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The North–South Divide in India: Regional Divergence, Conditional Convergence, and Growth Volatility (1980–2024)

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ABSTRACT

The idea of 'North-South Divide' first emerged globally in the Brandt Report (1980), which articulated a developmental boundary between the industrialised North and the agrarian South. The present study attempts to put the Indian sub-continent into this framework. Although regional income disparities have steadily increased over the last four and a half decades inciting a wide discourse of studies, a general consensus regarding the underlying dynamics of convergence across Indian states has not yet been achieved. This paper examines and compares growth trajectories of Indian states and union territories over the period of 1980 to 2024 based on Sigma Convergence, Beta Convergence (conditional and unconditional) and a Growth-Volatility Analysis. Results indicate that sigma divergence is persistent over the years, i.e., there has been a sustained increase in the dispersion of per capita income. No statistically significant evidence of unconditional beta convergence was found. This means that initial income levels alone do not explain subsequent growth performance. However, panel fixed effects estimates, that take into account time-invariant state characteristics and common shocks, revealed a statistically significant negative relation between growth and lagged income. This shows conditional convergence and hence it can be said that Indian states might be converging towards their own distinct, structurally determined steady states instead of moving towards a common national equilibrium. The growth volatility analysis fails to establish a systematic relationship between average growth and instability across states but further descriptive statistics indicate that economically stronger states mostly exhibit lower fluctuations compared to their lagging counterparts. In a nutshell, this paper puts persistent structural heterogeneity into the convergence perspective of Indian states. This has implications for policy-making as well – fiscal transfers tied to state-level metrics based on capacity building, infrastructural development and shock vulnerability reduction; shifting from a one-size-fits-all model to a differentiated model based on regional economic structure and expanding supply chains of core industries to periphery regions to infuse developmental spillover.

Keywords: Regional inequality, Convergence, Growth volatility, Indian states, Structural heterogeneity, Fiscal federalism

JEL Classification Codes: O47, R11, O53, C23, R12, H77

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I. INTRODUCTION

Global economic thought still hinges on the Brandt Report (1980)—the core framework conceptualizing a persistent developmental chasm between industrialized North and agrarian South. Theoretically, such demarcation stays rooted in the Prebisch-Singer hypothesis (1950). Primary commodity producers simply face a secular decline in terms of trade relative to manufactured exports. But these disparities are self-reinforcing; initial endowments and institutional quality dictate a region's long-term trajectory. North-South Divide has thus been associated with comparing prosperity against geography—both globally and regionally.

Within sub-national boundaries of India, these global dynamics find a localized expression—one that intensified post-1991 market liberalization (Sachs et al., 2002). Present study advances the discourse by shifting focus from mere growth averages towards underlying structural drivers of regional decoupling. Evidence from a 45-year panel of Per Capita Net State Domestic Product (PCNSDP) shows persistent sigma divergence —i.e., widening variations among state incomes. This indicates that the gap between leading and laggard states has reached historically unprecedented levels (Ahluwalia, 2000). Economic 'Core' states of geographic South and West have secured a 'stability premium' through diversification into service-led and skill-intensive manufacturing (Kochhar et al., 2006). But 'Economic Periphery' of the North and East remains stuck in a 'volatility trap'. Frequent output shocks appear to erode gains made during brief cyclical upswings (Loayza et al., 2007).

This creates a paradoxical inversion of the global Brandt Line. India's geographic South functions as industrialized 'North' while geographic North exhibits fragility typically associated with 'Global South' (Ahluwalia, 2002). Federal redistributive mechanisms are significant, but they struggle to mitigate this structural duality. Then, determining whether this widening cleavage is a transitory friction or a permanent feature requires rigorous examination of growth-volatility nexuses. Understanding mechanics of this divide is no longer just an academic exercise. It is a prerequisite for addressing spatial inequality.

Literature on regional income dynamics in India is marked by tension between convergence as theoretical expectation and divergence as empirical regularity. The present study is situated within that debate, but it departs from purely descriptive treatments. Evidence is organized around five linked questions—whether inter-state inequality widened over time; whether poorer states exhibited unconditional catch-up; whether growth is systematically associated with instability; whether state-level growth process is segmented into distinct clubs; and whether observed patterns survive robustness checks.

II. REVIEW OF LITERATURE

The review of literature follows the same structure of five interconnected questions discussed above.

The first body of work concerns the long-run trajectory of regional inequality, especially sigma convergence or divergence. Early evidence from India already indicated that dispersion in state income was not falling in the direction implied by the neoclassical growth model. Cashin and Sahay (1996) found that dispersion in real per capita net domestic product widened over 1961–1991, even though some

poorer states displayed signs of catch-up in growth rates. This distinction matters. A few states may grow faster without the distribution narrowing if the initial income gaps remain too large or if volatility offsets gains. Sachs et al. (2002) reinforced this point by showing overall divergence in the 1980–1998 period, with the most pronounced widening occurring within the poorer states themselves. Their evidence also suggested that divergence was not merely a pre-reform phenomenon; it continued after liberalization, though the pattern differed between richer and poorer groups. Gaur (2010), using inequality indices such as the Gini, Theil, and Atkinson measures for 20 major states, reported a sharp widening of disparities, especially after 1991. The central implication of that study is that the reform period did not produce a general equalization of incomes across states. Instead, it appears to have strengthened the separation between the leading states and the lagging ones.

Later studies using more recent data reach broadly similar conclusions, though the exact magnitude and timing of divergence vary by sample and metric. Cherodian and Thirlwall (2015) examined the period 1999-2000 to 2010-2011 and found continuous sigma divergence across Indian states, with the exception of the poorest states. That caveat is important because it suggests that the lower tail of the distribution may have behaved differently from the middle and upper segments. In other words, the distribution was not moving uniformly. Nayak and Sahoo (2022) also reported sigma divergence across 17 regions from 1990–1991 to 2017–2018, even while documenting absolute and conditional beta convergence. The coexistence of beta convergence with sigma divergence is not contradictory once one remembers that beta convergence is neither necessary nor sufficient for sigma convergence. Abler and Das (1998) make this conceptual distinction explicit, and the Indian evidence repeatedly confirms it. Hembram and Haldar (2019) likewise found rising PCNSDP inequality across 22 states from 1980–1981 to 2015–2016, together with absolute beta divergence and conditional beta convergence. Similar results appear in Singh et al. (2024), who report a widening national dispersion of mean per capita income and an uneven sectoral pattern in which the primary sector appears equalizing while the tertiary sector is associated with higher inequality. Taken together, this literature suggests that the inequality process is persistent, but not mechanically identical across time periods, sectors, or parts of the income distribution.

The second strand of the literature concerns the absolute catch-up hypothesis. Here, the evidence is even less supportive of unconditional convergence. In a broad sense, the Indian state-level literature has repeatedly failed to find the negative and statistically significant slope required for absolute beta convergence. Sachs et al. (2002) found divergence rather than convergence in the 1980–1998 period. Gaur (2010) obtained positive and significant beta coefficients for the pre-reform, post-reform, and pooled periods, which implies that richer states were not being overtaken by poorer ones. Cherodian and Thirlwall (2015) also found no evidence of unconditional beta convergence over the period of 1999-2000 to 2010-2011. Sinha (2024a) similarly reported no absolute convergence across Indian states and Union Territories over 1991–2020, while Sinha (2024b) again found no statistically significant negative association between initial per capita income and subsequent growth over 1991–2022. The continuity of these findings across different samples and windows is noteworthy, though it does not mean that all studies agree. Several papers do report unconditional beta convergence, especially in more restricted samples or under alternative specifications. Nayak and Sahoo (2022) found absolute beta convergence for 17 regions over 1990–1991 to 2017–2018. Roy et al. (2019) also reported convergence at the state level when fiscal and investment-

related controls were introduced, although their headline result without controls was less favourable to the catch-up hypothesis. Such differences appear to reflect the sensitivity of beta estimates to sample composition, conditioning variables, and the treatment of structural heterogeneity. The literature therefore does not support a single universal verdict, but the weight of evidence still leans against unconditional catch-up as a stable feature of India's regional growth process.

A related literature examines conditional beta convergence, and here the results are more favourable to the neoclassical framework, though only after substantial conditioning. Adabar (2004) found conditional convergence among 14 major states between 1976–77 and 2000–01 when per capita investment, population growth, human capital, and state-specific effects were included. Roy et al. (2019) likewise found significant conditional convergence once capital expenditure, development expenditure, and fiscal deficit were controlled for. Cherodian and Thirlwall (2015) reported weak evidence of conditional beta convergence after accounting for population growth, credit growth, male literacy, agricultural share, and state expenditure. Hembram and Haldar (2019) obtained conditional convergence after controlling for per capita bank deposits and a composite physical infrastructure index. Sinha (2024a, 2024b) similarly reported conditional convergence, with an estimated convergence rate of 0.038 in the later paper. This cluster of findings suggests that convergence in India is not absent, but conditional on state-specific steady-state determinants. That matters for interpretation. It implies that differences in infrastructure, fiscal capacity, human capital, and institutional environment may be more important than initial income alone in shaping long-run growth trajectories. The convergence process, in this reading, is not automatic. It is mediated. Some states converge because they possess or accumulate the conditions required to do so; others remain trapped in lower-income equilibria.

