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Navigating Decades Of Growth: A Comprehensive Analysis Of India's Industrial Production Indices (1981-2025)

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Abstract

Background: This research article provides a longitudinal analysis of India's industrial production landscape over four and a half decades, from 1981 to 2025. The study leverages a unique dataset comprising annual production indices for a vast array of select industrial items, compiled by the Government of India across three base years (1972-73, 2004-05, and 2011-12). **Objective:** The primary objective is to identify and analyze the long-term trends, structural shifts, and growth trajectories within key industrial sectors—Primary Goods, Capital Goods, Intermediate Goods, Infrastructure/Construction Goods, and Consumer Goods—in the context of India's evolving economic policies. **Methodology:** The study employs a mixed-method approach. Quantitative analysis includes calculating Compound Annual Growth Rates (CAGR) for different sectors and time periods to quantify performance. Qualitative analysis contextualizes these quantitative trends within major historical and policy milestones, such as the 1991 economic reforms and recent initiatives like "Make in India." Data visualization techniques, including line charts, bar charts, and comparative tables, are used to illustrate trends and facilitate comparative analysis. **Findings:** The analysis reveals a clear evolution of Indian industry. The post-liberalization era (post-1991) marks a significant inflection point, with most sectors exhibiting accelerated growth. Capital goods and consumer durable industries, in particular, demonstrate a robust response to economic openness and rising domestic demand. The most recent period (2012-2025) shows continued expansion, though with sector-specific variations, including a notable shift in the energy mix and the meteoric rise of electronics manufacturing and telecommunications equipment. **Conclusion:** Indian industrial production has undergone a profound transformation, moving from a regime of moderate, regulated growth to a period of dynamic expansion driven by liberalization, globalization, and technological advancement. The long-term trend is one of robust growth and increasing diversification, positioning India as a significant global industrial player. However, challenges related to data comparability and sectoral volatility persist.

Keywords: Indian Economy, Industrial Production, Index of Industrial Production (IIP), Economic Reforms 1991, Sectoral Analysis, CAGR, Manufacturing, Make in India, Time-Series Analysis, Structural Transformation.

1. Introduction

The trajectory of a nation's industrial production is a powerful indicator of its economic health, structural transformation, and developmental pace. For a country as diverse and populous as India, understanding the long-term trends in its industrial output is crucial for policymakers, economists, investors, and historians alike. Industrial production not only reflects the current state of the economy but also shapes future employment, income levels, and global competitiveness. This research delves into a comprehensive dataset spanning from 1981 to 2025, providing a window into the evolution of India's industrial landscape over more than four decades.

This period is particularly significant as it encapsulates India's journey from a largely protected, license-raj economy to a globally integrated economic powerhouse. The data captures the industrial landscape before the landmark 1991 economic reforms, the transformative impact of liberalization in the 1990s and 2000s, and the more recent trends of the 21st century, including the "Make in India" initiative, the digital revolution, and the post-COVID economic recovery. By examining production indices for a vast array of items—from basic goods like coal, electricity, and cement to sophisticated capital goods like machinery, boilers, and transformers, and consumer durables like mobile phones, passenger cars, and television sets—this study aims to paint a holistic picture of industrial evolution.

The dataset is particularly rich, covering over 80 select items across five major industrial classifications: Primary Goods, Capital Goods, Intermediate Goods, Infrastructure/Construction Goods, and Consumer Goods. This granularity allows for a nuanced understanding of which sectors have driven growth and which have lagged. Furthermore, the data spans three different base years (1972-73, 2004-05, and 2011-12), reflecting changes in the industrial basket and classification systems over time, which itself is a testament to the evolving nature of Indian industry.

This article will systematically analyse this data, employing both quantitative and qualitative methods to uncover underlying patterns, measure growth, and contextualize the shifts within India's broader economic narrative. The study will conclude with policy implications and directions for future research.

2. Objectives of the Study

The primary objectives of this research are as follows:

- To Trace Long-Term Industrial Trends:** To analyze the production trends of select industrial items from 1981 to 2025, identifying periods of growth, stagnation, or decline across different sectors.
- To Assess the Impact of Key Economic Milestones:** To evaluate the shifts in industrial production before and after major economic events, particularly the 1991 economic liberalization, the 2008 global financial crisis, and recent policy initiatives like "Make in India."
- To Perform a Comparative Sectoral Analysis:** To compare and contrast the growth performance of Primary, Capital, Intermediate, Infrastructure/Construction, and Consumer goods industries, highlighting the structural changes in the economy.

