ISSN No.2349-7165

A Study on Indian Exports and Imports with respect to its Volume, Composition and Direction and its Impact on Growth and Sustainability in Indian Economy

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ABSTRACT

This study investigates the structure and evolution of India's exports and imports by examining their volume, composition, and direction, and evaluates their impact on economic growth and sustainability. Utilizing a combination of exploratory and descriptive research designs, the study draws upon secondary data from reputable sources including the Ministry of Commerce and Industry, RBI, and World Bank databases. The analytical framework involves regression models to assess the influence of trade flows on GDP.

Key findings show a significant transformation in India's trade profile between 2000 and 2024. Export composition shifted from traditional sectors like agriculture and textiles to high-value sectors such as engineering goods, pharmaceuticals, and IT services. Meanwhile, imports remain concentrated in crude oil, electronics, and precious metals, reflecting India's energy and technology dependence. Regression analysis reveals a strong positive relationship between exports and GDP, with exports showing a statistically significant impact on economic growth, whereas imports exhibit a negative yet meaningful correlation.

The study emphasizes that while exports have driven industrial development and global integration, persistent trade deficits due to high import bills challenge macroeconomic stability. The implications point towards the need for diversified export strategies, trade policy reforms, and domestic capability enhancements to reduce reliance on imports. Policymakers are urged to strengthen bilateral agreements, incentivize local production, and manage exchange rate fluctuations to ensure balanced trade growth. Overall, this research highlights the crucial role of strategic trade management in sustaining India's long-term economic momentum.

Keywords: Exports, Imports, Gross Domestic Product, Sustainable Economic Development indices.

INTRODUCTION

A. Indian economy:

India's economic journey has been marked by significant challenges and transformations. In the 1970s, a **57%-rupee devaluation**, political instability (including the 1975 Emergency), and global oil shocks led to a sharp decline in the average growth rate to 2.9%. The 1980s saw a turnaround with reforms like the removal of price controls, fiscal adjustments, import duty cuts, and increased government spending, raising growth to 5.7%. However, external shocks from the Soviet Bloc breakup and the Iraq-Kuwait war, along with unsustainable government spending, triggered a balance of payments crisis in 1990–1991. This led to bold economic reforms in 1991 focused on liberalization, openness, and globalization, which integrated India more closely with the global economy. Today, India stands as the world's **fifth-largest economy** by nominal GDP and third largest by purchasing power parity (PPP). With global growth expected at 2.7% and China's growth slowing to 4%, India's rise highlights its growing influence in shaping the global economic landscape.

Table 1: Trade during January 2025*

		January 2025 (USD Billion)	January 2024 (USD Billion)
Merchandise	Exports	36.43	37.32
	Imports	59.42	53.88
Services*	Exports	38.55	31.01
	Imports	18.22	14.84
Total Trade (Merchandise +Services) *	Exports	74.97	68.33
	Imports	77.64	68.72
	Trade Balance	-2.67	-0.39

** Note: The latest data for services sector released by RBI is for December 2024. The data for January 2025 is an estimation, which will be revised based on RBI's subsequent release. (ii) Data for April-January 2023-24 and April-September 2024 has been revised on pro-rata basis using quarterly balance of payments data.*

B. Indian Economy and export (volume and Composition):

India's export sector plays a pivotal role in its economic growth, contributing significantly to GDP, employment, and foreign exchange reserves. Understanding the volume and composition of India's exports is essential for assessing its trade performance and formulating effective economic policies. Below is an overview based on official sources.

Export Volume:

As of November 2023, India's overall exports (merchandise and services combined) were estimated at USD 62.58 billion, marking a 1.23% increase over

November 2022. During the same period, overall imports were estimated at USD 67.88 billion, exhibiting a negative growth of 6.16% over November 2022.

However, in October 2024, the merchandise trade deficit widened unexpectedly to USD 27.14 billion, surpassing the anticipated USD 22 billion and the previous month's USD 20.78 billion. Exports grew by 17.26% year-on-year to USD 39.2 billion, while imports rose modestly by 3.88% to USD 66.34 billion.

Export Composition

India's export basket is diverse, encompassing various sectors that contribute to its trade earnings. Key export categories include:

- **Engineering Goods**: This sector has been a significant contributor to export growth. During April-October 2024, engineering exports reached USD 67.49 billion.
- **Electronics Goods**: The electronics sector has also seen substantial growth. Shipments of electronics goods amounted to USD 19.07 billion during April-October 2024.
- **Petroleum Products**: India exports refined petroleum products, which form a significant portion of its export earnings.
- **Textiles and Apparel**: The textile industry, including garments, is a traditional export sector for India.
- **Pharmaceuticals**: India is known globally for its pharmaceutical products, exporting generic medicines to various countries.
- **Agricultural Products**: Items like rice, spices, and tea are notable agricultural exports. **C. Indian Economy and Import (volume and Composition):**

India's import sector significantly influences its economic landscape, affecting domestic industries, consumer markets, and the overall balance of trade. Understanding the volume and composition of imports provides insights into the country's economic dependencies and strategic priorities.

Import Volume:

In fiscal year (FY) 2023-24, India's total goods imports amounted to approximately USD 675.44 billion, reflecting a decrease of 5.66% compared to the previous fiscal year. Monthly data indicates that imports in December 2024 stood at USD 59.95 billion, a slight decrease from USD 69.95 billion in November 2024.

Import Composition

India's imports are diverse, encompassing various commodities essential for its industrial and consumer needs. Key import categories include:

- **Crude Petroleum**: Accounting for approximately 22% of total imports in FY 2023, crude petroleum remains India's largest import commodity. This represents a 32.4% increase compared to the previous fiscal year, underscoring the nation's energy requirements.
- **Coal, Coke, and Briquettes**: These commodities constituted about 6.9% of total imports in FY 2023, marking a significant increase of over 56% from the prior year. The surge reflects India's growing energy demands and industrial consumption.
- **Finished Steel**: Between April 2024 and January 2025, India imported record levels of finished steel, primarily from South Korea (2.4 million metric tons), China (2.3 million metric tons), and Japan (1.8 million metric tons). These three countries collectively accounted for 78% of India's finished steel imports during this period.
- **Electronic Goods**: A substantial portion of imports includes electronic items such as smartphones, computers, and components, catering to India's burgeoning consumer electronics market.
- **Gold and Precious Metals**: India's cultural affinity for gold drives significant imports of precious metals, impacting the trade balance.
- **Implications for the Indian Economy:**
  The composition and volume of imports have several implications:
- **Trade Deficit**: A higher import bill, especially in non-essential commodities, can widen the trade deficit, impacting foreign exchange reserves and currency stability.
- **Domestic Industries**: Dependence on imported raw materials and intermediate goods can affect the competitiveness of domestic industries.
- **Energy Security**: Heavy reliance on imported energy sources like crude oil and coal underscores the need for diversifying energy supplies and investing in renewable energy.

