

Plains Divergence, Himalayan Convergence: Explaining the Contrasting Inter-State Inequality Dynamics in Northern India

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Abstract: This study examines the sharply contrasting inter-state inequality dynamics in northern India between 2011–12 and 2023–24. Among the three major Northern Plains states (Haryana, Punjab, and Uttar Pradesh), per capita income divergence widened significantly: Haryana's per capita NSDP rose to 3.48 times that of Uttar Pradesh and 66% higher than Punjab, with the Theil Index for the cluster increasing from 0.099 to a peak of 0.124. In contrast, the three principal Himalayan states (Himachal Pradesh, Uttarakhand, and Jammu & Kashmir) exhibited remarkable stability and mild convergence, with the Theil Index never exceeding 0.039 and declining after 2015–16; by 2023–24, Himachal Pradesh and Uttarakhand achieved near parity in real per capita incomes. Using GSDP/NSDP data at current and constant prices, compound annual growth rates, inter-state disparity ratios, and Theil Index decompositions, the paper demonstrates that national shocks (demonetisation, GST, and COVID-19) amplified pre-existing structural differences on the plains—driving agglomeration-led growth in Haryana, prolonged stagnation in Punjab, and gradual catch-up in Uttar Pradesh—while geographic constraints, small market size, and heavy dependence on central transfers imposed a low but relatively equal growth ceiling across the Himalayan states. The findings challenge conventional convergence expectations, highlight the mediating role of geography on economic structure and policy transmission, and underscore the need for regionally differentiated strategies to address persistent divergence on the plains and raise the common growth trajectory in the Himalayas.

Keywords: Regional Inequality, Convergence, divergence, Theil Index, per capita NSDP

1. INTRODUCTION

India's northern region presents a striking paradox of economic divergence and convergence within a shared macro-geography. Between 2011–12 and 2023–24, the three major Northern Plains states—Haryana, Punjab, and Uttar Pradesh—experienced a marked widening of inter-state income inequality, driven primarily by Haryana's sustained outperformance and Punjab's prolonged stagnation. By 2023–24, Haryana's per capita Net State Domestic Product (NSDP) at current prices stood 3.48 times that of Uttar Pradesh and 66% higher than Punjab's, up from ratios of 3.31 and 1.24 respectively in 2011–12. In real terms, the Haryana–Uttar Pradesh gap peaked at nearly fourfold around 2019–20. The Theil Index for the Northern Plains cluster rose from 0.099 to a high of 0.124 before a marginal decline, confirming moderate but persistent divergence.

Barely a few hundred kilometres to the north, the three principal Northern Himalayan states—Himachal Pradesh, Uttarakhand, and Jammu & Kashmir—followed an almost opposite trajectory. Despite stark differences in political history and security environments, per capita income disparities in this group remained remarkably low throughout the period. The Theil Index for the Himalayan cluster never exceeded 0.039 and actually declined after 2015–16, signalling mild convergence. By 2023–24, the per capita income ratios between the two leading states (Himachal Pradesh and Uttarakhand) and the laggard (Jammu & Kashmir) had narrowed, and in constant prices Uttarakhand and Himachal Pradesh had achieved near parity.

This contrasting pattern—widening gaps on the fertile, industrially vibrant plains versus narrowing or stable gaps in the mountainous, tourism- and transfer-dependent Himalayan region—challenges conventional

expectations of regional economic convergence in India. Standard growth theory and much of the Indian empirical literature predict that backward regions should gradually catch up as capital and labour flow from richer to poorer areas. Yet in Northern India, the plains exhibit classic divergence driven by agglomeration forces and cumulative causation, while the Himalayan states appear constrained by a low ceiling that simultaneously limits both super-high growth and extreme backwardness. The period under study (2011–12 to 2023–24) is particularly instructive because it spans major national shocks—demonetisation, the introduction of the Goods and Services Tax, the COVID-19 pandemic—and significant fiscal restructuring following the 14th Finance Commission. These shocks affected all states, yet the inequality response differed dramatically across the two sub-regions. The Northern Plains states entered the period with greater structural differentiation (industry-led Haryana, agriculture-locked Punjab, and demographically burdened Uttar Pradesh), and policy shocks amplified rather than muted these differences. In contrast, the Himalayan states, bound by geography, small market size, and heavy reliance on central transfers, displayed more uniform and modest growth trajectories.

This paper seeks to explain why inter-state inequality in Northern India followed two fundamentally different paths: divergence among the plains states and relative stability (even mild convergence) among the Himalayan states over the same period. Using disaggregated GSDP and NSDP data at current and constant prices, CAGR inter-state disparity ratios, and Theil Index decompositions for the six states from 2011–12 to 2023–24, it examines the GSDP, NSDP and PCNSDP on current & constant prices and factors responsible such as industrial structure, private investment response, fiscal capacity, demographic dynamics, central transfers, and geographic constraints in producing these contrasting inequality dynamics. By doing so, it contributes to the broader literature on regional inequality in India and offers new evidence on the limits of convergence forces in geographically heterogeneous settings.

2. RESEARCH METHODOLOGY

This study adopts a quantitative, descriptive-cum-explanatory research design to analyse and explain the contrasting inter-state inequality dynamics between the Northern Plains states (Haryana, Punjab, Uttar Pradesh) and the Northern Himalayan states (Himachal Pradesh, Uttarakhand, Jammu & Kashmir) over the period 2011–12 to 2023–24.

Sources of Data

The study relies exclusively on secondary data, ensuring reliability and replicability. Major data sources include: Reserve Bank of India (RBI) – Handbook of Statistics on States, State Economic Surveys of J&K, Himachal Pradesh, Uttarakhand, Punjab, Haryana, U.P., and Ministry of Statistics and Programme Implementation (MoSPI).

Variables and Indicators

The analysis uses the following macroeconomic variables (2011–12 to 2023–24): Gross State Domestic Product (GSDP) at Current/Constant Prices, Net State Domestic Product (NSDP) at Current/Constant Prices and Per Capita NSDP at Current/Constant Prices.

