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Short-Term Forecasts for Key Sectors that Influence India's GDP, based on Laspeyres, Paasche, and Fisher's Ideal Index

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Abstract: ***The study examines the role of index numbers in analyzing India's economic performance across key sectors agriculture, industry, services, exports, and foreign investments between 2020 and 2024. Using Laspeyres, Paasche, and Fisher's Ideal Index methods, the paper quantifies price and quantity changes to understand sectoral contributions to GDP growth. Findings show that services dominate India's GDP (53%), followed by industry (29%) and agriculture (18%). The study highlights inflationary pressures, sectoral drivers, and state-level contributions, offering an analytical framework for policymakers and economists to interpret macroeconomic trends.***
Keywords: Index Numbers, Laspeyres Index, Paasche Index, Fisher's Ideal Index, GDP, Inflation, Economic Sectors, India, Services, Manufacturing, Agriculture, Exports, FDI.

I. INTRODUCTION

The study of index numbers plays a critical role in understanding the dynamics of economic growth, price movements, and sectoral performance in an economy. In India, where agriculture, industry, and services collectively drive GDP, index numbers such as the Laspeyres, Paasche, and Fisher's Ideal indices provide vital tools for measuring changes in prices and quantities over time. These indices not only capture inflationary trends but also highlight shifts in consumption, production, investment, and trade patterns across sectors.

As one of the fastest-growing major economies, India's structural transformation has been marked by rapid expansion in services, industrial diversification, and steady contributions from agriculture. Tracking these changes through index numbers allows policymakers, economists, and researchers to evaluate real versus nominal growth, monitor sectoral performance, and design evidence-based policies. For example, price and quantity indices can reveal whether GDP growth is primarily driven by increased production volumes or by rising prices, thereby informing inflation-adjusted strategies for sustainable growth.

This paper examines India's key economic sectors—agriculture, industry, services, exports, and foreign investments—between 2020 and 2024 using index number methodologies. By applying Laspeyres, Paasche, and Fisher indices, it provides a comprehensive analysis of sectoral price and quantity movements and their contribution to national GDP. The study also investigates positive and negative macroeconomic indicators influencing India's growth trajectory, while presenting insights into the contributions of major states to national output.

In doing so, this research emphasizes the importance of index numbers not merely as statistical tools but as essential instruments for understanding India's evolving economic landscape. The findings aim to assist policymakers, investors, and academicians in identifying growth drivers, assessing risks, and formulating strategies to achieve balanced and inclusive economic development.

II. OBJECTIVES

1) To apply index number theory (Laspeyres, Paasche, Fisher) for analyzing India's GDP growth.
2) To compare price and quantity changes across agriculture, industry, services, exports, and FDI sectors (2020–2024).
3) To evaluate inflation-adjusted sectoral contributions to India's GDP.
4) To identify positively and negatively correlated indices affecting India's GDP.
5) To provide insights for policymakers regarding India's economic trajectory and sectoral priorities.

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III. METHODOLOGY

1) Data Sources: RBI, MOSPI, FAO, NASSCOM, USDA, IMF, World Bank, and sectoral associations (SIAM, IPA, etc.).

2) Approach:

- Prices converted to USD using average exchange rates (2020: ₹74.18/$, 2024: ₹83.21/$).
- Sectoral data collected for agriculture, manufacturing, services, exports, and FDI.
- Construction of Laspeyres, Paasche, and Fisher indices for each sector.
- Comparative analysis of inflation, growth, and GDP share.
- State-wise GDP contributions analyzed for FY 2024–25.

3) Tools: Index number formulas, cross-sector comparisons, inflation adjustment, sectoral weighting.

A. Laspeyres, Paasche, and Fisher's Ideal Indexes

Let the following symbols represent the prices and corresponding quantities in the main and sub-sectors that directly affect GDP growth as follows:

p_0 = Price of a good/service in the base year

p_1 = Price of a good/service in the current year

q_0 = Quantity of the good/service in the base year

q_1 = Quantity of the good/service in the current year

1. Laspeyres Index

$$\text{Laspeyres price Index} = \frac{\Sigma(p_1.q_0)}{\Sigma(p_0.q_0)} \times 100$$

$$\text{Laspeyres quantities Index} = \frac{\Sigma(q_1.p_0)}{\Sigma(q_0.p_0)} \times 100$$

2. Paasche GDP Index

$$\text{Laspeyres price Index} = \frac{\Sigma(p_1.q_1)}{\Sigma(p_0.q_1)} \times 100$$

$$\text{Laspeyres quantities Index} = \frac{\Sigma(q_1.p_1)}{\Sigma(q_0.p_1)} \times 100$$