D. IMPACT OF EXPORT & IMPORT IN GROWTH OF INDIAN ECONOMY

Exports and imports are pivotal components of India's economy, influencing various facets such as GDP growth, employment, industrial development, and the balance of payments. Here's an overview of their impact:

Exports:

- **Economic Growth**: Exports contribute positively to India's GDP by generating foreign exchange and stimulating domestic production. Empirical studies have shown a positive relationship between exports and economic growth in India.
- **Employment and Industrialization**: Export-oriented industries, such as textiles, IT services, and pharmaceuticals, have created substantial employment opportunities and fostered industrial development.
- **Global Integration**: By engaging in international trade, India integrates into the global economy, accessing larger markets and benefiting from technology transfers and foreign investments.

Imports:

- **Domestic Consumption and Production**: Imports provide access to goods and services not readily available domestically, enhancing consumer choice and supporting industries reliant on foreign raw materials and technology.
- **Trade Deficit and Economic Stability**: A higher import bill, especially without a corresponding increase in exports, can lead to a trade deficit, impacting foreign exchange reserves and currency stability. For instance, India's trade deficit widened to $31.8 billion in November 2024.
- **Inflation and Monetary Policy**: Import prices influence domestic inflation. For example, rising crude oil prices can increase transportation and production costs, leading to broader inflationary pressures. This, in turn, affects monetary policy decisions regarding interest rates.

Net Impact on Economic Growth:

- **Balance of Trade**: A favourable balance, where exports exceed imports, contributes positively to GDP. Net exports in real terms subtracted two percentage points from growth due to weak global demand for exports and strong domestic demand driving imports.

- **Sectoral Effects**: Export-driven sectors experience growth and employment gains, while industries facing stiff import competition may struggle, affecting domestic production and jobs.
- **Exchange Rates**: Trade balances influence currency values. A trade deficit can lead to currency depreciation, making imports more expensive and exports cheaper, which may eventually help correct the deficit.

Recent Developments:

- **Global Trade Policies**: India's exports are under pressure due to stringent trade policies from major partners like the US and EU, affecting sectors such as steel and information technology.
- **Trade Agreements**: Ongoing negotiations for trade deals with entities like the EU and the UK aim to lower tariffs and boost exports, potentially enhancing economic growth.

REVIEW LITERATURE

A. GENERAL:

i. Indian Economy

- **Economic Reforms and Growth**: The World Bank's "**India Development Update" (2025)** discusses the need for India to reduce import tariffs and implement regulatory reforms to enhance foreign investment and economic growth.

ii. Export Composition:

- **Mathor and Sagar (2015)** state that the exports are increasing at a decreasing rate, but the imports are increasing at an increasing rate. Trade deficit increased very sharply from 2004-05 to 2009- 10. The composition of India's foreign trade has undergone substantial changes, particularly, after the liberalization and globalization. Our major exports now include manufacturing goods such as Engineering Goods, Petroleum Products, Chemicals and allied Products, Gems and Jewelleries, Textiles, Electronic Goods, etc.
- **FICCI (2016)** "During the last 25 years, India's exports have increased more than 17 times, from US$ 18.1 billion in 1990-91 to US$ 309 billion in 2014-15, and India's imports have increased 19 times, from US$ 23.5 billion in 1990-91 to US$ 447 billion in 2014-15. India's share in global exports has moved up from mere 0.6 percent in early nineties to 1.7 percent currently. Likewise, India's share in global imports has increased from around 0.6 percent during early nineties to 2.4 percent currently."

- **Diversification of Exports**: **Patra and Sahoo (2015)**, in their IMF Working Paper "Make in India: Which Exports Can Drive the Next Wave of Growth?", analyse the evolution of Indian exports in terms of composition, direction, and diversification patterns.

iii. Import Composition:

- **Mehta (2015)** found no evidence of causal relationship between imports and gross domestic product (GDP) for India, however only a unidirectional causality from GDP to exports was supported by results. Nevertheless, the Toda-Yamamoto causality test results by Kumar (**2018**) supported export-led growth and import-led growth hypotheses for India. Yuksel and Zengin (**2016**) have reported mixed findings on the causality between import, export and growth for five developing countries: Argentina, Brazil, China, Mexico and Turkey. Using Toda Yamamoto causality test, they found the export-led growth to be valid for only Argentina.
- **Import-Led Growth**: Bahmani-Oskooee M. (1986). Determinants of international trade flows: The case of developing countries, examine the imports and exports reactions were quicker and the total response time was shorter when an exchange rate, rather than relative prices, caused a change in international prices

iv. Export and Import Direction:

- **Trade Partners and Policies**: The World Bank's "**India Development Update" (2025)** also highlights the evolution of India's trade direction, emphasizing the need for diversification and increased participation in Global Value Chains (GVCs).
- **Ocampo and Vos (2008)** state that "Although, developing Countries control the majority of the world's non-oil markets, but developing nations have been increasingly involved, particularly since the latter part of the 1980s. More significantly, the export structure of emerging nations (collectively) shifted from primary products to manufactured goods."

2. Specific:

i. Impact of Export & Import on the Indian Economy

- **Sharma and Panagiotidis (2024)**, in their study "A Causal Analysis Between Exports, Imports and GDP per Capita in India" published in the *Journal of Quantitative Economics*, explore the causal relationships between trade components and economic growth.

ii. Trade Openness and Economic Growth:

- Role of Trade Policies: The paper "Trade Openness, Tariffs and Economic Growth: **An Empirical Study from Countries of G-20" (2024) S M Toufiqul Huq Sowrov** examined the relationships among trade openness, import tariff rates, and economic growth. The findings indicated a positive correlation between trade openness and economic growth, while higher tariffs were associated with negative impacts on growth.

iii. Positive Impact of Exports on Economic Growth:

- Exports as a Growth Driver: "The Impact of Imports and Exports **on Economic Growth: Panel Data Analysis" (2023)** analysed selected European Union countries and found a statistically significant positive relationship between exports and GDP growth, suggesting that increased exports contribute positively to economic growth.

iv. Mixed Impact of Imports on Economic Growth:

- **University Metropolitan, Faculty of management, Miloš Stojanović Ivana Božić Miljković University Metropolitan, Faculty of management**: This paper aims to answer the question of whether import and export have a positive impact on the movement of the gross domestic product. In the same study, imports were also found to have a positive and statistically significant relationship with GDP growth, indicating that imports, like exports, can positively influence economic growth.

RESEARCH METHODOLOGY

Title of the study:

A Study on Indian Exports and Imports with respect to its volume, composition and direction and its impact on growth and sustainability in Indian Economy

Objectives of research:

- To study the composition and direction of Export & Import in Indian Economy over the years.
- To Study the impact of Export & import of Indian Economy on Growth.

Research Design:

- Research design of the proposed study considering its objectives will be Exploratory as well as Descriptive in nature.

Sample and sampling:

- The sample size of the study Stratified Sampling, systematic sampling, Probability sampling Method is being used by the researcher in selecting Sample for the study.

DATA COLLECTION

Secondary Data: Collected, evaluated, presented through Regression, Collection of trade statistics and economic data from reputable sources, including the Ministry of Commerce and Industry, Reserve Bank of India, World Bank, and World Integrated Trade Solutions (WITS).

RESEARCH METHODOLOGY

The data has been evaluated and presented through the Regression analysis, to identify the analysis of export and import of the GDP % from the last decade. After the data analysis with the variables of R square and P intercept.

