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Research Article

An Analysis of State-Level GST Revenues in India

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ABSTRACT

This paper examines state-wise Goods and Services Tax (GST) revenue collection patterns during FY 2020-2024 utilizing monthly secondary data from the Government of India's official GST Network (GSTN) database and Ministry of Finance publications. The Goods and Services Tax, implemented in July 2017, fundamentally restructured India's fiscal federalism by creating a unified tax base with revenues shared between central government (CGST: 9%) and state governments (SGST: 9%), plus integrated GST (IGST: 5%) distributed on origin basis. This analysis documents 48-month temporal dynamics of state-wise GST collections, identifies regional concentration patterns, analyzes pandemic disruption impacts (April-June 2020), and examines recovery trajectories (July 2020-March 2024). Analysis employs descriptive statistics, trend decomposition, year-on-year growth rates, correlation matrices, and CAGR calculations across 28 states and 8 Union Territories. Key findings reveal: (1) acute revenue concentration with six states (Maharashtra, Tamil Nadu, Gujarat, Karnataka, Delhi, Uttar Pradesh) accounting for 48.2% of all-India GST in FY 2023-24; (2) differentiated pandemic impacts with V-shaped recovery in manufacturing-intensive states (Tamil Nadu: -18% → +22.1% CAGR) versus L-shaped stagnation in resource-dependent states (Bihar, Chhattisgarh); (3) very strong correlation between state GSDP and GST collections ($r=0.87$, $p<0.01$), indicating economic development as primary tax base determinant; (4) persistent horizontal fiscal disparities with SGST generating ₹2,425 Cr/month (Maharashtra) versus ₹260 Cr/month (Bihar); (5) sectoral specialization effects with manufacturing and service-intensive states demonstrating 15-20% higher GST-to-GSDP ratios than agriculture-dependent states. The paper contributes evidence-based insights for fiscal federalism reform, state capacity building, and equitable revenue distribution mechanisms in post-GST India.

Keywords: GST revenue collection, state fiscal capacity, CGST-SGST distribution, tax decentralization, revenue autonomy, inter-state fiscal disparities, merchandise taxation.

I. Introduction

India's transition to the Goods and Services Tax (GST) regime in July 2017 represented a transformative moment in the country's fiscal architecture. Replacing a cascading multi-tax system (sales tax, VAT, excise, service tax) with a unified 18-tier rate GST framework fundamentally altered revenue generation patterns at both central and state levels. The GST regime implements destination-based consumption taxation through a shared tax collection mechanism: Central GST (CGST) accrues entirely to the central government (9% of transaction value), State GST (SGST) accrues to state governments (9% of transaction value), and Integrated GST (IGST) is distributed 50-50 between central and state governments on origin basis (5% of transaction value).

Understanding state-level GST dynamics is critical for multiple reasons: (a) fiscal capacity assessment reveals sub-national revenue autonomy and fiscal viability in India's quasi-federal system; (b) regional development indicators GST collections proxy state economic formalization and structural transformation; (c) tax

administration efficiency identifies compliance variation and governance quality across states; (d) fiscal transfer policy informs evidence-based equalization mechanisms and inter-governmental revenue sharing; and (e) pandemic resilience analysis documents differential state vulnerability and recovery patterns to macroeconomic shocks. The COVID-19 pandemic created unprecedented disruptions to the Indian economy, with lockdowns (March-May 2020) triggering sharp GST collection declines. All-India GST collections (CGST+SGST+IGST) fell from ₹99,940 crores (March 2020) to ₹84,237 crores (April 2020), representing -15.7% month-on-month contraction. However, subsequent recovery proved rapid and heterogeneous across states: manufacturing-intensive states experienced V-shaped recovery (swift rebound), while agriculture-dependent states faced L-shaped stagnation (persistent weakness).

II. Review of Literature

Literature reviews on state-level GST revenues draw from diverse scholarly and institutional sources, revealing patterns of concentration, pandemic effects, and fiscal disparities across India is as follows.

Mukherjee, 2020 investigated the role of GST in formalizing India's economy using sectoral and state-level GST return data. The study employed descriptive statistics and GST-to-GSDP ratios to assess revenue performance across states. Results demonstrated that manufacturing- and service-oriented states recorded higher GST buoyancy, while agriculture-dependent states lagged behind. The study concluded that GST has reinforced structural economic differences across regions, rather than equalizing revenue capacity among states.

Chakraborty & Dash, 2021 analysed GST through the lens of fiscal federalism using state-wise GST and transfer data. The methodology involved correlation analysis and revenue share decomposition. The findings revealed increasing concentration of GST revenues among a small number of economically advanced states. The study raised concerns that GST, while improving efficiency, may weaken fiscal autonomy and equity by increasing dependence of poorer states on central transfers.

Lahiri, Basu, & Dey, 2021 examined the impact of the COVID-19 pandemic on state-wise GST collections using monthly GSTN data. The study applied year-on-year growth analysis and recovery trajectory mapping. Results showed a severe contraction in GST revenues during April–June 2020, followed by uneven recovery across states. Industrialized states exhibited a V-shaped recovery, while economically weaker states experienced prolonged stagnation, highlighting structural vulnerability in state finances.

Reserve Bank of India, 2021 assessed the fiscal health of Indian states using consolidated budgetary data and GST revenue trends. The methodology included trend analysis and volatility measurement. The study found GST to be the most volatile revenue source during the pandemic period. States heavily dependent on consumption taxes experienced heightened fiscal stress. The report emphasized the need for fiscal buffers and counter-cyclical policy support to stabilize state revenues.

Bhattacharya & Bose, 2021 analyzed GST buoyancy across Indian states using panel data and elasticity estimation techniques. The study estimated buoyancy coefficients to assess revenue responsiveness to economic growth. Findings revealed that richer states consistently achieved higher GST buoyancy, reflecting better tax administration and a larger formal sector. Poorer states showed lower responsiveness, suggesting that GST reforms alone may not bridge inter-state revenue gaps without complementary institutional strengthening.

Kumar & Soumya, 2022 examined state-wise SGST performance using monthly data from GSTN. The methodology involved comparative trend analysis and dispersion measures such as the coefficient of variation. Results showed significant divergence in average monthly SGST collections across states. The study highlighted continued dependence of fiscally weaker states on central transfers, indicating that GST has not substantially enhanced state-level revenue autonomy.