The third body of work, and the one most directly relevant to the present study, concerns growth instability and the relationship between growth and volatility. Krishna (2004) provides one of the clearest early treatments of this issue by explicitly measuring instability through the coefficient of variation of year-to-year growth rates. That approach treats volatility as a structural feature rather than a statistical nuisance. The broader implication is that a state's average growth performance cannot be interpreted independently of the variability surrounding it. Lolayekar and Mukhopadhyay (2017) reinforce this perspective by noting that continuous shocks and instability can keep cross-sectional dispersion from falling even when some states experience periods of leapfrogging or criss-crossing. Their argument is analytically important because it moves beyond a simple average-growth framework and recognizes that transient shocks may have persistent distributional consequences. Patnaik (2022), using spatial panel methods for 17 major states over 1995–2015, reports a significant inverse relationship between growth and volatility. That finding is closer to a "stability premium" than a high-risk, high-return pattern. Put differently, the evidence suggests that instability may suppress growth rather than accompany it in a compensating way. Sachs et al. (2002) had already hinted at this asymmetry when they observed greater volatility in the dispersion of poorer states. Bandyopadhyay (2021) also contributes to this discussion by showing mixed evidence of mean reversion and non-stationarity in relative incomes, with some shocks dissipating within a decade while others persist. The broader lesson is that growth instability may help explain why some states fail to move into higher-income clubs even when temporary accelerations occur.

The fourth strand concerns structural heterogeneity, club convergence, and the segmentation of the growth process. This literature is especially relevant because it moves beyond aggregate averages and asks whether different groups of states are converging to different steady states. Bandyopadhyay (2012) identified two convergence clubs in Indian states over 1965–1997, one around 50 percent of the national average income and another around 125 percent. That result is important not merely because it documents clustering, but because it implies polarization around multiple equilibria rather than a single national one. Ghosh, Ghoshray, and Malki (2013), using Phillips and Sul's methodology, found significant divergence and multiple clubs across 15 major states over 1968/69–2008/09, with three clubs at the aggregate level and similar patterns in the sectoral breakdown. Hembram and Haldar (2019) also documented club convergence, describing higher stability but lower mobility in the short run. Akram and Ali (2021), working with a broader set of states and Union Territories, found multiple club convergence at both aggregate and sectoral levels, with the services sector converging faster than agriculture and industry. This sectoral dimension is relevant because it suggests that structural transformation is uneven. Services may allow some states to climb more quickly, while agriculture may anchor other states in lower-growth equilibria. The club-convergence literature therefore suggests that India does not operate as one integrated convergence space. Rather, it appears to contain multiple growth regimes, each with its own dynamics, entry barriers, and persistence mechanisms.
Spatial structure adds yet another layer to the club literature. Khomiakova (2008) found that high-growth states tended to cluster in the South and West, while low-income states clustered in the North, East, and BIMARU belt, producing a clear spatial pattern of divergence. Ohlan (2013) extended this line of reasoning at the district level and found the Southern region to be far more developed than the Central and Northern regions. Sahasranaman et al. (2021) likewise showed that districts in north-central and eastern India systematically underperform relative to scaling expectations, while districts in the South, West, and high North tend to overperform. Lolayekar and Mukhopadhyay (2019) added a spatial econometric perspective and argued that convergence estimates are biased if neighbouring-state spillovers are ignored. Their results suggest that divergence remains robust even after spatial dependence is modelled explicitly. These studies do not merely repeat a North–South divide narrative. Rather, they show that geography and spatial spillovers may help stabilize regional hierarchies, making them harder to overturn through standard convergence mechanisms. The clustering of low-income states with similarly lagging neighbours can create localized traps in which disadvantage becomes self-reinforcing.

The fifth theme concerns the robustness of reported divergence patterns to sample definition and data construction. This issue is often underestimated, but the literature indicates that regional inequality estimates in India can be sensitive to the choice of states, time period, and series construction. Abler and Das (1998) and Sachs et al. (2002) both worked with subsets of major states, reflecting the data limitations of earlier periods. Kalra and Thakur (2015) note that Indian convergence studies can be classified into convergence, divergence, conditional convergence, club convergence, and spatial convergence, which itself indicates how method-dependent the conclusions can be. Gaur (2010) used inequality indices over a fixed set of 20 major states, while later work expanded to 22 states, 27 states, or even states and Union Territories. This expansion may be analytically useful, but it also complicates comparisons across studies because changes in the cross-sectional composition can influence sigma estimates. The same concern applies to base-year revisions and splicing. While not all of the cited papers discuss these issues

explicitly, the broader literature implies that robustness checks are not decorative; they are essential to distinguishing genuine regional divergence from artifacts created by sample changes or price-base transitions. For that reason, the present study's robustness design is methodologically aligned with the broader literature even if the precise checks differ from one paper to another.

A final set of studies provides conceptual clarification rather than directly competing estimates. Abler and Das (1998) stress that beta convergence and sigma convergence are not equivalent. This distinction remains crucial for the current paper because the data may show falling beta coefficients without a reduction in dispersion, or rising dispersion despite some degree of conditional catch-up. Kalra and Thakur (2015) also emphasize the need to interpret convergence within a wider typology that includes club and spatial convergence. Singh et al. (2024) extend that logic by showing that sectoral composition matters: the primary sector may reduce inequality, while the tertiary sector may widen it. Such findings suggest that convergence dynamics are not only regional but also structural. They are shaped by the composition of output, the spatial distribution of productive capacity, and the institutional environment in which growth occurs. A single aggregate slope is therefore unlikely to capture the full story.

The literature reviewed here leads to a cautious but clear synthesis. First, the balance of evidence points to persistent sigma divergence in Indian states over the long-run, with the post-1991 period often associated with widening gaps. Second, unconditional beta convergence has generally been weak or absent, while conditional convergence appears more frequently once structural characteristics are introduced. Third, the growth process seems unevenly distributed across states, with evidence of club formation, spatial clustering, and multiple equilibria. Fourth, volatility appears to matter, not as a neutral statistical accompaniment to growth but as a possible constraint on sustained catch-up. The present study is positioned within that literature, but its purpose is narrower and more focused: to examine whether the long-term pattern of regional inequality, the absence or presence of unconditional catch-up, the growth–instability nexus, and the structure of growth clubs can be observed consistently in the same empirical framework. That integration is still missing in much of the existing work, which tends to isolate one dimension of the problem at a time. The literature therefore motivates, rather than resolves, the empirical questions posed here.

Research Gap

Research on convergence analysis based on Indian states already covers a lot of aspects. However, studies mostly separate sigma convergence, beta convergence, and club formation. Growth–volatility relationship is largely ignored within this framework as well. Furthermore, structural grouping and robustness checks are only done selectively across different samples and data variations.

III. OBJECTIVES

- To track long-run regional inequality using sigma-convergence test.
- To test the 'catch-up effect' using unconditional beta-convergence.
- To look at the link between growth and instability.

- To identify 'growth clubs' by grouping states into a stable core and a fragile periphery, thereby identifying the North-South divide.
- To focus on state-specific characteristics underneath growth inequality based on conditional beta-convergence test.

IV. METHODOLOGY

Data Sources

Per Capita Net State Domestic Product (PCNSDP) at constant prices is a standard indicator of regional economic progress. The raw PCNSDP data was obtained from the Handbook of Statistics on Indian States published by the Reserve Bank of India (RBI, 2024). To construct a longitudinal panel based on the 1980–2024 horizon, backward and repeated splicing was applied across multiple base-year revisions to maintain a uniform series in constant prices at 2011-12 base year level. Although such procedures are common in sub national analysis, it is important to note that these processes infuse a synthetic attribute to the data, primarily to the data from earlier years.

Data for states like Chhattisgarh, Jharkhand, and Uttarakhand—which only achieved political statehood in 2000—was back-calculated and officially published by the Ministry of Statistics and Programme Implementation (MoSPI). Since these official back-series ensure more institutional consistency than being computed by the author, the minimum analytical caution regarding the structural assumptions behind the Ministry's interpolation methods can be overlooked. Although more recent figures were available for some regions, the study is limited till 2023-24 owing to several incomplete observations reported in the later years. Forced extrapolation was avoided in order not to introduce the artificial bias into the σ-convergence and unconditional β-convergence metrics.

Analytical Tools

Measuring the year-on-year dispersion of these incomes allows for an assessment of σ-convergence, defined as the cross-sectional standard deviation of the natural logarithm of income. A rising trend in this coefficient would suggest that regional inequality is not merely persistent but actively intensifying.