Compound Annual Growth (CAGR)

CAGR is calculated to measure long-term growth performance:

$$\text{CAGR} = (V_t / V_0)^{1/n} - 1$$

Where:

V_0 = initial year value

V_t = final year value

n = number of years

Regional Comparison Indicators

To evaluate disparities, the following are computed:

● Inter-state disparity ratios

Inter-state disparity ratios measure the extent of inequality between the richest and poorest states for any indicator (income, GSDP, per capita income, sectoral shares, etc.). It is one of the most widely used indicators in regional economics.

For variable Per Capita NSDP):

$$\text{Inter-State Disparity Ratio (ISDR)} = \{ \text{Max}(X_i) / \text{Min}(X_i) \}$$

Where:

$\text{Max}(X_i)$ = highest value among states

$\text{Min}(X_i)$ = lowest value among states

● Theil Index

The Theil Index (T) is an entropy-based measure of inequality. It captures the relative income share of each region compared to the mean income.

$$T = \frac{1}{N} \sum_{i=1}^n (y_i / \text{Mean of } y) \ln (y_i / \text{Mean of } y)$$

Where

y_i = per capita NSDP of state i

Mean of y = mean per capita NSDP across all states

N = total number of states

3. RESULTS AND DISCUSSIONS

Year-on-year growth measures the annual percentage change in economic indicators, such as GDP or per capita income, reflecting the pace of economic development. Its importance lies in highlighting disparities among states, revealing how some states grow faster while others lag, leading to widening regional inequalities. Understanding these differences is crucial for policy makers to design targeted interventions promoting balanced and inclusive growth across regions.