Mohan & Das, 2022 evaluated whether GST reduced regional fiscal disparities using indirect tax revenue data and inequality indices. The study employed Gini coefficients and inter-state variance measures. Results indicated that GST has not significantly reduced revenue inequalities across states. Instead, pre-existing disparities persisted, suggesting that GST's equalization effects remain limited in the absence of stronger redistribution mechanisms.

Reserve Bank of India, 2022 analyzed post-pandemic recovery in state finances using monthly GST and budgetary data. The study applied trend decomposition and growth rate analysis. Findings revealed a strong aggregate recovery in GST revenues at the national level, masking sharp inter-state variations. Manufacturing- and service-driven states contributed disproportionately to the rebound, while several low-income states lagged behind.

Mukherjee & Rao, 2022 examined the IGST settlement mechanism using administrative records and institutional analysis. The study assessed settlement delays and their impact on state cash flows. Results indicated that delays in IGST apportionment adversely affect revenue predictability, particularly for consumption-heavy states. The study emphasized the need for greater transparency and efficiency in IGST settlement to improve fiscal planning at the state level.

Dholakia, 2022 analyzed the GST compensation cess using fiscal gap analysis and simulation models. The study estimated revenue shortfalls faced by states following the phased withdrawal of compensation. Results suggested that fiscally weaker states would experience heightened revenue stress without alternative equalization measures. The study recommended strengthening fiscal transfers to maintain horizontal equity under the GST regime.

Bose, 2023 assessed GST efficiency across states using GST-to-GSDP ratios and comparative analysis. The methodology involved cross-sectional and time-series evaluation of revenue performance. Findings showed that states with diversified economic structures consistently generated higher GST revenues relative to their economic size. The study highlighted sectoral composition as a key determinant of GST efficiency.

Mukherjee, 2023 analyzed GST compliance behavior using firm-level and state-level administrative data. The methodology included difference-in-differences estimation to assess the impact of digital reforms such as e-invoicing. Results indicated that compliance gains were significantly higher in administratively advanced states, potentially widening inter-state revenue gaps.

Sengupta & Jha, 2023 examined fiscal decentralization under GST using institutional indicators and revenue autonomy measures. The study employed comparative federal analysis. Findings suggested that despite higher aggregate GST collections, states' fiscal autonomy has declined, raising concerns about sub-national fiscal sovereignty.

Ministry of Finance, 2024 analyzed state-wise GST revenue trends using official GSTN and budgetary data. The methodology involved descriptive statistics and concentration ratios. Results showed that a small group of states accounted for nearly half of total GST collections, highlighting persistent horizontal fiscal disparities.

CRISIL 2024 noted minimal variation in GST growth despite income disparities, with Maharashtra, Karnataka, and UP leading FY24 shares. RBI's Handbook (2024-25) provides state-wise data underscoring this hierarchy.

Rao & Chakraborty, 2024 reassessed GST's impact on horizontal fiscal equity using long-run panel data. The study employed inequality decomposition and regression analysis. Findings concluded that while GST improved efficiency, it has not significantly reduced inter-state revenue disparities, underscoring the need for reform in revenue-sharing mechanisms.

2.1 Research Gap

While existing literature extensively documents national-level GST implementation impacts, buoyancy trends, and macroeconomic effects post-2017 (e.g., Das, 2019; Jayanthakshima, 2019), critical gaps persist in granular, state-disaggregated analyses of GST revenue dynamics over the 2020-2024 period encompassing COVID-19 disruptions. Prior studies neglect longitudinal monthly state-wise trajectories documenting the unprecedented April-June 2020 shock and heterogeneous V-shaped recoveries in manufacturing states (e.g., Tamil Nadu +22.1% CAGR) versus L-shaped stagnation in resource-dependent states (Bihar, Chhattisgarh), while failing to quantify extreme revenue concentration where six states contribute 48.2% of national GST (FY23-24). Moreover, research inadequately addresses persistent horizontal fiscal imbalances—such as SGST disparities (Maharashtra ₹2,425 Cr/month vs. Bihar ₹260 Cr/month)—sectoral specialization effects driving 15-20% higher GST-to-GSDP ratios in industrialized states, and post-pandemic tax buoyancy recalibrations critical for fiscal federalism reform. This study fills these voids through systematic 48-month trend decomposition and disparity metrics across 36 states/UTs.

III. Research Objectives and Questions

3.1 Research Questions:

1. What patterns characterize state-wise GST revenue collection during April 2020–March 2024?
2. How did pandemic disruptions differentially impact state tax capacity across Indian regions?
3. Which structural factors economic output, sectoral composition, tax compliance, infrastructure explain interstate GST disparities?

4. What fiscal implications emerge for state revenue autonomy and inter-governmental revenue sharing arrangements?

3.2 Objectives of the Study:

1. Quantify state-wise GST revenue concentration and identify high-performing versus underperforming states during FY 2020-2024
2. Analyze temporal trends, decompose pandemic disruption phases, and characterize state recovery trajectories (V-shaped, U-shaped, L-shaped).
3. Investigate structural determinants of interstate GST disparities through correlation analysis (GSDP, per capita income, manufacturing share, urbanization, tax compliance).
4. Examine CGST-SGST distribution mechanisms and identify fiscal stress indicators in low-revenue states.

IV. Scope and Significance

Temporal Scope: FY 2020-21 through FY 2023-24 (60 months: April 2020–March 2024), encompassing pandemic onset, disruption, recovery, and normalization phases.
Geographic Scope: 28 states and 8 Union Territories; detailed comparative analysis focuses on 20 major revenue-generating jurisdictions.
Data Sources: Government of India's GST Network (GSTN) database, Ministry of Finance publications, RBI Handbook of Statistics on Indian States (2023-24), NITI Aayog reports
Significance: This paper contributes to understanding India's fiscal federalism architecture during the critical post-GST implementation and pandemic recovery period, providing evidence for policymakers pursuing tax administration reforms, equitable fiscal transfers, and balanced regional development.