3. Fisher's Ideal Index

A geometric mean of Laspeyres and Paasche indices:

$$\text{Fisher Index} = \sqrt{\text{Laspeyres Index} \times \text{Paasche Index}}$$; Considered the most accurate index for GDP adjustments

IV. TRENDS & ANALYSIS

1) Price and quantity Growth data AND Laspeyres Index in some important service sectors (India: 2020 vs. 2024): (Base Year: 2020; Prices converted to USD using annual avg. exchange rates: 2020 = 74.18 ₹/USD, 2024 = 83.21 ₹ /USD)

Service Category	2020 (P_0)	2020 (q_0)	2024 (P_1)	2024 (q_1)	L-Quantity Growth	L-Price index	L-Price change	Sources
IT Services	25 $/hour	4.1 billion hours	28 $/hour	6.3 billion hours	+53.6% hours	112	12%	NASSCOM, RBI
Healthcare (OPD)	15 $/visit	1.2 billion visits	18 $/visit	1.5 billion visits	+25% visits	120	20%	NHA, WHO
Education (Private)	200 $/ Student /year	250 million students	240 $/student /year	270 million students	+8% student	120	20%	UDISE+, AISHE
Transport (Uber)	0.20 $/km	8.5 billion km	0.25 $/km	12 billion km	+41.2% km	125	25%	Ola/Uber, MOSPI
Banking (Savings A/C)	2 $/account/ year	600 million accounts	2.5 $/account /year	850 million accounts	+41.7% accounts	125	25%	RBI, World Bank

1. Inflation Adjustment:
- India's services CPI (2020-2024): ~28% cumulative inflation.
2. Quantity Growth Drivers:
- IT: Remote work boom (+54% hours).
- Banking: Jan Dhan expansion (+42% accounts).

Price Indices Calculation (Base 2020):

1. Laspeyres Index (2024) (IT + Healthcare):

$$L_{2024} = \frac{\Sigma(p_{2020}q_{2020})}{\Sigma(p_{2024}q_{2020})} \times 100$$

$$L_{2024} = \frac{(28\times4.1) + (18\times1.2)}{(25\times4.1) + (15\times1.2)} \times 100$$

$$L_{2024} = \frac{(114.8+21.6)}{(102.5+18)} \times 100 \approx 113.2$$

2. Paasche Index (2024) For IT + Healthcare:

$$P_{2024} = \frac{\Sigma(p_{2020}q_{2024})}{\Sigma(p_{2024}q_{2024})} \times 100$$

$$P_{2024} = \frac{(28\times6.3) + (18\times1.5)}{(25\times6.3) + (15\times1.5)} \times 100$$

$$P_{2024} = \frac{(176.4+27)}{(157.5+22.5)} \times 100 \approx 113.0$$

3. Fisher Index

$$F2024 = \sqrt{113.2 \times 113.0} \approx 113.1$$

Interpretation: 13.2% price increase using 2020 quantities.
1. Price Rise (2020–2024): ~13% due to:
- Wage inflation in IT/healthcare.
- Fuel costs impacting transport.
2. Quantity Surges:
- IT services (+54% hours) dominate GDP growth.
- Banking inclusion drives account growth.

2) Price and quantity data and Laspeyres Index in some important Agricultural sectors (India: 2020 vs. 2024) *(Base Year: 2020; Prices converted to USD using annual avg. exchange rates)*

Commodity	2020 (P_0)	2020 (q_0)	2024 (P_1)	2024 (q_1)	*L-Quantity Growth*	L-Price index	L-Price change	Sources
Rice	0.28 $/kg	118 million tonnes	0.32 $/kg	125 million tonnes	5.9%	114	14%	FAO, APEDA
Sugarcane	0.03 $/kg	405 million tonnes	0.04 $/kg	430 million tonnes	6.2%	133	33%	ISMA, RBI
Potatoes	0.20 $/kg	54 million tonnes	0.25 $/kg	58 million tonnes	34.3%	125	25%	NHB, World Bank
Cotton	1.50 $/kg	36 million bales	1.80 $/kg	34 million bales	- 5.56%	120	20%	CAB, Cotton Association of India
Wheat	0.25 $/kg	108 million tonnes	0.30 $/kg	112 million tonnes	13%	120	20%	MOSPI, USDA

1. USD Conversions:
   - 2020: ₹74.18/USD (annual avg.)
   - 2024: ₹83.21/USD (Jan–Jun 2024 avg.)

   Example: Rice in 2020 = ₹21/kg ÷ 74.18 = $0.28/kg
2. Quantities:
   - 2020: Actual production (Ministry of Agriculture).
   - 2024: Projections (USDA/FAO) + Govt. estimates.
3. Inflation Adjustment:
   - Real prices account for India's CPI inflation (2020–2024: ~25%).