Testing the 'catch-up' hypothesis requires a two-stage econometric approach. First, we estimate unconditional β-convergence by regressing annualized growth rates against initial income levels. Neoclassical theory would predict a negative coefficient here, suggesting that poorer states grow faster than their wealthier counterparts due to diminishing returns to capital (Barro & Sala-i-Martin, 1992). Preliminary observations of the Indian context suggest that this absolute catch-up mechanism may have stalled in the post-reform era (Ahluwalia, 2000). Second, we account for the unique institutional and geographical constraints of each state by testing for conditional β-convergence.

Panel Fixed Effects (FE) models are utilized to absorb time-invariant state characteristics, thereby isolating the internal speed at which regions move towards their idiosyncratic steady states. This distinction is critical. A state may exhibit conditional β-convergence without showing any sign of unconditional β-convergence, implying it is catching up to its own limited potential rather than the national equilibrium.

Structural 'growth clubs' facilitate an investigation into the growth-instability nexus. Comparing a stable 'Economic Core' against a 'Fragile Periphery' helps illustrate the structural divide between the industrialized South and the agrarian North (Sachs et al., 2002). Robustness checks, including fixed-panel analysis, verify that these trends are not artifacts of base-year revisions or shifting cross-sectional compositions.

Hypotheses and Model Specifications

1. H1: Persistent Sigma Divergence
   Model Equation:
   Dispersion is measured as the cross-sectional standard deviation of log income:

$$\sqrt{\frac{1}{N}\sum_{i=1}^{N}\left(\ln y_{it} - \overline{\ln y_t}\right)^2}$$

   The trend in dispersion is estimated as:

$$\sigma_t = \alpha + \theta\ Year_t + \epsilon_t$$

   θ signifies the estimated linear rate of change in income dispersion

   Null Hypothesis (H0): θ = 0
   Alternative Hypothesis (H1): θ > 0

2. H2: Unconditional Beta-Convergence
   Model Equation:

$$\frac{1}{T}\ln\left(\frac{y_{i,T}}{y_{i,0}}\right) = \alpha + \beta\ln\left(y_{i,0}\right) + \epsilon_i$$

   The left-hand-side represents annualised growth rate. $\ln(y_{i,0})$ refers to the initial income level (log PCNSDP).

   Null Hypothesis (H0): β = 0
   Alternative Hypothesis (H1): β < 0

3. H3: Conditional Beta-Convergence
   Model Equation:

$$g_{it} = \alpha_i + \eta_t + \beta\ln\left(y_{i,t-1}\right) + \epsilon_{it}$$

   g_{it} denotes the annual growth rate of state i, while α_i and η_t represent state and year fixed effects respectively utilized to isolate unobserved structural heterogeneity and systemic macroeconomic shocks.

   Null Hypothesis (H0): β = 0
   Alternative Hypothesis (H1): β < 0

4. H4: Volatility (Club Effects)
   Model Equation:

$$Volatility_i = \gamma_0 + \gamma_1 D\_Periphery_i + \gamma_2 D\_Special_i + \mathcal{E}_i$$

   $Volatility_i$ is defined as the standard deviation of annual growth, with the two binary dummy variables (D) capturing the relative instability of the Periphery and Special regions compared to the omitted Economic Core baseline.

   Null Hypothesis (H0): $\gamma_1 = \gamma_2 = 0$
   Alternative Hypothesis (H1): $\gamma_1, \gamma_2 > 0$

5. H5 (Supplementary): Growth–Volatility
   Model Equation:

$$Volatility_i = \delta_0 + \delta_1 \bar{g}_i + \varepsilon_i$$

   Here, $\bar{g}_i$ refers tothe state's mean annual growth rate.

   Null Hypothesis (H0): $\delta_1 = 0$
   Alternative Hypothesis (H1): $\delta_1 \neq 0$

V. ANALYSIS AND FINDINGS

Sigma Convergence

The sigma-convergence test points decisively in the opposite direction: rather than a narrowing of interstate income disparity, the Indian states exhibit a gradual but persistent widening of relative income inequality over the period 1980–2024. The linear time-trend specification yields a positive and highly significant coefficient on the year variable (0.003291, $p < 0.01$), implying that the cross-sectional dispersion of log per capita net state domestic product has trended upward over time. The Newey–West correction confirms that this result is not based out of serial correlation; the estimate remains precisely measured, with a t-statistic of 14.87 and an F-statistic of 221.09. In substantive terms, the pattern is consistent with sigma divergence rather than sigma convergence (see Table-1).

Table-1: Newey–West Regression Results (Standard errors with lag 1)

Variable	Coefficient	Std. Error
Year	0.003291***	0.000221
Constant	-6.088392***	0.444171

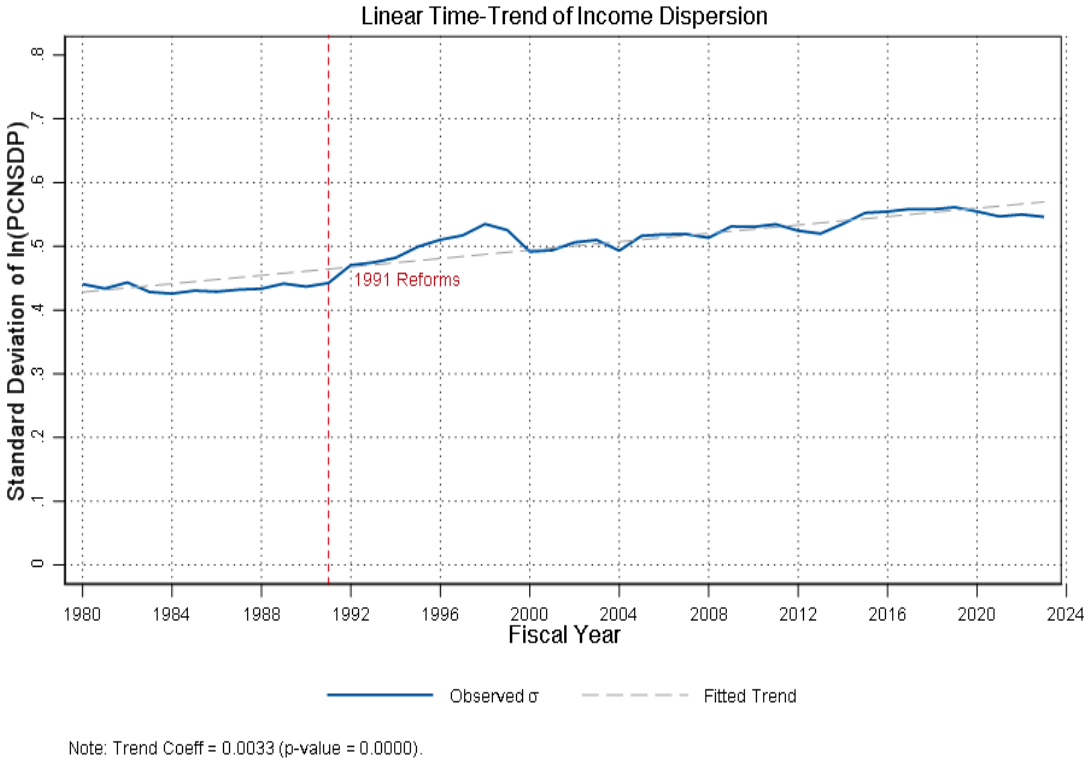
Source: Author's calculation based on RBI (2024)
Note:

- Observations: 44
- F-statistic: 221.09
- Prob > F: 0.0000
- The positive and highly significant time trend indicates a statistically strong rise in sigma dispersion over time.

The graphical evidence reinforces this interpretation (see Figure-1). Dispersion remains relatively stable through the early 1980s and late 1980s, but begins to

edge upward around the post-reform period, with a noticeable increase in the mid-1990s and a further, though slower, rise thereafter. The vertical marker for the 1991 reforms is especially revealing: while the series does not exhibit an immediate structural break, the post-reform trajectory is clearly steeper than the pre-reform path. This suggests that economic liberalisation did not produce a uniform equalising effect across states. Instead, it appears to have interacted with pre-existing differences in industrial capacity, infrastructure quality, fiscal space, and institutional readiness, thereby amplifying the dispersion of state incomes over time.

