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Structural Transformation of The Indian Economy: From Agriculture to Services

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Abstract: This paper examines the structural transformation of the Indian economy from an agrarian-dominant system to a services-led growth model over the period 1950–2024. Unlike the classical trajectory observed in Western industrializing nations—where manufacturing served as the intermediary between agriculture and services—India has experienced a distinctive leap, bypassing a sustained manufacturing phase. Using time-series data from the National Statistical Office (NSO), Reserve Bank of India (RBI), and World Bank Development Indicators, this study employs trend decomposition, shift-share analysis, and ordinary least squares (OLS) regression to quantify the pace, direction, and determinants of India's structural change. The findings reveal that the services sector's share of Gross Value Added (GVA) rose from 30.5% in 1950–51 to 54.6% in 2023–24, while agriculture declined from 51.9% to 15.0% during the same period. However, employment reallocation has significantly lagged output reallocation, creating a structural dualism characterized by low-productivity employment retention in agriculture. The paper further identifies liberalization (1991), information technology expansion, urbanization, and human capital accumulation as primary drivers of this transformation, while flagging premature deindustrialization and agrarian distress as policy concerns. The study contributes to the literature by offering an integrated quantitative assessment of India's anomalous structural path and its implications for inclusive growth.

Keywords: Structural transformation, Indian economy, services-led growth, premature deindustrialization, sectoral productivity, Gross Value Added

JEL Classification: O14, O53, L80, Q10

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1. INTRODUCTION

Structural transformation—the reallocation of economic activity and employment across the agricultural, industrial, and services sectors—is a defining feature of long-run economic development. The canonical model, rooted in the works of Fisher (1939), Clark (1940), and Kuznets (1966), posits a sequential transition from agriculture to manufacturing to services as economies mature, per capita incomes rise, and Engel's Law reduces the relative demand for food products. This pattern was broadly validated by the historical experience of Western Europe, North America, and East Asia, where industrialization served as the engine of growth, absorbing surplus agricultural labor and generating economy-wide productivity gains.

India's experience, however, represents a significant departure from this canonical trajectory. Since independence in 1947, and particularly after the economic liberalization of 1991, India has witnessed a rapid expansion of the services sector in both output and, to a lesser extent, employment, without a correspondingly robust or sustained phase of manufacturing-led industrialization. By 2023–24, services accounted for approximately 54.6% of India's Gross Value Added (GVA) at basic prices, while manufacturing's share remained relatively modest at around 17.4%, and agriculture, though declining in output share, continued to employ approximately 42.3% of the workforce (NSO, 2024; Periodic Labour Force Survey, 2023–24).

This anomalous pattern raises several important questions. First, what has been the precise trajectory and pace of structural change in India across different sub-periods? Second, what factors have driven this services-led transformation, and why has manufacturing failed to serve its traditional role as the absorber of agricultural surplus labor? Third, what are the implications of this pattern for productivity growth, employment generation, income inequality, and sustainable development? Fourth, how does India's structural path compare with international benchmarks and alternative development trajectories?

This paper addresses these questions through a systematic empirical analysis spanning over seven decades (1950–51 to 2023–24). It contributes to the existing literature in several ways. First, it provides an updated and comprehensive quantitative mapping of India's structural transformation using the most recent national accounts data. Second, it integrates output-side and employment-side analyses to highlight the persistence of structural dualism. Third, it employs shift-share decomposition and regression analysis to identify the drivers and determinants of sectoral change. Fourth, it contextualizes India's experience

within comparative international frameworks to assess the distinctiveness and sustainability of its development path.

The remainder of the paper is structured as follows. Section 2 reviews the theoretical and empirical literature on structural transformation, with a focus on India. Section 3 outlines the data sources, variables, and methodology. Section 4 presents the empirical results, including descriptive trends, decomposition analysis, and regression estimates. Section 5 discusses the findings and their policy implications. Section 6 concludes.

2. LITERATURE REVIEW

2.1. Theoretical Foundations

The theoretical literature on structural transformation can broadly be organized around three key mechanisms that drive sectoral reallocation. The first operates on the demand side and is rooted in Engel's Law and non-homothetic preferences. As incomes rise, the proportion of expenditure devoted to food and agricultural goods declines, while demand shifts toward manufactured products and, eventually, services (Kongsamut *et al.*, 2001). The second mechanism works through the supply side, reflecting differences in the pace of technological progress across sectors. When productivity growth in agriculture and manufacturing exceeds that in services—as highlighted by Baumol's cost disease hypothesis—relative prices adjust in a way that increases the nominal share of services, even in the absence of changes in real consumption patterns (Baumol, 1967; Ngai and Pissarides, 2007). The third mechanism relates to the role of international trade, where patterns of comparative advantage influence a country's sectoral specialization and the trajectory of structural change (Matsuyama, 2009).

The classical dual-economy model developed by Lewis (1954) provides an additional perspective that is particularly relevant for developing economies such as India. In this framework, surplus labor in the traditional agricultural sector is gradually absorbed into the modern capitalist sector, typically manufacturing, facilitating capital accumulation and structural transformation. The process continues until the surplus labor is fully absorbed, at which point wages begin to rise across sectors—a stage often referred to as the "Lewis turning point."

2.2. India's Structural Transformation in the Literature

A substantial body of work has examined the process of structural transformation in India, with particular emphasis on its distinctive services-led trajectory. Bhagwati

(1984), and later Panagariya (2008), argue that India's comparative advantage in services—especially in areas such as information technology, business process outsourcing, telecommunications, and financial services—emerged as a natural outcome of its investments in human capital and widespread use of the English language, despite relatively low levels of per capita income.

Gordon and Gupta (2004) offer one of the earlier systematic analyses of this shift, showing that the acceleration in services growth following the 1991 reforms was largely driven by communications, financial services, business services, and community services. They attribute this expansion to the combined effects of economic liberalization and advances in information technology, and argue that the observed growth was not simply the result of an expanding public sector but reflected genuine dynamism in market-oriented producer services.

Kochhar *et al.* (2006) and Dasgupta and Singh (2006) examine the idea of "premature deindustrialization" in the Indian context. Their findings suggest that manufacturing has underperformed relative to the country's stage of development, constrained by factors such as rigid labor regulations, infrastructure bottlenecks, and policy distortions favoring small-scale production. In this setting, the services sector appears to have taken on a leading role in driving growth earlier than would typically be expected.

More recent contributions, including Chatterjee and Subramanian (2020), consider whether India's services-led growth model is sustainable and capable of generating sufficient employment. While they find that IT-enabled services have been both export-competitive and productivity-enhancing, they also note that a large share of employment within the services sector remains concentrated in low-productivity, informal activities such as petty trade, domestic work, and transport.

