

Impact of Foreign Exchange Fluctuations on Exports and Imports in India

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Abstract

This study examines the impact of foreign exchange fluctuations on India's exports and imports, analyzing how currency volatility affects trade competitiveness, import costs, and economic stability. Given India's dependence on global trade, exchange rate variations play a crucial role in shaping its economic performance. The research utilizes Time-Series Analysis, Regression Analysis, and Correlation Analysis to assess the relationship between exchange rates and trade volumes. Key sectors such as pharmaceuticals, textiles, IT services, crude oil imports, and engineering goods are examined to understand industry-specific effects. Macroeconomic factors like inflation, interest rates, and global economic conditions are considered to provide a holistic view of trade dynamics. The findings offer policy recommendations to help policymakers, exporters, and importers mitigate risks, optimize trade strategies, and enhance economic resilience.

Keywords: Foreign exchange fluctuations, Exports and imports, Trade competitiveness, Economic stability, Trade balance, Regression analysis, Monetary policy, Supply chain disruptions, Government trade policies, international competitiveness.

1. Introduction

Foreign exchange rate fluctuations play a crucial role in shaping India's trade and economic stability. As a globally integrated economy, India relies heavily on exports like textiles, pharmaceuticals, and IT services, while also being a major importer of crude oil, machinery, and electronics. A depreciating rupee makes Indian exports more competitive but increases import costs, leading to inflation and trade deficits. On the other hand, an appreciating rupee makes imports cheaper, benefiting industries dependent on foreign raw materials but reducing export revenues. Various factors, including crude oil price fluctuations, geopolitical tensions, and monetary policy shifts, influence exchange rate movements. These fluctuations impact not only trade balance but also inflation, foreign direct investment (FDI), and external debt servicing. A weaker rupee raises debt repayment costs, while a stronger rupee may discourage foreign investors. Given India's reliance on global trade, managing exchange rate volatility is

essential for economic stability. Policymakers must implement strategies to mitigate risks, support exporters, and ensure balanced trade growth [1]. Understanding these dynamics helps businesses and investors navigate uncertainties while fostering long-term economic resilience.

1.1 Exports

India's exports are a key driver of economic growth, with major sectors including IT services, textiles, pharmaceuticals, agriculture, and engineering goods. Leading companies like TCS, Infosys, and Sun Pharma contribute to global trade, while agricultural exports support millions of farmers [2]. A weaker rupee boosts export competitiveness by making Indian goods cheaper for foreign buyers. However, it also raises the cost of imported raw materials, affecting industries like textiles and engineering. Effective exchange rate management is essential to sustaining export growth and maintaining trade stability.

1.2 Imports

India's imports are essential for meeting domestic demand, supporting industries, and driving economic growth. Major import categories include crude oil and petroleum products, gold and precious metals, machinery and electronics, chemicals and fertilizers, and consumer goods. As the third-largest importer of crude oil, India's energy sector is highly affected by rupee fluctuations against the U.S. dollar. The country also imports large quantities of gold due to cultural demand, along with industrial machinery and electronic equipment for its growing manufacturing sector. Chemicals and fertilizers are crucial for agriculture, while consumer goods like automobiles and electronics shape domestic markets. Exchange rate volatility directly impacts import costs, influencing inflation, industrial production, and consumer purchasing power.