Figure-1: Sigma Divergence among Indian States (1980-2024)



Source: Author's calculation based on RBI (2024)

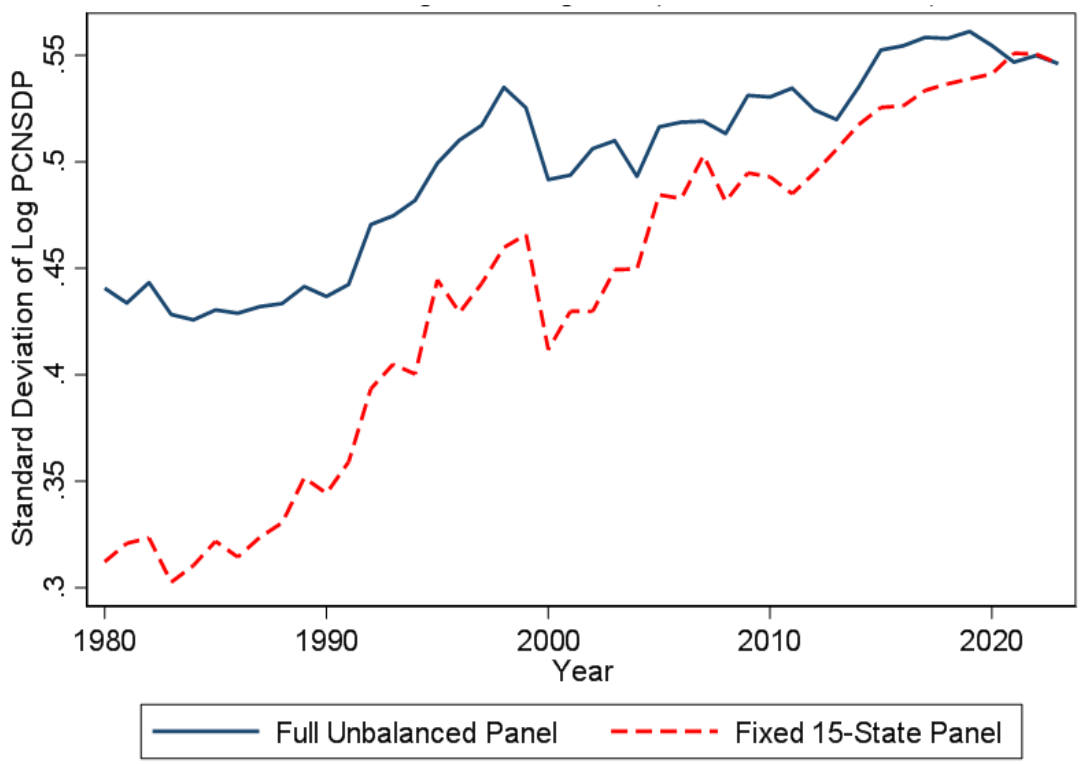
From the standpoint of the broader convergence debate, these results are important because they indicate that aggregate national growth has not translated into a commensurate reduction in interstate inequality. The modest but sustained upward trend implies that growth dynamics have remained uneven, with relatively better-positioned states either maintaining or extending their lead. This finding is also consistent with the possibility of club-based divergence: rather than moving towards a common steady state, states may be sorting into distinct income trajectories, with some converging internally within a higher-income club and others remaining trapped in slower-growth equilibria. The sigma-divergence result therefore provides the first empirical signal that the Indian growth process has been territorially uneven and structurally segmented.

The Robustness of Sigma Divergence (Full vs. Fixed Panel)

One of the most common criticisms of long-term Indian data is that "new" states (like Chhattisgarh or Jharkhand) entered the dataset in 2000, potentially skewing the inequality metrics. To ensure that the observed rise in income dispersion is not a statistical artifact of new, smaller units entering the dataset, a restricted analysis was conducted on the fifteen major "unbroken" states that have existed continuously since 1980. Calculating the standard deviation of ln(PCNSDP) for this fixed set reveals a trajectory that tracks the full unbalanced panel with remarkable precision.

In Figure-2, temporal trends in the 15-state subset mirror the aggregate data, suggesting that the "Great Divergence" is a phenomenon rooted in the core of the Indian union rather than its periphery. Such resilience in the divergence coefficient implies that the forces of spatial decoupling are systemic. Internal dynamics within the most established regional economies appear to be the primary drivers of national inequality. Consequently, the upward trajectory of sigma-divergence survives the scrutiny of composition-bias tests, reinforcing the narrative of a deepening structural cleavage.

Figure-2: Robustness Sigma Divergence (Full vs. Fixed Panel)



Source: Author's calculation based on RBI (2024)

Unconditional Beta Convergence

The unconditional beta-convergence exercise provides little support for the proposition that poorer Indian states have grown systematically faster than richer ones over 1993–2024.

The estimated coefficient on initial income is negative, as theory would predict under convergence, but the magnitude is very small and statistically insignificant (β = -0.0679). The beta-convergence regression implicitly yields a very low R^2 (consistent with the near-flat fitted line in the scatter plot later), reflecting the fact that initial income explains very little of the cross-sectional variation in growth rates. This is reinforced by the absence of statistical significance in the slope coefficient. In such a setting, the F-statistic—which tests the joint significance of regressors (here, effectively just initial income)—would also be very low and statistically insignificant. Econometrically, this means we fail to reject the null hypothesis that initial income has no explanatory power for subsequent growth. (see Table-2).

Table-2: Unconditional Beta-Convergence Regression Results (Robust SE)

Variable	Coefficient	Robust Std. Errors
ln_pcnsdp1993	-0.0679	0.3544
Constant	5.3152	3.7157

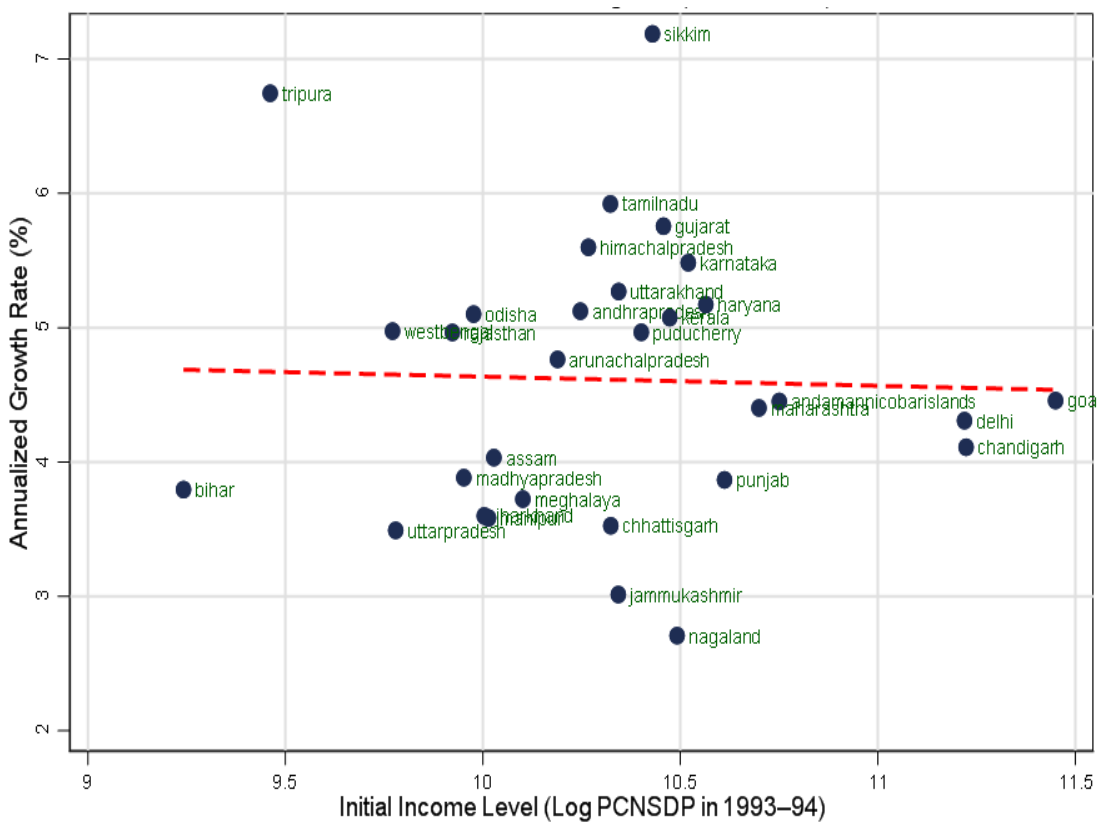
Source: Author's calculation based on RBI (2024)
Note:

- Observations: 31
- F-statistic: 0.04
- Prob > F: 0.8493
- R-squared: 0.0010
- No significance stars are shown because the coefficient is not statistically significant. Robust standard errors are reported.

Figure-3 plots the relationship between initial income levels and subsequent long-term growth across Indian states over the period 1993–94 to 2023–24. The fitted regression line is nearly flat, with a marginally negative slope that is statistically insignificant. This indicates that initial income levels explain virtually none of the variation in subsequent growth rates across states. In other words, the cross-sectional association between starting income and long-run growth is too weak to sustain a claim of unconditional β-convergence.