From an employment perspective, Mehrotra and Parida (2019) document the relatively slow pace at which labor has moved out of agriculture, despite significant shifts in output toward other sectors. They emphasize the role of factors such as education, skill formation, gender, and caste in shaping access to non-agricultural employment, contributing to a segmented labor market and the persistence of structural dualism.

2.3. Research Gap

While the existing literature has provided valuable insights into India's structural transformation, several gaps remain. Much of the empirical work relies on data that

extend only up to 2015 or earlier, and therefore does not capture key developments over the past decade, including the introduction of the Goods and Services Tax (GST), the expansion of digitalization, the impact of the COVID-19 pandemic, and the patterns of recovery that have followed. In addition, relatively few studies examine output shares and employment shares within a single analytical framework that also accounts for productivity differentials and how these evolve over time. This paper seeks to address these limitations by offering an updated and comprehensive analysis using an integrated methodological approach..

3. DATA AND METHODOLOGY

3.1. Data Sources

The study uses annual data on sectoral Gross Value Added (GVA) at constant prices, employment, and related macroeconomic indicators sourced from the National Statistical Office (NSO), Reserve Bank of India's Handbook of Statistics on Indian Economy, and the Annual Survey of Industries.

Employment data are drawn from the quinquennial rounds of the National Sample Survey (NSS) Employment-Unemployment Surveys, covering the period from 1972–73 to 2011–12, and from the Periodic Labour Force Survey (PLFS) for the years 2017–18 onwards. Additional macroeconomic indicators are obtained from the Reserve Bank of India's Handbook of Statistics on the Indian Economy. For international comparisons, data are sourced from the World Bank's World Development Indicators (WDI) database.

The present study uses National Accounts Statistics data with 2011-12 as the base year for computing real Gross Value Added (GVA) and sectoral shares. It is acknowledged that the National Statistical Office (NSO), Government of India, has recently revised the base year of the national accounts' series from 2011-12 to 2022-23, with the new series released in 2026. However, the 2011-12 base year series has been retained in this study for the following reasons:

***Availability of a long and consistent time series*:** The 2011-12 base year series provide a continuous and internally consistent back-series spanning the entire study period (e.g., 1991–2023 or 2000–2023). The revised 2022-23 base year series, at the time of undertaking this research, did not offer a comparable back-series of sufficient length to conduct meaningful long-term structural change analysis.

***Comparability with existing literature*:** The overwhelming majority of published studies on India's structural transformation — including those by the Reserve Bank

of India, NITI Aayog, the Economic Survey, and academic researchers — have used the 2011-12 base year series. Retaining the same base ensures comparability of findings and facilitates cross-study validation.

***Methodological consistency*:** Shifting to the new base year mid-analysis would require splicing datasets constructed under different methodologies (e.g., revised classification of sectors, updated coverage of enterprises, new data sources), potentially introducing measurement inconsistencies into the decomposition results.

***Substantive conclusions remain robust*:** Base year revisions primarily affect the *level* of GDP and sectoral GVA estimates through updated weights and coverage, but the broad *trends* and *direction* of structural change (declining agricultural share, rising services share) remain qualitatively unchanged across base year revisions. The analytical conclusions of this study regarding the pattern and pace of structural transformation are therefore unlikely to be materially altered by the choice of base year.

It is recommended that future research replicate this analysis using the 2022-23 base year series once a sufficiently long back-series becomes available.

3.2. Variable Definitions

The analysis adopts a three-sector classification in line with standard national accounting conventions. The agriculture sector comprises agriculture, forestry, fishing, and related activities. The industry sector includes mining and quarrying, manufacturing, electricity, gas, water supply, and construction. The services sector covers trade, hotels, transport, communication, financial services, real estate, professional services, public administration, defense, and other services. Sectoral output is measured using Gross Value Added (GVA) at basic prices, while employment is defined on the basis of the usual principal status (UPS) criterion to ensure comparability across survey rounds.

3.3. Analytical Framework

The study employs four complementary analytical approaches. First, descriptive trend analysis is used to trace the evolution of sectoral shares in both output and employment over time, with a view to identifying structural breaks and periods of acceleration. Second, a shift-share decomposition of aggregate labor productivity growth is undertaken, following the approach originally proposed by Fabricant (1942) and later adapted by Timmer and de Vries (2009). This method decomposes

overall productivity growth into two components: a within-sector effect, capturing productivity improvements within individual sectors, and a structural change effect, reflecting the reallocation of labor across sectors with differing productivity levels. Formally, the decomposition can be expressed as follows:

$$\Delta P = \sum_i s_{i,t-1}\,\Delta p_i + \sum_i p_{i,t}\,\Delta s_i \quad (1)$$

Where,

ΔP is change in aggregate labour productivity of the economy between period $t-1$ and period t,

$s_{i,t-1}$ is employment share of sector i in the initial (base) period t−1 i.e., $s_{i,t-1} = \frac{L_{i,t-1}}{Lt-1}$

p_i is productivity in sector i,

$p_{i,t}$ labour productivity of sector i in the terminal period t, defined as output per worker: $p_{i,t} = \frac{Y_{i,t}}{Lt,t}$

s_i is the employment share of sector i.

The first term captures the within-sector effect and the second captures the structural change effect (reallocation effect). Third, an OLS regression model is estimated to identify the determinants of sectoral output shares. The model takes the general form:

$$Y_{it} = \alpha + \beta_1 \ln(PCGDP_t) + \beta_2 URBAN_t + \beta_3 OPEN_t + \beta_4 REFORM_t + \beta_5 TECHEXP_t + \epsilon_t \quad (2)$$

Where,

Y_{it} is the dependent variable — the share (output or employment) of sector *i* in GDP at time *t*, expressed as a percentage or fraction,

i is the sector index, where i ∈ {A, M, S} denoting Agriculture, Manufacturing/ Industry, and Services

t is time period (year of observation)

α is intercept (constant term); represents the expected value of YitY_{it}Yit when all explanatory variables are zero

β_1 is coefficient on log per capita GDP; measures the elasticity (percentage-point change) of the sectoral share with respect to a proportional change in per capita income,

$\ln(PCGDP_t)$ is natural logarithm of real per capita GDP at time t; captures the level of economic development. The log transformation accounts for diminishing marginal effects of income on structural composition

β_2 is coefficient on urbanisation; measures the marginal effect of a one-unit increase in the urbanisation rate on the sectoral shar

$URBAN_t$ is urbanisation rate at time ttt; defined as the percentage of total population living in urban areas,

β_3 is coefficient on trade openness; measures the marginal effect of openness on the sectoral shar

$OPEN_t$ is Trade openness at time t; typically defined as (Exports+Imports)/ GDP×100 representing the degree of integration with the global economy

β_4 is coefficient on the reform variable; captures the impact of economic reforms/liberalisation on sectoral composition

$REFORM_t$ is economic reform indicator at time t; this may be a dummy variable (e.g., =1 for post-reform period, =0 otherwise) or a continuous index measuring the extent of policy liberalisation (e.g., deregulation, privatisation, delicensing)

β_5 is coefficient on technology expenditure; measures the marginal effect of technology spending on the sectoral share

$TECHEXP_t$ is technology expenditure at time ttt; typically measured as R&D expenditure as a percentage of GDP, or total public and private spending on science, technology, and innovation

ϵ_t is error term (stochastic disturbance) at time t; captures all other unobserved factors affecting the sectoral share. Assumed to satisfy ϵ_t ~N(0, σ2) with standard OLS assumptions (zero mean, constant variance, no autocorrelation).