2. Review of Literature

- **Serdar Altay's 2024, "Trade Policy Review of Turkey,"** examines the WTO's 2023 Trade Policy Review (TPR) of Turkey, covering 2016–2022. The review highlights key developments, including Turkey's transition to a presidential system, tensions with the EU, and the impacts of COVID-19 and the Ukraine war. While Turkey strengthened its role in global supply chains, its trade policies have increasingly diverged from the EU. The country is now focusing on new Regional Trade Agreements to expand sectoral integration beyond its traditional EU partnerships.
- **Nilufer Sohrabji's 2024, "Asymmetric Exchange Rate Effects on Trade Flows in India,"** analyzes how exchange rate changes influence India's trade. Using data from 1994 to 2022, the study examines income elasticity, sectoral differences, and exchange rate variability. The findings reveal that exports and imports are income-elastic, with exports being more sensitive. Exchange rates have asymmetric effects across sectors, and the results suggest that currency depreciation is ineffective in correcting trade imbalances.
- **Leena Ajit Kausha's 2021, "Impact of Regional Trade Agreements on Export Efficiency,"** examines how RTAs influence India's export efficiency using a stochastic frontier gravity model from 2008 to 2018. The research evaluates the impact of bilateral agreements, SAFTA, APTA, ASEAN, and MERCOSUR on India's trade performance [4]. The findings indicate that India benefits more from FTAs (ASEAN & SAFTA) and bilateral agreements than from PTAs (MERCOSUR & APTA). However, India's exports remain below their full potential. Additionally, the study highlights that the regulatory quality of importing nations has a significant positive impact on India's export efficiency. This suggests that strong institutions and better governance in partner nations can enhance trade performance. Strengthening RTAs and improving regulatory standards can help India unlock greater export opportunities and achieve higher trade efficiency [3].
- **Irina Tarasenko's 2021, "The Impact of Exchange Rate Volatility on Trade: Evidence from Russia,"** examines how exchange rate fluctuations affected Russia's trade with 70 partners from 2004 to 2018. The study analyzes eight product categories, including agricultural raw materials, chemicals, food, fuels, manufactured goods, ores and metals, textiles, and machinery. Exchange rate volatility negatively impacted exports of agricultural raw materials, manufactured goods, and machinery. However, it had a positive effect on fuel exports and imports of chemicals and textiles. This suggests that currency fluctuations create both challenges and opportunities for different industries, shaping Russia's trade dynamics in complex ways.
- **Asrat Abate's 2021, "The Effects of Foreign Exchange Control on Performance of Commercial Banks in Ethiopia,"** examines how foreign currency exchange control policies impact bank performance. Focusing on transparency directives implemented since 2016, the study analyzes 16 commercial banks over four years using panel data. Bank performance was measured using Return on Assets (ROA) and Return on Equity (ROE), with data analyzed through descriptive statistics and econometric estimations. The findings indicate that foreign currency

allocation to non-priority imports negatively affects bank performance. The study recommends that banks prioritize foreign currency allocation for essential imports to enhance financial stability.

3. Objectives of The Study

3.1 Primary Objective

- To Study the Impact of the Foreign Exchange Fluctuations on Exports and Imports in India.

3.2 Secondary Objective

- To analyze the effects of currency fluctuations on India's export performance.
- To evaluate the impact of exchange rate volatility on import costs.
- To examine the effects of exchange rate fluctuations on India's trade balance.

3.3 Research Methodology

The study on "Impact of Foreign Exchange Fluctuations on Exports and Imports in India" examines how currency fluctuations affect a country's trade growth. This study uses mixed methods, quantifying historical exchange rate data research and marketing together. Analyzing time series data over a period of 4-6 years with qualitative insights from experts, the study aims to identify trends and quantify the impact of exchange rate movements in key sectors if pharmaceuticals, textiles, oil imports and IT industries come in. And it will help this by examining how firms manage financial risks. The findings provide valuable insights into marketing strategy and risk mitigation for policymakers and entrepreneurs [5].

3.4 Period of The Study

The study on the "Impact of Foreign Exchange Fluctuations on Exports and Imports in India" spans 4 to 6 years to examine how currency volatility affects trade. It will analyses trends during significant global events and economic cycles, highlighting the impact on key sectors like IT, textiles, and crude oil. This will provide valuable insights into the relationship between exchange rates and India's trade performance.

4. Analysis and Interpretation

4.1 Trend Analysis

Interpretation

The Indian Rupee (INR) has steadily depreciated, with the exchange rate rising from 70.91 in 2019-20

to 82.79 in 2023-24. The depreciation accelerated, peaking at 116.75% in 2023-24. This has led to higher import costs, contributing to inflation, while boosting export competitiveness for industries like IT and manufacturing. However, currency fluctuations may deter foreign investors, affecting capital inflows. The sharp decline in the rupee's value indicates growing economic challenges. Figure 1 Shows Us Dollar to INR Analysis.