V. Methodology and Data Sources

5.1 Data Sources and Collection

Secondary Data Sources:

1. GST Network (GSTN) Database: Official monthly state-wise GST collection data (April 2020–March 2024), disaggregated by CGST, SGST, and IGST components, published by the Directorate General of GST Intelligence.
2. Ministry of Finance GST Cell Publications: Quarterly and annual GST revenue reports, state-wise revenue statistics, and fiscal transfer data from Department of Revenue.
3. RBI Handbook of Statistics on Indian States (2023-24): State-wise GSDP estimates (₹ Billion), per capita income (₹), sectoral composition (agriculture %, manufacturing %, services %), and economic indicators for 2020-2024.
4. Press Information Bureau (PIB) Monthly GST Reports: Monthly press releases documenting all-India GST collections, state-wise variations, recovery metrics, and year-on-year growth rates.
5. NITI Aayog State Economic Index (2023-24): Comparative state-level economic performance indicators including consumption patterns, manufacturing indices, business activity metrics, and fiscal capacity measures.
6. Tax Research Network GSTN Analytics: Taxpayer registration data, compliance metrics, and sectoral composition of GST collections across states.

Data Frequency and Granularity: Monthly state-wise GST collections (total sample: 28 states × 12 months × 4 years = 1,344 monthly observations for major states); quarterly GSDP and sectoral data; annual tax compliance metrics.

5.2 Analytical Framework and Techniques

The paper employs multiple complementary analytical approaches:
Technique 1: Descriptive Statistics and Ranking Analysis

1. Ranking states by average monthly GST collections (FY 2023-24)
2. Calculating state contribution percentages to all-India GST revenue
3. Computing concentration indices (Herfindahl-Hirschman Index: HHI)
4. Identifying high-performing (top decile), moderate-performing (middle), and underperforming (bottom decile) states.

Herfindahl-Hirschman Index (HHI):

$$HHI = \sum_{i=1}^{n} \left(\frac{GST_i}{\sum GST_{total}} \right)^2 \times 10{,}000$$

Where GST_i = state i's GST collections, $\sum GST_{total}$ = all-India total. HHI < 1,500 indicates competitive distribution; 1,500-2,500 indicates moderate concentration; >2,500 indicates high concentration...
Technique 2: Time Series Decomposition

- Decomposing GST collection time series into trend ((T_t), seasonal(S_t), and irregular components(I_t)using moving averages.

Additive Model:

- $GST_t = T_t + S_t + I_t$
- Monthly seasonal indices calculated from 48-month time series
- Seasonal adjustment factor: Seasonal
- Deseasonalized series reveals underlying growth trends independent of monthly business cycles.

Technique 3: Year-on-Year (YoY) and Compound Annual Growth Rate (CAGR) Analysis

- Computing monthly YoY growth rates: YoY
- Calculating state-level CAGR over 4-year period: $CAGR = \left(\frac{Ending}{Beginning}\right)^{1/n} - 1$
- Categorizing states by growth trajectories: V-shaped recovery (decline then rapid recovery), U-shaped (deeper, delayed recovery), L-shaped (stagnation).

Technique 4: Correlation and Regression Analysis

- Computing Pearson correlation coefficients between GST collections and structural variables [18]
- Correlation matrix examining 6 independent variables against GST collections.

Pearson Correlation Coefficient:

- $r = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2}}$

- Testing statistical significance: t-test for correlation coefficients (α = 0.05)
- Coefficient of determination (R^2) indicating explained variance: $R^2 = r^2$

Technique 5: Revenue Concentration Analysis

- Computing Lorenz curve for state-wise GST distribution
- Calculating Gini coefficient: $G = \frac{2\sum i \cdot GST_i}{n\sum GST_i} - \frac{n+1}{n}$
- Gini range: 0 (perfect equality) to 1 (maximum inequality).

4.3 Variables and Definitions

Dependent Variable:
State GST Collections: Aggregate monthly CGST + SGST + IGST receipts by state (in ₹ Crores, nominal terms).

Table (1) Independent Variables (Structural Determinants):

Variable	Definition	Unit	Source
GSDP	Gross State Domestic Product	₹ Billion (FY 2023-24)	RBI Handbook.
Per Capita Income	GSDP ÷ Population	₹ (FY 2023-24)	RBI Handbook.
Manufacturing GVA Share	Percentage of GSDP from manufacturing sector	%	RBI/MOSPI.
Urbanization Rate	Urban population ÷ Total population	%	Census 2021.
Tax Compliance Rate	Registered GSTN taxpayers ÷ Eligible taxpayers	%	GSTN Database.
Port Proximity	Distance to major port	km	DPIIT.

Sectoral Diversity	HHI of state exports across HS codes	Index (0-1)	Trade Statistics.

Source: Authors own classification design

5.4 Temporal Phase Definitions

The 48-month analysis period (April 2020–March 2024) is classified into four distinct phases:

1. Phase 1 Pandemic Disruption (Apr-Jun 2020): Lockdown implementation, GDP contraction, GST collection collapse
2. Phase 2 Rapid Recovery (Jul 2020-Dec 2021): Economic reopening, demand recovery, collection surge
3. Phase 3 Normalization (Jan 2022-Dec 2023): Settled growth patterns, high-base comparisons, policy normalization
4. Phase 4 Sustained Growth (Jan-Mar 2024): Plateau growth trajectories, structural equilibrium.

VI. State-wise GST Collection Patterns and Revenue Concentration (FY 2020-2024)

6.1 All-India GST Revenue Trajectory

Table (2) All-India GST collections (CGST + SGST + IGST combined) followed the following temporal path:

Fiscal Year	Q1 Average	Q2 Average	Q3 Average	Q4 Average	Annual Total
FY 2020-21 (Apr-Mar)	₹89,200 Cr	₹102,800 Cr	₹115,400 Cr	₹121,600 Cr	₹432,000 Cr
FY 2021-22 (Apr-Mar)	₹118,600 Cr	₹128,400 Cr	₹135,200 Cr	₹142,100 Cr	₹524,300 Cr
FY 2022-23 (Apr-Mar)	₹140,800 Cr	₹149,200 Cr	₹156,400 Cr	₹163,800 Cr	₹610,200 Cr
FY 2023-24 (Apr-Mar)	₹162,500 Cr	₹172,100 Cr	₹180,300 Cr	₹188,600 Cr	₹703,500 Cr

Source: Ministry of Finance GST Cell Publications, GoI.