Identified with the given formula:

$Y(GDP) = d0 + \beta1 * X1 + \beta2 * X2 + \mu$

This model shows the Regression analysis formula in respect of the Current US $:

Y = GDP (current US $ / % growth),

X1 = Export (current US $ / % growth),

X2 = Import (current US $ / % growth),

β1 = First coefficient of Export,

β2 = First coefficient of Import,

d0 = Intercept

This study is structured around two main facets:

A. Overall Trend Analysis (2001-2023)

- Total value of exports and imports
- Merchandise imports and exports

B. Comparison of Composition and Concentration by Country

2001 vs. 2023

In this section, I have analysed the composition of India's exports and imports across two distinct points in time - 2001 and 2023.

PURPOSE OF THE STUDY

- The research aimed to analyze the impact of exports and imports on India's trade performance and economic growth.
- It sought to identify key trends, challenges, and opportunities within India's trade framework to provide actionable insights for improving trade balance and sectoral performance.

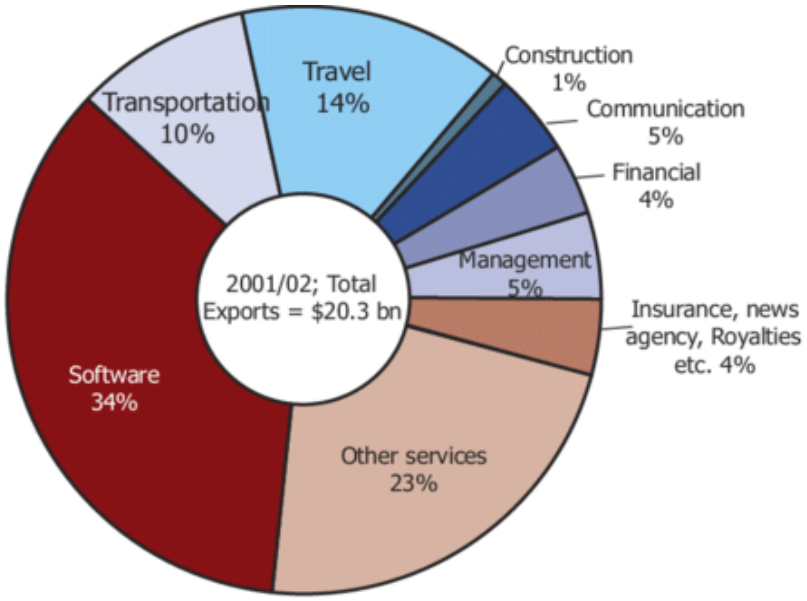
Significance and Implications

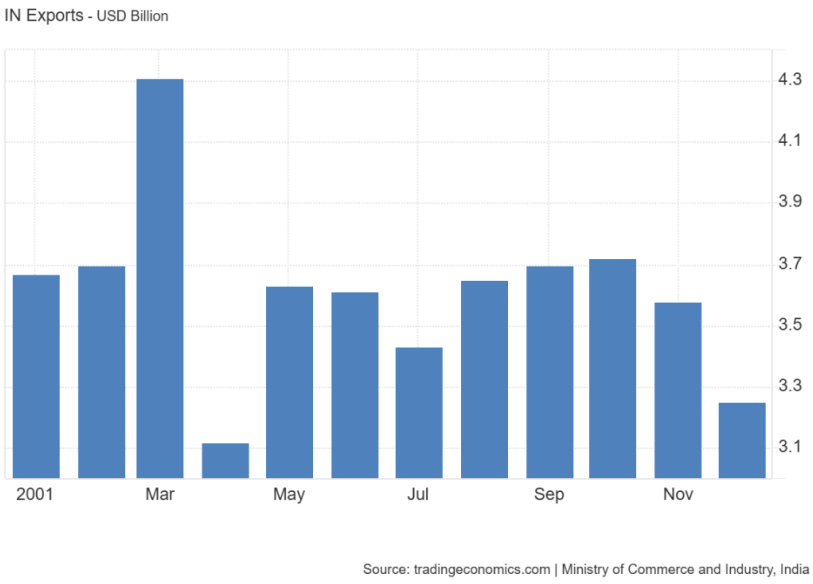
- The findings highlight the need for strategic trade policies, better market diversification, and improved domestic production capacity.
- Strengthening bilateral trade relations, managing exchange rate volatility, and enhancing domestic competitiveness are crucial for sustaining long-term trade growth.

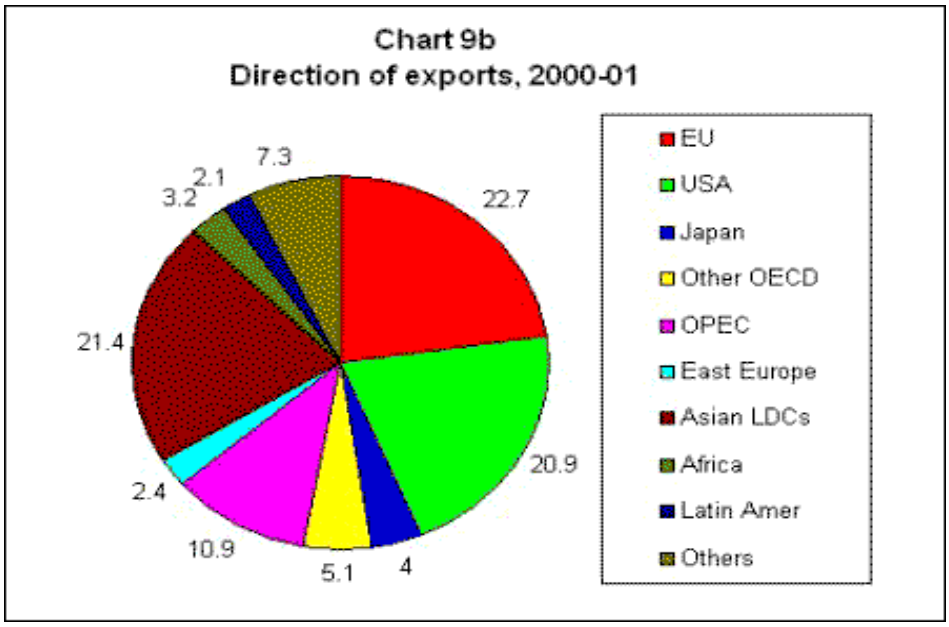
DATA ANALYSIS AND INTERPRETATIONS

1. A. India's Export Composition in 2001

In 2001, India's exports were primarily dominated by traditional sectors:



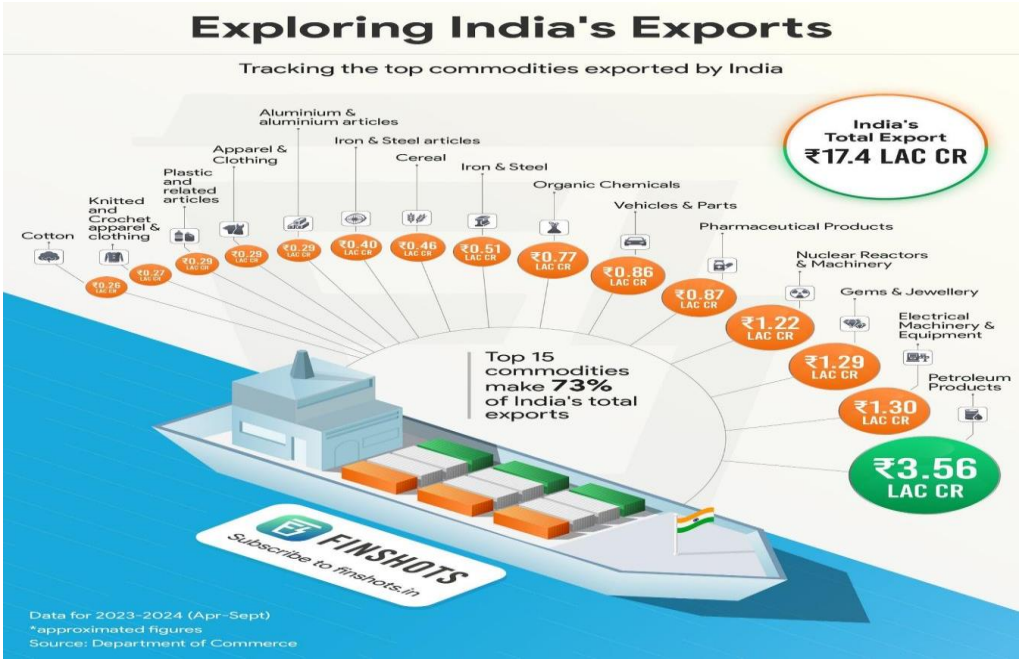




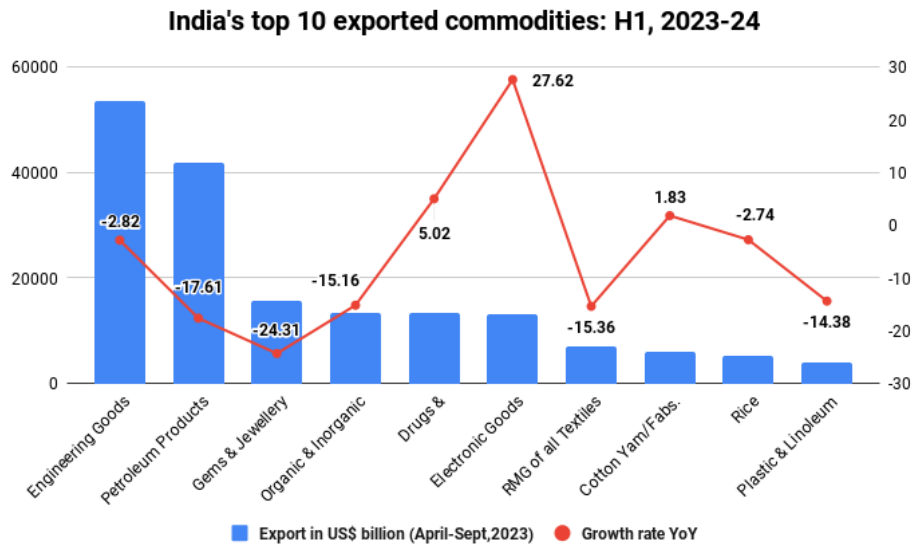
- Agricultural Products: Commodities such as tea, coffee, spices, and tobacco constituted a substantial portion of exports.
- Textiles and Garments: India was a major exporter of cotton textiles, garments, and related products.
- Gems and Jewellery: The export of cut and polished diamonds, along with gold jewelry, was significant.
- Engineering Goods: Including machinery and instruments, though on a smaller scale compared to other sectors.

B. India's Export Composition in 2024

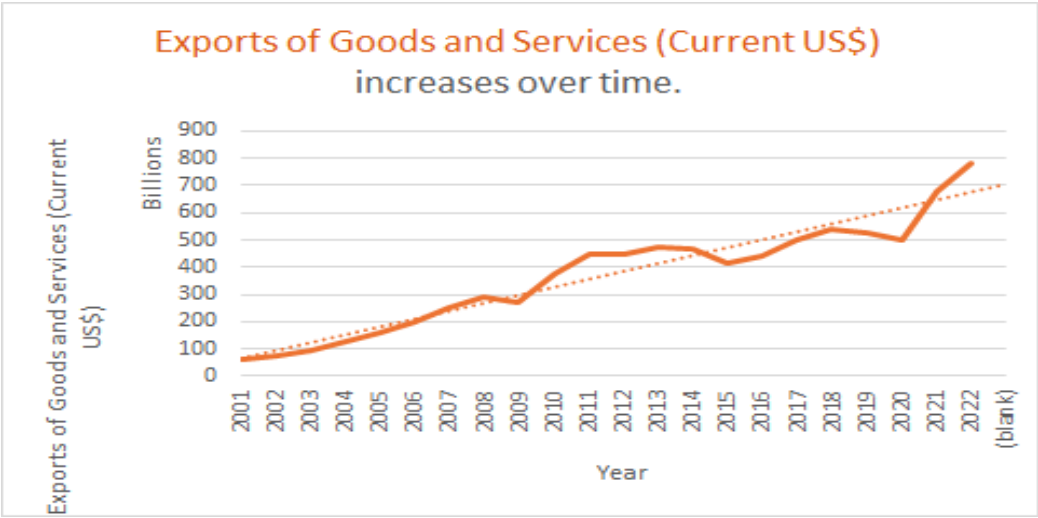
By 2024, India's export profile had diversified considerably:



- **Engineering Goods**: Over 9 trillion Indian rupees in FY 2024.
- **Petroleum Products**: Significant contributor, reflecting India's refining capacity.
- **Gems and Jewellery**: A traditional strength in India's export portfolio.
- **Pharmaceuticals**: Notable growth, establishing India as a global supplier.
- **Textiles and Apparel**: Consistent performance over the years



C. Exports of goods and services from 2000-2023:



Top 10 Export Destinations in 2024:

The following countries have been significant export destinations for India in recent years:

1. **United States**
2. **United Arab Emirates**
3. **China**

4. **Hong Kong**
5. **Singapore**
6. **United Kingdom**
7. **Germany**
8. **Bangladesh**
9. **Netherlands**
10. **Nepal**

Note: The exact figures and rankings for 2024 would require access to the latest trade data.