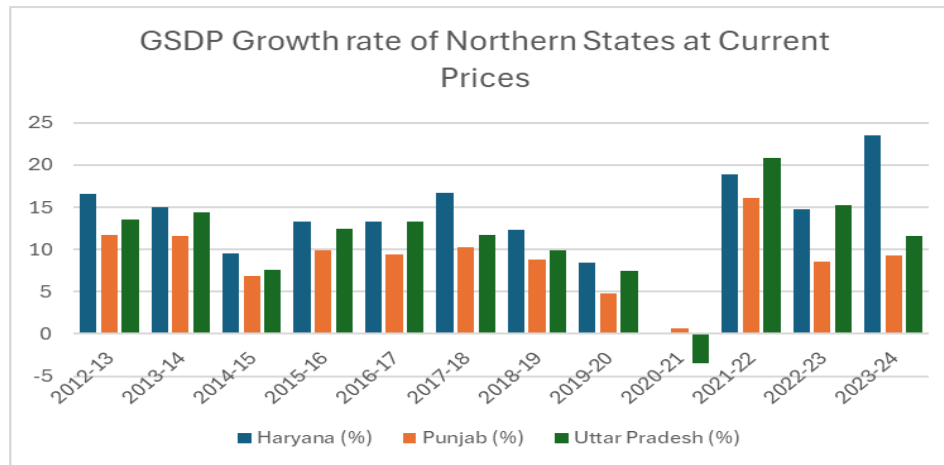


Figure 1: GSDP Growth rate of Northern States at Current Prices

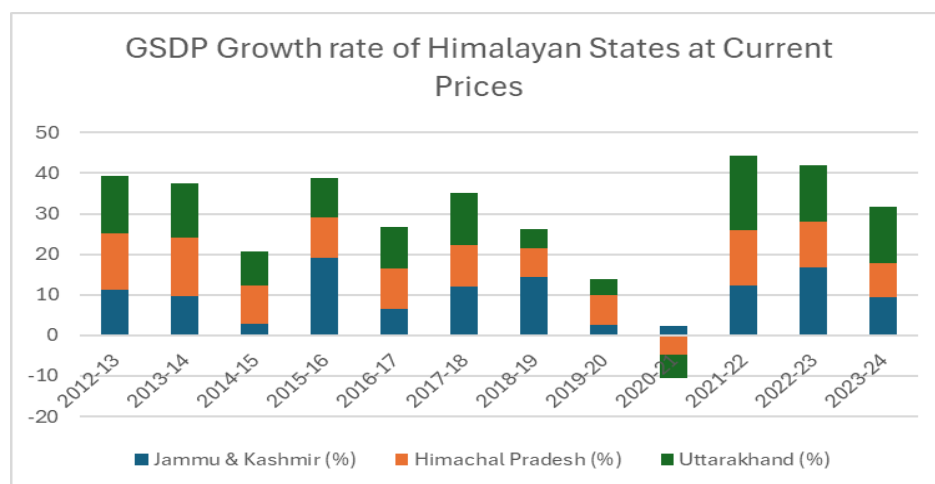


Figure 2: GSDP Growth rate of Himalayan States at Current Prices

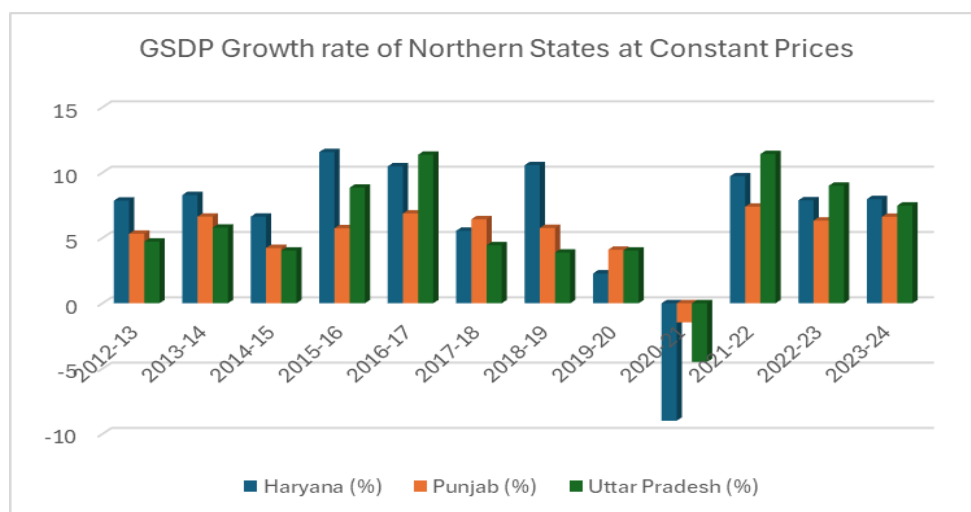


Figure 3: GSDP Growth rate of Northern States at Constant Prices

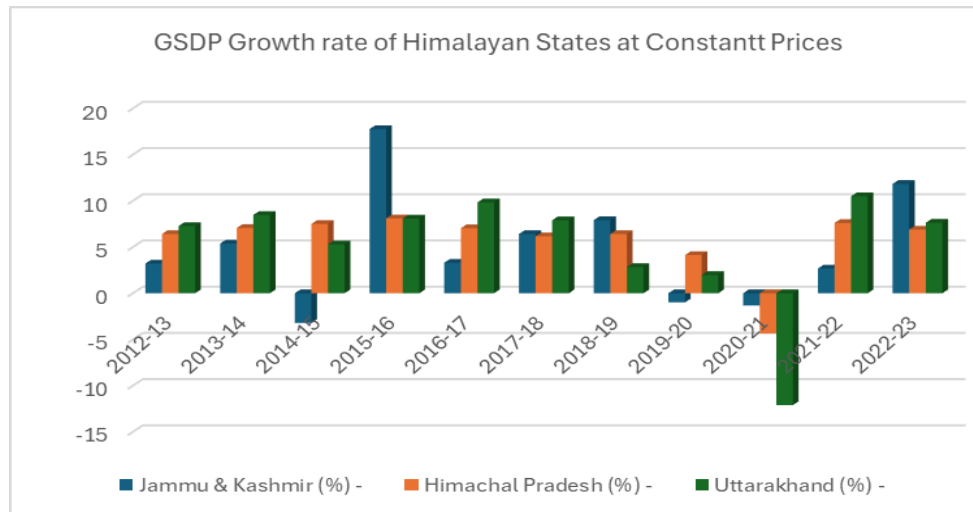


Figure 4: GSDP Growth rate of Himalayan States at Constant Prices

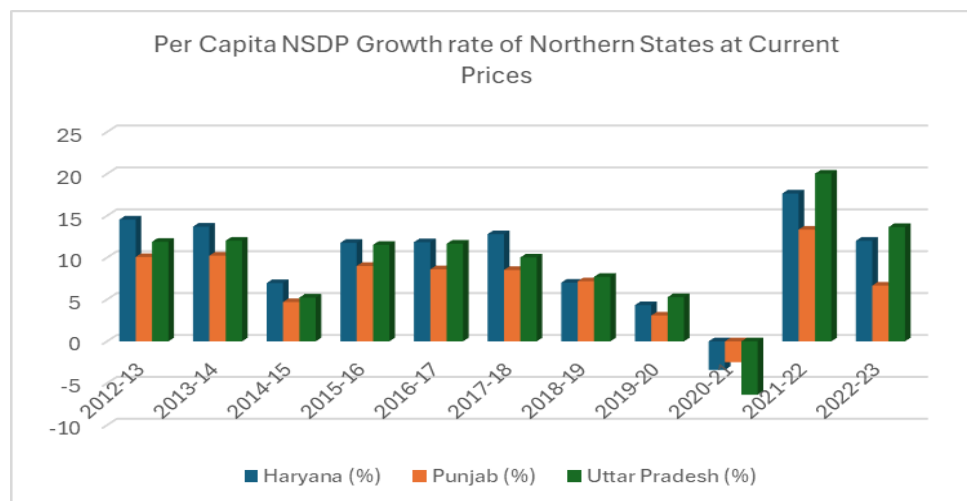


Figure 5: Per Capita NSDP Growth rate of Northern States at Current Prices

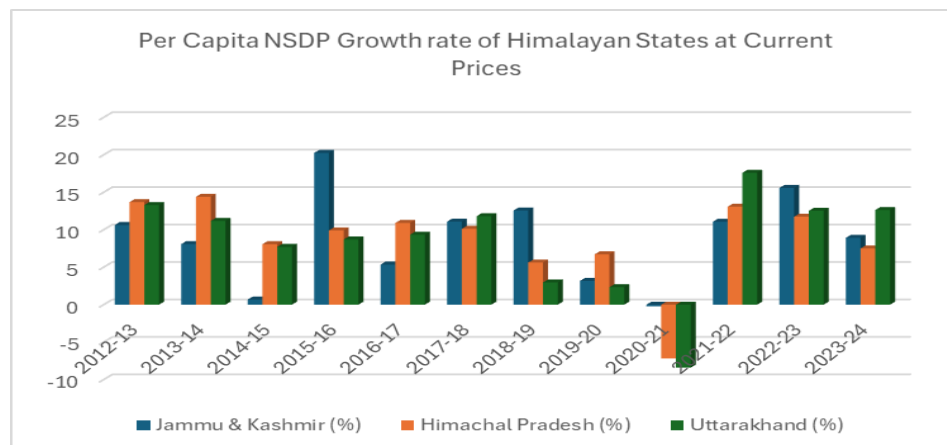


Figure 6: Per Capita NSDP Growth rate of Himalayan States at Current Prices

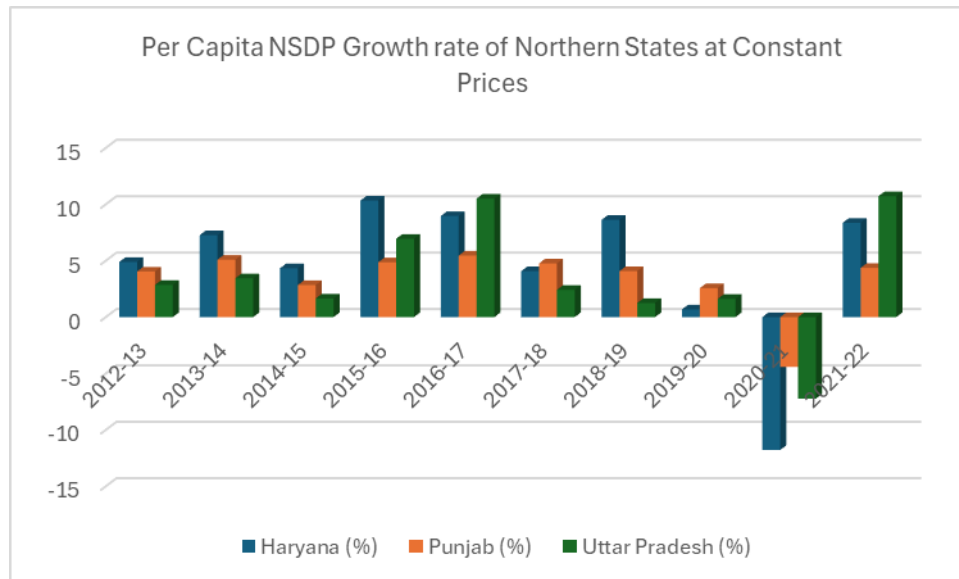


Figure 7: Per Capita NSDP Growth rate of Northern States at Constant Prices

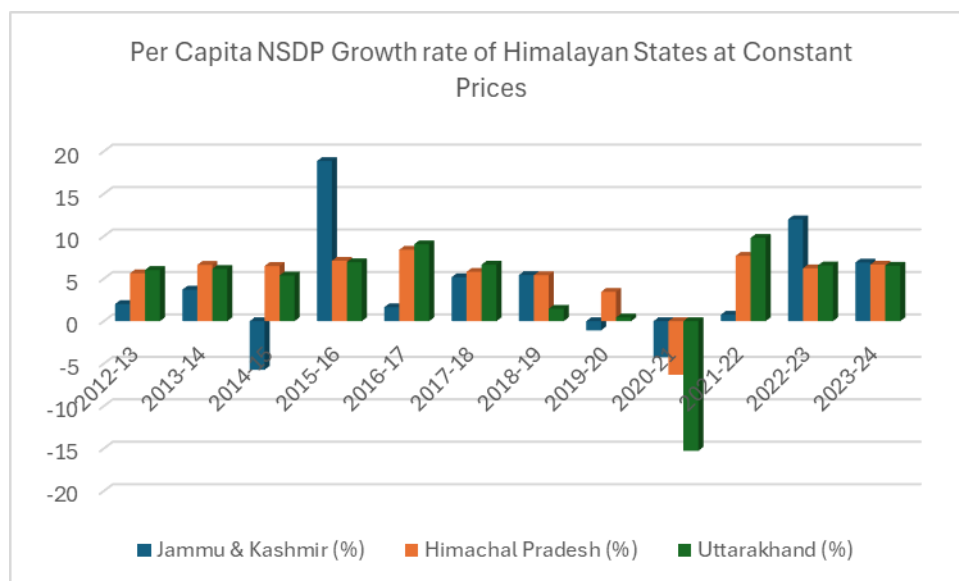


Figure 8: Per Capita NSDP Growth rate of Himalayan States at Constant Prices

The year-on-year growth tables for Gross State Domestic Product (GSDP) and Per Capita Net State Domestic Product (NSDP), at both current and constant prices, reveal clear disparities in economic performance among Indian states. States like Haryana and Punjab generally show higher growth percentages compared to Uttar Pradesh and the northern hill states (Jammu & Kashmir, Himachal Pradesh, and Uttarakhand), highlighting uneven economic advancement. Negative or low growth periods, particularly around 2020-21, reflect pandemic-related shocks, but their varying recovery speeds further accentuate regional inequalities. These disparities manifest not only in aggregate economic output but also in per capita income, indicating uneven wealth distribution and standards of living across regions. Understanding these varied growth trajectories is essential for shaping policies aimed at bridging developmental gaps to promote inclusive economic progress nationwide.

Table 1

CAGR of Gross State Domestic Product of Northern Plain States (Current Prices)

Year	Haryana	Punjab	Uttarpradesh
2011-12 to 2015-16	13.60 %	9.98 %	11.96 %
2016-17 to 2023-24	23.26 %	8.27 %	10.23 %
2011-12 to 2019-20	23.57 %	9.15 %	11.26 %
2019-20 to 2023-24	10.69 %	8.52 %	10.64 %
2011-12 to 2023-24	19.12 %	8.94 %	11.05 %
CAGR of Gross State Domestic Product of Northern Himalayan States (Current Prices)			