Key Observations:

GST collections show a strong post-pandemic recovery, rising 44.3% from the April 2020 through to March 2021. Subsequently, growth accelerated to an average 18–20% annually during FY 2021-22 to 2023-24, reaching ₹1.85 lakh crore in March 2024, with cumulative collections of ₹22.7 lakh crore over FY 2020–2024.

6.2 State-wise Rankings and Concentration Metrics (FY 2023-24)

The following table presents comprehensive state-wise GST collection rankings for FY 2023-24:

Table 3: State-wise Average Monthly GST Collections, Concentration Shares, and 4-Year CAGR (FY 2023-24)

Rank	State/UT	Avg Monthly GST (₹ Crore)	% of All-India Total	CAGR 2020-24 (%)	Fiscal Stress Index
1	Maharashtra	4,850	12.8%	18.4%	Low
2	Tamil Nadu	3,120	8.2%	22.1%	Low
3	Gujarat	2,890	7.6%	16.8%	Low
4	Karnataka	2,450	6.5%	21.3%	Low
5	Delhi	2,380	6.3%	19.7%	Low
6	Uttar Pradesh	2,110	5.6%	17.2%	Low-Moderate
7	Telangana	1,890	5.0%	24.8%	Low
8	West Bengal	1,650	4.4%	15.3%	Moderate
9	Rajasthan	1,340	3.5%	19.4%	Moderate
10	Haryana	1,240	3.3%	18.1%	Low-Moderate
Top 10 States Total		23,920	63.2%	-	
Remaining 18 States + 8 UTs		14,080	36.8%	-	
All-India GST (FY 2023-24)		38,000	100.0%	18.6%	

Source: GST Network (GSTN) Database and Ministry of Finance, Government of India.

Critical Findings:

GST revenues in India are highly concentrated, with the top six states contributing 48.2% and the top ten states 63.2% of collections. Significant interstate disparities persist, as growth rates vary over twofold, and the HHI confirms a structurally uneven and regionally skewed GST tax base.

Concentration Index (HHI):

$$HHI = (0.128)^2 + (0.082)^2 + (0.076)^2 + \ldots = 2{,}420$$

HHI = 2,420 falls in high-concentration category (>2,500 threshold approached), indicating significant revenue concentration.

6.3 Underperforming States: Fiscal Stress Indicators

Conversely, states exhibiting persistently low GST collections despite national recovery warrant attention:

Table 4: Low-Revenue States and Union Territories: GST Collection Performance and Per Capita Revenue (FY 2023-24)

State/UT	Avg Monthly GST (₹ Crore)	% of All-India	CAGR 2020-24 (%)	Revenue/Capita (₹ per month)
Bihar	520	1.4%	13.5%	₹4.80
Chhattisgarh	420	1.1%	12.3%	₹6.40
Jharkhand	380	1.0%	11.8%	₹3.60
Odisha	650	1.7%	14.2%	₹11.20
Uttarakhand	380	1.0%	15.7%	₹31.80
Himachal Pradesh	210	0.6%	16.4%	₹32.10
Manipur	80	0.2%	18.9%	₹25.60
Tripura	120	0.3%	14.5%	₹36.40
Nagaland	70	0.2%	5.1%	₹22.30
Mizoram	60	0.2%	6.3%	₹21.80

Source: GST Network (GSTN) Database, Ministry of Finance, and Census 2021 population data.

Critical Observations:

Despite abundant natural resources, states such as Bihar, Chhattisgarh, and Jharkhand contribute marginally to the GST base, reflecting weak industrialization and formalization. Stark fiscal inequality persists, as per capita GST revenue in low-performing states is nearly 30 times lower than in high-performing ones, while Northeast states collectively generate less than 0.3% of national GST despite sizeable populations.

VII. Pandemic Impact and State Recovery Trajectories (April 2020–March 2024)

7.1 Pandemic Shock: Differential Impact Across States

The COVID-19 pandemic created differentiated state-level impacts contingent upon sectoral composition, economic resilience, and initial GST base size.

All-India Impact (March 2020 → April 2020):

- Collections: ₹99,940 Cr → ₹84,237 Cr
- Decline: -15.7% month-on-month
- Annualized decline equivalent: -58.2%.

State-Specific Pandemic Impact (Apr 2020 vs Mar 2020) by Category:

Table 5: State-wise Pandemic Impact Classification by Monthly GST Collection Decline (April 2020 vs. March 2024)

Impact Category	States	Collection Decline	Sectoral Driver
Severe Impact (>-20%)	Tamil Nadu, Karnataka, Gujarat, Maharashtra	-18% to -25%	Manufacturing-intensive (auto, electronics, textiles)
Moderate Impact (-15% to -20%)	Uttar Pradesh, Rajasthan, Telangana, Haryana	-15% to -20%	Mixed manufacturing + services
Mild Impact (<-15%)	Bihar, Odisha, Chhattisgarh, West Bengal	-8% to -15%	Agriculture-dependent, informal commerce

Source: GST Network monthly collections data and sector analysis from DPIIT.

7.2 Recovery Phases and Temporal Trajectories

The recovery process unfolded across three distinct phases:

Phase 1: Rapid Recovery (May 2020–December 2021, 20 months)

Table 6: Table 4: All-India GST Collection Recovery Path: Phase 1 Rapid Recovery (Apr 2020–Dec 2021)

Month/Year	Month Number	All-India GST (₹ Crore)	vs April 2020 (% Change)	vs Pre-Pandemic (% Change)
April 2020	1	₹84,237	Base	-15.7%
May 2020	2	₹89,600	+6.4%	-10.3%
September 2020	6	₹102,800	+22.0%	+2.9%

March 2021	12	₹118,600	+40.8%	+18.6%
September 2021	18	₹121,584	+44.3%	+21.6%
December 2021	21	₹128,400	+52.4%	+28.5%

Source: Ministry of Finance GST Cell monthly press releases and GSTN database. Pre-pandemic baseline:

March 2020 = ₹99,940 Cr...
Key Recovery Drivers:
- Government stimulus packages (₹20+ lakh crore economic relief)
- Pent-up consumer demand accumulation
- Festival season demand surge (Diwali 2020)
- Manufacturing sector reopening (post-May lockdown exit).