Interpretation of Changes:

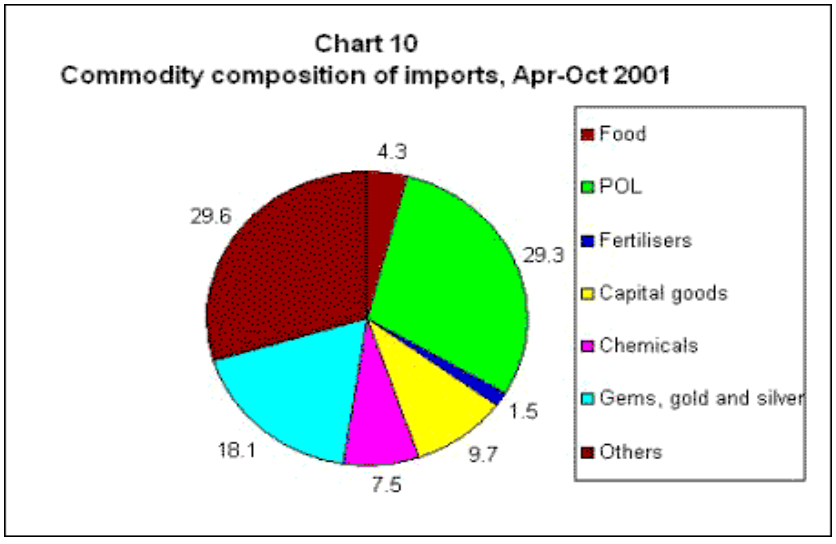
- **Diversification:** India's export markets have diversified over the years, with increased engagement in Asian and European markets.
- **Emerging Markets**: Countries like China and Bangladesh have become more prominent in India's export landscape, reflecting regional economic growth.
- **Consistent Partners:** The United States and the United Arab Emirates have remained key trading partners, indicating stable economic ties.

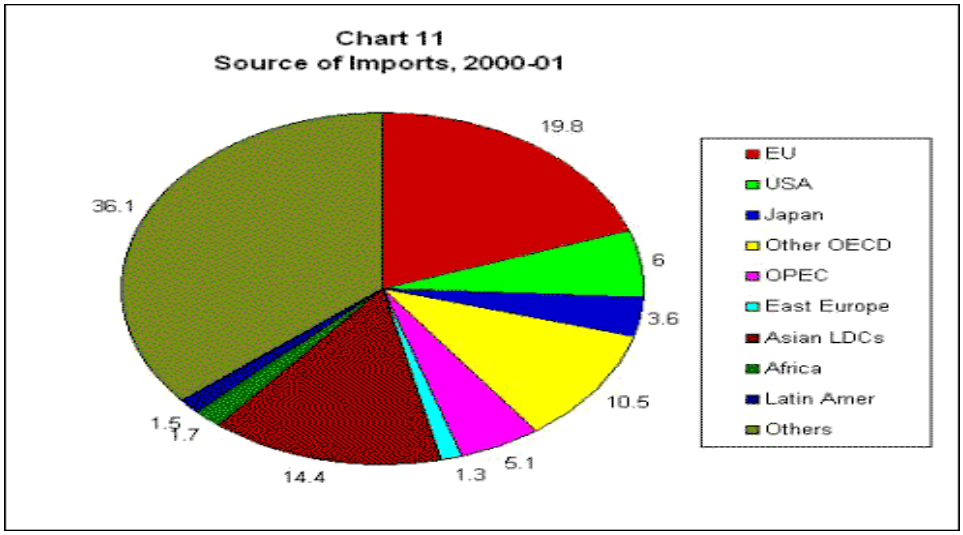
Interpretation:

The shift in export composition from 2000 to 2024 indicates India's transition from a primarily agrarian economy to a diversified industrial and service-oriented economy. This evolution reflects strategic initiatives to enhance manufacturing capabilities and leverage the global demand for technology and pharmaceutical products.

2. <u>A. India's Import Composition in 2001:</u>

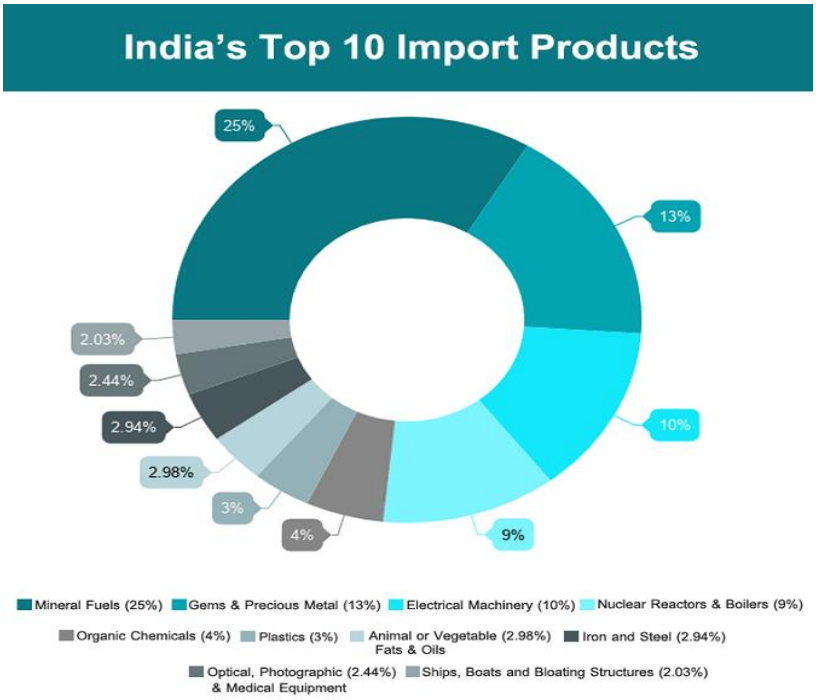
In 2001, India's imports were primarily dominated by traditional sectors:



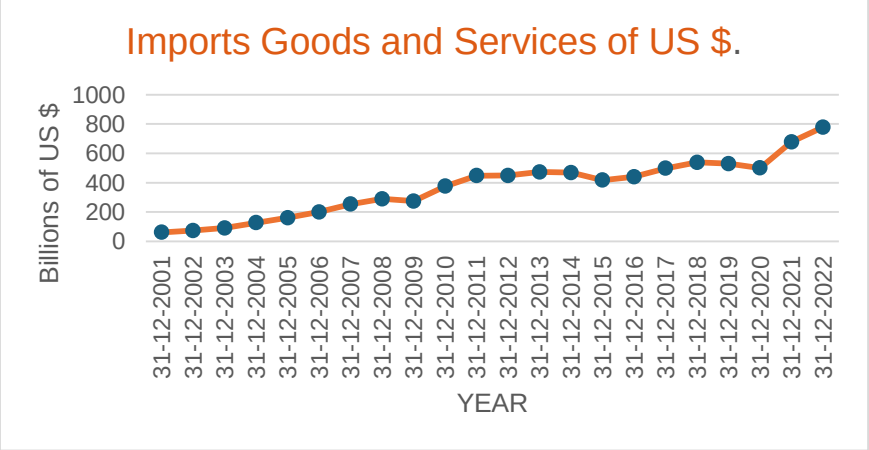


B. India's Import Composition in 2024:

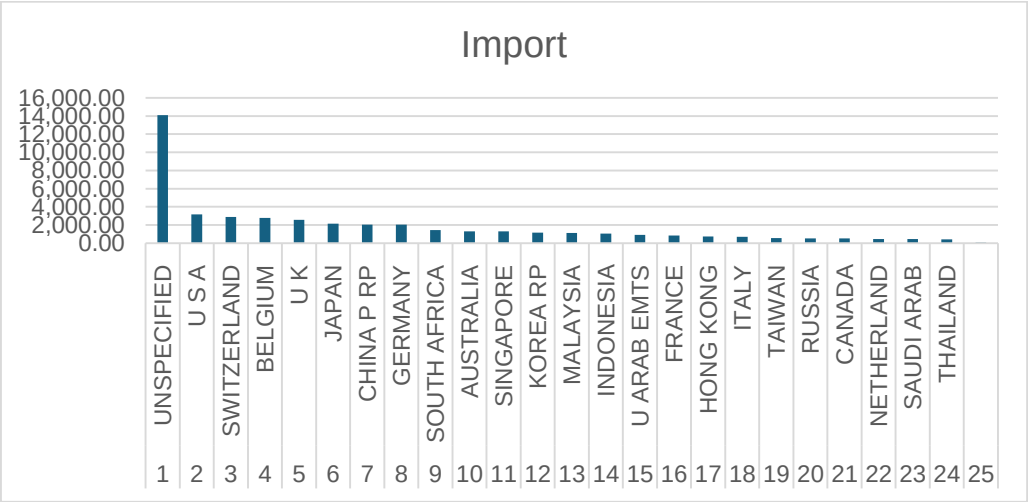
By 2024, India's export profile had diversified considerably:



C. Imports of goods and services from 2000-2023:



Top 10 Import Destinations in 2024:



Crude petroleum ($170 billion), coal briquettes ($58.7 billion), gold ($35.8 billion), petroleum gas ($32 billion) and diamonds ($26.1 billion) are India's main imports.

The country imports most of its goods from **China** ($110 billion), the **United Arab Emirates** ($51 billion), the **United States** ($48.5 billion), **Saudi Arabia (**$46.2 billion) and **Russia** ($40.4 billion).

Coal Briquettes ($58.7B), Diamonds ($26.1B), Palm Oil ($11.1B), Mixed Mineral or Chemical Fertilisers ($7.88B), and Nitrogenous Fertilisers ($7.37B) were the top imports from India in 2024.

Miscellaneous commercial, professional, and technical services ($48 billion), sea transportation ($12.3 billion), personal travel ($8.19 billion), royalties and licence fees ($7.24 billion), and air transportation ($6.94 billion) were the main services that India imported in 2023.

Interpretation:

Imports have consistently grown, reflecting India's increasing demand for raw materials, petroleum, and electronic goods. The graph shows steep rises in 2007 and 2018, primarily due to infrastructural development and consumption-driven growth.

Country Code	**IND**		
Indicator Name	**Exports of goods and services (% of GDP)**	**Imports of goods and services (% of GDP)**	**GDP Growth (annual %)**
2000	13.0	13.9	3.8
2001	12.6	13.4	4.8
2002	14.3	15.2	3.8
2003	14.9	15.6	7.9
2004	17.9	19.6	7.9

2005	19.6	22.4	7.9
2006	21.3	24.5	8.1
2007	20.8	24.9	7.7
2008	24.1	29.3	3.1
2009	20.4	25.9	7.9
2010	22.4	26.9	8.5
2011	24.5	31.1	5.2
2012	24.5	31.3	5.5
2013	25.4	28.4	6.4
2014	23.0	26.0	7.4
2015	19.8	22.1	8.0
2016	19.2	20.9	8.3
2017	18.8	22.0	6.8
2018	19.9	23.7	6.5
2019	18.7	21.2	3.9
2020	18.7	19.1	-5.8
2021	21.4	24.0	9.7
2022	23.2	26.8	7.0
2023	21.8	24.1	8.2

3. India's Exports & Imports of Goods & Services (% of GDP):

Data of the import and export of goods and services % of Gross Domestic Product (GDP) with respect to the Gross Domestic Product (GDP) growth in % over the 24 years:

Regression Statistics

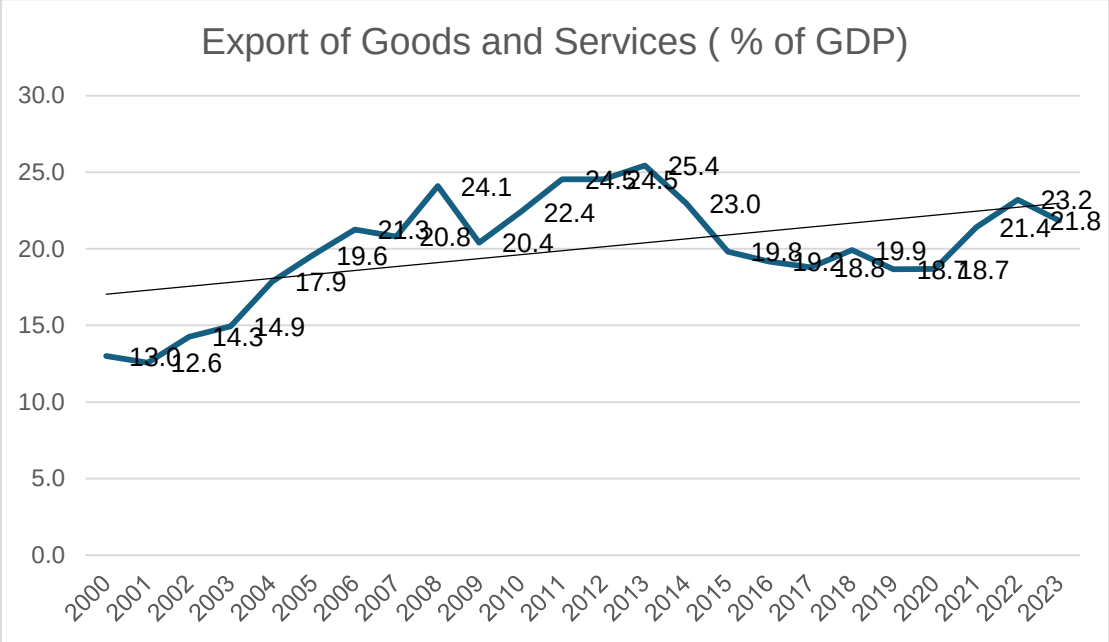
Multiple R	0.233838
R Square	0.05468
Adjusted R Square	-0.03535
Standard Error	3.158072
Observations	24

ANOVA

	df	*SS*	*MS*	*F*
Regression	2	12.11472	6.057361	0.607351
Residual	21	209.4418	9.973418	
Total	23	221.5565		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	4.446519	4.5008	0.98794	0.334429
Exports of goods and services (% of GDP)	-0.32894	0.799323	-0.41152	0.684859
Imports of goods and services (% of GDP)	0.36128	0.567809	0.636271	0.531474