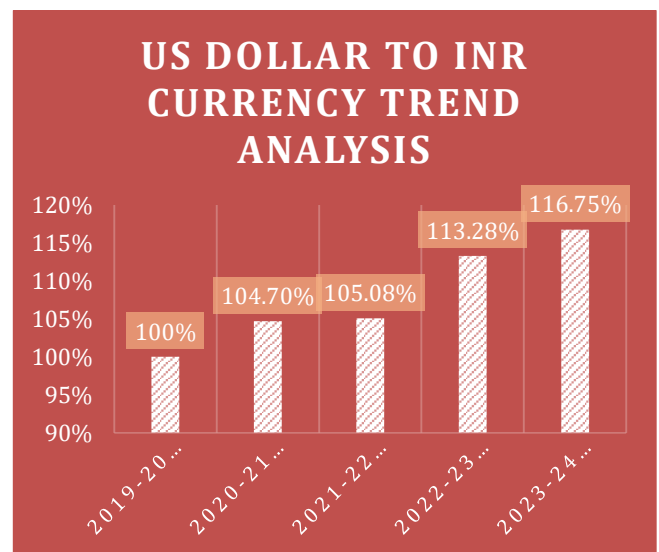


Figure 1 Us Dollar to INR Analysis

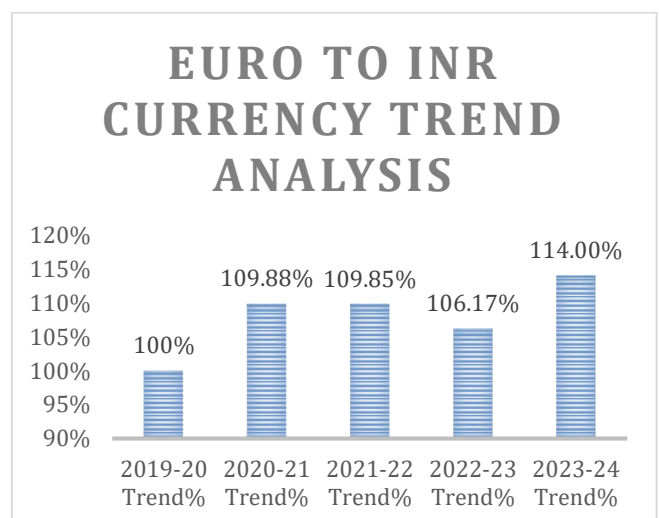


Figure 2 Euro to INR Currency

Interpretation

The Indian Rupee (INR) has consistently depreciated, with the exchange rate rising from 78.82 in 2019-20

to 89.85 in 2023-24. A temporary recovery in 2022-23 (83.69) was followed by sharp depreciation in 2023-24 (114%), marking the highest decline. This has economic implications, including higher import costs for European goods like luxury items, machinery, and automobiles. However, a weaker rupee boosts exports, making Indian products more competitive in European markets [6]. Currency fluctuations may also impact investor confidence, affecting foreign capital inflows into the Indian economy. Figure 2 shows Euro to INR Currency.