This regression model estimates how the sectoral composition of the economy (the share of sector i) is influenced by the level of economic development, urbanisation, trade integration, policy reforms, and technological investment. The model is grounded in structural change theory, which posits that as economies develop, resources systematically shift from agriculture to industry and eventually to services.

3.4. Estimation Procedures

All regression models are estimated using OLS with Newey-West heteroskedasticity and autocorrelation consistent (HAC) standard errors to account for the time-series nature of the data. The Augmented Dickey-Fuller (ADF) test is applied to verify

stationarity properties. Where variables are found to be integrated of order one, the models are estimated in first differences or, where cointegration is established via the Engle-Granger two-step procedure, in error-correction form. Structural breaks are tested using the Chow test at the hypothesized break point of 1991.

4. EMPIRICAL RESULTS

4.1. Sectoral Composition of Output: Trends and Transitions

Table 1 presents the sectoral shares of GVA at current basic prices for selected years from 1950–51 to 2023–24, organized by decade to illustrate the long-run trajectory of structural change.

Table 1: Sectoral Shares of Gross Value Added at Current Basic Prices (%), Selected Years

Year	*Agriculture & Allied*	*Industry*	*Services*	*Total*
(1)	(2)	(3)	(4)	(5)
1950–51	51.9	14.2	30.5	100.0*
1960–61	47.6	16.6	33.8	100.0*
1970–71	41.7	20.5	35.2	100.0*
1980–81	35.7	24.3	37.1	100.0*
1990–91	29.3	26.5	41.1	100.0*
2000–01	23.0	26.0	48.8	100.0*
2010–11	18.2	27.2	52.0	100.0*
2014–15	16.5	26.7	53.2	100.0*
2019–20	15.9	25.5	55.3	100.0*
2020–21	18.3	25.0	53.6	100.0*
2021–22	16.8	26.6	53.8	100.0*
2022–23	15.4	26.1	55.0	100.0*
2023–24	15.0	26.3	54.6	100.0*

Note: Totals may not sum to exactly 100 due to statistical discrepancies and rounding. The "Industry" column includes mining, manufacturing, electricity, gas, water supply, and construction. Figures marked with asterisks include minor adjustments for statistical discrepancy not allocated to sectors.

Source: National Accounts Statistics, NSO, Government of India (various issues); RBI Handbook of Statistics on Indian Economy, 2024. Figures for 1950–51 to 1999–2000 are based on spliced back-series linking the 1999–2000, 2004–05, and 2011–12 base-year series using sectoral growth rates. Figures for 2011–12 onwards are from the 2011–12 base-year series directly published by NSO. The splicing methodology follows the approach used by the RBI in its Handbook of Statistics (2024), where overlapping-year ratios are used to convert earlier-base data to the most recent base-year framework.

Estimation Note for Table 1: Data for 1950–51 to 2004–05 are drawn from the CSO's back-series estimates as compiled in the RBI Handbook of Statistics (Table 3: Gross Domestic Product at Factor Cost by Industry of Origin). For the period

2011–12 onwards, data correspond to the GVA at basic prices series published under the new 2011–12 base-year methodology (NSO, National Accounts Statistics 2024). The transition from GDP at factor cost to GVA at basic prices involves the inclusion of production taxes less production subsidies, and the figures for earlier periods have been approximately adjusted for conceptual comparability using the linking factors published by CSO (2015) in their back-series report.

The data reveal several key patterns. Agriculture's share declined continuously from 51.9% in 1950–51 to 15.0% in 2023–24, representing a reduction of approximately 36.9 percentage points over seven decades. The pace of decline was relatively uniform across decades, averaging approximately 5 percentage points per decade, though it slowed after 2010 as agriculture's share approached its structural floor. Notably, the temporary uptick to 18.3% in 2020–21 reflects the differential impact of the COVID-19 pandemic: agriculture proved resilient while industry and services contracted sharply, demonstrating the sector's continued role as a buffer during economic crises.

Industry's share rose from 14.2% to a peak of approximately 27.2% in 2010–11, before stabilizing and even slightly declining to 26.3% by 2023–24. This trajectory suggests that India's industrial deepening stalled well before achieving the levels (35–40%) reached by successfully industrializing East Asian economies at comparable stages of their development.

The services sector exhibited the most dramatic expansion, rising from 30.5% to 54.6%. Notably, the acceleration was most pronounced in the 1990s and 2000s, coinciding with economic liberalization, the IT revolution, and telecommunications expansion. Services overtook agriculture as the largest sector by the late 1970s and overtook agriculture plus industry combined by the early 2010s.

4.2. Sectoral Composition of Employment

Table 2 presents the distribution of employment across sectors for years in which comprehensive survey data are available.

Table 2: Sectoral Distribution of Employment (% of Total Employment, Usual Principal Status)

Year	*Agriculture & Allied*	*Industry*	*Services*	*Total*
(1)	(2)	(3)	(4)	(5)
1972–73	73.9	11.2	14.9	100.0
1977–78	71.4	12.3	16.3	100.0
1983	68.6	13.8	17.6	100.0

Year	*Agriculture & Allied*	*Industry*	*Services*	*Total*
(1)	(2)	(3)	(4)	(5)
1987–88	64.9	15.6	19.5	100.0
1993–94	64.0	15.1	20.9	100.0
1999–00	60.4	16.4	23.2	100.0
2004–05	58.5	18.2	23.3	100.0
2011–12	48.9	24.3	26.8	100.0
2017–18	44.1	24.9	31.0	100.0
2018–19	42.5	25.5	32.0	100.0
2019–20	42.5	25.4	32.1	100.0
2020–21	46.5	23.7	29.8	100.0
2021–22	45.5	24.4	30.1	100.0
2022–23	43.2	25.2	31.6	100.0
2023–24	42.3	25.8	31.9	100.0

Source: NSS Employment-Unemployment Survey Reports (27th Round 1972–73; 32nd Round 1977–78; 38th Round 1983; 43rd Round 1987–88; 50th Round 1993–94; 55th Round 1999–2000; 61st Round 2004–05; 68th Round 2011–12), NSSO, Government of India. Data for 2017–18 onwards are from the Periodic Labour Force Survey (PLFS) Annual Reports published by NSO. Employment is measured by usual principal status (ps) for workers aged 15 years and above for PLFS data and all ages for NSS rounds (adjusted for comparability where feasible).

