

## Balancing Acts: The Influence of Forex Reserves on India's Trade Dynamics Post-1991 Economic Reforms

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### Abstract

*Exchange reserves and exchange rate volatility are crucial factors in determining the dynamics of international trade worldwide. Exchange reserve and exchange rate fluctuations lead to uncertainties and risk factors for exporters and importers. It also affects the decision-making process of traders all over the world. The study examines the “balancing act: the influence of forex reserves on India's trade dynamics post-1991 economic reforms”. The current study uses secondary time series data to determine the correlation between exchange rates and their impact on exchange reserves and Indian foreign trade from 1990-91 to 2023-24. The results show that the instability of the exchange rate influences international trade in the country. Other overall trends show that India's foreign trade growth, the foreign reserve increased, and the value of the Indian currency has depreciated since the economic reforms period. It is also widely believed that the exchange reserve volatility strongly hampers the growth of India's foreign trade.*

### Keywords:

*Exchange Reserve,  
Exchange Rate, Imports,  
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### Introduction

Foreign exchange reserves and exchange rate volatility are key factors determining the dynamics of international trade worldwide. Exchange reserve and exchange rate fluctuations are leading to uncertainties and risk factors for both exporters and importers. It also affects the decision-making process of traders all over the world. The degree of exchange reserve

and exchange rate fluctuations affects the competitiveness of Indian goods in international markets, potentially resulting in a decline in export volumes. Import costs may be affected by exchange rate volatility because changes in the exchange rate may influence the cost of imported items and raw materials. Increased import costs due to a variable exchange rate could raise inflation and lower buying power. Exchange reserves and exchange rate fluctuations may impact foreign trade enterprises' profitability and strategy. Rapid currency swings can make it difficult for firms to effectively forecast expenses and profits by introducing uncertainty into pricing, hedging, and investment choices. Long-term investment and growth in international trade may be hampered by this uncertainty. Exchange reserve and exchange rate volatility can be lessened by taking steps like currency interventions, exchange rate stabilization, and hedging mechanisms in India's foreign trade. This study's conclusion emphasizes the importance of the exchange rate, Exchange reserve, and exchange rate volatility in determining the dynamics of India's foreign trade. It highlights the necessity for both businesses and policymakers to properly manage exchange rate risks and put in place policies that will effectively lessen the negative consequences of volatility. Stakeholders may improve India's participation in international commerce and advance economic growth and stability by making well-informed decisions by recognizing the association between exchange reserves and exchange rate volatility and foreign trade.

### **Review of Literature**

There are various theoretical and empirical studies conducted by various national and international research scholars, economists, and policymakers to find out the association between these macroeconomic variables. The association between Exchange reserve and exchange rate fluctuation and its impact on foreign trade in the world economy during the post-reform period. Various theoretical and empirical explanations are given by different research scholars through their recent research. They have tried to connect exchange rate fluctuation and international trade. According to Gupta and Shuchi (2019), foreign trade plays an important role in the Indian economy, as it requires many products, so foreign trade is very significant. Mehtiyev, J., Magda, R., & Vasa, L. (2021). Examine and conclude that the exchange rate fluctuation significantly impacts the trade balance in terms of exports and imports. According to Iqbal, J., Nosheen, M. & Wohar, M. (2023), who investigated the third country risk on Indian foreign trade. They also found that the foreign exchange rate from different countries has an impact on the Indian importing industry in both the short run and long run. Sokolova, M.V. (2017) shows that regional trade integration shifts the burden of the exchange rate adjustment towards the less integrated trading partners. Bhattacharyya, R., &

Rit, B. (2018) have examined the relationship between nominal exchange rate and export demand in India. They also found a strong relationship between the exchange rate and price overall. According to them, the nominal exchange rate affects exports indirectly through domestic prices. Few studies argue that there is no association between exchange rates and foreign exchange reserves. The research paper published by Sarkar P. (1994) presents different opinions about the selected variables. He said there is no meaningful relationship between nominal and real exchange behaviour. Gokhale Mayuresh S, and Ramna Raju J. V. (2013), used time series data to find out the relationship between two variables and found that there is no long-term and short-term relationship between the exchange rate and the exchange reserve in the Indian context.

