

# Assessing Interstate Economic Disparities in India through SDG 9 and SDG 10

**Dr. Pankaj Kumar Mahato**

Assistant Professor, Department of Commerce, Gaya College, Gaya Jee  
ORCID: 0000-0001-7962-4630

## Abstract

This study explores the interplay between structural transformation, social inclusion, and economic prosperity across the Indian federation. Utilizing cross-sectional data for the year 2023–24 for 28 states and two Union Territories, an Ordinary Least Squares regression was employed to evaluate the impact of SDG 9 and SDG 10 scores on Gross State Domestic Product per capita. The results indicate that industrial innovation and infrastructure, represented by SDG 9, act as primary catalysts for interstate income variation. In contrast, while the coefficient for SDG 10 is positive, it lacks statistical significance, suggesting that social equity may not yield immediate linear gains in economic output. These findings underscore a developmental pattern where structural capacity currently dictates productivity levels. Consequently, the study advocates for a synchronized policy framework that integrates robust industrial development with inclusive social initiatives to foster long-term regional convergence.

**Keywords:** SDG 9, SDG 10, regional economic disparities, social inclusion

## 1. Introduction

The pursuit of the 2030 Agenda for Sustainable Development has fundamentally reshaped the developmental discourse in India, shifting the focus from national-level metrics to the performance of sub-national entities. Within India's federal architecture, the localization of these global goals has been institutionalized through the NITI Aayog's SDG India Index, which serves as a benchmark for state-level progress (NITI Aayog, 2024). While the national economy has seen periods of rapid expansion, the benefits of this growth have not been distributed evenly across the geography. The persistent and widening disparity in Gross State Domestic Product per capita remains a central concern for policymakers, as regional economic trajectories in India appear to be characterized more by divergence and polarization than by a unified march toward prosperity (Arora & Anand, 2021).

At the heart of this economic variation lies Sustainable Development Goal 9, which focuses on industry, innovation, and infrastructure. In a developing economy like India's, the capacity of a state to build resilient infrastructure and foster sustainable industrialization is often the primary determinant of its wealth (Ahmed et al., 2024). Research indicates that SDG 9

\*Corresponding Author Email: [pankajmahato.finance@gmail.com](mailto:pankajmahato.finance@gmail.com)

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performance is highly uneven across the country; while some states have successfully positioned themselves as hubs for manufacturing and digital innovation, others remain constrained by significant infrastructure deficits (Sharma et al., 2025). This divide is not merely a matter of geography but is deeply tied to a state's ability to attract investment and modernize its productive sectors. Infrastructure provisioning, in particular, has a complex relationship with growth; while it can act as a catalyst for expansion, its uneven distribution often explains the regional imbalances observed in per capita income (Mohanty et al., 2017).

However, economic output alone does not guarantee sustainable progress. Sustainable Development Goal 10, which targets the reduction of inequalities, highlights the importance of social inclusion and institutional equity in the growth process. In India, the "rich-poor divide" is visible not only in wealth distribution but also in the access to basic socioeconomic amenities (Kumari et al., 2023). The relationship between a state's economic strength and its SDG 10 performance is often bidirectional. High-income states like Kerala and Goa typically have more fiscal room to implement inclusive social policies, whereas lagging states may find themselves in a trap where inequality hinders productive participation in the economy (Sharma et al., 2025). Consequently, the "patchy" nature of India's growth turnaround suggests that some states have successfully integrated social and economic goals, while others continue to struggle with structural and institutional bottlenecks.

Despite the wealth of literature on regional convergence in India, there is a need for a more nuanced examination of how specific sustainable development metrics interact with economic output. While some studies have begun to unravel the subnational progress of SDGs, few have empirically linked the official SDG 9 and SDG 10 scores to variations in state-level GSDP per capita (Garai et al., 2025). Understanding whether industrial innovation and reduced inequality actually explain the differences in state income is vital for refining the localization of the SDGs. It moves the conversation beyond simple growth figures toward a more holistic view of structural transformation that accounts for both the strength of a state's industrial base and the inclusivity of its social fabric.

A study by (Roy et al., 2023) aims to address this gap by empirically examining the extent to which official SDG 9 and SDG 10 scores explain the variations in state-level GSDP per capita. By utilizing the data from NITI Aayog publications alongside established economic indicators, the research seeks to determine if the states performing better on these specific goals also exhibit higher levels of economic prosperity. Ultimately, this analysis will provide insights into whether the current path of industrialization and social inclusion is sufficient to bridge the deep-seated economic divides within the Indian federation.

## **2. Literature Review**

### **2.1 Studies outside India**

The relationship between income inequality and economic growth remains a subject of intense academic inquiry, marked by a shift from the traditional Kuznetsian perspective toward more complex, non-linear empirical models. Theoretically, the discourse is divided between models where inequality may promote growth through higher savings rates among the wealthy and models where it hinders development via credit market imperfections and social-political

unrest (Mdingi & Ho, 2021). Modern research highlights that these outcomes are deeply contingent on a country's specific development level and institutional quality.