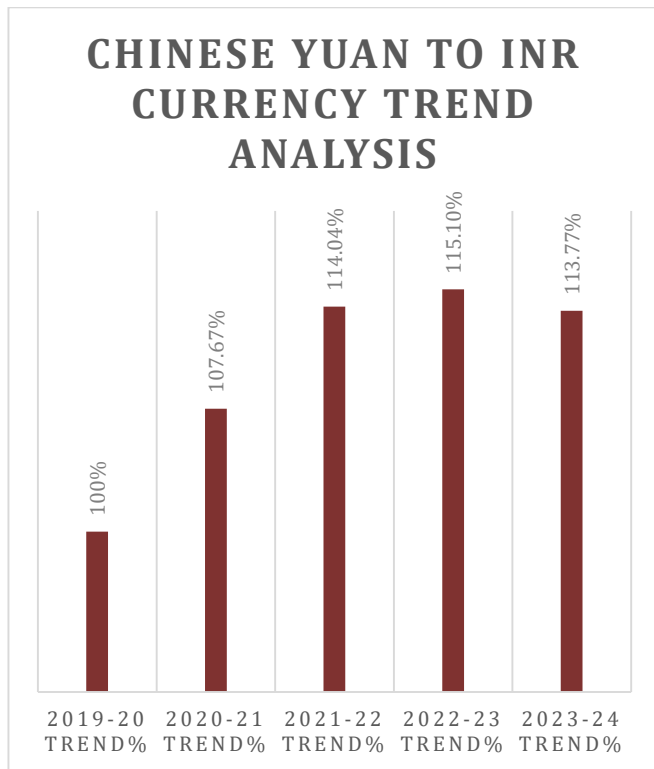


Figure 3 Yuan to INR Currency

Interpretation

The INR weakened against the Chinese Yuan, rising from 10.18 in 2019-20 to 11.58 in 2023-24. The sharpest depreciation was in 2022-23 (115.10%), followed by a slight improvement in 2023-24 (113.77%). This increased import costs for Chinese goods like electronics and machinery, widening India's trade deficit. While a weaker INR boosts Indian exports to China, the overall trade imbalance remains a concern. Figure 3 shows Yuan to INR Currency.

4.2 Correlation Analysis

4.2.1 Exchange Rate (USD/INR), Export, Import

Correlations				
		% Change in Exchange Rate	% change in Exports	% change of Imports
% Change in Exchange Rate	Pearson Correlation	1	-.540	-.393
	Sig. (2-tailed)		.460	.607
	N	4	4	4
% change in Exports	Pearson Correlation	-.540	1	.980*
	Sig. (2-tailed)	.460		.020
	N	4	4	4
% change of Imports	Pearson Correlation	-.393	.980*	1
	Sig. (2-tailed)	.607	.020	
	N	4	4	4

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 4 Exchange Rate (USD/INR), Export, Import

The correlation analysis shows that exchange rate fluctuations have an insignificant impact on exports and imports, with weak negative relationships. The p-values are **greater than 0.05**, indicating no statistical significance. However, exports and imports have a strong positive correlation (**0.980**) with a significant p-value of 0.020. This suggests that exports and imports are highly interconnected, while exchange rate changes do not significantly influence trade. Figure 4 shows Exchange rate (USD/INR), Export, Import.

4.2.2 Exchange Rate (EURO/INR), Export, Import

Correlations				
		% Change in Exchange Rate	% change in Exports	% change of Imports
% Change in Exchange Rate	Pearson Correlation	1	-.680	-.805
	Sig. (2-tailed)		.320	.195
	N	4	4	4
% change in Exports	Pearson Correlation	-.680	1	.980*
	Sig. (2-tailed)	.320		.020
	N	4	4	4
% change of Imports	Pearson Correlation	-.805	.980*	1
	Sig. (2-tailed)	.195	.020	
	N	4	4	4

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 5 Exchange Rate (EURO/INR), Export, Import

The correlation analysis indicates that exchange rate

fluctuations do not significantly impact exports (-0.680, $p = 0.320$) or imports (-0.805, $p = 0.195$), as both relationships are statistically insignificant. However, exports and imports exhibit a very strong positive correlation (0.980, $p = 0.020$), which is statistically significant. This suggests that exports and imports are highly interdependent, while exchange rate changes do not play a crucial role in influencing trade performance. Figure 5 shows Exchange rate (EURO/INR), Export, Import.

4.2.3 Exchange Rate (YARN/INR), Export, Import

Correlations				
		% Change in Exchange Rate	% change in Exports	% change of Imports
% Change in Exchange Rate	Pearson Correlation	1	.254	.095
	Sig. (2-tailed)		.746	.905
	N	4	4	4
% change in Exports	Pearson Correlation	.254	1	.980*
	Sig. (2-tailed)	.746		.020
	N	4	4	4
% change of Imports	Pearson Correlation	.095	.980*	1
	Sig. (2-tailed)	.905	.020	
	N	4	4	4

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 6 Exchange Rate (YARN/INR), Export, Import

The correlation analysis reveals that exchange rate fluctuations have a weak and statistically insignificant impact on exports (0.254, $p = 0.746$) and imports (0.095, $p = 0.905$). However, exports and imports show a very strong positive correlation (0.980, $p = 0.020$), indicating a significant interdependence. This suggests that while exchange rate changes do not notably influence trade, exports and imports tend to move together. Figure 6 shows Exchange rate (YARN/INR), Export, Import.