### **Research Problem**

The exchange reserve and exchange rate volatility are one of the main sources of risk, and their implications for the volume of imports and exports in the country. The fluctuation in the exchange rate directly and indirectly impacts the country's balance of payments and trade. So far, the Indian economy has adopted the managed flexible exchange rate from the economic reforms period, and after that Indian currency has been depreciating year by year. The situation of Indian trade in the current account is always in deficit, which is a cause of concern for the overall economy. The current study attempts to examine the “Balancing Act: the influence of forex reserves on India's trade dynamics post-1991 economic reforms”.

### **Objectives**

The major objective of the study is to investigate the influence of foreign exchange reserves on India's trade dynamics since 1991. In this connection, the following objectives have been set, and they are as follows:

1. Analyze the exchange rate trends between different countries' currencies and their compound annual growth rates.
2. Estimate the exchange reserve trends from 1990-91 to 2023-24.
3. Identify the overall trends in India's foreign trade and its compound annual growth rate during the post-economic reforms period.
4. Compare the overall foreign investment trends in India and their compound annual growth during the post-economic reforms period.
5. Examine the major challenges encountered in the post-reform period related to exchange rates and India's foreign trade.

## Hypotheses

Before conducting the regression equation analysis, let us understand the association between the exchange reserve and the exchange rate, which impacts foreign trade in India. Do The following hypothesis has been framed for research analysis purposes.

1. Null Hypothesis: (H<sub>0</sub>): There are no significant effects of foreign exchange reserve and foreign exchange rate on India's foreign trade.

Mathematically:  $\beta_1=0$  and  $\beta_2=0$

2. Alternative Hypothesis (H<sub>1</sub>): There is a significant effect of foreign exchange reserve and foreign exchange rate on India's foreign trade.

Mathematically:  $\beta_1 \neq 0$  or  $\beta_2 \neq 0$

## Research Methodology

The current study uses secondary data to examine the association between the exchange rate, the exchange reserve, and Indian foreign trade since the economic reforms period. The study is going to use previous studies conducted by the researcher, scholars, policymakers, and academicians in this field. The study is going to utilize various economic indicators and quantitative data for the study purposes. The qualitative insight of the study will be acquired through various research papers from different national and international journals, and various annual reports published by the government of India and the RBI from time to time. For the statistical analysis, various tools are going to be used, such as the ratio method, growth rate through MS. Excel, data analysis pack from Excel to run the regression model, etc.

## Overview of Foreign Exchange and India's Foreign Trade

India is one of the economies heavily based on the agricultural sector and is shifting to a service-oriented economy. India's foreign trade plays a significant role in the economic growth and development of the country. The Indian economy adopted the system of the open economy during the balance of payment crisis in 1990-91. The country started a reform process during the same time, and it was called economic reforms, as well as structural changes in the Indian economy. During the economic reforms, the Indian economy shifted the exchange rate system from fixed to a flexible or floating exchange rate system. After the adoption of the open economy system, the Indian economy started implementing various rules related to the market-oriented system. The share proportion of India's exports in the world export in 1993 was 0.6 percent of world exports, and it has increased to 1.8 percent in

the year 2021. India's share of global imports was 0.6 percent in 1993, and it increased to 2.6 percent by 2021. (WTO, 2021).

### Foreign Exchange Rate

Exchange rate fluctuations and their impact on exchange reserves are a natural outcome of the type of exchange rate system, which is called a floating exchange rate system, in both developed and developing countries. In India, exchange rate fluctuation and its impact on reserves, imports, exports, and overall trade have an incredibly significant impact. The current section examines the exchange rate fluctuation on various international currencies against the Indian currency from 1990-91 to 2021-22.