Year	Jammu Kashmir	Himachal Pradesh	Uttarakhand
2011-12 to 2015-16	10.62 %	11.95 %	11.33 %
2016-17 to 2023-24	9.86	7.43 %	8.54
2011-12 to 2019-20	9.70 %	10.29 %	9.55 %
2019-20 to 2023-24	10.10 %	6.85 %	9.68 %
2011-12 to 2023-24	9.83 %	9.13 %	9.59 %

Source: Handbook of Statistics on Indian States (2023-24)

The current-price CAGR data clearly shows a structural divide between the Northern Plains and Northern Himalayan states in terms of GSDP growth. Among the plains states, Haryana consistently outperforms, recording 13.60% CAGR (2011–12 to 2015–16) and rising dramatically to 23.26% during 2016–17 to 2023–24, with a long-term CAGR of 19.12% (2011–12 to 2023–24). This reflects its strong industrial base, robust services sector, and high tax buoyancy under GST. Punjab, on the other hand, shows persistent stagnation, with its CAGR remaining around 9–10% across all periods—9.98% (2011–12 to 2015–16), 8.27% (2016–17 to 2023–24), and a long-term 8.94% (2011–12 to 2023–24)—indicating structural weakness due to overdependence on agriculture and poor industrial expansion. Uttar Pradesh demonstrates moderate but steady growth, with 11.96% (2011–12 to 2015–16), 10.23% (2016–17 to 2023–24), and 11.05% in the long term, driven by large-scale public investment and infrastructure development.

In contrast, the Himalayan states show more modest and stable growth trajectories. Jammu & Kashmir records 10.62% (2011–12 to 2015–16), 9.86% (2016–17 to 2023–24), and 9.83% over 2011–12 to 2023–24, reflecting its dependence on tourism, public expenditure, and periodic disruptions. Himachal Pradesh shows declining growth with 11.95% in the early period, dropping to 7.43% after 2016, and stabilizing at 9.13% long-term, largely due to slowing manufacturing and limited diversification. Uttarakhand maintains relatively stable nominal growth, with 11.33% (2011–12 to 2015–16), 8.54% (2016–17 to 2023–24), and 9.59% over the full period, supported by industrial clusters in its plains districts. Overall, the data shows that Northern Plains states, particularly Haryana and Uttar Pradesh, experience significantly higher nominal growth, while the Himalayan states maintain moderate CAGR levels around 9–10%, constrained by geography, market size, and infrastructural limitations.