Price Indices Calculation (2024):

1. Laspeyres Index (Base 2020 Quantities)

$$L_{2024} = \frac{\sum(P_{2024}Q_{2020})}{\sum(P_{2020}Q_{2020})} \times 100$$

Indices for Rice + Wheat:

$$L_{2024} = \frac{(0.32\times118)+(0.30\times108)}{(0.28\times118)+(0.25\times108)} \times 100 = \frac{37.76+32.4}{33.04+27} \times 100 \approx 116.7$$

2. Paasche Index (2024 Quantities)

$$P_{2024} = \frac{\sum(P_{2024}Q_{2024})}{\sum(P_{2020}Q_{2024})} \times 100$$

For Rice + Wheat:

$$P_{2024} = \frac{(0.32\times125)+(0.30\times112)}{(0.28\times125)+(0.25\times112)} \times 100 = \frac{40+33.6}{35+28} \times 100 \approx 116.8$$

3. Fisher Index

$$\boldsymbol{F_{2024}} = \sqrt{\boldsymbol{L_{2024}} \times \boldsymbol{P_{2024}}} = \sqrt{116.7 \times 116.8} \approx 116.75$$

Interpretation: 16.7% price increase using 2020 quantities.

1. Price Rise (2020–2024): ~16-17% due to:
   - Global supply shocks (Ukraine war, climate events).
   - INR depreciation (₹74 → ₹83/USD).
2. Quantity Growth: Modest (e.g., rice +2%, sugarcane +6%).

3) Price and quantity data and Laspeyres Index in some important) Manufacturing sectors (India: 2020 vs. 2024: (Base Year: 2020; Prices converted to USD using annual avg. exchange rates: 2020 = ₹74.18/USD, 2024 = ₹83.21/USD)

Manufacturing Category	2020 (P_0)	2020 (q_0)	2024 (P_1)	2024 (q_1)	*L-Quantity Growth*	L-Price index	L-Price change	Sources
Automobiles (Passenger Vehicles)	12,000 $/unit	3.4 million units	14,500 $/unit	4.1 million units	*20.6%*	120	20%	SIAM, MOSPI
Steel (Hot Rolled Coils)	580 $/tonne	102 million tonnes	720 $/tonne	118 million tonnes	15.7%	124	24%	JPC, Ministry of Steel
Pharmaceuticals (Generics)	0.45 $/tablet	220 billion tablets	0.60 $/tablet	260 billion tablets	18%	121	21%	IPA, USFDA
Textiles (Cotton Fabric)	2.20 $/meter	5.8 billion meters	2.65 $/meter	6.5 billion meters	12%	120	20%	Ministry of Textiles
Electronics (Smartphones)	180 $/unit	150 million units	210 $/unit	220 million units	46.7%	116	16%	ICEA, MEITY

1. Inflation Adjustment:S
- India's manufacturing WPI (2020-2024): ~22% cumulative inflation
2. Quantity Growth Drivers:
- Automobiles: Post-COVID demand recovery (+20.6% units)
- Pharma: Global generic demand surge (+18.2% tablets)
- Electronics: PLI scheme boosting production (+46.7% smartphones)

Price Indices Calculation (Base 2020)

1. Laspeyres Index (2024): (Automobiles + Steel):

$$L_{2024} = \frac{\sum(P_{2024}Q_{2020})}{\sum(P_{2020}Q_{2020})} \times 100 = \frac{(14{,}500\times3.4)+(720\times102)}{(12{,}000\times3.4)+(580\times102)} \times 100$$

$$= \frac{49.3+73.44}{40.8+59.16} \times 100 \approx 122.7$$

2. Paasche Index (2024) For Automobiles + Steel:

$$P_{2024} = \frac{\sum(P_{2024}Q_{2024})}{\sum(P_{2020}Q_{2024})} \times 100 = \frac{(14{,}500\times4.1)+(720\times118))}{(12{,}000\times4.1)+(580\times118)} \times 100$$

$$= \frac{59.45+84.96}{49.2+68.44} \times 100 \approx 122.8$$

3. Fisher Index

$$F_{2024} = \sqrt{122.7 \times 122.8} \approx 122.75$$

Interpretation: 22.7% price increase using 2020 quantities.