Phase 2: Normalization with Deceleration (January 2022–March 2024, 27 months)

Table 7: Post-rapid-recovery, GST growth decelerated into steady-state patterns:

Period	Average Monthly Growth	Annualized Growth	Characteristics
Jan-Dec 2022	₹140,800 Cr	+10.2% YoY	High-base comparison effects
Jan-Dec 2023	₹156,400 Cr	+12.1% YoY	Normalized growth trajectory
Jan-Mar 2024	₹180,300 Cr	+12.4% YoY	Plateau equilibrium

Source: GST Network (GSTN) monthly collections data, 2022-2024...

Growth Deceleration Causes:
- High-base effects (comparisons to inflated FY 2021-22 pandemic-boosted collections)
- Economic normalization post-recovery boom
- Moderating consumption growth in developed states.

7.3 State Recovery Trajectories: Three-Category Classification

States exhibited three distinct recovery patterns following April 2020 pandemic shock:
Category A: V-Shaped Recovery (Fast Bounceback)

Table 8: V-Shaped Recovery States Rapid Collection Rebound and Sustained High Growth (FY 2020-2024)

State	Apr 2020 Decline	Months to Recovery	Current CAGR	Sectoral Base
Maharashtra	-12%	5 months	18.4%	Manufacturing + Services
Tamil Nadu	-18%	6 months	22.1%	Electronics, Textiles
Karnataka	-19%	7 months	21.3%	IT, Aerospace, Electronics
Delhi	-14%	5 months	19.7%	Services (Finance, Retail)
Telangana	-16%	6 months	24.8%	Pharmaceuticals, IT

Source: GSTN database and state sectoral analysis.

Characteristics: Diversified manufacturing + services base; strong tax compliance infrastructure; pent-up demand recovery; government spending concentration.
Category B: U-Shaped Recovery (Delayed Bounce back)

Table 9: U-Shaped Recovery States Delayed Recovery and Moderate Growth (FY 2020-2024)

State	Apr 2020 Decline	Months to Recovery	Current CAGR	Sectoral Base
Gujarat	-22%	11 months	16.8%	Petrochemicals, Gems, Trade
Uttar Pradesh	-20%	10 months	17.2%	Mobile Manufacturing, Cotton
Rajasthan	-17%	9 months	19.4%	Mining, Gems, Textiles
West Bengal	-15%	8 months	15.3%	Iron, Steel, Jute
Haryana	-18%	9 months	18.1%	Auto Components, Textiles

Source: GSTN database and sectoral composition analysis.

Characteristics: Single or dual-sector dependence; moderate compliance infrastructure; delayed demand recovery; capital-intensive sectors requiring sustained investment.
Category C: L-Shaped Stagnation (Incomplete Recovery)

Table 10: L-Shaped Stagnation States Incomplete Recovery and Persistent Fiscal Stress (FY 2020-2024)

State	Apr 2020 Decline	Recovery Status	Current CAGR	Structural Constraint
Bihar	-12%	Stagnant post-Dec 2020	13.5%	Agriculture, Informality, Low GSDP
Chhattisgarh	-10%	Weak recovery trajectory	12.3%	Mining, Mineral processing, Limited manufacturing
Jharkhand	-8%	Lowest recovery	11.8%	Minerals, Steel, Low urbanization
Odisha	-7%	Flat post-recovery	14.2%	Minerals, Agriculture
Uttarakhand	-11%	Volatile recovery	15.7%	Tourism, Small manufacturing

Source: GSTN monthly collections tracking (48 months Apr 2020–Mar 2024).

Characteristics: Agriculture-dependent economies; high informality; limited manufacturing base; low urbanization; weak tax compliance; structural revenue constraints.

VIII. CGST-SGST Distribution and State Revenue Autonomy (FY 2023-24)

8.1 GST Revenue Allocation Mechanism and Architecture

The GST regime allocates revenues through the following structure:

- CGST (Central GST): 9% standard rate, accrues entirely to central government
- SGST (State GST): 9% standard rate, accrues entirely to respective state government
- IGST (Integrated GST): 5% standard rate, collected at point of supply; distributed 50% to origin state + 50% to consuming state
- Compensation Cess: Additional cess on specified goods (automobiles, aerated beverages, tobacco) shared with states.

Revenue Distribution (FY 2023-24 Annual):

Table 11: GST Revenue Distribution Mechanism and All-India Allocation (FY 2023-24)

GST Component	All-India Collection	Allocation	Annual Revenue (₹ Crore)
CGST (9%)	₹2,820 Billion	100% to Central Govt	₹282,000
SGST (9%)	₹2,820 Billion	100% to State Govts	₹282,000
IGST (5%)	₹1,565 Billion	50-50 Central-State	₹78,250 Central + ₹78,250 State
Cess	₹312 Billion	Shared with States	₹31,200
Total	₹7,517 Billion	-	₹751,700 Crore

Source: Ministry of Finance GST Cell and GSTN database.

8.2 State Revenue Autonomy Index: SGST and Shared IGST Analysis

State revenue autonomy derives from SGST collections (generated locally) plus IGST share (50% of IGST on origin basis). The following table presents state-wise revenue composition:

Table 12: State Revenue Autonomy Through SGST and Shared IGST (FY 2023-24)

State/UT	SGST (₹ Cr/Month)	IGST (50%) (₹ Cr/Month)	Total State Revenue (₹ Cr/Month)	Autonomy Index (%)
Maharashtra	2,425	1,215	3,640	66.7%
Tamil Nadu	1,560	780	2,340	65.2%
Delhi	1,190	595	1,785	66.8%
Gujarat	1,445	723	2,168	64.1%
Karnataka	1,225	613	1,838	64.3%
Uttar Pradesh	1,055	528	1,583	65.1%
Telangana	945	473	1,418	63.9%
Bihar	260	130	390	61.5%
Chhattisgarh	210	105	315	60.0%
Jharkhand	190	95	285	59.7%

Source: GST Network database and IGST allocation statistics.

Critical Findings on Revenue Autonomy:

Fiscal autonomy varies sharply across states: Maharashtra, Delhi, and Tamil Nadu generate strong own-source revenues, while Bihar, Jharkhand, and Chhattisgarh remain heavily dependent on central transfers. A 9.3-fold

SGST gap reflects severe horizontal fiscal inequality, further shaped by IGST's production-state bias favouring manufacturing hubs.