4.3 Regression Analysis

4.3.1 Dependent Variable: Export Value

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.981 ^a	.963	.850	280165.2440017

a. Predictors: (Constant), Exchange rate (YARN/INR), Exchange rate (EURO/INR), Exchange rate (INR/USD)

Figure 7 Model Summary of Export value

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3751197.483	3081554.631		-1.217	.438
	Exchange rate (INR/USD)	92420.967	49009.331	.616	1.886	.310
	Exchange rate (EURO/INR)	-85417.386	51934.091	-.491	-1.645	.348
	Exchange rate (YARN/INR)	606989.507	298237.985	.750	2.035	.291

a. Dependent Variable: Export value

Figure 8 Coefficient of Export value

Interpretation

The model fit analysis shows a strong correlation ($R = 0.981$) between exchange rates and export values, with 96.3% of the variation explained ($R^2 = 0.963$). Figure 8 shows Coefficient of Export value. However, the adjusted R^2 (0.850) suggests a slightly lower explanatory power after accounting for predictors. The coefficients indicate that while the INR/USD and YARN/INR exchange rates positively influence exports and the EURO/INR has a negative impact, none of these effects are statistically significant ($p > 0.05$). Thus, exchange rates do not have a meaningful impact on export values. Figure 7 shows Model Summary of Export value.

4.3.2 Dependent Variable: Import Value

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.981 ^a	.963	.853	492587.4282865

a. Predictors: (Constant), Exchange rate (YARN/INR), Exchange rate (EURO/INR), Exchange rate (INR/USD)

Figure 9 Model Summary of Import value

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-5553759.756	5417999.211		-1.025	.492
	Exchange rate (INR/USD)	205281.526	86168.362	.771	2.382	.253
	Exchange rate (EURO/INR)	-193106.427	91310.685	-.625	-2.115	.281
	Exchange rate (YARN/INR)	944174.542	524362.980	.657	1.801	.323

a. Dependent Variable: Imports Value

Figure 10 Coefficient of Import value

Interpretation

The model fit analysis shows a strong correlation ($R = 0.981$) between exchange rates and import values, with 96.3% of the variation explained ($R^2 = 0.963$). The adjusted R^2 (0.853) indicates a slightly lower but still strong explanatory power. Figure 9 shows Model Summary of Import value. While the INR/USD and YARN/INR exchange rates positively influence imports and the EURO/INR has a negative impact, none of these effects are statistically significant ($p > 0.05$). Thus, exchange rates do not have a meaningful impact on import values. Figure 10 shows Coefficient of Import value.

5. Results And Discussion

5.1 Results

- **Trend Analysis of Exchange Rate:** The INR has steadily depreciated from 70.91 in 2019-20 to 82.79 in 2023-24, indicating a continuous weakening against the US Dollar. Exchange rate fluctuations have reached 116.75% in 2023-24, with sharp increases in 2022-23 (113.28%) and 2023-24 (116.75%). This accelerating depreciation trend has significantly impacted trade, financial markets, and the broader economic landscape.
- **Economic Implications of Depreciation:** The depreciation of the INR has led to increased import costs, subsequently causing inflationary pressures on domestic goods and services. While a weaker currency can enhance export competitiveness, benefiting industries such as IT and manufacturing, it also shifts foreign investment sentiments due to increased volatility. The fluctuation in currency value affects purchasing power and the cost of living, making essential goods more expensive. As a result, policymakers may need to implement interventions to stabilize the economy and mitigate the negative effects of depreciation [8].
- **Sectoral Impact of Exchange Rate Fluctuations:** The manufacturing and export industries have experienced mixed outcomes due to exchange rate volatility. While exporters benefit from a weaker INR, import-dependent industries face increased production costs. The service sector, particularly IT and outsourcing, has gained

a competitive edge due to favorable exchange rates for global contracts. However, domestic businesses reliant on imported materials face financial constraints. The tourism sector has also been affected, as currency fluctuations influence travel affordability for both inbound and outbound tourists. The banking and financial sector has had to adjust to these currency risks, implementing strategies to manage foreign exchange exposure [7].