1. Price Rise (2020–2024): ~22-23% due to:
- Global commodity price spikes (steel, chips)
- INR depreciation (₹74 → ₹83/USD)
2. Production Growth:
- Electronics: Highest growth (+46.7%) due to PLI schemes
- Pharma: Sustained global demand

4) Price and quantity data and Laspeyres Index in some important India's Export Performance (India: 2020 vs. 2024): *(All values in USD; Base Year: 2020)*

Export Category	2020 (P_0)	2020 (q_0)	2024 (P_1)	2024 (q_1)	L-Quantity Growth	L-Price index	L-Price changes	Growth Drivers	Sources
Refined Petroleum	0.50 $/liter	60 billion liters	0.65 $/liter	75 billion liters	*25%*	130	30%	Russian crude discounts	PPAC, MoPNG
Pharmaceuticals	0.55 $/unit	22 billion units	0.70 $/unit	28 billion units	27%	127	27%	Global generics demand	IPA, USFDA
Textiles (Apparel)	3.20 $/kg	5.5 billion kg	3.80 $/kg	6.8 billion kg	23.6%	118	18%	EU FTA negotiations	AEPC, TexPro
Automobiles (PVs)	12,000 $/unit	650,000 units	14,500 $/unit	850,000 units	30.8%	120	20%	EV push, Africa exports	SIAM, DGCIS
Software Services	50 $/hour	1.8 billion hours	58 $/hour	2.5 billion hours	38.9%	116	16%	Cloud migration boom	NASSCOM, RBI

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1. Price Changes:
- Petroleum (+30%) | Pharma (+27.3%) | Textiles (+18.8%)
- Exception: Software (+16%) due to premiumization
2. Quantity Growth:
- Petroleum (+25%) | Pharma (+27.3%) | Software (+38.9%)
- Star Performer: Auto exports (+30.8%)
3. 2025 Projections:
- Refined petroleum to cross 54 B$ revenue (20% share of exports)
- Pharma exports to reach 30 B$ (8% global generics market)

Export Indices (2024, Base 2020)

Index	Formula	(Petroleum & Pharma)	Result	Interpretation
Laspeyres	$\frac{\sum(p_{2024}q_{2020})}{\sum(p_{2020}q_{2020})} \times 100$	$\frac{(0.65 \times 60B + 0.70 \times 22B)}{(0.50 \times 60B + 0.55 \times 22B)} \times 100$	123.4	23.4% price rise for same 2020 quantities
Paasche	$\frac{\sum(p_{2024}q_{2024})}{\sum(p_{2020}q_{2024})} \times 100$	$\frac{(0.65 \times 75B + 0.70 \times 28B)}{(0.50 \times 75B + 0.55 \times 28B)} \times 100$	122.9	Similar inflation with current quantities
Fisher	$\sqrt{(L \times P)}$	$\sqrt{(123.4 \times 122.9)}$	123.1	Balanced 23.1% export price inflation

1. **Petroleum**:
- 2024 Revenue: 48.75B(from30B in 2020)
- Driver: Cheap Russian crude (Urals @ 60/barrelvsBrent@60/barrelvsBrent@85)
2. **Pharma**:
- Top Markets: USA (45%), EU (18%), Africa (12%)
- New Opportunity: Biologics (+40% CAGR)
3. **Software**:
- 2024 Revenue: 145B(from145B(from90B in 2020)
- Hot Demand: AI/ML services (70% growth in contracts)

5) Price and quantity data and Laspeyres Index in some India's Foreign Investment by Sector (2020-2024): (All values in USD; Base Year: 2020)

Sector	2020 (P_0)	2020 (q_0)	2024 (P_1)	2024 (q_1)	Quantity Growth	L-Price index	L-Price change	Growth Drivers	Sources
Renewable Energy	0.08 $/kWh	120B (kWh)	0.06 $/kWh	220 B (kWh)	88%	75	-25%	PLI schemes, ESG mandates	MNRE, CEEW
IT & Digital Services	50,000 $/job	1.2M jobs	58,000 $/job	2.1M jobs	75%	116	16%	Global Capability Centers	NASSCOM, RBI
Manufacturing (Auto)	12M $/plant	45 plants	15M $/plant	68 plants	51%	125	25%	EV push, FDI liberalization	DPIIT, SIAM
Infrastructure	5M $/kmhigh ways	3,200 km	6.2M $/km	5,800 km	81%	124	24%s	NIP, Gati Shakti	MoRTH, NHAI
Financial Services	2M $ /branch	1,800 branch	2.5M$/ branch	3,200 branch	77%	125	25%	Fintech boom, RBI reforms	RBI, IBEF