A. India's Exports of Goods & Services (% of GDP) with respect to GDP %

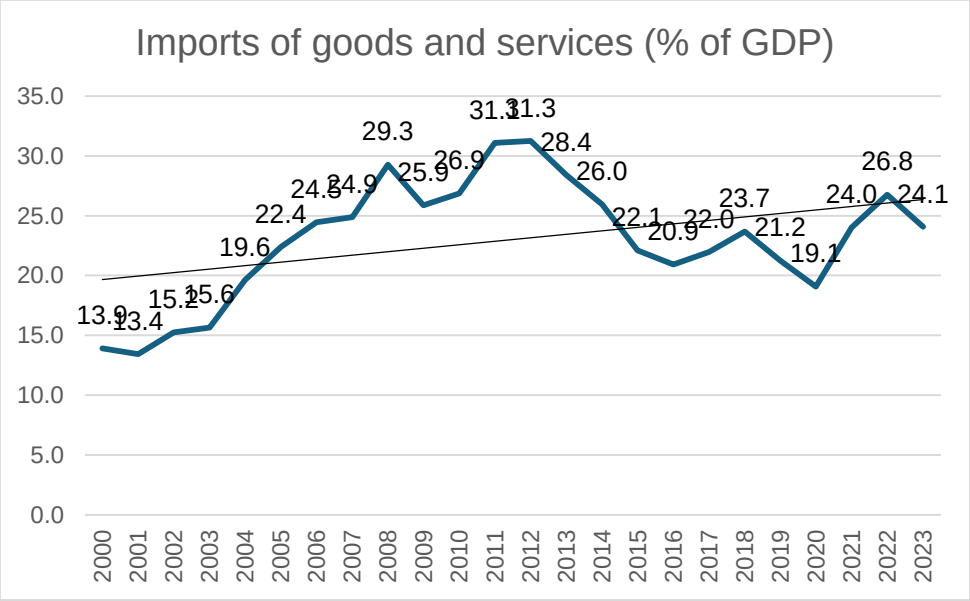


Interpretation:

- A 1% increase in exports is associated with a **0.33% decrease** in GDP growth, holding imports constant.
- A 1% increase in imports is associated with a **0.36% increase** in GDP growth, holding exports constant.
- **R Square = 0.0547 –** Only 5.47% of the variation in GDP growth is explained by the model, which is very low, indicating that the model does not explain much of the variation in GDP growth.
- **Observations = 24 –** The sample size is relatively small, which might contribute to the low explanatory power of the model.
- Both the coefficients for exports and imports are statistically insignificant (p-values > 0.05), suggesting that neither variable has a meaningful effect on GDP growth in this model.

- The negative coefficient on exports is counterintuitive since higher exports typically contribute positively to GDP growth.
- Neither exports nor imports have a statistically significant relationship with GDP growth.
- The negative coefficient on exports suggests that higher exports might be linked with lower GDP growth in this dataset, but the relationship is weak and not statistically significant.
- The model's poor fit and lack of significance suggest that other factors not included in the model might be driving GDP growth.

B. India's Imports of Goods & Services (% of GDP) with respect to GDP %:



Interpretation:

- The **R-squared value of 0.0547** indicates that only about 5.47% of the variation in GDP growth is explained by imports and exports. This means that imports and exports have a very weak explanatory power regarding GDP growth.
- The negative coefficient on exports is counterintuitive since higher exports are generally expected to stimulate economic growth. This suggests that other factors (e.g., trade imbalances, global market conditions) might be influencing the relationship.
- The positive coefficient on imports suggests that higher imports are slightly linked with increased GDP growth, but the relationship is weak and not significant.

- The chart shows that **imports as a percentage of GDP** increased significantly from **2000 to 2011** (peaking at **31.3%** in 2011), then experienced a decline until around **2019**, followed by a modest recovery.
- The overall trendline shows a slight upward trend in imports over the long term, Despite this upward trend, the weak relationship in the regression suggests that increased imports have not had a consistent or strong impact on GDP growth.
- The weak correlation between GDP growth and imports/exports suggests that GDP growth may be driven more by **domestic consumption, government spending, and investments** rather than trade alone.
- Structural factors (e.g., production efficiency, global market demand, and trade policies) could be influencing why trade openness (imports and exports) is not translating into higher GDP growth.

4. India's Merchandise Exports & Merchandise Imports of Goods & Services current US $):

The Log Merchandise Import and Log Merchandise Export of goods and services of current US $ (from the actual merchandise data of Exports and Imports in US $) with respect to the Gross Domestic Product (current US $) over the 24 years shows the following from the data.

Country Code			
INDIA IND			
Indicator Name	**Log exports merchandise**	**Log Imports merchandise**	**Log GDP**
2000	10.63	10.71	11.67
2001	10.64	10.70	11.69
2002	10.69	10.75	11.71
2003	10.77	10.86	11.78
2004	10.88	11.00	11.85
2005	11.00	11.15	11.91
2006	11.09	11.25	11.97
2007	11.18	11.36	12.09
2008	11.29	11.51	12.08
2009	11.22	11.41	12.13
2010	11.35	11.54	12.22
2011	11.48	11.67	12.26

2012	11.47	11.69	12.26
2013	11.50	11.67	12.27
2014	11.51	11.67	12.31
2015	11.43	11.60	12.32
2016	11.42	11.56	12.36
2017	11.48	11.65	12.42
2018	11.51	11.71	12.43
2019	11.51	11.69	12.45
2020	11.44	11.57	12.43
2021	11.60	11.76	12.50
2022	11.66	11.86	12.53
2023	11.64	11.83	12.55

A. Merchandise Exports (current US $) with the GDP current US $:

Regression Statistics	
Multiple R	0.983313625
R Square	0.966905686*
Adjusted R Square	0.963753846
Standard Error	0.053775526
Observations	24

ANOVA

	df	*SS*	*MS*	*F*
Regression	2	1.774269	0.887134	306.775
Residual	21	0.060728	0.002892	
Total	23	1.834996		
	Coefficients	***Standard Error***	***t Stat***	***P-value***
Intercept	1.412030572	0.581068	2.430062	0.024149
log exports merchandise	2.205760042*	0.449754	4.904366	7.51E-05
log Imports merchandise	-1.23306968	0.404076	-3.05158	0.006062

✔ **R^2 = 96**% strength of the test model is good, which shows the good fitness of the model and this the dependent variable which is defined by the independent variable. After knowing the strength of the model, lets see the impact of it via Formula:

Y(GDP) = d0 + β1* X1 + β2 * X2 + μ;

Y = 1.41 + 2.2 + (-1.2) + μ

- **β1** shows the changes in the dependent variable (GDP) with change in the Independent (export) Variable**. If Independent variables (export) increase by 1 unit, then, the dependent variable (GDP) increases by 2.2 units,** The highly significant P-value (**7.51E-05**) confirms the strength of this relationship.
- **β2** shows the changes in the dependent variable (GDP) with change in the Independent (Import) Variable. **If Independent variables (import) increase by 1 unit, then, the dependent variable (GDP) decreases by -1.2 units,** holding other factors constant. The P-value (**0.0061**) indicates that this relationship is statistically significant
- μ shows the extraneous residual, which are the other factors that is not a part of my test.
- Log is applied to easily get the results through the test feasible answer.

Interpretation:

The regression model analyses the relationship between **GDP in current US dollars** (dependent variable) and **log exports** and **log imports of merchandise** (independent variables).

- The **Multiple R** value of **0.9833** indicates a very strong positive correlation between the independent variables and GDP.
- The **R Square** value of **0.9669** suggests that approximately **96.69%** of the variation in GDP is explained by changes in exports and imports, showing a highly predictive model.
- **2.2** is first coefficient shows the **Impact of exports on Gross Domestic Product.**

The regression results suggest that **exports** have a strong and positive impact on GDP, while **imports** have a negative but statistically significant effect. The high R-squared value and significant coefficients confirm that the model effectively explains the variation in GDP based on trade activity. The results highlight the importance of increasing exports to drive GDP growth while managing the impact of imports.

