

Analyzing India's Total Trade Value and GDP Per Capita: A Power BI Journey and Economic Insights

Exploring India's Trade Openness and Economic Growth (1960-2023)

By
Saptarshi Bandyopadhyay

Introduction

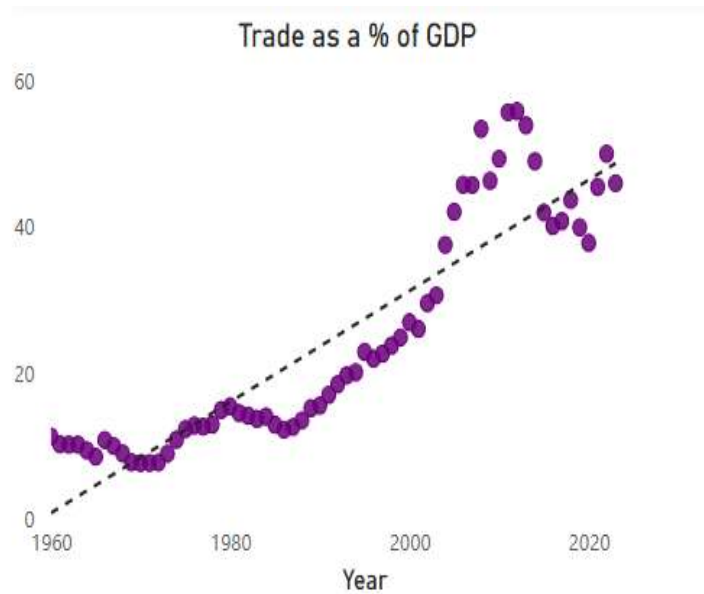
- Focus: Total trade value (exports + imports as a % of GDP) as a measure of India's trade openness.
- Relevance: Highlights India's integration into the global economy and its economic development.
-
- Context: The US-China trade war impacts global trade flows, affecting India's trade opportunities and risks.
- Objective: Analyze trends in total trade value and GDP per capita from 1960 to 2023.

ETL Process - Extract, Transform, Load

- Extract:** Sourced data from the World Bank (CSV format).
- Transform** (in Power Query):
 - Verified no missing values.
 - Set data types: Year (integer), Total Trade (% of GDP) (decimal), GDP Per Capita (USD) (fixed decimal).
 - Removed duplicates (none found).
 - Renamed columns: e.g., trade data to Total Trade (% of GDP).
 - Added calculated column: $\text{Log_GDP_percapita} = \log([\text{GDP Per Capita (USD)}])$. Here I used Natural log
- Load:** Loaded into Power BI's data model.

Visualization 1

Total Trade Volume Over Time



By Saptarshi

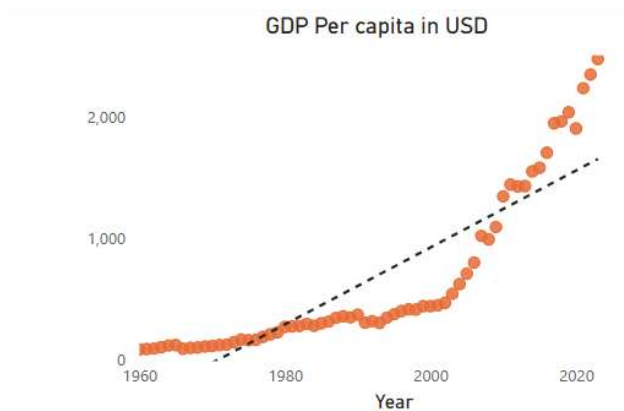
Key Insights

- 1960–1990s: Low trade openness (7%–15% of GDP).
- Post-1990s liberalization: Significant rise, peaking at 55.8% in 2012.
- Recent trends: Declined to 39.9% in 2019, rebounded to 49.9% in 2022, and settled at 45.9% in 2023.