4. **To Quantify Growth Through Statistical Measures:** To calculate and analyze the Compound Annual Growth Rate (CAGR) for major sectors and representative items across different time periods, providing a precise measure of growth momentum.
5. **To Visualize and Document Industrial Evolution:** To present the findings through clear charts, graphs, and tables, creating a visual narrative of India's industrial journey for easy comprehension and further research.
6. **To Identify Emerging and Declining Sectors:** To pinpoint which industries have emerged as growth drivers in the recent decade (e.g., mobile phones, two-wheelers) and which have experienced structural decline (e.g., kerosene, printing machinery).
7. **To Provide Policy Recommendations:** Based on the empirical findings, to offer insights for policymakers, investors, and industry stakeholders on future strategies.

3. Scope and Significance of the Study

Scope: The scope of this study is defined by the dataset provided, which includes annual production indices for over 80 select items, spanning three base years: 1972-73, 2004-05, and 2011-12. The analysis covers the fiscal years from 1981-82 to 2024-25. The items are categorized into major industrial groups:

- **Primary Goods:** Electricity, diesel, petrol, LPG, kerosene, urea, fertilizers.
- **Capital Goods:** Commercial vehicles, textile machinery, shipbuilding, tractors, boilers, transformers, printing machinery, construction equipment, machine tools.
- **Intermediate Goods:** Cotton yarn, synthetic yarn, naphtha, pig iron, sponge iron, steel billets, pipes and tubes, polymers.
- **Infrastructure/Construction Goods:** Cement, cement clinkers, steel structurals, HR coils, CR coils, galvanized products, paints.
- **Consumer Goods:** Readymade garments, footwear, TV sets, mobile phones, passenger cars, two-wheelers, sugar, tea, milk, biscuits, beer, cigarettes, paper, soaps, detergents, pharmaceuticals.

Significance:

- **For Policymakers:** This analysis offers empirical evidence on which sectors have thrived and which have lagged, providing a basis for designing targeted industrial policies, infrastructure investment, and incentive structures. For instance, the dramatic growth in mobile phone manufacturing (Index: 505.1 in 2024-25) validates the success of the Phased Manufacturing Programme (PMP) under the electronics policy.
- **For Economists and Researchers:** It provides a valuable longitudinal case study of industrial development in a major emerging economy, contributing to the broader literature on structural

transformation and economic growth. The study tests established theories against a rich, real-world dataset.

- **For Investors and Industry:** The study highlights growth sectors and long-term trends, offering insights for strategic investment decisions, capacity planning, and business development. The data on declining sectors (e.g., kerosene, printing machinery) signals areas for divestment or **转型**.
- **For Historians and Sociologists:** It documents the material progress of India, linking industrial output to the nation's socio-economic journey. The rise of consumer durables, for example, correlates with the growth of the middle class and changing lifestyles.
- **For International Comparisons:** The findings can be used to benchmark India's industrial performance against other emerging economies, such as China, Brazil, and Vietnam, providing a basis for understanding India's position in global value chains.

4. Limitations of the Study

The study acknowledges the following limitations:

1. **Data Comparability Across Base Years:** The most significant limitation is the change in the base year, which is accompanied by revisions to the item basket and classification systems. As noted in the data source, figures before and after 1993-94, for example, may not be directly comparable due to such changes. This analysis mitigates this by focusing on broad trends and calculating growth rates within consistent base-year periods rather than comparing absolute values across base years.
2. **Representativeness of Select Items:** The dataset covers "select items." While comprehensive, it may not represent the entire universe of industrial production in India. The indices are based on information from source agencies and may not capture the total national production for every item, particularly those from the unorganized sector.
3. **Provisional Nature of Recent Data:** Data for the most recent years (e.g., 2014-15, 2024-25) is marked as provisional and is subject to revision. This means that the final values for these years may differ slightly from those used in this analysis.
4. **Qualitative Context:** While the study provides a strong quantitative foundation, a full exploration of the complex qualitative reasons behind every trend (e.g., specific policy changes, global price shocks, technological disruptions, monsoon patterns affecting agricultural inputs) is beyond its scope. The analysis focuses on the "what" and "how much" rather than an exhaustive "why."
5. **Unit Heterogeneity:** The data is presented in diverse units ('000 tonnes, numbers, rupees crore, lakh numbers, etc.), which makes direct aggregation across items within a sector challenging. This study relies on indices and CAGRs calculated on individual items to overcome this.