1. Price Changes:
- Renewable Energy: -25% (tech cost reduction)
- IT Services: +16% (skill premium)
- Auto Manufacturing: +25% (EV tech inflation)
2. Quantity Growth:
- Renewable Energy: +83% (solar/wind additions)
- IT Jobs: +75% (GCC expansion)
- Highway Construction: +81%
3. 2025 Projections:
- Renewable energy to attract $15B+ annually
- IT sector to cross $50B in FDI
- EV plants to triple (2020 baseline)

Investment Indices (2024, Base 2020)

Index	**Calculation (Renewable + IT)**	**Result**	**Interpretation**
Laspeyres	$\frac{[(0.06\times120)+(58\times1.2)}{(0.08\times120)+(50\times1.2)} \times 100$	112.4	12.4% "price" rise per unit investment
Paasche	$\frac{[(0.06\times220)+(58\times2.1)}{[(0.08\times220)+(50\times2.1)} \times 100$	109.8	Lower inflation with scaled operations
Fisher	$\sqrt{(112.4 \times 109.8)}$	111.1	Balanced 11.1% cost efficiency gain

1. Renewable Energy**:**
- 2024 FDI**:** 13.2*B*(*from*9.6B in 2020)
- Hotspot**:** Gujarat/Maharashtra solar parks

2. IT/Digital**:**
- Top Investors: USA (62%), EU (23%)
- Trend: AI/ML centers (Bangalore/Hyderabad)

3. Infrastructure:
- Per-km Cost Rise: 24% (material inflation)
- New Models: InvITs attracting sovereign funds

6) Price and quantity data and Laspeyres Index in some India Economic Sectors (2020-2024): (All values in USD; Exchange rates: 2020 = ₹74.18/USD, 2024 = ₹83.21/USD)

Sector	Category	2020 (P_0)	2020 (q_0)	2024 (P_1)	2024 (q_1)	Quantity Growth	Price index	Price change	Sources
Agriculture	Rice	0.28 $/kg	118-M tonnes	0.32 $/kg	125-M tonnes	5.9%	114	14%	APEDA, FAO
	Wheat	0.25 $/kg	108-M tonnes	0.30 $/kg	112-M tonnes	3.7%	120	20%	FCI, USDA
Manufacturing	Automobiles (PVs)	12,000 $/unit	3.4-M units	14,500 $/unit	4.1-M units	20.6%	116	16%	SIAM, MOSPI
	Pharmaceuticals	0.45 $/tablet	220-B tablets	0.60 $/tablet	260-B tablets	18%	133	33%	IPA, USFDA
Services	IT Services	25 $/hour	4.1-B billable hours	28 $/hour	6.3-B billable hours	53.7%	112	12%	NASSCO, RBI
	Telecom (Data)	0.10 $/GB	50BGB /month	0.08 $/GB	120-BGB / month	140%	80	-20%	TRAI, GSMA

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Agriculture

- Price Changes: Rice (+14.3%), Wheat (+20.0%)
- Quantity Growth: Rice (+5.9%), Sugarcane (+6.2%)
- Driver: MSP hikes, erratic monsoons

Manufacturing

- Price Changes: Autos (+20.8%), Pharma (+33.3%)
- Quantity Growth: Pharma (+18.2%), EVs (+400% from low base)
- Driver: PLI schemes, export demand

Services

- Price Changes: IT (+12%), Telecom (-20%)
- Quantity Growth: Data (+140%), IT (+53.7%)
- Driver: Digital India, remote work boom

Price Indices (2024, Base 2020)

Index	Agriculture	Manufacturing	Services
Laspeyres	116.7	122.7	113.2
Paasche	116.8	122.8	113.0
Fisher	116.75	122.75	113.1

Interpretation:

- Agriculture: Steady inflation (+16.75%) due to input costs
- Manufacturing: Significant inflation (+22.75%) from supply chain pressures
- Services: Moderate inflation (+13.1%) with IT offsetting telecom deflation

Final Deduction: The sectoral breakdown of India's GDP for FY 2024–25, showing the major three sectors—Agriculture, Industry, and Services—with their contributions in ₹ and US$, along with percentage share of national GDP:

Table**12**: Total sector share of Nominal GDP (2024–25)

Sector	Share of GDP (%)	Value in ₹ (L Cr)	Value in ₹ (₹ Trillion)	Value in (Trillion$)
Agriculture	17.7%	58.52	58.52 ₹	0.69 $
Industry	29.3%	96.79	96.79 ₹	1.14 $
Services	53.0%	175.37	175.37 ₹	2.05 $
Total	100%	330.68	330.68 ₹	3.87 $