The scatter itself is revealing because it shows that growth performance has been highly dispersed across the income distribution. Several lower-income states, such as Bihar and Uttar Pradesh, remain below the implied trend line, while some relatively low- to middle-income states, including Tripura and Sikkim, register very high growth rates. At the same time, a number of richer states cluster around moderate growth outcomes, suggesting that the growth process has not been governed by a simple mean-reverting mechanism. The presence of such outliers is important: it implies that growth trajectories in Indian states are shaped by more than initial income alone, and that institutional quality, policy choices, structural transformation, and spatial advantages likely play a far more decisive role.

Figure-3: Unconditional Beta Convergence (1993-2024)



Source: Author's calculation based on RBI (2024)

Taken together, the absence of statistically significant unconditional beta convergence and the earlier evidence of sigma divergence point to a common conclusion: interstate growth in India has not followed a uniform path towards equalization. Rather than moving towards a single steady state, states appear to have followed heterogeneous trajectories, with growth outcomes distributed unevenly across the income spectrum. This pattern is more consistent with club-type dynamics than with unconditional convergence, and it motivates a move from the aggregate relationship to a richer assessment of structural clustering and conditional convergence.

Conditional Beta Convergence

Given the absence of unconditional catch-up, a panel regression with state and year fixed effects is estimated to test for conditional β-convergence. By absorbing unobserved, time-invariant state-specific characteristics—such as institutional capacity, geography, and demographic endowments—the fixed-effects specification isolates the underlying convergence mechanism from structural heterogeneity.

Table-3: Panel Fixed Effects Regression Results

Variable	Coefficient	Std. Error
Lagged log PCNSDP	-6.492***	1.349
Constant	67.242***	13.394

Source: Author's calculation based on RBI (2024)
Note:

- Controls: State fixed effects, Year fixed effects
- Observations: 1,324
- Number of states: 33
- Within R^2: 0.220
- Std. errors: Clustered at state level
- *** p < 0.01, ** p < 0.05, * p < 0.10

As reported in Table-3, the panel fixed-effects estimation yields a conditional β-coefficient of -6.49 ($p<0.01$), indicating a robust process of conditional convergence. However, the estimated rho(ρ) value (intra-class correlation coefficient) of 0.267 suggests that a substantial share of the variation in growth is attributable to time-invariant state-specific characteristics. This highlights the continued importance of structural factors in shaping growth trajectories. Controlling for structural differences, poorer states tend to grow faster than richer ones.

This gives rise to a "convergence paradox": while states such as Bihar and Uttar Pradesh are converging towards their own steady states, these equilibria remain structurally lower than those of the more industrialized core. Convergence, therefore, occurs within structurally bounded regimes rather than towards a common national frontier.

The contrast with the insignificant unconditional regression is instructive. It indicates that convergence in India is not automatic but contingent on underlying structural conditions. States do not converge towards a common national steady state; rather, they converge towards distinct, group-specific steady states shaped by persistent differences in economic structure and capacity.

This finding aligns closely with the convergence club hypothesis. In particular, it suggests that the economic periphery is constrained to a lower and more volatile steady-state path, while the economic core converges towards a higher and more stable equilibrium, thereby limiting the scope for absolute convergence across states.

Structural Clubs - Growth vs. Volatility

A common presumption in growth theory is that higher growth may come at the cost of greater instability, implying a trade-off between growth and volatility. This section investigates whether faster-growing states have systematically experienced higher volatility, or whether volatility itself is unevenly distributed across structurally distinct groups of states. By doing so, it introduces the idea of a "volatility paradox": the possibility that the regions driving growth are not necessarily the ones experiencing the greatest instability.

Indian states were grouped into three clubs:

- Economic core: Punjab, Maharashtra, Haryana, Kerala, Karnataka, Tamil Nadu, Gujarat.
- Economic periphery: Bihar, Jharkhand, Odisha, Madhya Pradesh, Chhattisgarh, Assam, Uttar Pradesh, Rajasthan.
- Special/urban: Andhra Pradesh, Arunachal Pradesh, Goa, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Telangana, Tripura, West Bengal, Andaman & Nicobar Islands, Chandigarh, Delhi, Puducherry, Lakshadweep.

The grouping is meant to capture structural similarity in growth dynamics as observed in convergence literature, not merely administrative labels. The three clubs are interpreted as follows: the economic core consists of relatively diversified, higher-income states with stronger industrial and service bases and lower volatility; the economic periphery comprises lower-income states with slower growth and more fragile trajectories; and the special/urban bloc contains the remaining states and Union Territories whose trajectories are shaped by small size, special status, urban concentration, tourism, or distinctive administrative and geographic features.

Regression results in Table-4 show that faster growth is not systematically associated with higher volatility. The coefficient on mean growth rate is positive (0.341), but it is statistically insignificant ($p = 0.165$). That means we cannot reject the null hypothesis that growth and volatility are unrelated in a meaningful way across states. The model fit is also very weak: the R^2 is only 0.036, so growth explains just about 3.6 percent of the variation in volatility. The F-statistic of 2.02 is likewise insignificant, confirming that the regression as a whole has little explanatory power.

Table-4: Volatility – Mean Growth Regression Results

Variables	Volatility	Robust Std. Errors
Mean Growth Rate	0.341	0.24
Constant	4.703***	1.088

Source: Author's calculation based on RBI (2024)

Note:

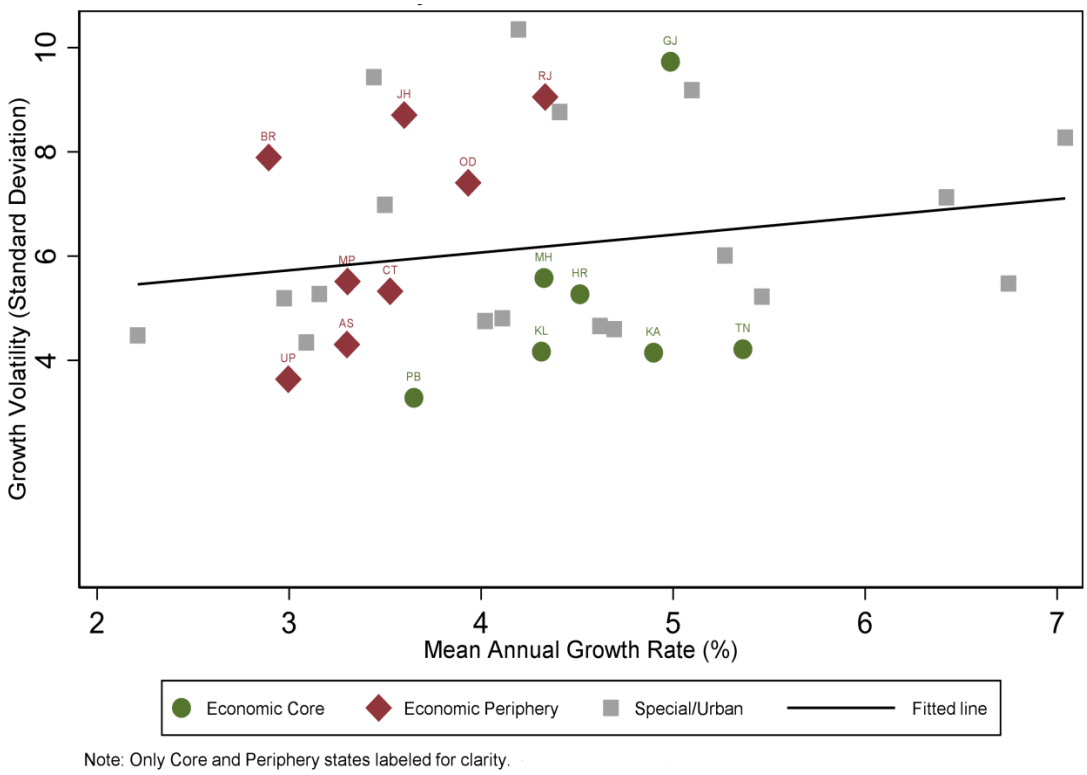
- Observations: 33
- R-squared: 0.036
- F-statistic: 2.02
- Prob > F: 0.165
- *** p < 0.01, ** p < 0.05, * p < 0.10

Substantively, the scatter plot in Figure-4 reinforces this point. States do not line up along a clear upward pattern; instead, they are widely dispersed. Some high-growth states show moderate volatility, while several lower-growth states exhibit relatively high volatility. This weak slope is what one would expect if volatility is shaped less by growth itself and more by deeper structural differences across states.

The group averages in Table-5 also sharpen the interpretation. The economic core states grow faster on average and with lower volatility, while the economic periphery grows more slowly and with higher volatility. The special-category states sit somewhat in between on growth but remain relatively volatile. So the broad pattern

is not that growth necessarily creates instability; rather, volatility appears to be structurally concentrated in the lagging regions. This is exactly the kind of evidence that supports a club-based reading of Indian state growth dynamics.

Figure-4: Volatility Paradox – Structural Clubs in India



Note: Only Core and Periphery states labeled for clarity.