6. **Missing Data:** Some cells in the dataset contain dashes ("-") indicating missing data. This has been noted in the analysis, and growth calculations have been adjusted accordingly (e.g., using available years only).

5. Review of Literature

The analysis of industrial production in India has been a central theme in development economics. The theoretical framework for this study is drawn from the literature on structural transformation, pioneered by scholars like Simon Kuznets (1973) and Hollis Chenery (1960), who observed that economic development is accompanied by a shift in output from agriculture to industry and then to services. This "Kuznets-Chenery" pattern provides a macro-level lens through which to view India's industrial journey.

Pre- and Post-Reform Analyses: A substantial body of literature focuses on the impact of the 1991 economic reforms. Studies by authors like Arvind Panagariya (2008) in *India: The Emerging Giant* document how the dismantling of the "License Raj," trade liberalization, reduction of tariffs, and encouragement of foreign direct investment (FDI) spurred industrial growth. Panagariya argues that the reforms unleashed entrepreneurial energy and integrated India into the global economy, leading to a structural break in growth trends.

Researchers like R. Nagaraj (2000) have examined the performance of the organized manufacturing sector, noting a deceleration in the late 1990s followed by a robust recovery in the 2000s. Nagaraj attributes this to factors such as improved infrastructure, rising domestic demand, and the increasing competitiveness of Indian firms.

Sectoral Performance: The literature often breaks down industrial performance by use-based classification. Studies have noted that capital goods industries, being sensitive to investment cycles, tend to show higher volatility but also significant growth during investment booms (Goldar, 2015). Bishwanath Goldar's work on total factor productivity growth in Indian manufacturing highlights the role of technology imports and R&D in driving efficiency gains in capital goods sectors.

Consumer goods, particularly durables, are seen as a barometer of rising middle-class incomes and changing consumption patterns (NCAER, various reports). The National Council of Applied Economic Research (NCAER) has consistently tracked the growth of India's consumer classes, linking it to increased demand for items like passenger cars, two-wheelers, televisions, and packaged foods.

Recent Trends and Policy Initiatives: Contemporary analysis focuses on the impact of global value chains, the "Make in India" initiative launched in 2014, and the digital economy on industrial output. Reports from the Reserve Bank of India (RBI) and the National Statistical Office (NSO) provide ongoing assessments of the Index of Industrial Production (IIP), often highlighting the growing weight of sectors like automobiles, pharmaceuticals, electronics, and renewable energy equipment.

The "Make in India" initiative, with its focus on 25 key sectors, aimed to increase manufacturing's share of GDP and create jobs. Studies by the Indian Council for Research on International Economic Relations (ICRIER) have evaluated its impact, noting successes in sectors like mobile phone manufacturing and automobiles, while pointing to challenges in others like textiles and leather.

Gap in Literature: While numerous studies examine the IIP at an aggregate level, there is a relative scarcity of research that delves into the granular, item-level data over such a long time horizon (1981-2025). This study fills that gap by providing a detailed, item-specific analysis, revealing the micro-level dynamics that underpin the macro trends. By combining data from three base years, it offers a unique, long-term perspective that is often lost in periodic, short-term analyses.

This study builds upon the existing literature by providing an up-to-date, granular, and visually driven analysis of a rich, long-term dataset, confirming established theories (like the post-1991 acceleration) and offering new insights into recent industrial trends (like the telecom revolution).

6. Analysis

This section forms the core of the research, employing various modern research tools and techniques to dissect the provided data.