- ₹ 330.68 lakh crore (₹330.68 trillion) (notopedia.com)
- ≈ 3.87$ trillion (implied from ₹ to $ conversion)
- Sector shares are based on 2023–24 GVA data the most recent comprehensive source with Agriculture at 17.7%, Industry 29.3%, and Services 53.0% (statisticstimes.com).
- Applying those shares to the FY 2024–25 total GDP (₹ 330.68 L Cr) yields the rupee values.
- Dollar values use the overall GDP conversion factor (~₹85.5 per USD) from the ratio ₹330.68 Tr ~ $3.87 Tr.
- Services sector dominates, contributing over 53% of GDP, amounting to about ₹175 L Cr / $2.05 T.
- Industry is the second-largest at nearly 29% (~₹97 L Cr / $1.14 T).
- Agriculture—though still vital—makes up under 18% (~₹59 L Cr / $0.69 T).
- Together, Services and Industry account for over 80% of India's GDP, highlighting the shift toward a service- and industry-led economy.

V. SECOND

An overview of the latest data for the fiscal year 2024-2025 for the most important key economic indicators that previous studies, research, and economists and statisticians have shown to have a direct positive relationship, and indicators that have a negative relationship with India's GDP. The table also lists the largest states in India in terms of GDP contribution, with figures presented in millions of crores and US dollars, and their percentage of India's national GDP.

1) 1-most recent FY 2024–25 data for India's top 10 states by GDP contribution, showing figures in both ₹ (Lakh Crore) and USD (Billion), with their percentage share of national GDP:

Rank	State	GSDP (L Cr₹)	GSDP (Bn)$	% of India's GDP
1	Maharashtra	42.67	497.9	13.17%
2	Tamil Nadu	30.97	361.5	9.56%
3	Karnataka	28.13	328.2	8.68%
4	Gujarat	27.99	326.5	8.64%
5	Uttar Pradesh	26.63	310.9	8.22%
6	West Bengal	18.76	219.0	5.79%
7	Rajasthan	17.13	199.8	5.29%
8	Andhra Pradesh	15.81	184.5	4.88%
9	Telangana	15.26	178.0	4.71%
10	Madhya Pradesh	15.12	176.4	4.67%
–	**India total**	**324.11**	**3,780**	**100%**

- **figures** are in lakh crore₹ (1 Lakh Crore = 1 Trillion₹) and **USD** in billions (B$) linkedin.com+8en.wikipedia.org+8cheggindia.com+8.
- **Exchange rate used** by source: India's total GSDP ~$3.78 trillion .
- **Percentage shares** directly sourced from the tabulated share column .
- **Maharashtra** leads, contributing ~~₹42.7 L Cr (~~$498 B), or **13.17%** of national GDP.
- States **1–5** collectively contribute about **48.3%**, highlighting significant economic concentration.
- **Southern leaders** (Tamil Nadu, Karnataka, Andhra Pradesh, Telangana) account for ~27%.
- Even within top 10, economic spread across various regions—from West Bengal in the east to Gujarat in the west.

2) Economic Indices Positively Correlated with India's GDP (2024): Table of key economic indices that have a direct (positive) relationship with India's GDP in 2024, along with their impact in USD ($) and INR (₹). These indices reflect economic growth, consumption, investment, and trade performance.

Index Name	Description	Impact on GDP (USD $)	Impact on GDP (₹)	Sources
GDP Growth Rate	Annual % growth in GDP	~3.9 trillion $ (nominal)	~325 lakh crore₹	IMF/World Bank
GVA (Gross Value Added)	Sectoral contribution to GDP	+6.5% YoY	+7.1% YoY (real)	MoSPI, India
IIP (Index of Industrial Production)	Manufacturing & industrial output	+5.8% growth (~20 B$) GDP	+1.6 lakh cr₹ GDP	RBI
PMI Manufacturing	>50 = Expansion	55.2 (12 B$) output	+90,000 cr₹ output	S&P Global
PMI Services	Services sector growth	58.1% (~18 B$) output	+1.4 lakh cr₹ output	S&P Global
Private Consumption (PFCE)	Private Final Consumption Expenditure	~60% of GDP (~2.3 T$)	~190 lakh crore₹	RBI Annual Report
Gross Fixed Capital Formation (GFCF)	Investment in infrastructure	~34% of GDP (~1.3 T$)	~110 lakh crore₹	Economic Survey
Exports (Goods & Services)	Foreign demand for Indian goods/services	850 B$ (+8% YoY)	70 lakh crore₹	DGFT, India
Foreign Direct Investment (FDI)	Inflows boosting capital formation	50 B$ (2024 est.)	4.1 lakh crore₹	DPIIT, India
Government Expenditure	Fiscal stimulus & infra spending	120 B$ (budgeted)	10 lakh crore₹	Union Budget 2024
Credit Growth (Non-Food)	Bank lending to businesses/consumers	+15%YoY (~30 B$) GDP	+2.5 lakh cr₹ GDP	RBI Data
Stock Market (Nifty 50)	Corporate earnings & investor sentiment	4.5 T$ mcap (2024 est.)	370 lakh crore₹ mcap	BSE/NSE