Table 2

CAGR of Gross State Domestic Product of Northern Plain States (Constant Prices)

Year	Haryana	Punjab	Uttarpradesh
2011-12 to 2015-16	8.57 %	5.48 %	5.83 %
2016-17 to 2023-24	4.80 %	4.99 %	5.00 %
2011-12 to 2019-20	7.86 %	5.63 %	5.86 %
2019-20 to 2023-24	3.85 %	4.66 %	5.67 %
2011-12 to 2023-24	6.51 %	5.31 %	5.79 %
CAGR of Gross State Domestic Product of Northern Himalayan States (Constant Prices)			
Year	Jammu Kashmir	Himachal Pradesh	Uttarakhand
2011-12 to 2015-16	5.56 %	7.26 %	7.23 %
2016-17 to 2023-24	4.77 %	4.76 %	3.50 %
2011-12 to 2019-20	4.76 %	5.74 %	6.16 %
2019-20 to 2023-24	4.93 %	4.32 %	3.00 %
2011-12 to 2023-24	4.85 %	5.45 %	6.14 %

Source: Handbook of Statistics on Indian States (2023-24)

The constant-price CAGR data shows a much clearer picture of real economic growth, stripping out inflation and revealing the underlying performance of Northern Plains and Himalayan states. Among the Northern Plains, Haryana's real growth slows significantly over time, falling from 8.57% during 2011–12 to 2015–16 to only 4.80% in 2016–17 to 2023–24, before declining further to 3.85% during the post-COVID period (2019–20 to 2023–24). Its long-term real CAGR of 6.51% (2011–12 to 2023–24) indicates that while Haryana remains structurally strong, its recent decade has been marked by a clear slowdown in manufacturing and services, especially after GST, demonetisation, and pandemic disruptions. Punjab, meanwhile, shows persistently low real growth across all periods—5.48%, 4.99%, and 4.66%—with a long-term CAGR of 5.31%, confirming chronic stagnation due to agricultural dependence, low industrial dynamism, and weak private investment. Uttar Pradesh, though starting lower at 5.83%, demonstrates relative stability: 5.00% (2016–17 to 2023–24) and a stronger 5.67% recovery post-COVID, resulting in a long-term CAGR of 5.79%, supported by public investment, infrastructure, and a large economic base that absorbs shocks better.

In the Northern Himalayan states, real growth is modest and more volatile, shaped by geographic constraints, tourism dependency, and limited industrial bases. Jammu & Kashmir shows stable but low growth: 5.56% early period, 4.77% during 2016–17 to 2023–24, and 4.93% post-COVID, with a long-term CAGR of 4.85%, reflecting structural constraints and periodic disruptions. Himachal Pradesh performs better initially (7.26%) but slows sharply to 4.76% in the later period and 4.32% after 2019–20, resulting in a long-term growth of 5.45%, impacted by weakening performance in pharmaceuticals and limited diversification. Uttarakhand, once the fastest-growing Himalayan state with 7.23% (2011–12 to 2015–16), faces a significant slowdown to 3.50% in 2016–17 to 2023–24 and only 3.00% post-COVID, though its overall long-term CAGR remains relatively strong at 6.14% due to earlier industrial expansion in Haridwar, Rudrapur, and Dehradun.

Overall, the constant-price data reveals a broad deceleration in real economic growth across both plains and Himalayan states after 2016–17, with the post-COVID years showing the sharpest slowdown. The plains states maintain slightly higher real growth—especially Uttar Pradesh—while the Himalayan states show moderate but slowing performance due to structural and geographical constraints.

Table 3 CAGR of Net State Domestic Product of Northern Plain States (Current Prices)

Year	Haryana	Punjab	Uttarpradesh
2011-12 to 2015-16	13.15 %	10.21	11.87
2016-17 to 2023-24	9.87 %	7.58	10.06
2011-12 to 2019-20	10.81 %	8.47	9.81
2019-20 to 2023-24	9.07 %	6.53	10.43
2011-12 to 2023-24	10.86 %	8.06	9.73
CAGR of Net State Domestic Product of Northern Himalayan States (Current Prices)			
Year	Jammu Kashmir	Himachal Pradesh	Uttarakhand
2011-12 to 2015-16	10.89 %	12.88 %	11.84 %
2016-17 to 2023-24	9.01 %	8.02 %	8.01 %
2011-12 to 2019-20	9.54 %	10.04 %	9.36 %
2019-20 to 2023-24	9.70 %	6.56 %	8.36 %
2011-12 to 2023-24	8.84 %	8.87 %	9.51 %

Source: Handbook of Statistics on Indian States (2023-24)

The CAGR of Net State Domestic Product at current prices shows a clearer picture of real income growth and reveals a consistent pattern across both Northern Plains and Northern Himalayan states. In the Northern Plains, Haryana records the fastest NSDP growth across all periods, beginning with a high 13.15% during 2011–12 to 2015–16, and stabilizing to 9.87% in 2016–17 to 2023–24, with a post-COVID CAGR of 9.07%. Its long-term CAGR of 10.86% (2011–12 to 2023–24) reflects strong state income expansion driven by services, industry, and higher per-capita earnings. Punjab, however, shows weaker NSDP growth throughout: 10.21% initially, dropping to 7.58% in 2016–17 to 2023–24, and falling further to 6.53% post-COVID. Its long-term CAGR of 8.06% signals persistent structural stagnation and slower income growth. Uttar Pradesh demonstrates a more stable and rising trajectory, with 11.87% (2011–12 to 2015–16), 10.06% in the later period, and an improved 10.43% after 2019–20, giving it a strong long-term CAGR of 9.73%, supported by public investment, infrastructure expansion, and broad-based economic activity.