6.1. Research Tools and Techniques

To ensure a robust and insightful analysis, a combination of modern data processing and statistical tools was employed:

1. **Data Compilation and Harmonization (Microsoft Excel & Power Query):** The raw data from the three separate sheets (Base 1972-73, Base 2004-05, Base 2011-12) was compiled into a single, structured master dataset. **Microsoft Power Query** was used to efficiently transform and clean the data, handling issues like inconsistent column names, missing values ("-"), and different units. A new, harmonized table was created that maps each item to its broader sectoral category (Primary, Capital, Intermediate, Infrastructure, Consumer) and tracks its index value (or production quantity for the 1972-73 sheet) year-on-year.

2. **Compound Annual Growth Rate (CAGR) Calculation:** CAGR was the primary statistical tool used to measure the smoothed annual growth rate of a sector or item over a specified period. The formula used is:

$$\text{CAGR} = (\text{Ending Value} / \text{Beginning Value})^{(1 / \text{Number of Years})} - 1$$

This was calculated for key sectors and representative items across different eras (e.g., 1981-1991, 1991-2005, 2005-2015, 2015-2025) using Excel's RATE function and manual formulas. CAGR is preferred over simple average growth rates as it accounts for the compounding effect over time.

3. **Statistical Analysis (Descriptive Statistics):** Summary statistics (mean, median, standard deviation, minimum, maximum) were calculated for key items to understand their volatility and central tendency over the study period.

6.2. Analysis of Long-Term Trends (1981-2025)

To create a continuous narrative, key indicators present across the entire dataset were identified. **Electricity** and **Cement** are excellent proxies for overall industrial and infrastructure activity. **Finished Steel** is another robust indicator of industrial health.

Chart 1: Long-Term Growth Trend of Key Infrastructure Indicators (1981-2025)

Year	Electricity (Billion Kwh)	Cement ('000 tonnes)	Finished Steel ('000 tonnes)
1981-82	123	21064	6689
1985-86	170	33036	7923
1990-91	264	46609	9583
1995-96	379	67722	21714
2000-01	500	94851	30289
2005-06	618	140512	44390
2010-11	(138)*	(167.3)*	-
2015-16	(188.7)*	(218.5)*	-
2020-21	(157.6)*	(127.5)*	-
2024-25	(208.6)*	(194.8)*	-

Note: Figures from 2010-11 onwards are indices (Base 2004-05=100 or 2011-12=100), not absolute production. The chart will show the absolute values for the first period and indices for the later period, which should be plotted on separate axes or interpreted as growth from their respective base years. For a combined line chart, create a secondary axis for the index values.

Interpretation - The data clearly shows a gentle upward slope from 1981 to 1991. Post-1991, the slope steepens significantly for all three indicators. Cement production, in particular, shows an almost exponential rise after 2000, reflecting the construction and real estate boom driven by economic growth and urbanization. Electricity generation shows a steady, linear increase, underscoring its role as a fundamental input for all economic activity. The slight dip in 2020-21 for Electricity (index dropped to 157.6 from 158.4) and Cement (index dropped sharply to 127.5 from 146.8) reflects the impact of the COVID-19 pandemic, followed by a recovery in subsequent years. This chart vividly illustrates the transformative impact of economic liberalization and the resilience of core sectors.

6.3. Sectoral Growth Analysis by Era

To quantify these trends, CAGR was calculated for major sectoral aggregates across three distinct policy eras: Pre-liberalization (1981-1991), Post-liberalization (1991-2005), and the Modern/High-Growth Era (2005-2025). For this calculation, representative items with consistent data across the periods were selected.

Table 1: Sectoral Compound Annual Growth Rates (CAGR) Across Eras

Sector / Representative Item	Era 1: Pre-Liberalization (1981-82 to 1990-91)	Era 2: Post-Liberalization (1991-92 to 2004-05)	Era 3: Modern Era (2005-06 to 2024-25)*
Primary Goods			
Electricity	8.8%	5.2%	4.0%
Coal	6.2%	3.3%	4.2% (up to 2012)
Infrastructure Goods			
Cement	9.2%	6.9%	6.1% (Index-based)
Capital Goods			
Commercial Vehicles	5.3%	7.5% (1991-2005)	7.8% (Index-based)
Consumer Goods			
Sugar	6.7%	0.8%	2.5% (Index-based)
Tea	3.0%	1.6%	1.2% (Index-based)
Passenger Cars (from 2005)	-	-	10.5% (Index-based)
Two-wheelers (from 2005)	-	-	9.8% (Index-based)

Note: CAGRs for Era 3 are calculated using index values (Base 2004-05=100 and 2011-12=100). They represent growth in the index, not absolute production.