B. Merchandise Exports (current US $) with the GDP current US $:

Regression Statistics

Multiple R	0.255668144
R Square	0.0653662
Adjusted R Square	-0.023646543
Standard Error	3.140171376
Observations	24

ANOVA

	df	*SS*	*MS*	*F*
Regression	2	14.48231	7.241154	0.734347
Residual	21	207.0742	9.860676	
Total	23	221.5565		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	28.24837579	33.93091	0.832526	0.41448
log exports merchandise	29.80464431	26.26298	-1.13485	0.269224
log Imports merchandise	27.46048874	23.59562	1.163796	0.25756

✔ **R^2 = 6.53**% weakest test model, which shows the model doesn't fit and this the dependent variable which is defined by the independent variable.

Y(GDP) = d0 + β1* X1 + β2 * X2 + μ;

Y = 28.24 + 29.80 + (27.46) + μ

- **d0 shows the intercept i.e. 28.24**
- **β1** shows the changes in the dependent variable (GDP) with change in the Independent (export) Variable**. If Independent variables (export) increase by 1 unit, then, the dependent variable (GDP) decreases by 29.80 unit,** but the P-value (0.2692) shows that this relationship is not statistically significant.
- **β2** shows the changes in the dependent variable (GDP) with change in the Independent (Import) Variable. **If Independent variables (import) increase by 1 unit, then, the dependent variable (GDP) increases by 27.46 units,** but the P-value **(0.2576)** shows that this relationship is also not statistically significant**.**
- μ shows the extraneous residual, which are the other factors that is not a part of my test.
- Log is applied to easily get the results through the test feasible answer.

Interpretation:

This regression model examines the relationship between **GDP in current US dollars (dependent variable) and log exports and log imports of merchandise (independent variables**). However, the results suggest that the model is weak and not statistically significant.

- **Multiple R of 0.2557** indicates a very weak positive correlation between the independent variables and GDP.

- **R Square of 0.0654** implies that only **6.54%** of the variation in GDP is explained by changes in exports and imports, which indicates that the model does not have good explanatory power.
- The **Standard Error** of **3.14** indicates a relatively high level of error, which further reflects the weak fit of the model.

This regression model is statistically weak and ineffective in explaining variations in GDP based on exports and imports of merchandise. The low R-squared value, high P-values, and insignificant coefficients suggest that other variables or factors may play a more significant role in determining GDP. The negative adjusted R-squared value indicates that the model is not a reliable predictor and may need to be revised by including additional explanatory variables or transforming the data.

FINDINGS

1. **Strong Model Fit for Merchandise Trade**: The first regression model shows a Multiple R of 0.983 and an R Square of 0.967, indicating that 96.7% of the variation in GDP is explained by exports and imports of merchandise. This suggests a strong relationship between merchandise trade and GDP growth.
2. **Significant Impact of Merchandise Exports and Imports**: A 1% increase in exports leads to a 2.21% rise in GDP (P-value = 0.000075), while a 1% increase in imports reduces GDP by 1.23% (P-value = 0.006). Both coefficients are statistically significant, confirming the critical role of exports and imports in GDP growth.
3. **Weak Fit in Other Regression Model**: The second model has an R Square of 0.065 (6.5%), indicating weak explanatory power. High P-values for exports (0.269) and imports (0.257) suggest that these variables are not significant predictors of GDP in this case.
4. **Overall Impact of Merchandise Trade on GDP:** Merchandise exports positively affect GDP, while imports tend to have a negative impact. The first model demonstrates a strong and significant relationship, while the second model reflects weaker predictive power.
5. **Trend in Export and Import Growth:** Exports and imports have shown a consistent rise over the past decade, with strong growth in textiles, pharmaceuticals, and IT services. Imports increased significantly in crude oil, electronics, and gold, highlighting reliance on foreign goods for strategic needs.
6. **Trade Deficit:** The trade deficit widened due to higher import costs, especially for crude oil and electronics, posing a challenge to trade balance.

7. **Sectoral Performance:** The pharmaceutical and IT sectors led export growth, while agriculture showed moderate growth and engineering goods remained stable.

8. **Impact of Global Trade Policies:** Global trade policies, tariff adjustments, and bilateral agreements directly impacted India's trade balance and market conditions

9. **Role of Exchange Rates and Domestic Policies:** Exchange rate fluctuations influenced export competitiveness, while domestic policies like GST and export incentives shaped trade performance.

DISCUSSIONS

- **Sustainability of Export Growth:**

While the growth in exports reflects strong global demand and improved domestic production capacity, sustaining this trend will require strategic diversification into high-value products and technology-driven sectors.

- **Reducing Import Dependency:**

A major concern highlighted is India's reliance on imports for essential commodities like crude oil and electronics. Strengthening domestic production and investing in alternative energy sources could mitigate this challenge.

- **Policy Implications:**

Trade policies need to be aligned with global market dynamics to leverage new opportunities. Strengthening bilateral agreements and diversifying export markets can mitigate these external risks.

✔ Trade tensions, tariff adjustments, and changing geopolitical relations have caused fluctuations in trade performance.

- **Impact of Trade Deficit:**

The trade deficit poses a risk to the overall economic stability. Measures to boost exports while rationalizing imports through import-substitution strategies could improve the situation.

✔ Despite growth in exports, the widening trade deficit due to heavy reliance on imports for crude oil and electronics remains a concern.

✔ Addressing structural issues in domestic production and increasing export diversity can help balance the trade equation.

- **Challenges and Opportunities in the Global Market:**

Geopolitical uncertainties and shifting global supply chains present both challenges and opportunities. India can benefit from emerging markets by positioning itself as a reliable trade partner.

- **Data Reliability and Coverage**
  - ✔ The analysis is limited by the availability and accuracy of data, which may not fully capture informal trade and recent market shifts.
  - ✔ Sector-specific data gaps could affect the accuracy of insights, especially in the agricultural and small-scale manufacturing sectors.
  - ✔ Focused policy measures and infrastructure improvements are needed to boost performance in underperforming sectors.
- **Domestic Policy and Exchange Rates**
  - ✔ Fluctuations in the exchange rate have impacted the competitiveness of Indian exports in global markets.
  - ✔ Effective monetary policies and targeted export incentives can enhance trade stability and competitiveness.

CONCLUSIONS

- India's trade performance has shown promising growth over the last decade, with strong contributions from key sectors such as pharmaceuticals, IT, and engineering goods.
- The widening trade deficit remains a concern, necessitating strategic interventions to balance exports and imports.
- Effective trade policies, including strengthening bilateral agreements, encouraging domestic production, and adopting currency stabilization measures, can enhance India’s trade competitiveness.
- Leveraging technological advancements and improving infrastructure will be critical in sustaining export growth and reducing import dependency.
- The study underscores the importance of a balanced trade strategy that enhances India's position in the global market while ensuring economic resilience.

The research provides a comprehensive understanding of India’s trade dynamics and suggests that targeted policy measures, infrastructure improvements, and sectoral support can drive balanced trade growth.

The study emphasizes that a balanced approach to managing imports and boosting export competitiveness will strengthen India’s position in global trade.

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