Source: Author's calculation based on RBI (2024)

Table-5: Group wise Growth vs. Volatility

Structural group	Mean growth	Volatility
Economic Core	4.58	5.2
Economic Periphery	3.49	6.48
Special Category	4.47	6.39
Total	4.25	6.16

Source: Author's calculation based on RBI (2024)

Test for Difference in Volatility among Clubs

To examine whether the observed clustering of states into structural groups reflects statistically meaningful differences, an OLS specification with group dummies is estimated. Treating the economic core as the omitted category, the regression tests whether volatility in the periphery and special-category/urban states differs significantly from that of the core.

Table-6: Regression results – Volatility with Group Dummies

Variable	Coefficient	Robust Std. Errors
Economic Periphery	1.282	1.061
Special Category, Urban & Transition	1.187	0.92
Constant	5.198***	0.786

Source: Author's calculation based on RBI (2024)
Note:

- Observations: 33
- R-squared: 0.062
- F-statistic: 0.96
- Prob > F: 0.393
- *** p < 0.01, ** p < 0.05, * p < 0.10

The results (Table-6) indicate that both the economic periphery and the special/urban group exhibit higher average volatility relative to the core, with coefficients of 1.282 and 1.187 respectively. However, these differences are not statistically significant at conventional levels (p-values of 0.236 and 0.206). While the direction of the coefficients aligns with the descriptive evidence—suggesting greater instability outside the core—the lack of statistical significance implies that we cannot conclusively reject the null of equal mean volatility across groups.

At one level, this may appear to weaken the structural-club interpretation. However, two considerations are important. First, the relatively small cross-sectional sample limits statistical power, making it difficult to detect differences even when economically meaningful gaps exist. Second, the earlier scatter and group averages already point to systematic clustering in outcomes, even if the mean differences alone are not sharply estimated.

Taken together, the results suggest that while the magnitude of volatility differs across groups in an economically intuitive manner, the variation within groups remains substantial, diluting statistical precision. This reinforces the idea that structural heterogeneity operates along multiple dimensions and may not be fully captured by a simple three-way classification.

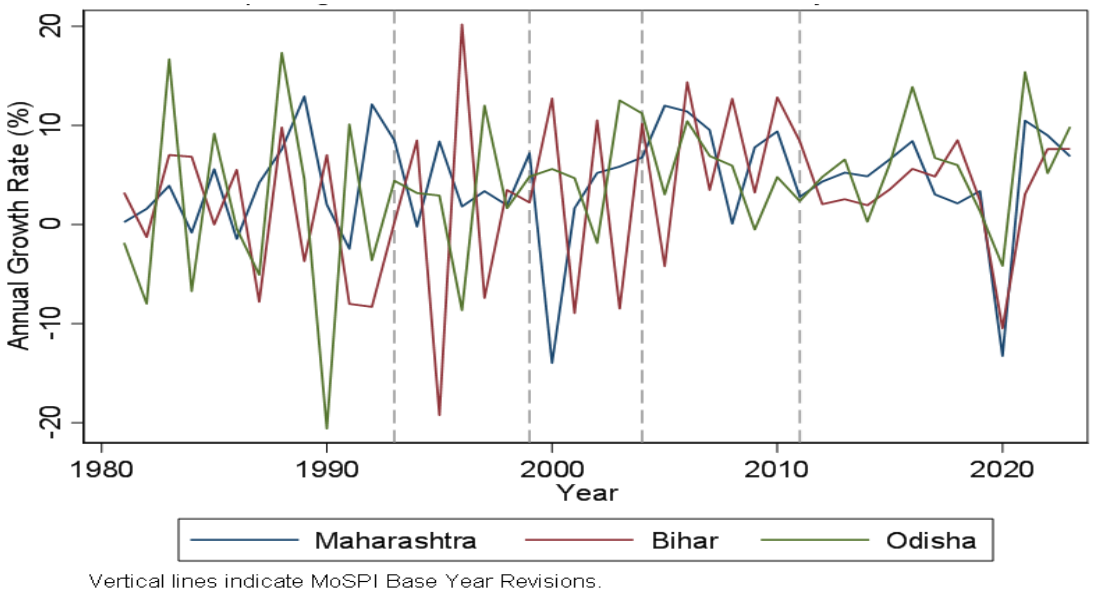
Splicing Artifacts and Data Integrity

To ensure the structural integrity of the long-run series, the analysis incorporates a diagnostic check for splicing artifacts (Figure-5). Given that the data is constructed by back-calculating and splicing multiple base-year regimes, there is a latent risk that base-year revisions may introduce artificial volatility or "spikes" at the points of transition. By examining the annual growth trajectories of three representative states—Maharashtra (Core), Bihar (Periphery), and Odisha (Transition)—against the vertical markers of major revisions (1993, 1999, 2004, and 2011), the study verifies the smoothness of the series.

The visual evidence from this diagnostic suggests that while minor fluctuations occur during revision years, they do not constitute a systematic bias that would invalidate the broader findings of sigma divergence or the volatility paradox. The growth patterns for both industrialized and agrarian states remain consistent with their respective structural regimes throughout the transition periods. This confirmation is vital for the credibility of the study's terminal conclusions: it proves

that the widening income gap is a reflection of diverging regional fortunes rather than a byproduct of shifting price indices or weightage revisions in the national accounting framework.

Figure-5: Splicing Artifact Check – Annual Growth Trajectories



Source: Author's calculation based on RBI (2024)

VI. CONCLUSION

Income disparity among Indian states has significantly widened over time. Some states, mostly in the south and west have kept moving ahead of their counterparts in the north and east. Poorer states are not automatically catching up over the years. However, when state-specific characteristics pertaining to infrastructure, institutions and long-term conditions are taken into account, poorer states exhibit catching up within their own limits. Convergence is visible but towards their own steady states. These states also exhibit higher instability and slower growth.

Policy Implications

The above findings of the study indicate that presence of a federal structure allows for carefully curating centrally governed state level policies, yet differences in political ideology between central and state governments often restrict effective implementation. Instead of a one-size-fits-all framework, policy should be differentiated based on regional economic structure. Supply chains of core industries, which are concentrated primarily in high income states, can be expanded to periphery regions to induce developmental spillover. Fiscal transfers need to be tied to state-level metrics capacity-building, infrastructure development and shock vulnerability reduction.

Limitations of the Study

The whole study, however is based on just one single growth variable which is PCNSDP. Also, the four and a half decade long data is not purely a balanced complete panel dataset owing to state bifurcations and accounting discrepancies. Splicing introduces a synthetic nature to the data too, which although has become a norm in such kind of studies, still needs to be mentioned. The conditional beta convergence rightly takes into consideration the state fixed effects, but more focussed variables connected to infrastructure, human capital formation and economic health can add more robustness to the results. Club classification in this paper, although backed by literature, might seem imposed to many as there are several other grounds for classification that could be considered. Lastly, the number of observations is limited by the number of states and UTs in Indian economy and hence is quite low. Nevertheless, in spite of the limitations, this study documents distinct divergence patterns across Indian states but leaves the underlying structural drivers open for further investigation.

VII. REFERENCES

Abler, D. G., & Das, J. (1998). The determinants of the speed of convergence: The case of India. *Applied Economics, 30*(12), 1595–1602.

Adabar, K. (2004). *Economic growth and convergence in India*. Institute for Social and Economic Change.

Ahluwalia, M. S. (2000). Economic performance of states in post-reform period. *Economic and Political Weekly, 35*(19), 1637–1648.

Ahluwalia, M. S. (2002). State-level performance under economic reforms in India. In A. O. Krueger (Ed.), *Economic policy reforms and the Indian economy* (pp. 91–122). University of Chicago Press.

Akram, V., & Ali, J. (2021). Output convergence at sector level across Indian states: Evidence from weak sigma and club convergence analysis. *Journal of International Development, 33*(4), 728–748.

Bandyopadhyay, S. (2012). Convergence club empirics: Evidence from Indian states. *Research in Applied Economics, 4*(1), 1–22.

Bandyopadhyay, S. (2021). The persistence of inequality across Indian states: A time series approach. *Review of Development Economics, 25*(4), 2058–2075.

Barro, R. J., & Sala-i-Martin, X. (1992). Convergence. *Journal of Political Economy, 100*(2), 223–251.

Cashin, P., & Sahay, R. (1996). Regional economic growth and convergence in India. *Finance and Development, 33*, 49–52.

Cherodian, R., & Thirlwall, A. P. (2015). Regional disparities in per capita income in India: Convergence or divergence? *Journal of Post Keynesian Economics, 37*(3), 384–407.

Gaur, A. K. (2010). *Regional disparities in economic growth: A case study of Indian states*. Paper presented at the 31st General Conference of the International Association for Research in Income and Wealth.

Ghosh, M. (2008). Economic reforms, growth and regional divergence in India. Margin: The *Journal of Applied Economic Research, 2*(3), 265–285.