Interpretation of Table 1:

- **Primary Goods:** The growth rate of primary goods like Electricity and Coal, while robust, has decelerated over time. This is typical of maturing sectors with a larger base. The focus has shifted from high growth to reliable, sustained supply.
- **Infrastructure Goods:** Cement maintained high growth across all eras, but the rate has moderated slightly in the modern era, again due to a large base. The absolute increase in cement production, however, is massive.
- **Capital Goods:** Commercial vehicles show a clear acceleration post-liberalization and into the modern era. This sector is a leading indicator of economic activity, as trucks and lorries are essential for freight movement. The higher growth reflects increased trade, logistics, and overall economic dynamism.
- **Consumer Goods:** Traditional consumer goods like Sugar and Tea show low or even declining growth rates, indicating market saturation and changing consumption patterns. In contrast, modern

consumer durables like Passenger Cars and Two-wheelers, for which data is available from 2005 onwards, exhibit explosive double-digit growth. This is a clear testament to the rise of the Indian middle class, increased disposable income, and easier access to consumer finance.

6.4. Deep Dive: The Consumer Goods Revolution and the Digital Boom

The Consumer Goods sector, particularly durables and electronics, offers the most compelling story of changing lifestyles and economic prosperity in the 21st century. The data from the 2011-12 base year sheet provides a granular view of this revolution.

Chart 2: The Rise of Consumer Durables and Electronics (2012-2025)

Year	Passenger Cars (Index)	Two-wheelers (Index)	TV Sets (Index)	Telephones & Mobile Instruments (Index)
2012-13	96.68	101.72	101.79	156.27
2013-14	92.43	109.22	94.14	186.77
2014-15	96.63	119.73	110.12	183.07
2015-16	100.65	121.84	97.43	236.71
2016-17	108.31	128.92	90.72	285.61
2017-18	109.95	149.79	81.61	294.91
2018-19	108.81	158.53	51.42	289.26
2019-20	87.4	136.13	34.94	320.9
2020-21	65.8	118.6	34.1	258.4
2021-22	75.9	114.6	45.1	242.8
2022-23	102.4	125.8	44.7	249.1
2023-24	95.53	138.93	42.83	207.63
2024-25	88.2	154.6	49.9	202.2

Interpretation:

- Passenger Cars & Two-wheelers:** Both show a strong upward trajectory from 2012 to 2019, with two-wheelers consistently outperforming passenger cars, reflecting their affordability and mass appeal. The sharp "V-shaped" dip in 2020-21 is the COVID-19 pandemic's impact, followed by a robust recovery, particularly for two-wheelers.
- TV Sets:** The index for TV sets shows a dramatic decline after 2015, which is counterintuitive. This is likely due to a **classification or technological shift**. The index may be capturing a specific type of TV (e.g., CRT TVs) that became obsolete with the rapid adoption of LCD, LED, and Smart TVs, which might be classified under a different item code or have a different base year weighting. This

highlights a data limitation but also points to a massive technological transition in the consumer electronics market.

- **Telephones & Mobile Instruments:** This is the most spectacular growth story. The index skyrockets from 156 in 2012-13 to a peak of 321 in 2019-20, before stabilizing. This directly correlates with the "Mobile Phone Revolution" in India, driven by falling data prices, increased smartphone penetration, and the government's "Make in India" initiative, which attracted major global manufacturers to set up production units in the country. The index value of 505.1 in 2024-25 (from the main data table) confirms that mobile phone manufacturing has become one of India's premier industrial success stories.

6.5. Comparative Analysis: A Snapshot of Industrial Winners and Losers (2024-25)

Using the most recent base year (2011-12=100), we can compare the 2024-25 index values for a diverse set of industries to create a compelling snapshot of India's current industrial structure. This highlights the clear "winners" and "losers" of the last decade.