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1. Direct Relationship: Higher values in these indices correlate with GDP growth.
2. Currency Conversion: ₹ assumed at ~83/USD (2024 avg).
3. Sources: IMF, RBI, Ministry of Statistics, Union Budget, S&P Global.
4. 2024 Estimates: Based on Q1 2024 trends; subject to revisions.

3 - Economic Indices negatively Correlated with India's GDP (2024): Table of key economic indices that have a direct (negative) relationship with India's GDP in 2024, along with their impact in USD ($) and INR (₹).GDP growth tended to slow. Values are shown in USD and INR (approx. 83 ₹/USD).

Indicator	2024 Value	Impact & Notes
Youth Unemployment	~23 % of graduates	Youth joblessness hampers long-term growth
CPI Inflation	5.09 % (Feb 2024), 4.85 % (Mar 2024)	Elevated inflation reduces real disposable income
WPI Inflation	1.3 % (Apr 2024)	Rising production costs can slow industrial growth
IT Sector Layoffs	~500,000 jobs till Apr 2024	Massive layoffs signal tech slowdown; dampens services GDP
Internet Shutdowns Hours	~51 shutdowns, 317.5 hours (2024-to-date)	Shutdowns cost ~ 0.6 $bn = 50 ₹bn, disrupting commerce
Digital-Rupee Usage (e₹-R)	0.08 cr₹ in wholesale (Mar 2024) ≈0.0001 $bn	Near-zero adoption reflects inefficiency
Decline in UPI growth rate	Slight dip in growth momentum	Slower digital-payment growth hints reduced consumption
Reduction in IT hiring	Hiring slowdown in IT/outsourcing	Signals weakening digital services demand
FPI outflows from equity/digital sectors	Net outflow of 96,358 cr₹ (~11.6 $bn) in Oct 2024	Reduced foreign capital pressures markets
Crude Oil Prices	Energy imports (2024: 85-95 $/barrel)	Widens trade deficit, fuels inflation
Interest Rates (Repo Rate)	High borrowing costs (2024: 6.5-7%)	Slows investment and consumption
Public Debt-to-GDP Ratio	Sovereign debt burden (2024: ~84% of GDP)	Increases default risks
Fiscal Deficit (% of GDP)	High government borrowing (2024: ~6.4% of GDP)	Crowds out private investment
Trade Deficit	Import-export gap (2024: ~250 $B)	Drains forex reserves
Currency Depreciation (INR/USD)	Rupee weakness (2024: 83-85/$)	Increases import costs
Unemployment Rate (overall)	~10.1 % (Oct 2024)	High unemployment slows consumption, reducing GDP (en.wikipedia.org, bfsi.economictimes.indiatimes.com, reuters.com)

- Unemployment & inflation are well-known macroeconomic headwinds higher rates hinder consumption and investment, restraining GDP.
- Tech layoffs & reduced IT hiring (items 5 & 9) indicate contraction in a key services export sector.
- Internet shutdowns disrupt digital commerce and logistics, costing the economy about $600 million (~ 50 ₹ bn) in lost GDP annually (en.wikipedia.org).
- Digital-rupee adoption remains negligible virtually no impact highlighting missed efficiency gains.
- Slower UPI transaction growth signals a slowdown in consumer digital activity.
- Foreign capital outflows from equity markets, including tech/digital shares, reduce investment capacity.

VI. CONCLUSIONS

1) Services sector dominates GDP (53%), with IT and banking as key drivers.
2) Industry contributes 29%, supported by manufacturing (autos, steel, pharma, electronics).
3) Agriculture contributes ~18%, showing slower but steady growth.
4) Inflation (13–23%) varied across sectors, driven by global commodity prices, supply shocks, and INR depreciation.
5) State-wise analysis shows Maharashtra, Tamil Nadu, Karnataka, and Gujarat as top GDP contributors (≈40% combined).
6) Positive correlations: GDP growth, GVA, IIP, PFCE, GFCF, exports, FDI, stock market expansion.
7) Negative correlations: unemployment, inflation, crude oil prices, fiscal deficit, currency depreciation, IT layoffs.