Estimation Note for Table 2: The NSS rounds up to 2011–12 used a different reference period and age classification (all ages, 15+ adjusted) compared to the PLFS (which reports workers aged 15 years and above). To ensure approximate comparability, the NSS figures for earlier rounds have been adjusted using the ratio of 15+ employment to total employment as reported in the respective NSS reports. The industry classification also underwent revision (from NIC-1998 to NIC-2004 to NIC-2008), and concordance tables published by NSSO have been applied to reclassify earlier data into the three broad sectors. Minor discrepancies of 1–2 percentage points may persist due to these harmonization procedures.

The employment data reveal a crucial asymmetry: while agriculture's share of output fell by 36.9 percentage points between 1950–51 and 2023–24, its share of employment fell by approximately 31.6 percentage points from the first available comprehensive data point (1972–73). More critically, as of 2023–24, agriculture still employed 42.3% of the workforce while contributing only 15.0% of GVA—implying a massive productivity gap. Conversely, services contributed 54.6% of output with only 31.9% of employment. This divergence between output shares and employment shares is the hallmark of India's incomplete structural transformation and has profound implications for income distribution and poverty.

4.3. Sectoral Labor Productivity Analysis

Table 3 computes relative labor productivity (measured as the ratio of a sector's output share to its employment share) across time. A ratio of 1.0 indicates that the sector's productivity is equal to the economy-wide average; values below 1.0 indicate below-average productivity, and values above 1.0 indicate above-average productivity.

Table 3: Relative Labor Productivity by Sector (Ratio of GVA Share to Employment Share)

Year	*Agriculture & Allied*	*Industry*	*Services*
(1)	(2)	(3)	(4)
1972–73	0.60	1.83	2.36
1983	0.55	1.60	2.14
1993–94	0.46	1.75	1.97
1999–00	0.38	1.59	2.10
2004–05	0.32	1.50	2.24
2011–12	0.37	1.12	1.94
2017–18	0.37	1.06	1.78
2019–20	0.37	1.00	1.72
2022–23	0.36	1.04	1.74
2023–24	0.35	1.02	1.71

Source: Computed by the author using GVA share data from Table 1 and employment share data from Table 2. Relative labor productivity for sector (i) in year (t) is calculated as:

$$RLP_{i,t} = \frac{GVA_Share_{i,t}}{Employment_Share_{i,t}} \quad (3)$$

Estimation Note for Table 3: Since GVA data and employment data do not always correspond to the same fiscal year (GVA is reported for fiscal years while NSS rounds span calendar years), the closest available matching years have been paired. For instance, the 1993–94 NSS employment data are matched with 1993–94 GVA data. For PLFS years (2017–18 onwards), exact fiscal year matching is possible. All computations use current price GVA shares to maintain consistency with the nominal productivity interpretation.

The results reveal that agriculture's relative productivity has remained persistently below 0.40 since the mid-1990s, indicating that a worker in agriculture produces, on average, only about 35–40% of the economy-wide average output. This represents a slight improvement from the 0.32 nadir in 2004–05 (reflecting subsequent agricultural terms-of-trade improvements and some labor exit), but remains indicative of severe disguised unemployment and underemployment in the sector.

Industry's relative productivity has declined from 1.83 in 1972–73 to 1.02 in 2023–24, suggesting a convergence toward the economy-wide average. This decline reflects the absorption of relatively lower-skilled workers into construction and informal manufacturing—subsectors with lower productivity than organized manufacturing.

Services maintain the highest relative productivity at 1.71 in 2023–24, though this too has declined from 2.36 in 1972–73. The decline reflects the compositional shift within services: while high-productivity IT, financial, and business services have grown rapidly, much of the employment absorption has occurred in lower-productivity segments such as retail trade, domestic services, and transport operations.

4.4. Shift-Share Decomposition of Productivity Growth

Table 4 presents the results of the shift-share decomposition of aggregate labor productivity growth for different sub-periods.

Table 4: Shift-Share Decomposition of Aggregate Labor Productivity Growth (% per annum)

Period	*Aggregate Productivity Growth*	*Within-Sector Effect*	*Structural Change (Reallocation) Effect*	*Interaction Effect*
(1)	(2)	(3)	(4)	(5)
1972–73 to 1983	1.82	1.41	0.32	0.09
1983 to 1993–94	2.95	2.28	0.54	0.13
1993–94 to 2004–05	3.87	3.02	0.68	0.17
2004–05 to 2011–12	5.43	3.71	1.42	0.30
2011–12 to 2017–18	4.86	3.94	0.72	0.20
2017–18 to 2023–24	3.52	2.98	0.41	0.13

Source: Computed by the author using sectoral GVA (at constant 2011–12 prices) and employment data from NSO National Accounts Statistics and NSS/PLFS surveys respectively.

Estimation Note for Table 4: The decomposition follows the three-term methodology of Timmer and de Vries (2009):

$$\Delta P = \sum_i s_{i,0}\,\Delta p_i + \sum_i p_{i,T}\,\Delta s_i + \sum_i \Delta p_i \cdot \Delta s_i \qquad (4)$$

where subscripts 0 and T denote the beginning and end of the period, p_i is labor productivity (real GVA per worker) in sector i, and s_i is the employment share. The first term is the within-sector effect, the second is the static reallocation (structural change) effect, and the third is the dynamic interaction (cross) term. Real GVA at constant 2011–12 prices is computed using sector-specific deflators from NSO back-series for earlier periods and direct NSO estimates for 2011–12 onwards. Employment in absolute numbers is derived by applying sectoral percentage shares

(Table 2) to total employment estimates from the respective NSS/PLFS rounds and Census economic activity rates for interpolation in non-survey years.

The decomposition reveals several important findings. First, the within-sector effect dominates in all periods, accounting for 70–82% of total productivity growth. This indicates that productivity improvements within sectors—driven by technological change, capital deepening, and efficiency gains—have been more important than labor reallocation between sectors in driving aggregate productivity growth.

Second, the structural change effect was highest during 2004–05 to 2011–12 (1.42 percentage points per annum), a period that coincided with particularly rapid movement of workers out of agriculture into construction and services. This was also the period of India's fastest GDP growth (averaging over 8% per annum), suggesting that structural reallocation and rapid growth are mutually reinforcing.

Third, the structural change effect has diminished in the most recent period (2017–18 to 2023–24, only 0.41 percentage points), partly reflecting the COVID-19-induced reverse migration to agriculture and the subsequent slow pace of re-urbanization, as well as the more general slowdown in labor absorption capacity of the formal economy.

4.5. Decade-wise Sectoral Growth Rates

Table 5 presents the compound annual growth rates (CAGR) of real GVA by sector for each decade since 1950–51.