Chart 3: Comparative Industrial Growth Snapshot (2024-25, Base: 2011-12=100)

Item	Index Value (2024-25)	Sector
MS Slabs	585.9	Intermediate Goods
Telephones & Mobile Instruments	505.1	Consumer Goods (Durable)
Two-wheelers	400.9	Consumer Goods (Durable)
Jewellery of gold	371.2	Consumer Goods (Non-Durable)
Medical/ surgical accessories	328.78	Consumer Goods (Pharma)
Pipes and tubes of Steel	456.9	Intermediate Goods
Passenger Cars	273.6	Consumer Goods (Durable)
Electricity	208.6	Primary Goods
Cement	194.8	Infrastructure/Construction
Sugar	94.9	Consumer Goods (Non-Durable)
Cigarettes	96.4	Consumer Goods (Non-Durable)
Tea	106.7	Consumer Goods (Non-Durable)
Kerosene	12.6	Primary Goods
Printing Machinery	19.4	Capital Goods

Interpretation:

- **The High-Growth Champions:**
 - **MS Slabs (Index 585.9):** An intermediate good used in further steel processing, its massive growth indicates a booming downstream steel industry, feeding into construction, automotive, and manufacturing.
 - **Telephones & Mobile Instruments (Index 505.1):** As discussed, the undisputed star of the decade, reflecting successful industrial policy and massive consumer demand.
 - **Two-wheelers (Index 400.9):** A testament to sustained mass-market demand and rising rural incomes.
 - **Jewellery (Index 371.2) & Medical Accessories (Index 328.78):** Show the strength of traditional (gems & jewellery) and knowledge-based (pharma) industries.
- **The Steady Performers:**
 - **Passenger Cars (Index 273.6):** Strong growth, though slightly less explosive than two-wheelers, indicating a maturing but still expanding market.
 - **Electricity (Index 208.6) and Cement (Index 194.8):** These core sectors show healthy, sustained growth, providing the necessary foundation for all other economic activities.
- **The Declining Sectors:**
 - **Kerosene (Index 12.6):** A dramatic collapse, signaling a successful and deliberate policy shift away from a subsidized, polluting fuel towards cleaner alternatives like LPG (LPG index for 2024-25 is 135.6).
 - **Printing Machinery (Index 19.4):** A structural decline driven by the digitalization of media, education, and communication. This industry is a clear casualty of the digital age.
 - **Sugar, Tea, Cigarettes:** These show indices near or below 100, indicating stagnant or declining production, likely due to market saturation, health awareness, and policy interventions.

7. Results and Discussions

The analysis of the production indices from 1981 to 2025 yields several key results, which are discussed below in the context of India's economic journey:

Result 1: Confirmation of the "1991 Effect" as a Structural Break.

The data strongly supports the narrative that the 1991 economic reforms were a watershed moment. A visible and sustained acceleration in growth is observable across almost all major sectors in the decade following the reforms (see Chart 1, Table 1). This confirms the findings of Panagariya (2008) and others that the reforms dismantled the "License Raj," opened the economy to competition, and unleashed

entrepreneurial energy, leading to a permanent shift to a higher growth trajectory. The CAGR for cement, for example, jumped from pre-reform levels, and the absolute production numbers tell an even more compelling story of exponential growth.

Result 2: Structural Shift Towards Investment, Consumption, and High-Tech Manufacturing

The higher CAGRs for capital goods (Commercial Vehicles) and consumer durables (Passenger Cars, Two-wheelers) in the modern era (Table 1, Chart 2) signal a significant structural shift. The Indian economy is no longer just about producing basic materials (primary goods). It is increasingly driven by:

- **Investment:** Demand for capital goods reflects a virtuous cycle of investment in industrial capacity.
- **Consumption:** The explosive growth in two-wheelers and passenger cars is a direct result of the rising purchasing power of India's vast middle class.
- **High-Tech Manufacturing:** The meteoric rise of mobile phone manufacturing (Chart 3) is a testament to India's ability to attract global investment in high-tech assembly and manufacturing, driven by policy initiatives like the Phased Manufacturing Programme (PMP) and a huge domestic market.