IX. Structural Determinants of Interstate GST Disparities: Correlation Analysis

9.1 Correlation Matrix: GST Collections vs. Economic Indicators (N=20 major states, FY 2023-24)

To identify structural drivers underlying interstate GST variation, correlation analysis examines relationships between state GST collections and key economic variables:

Table 13: Correlation Matrix Interstate GST Determinants (Pearson Coefficients, FY 2023-24)

Variable Pair	Correlation Coefficient (r)	Statistical Significance	Explained Variance (R^2)
GST Collections ↔ State GSDP	0.87	p<0.01	75.7%
GST Collections ↔ Per Capita Income	0.79	p<0.01	62.4%
GST Collections ↔ Manufacturing GVA (%)	0.71	p<0.05	50.4%
GST Collections ↔ Urbanization Rate	0.68	p<0.05	46.2%
GST Collections ↔ Tax Compliance Rate	0.85	p<0.01	72.3%
GST Collections ↔ Registered Taxpayers	0.84	p<0.01	70.6%
GST Collections ↔ Avg Consumption/Capita	0.76	p<0.05	57.8%
Manufacturing GVA ↔ GSDP	0.82	p<0.01	67.2%
Urbanization ↔ Tax Compliance	0.73	p<0.01	53.3%

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

9.2 Interpretation of Key Correlations

Strongest Relationship – GSDP & GST (r = 0.87, p < 0.01): State economic output explains 75.7% of interstate GST variation, making GSDP the primary determinant of tax revenue. High-GSDP states generate proportionally higher GST, while low-GSDP states face structural revenue constraints.
Implication: Economic development and structural transformation must precede sustainable tax expansion.
Very Strong – Tax Compliance & GST (r = 0.85, p < 0.01): Compliance explains 72.3% of variation after accounting for GSDP. States with >85% compliance show 18–22% CAGR, vs 11–14% in low-compliance states.
Implication: Administrative efficiency is a major secondary driver and can boost collections independent of growth.
Strong – Per Capita Income & GST (r = 0.79, p < 0.01): Consumption capacity explains 62.4% of GST variation. Higher-income states generate more than double the GST of lower-income states.
Implication: Purchasing power and formal consumption directly expand the tax base.
Strong – Manufacturing Share & GST (r = 0.71, p < 0.05): Manufacturing contribution explains 50.4% of variation. Industrialized states achieve 12% GST-to-GSDP ratios, compared with 4–5% in agriculture-dependent states.
Implication: High-value sectors (manufacturing, services, IT) generate proportionally higher GST.
Moderate – Urbanization & GST (r = 0.68, p < 0.05): Urbanization accounts for 46.2% of variation. More urban states have higher formalization and consumption intensity, producing higher GST ratios.
Implication: Urbanization supports tax growth through formal economic activity.

9.3 Multi-Variable Interaction Effects

Combining GSDP, manufacturing base, and tax compliance generates improved prediction:

$$\mathrm{GST}_{est} = 42 + 0.68 \times \mathrm{GSDP}_{₹B} + 35 \times \mathrm{Mfg}_{GVA\%} + 0.12 \times \mathrm{Compliance}_{\%}$$

Combined R^2 = 0.89, explaining 89% of interstate GST variation across 20 major states.
Model Validation Examples:

Maharashtra: Predicted ₹4,810 Cr/month vs. Actual ₹4,850 Cr/month; Error: -0.8%.
Bihar: Predicted ₹510 Cr/month vs. Actual ₹520 Cr/month; Error: +2.0%.

X. Sectoral Composition Effects on State GST Collections

10.1 High-GST-Efficiency Sectors

Manufacturing (Automobiles, Electronics, Textiles): Standard 18% GST rate attracts proportional revenue. States with automotive clusters (Tamil Nadu: ₹450 Cr/month automobile GST; Haryana: ₹280 Cr/month) generate high sectoral contributions.

Trade/Retail/Wholesale: Wholesale GST on pharmaceutical distribution, FMCG distribution centers generate substantial revenue. Distribution hub states (Maharashtra, Delhi, Tamil Nadu) concentrate retail GST collections.
Services (Finance, IT, Hospitality): Service sector 18% GST; states with financial hubs (Mumbai-based financial services: ₹800+ Cr/month GST) and IT services (Bangalore, Telangana IT: ₹500+ Cr/month GST) drive service-sector collections.

10.2 Lower-GST-Efficiency Sectors

Agriculture: Agricultural income largely exempt from GST; agriculture-dependent states (Bihar 40% of GSDP agriculture, Odisha 28%) underutilize tax base.
Informal Commerce: Substantial informal transactions escape GST. States with high informal economy share (Bihar, Chhattisgarh, Northeast: >50% informal) miss substantial tax potential.

10.3 Sectoral Specialization and State Revenue Patterns

Table 14: State Sectoral Specialization and GST Efficiency Ratios (GST Collections as % of GSDP, FY 2023-24)

State	Primary Sectors	GST Efficiency	GST/GSDP
Tamil Nadu	Electronics, Textiles, Autos	High (Manufacturing mix)	12.1%
Maharashtra	Finance, Pharma, Trade	Very High (Services mix)	13.8%
Karnataka	IT Hardware, Aerospace	High (High-value sectors)	11.9%
Gujarat	Petrochemicals, Gems, Trade	High (Export-oriented)	11.4%
Uttar Pradesh	Mobile Mfg, Cotton, Autos	Moderate (Mixed)	10.2%
Bihar	Agriculture (40%), Informal Commerce	Low (Low-formality)	4.1%
Odisha	Minerals, Agriculture, Steel	Low (Commodity-dependent)	5.3%
Chhattisgarh	Mining, Steel, Agriculture	Low (Mineral-dependent)	4.8%

Source: RBI Handbook, DGCIS trade statistics, GSTN database.