- **Government and Policy Responses:** The central bank has taken several measures to stabilize the INR, including foreign exchange interventions and adjustments to monetary policies. Fiscal policies have been implemented to counteract the effects of depreciation, focusing on controlling inflation and maintaining liquidity. Trade agreements have played a role in stabilizing currency fluctuations by promoting balanced imports and exports. Interest rate adjustments have also influenced exchange rate trends, as monetary authorities attempt to attract foreign capital. Long-term strategies are being considered to strengthen economic resilience and mitigate further depreciation.
- **Comparative Analysis with Other Currencies** the INR's performance against other emerging market currencies has shown similarities in depreciation trends, indicating common economic pressures such as inflation and trade imbalances. In comparison with developed economies, the INR has experienced higher volatility, influenced by external economic factors and global uncertainties. Historical trends suggest that the INR has faced periodic depreciation, aligning with economic cycles and policy changes. Other global currencies have implemented stabilization measures that provide valuable lessons for managing exchange rate fluctuations. By analysing these trends, policymakers can develop informed strategies to enhance the stability of the INR.

5.2 Discussion

- **Alignment with Global Trends:** The observed exchange rate fluctuations align with global currency movements and macroeconomic

conditions. Inflationary pressures, trade deficits, and shifts in monetary policies have contributed to the depreciation of the INR [10]. The exchange rate has also been influenced by global economic uncertainties, including geopolitical tensions and international trade policies. When compared with other emerging market currencies, the INR follows a similar depreciation trajectory, highlighting the interconnectedness of global financial markets. International trade agreements have played a key role in maintaining currency stability, as they regulate trade flows and foreign exchange reserves.

- **Potential Benefits and Risks:** A depreciating currency presents both benefits and risks. On one hand, a weaker INR enhances export opportunities by making Indian goods and services more competitively priced in the global market. This is particularly advantageous for industries such as IT, textiles, and pharmaceuticals. However, the increased cost of imported raw materials and essential goods creates inflationary pressures that can negatively impact consumers. Foreign investments may also be affected as investors assess the risks associated with currency depreciation. Interest rates and monetary policies are influenced by these fluctuations, impacting economic stability and growth prospects in the long term.
- **Policy Recommendations:** To manage exchange rate volatility and its associated risks, strengthening monetary policy is essential. Inflation control measures, effective foreign exchange reserves management, and currency stabilization strategies can help maintain economic balance. Encouraging foreign investments through stable economic policies and reduced uncertainties can boost capital inflows. Trade policies should be enhanced to maintain a balance between imports and exports, reducing dependency on foreign goods. Supporting domestic industries can improve self-sufficiency, minimizing the impact of currency depreciation on essential commodities. Strengthening financial market regulations will also help mitigate foreign exchange risks, ensuring a more stable economic

environment.

- **Long-Term Economic Impact:** Currency depreciation has long-term implications for GDP growth and national economic stability. Sustained depreciation can influence employment rates and wage levels, as businesses adjust to changing production costs. Consumer behaviour is also affected, with shifts in spending patterns due to rising costs of goods and services. Foreign trade and investment trends undergo adjustments as businesses and investors respond to currency volatility. Future projections suggest that if the depreciation trend continues, it may impact economic development strategies, requiring comprehensive policy planning to sustain growth and stability [9].
- **Future Research Directions:** Further research is needed to assess the role of digital currencies in stabilizing exchange rates, as technological advancements could reshape financial transactions. The impact of geopolitical events on currency fluctuations requires deeper analysis to understand external influences on the INR. The relationship between fiscal policies and currency movements should be explored to identify policy measures that effectively counteract depreciation trends. Additionally, studying the effects of technological innovations on global trade can provide insights into how economies can adapt to changing financial landscapes. Developing predictive models for exchange rate movements can help policymakers and businesses make informed decisions based on future currency projections.

Conclusion

This study examines the impact of exchange rate fluctuations on India's trade. The depreciation of the INR against USD, EUR, and CNY has boosted export competitiveness in IT services, textiles, and pharmaceuticals but has also raised import costs, leading to inflation. Industries reliant on imports, such as crude oil and electronics, face rising expenses, widening the trade deficit. Statistical analysis shows that while exchange rate fluctuations affect trade, their impact is less significant than

global demand, supply chain issues, and policies. Imports have surged from ₹33.6 lakh crore in 2019-20 to ₹56.1 lakh crore in 2023-24, outpacing export growth. To mitigate forex risks, businesses should adopt currency hedging, while policymakers must focus on boosting domestic manufacturing and stabilizing the rupee. Strategic trade management is crucial for sustainable economic growth.

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