Table 5: Sectoral Compound Annual Growth Rates of Real GVA (%)

Period	*Agriculture & Allied*	*Industry*	*Services*	*Overall GDP*
(1)	(2)	(3)	(4)	(5)
1950–51 to 1960–61	2.7	5.9	4.4	3.6
1960–61 to 1970–71	2.3	5.3	4.8	3.4
1970–71 to 1980–81	1.8	4.4	4.5	3.2
1980–81 to 1990–91	3.6	6.8	6.6	5.2
1990–91 to 2000–01	2.9	5.6	7.6	5.6
2000–01 to 2010–11	3.3	7.8	9.1	7.0
2010–11 to 2019–20	3.5	5.6	7.7	6.3
2019–20 to 2023–24	3.0	4.8	6.8	5.3

Source: Computed by the author from constant-price GVA/GDP series published in National Accounts Statistics (NSO, various years) and RBI Handbook of Statistics on Indian Economy, 2024. Growth rates for 1950–51 to 2004–05 are based on the spliced constant-price GDP series at 2004–05 prices. Growth rates from 2011–12 onwards are based on GVA at constant 2011–12 basic prices. The overlap year of 2011–12 is used to verify consistency across the two series, and discrepancies of less than 0.2 percentage points are within acceptable tolerance.

Estimation Note for Table 5: CAGR is computed as:

$$CAGR = \left(\frac{GVA_T}{GVA_0}\right)^{\frac{1}{T-0}} - 1 \quad (5)$$

where GVA_T and GVA_0 are real GVA at the terminal and initial years respectively. For the base-year transitions (1999–2000 to 2004–05 to 2011–12), constant-price series have been linked using the ratio at the overlap year. The 2019–20 to 2023–24 period includes the COVID-19 contraction year (2020–21, with GDP declining by 5.8%) and subsequent recovery, which affects the average growth rate interpretation.

The growth rate data illuminate the structural transformation dynamics. Services growth has consistently outpaced agriculture since the 1960s and has exceeded industry growth since the 1990s. The decade of 2000–01 to 2010–11 represents the peak of India's services expansion (9.1% CAGR), driven by the IT/BPO boom, financial sector expansion, telecommunications revolution, and rising urban consumer spending. Agriculture's growth, while improving modestly over time (from the "Hindu rate" of 1.8% in the 1970s to around 3.0–3.5% subsequently), has consistently lagged overall GDP growth, mechanically reducing its share.

4.6. Sub-Sectoral Decomposition of Services

Table 6 disaggregates the services sector to identify which sub-sectors have driven its expansion.

Table 6: Sub-Sectoral Composition within Services (% of Total GVA at Current Prices)

Sub-Sector	*1990–91*	*2000–01*	*2010–11*	*2019–20*	*2023–24*
(1)	(2)	(3)	(4)	(5)	(6)
Trade, Hotels, Restaurants	11.8	13.2	12.3	12.7	12.5
Transport, Storage, Communication	5.7	7.3	7.4	6.8	6.9
Financial Services, Real Estate, Business Services	10.4	13.8	17.1	20.2	19.8
Public Administration, Defense	6.2	6.5	6.3	6.1	6.0
Other Services (Education, Health, Personal)	7.0	8.0	8.9	9.5	9.4
Total Services	41.1	48.8	52.0	55.3	54.6

Source: National Accounts Statistics, NSO (various years); RBI Database on Indian Economy. Classification follows the NAS 2011–12 base-year framework for 2010–11 onwards. Earlier figures are reclassified from NAS 2004–05 base and 1999–2000 base using concordance ratios at overlap years. The sub-sectoral categories are aggregated from more detailed NIC classifications as follows: Trade, Hotels, Restaurants corresponds to NIC Sections G and I; Transport corresponds to Section H; Financial Services includes Sections K, L, and M; Public Administration corresponds to Section O; Other Services includes Sections P, Q, R, S, and T.

Estimation Note for Table 6: Due to changes in industrial classification across NAS revisions, sub-sectoral boundaries have shifted marginally over time. The most significant reclassification occurred in the 2011–12 base revision, where real estate was separated from business services and IT was explicitly classified within information and communication. For this table, the pre-2011–12 categories have been mapped to the closest post-2011–12 equivalent categories using mapping tables published in the NSO's Sources and Methods document (2015). Figures should be interpreted as indicative of broad trends rather than precisely comparable point estimates.

The decomposition reveals that financial services, real estate, and business services have been the fastest-growing sub-sector within services, nearly doubling their share of total GVA from 10.4% in 1990–91 to 19.8% in 2023–24. This category encompasses banking, insurance, IT/ITeS, professional and consulting services, and real estate activities—precisely the sub-sectors most affected by liberalization, globalization, and the digital revolution. Trade and transport have maintained relatively stable shares, while public administration has actually declined slightly, refuting the notion that government expansion is primarily responsible for the services sector's rising share.

4.7. Regression Analysis: Determinants of Structural Change

Table 7 presents the OLS regression estimates for the determinants of sectoral output shares.

Table 7: OLS Regression Results—Determinants of Sectoral GVA Shares (1980–81 to 2023–24, N=44)

Variable	*Agriculture Share (Model 1)*	*Industry Share (Model 2)*	*Services Share (Model 3)*
(1)	(2)	(3)	(4)
Constant	142.38*** (18.52)	8.72 (7.46)	-51.10** (22.31)
ln(Per Capita GDP)	-11.84*** (1.74)	0.98 (0.71)	10.86*** (2.09)
Urbanization Rate (%)	-0.28** (0.12)	0.19** (0.08)	0.09 (0.14)
Trade Openness (%)	-0.06* (0.03)	0.02 (0.02)	0.04 (0.03)
Post-1991 Dummy	-3.42** (1.38)	-1.87* (0.97)	5.29*** (1.65)
ICT Investment/GDP (%)	-0.94* (0.48)	-0.38 (0.34)	1.32** (0.57)
Adjusted R^2	0.97	0.42	0.97
F-statistic	283.6***	7.2***	291.4***
Durbin-Watson	1.24	1.08	1.31

Variable	*Agriculture Share (Model 1)*	*Industry Share (Model 2)*	*Services Share (Model 3)*
(1)	(2)	(3)	(4)
Breusch-Godfrey LM (p-value)	0.03	0.01	0.04

Notes: *Newey-West HAC standard errors in parentheses.* , , * denote significance at 1%, 5%, and 10% levels respectively.*

Source: Author's estimation using data from RBI Handbook of Statistics (per capita GDP at constant 2011–12 prices), Census of India and UN World Urbanization Prospects (urbanization rate), RBI/WDI (trade openness), and ITU/WDI/NASSCOM (ICT investment proxy).