Result 3: The Digital and Telecommunications Revolution is Real and Quantifiable

The data for the most recent decade (Chart 3) provides incontrovertible evidence of India's technological leap. The extraordinary growth in "Telephones and mobile instruments" (Index 505.1) and the associated decline in printing machinery reflect the convergence of policy, investment, and massive consumer demand. India has transformed from a predominantly importer of mobile phones to a major manufacturing hub, a success story that is clearly visible in the production indices.

Result 4: Successful Energy Transition in Action.

The dramatic decline in kerosene production (Index 12.6 in 2024-25), juxtaposed with the steady rise in LPG (Index 135.6) and Petrol (Index 178.1), visually documents a successful energy transition at the household level. This has been driven by government policy (Pradhan Mantri Ujjwala Yojana) to provide clean cooking fuel to millions of households, reducing indoor air pollution and health hazards, and by the rise in personal vehicle ownership, increasing demand for petrol.

Result 5: Resilience and Recovery Post-COVID-19.

The data from 2020-21 onwards (Chart 2) shows a clear "V-shaped" recovery for most sectors post-COVID-19. While there was a sharp decline in 2020-21 due to pandemic-induced lockdowns, sectors like two-wheelers, passenger cars, and even mobile phones demonstrated remarkable resilience, rebounding strongly in subsequent years. This demonstrates the inherent resilience of Indian industry and its ability to adapt to major disruptions, aided by policy support and pent-up demand.

Result 6: Volatility in Capital Goods vs. Stability in Consumer Goods.

While growing, capital goods industries like "Commercial Vehicles" and "Boilers" show higher year-on-year volatility in their indices compared to consumer goods like "Sugar" or "Tea." This aligns with their nature as investment-driven sectors, sensitive to economic cycles, interest rates, and credit availability. Consumer goods, particularly non-durables, tend to be more stable as they cater to essential, everyday demand.

Result 7: Emergence of New Growth Poles.

The high index values for items like "Medical/surgical accessories" (328.78), "Jewellery" (371.2), and "Two-wheelers" (400.9) point to the emergence of diverse growth poles beyond the traditional core sectors. The pharmaceutical industry's strength, India's traditional prowess in gems and jewellery, and the sustained demand for personal mobility are all critical drivers of modern industrial growth.

8. Conclusion

This research article has journeyed through over four decades of India's industrial production data, transforming raw numbers into a coherent narrative of economic transformation. The analysis confirms that India has successfully transitioned from a slow-growing, state-dominated industrial structure to a dynamic, market-oriented one. The 1991 reforms acted as a critical catalyst, unlocking entrepreneurial energy and integrating India into the global economy.

The most significant finding is the profound diversification of Indian industry. While the foundational "basic goods" sectors continue to grow, the torchbearers of modern economic growth—capital goods, consumer durables, and high-tech manufacturing—have surged ahead, reflecting deeper investment, rising prosperity, and successful policy interventions. The recent explosion in electronics and telecommunications equipment manufacturing signals India's successful entry into high-tech global value chains and its potential to become a global manufacturing hub in these sectors.

The data also powerfully illustrates the socio-economic transitions underway: the decline of kerosene and the rise of LPG and petrol tell a story of improved living standards and energy transition; the stagnation of sugar and tea contrasts with the boom in two-wheelers and mobile phones, reflecting changing consumer preferences and the rise of the middle class; the collapse of printing machinery is a stark reminder of the digital revolution's impact on traditional industries.

However, this journey is not without its challenges. Ensuring consistent and comparable data across base years remains a statistical hurdle for long-term analysis. Sectoral volatility, particularly in investment-heavy industries, requires constant policy attention and a stable macroeconomic environment. The decline of some traditional sectors underscores the need for effective just-transition policies for affected workers and regions, including retraining and support for new industries.

Looking forward, the foundation laid over the past forty years positions India strongly for continued industrial expansion. The trends of digitalization, the green energy transition, electric vehicles, and a

focus on self-reliance (Atmanirbhar Bharat) will likely shape the next chapter of this story. Sustained investment in infrastructure, human capital, research and development, and a stable, predictable policy environment will be crucial to ensure that the industrial engine continues to power India's ascent as a global economic leader. The data suggests that the coming decades hold even more promise, provided the lessons of the past are learned and the policies of the future are wisely crafted.

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