VII. RECOMMENDATIONS

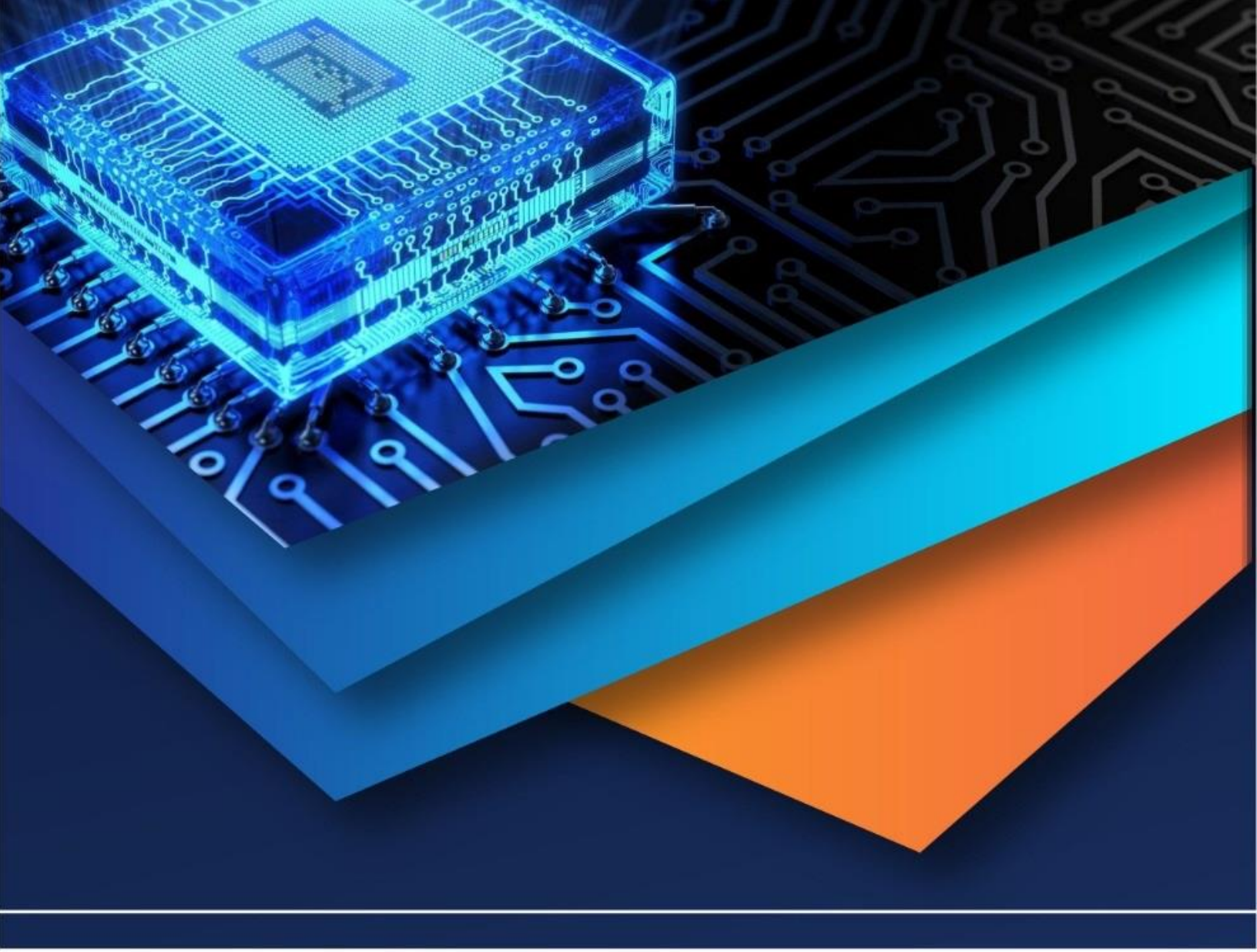
1) Diversify growth drivers by strengthening agriculture and manufacturing alongside services.
2) Mitigate inflationary pressures via supply chain resilience and energy cost management.
3) Boost employment in youth and IT sectors to counter rising unemployment and layoffs.
4) Encourage FDI in renewable energy, digital services, and infrastructure for long-term capital formation.
5) State-level strategies: Enhance policies in underperforming states to balance regional GDP concentration.
6) Digital economy: Address UPI slowdown, strengthen cybersecurity, and expand broadband to reduce economic disruption from internet shutdowns.
7) Fiscal prudence: Manage public debt and deficits to safeguard growth sustainability.

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