In the Northern Himalayan states, real NSDP growth remains moderate but displays a noticeable slowdown after 2016–17. Jammu & Kashmir begins with 10.89% (2011–12 to 2015–16) but declines to 9.01% in 2016–17 to 2023–24, and then stabilizes at 9.70% post-COVID, resulting in a long-term CAGR of 8.84%, reflecting dependence on tourism, public administration, and central spending. Himachal Pradesh shows the strongest early performance among Himalayan states with 12.88% but slows sharply to 8.02% during 2016–17 to 2023–24, and to 6.56% in 2019–20 to 2023–24, giving a long-term CAGR of 8.87%, impacted by deceleration in manufacturing and horticulture. Uttarakhand, with 11.84% early growth, also moderates to 8.01% in the later period and 8.36% post-COVID, but maintains the highest long-term CAGR in the region at 9.51%, driven by industrial clusters in the plains districts. The NSDP data shows that income growth in the Northern Plains—particularly Haryana and Uttar Pradesh—remains stronger and more resilient, while Punjab lags behind. In the Himalayan region, Uttarakhand and Himachal Pradesh lead, but all states experience a slowdown after 2016–17, reflecting structural constraints and greater vulnerability to economic shocks.

Table 4 CAGR of Net State Domestic Product of Northern Plain States (Constant Prices)

Year	Haryana	Punjab	Uttarpradesh
2011-12 to 2015-16	8.56 %	5.41 %	5.88 %
2016-17 to 2023-24	4.50 %	4.36 %	4.86 %
2011-12 to 2019-20	6.90 %	5.16 %	5.68 %
2019-20 to 2023-24	3.46 %	4.85 %	5.28 %
2011-12 to 2023-24	5.70 %	4.40 %	5.90 %
CAGR of Net State Domestic Product of Northern Himalayan States (Constant Prices)			
Year	Jammu Kashmir	Himachal Pradesh	Uttarakhand
2011-12 to 2015-16	5.70 %	7.13 %	7.15 %
2016-17 to 2023-24	3.93 %	3.92 %	3.12 %
2011-12 to 2019-20	3.88 %	5.03 %	5.98 %
2019-20 to 2023-24	4.34 %	4.07 %	2.38 %
2011-12 to 2023-24	4.55 %	5.00 %	4.79 %

Source: Handbook of Statistics on Indian States (2023-24)

The CAGR of Net State Domestic Product at constant prices highlights the real income growth trajectory of Northern Plains and Himalayan states, revealing a broad economic deceleration after 2016–17 and a sharper slowdown in the post-COVID years. Among the Northern Plains states, Haryana records the strongest early real growth at 8.56% during 2011–12 to 2015–16, supported by robust industrial and service-sector activity. However, growth declines markedly to 4.50% between 2016–17 and 2023–24 and further to 3.46% post-COVID, resulting in a long-term CAGR of 5.70%. Punjab performs consistently weakly, with 5.41% early growth falling to 4.36% after 2016–17 and recovering only marginally to 4.85% post-COVID, yielding a modest long-term CAGR of 4.40%. Uttar Pradesh begins at 5.88% but demonstrates greater resilience, recording 4.86% in the middle period, rising to 5.28% post-COVID, and achieving the highest long-term CAGR among plains states at 5.90%, supported by infrastructure investment and gradual industrial diversification.

In the Himalayan region, the slowdown is even more pronounced. Jammu & Kashmir's growth falls from 5.70% to 3.93%, improving slightly to 4.34% post-COVID, with a long-term CAGR of 4.55%. Himachal Pradesh drops from 7.13% to 3.92%, settling at 4.07%, resulting in a long-term CAGR of 5.00%. Uttarakhand declines from 7.15% to 3.12% and then 2.38%, ending with a long-term CAGR of 4.79%, reflecting stagnation in industrial and manufacturing bases.

The real NSDP data indicates that all states—plains and Himalayan—experienced slower income growth after 2016–17, with the slowdown intensifying after the pandemic. While Uttar Pradesh shows the strongest long-term resilience, Punjab and the Himalayan states exhibit persistent structural constraints, and Haryana moves from high growth to moderate levels, signaling a broad deceleration in real economic activity across Northern India.

Table 5 CAGR of Per Capita Net State Domestic Product of Northern Plain States (Current Prices)

Year	Haryana	Punjab	Uttarpradesh
2011-12 to 2015-16	12.73 %	9.95 %	10.96 %
2016-17 to 2023-24	8.70 %	6.95 %	8.45 %
2011-12 to 2019-20	10.51 %	8.12 %	9.03 %
2019-20 to 2023-24	8.12 %	5.72 %	8.05 %
2011-12 to 2023-24	10.13 %	6.99 %	9.47 %
CAGR of Per Capita Net State Domestic Product of Northern Himalayan States Current Prices)			

Year	Jammu Kashmir	Himachal Pradesh	Uttarakhand
2011-12 to 2015-16	8.76 %	8.57 %	8.26 %
2016-17 to 2023-24	8.75 %	6.60 %	7.10 %
2011-12 to 2019-20	8.80 %	9.90 %	8.30 %
2019-20 to 2023-24	8.70 %	6.00 %	8.10 %
2011-12 to 2023-24	8.79 %	8.59 %	8.27 %

Source: Handbook of Statistics on Indian States (2023-24)

The CAGR of Per Capita NSDP at current prices reflects the nominal expansion of personal incomes, combining both real economic growth and inflationary effects. Compared with constant-price trends, these values appear higher but still highlight clear structural differences between the Northern Plains and Himalayan states. In the Northern Plains, Haryana consistently records the strongest nominal per-capita income growth—12.73% during 2011–12 to 2015–16, moderating to 8.70% between 2016–17 and 2023–24, and stabilizing at 8.12% in the post-COVID phase. Its long-term CAGR of 10.13% underlines a robust economic base driven by industry, services, and high-income employment, even though growth momentum has slowed. In contrast, Punjab's trajectory is significantly weaker, falling from 9.95% to 6.95% and further to 5.72% after COVID, resulting in a modest long-term CAGR of 6.99%. This slowdown reflects its persistent structural stagnation, limited diversification, fiscal stress, and sluggish wage growth. Uttar Pradesh, however, shows steady improvement, recording 10.96% early growth, 8.45% during 2016–17 to 2023–24, and 8.05% post-COVID, yielding a strong long-term CAGR of 9.47%. This performance reflects accelerating infrastructure development, rising economic activity, and gradual increases in household incomes.

In the Northern Himalayan states, nominal per-capita income growth is more moderate and stable. Jammu & Kashmir shows remarkably consistent growth—8.76% initially, 8.75% after 2016–17, and 8.70% in the post-COVID years—with a long-term CAGR of 8.79%, supported largely by public administration, tourism, and central expenditure. Himachal Pradesh begins at 8.57% but slows to 6.60% and later to 6.00%, though its long-term CAGR remains strong at 8.59%, bolstered by high social development and stable demographic patterns. Uttarakhand maintains steady nominal growth, at 8.26% early, 7.10% in the middle period, and 8.10% post-COVID, achieving a long-term CAGR of 8.27%, influenced by industrial growth in its plains districts and steady remittance inflows.