Extensive empirical studies published in indexed journals provide evidence that the long-term impact of inequality on economic performance is frequently negative, particularly when it restricts human capital development. In South Africa, for instance, longitudinal analysis identifies a long-run relationship where high income disparity acts as a consistent drag on national output (Mdingi & Ho, 2023). Similarly, cross-country panel data suggests that in developed contexts, economic growth is statistically and negatively correlated with inequality levels, likely due to the erosion of upward mobility and the exclusion of marginalized populations from productive activities (Bouincha & Karim, 2018).

However, some researchers argue that the relationship is governed by specific thresholds rather than a simple linear trend. Re-examinations of global data using endogenous growth models have identified an "inverted-U" shape, suggesting that inequality may support growth only up to a certain point—such as a Gini coefficient threshold of approximately 35.92—before its effects turn detrimental (Balcilar et al., 2021). Furthermore, the specific segment of the income distribution experiencing the disparity dictates the economic outcome; research indicates that while top-end inequality might occasionally foster investment incentives, inequality at the bottom end of the distribution consistently retards expansion by depressing aggregate demand and health outcomes (Ray & Lindén, 2018).

In the era of globalization, these dynamics have further evolved. While international trade and technological progress drive overall growth, they often exacerbate market inequalities in developing economies, necessitating robust social expenditure and active labor market policies to maintain a sustainable balance (Tabash et al., 2024). These findings underscore that for growth to be resilient, it must be supported by institutional mechanisms that promote inclusive distribution and mitigate the "inequality traps" found in many emerging markets (Nasr et al., 2018).

## **2.2 Studies in India**

Existing research on the inequality-growth relationship in India reveals a transition from relative stability in the 1980s to significant regional divergence following the 1991 economic reforms (Cherodian & Thirlwall, 2015). While national growth has accelerated, it has been geographically uneven, leading to a "patchy" participation among states. Empirical evidence indicates a positive correlation between a state's per capita income and its levels of inequality; higher-income states often exhibit higher Gini coefficients, suggesting that the benefits of industrial and service sector expansion have been concentrated in specific urban hubs (Singhal et al., 2020).

Furthermore, this relationship is characterized by spatial complexities where a state's ability to converge with wealthier peers depends heavily on initial conditions such as physical infrastructure, literacy, and financial access (Singh et al., 2013). Some studies identify an asymmetric effect, noting that while extreme inequality may constrain growth at lower income tails due to credit constraints, it can occasionally stimulate investment at higher levels (Acheampong et al., 2023). However, the persistence of deep-seated "rich-poor divides"

remains a structural barrier to long-term stability, as rising disparities can lead to social unrest and hinder sustainable development (Bandyopadhyay, 2021).

### 3. Research Gap

While many studies evaluate growth determinants or inequality outcomes separately, few studies test whether official SDG-based structural and social indices jointly explain interstate income differences. This paper fills that gap using official SDG composite scores.

### 4. Methodology

This study utilizes a cross-sectional dataset of 30 observations, including 28 Indian states and the Union Territories of Delhi and Jammu & Kashmir for the 2023–24 period. The independent variables—SDG 9 and SDG 10 scores—are sourced from the *SDG India Index 2023–24* (NITI Aayog, 2024). SDG 9 measures a state’s industrial infrastructure and innovation capacity, while SDG 10 evaluates socioeconomic inclusion and reduced inequalities (Bhanja & Roychowdhury, 2020). The dependent variable, GSDP per capita at current prices, is obtained from MoSPI and RBI publications to maintain temporal consistency with the NITI Aayog index (NITI Aayog, 2024).

The empirical relationship is examined using an Ordinary Least Squares estimation model:

$$\text{GSDP}_i = \alpha + \beta_1 * \text{SDG9}_i + \beta_2 * \text{SDG10}_i + \epsilon_i$$

In this framework,  $\beta_1$  and  $\beta_2$  estimate the marginal impact of industrial progress and social equity on state-level economic output. This methodology allows for a robust assessment of how structural transformation and inclusion indicators drive regional income dynamics (Constantin et al., 2021). By focusing on these specific goals, the study identifies whether sustainable development performance serves as a significant predictor of economic prosperity at the sub-national scale (Ranjith et al., 2022).

#### 4.1 Research Hypotheses

- Hypothesis 1: Higher SDG 9 scores are positively associated with higher GSDP per capita.  
Hypothesis 2: Higher SDG 10 scores are positively associated with higher GSDP per capita.