Estimation Note for Table 7: The dependent variables are the sectoral shares of GVA at current basic prices (from Table 1, interpolated for years without direct NSO estimates using growth-rate-based linking). Per capita GDP is measured at constant 2011–12 prices from NSO/RBI, expressed in natural logarithm. The urbanization rate is the percentage of total population living in urban areas, interpolated between Census years (1981, 1991, 2001, 2011) using exponential growth rates; for post-2011 years, projections from the UN World Urbanization Prospects (2018 revision) and Registrar General's estimates are used. Trade openness is (Exports + Imports)/GDP at current prices from RBI. The post-1991 reform dummy equals 1 for all years from 1991–92 onwards and 0 otherwise. ICT investment is proxied by a composite measure drawing on NASSCOM industry revenue data (as % of GDP) for IT/ITeS and Department of Telecommunications data on telecom investment; this variable is available consistently only from 1980–81 and is therefore the binding constraint on the sample period. The low Durbin-Watson statistics and significant Breusch-Godfrey LM tests indicate residual autocorrelation, which is addressed through HAC standard errors. Additionally, ADF tests indicated that sectoral shares and ln(PCGDP) are I(1) variables; however, Engle-Granger cointegration tests confirmed cointegrating relationships for Models 1 and 3 (test statistics of -4.87 and -5.12 respectively, significant at 1%), justifying the levels specification.

The regression results yield several important insights. Per capita income (in log form) is the most powerful predictor of structural change, with a 1% increase in per capita GDP associated with a 0.12 percentage point decline in agriculture's share and a 0.11 percentage point increase in services' share. This confirms the Kuznets-Chenery hypothesis that income growth drives structural reallocation through changing demand patterns and factor productivity differentials.

The post-1991 reform dummy is highly significant in all three models, indicating that liberalization produced a structural break independent of the income effect. The reform is associated with a 5.29 percentage point additional increase in services' share and a 3.42 percentage point additional decline in agriculture's share, controlling for income, urbanization, and other factors. This likely captures the combined effects of deregulation, FDI liberalization, trade opening, and the catalytic role of IT sector growth in the post-reform period.

Urbanization significantly predicts both lower agricultural share and higher industrial share, consistent with the spatial dimension of structural transformation. ICT investment is significantly associated with rising services share, reflecting the technology-intensive nature of India's services growth.

The adjusted R^2 values for Models 1 and 3 (both 0.97) indicate that the selected variables explain virtually all the variation in agricultural and services shares. However, Model 2 (industry share) has a much lower R^2 (0.42), suggesting that industrial development in India is driven by additional factors not captured in this specification—possibly including infrastructure quality, labor regulations, industrial policy, and global manufacturing value chain dynamics.

4.8. International Comparison

Table 8 situates India's structural composition in a comparative international perspective, comparing India with selected countries at similar per capita income levels (in purchasing power parity terms) and with countries that represent alternative development models.

Table 8: International Comparison of Sectoral Shares in GDP (%, Latest Available Year circa 2022–23)

Country	*Per Capita GDP (PPP, Current Int. $)*	*Agriculture*	*Industry*	*Services*
(1)	(2)	(3)	(4)	(5)
India	9,183	15.0	26.3	54.6
China	21,476	7.3	38.3	54.4
Vietnam	13,852	11.9	38.2	41.8
Indonesia	14,535	12.4	38.7	43.0
Bangladesh	7,067	11.4	33.7	51.8
South Korea (1990)	~11,000	8.5	41.4	50.1
Thailand	19,157	8.8	33.6	57.6
Brazil	16,831	7.1	20.4	65.6

Country	*Per Capita GDP (PPP, Current Int. $)*	*Agriculture*	*Industry*	*Services*
(1)	(2)	(3)	(4)	(5)
Sub-Saharan Africa (avg.)	3,924	16.2	25.5	52.8

Source: World Bank World Development Indicators (WDI) database accessed March 2025. Data correspond to 2022 or latest available year. Per capita GDP in PPP terms is from the International Comparison Program via WDI. South Korea 1990 data are from the Bank of Korea national accounts archives. Sub-Saharan Africa average is computed as the unweighted mean of all countries in the region with available data.

Estimation Note for Table 8: All figures correspond to value added as a percentage of GDP (at current prices) as reported in WDI indicator series NV.AGR.TOTL.ZS, NV.IND.TOTL. ZS, and NV.SRV.TOTL.ZS. Minor discrepancies with India's NSO-reported figures (Table 1) arise because WDI uses a slightly different sectoral classification and GDP denominator (including net indirect taxes) compared to India's GVA-at-basic-prices measure. South Korea 1990 is included as a historical benchmark representing the point at which a now-high-income Asian economy had a per capita income like India's current level (adjusted to approximately equivalent PPP terms).

The comparison reveals India's distinctiveness. At its current income level, India has a significantly smaller industrial sector (26.3%) compared to China (38.3%), Vietnam (38.2%), Indonesia (38.7%), and even South Korea at a comparable income level in 1990 (41.4%). Conversely, India's services share (54.6%) is higher than all comparators except Brazil (65.6%) and Thailand (57.6%), both of which have substantially higher per capita incomes. This confirms that India's services intensity is unusual for its level of development—it has achieved a services share typical of upper-middle-income countries while remaining a lower-middle-income economy.

Bangladesh, despite lower per capita income, has a higher industrial share (33.7%) than India, largely driven by its garment manufacturing sector. This suggests that India's manufacturing underperformance is not merely a function of income level but reflects specific structural, institutional, and policy factors.

4.9. Structural Change and Employment Elasticity

Table 9 examines the employment elasticity of output growth by sector, defined as the percentage change in employment for each percentage change in sectoral output.

Table 9: Employment Elasticity of Output by Sector

Period	*Agriculture*	*Industry*	*Services*	*Aggregate*
(1)	(2)	(3)	(4)	(5)
1972–73 to 1983	0.52	0.56	0.68	0.54
1983 to 1993–94	0.41	0.58	0.55	0.47
1993–94 to 2004–05	0.23	0.65	0.43	0.38
2004–05 to 2011–12	-0.31	0.72	0.52	0.20
2011–12 to 2017–18	-0.10	0.34	0.61	0.18
2017–18 to 2023–24	0.02	0.27	0.38	0.23

Source: Author's computation using GVA at constant prices (NSO) and employment estimates (NSS/PLFS).

Estimation Note for Table 9: Employment elasticity is computed as:

$$\eta_i = \frac{\%\Delta Employment_i}{\%\Delta RealGVA_i}$$

where percentage changes are compound annual rates over the specified period. Total employment by sector is derived by applying percentage shares from Table 2 to total employment estimates from the respective survey rounds. Total employment estimates for NSS rounds are taken from the published survey reports; for PLFS years, the workforce participation rate (usual principal status, 15+ years) is applied to the working-age population estimates from the Registrar General of India's projections. Negative employment elasticities in agriculture during 2004–05 to 2011–12 indicate absolute reductions in agricultural employment despite positive output growth—consistent with labor exit from agriculture during India's high-growth phase.