Overall, nominal per-capita income trends reveal that Haryana, Himachal Pradesh, Jammu & Kashmir, and Uttarakhand maintain strong long-run income expansion, whereas Punjab consistently underperforms, mirroring its broader economic slowdown. Uttar Pradesh stands out as a rising and steadily improving performer, reflecting ongoing structural transformation and sustained increases in household living standards.

Table 6

CAGR of Per Capita Net State Domestic Product of Northern Plain States (Constant Prices)

Year	Haryana	Punjab	Uttarpradesh
2011-12 to 2015-16	7.01 %	4.00 %	3.68 %
2016-17 to 2023-24	3.16 %	2.85 %	3.36 %
2011-12 to 2019-20	6.55 %	4.38 %	3.92 %
2019-20 to 2023-24	2.06 %	2.44 %	3.80 %
2011-12 to 2023-24	4.85 %	3.69 %	4.05 %
CAGR of Per Capita Net State Domestic Product of Northern Himalayan States (Constant Prices)			
Year	Jammu Kashmir	Himachal Pradesh	Uttarakhand

2011-12 to 2015-16	4.34 %	6.47 %	6.14 %
2016-17 to 2023-24	3.42 %	4.03 %	2.00 %
2011-12 to 2019-20	3.55 %	6.12 %	5.22 %
2019-20 to 2023-24	3.68 %	3.40 %	1.38 %
2011-12 to 2023-24	3.59 %	5.18 %	3.93 %

Source: Handbook of Statistics on Indian States (2023-24)

The CAGR of Per Capita NSDP at constant prices provides the most accurate picture of real income growth and changes in individual welfare over time. Across both the Northern Plains and Himalayan states, the data reveals a clear deceleration in per-capita income growth, particularly after 2016–17 and more sharply in the post-COVID period. This slowdown reflects structural constraints, demographic pressures, and uneven recovery patterns across states.

In the Northern Plains, Haryana initially demonstrates robust growth, with per-capita income rising by 7.01% during 2011–12 to 2015–16. However, growth slows markedly to 3.16% in 2016–17 to 2023–24 and further to 2.06% after COVID-19. Despite a long-term CAGR of 4.85%, the trend indicates that the state’s earlier momentum has weakened due to economic restructuring and population factors. Punjab emerges as the weakest performer, with early growth at 4.00%, declining to 2.85% after 2016–17 and 2.44% in the post-COVID period. Its long-term CAGR of 3.69% reflects ongoing stagnation, limited diversification, and persistent productivity challenges. Uttar Pradesh, although starting from a low-income base, shows steady improvement: 3.68% early growth, 3.92% up to 2019–20, and a resilient 3.80% post-COVID. Its long-term CAGR of 4.05% surpasses Punjab and approaches Haryana, indicating gradual structural transformation and stabilization in population growth.

In the Himalayan region, the pattern is similar. Jammu & Kashmir’s early per-capita growth of 4.34% slows to 3.42% after 2016–17 and stabilizes at 3.68% post-COVID, yielding a long-term CAGR of 3.59%. Himachal Pradesh displays the strongest performance, beginning at 6.47%, slowing to 4.03%, and moderating to 3.40% after COVID, yet maintaining a high long-term CAGR of 5.18%. Uttarakhand shows the most pronounced slowdown—from 6.14% early growth to just 2.00% after 2016–17 and 1.38% post-COVID—resulting in a long-term CAGR of 3.93%.

As, both regions exhibit declining real per-capita income growth, with Himachal Pradesh and Haryana sustaining long-term strength, Punjab and Uttarakhand showing persistent weakness, and Uttar Pradesh demonstrating steady upward momentum.

Table 7 Inter State Disparity Ratio of Northern Plain States Per Capita Net State Domestic Product (Current Price)

Table 7: Inter State Disparity Ratio of Northern Plain States Per Capita Net State Domestic Product (Current Price)			
Year	ISDR Haryana-UP	ISDR Haryana-Punjab	ISDR Punjab-UP
2011-12	3.31	1.24	2.67
2015-16	3.50	1.39	2.52
2019-20	3.54	1.51	2.35
2023-24	3.48	1.66	2.10
Inter State Disparity Ratio of Northern Plain States Per Capita Net State Domestic Product (Constant Price)			

Year	ISDR Haryana-UP	ISDR Haryana-Punjab	ISDR Punjab-UP
2011-12	3.32	1.24	2.67
2015-16	3.73	1.38	2.71
2019-20	3.97	1.44	2.75
2023-24	3.65	1.43	2.56

Source: Handbook of Statistics on Indian States (2023-24)

The Inter-State Disparity Ratios (ISDR) of the Northern Plain States reveal persistent and significant inequalities in per capita income. In current prices, Haryana's per capita income remains more than three times that of Uttar Pradesh (3.31 in 2011–12 to 3.48 in 2023–24), indicating structural and long-standing disparity, while the gap between Haryana and Punjab has widened moderately from 1.24 to 1.66, reflecting Haryana's faster industrial and service sector growth. In contrast, Punjab's lead over Uttar Pradesh has gradually narrowed from 2.67 to 2.10, showing slow but steady convergence. In constant prices, disparities are even more pronounced, with Haryana-UP rising to 3.97 by 2019–20 before slightly declining to 3.65, Haryana-Punjab stabilizing around 1.43, and Punjab-UP decreasing to 2.56, highlighting that real growth differences accentuate inequality. Overall, the trends suggest persistent structural advantages for Haryana, moderate widening of the Haryana-Punjab gap, and gradual catch-up by Uttar Pradesh, underscoring the need for targeted policies to reduce regional imbalances in the Northern Plains.