Ghosh, M., Ghoshray, A., & Malki, I. (2013). Regional divergence and club convergence in India. *Economic Modelling, 30*, 733–742.

Hembram, S., & Haldar, S. K. (2019). Beta, sigma and club convergence: Indian experience from 1980 to 2015. *Indian Economic Review, 54*(2), 245–272.

Independent Commission on International Development Issues. (1980). *North–South: A program for survival (The Brandt Report)*. MIT Press.

Kalra, R., & Thakur, S. (2015). Development patterns in India: Spatial convergence or divergence? *GeoJournal, 80*(4), 547–565.

Khomiakova, T. (2008). Spatial analysis of regional divergence in India: Income and economic structure perspectives. *International Journal of Economic Policy Studies, 3*(1), 113–133.

Kochhar, K., Kumar, U., Rajan, R., Subramanian, A., & Tokatlidis, I. (2006). India's pattern of development: What happened, what follows? *Journal of Monetary Economics, 53*(5), 981–1019.

Loayza, N. V., Rancière, R., Servén, L., & Ventura, J. (2007). Macroeconomic volatility and welfare in developing countries: An introduction. *The World Bank Economic Review, 21*(3), 343–357.

Lolayekar, A., & Mukhopadhyay, P. (2017). Growth convergence and regional inequality in India (1981–2012). *Journal of Quantitative Economics, 15*(1), 139–161.

Lolayekar, A., & Mukhopadhyay, P. (2019). Spatial dependence and regional income convergence in India (1981–2010). *GeoJournal, 84*(3), 631–653.

Lolayekar, A., & Mukhopadhyay, P. (2020). Understanding growth convergence in India (1981–2010): Looking beyond the usual suspects. *PLOS One, 15*(10), e0239331.

Nayak, S., & Sahoo, D. (2022). Regional economic growth in India: Convergence or divergence? *Competitiveness Review, 32*(1), 1–20.

Nayyar, G. (2008). Economic growth and regional inequality in India. *Economic and Political Weekly, 43*(6), 58–67.

Ohlan, R. (2013). Pattern of regional disparities in socio-economic development in India: District level analysis. *Social Indicators Research, 114*(3), 841–873.

Patnaik, A. (2022). The growth volatility relationship: A spatial panel analysis of the states of India. *Journal of South Asian Development, 17*(1), 7–32.

Prebisch, R. (1950). *The economic development of Latin America and its principal problems*. United Nations Department of Economic Affairs.

Reserve Bank of India. (2024). *Handbook of statistics on Indian states 2023–24*. RBI Publications.

Roy, S., Sen, C., & Sanyal, R. (2019). An empirical inquiry into per capita convergence of Indian states. *Global Journal of Emerging Market Economies, 11*(1–2), 1–18.

Sachs, J. D., Bajpai, N., & Ramiah, A. (2002). Understanding regional economic growth in India. *Asian Economic Papers, 1*(3), 32–62.

Sahasranaman, A., Jensen, S. K., & Bettencourt, L. M. A. (2021). Economic geography and the scaling of urban and regional income in India. *Environment and Planning B: Urban Analytics and City Science, 48*(6), 1541–1555.

Singer, H. W. (1950). The distribution of gains between investing and borrowing countries. *American Economic Review, 40*(2), 473–485.

Singh, O., Kumar, P., & Radulescu, M. (2024). Analysis of inter-state and inter-region beta-convergence of growth rates in India in the post-reform period. *Acta Oeconomica*.

Sinha, J. K. (2024a). An investigation into the convergence of economic growth among Indian states and the path ahead. *Statistical Journal of the IAOS, 40*(1), 1–15.

Sinha, J. K. (2024b). Economic growth convergence and resilience amidst the COVID-19 pandemic in Indian states. *Studies in Economics and International Finance, 4*(1), 85–104.

VIII. APPENDIX

Table-A1: PCNSDP Panel Data

Year	Andaman & Nicobar Islands	Andhra Pradesh	Arunachal Pradesh	Assam	Bihar	Chandigarh	Chhattisgarh	Delhi	Goa
1980-81	39396	17427	12411	18367	9287	.	.	48190	53711
1981-82	39260	19814	13825	20055	9591	.	.	49779	48946
1982-83	36396	19738	13864	20556	9470	.	.	53749	55316
1983-84	40105	20117	14386	21028	10158	.	.	50293	54889
1984-85	36863	19094	15302	20699	10877	.	.	50233	56068
1985-86	39788	19865	16740	21600	10877	.	.	55782	52789
1986-87	39863	18905	17340	20556	11495	.	.	56977	54582
1987-88	40632	21001	17893	20999	10634	.	.	59489	59739
1988-89	42472	24070	18754	20685	11728	.	.	62000	71643
1989-90	40934	25421	18667	21700	11303	.	.	65025	73914
1990-91	38899	26015	21401	22086	12123	.	.	65132	83393
1991-92	34707	26949	23802	22530	11191	.	.	72295	81736
1992-93	43482	25750	23818	22272	10300	.	.	72247	91898
1993-94	46648	28188	26608	22646	10322	74858	30447	74548	93888
1994-95	49716	29309	25934	22733	11236	79631	30009	80312	96264
1995-96	47146	30677	29075	22824	9272	85324	30144	78635	101664
1996-97	48810	32361	26706	22955	11345	94154	30982	86111	117295
1997-98	50204	31134	26842	22967	10536	96484	31708	96362	116779
1998-99	44529	34756	27085	22523	10910	101212	32002	97513	143821
1999-00	46958	35899	25424	22923	11155	104151	31159	98495	143861
2000-01	46279	38569	42117	28343	12668	113021	28959	94843	132547
2001-02	46692	40056	48029	28529	11586	118133	32694	95460	133737
2002-03	49857	40352	45281	29766	12870	131040	31392	100742	138030
2003-04	53265	43793	49594	31139	11824	139032	36604	106950	143483
2004-05	53339	46456	55311	31758	13090	145927	37699	111394	154321
2005-06	54283	48639	55620	32264	12551	153785	37641	119882	162094
2006-07	61944	53324	57286	33265	14488	167960	43836	132223	172947
2007-08	65993	59445	62693	34231	15002	171011	46576	144365	174607
2008-09	73391	60368	66297	35807	17032	173717	48602	159285	181272
2009-10	80047	63848	70157	38615	17591	172640	49136	169137	191119
2010-11	84350	67482	71513	40015	19998	163921	52796	179704	221166
2011-12	89100	69000	73540	41142	21750	158967	55177	185001	259444
2012-13	92644	68865	73960	41609	22201	169336	56777	192220	220019
2013-14	98735	72254	79004	43002	22776	180615	61409	200702	188358
2014-15	106711	79174	91034	44809	23223	182867	61122	213669	241081
2015-16	114660	88609	88768	50642	24064	195205	61433	233115	278601
2016-17	129532	94115	91311	53575	25455	208231	67139	244255	305875
2017-18	145562	103177	94001	57835	26719	218201	68374	252960	308296
2018-19	154233	108853	99570	59943	29092	227231	75438	257597	308753
2019-20	161564	110587	113081	61519	29798	239373	76827	260559	313973
2020-21	146995	110971	105892	62944	26839	209158	74489	228162	295023
2021-22	160513	118349	104980	63657	27674	222250	78350	239821	294563
2022-23	165775	123853	102764	68757	29862	240305	82699	252768	333709
2023-24	177335	131083	111107	75938	32227	256912	87681	271490	357611
2024-25	.	141609	.	81127	.	.	93161	.	.

Source: Author's calculations based on RBI (2024)