3/28/2025

Visualization 2

GDP Per Capita Over Time



By Saptarshi

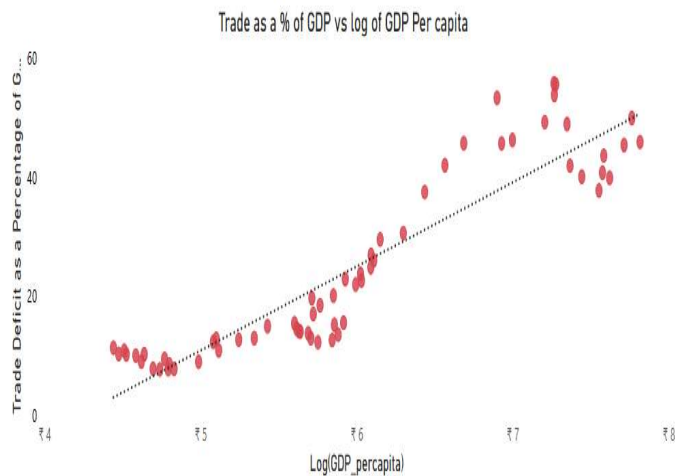
Key Insights

- 1960–1990s: Below \$200.
- Post-1991: Steady growth, accelerating after 2000.
- 2023: Reached \$2,480.

3/28/2025

Visualization 3

Trade Volume vs. Log of GDP Per Capita



By Saptarshi

Key Insights

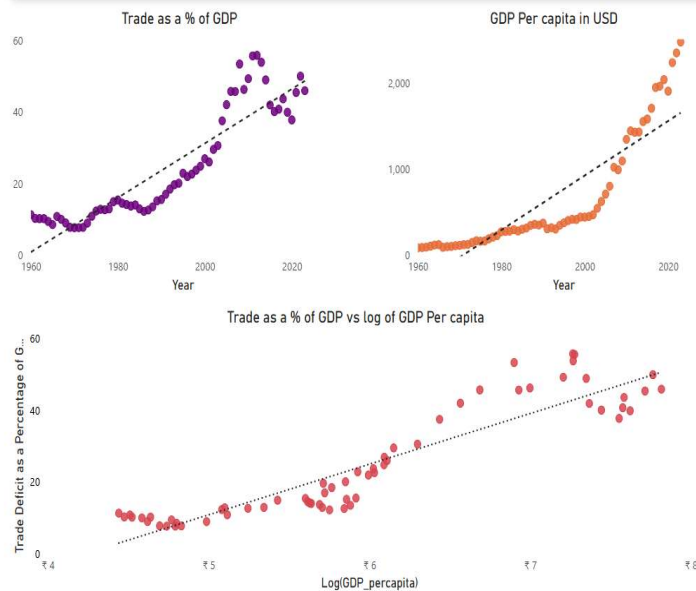
- Positive relationship: As Log_GDP_per capita rose from 4.5 (1960) to 7.8 (2023), trade volume increased.
- Sharp rise after Log_GDP_per capita crossed 5.5 (1990s).

3/28/2025

Visualization 4

Analysis of the Relationship

Trade deficit as a percentage of GDP vs log of GDP per capita



By Saptarshi

- ✓ Finding: Higher GDP per capita correlates with increased total trade value.
- ✓ Interpretation: As India's income grows, its trade openness expands, signaling economic development and global integration.
- ✓ Key Period: Post-1990s liberalization accelerated this trend.

3/28/2025

Economic Implications

❑ **Benefits of Trade Openness:**

- Access to global markets, technology, and capital.
- Broader range of goods and services.

❑ **Challenges:**

- Vulnerability to global shocks (e.g., trade wars, price fluctuations).
- Risk of import reliance if exports don't keep pace.

India's Position Amidst the Trade War

- Total trade at 45.9% of GDP in 2023 reflects high global integration.
- **Opportunities:** Potential to capture trade diverted from China.
- **Risks:** Trade openness increases exposure to global trade disruptions.
- **Recent Volatility:** Trade value fluctuated from 49.9% (2022) to 45.9% (2023).

Recommendations for Leveraging Trade Openness

- ✓ **Diversify Trade Partners:** Strengthen ties with Africa, Southeast Asia, and Latin America.
- ✓ **Enhance Exports:** Invest in high-growth sectors (e.g., IT, pharmaceuticals).
- ✓ **Upgrade Infrastructure:** Reduce logistics costs and simplify trade regulations.
- ✓ **Capitalize on Global Shifts:** Position India as an alternative to China in manufacturing.