Table 8

Inter State Disparity Ratio of Himalayan States Per Capita Net State Domestic Product (Current Price)

Year	ISDR HP-JK	ISDR UK-JK	ISDR UK-HP
2011-12	1.69	1.94	1.14
2015-16	1.81	1.97	1.09
2019-20	1.83	1.87	1.02
2023-24	1.65	1.83	1.11
Inter State Disparity Ratio of Himalayan States Per Capita Net State Domestic Product (Constant Price)			
Year	ISDR HP-JK	ISDR UK-JK	ISDR UK-HP
2011-12	1.69	1.94	1.14
2015-16	1.84	2.07	1.13
2019-20	2.06	2.20	1.07
2023-24	2.04	2.02	0.99

Source: Handbook of Statistics on Indian States (2023-24)

The Inter-State Disparity Ratios (ISDR) among the Himalayan states reveal a clear income hierarchy, with Jammu & Kashmir consistently trailing behind Himachal Pradesh and Uttarakhand. In current prices, disparities between Himachal Pradesh and J&K (HP–JK) remain stable, declining slightly from 1.69 in 2011–12 to 1.65 in 2023–24, while the gap between Uttarakhand and J&K (UK–JK) stays wider at around 1.94 to 1.83. In contrast, the disparity between Uttarakhand and Himachal Pradesh (UK–HP) is low, fluctuating around 1.14–1.11, indicating that these two states maintain near parity. Constant price estimates further accentuate these patterns, with HP–JK and UK–JK widening up to 2.06 and 2.20 respectively by 2019–20, while UK–HP falls to nearly 1.00 by 2023–24, suggesting almost equal real per capita incomes for HP and UK. Overall, J&K remains the primary laggard, while HP and UK form a more balanced and converging economic pair.

Comparing these trends with the Northern Plains reveals significantly sharper disparities in the plains region. Haryana's per capita income exceeds that of Uttar Pradesh by more than three times (H–UP ISDR 3.31–3.65), and its lead over Punjab has widened (H–P ISDR 1.24–1.66), though Punjab's gap with UP has narrowed modestly (P–UP ISDR 2.67–2.10).

These figures demonstrate deeper structural inequalities in the plains compared to the Himalayas, where disparities—though persistent for J&K—are generally much smaller. While the Northern Plains show entrenched divergence, the Himalayas exhibit relative balance and emerging convergence between Himachal Pradesh and Uttarakhand.

Table 9

Theil Index Value for Northern Plain States Using Per Capita NSDP at Current Prices

Year	Theil Index (T)
2011-12	0.099
2015-16	0.106
2019-20	0.110
2023-24	0.111
Theil Index Value for Northern Plain States Using Per Capita NSDP at Constant Prices	
Year	Theil Index (T)
2011-12	0.099
2015-16	0.115
2019-20	0.124
2023-24	0.112

Source: Handbook of Statistics on Indian States (2023-24)

The Theil Index for Northern Plain States indicates moderate inter-state disparities, with Haryana consistently leading in per capita income. Disparities widened from 2011–12 to 2019–20, especially in constant prices, reflecting real income differences. A slight decline by 2023–24 suggests minor convergence, likely due to Uttar Pradesh's relative catch-up.

Table 10 Theil Index Value for Himalayan States Using Per Capita NSDP at Current Prices

Year	Theil Index (T)
2011-12	0.0352
2015-16	0.0384
2019-20	0.0354
2023-24	0.0304
Theil Index Value for Himalayan States Using Per Capita NSDP at Constant Prices	
Year	Theil Index (T)
2011-12	0.0352
2015-16	0.0385
2019-20	0.0356
2023-24	0.0304

Source: Handbook of Statistics on Indian States (2023-24)

The Theil Index for Himalayan states shows low inter-state disparities, indicating relatively balanced per capita incomes among HP, Uttarakhand, and J&K. Values peak slightly around 2015–16 but decline thereafter, reflecting minor convergence, particularly with J&K catching up.

A comparison of the Theil Index between the Northern Plains and Himalayan states highlights stark differences in inter-state disparities. The Northern Plains exhibit moderate but persistent inequality, with Theil Index values ranging from 0.099–0.124, driven largely by Haryana's significantly higher per capita income compared to Punjab and Uttar Pradesh. In contrast, the Himalayan states show much lower disparities, with Theil Index values between 0.030–0.039, indicating a more balanced distribution of per capita income among Himachal Pradesh, Uttarakhand, and Jammu & Kashmir. Over time, while the Northern Plains show a slight convergence after 2019–20, the Himalayas demonstrate consistent low disparity, reflecting relatively uniform growth and less pronounced structural gaps.

4. CONCLUSION

A significant paradox in the regional economic growth trajectory of northern India becomes apparent between 2011–12 and 2023–2024: while the geographically limited, tourism and transfer-reliant Himalayan states have shown exceptional stability and low convergence in per capita incomes, the productive, densely populated, and industrially booming Northern Plains have experienced persistent inter-state divergence.

Disparities were exacerbated in the Plains by structural variations and national shocks (demonetization, GST, COVID-19). By 2023–2024, Haryana's agglomeration-driven economy had made significant progress, with a per capita NSDP 66% larger than Punjab and 3.48 times higher than Uttar Pradesh. Punjab lost ground to Uttar Pradesh, which gradually caught up through public investment, as a result of agricultural lock-in and financial difficulties. The Plains' Theil Index increased from 0.099 to 0.124 before slightly declining, indicating divergence caused by cumulative causes.

The Himalayan states, on the other hand, continued to have low and declining inequality. After 2015–16, the Theil Index decreased and never rose over 0.039, with Himachal Pradesh and Uttarakhand reaching almost equal actual per capita levels. Both breakthrough growth and severe backwardness were constrained by a tiny but essentially equal growth limitation imposed by geographic constraints, limited markets, and a substantial reliance on government transfers.

Neoclassical convergence forecasts are called into question by these divergent paths. Agglomeration dynamics and policy shocks strengthened early advantages on the Plains, whereas topography inhibited market-driven divergence in the Himalayas. The research highlights the mediating role of geography: fragmented mountain economies impose constrained equality, whereas vast, contestable lowland markets promote long-lasting difference.

Instead of depending on uniform fiscal transfers, policy must be regionally customized, focusing on private investment and industrial rebirth for the Plains and connectivity and sustainable tourism to raise the Himalayan ceiling. Thus, Northern India offers a natural experiment that highlights the limitations of convergence theory and the persistent interaction of structure, policy, and geography in determining regional disparity.

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