Table-A2: PCNSDP Panel Data

Year	Gujarat	Haryana	Himachal Pradesh	Jammu & Kashmir	Jharkhand	Karnataka	Kerala	Madhya Pradesh	Maharashtra
1980-81	22925	26240	21178	29621	.	23364	25352	16255	25827
1981-82	24627	26562	22036	29554	.	24332	24696	16279	25890
1982-83	23729	27536	20855	29721	.	24379	24965	16614	26304
1983-84	27688	27448	21452	29921	.	25562	23637	17081	27354
1984-85	27097	27824	19873	30638	.	26900	24763	15884	27132
1985-86	25832	32032	22135	30555	.	25270	25335	16865	28691
1986-87	26896	31279	23328	30171	.	27115	24427	15740	28277
1987-88	23469	29995	22993	26202	.	28482	24915	17464	29497
1988-89	32344	36418	25429	28954	.	30403	27134	18302	31820
1989-90	31245	36030	27964	28854	.	31587	28664	18230	36211
1990-91	31209	38853	27852	29754	.	31341	30513	20299	36943
1991-92	28136	38742	27505	29671	.	34769	30698	18408	36052
1992-93	36526	37878	28175	30288	.	35015	32479	19365	40698
1993-94	34793	38734	28771	31034	22099	37048	35350	20988	44304
1994-95	40970	40548	31034	31394	22672	38272	38289	20880	44213
1995-96	41375	40363	32174	31931	22878	39553	39491	21644	48079
1996-97	46905	44020	33413	33097	21162	42493	40725	22598	48962
1997-98	46237	43314	35187	33809	27203	44507	41259	23274	50639
1998-99	48784	44498	37036	34606	29058	49861	43726	24294	51635
1999-00	47231	46527	40400	35023	27124	51576	46447	26293	55483
2000-01	36500	51940	49439	35142	23439	51143	46901	23671	48254
2001-02	38558	54524	51069	34952	24545	51291	49325	24870	49061
2002-03	41331	56885	52634	36364	24808	53392	52395	23098	51681
2003-04	47428	61259	55223	37654	26241	53748	55294	25199	54794
2004-05	49460	65268	59453	39084	30224	58479	59981	25543	58638
2005-06	55765	69834	63837	40293	28421	63731	65805	26346	66105
2006-07	59575	76359	68095	42036	28456	69541	70665	28242	74088
2007-08	65645	80868	71568	44005	34283	77387	76602	29067	81493
2008-09	67479	85568	74284	46111	32440	82012	80920	32194	81566
2009-10	75947	94616	77539	47688	35162	81131	87810	34670	88170
2010-11	83123	99348	83226	49753	39727	88537	92976	35905	96851
2011-12	87481	106085	87721	51775	41254	90263	97912	38497	99597
2012-13	96683	111780	92672	52821	44176	94375	103551	41142	104008
2013-14	102589	119791	98816	54783	43779	101858	107846	42548	109597
2014-15	111370	125032	105241	51649	48781	105697	112444	44027	115058
2015-16	120683	137833	112723	61388	44524	116813	120387	47351	122889
2016-17	129738	150259	122208	62398	48826	131186	129251	52782	133686
2017-18	143604	156200	129303	65621	52277	140747	137181	54824	137808
2018-19	154887	169604	136292	69183	56133	149024	147347	59005	140782
2019-20	164060	170765	140999	68437	55658	156478	147951	60452	145626
2020-21	156285	151979	132015	65539	51464	149578	132531	56037	127550
2021-22	170519	166873	137402	66029	57172	165517	147376	61011	141651
2022-23	181963	171661	144807	71804	60938	182371	152722	63681	154979
2023-24	195617	182816	154330	76653	65062	191970	162040	67301	166013
2024-25	194285	163465	81774	.	.	204605	.	70434	176678

Source: Author's calculations based on RBI (2024)

Table-A3: PCNSDP Panel Data

Year	Manipur	Meghalaya	Mizoram	Nagaland	Odisha	Puducherry	Punjab
1980-81	16845	19732	.	22588	18324	33226	26971
1981-82	17355	19993	.	26173	17989	32798	28999
1982-83	17177	19732	.	28547	16608	34463	29311
1983-84	18162	19630	.	28132	19620	33856	29291
1984-85	18435	20080	.	27900	18345	34760	30996
1985-86	18969	20471	.	27435	20109	35390	32771
1986-87	18851	20254	.	29344	20025	36473	33306
1987-88	19812	21530	.	31650	19035	35712	34395
1988-89	20263	21095	.	32913	22633	36330	35565
1989-90	20026	23139	.	32962	23693	36865	37623
1990-91	21255	25125	.	32796	19286	37852	37810
1991-92	22502	25575	.	33294	21336	34285	38581
1992-93	23052	23444	.	37161	20583	28945	39650
1993-94	22341	24370	.	36015	21513	32893	40608
1994-95	21368	24532	.	37124	22207	32490	40844
1995-96	21591	26636	.	38055	22866	33256	41560
1996-97	23152	26873	.	38978	20973	45440	43787
1997-98	24736	27859	.	40584	23648	58522	44129
1998-99	24609	30072	.	35972	24040	64835	45797
1999-00	27285	31800	32614	34426	25230	65154	47314
2000-01	28212	34159	32995	31671	26685	73070	56945
2001-02	29335	35553	34205	33527	27964	76577	56958
2002-03	28588	36387	36553	35103	27449	82598	56877
2003-04	31071	38164	36803	34923	31109	84703	59332
2004-05	33265	40312	37495	34823	34797	71777	61151
2005-06	34689	42407	39265	37880	35871	89229	62985
2006-07	34526	44490	39998	40173	39814	90858	68510
2007-08	35634	44773	43280	42728	42665	96218	73091
2008-09	37415	49298	48532	44660	45273	103090	75745
2009-10	39116	51189	52755	46432	45043	119420	79123
2010-11	37146	54878	60924	50324	47255	125036	82703
2011-12	39762	59794	57654	53010	48387	119649	85577
2012-13	38954	60114	60261	55482	50769	119196	88915
2013-14	41441	59729	67594	58619	54209	129127	93238
2014-15	44101	57478	85056	60372	54361	117102	95807
2015-16	46389	58284	91845	60663	57806	121000	100141
2016-17	47151	60752	99089	64259	66416	126531	105848
2017-18	51211	62231	117272	66813	71032	134934	110857
2018-19	48106	64716	119022	70218	75421	155466	115592
2019-20	49267	67229	130741	73361	76439	153411	118487
2020-21	44449	60522	116229	68272	73325	136327	113025
2021-22	54587	65313	123907	69531	85516	135715	118307
2022-23	59992	69997	140074	71788	90062	139123	124093
2023-24	65471	74489	152363	81158	99396	145921	129561
2024-25	.	77412	.	.	106918	155533	135356

Source: Author's calculations based on RBI (2024)

Table-A4: PCNSDP Panel Data

Year	Rajasthan	Sikkim	Tamil Nadu	Telangana	Tripura	Uttar Pradesh	Uttarakhand	West Bengal
1980-81	14028	14153	17909	.	9286	13883	.	12837
1981-82	14751	14513	19608	.	8867	13861	.	12229
1982-83	14648	15765	18257	.	9514	14599	.	12446
1983-84	17507	15837	18914	.	8959	14816	.	13634
1984-85	15830	17288	21019	.	8967	14708	.	13700
1985-86	15360	18171	21497	.	8810	14936	.	13967
1986-87	16393	20693	20983	.	9052	15230	.	14206
1987-88	14866	24125	21963	.	9933	15566	.	14640
1988-89	20560	26342	23756	.	10821	17207	.	14923
1989-90	19700	28089	25036	.	11190	17304	.	15104
1990-91	22294	30350	26745	.	11667	17946	.	15531
1991-92	20147	31458	27140	.	11674	17674	.	16414
1992-93	22673	30909	28252	.	11837	17544	.	16617
1993-94	20388	33839	30414	.	12854	17661	31062	17521
1994-95	23528	37097	33732	.	12459	18159	33149	19111
1995-96	23800	39540	34462	.	13256	18323	32222	18577
1996-97	25930	40992	35495	.	14492	19894	33630	19388
1997-98	28367	42754	38242	.	15860	19236	33419	19266
1998-99	28872	44434	39370	.	17180	18937	33221	19153
1999-00	28215	44255	41322	.	18508	19784	32641	18818
2000-01	30881	45488	43358	.	21875	21460	36060	27982
2001-02	33510	47414	42140	.	24825	21352	37104	28716
2002-03	28991	50719	41957	.	26005	21647	39919	30928
2003-04	37469	53971	44186	.	27179	22340	42363	32787
2004-05	35855	57457	49026	49124	29041	23005	47150	36491
2005-06	37554	62447	55655	56192	30582	23884	52975	44519
2006-07	41220	65214	63875	61507	32808	25299	58435	49106
2007-08	42340	68290	67367	66959	34551	26425	67588	56798
2008-09	45110	76195	70443	75341	37752	27914	73646	61889
2009-10	46940	130832	77296	74832	41125	29116	84965	71402
2010-11	53117	142375	87271	87251	43713	30889	92532	77761
2011-12	57192	158667	93112	91121	47155	32002	100314	51543
2012-13	58441	160553	97257	92732	50501	32908	106359	53157
2013-14	61053	168897	102191	96039	54645	34044	112900	53815
2014-15	64496	180675	107117	101424	63992	34583	118979	54520
2015-16	68565	195066	115875	112267	61612	36973	127249	57255
2016-17	71324	207355	123206	121512	69860	40847	138784	60618
2017-18	73529	232483	133029	131503	75020	41771	148011	64007
2018-19	73975	240743	141844	146777	82313	42333	150179	68195
2019-20	76840	248691	144845	153286	83985	43061	150820	69548
2020-21	73447	237212	143482	140743	79123	39866	127788	62852
2021-22	79490	255016	154269	156455	85378	44161	131794	70100
2022-23	84585	273145	166590	167823	90443	46822	141511	73793
2023-24	90414	292339	179732	177000	97250	50341	150931	77933
2024-25	96638	.	196309	187912	.	.	158819	82781

Source: Author's calculations based on RBI (2024)