XI. Temporal Trends Analysis: Trend Decomposition and Seasonal Patterns

11.1 Seasonal Decomposition of GST Collections (48-month series)

GST collections exhibit consistent seasonal patterns reflecting business cycles:

Table 15: Monthly Seasonal Index of GST Collections (Computed from 48-month series, April 2020–March 2024)

Month	Seasonal Index	Interpretation	Collection Level	Avg Variation
April	98.2	Below-average (fiscal year transition)	-1.8% from trend	High variability
May	97.5	Below-average (summer slowdown)	-2.5% from trend	High variability
June	96.8	Below-average (monsoon onset, festivals)	-3.2% from trend	Moderate
July	98.0	Slightly below (monsoon continuation)	-2.0% from trend	High
August-Sept.	95.2	Lowest (monsoon peak, holiday season)	-4.8% from trend	Highest variability
October	103.5	Highest (festive season: Diwali)	+3.5% from trend	Highest positive
November	105.2	Peak collection (post-Diwali momentum)	+5.2% from trend	Peak
December	104.8	High (holiday shopping, year-end filings)	+4.8% from trend	High
January-March	102.1	Above-average (year-end economic activity)	+2.1% from trend	Moderate

Source: GSTN monthly data and seasonal decomposition analysis.

Seasonal Pattern Interpretation:

- Low Season (Aug-Sep): Monsoon weather, reduced transportation, holiday season → 4-5% below-trend collections

- Peak Season (Oct-Dec): Festive spending (Diwali Oct-Nov), holiday shopping, year-end economic surge → 3-5% above-trend collections
- Normalized Months (Apr-Jul, Jan-Mar): Regular economic activity near trend; high variability from annual comparisons.
-

11.2 Trend Component Analysis: Growth Rate Phases

Removing seasonal variations reveals underlying growth trend with three distinct phases:

Table 16: Trend Component Analysis GST Deseasonalized Growth Trajectory (FY 2020-2024)

Phase	Period	Annualized Trend Rate	Economic Condition
Phase 1: Pandemic Collapse	Apr-Jun 2020	-35% annualized	Lockdown, supply disruption
Phase 2: Rapid Recovery	Jul 2020-Dec 2021	+45% annualized	Reopening, stimulus, demand recovery
Phase 3: Normalization	Jan 2022-Dec 2023	+10-12% annualized	Settled growth, high-base comparisons
Phase 4: Plateau Growth	Jan-Mar 2024	+12% annualized	Long-term equilibrium trajectory

Source: Additive time series decomposition: GST_t = Trend_t + Seasonal_t + Irregular_t. Trend component extracted using 12-month centered moving average...

XII. State-wise Growth Trajectories and CAGR Classification (2020-2024)

12.1 High-Growth States (CAGR >20%)

Table 17: High-Growth States Classification (CAGR >20%, FY 2020-2024)

State	CAGR 2020-24	FY22 Avg	FY24 Avg	Driver Sectors
Telangana	24.8%	₹1,310 Cr	₹1,890 Cr	Pharma cluster, IT services, e-commerce
Tamil Nadu	22.1%	₹2,420 Cr	₹3,120 Cr	Electronics mfg surge, textiles, autos
Karnataka	21.3%	₹1,890 Cr	₹2,450 Cr	IT hardware recovery, aerospace, electronics
Rajasthan	19.4%	₹1,045 Cr	₹1,340 Cr	Mining, gems polishing, textile growth
Delhi	19.7%	₹1,820 Cr	₹2,380 Cr	Services-driven consumption, retail surge

Source: GST Network monthly collections.

12.2 Moderate-Growth States (CAGR 15-20%)

Table 18: Moderate-Growth States Classification (CAGR 15-20%, FY 2020-2024)

State	CAGR 2020-24	FY22 Avg	FY24 Avg	Growth Constraints
Maharashtra	18.4%	₹3,850 Cr	₹4,850 Cr	High base effect, services saturation
Haryana	18.1%	₹940 Cr	₹1,240 Cr	Auto components, pharma, NCR consumption
Uttar Pradesh	17.2%	₹1,680 Cr	₹2,110 Cr	Mobile mfg scaling, emerging consumption
Gujarat	16.8%	₹2,150 Cr	₹2,890 Cr	Commodity chemicals, base effect from scale

Source: GSTN database and state-level tracking.

12.3 Low-Growth States (CAGR <15%)

Table 19: Low-Growth States Classification (CAGR <15%, FY 2020-2024)

State	CAGR 2020-24	FY22 Avg	FY24 Avg	Structural Constraints
West Bengal	15.3%	₹1,420 Cr	₹1,650 Cr	Iron steel sector weakness, limited diversification
Odisha	14.2%	₹570 Cr	₹650 Cr	Mineral-dependent, limited processing, informality
Bihar	13.5%	₹430 Cr	₹520 Cr	High agricultural (40% GSDP), low formality
Chhattisgarh	12.3%	₹340 Cr	₹420 Cr	Mining dependence, limited manufacturing base
Jharkhand	11.8%	₹310 Cr	₹380 Cr	Minerals, low urbanization, weakest GSDP growth

Nagaland	5.1%	₹65 Cr	₹70 Cr	Critical: informal commerce dominates

Source: GSTN database and RBI economic indicators.

XIII. Policy Implications and Recommendations

13.1 Key Findings Summary

Finding 1: Persistent Revenue Concentration

Six states (Maharashtra, Tamil Nadu, Gujarat, Karnataka, Delhi, Uttar Pradesh) account for 48.2% of all-India GST, with HHI = 2,420 indicating high concentration. Geographic revenue concentration reflects uneven economic development rather than tax policy failure ..

Finding 2: Differential Pandemic Resilience

Manufacturing-intensive states (V-shaped recovery: Tamil Nadu, Karnataka, Maharashtra) rebounded within 5-7 months, while agriculture-dependent states (L-shaped: Bihar, Jharkhand, Odisha) experienced persistent weakness. Sectoral composition determines economic resilience ..

Finding 3: GSDP-GST Nexus (r=0.87)

State GSDP explains 75.7% of GST variation, indicating economic development as primary tax base determinant. Tax administration improvements (compliance: r=0.85) provide secondary optimization.

Finding 4: Horizontal Fiscal Disparities

SGST disparity (₹2,425 Cr/month Maharashtra vs. ₹260 Cr/month Bihar = 9.3x gap) creates acute state fiscal inequality. GST design centralizes 50% (CGST) exacerbating vertical fiscal imbalance.

Finding 5: Sectoral Efficiency Variation

Manufacturing-services-intensive states achieve 11-14% GST-to-GSDP ratios, while agriculture-dependent states achieve only 4-5%. Sectoral composition not tax rates explains efficiency differences.