The declining employment elasticity in services (from 0.68 in the earliest period to 0.38 in the most recent) is particularly concerning. It indicates that services growth is becoming increasingly capital-intensive and technology-intensive, with each unit of output growth generating fewer jobs than in the past. This trend, driven by automation, digitalization, and the shift from labor-intensive to knowledge-intensive services, poses challenges for India's employment generation imperative given its demographic profile.

Agriculture's employment elasticity turned negative during 2004–05 to 2011–12, indicating that workers were leaving agriculture even as agricultural output grew. This is the healthiest form of structural transformation—absolute labor release from a low-productivity sector. However, the recent period (2017–18 to 2023–24) shows the elasticity returning to near zero, suggesting that the pace of labor exit from agriculture has stalled, possibly due to inadequate absorptive capacity in industry and services and the reverse migration induced by COVID-19.

4.10. State-Level Heterogeneity in Structural Transformation

Table 10 illustrates the substantial variation in structural transformation across Indian states, reflecting their diverse economic bases, policy environments, and developmental histories.

Table 10: Sectoral Composition of Gross State Value Added for Selected States (%, 2022–23)

State	*Agriculture & Allied*	*Industry*	*Services*	*Per Capita NSDP (₹ at current prices)*
(1)	(2)	(3)	(4)	(5)
Goa	4.8	42.1	53.1	5,98,000
Maharashtra	10.3	29.8	59.9	3,08,000
Tamil Nadu	11.7	32.4	55.9	3,20,000
Karnataka	12.5	24.1	63.4	3,35,000
Gujarat	14.8	40.5	44.7	3,01,000
Kerala	9.8	24.7	65.5	2,78,000
West Bengal	21.5	22.8	55.7	1,42,000
Uttar Pradesh	25.3	24.6	50.1	90,000
Bihar	20.5	18.9	60.6	60,000
Madhya Pradesh	30.2	24.8	45.0	1,28,000
Rajasthan	26.5	27.3	46.2	1,45,000
Punjab	22.1	27.5	50.4	2,08,000
All-India	15.0	26.3	54.6	2,00,000

Source: State Domestic Product and related aggregates published by NSO/respective state Directorates of Economics and Statistics; RBI Handbook of Statistics on Indian Economy (Table on Net State Domestic Product), 2024. Per capita NSDP figures are approximate and rounded.

Estimation Note for Table 10: Gross State Value Added (GSVA) data are from the new series with base year 2011–12 as published by the respective state statistical agencies and compiled by the NSO. Some state-level figures are advance estimates for 2022–23. Per capita Net State Domestic Product (NSDP) figures are at current prices as published by RBI. The sectoral classification follows the same three-sector framework used for national-level analysis. Minor discrepancies between the sum of state-level figures and all-India totals arise from adjustments for union territories and items not allocated to states.

The inter-state variation is striking. Karnataka, with its Bengaluru-centered IT economy, has services accounting for 63.4% of GSVA—substantially above the national average. Kerala (65.5%) has an even higher services share driven by remittances, tourism, health, and education services, combined with minimal

industrialization. At the other extreme, Madhya Pradesh retains an agriculture share of 30.2%, reflecting its continued dependence on the primary sector.

Gujarat presents an interesting contrast: it has one of the highest industrial shares (40.5%) among major states, reflecting its manufacturing and petrochemical strength, combined with a relatively lower services share (44.7%). This suggests that at least some Indian states have followed a more conventional industrialization-led pathway.

Bihar's combination of high services share (60.6%) with very low per capita income (₹60,000) illustrates an important caveat: a high services share does not necessarily indicate advanced development. In Bihar's case, much of the services sector consists of low-productivity activities (petty trade, personal services, government administration) rather than the high-value knowledge services that characterize Karnataka or Maharashtra.

5. DISCUSSION

5.1. Characterizing India's Structural Path

The empirical results discussed in the preceding section indicate that India's structural transformation diverges in important ways from the canonical Fisher-Clark-Kuznets pattern. Rather than following a sequential shift from agriculture to industry and then to services, the Indian experience is better described as a services-led transformation, accompanied by relatively modest industrial expansion and a continued concentration of employment in agriculture. Three features of this pattern stand out.

First, the services sector has absorbed the largest share of the decline in agriculture's contribution to output. Of the 37-percentage point reduction in agriculture's share between 1950–51 and 2023–24, approximately 24 percentage points have accrued to services. Industry accounts for the remaining 12 percentage points, with most of this increase occurring prior to 2000. This contrasts with the experience of East Asian economies, where manufacturing played the dominant role in absorbing the declining share of agriculture.

Second, there is a pronounced asymmetry between changes in output shares and employment shares. Although agriculture's share in output has fallen to around 15%, it still accounts for roughly 42% of total employment, implying a gap of about 27 percentage points. This disparity suggests that average productivity in agriculture remains significantly lower than in non-agricultural sectors, with agricultural

workers producing less than one-third of the output generated by their counterparts elsewhere. The magnitude of this gap highlights the potential gains from further labor reallocation.

Third, the pace of structural transformation appears to have accelerated after 1991. The share of services in output increased by 13.5 percentage points between 1990–91 and 2023–24, compared to an increase of 10.6 percentage points over the preceding four decades (1950–51 to 1990–91). This acceleration coincides with the period of economic liberalization, suggesting that policy changes—including deregulation, greater openness to foreign investment, and integration into global services markets—played an important role in shaping the trajectory of transformation.

5.2. Explanations for India's Distinctive Path

A combination of demand- and supply-side factors helps explain why India's structural transformation diverged from the manufacturing-led trajectory observed elsewhere. On the demand side, the liberalization of telecommunications and financial services in the 1990s unlocked previously suppressed demand under the license-raj regime. This was further reinforced by the expansion of the middle class, increasing urbanization, and evolving consumption patterns, which together contributed to a rise in demand for a wide range of services, including healthcare, education, entertainment, and financial products.

On the supply side, India's long-standing investments in higher education—particularly in engineering, management, and English-medium instruction—created a workforce that was well suited to knowledge-intensive service sectors rather than to factory-based manufacturing. Institutions such as the Indian Institutes of Technology (IITs), Indian Institutes of Management (IIMs), and a growing network of engineering colleges produced graduates who were readily absorbed into industries such as information technology, consulting, and financial services. The widespread use of English, a legacy of the colonial period, further facilitated integration into global business services markets.

At the same time, the manufacturing sector faced a range of structural constraints. Labor market regulations, including provisions under the Industrial Disputes Act that required government approval for retrenchment in larger firms, discouraged the expansion of formal, large-scale manufacturing employment.

Infrastructure bottlenecks—such as unreliable power supply, inadequate transport networks, and port congestion—raised production and logistics costs. Policies reserving certain products for small-scale industries, which were only gradually phased out between 1997 and 2015, limited the ability of firms to achieve economies of scale. In addition, challenges related to land acquisition, regulatory complexity, and tax uncertainty further dampened investment in manufacturing.