### 5. Results

State / UT	GSDP per capita at current price (₹)	SDG 9 Score	SDG 10 Score
Andhra Pradesh	270,295	49	67
Arunachal Pradesh	239,045	28	67
Assam	158,807	44	68
Bihar	66,828	53	56
Chhattisgarh	162,870	39	72
Goa	674,684	76	87
Gujarat	336,875	61	69
Haryana	361,993	72	73
Himachal Pradesh	276,943	59	80

Jharkhand	115,960	53	59
Karnataka	368,085	62	69
Kerala	317,723	69	71
Madhya Pradesh	156,381	39	54
Maharashtra	319,474	58	66
Manipur	125,937	62	79
Meghalaya	156,326	44	77
Mizoram	275,633	55	43
Nagaland	179,379	50	55
Odisha	203,085	48	64
Punjab	227,950	69	77
Rajasthan	187,454	53	49
Sikkim	707,181	55	80
Tamil Nadu	353,483	67	76
Telangana	393,385	60	65
Tripura	198,379	39	77
Uttar Pradesh	107,468	53	66
Uttarakhand	295,751	62	69
West Bengal	181,184	66	70
Andaman & Nicobar Islands	NA	50	79
Chandigarh	NA	55	75
Dadra & Nagar Haveli and Daman &	NA	55	71
Delhi	512,131	75	56
Jammu & Kashmir	192,898	59	74
Ladakh	NA	43	49
Lakshadweep	NA	48	70
Puducherry	NA	76	80
Source: GSDP data is obtained from RBI publication and SDG data are sources from NITI			

The GSDP per capita at the current price, SDG 9 and SDG 10 for all the states and UTs for the year 2023-24 have been presented in table 1.

Predictor	$\beta$	SE $\beta$	t	p
Constant	-299,300	184,000	-1.63	.116
SDG 9 Score	5,939.98	2,162.11	2.75	.011
SDG 10 Score	3,503.08	2,488.27	1.41	.171
Source: Calculation in MS Excel				

The regression results presented in the table 2 indicate that industrial innovation and infrastructure serve as the primary drivers of economic variation across the sampled Indian states. Specifically, SDG 9 scores exhibit a statistically significant positive relationship with GSDP per capita ( $\beta_1 = 5,939.98$ ,  $p = .011$ ), suggesting that enhancements in manufacturing capacity and digital connectivity directly correlate with higher income levels. This finding

reinforces the perspective that infrastructure provisioning remains a fundamental determinant of regional productivity (Bajar & Rajeev, 2015; Mohanty et al., 2017).

In contrast, while the coefficient for SDG 10 is positive ( $\beta_2 = 3,503.08$ ), it fails to reach statistical significance ( $p = .171$ ). This implies that reductions in socioeconomic inequality do not yet yield a direct, linear impact on state-level output within the current fiscal period (Bhanja & Roychowdhury, 2020; Guha & Chandra, 2022). Such a disparity suggests a "patchy" participation in India's growth turnaround, where the wealth-generating effects of industrialization often precede the measurable economic benefits of social inclusion (Ghate & Wright, 2012).

## **6. Discussion**

The findings designate SDG 9 as a primary structural growth engine, where a one-point score increase correlates with an approximate ₹5,940 rise in GSDP per capita. This reinforces the view that industrial innovation and infrastructure are fundamental drivers of the observed interstate income disparities in India. In contrast, the non-significant coefficient for SDG 10 suggests that social inclusion, while socially imperative, does not exert an immediate linear effect on economic output once structural factors are controlled.

This indicates "patchy" growth participation, where structural transformation drives output quantity, while inclusion indicators—such as political representation or reduced crime—affect long-term development quality and stability. Thus, infrastructure remains essential for state prosperity, but social equity's economic benefits likely emerge via complex, non-linear paths over time.

## **7. Policy Implications**

The empirical evidence necessitates a dual-track policy framework where industrial transformation and social inclusion are treated as symbiotic rather than independent objectives. Primarily, state governments should prioritize the expansion of manufacturing clusters and innovation ecosystems, as digital connectivity and resilient infrastructure remain the most potent catalysts for boosting per capita income. These structural advancements must be anchored by inclusive social policies; while SDG 10 metrics may not yield immediate linear increases in economic output, they are critical for fostering institutional trust, reducing social friction, and stabilizing labor participation.

By integrating SDG 9 and SDG 10 into a unified developmental strategy, states can move beyond "patchy" growth patterns toward a more resilient and balanced economic equilibrium. Ultimately, promoting equity alongside industrial innovation ensures that the benefits of structural transformation are broad-based, mitigating the risks of long-term regional divergence (Barua & Sawhney, 2015).

## **8. Conclusion**

This study confirms that structural transformation, captured by SDG 9, serves as the dominant catalyst for interstate income variation in India. While SDG 10 indicators for social inclusion demonstrate a positive trend, their immediate linear impact on economic output remains

statistically marginal. These findings suggest that although industrial infrastructure directly elevates per capita income, the benefits of reduced inequality likely manifest through long-term institutional stability rather than instantaneous output gains. Consequently, achieving sustainable regional convergence requires a synchronized approach that integrates industrial innovation with robust inclusive policy frameworks.

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