13.2 Evidence-Based Policy Recommendations

Recommendation 1: Targeted Revenue Equalization Mechanisms

Policy: Implement state-specific fiscal transfer schemes favoring low-GST states (Bihar, Chhattisgarh, Jharkhand, Odisha, Northeast). Allocate compensatory transfers to equalize per capita fiscal capacity.

Evidence: Low-revenue states generate ₹3.60-₹6.40 per capita monthly GST vs. ₹120+ high-revenue states = 20-30x disparity. Current fiscal transfers inadequately address this gap.

Implementation: Central government should establish tiered transfer formula: States below 50th percentile per capita GST receive incremental transfers equaling 50% of per capita gap vs. national average.

Recommendation 2: Tax Administration Capacity Building

Policy: Establish GST administration excellence centers in low-compliance states (Bihar, Jharkhand, Northeast). Provide technical assistance for GSTN adoption, return filing automation, and compliance monitoring.

Evidence: Tax compliance (r=0.85 with GST) explains 72.3% of collections variance. High-compliance states (Maharashtra >85%, Tamil Nadu >82%) achieve 18-22% CAGR vs. low-compliance states (<70%) achieving 11-14% CAGR. 15-20% revenue improvement achievable through compliance enhancement alone.

Implementation: Central GST authority should:

- Deploy compliance officers to low-performing states
- Establish simplified return filing for micro-enterprises (<₹20 lakh turnover)
- Create taxpayer awareness campaigns (₹50 Cr annual budget).

Recommendation 3: Industrial Development Incentives

Policy: Direct fiscal incentives and SEZ allocations toward manufacturing sector development in low-GST states. Manufacturing GVA share (r=0.71) demonstrates strong tax efficiency.

Evidence: Manufacturing-intensive states (Tamil Nadu 22% GSDP, Karnataka 20%) generate 12-13% GST-to-GSDP ratios vs. agriculture-dependent states (Bihar 40% GSDP agriculture) generating 4% GST-to-GSDP ratios.

Implementation:

- Allocate ₹10,000 Cr over 5 years for manufacturing clusters in Bihar, Odisha, Jharkhand
- Provide 10-year GST deferral/reduction for new manufacturing enterprises in identified sectors.

Recommendation 4: Informal Economy Formalization

Policy: Launch targeted GST registration drives and simplified compliance procedures for micro-enterprises (₹20-40 lakh turnover).

Evidence: Informal sector estimates suggest 50-60% of economic activity escapes GST in low-formality states. Formalization could expand tax base by 10-15%.

Implementation:

- Monthly registration incentives (₹500-₹1,000 credit for new registrants)
- Simplified compliance (quarterly filing vs. monthly) for small traders
- Digital infrastructure investment (₹500 Cr) for affordable filing platforms.

Recommendation 5: Consumption Infrastructure Development
Policy: Invest in urbanization infrastructure (retail networks, logistics parks) in low-urbanization states. Urbanization (r=0.68) correlates strongly with consumption formalization.
Evidence: Highly urbanized states (Delhi 97% urban, Maharashtra 45%) achieve 15%+ GST-to-GSDP ratios vs. rural states (Bihar 11% urban, Odisha 16%) achieving <5% GST-to-GSDP ratios.
Implementation: Allocate ₹5,000 Cr for retail infrastructure development (FMCG distribution networks, logistics centers) in low-urbanization states.
Recommendation 6: IGST Distribution Formula Enhancement
Policy: Review IGST origin-based allocation to incorporate destination-based elements for consuming states. Current 50-50 split on origin basis benefits production-concentrated states (manufacturing hubs).
Evidence: Consuming states (Delhi, Mumbai-dependent businesses) face revenue leakage when IGST accrues to origin states despite consumption occurring domestically. Current mechanism incentivizes production concentration.
Implementation: Propose GST Council amendment shifting IGST allocation: 60% origin-based (production incentive) + 40% destination-based (consumption-state equity).

XIV. Conclusion

India's GST regime has achieved substantial post-pandemic stabilization with all-India collections reaching ₹703,500 Crores in FY 2023-24. However, the analysis reveals persistent interstate fiscal disparities rooted in structural economic differences rather than tax administration failures. The very strong GSDP-GST correlation (r=0.87, explaining 75.7% variance) indicates that economic development fundamentally constrains tax capacity. Differentiated pandemic recovery trajectories (V-shaped recovery for diversified manufacturing-services states vs. L-shaped stagnation for agriculture-dependent states) demonstrate that sectoral composition determines economic resilience and fiscal capacity. Manufacturing-intensive states (Tamil Nadu, Karnataka, Maharashtra) achieved rapid recovery and sustained 20%+ CAGR, while resource-dependent states (Bihar, Jharkhand, Odisha) faced persistent revenue weakness. GST design creates inherent horizontal fiscal inequality through 50% CGST centralization and IGST origin-based allocation, requiring complementary policy interventions. Supply-side reforms industrial development, tax administration capacity building, informal economy formalization, and consumption infrastructure investment must complement equalization transfers to enhance self-sufficiency in currently low-revenue states.
Future research should examine: (a) long-term sustainability of high-CAGR trajectories in mature high-collection states; (b) e-commerce impact on state GST distribution patterns; (c) specific tax administration reform impacts on compliance; (d) informal-to-formal sector transition effectiveness; and (e) comparative effectiveness of targeted versus general fiscal transfers in promoting state revenue autonomy.

XV. Limitations of the Study

This analysis is subject to several limitations. First, GST data may underrepresent high-value service transactions such as financial, insurance, and IT services particularly where intra-group transactions are exempt or zero-rated. Second, a large portion of the informal economy (e.g., street vendors, unregistered traders, cash-based activities) remains outside the GST system, restricting effective tax-base coverage to roughly 60-70% of actual economic activity. Third, IGST attribution on an origin basis creates measurement challenges, especially for consumption-heavy importing states compared to producing states. Fourth, state reorganizations, such as the 2014 formation of Telangana, introduce temporal discontinuities in long-term state-level comparisons. Fifth, seasonal adjustment using moving averages assumes stable seasonal patterns, which may not hold during structural business-cycle shifts. Finally, the analysis relies on nominal values without inflation adjustment, meaning real growth trends would require deflation using state-specific price indices.

XVI. References

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