The global environment also played an important role. China's accession to the World Trade Organization in 2001 and its rapid emergence as a dominant manufacturing exporter made it difficult for India to compete in labor-intensive manufacturing. By the time India undertook significant liberalization, the conditions that had supported export-led industrialization in East Asia had changed, with global value chains already well established and automation beginning to alter the nature of manufacturing competitiveness.

5.3. The Sustainability Question

A critical question is whether India's services-led growth path is sustainable and inclusive in the long run. Several concerns arise.

- First, the employment intensity of services growth is declining (Table 9), as automation, artificial intelligence, and platform technologies reduce the labor requirements of even traditionally labor-intensive services. If services growth cannot generate employment at a pace commensurate with labor force growth (approximately 7–8 million new entrants per year), the economy may face a structural employment deficit.
- Second, the quality of service-sector employment is highly heterogeneous. While IT professionals, financial analysts, and consultants enjoy high wages and productivity, the majority of service workers are engaged in low-productivity, informal activities—street vending, domestic help, unorganized transport, and petty repair services. The high relative productivity of the services sector (Table 3) is therefore an average that masks enormous within-sector inequality.
- Third, the agricultural sector's continued retention of 42% of the workforce at very low productivity levels represents both a development failure and a ticking time bomb. Without productive employment opportunities in industry and services, agricultural workers cannot move—yet their

remaining in agriculture perpetuates low incomes, rural poverty, and periodic agrarian crises.

5.4. Policy Implications

The findings point to several important policy priorities.

- First, strengthening the manufacturing sector remains essential for generating large-scale employment. This would require a combination of targeted industrial policy measures, including labor market reforms, improved infrastructure, streamlined regulatory processes, and deeper integration into global value chains. Initiatives such as "Make in India" (launched in 2014) and the Production-Linked Incentive (PLI) schemes introduced from 2020 represent steps in this direction, although their impact on employment has so far been limited.
- Second, facilitating the movement of workers out of agriculture into more productive non-agricultural activities requires sustained investment in skill development. This goes beyond standalone training programs and calls for a broader enabling ecosystem, including access to affordable urban housing, portability of social security benefits, and formal recognition of skills acquired in informal settings.
- Third, the services sector itself requires structural upgrading. A key challenge is to enable the transition of workers from low-productivity informal services into more productive and formal segments. This can be supported through measures such as digitalization, expanded financial inclusion, targeted formalization incentives, and the use of platform-based models to better organize informal work, and
- Finally, improving productivity within agriculture remains equally important. Policies aimed at technological modernization, expansion of irrigation, development of agricultural value chains, and institutional reforms—such as more flexible land leasing arrangements and market liberalization—can help raise farm incomes while gradually facilitating the release of labor to other sectors.

5.5. Limitations

This study has several limitations that should be acknowledged. First, the employment data suffer from comparability issues across NSS rounds and PLFS

surveys due to changes in definitions, coverage, and methodology. While efforts have been made to harmonize the data, residual inconsistencies may affect point estimates. Second, the three-sector classification, while standard, masks important within-sector heterogeneity. The formal-informal distinction within each sector is arguably as important as the between-sector distinction for understanding productivity and welfare outcomes. Third, the regression analysis in Table 7 employs a relatively parsimonious specification and may suffer from omitted variable bias—particularly the omission of institutional quality, governance variables, and sector-specific policy measures. Fourth, the study treats India as a unitary economy, whereas Table 10 demonstrates that structural transformation proceeds at vastly different paces across states, suggesting that a state-level panel analysis would yield richer insights

6. CONCLUSION

This paper has documented and analyzed the structural transformation of the Indian economy from 1950–51 to 2023–24, demonstrating that India has followed a distinctive services-led development path that departs significantly from the historical experience of currently advanced economies and contemporary Asian industrializers. The services sector's share of GVA has risen from 30.5% to 54.6% while agriculture has declined from 51.9% to 15.0%, with industry's share peaking at around 27% and stagnating thereafter—a level well below the industrial peak of comparator countries.

The shift-share decomposition reveals that within-sector productivity improvements have contributed more to aggregate productivity growth than structural reallocation, though the reallocation effect was substantial during India's high-growth phase (2004–05 to 2011–12). The regression analysis identifies per capita income growth, post-1991 liberalization, urbanization, and ICT investment as the key determinants of sectoral change, with liberalization producing a discrete structural break independent of the income trend.

The central challenge of India's structural transformation remains the massive gap between output reallocation and employment reallocation. With agriculture still employing 42% of workers but producing only 15% of output, the potential for productivity-enhancing structural change remains substantial—but realizing this potential requires that industry and services generate productive employment opportunities at a scale and pace far beyond what has been achieved to date.

India's future growth trajectory will depend critically on whether it can engineer a second phase of structural transformation—one that simultaneously raises manufacturing's share (through competitiveness-enhancing reforms), upgrades services quality and productivity (through technology and formalization), and accelerates labor exit from agriculture (through rural transformation and urbanization). The achievement of these goals will determine whether India's structural transformation ultimately delivers shared prosperity or continues to generate growth that coexists with mass underemployment and persistent inequality.

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APPENDIX: DATA CONSTRUCTION NOTES

The construction of a consistent long-run dataset for India's structural transformation involves several challenges that are documented here for transparency and replicability.

Regarding base-year changes in national accounts, India's national accounts have undergone multiple base-year revisions: 1948–49, 1960–61, 1970–71, 1980–81, 1993–94, 1999–2000, 2004–05, and 2011–12. Each revision incorporated methodological improvements, expanded coverage, and updated weighting structures. To construct a consistent series, this study uses the splicing methodology employed by the RBI, wherein the growth rates from the old series are applied backwards from the overlap year to extend the new series. Specifically, for the period before 2004–05, the 2004–05 base series published by CSO is used; this is then linked to the 2011–12 base series using the ratio of the two series at the overlap year (2011–12).

Regarding the shift from GDP at factor cost to GVA at basic prices, the 2011–12 base revision shifted India's national accounts from reporting GDP at factor cost to GVA at basic prices (which includes production taxes net of production subsidies). For analytical consistency, the earlier series (reported at factor cost) are treated as approximately equivalent to GVA at basic prices, given that the difference between the two is relatively small at the sectoral level and does not materially affect long-run share trends.

Regarding employment data harmonization, NSS employment rounds before 2017–18 used a different questionnaire design, reference periods, and age classifications compared to the PLFS. The PLFS also introduced a continuous survey design replacing the quinquennial cross-section. Key adjustments include restricting analysis to the 15+ age group for PLFS comparability, using usual principal status (rather than usual principal and subsidiary status) for consistency, and applying NIC concordance tables for industrial reclassification.