**Table No. 1: Exchange Rate of the Indian Rupee vis-à-vis the US Dollar  
(Calendar Year – Annual Average), (₹ per unit of foreign currency)**

Year	US Dollar	Year	US Dollar
1991	22.6890	2007	41.3485
1992	25.9206	2008	43.5049
1993	31.4458	2009	48.4049
1994	31.3742	2010	45.7262
1995	32.4232	2011	46.6723
1996	35.4294	2012	53.4376
1997	36.3196	2013	58.5978
1998	41.2677	2014	61.0295
1999	43.0485	2015	64.1519
2000	44.9401	2016	67.1953
2001	47.1857	2017	65.1216
2002	48.5993	2018	68.3895
2003	46.5819	2019	70.4203
2004	45.3165	2020	74.0996
2005	44.1000	2021	73.9180
2006	45.3070	2022	78.6045

**Source:** Handbook of Statistics on The Indian Economy 2022-23

As noted in Table 1, the rupee has shown a gradual loss of value against the dollar, which has risen from Rs 22.69 in 1991 to Rs 78.60 as of 2022. This continued fall emphasizes the structural economic problems that India grapples with, which include its large trade deficits and rising costs of imports, including oil, which in turn creates inflationary

pressures. The reforms of 1991 onwards ushered in a floating exchange rate system that enabled the forces of demand and supply to operate on the rupee, and interventions by the Reserve Bank of India were made only during times of extreme fluctuations. Contrary to this, while currency depreciation helps make Indian exports overseas more competitive, it also makes imports more expensive, which adds to inflation. Therefore, even if exporters gain from the loss in value of the rupee, it has further negative effects on domestic inflation and trade deficits.

**Table No. 2: Table No. Compound Annual Growth Rate of Exchange Rate between Indian Currency and US Dollar, Pound, and J. Yen**

Years	US Dollar	Pound Sterling	Japanese Yen
1990-91 to 2005-06	4.7	5.0	5.7
2006-07 to 2021-22	4.4	1.1	3.6
1990-91 to 2021-22	4.1	2.9	4.2

**Source:** Author's calculation based on Data obtained from the Handbook of Statistics on the Indian Economy 2022-23

As represented in Table 2, the compound annual growth rate (CAGR) of the Indian rupee is presented concerning the dollar, pound, and yen for three separate periods to further elaborate on the depreciation of the currency. In this case as well, it could be seen that the Indian rupee has been on a consistent depreciation trend, and the USD has outperformed all currencies with a CAGR of 4.1% during the study period. This time the rate of decline, however, does not appear to be as steep, especially during the second phase (2006-07 to 2021-22), which may indicate attempts to protect the value of the currency towards the latter half of the period; this is however not true for all the currencies. The British pound saw a greater easing in depreciation than the US dollar, and this trend persisted throughout the period in question.

As per the theory of exchange rate, if the domestic currency is depreciating, it has more value in the international market as international traders can buy more goods from the depreciating currency, but if the domestic currency is appreciating, then the domestic currency is costly, and our export will be costlier, and import will be cheaper. It will be a good opportunity for national traders to trade from abroad at a lower rate. The result of the study shows that the domestic currency declined by around 4 to 5 percent during the study period. It has a direct impact on India's foreign trade.

### India's Foreign Exchange Reserve

The foreign exchange reserves in India have increased up to 607309 million dollars in the financial year 2021-22. India is one of the largest foreign reserve holders in the world. This section is going to deal with the foreign exchange reserve since economic reforms in 1991. The detailed analysis is as follows:

**Table No.3: Foreign Exchange Reserve**

End of Financial Year	US \$ Million	End of Financial Year	US \$ Million
1990-91	5834	2006-07	199179
1991-92	9220	2007-08	309723
1992-93	9832	2008-09	251985
1993-94	19254	2009-10	279057
1994-95	25186	2010-11	304818
1995-96	21687	2011-12	294397
1996-97	26423	2012-13	292046
1997-98	29367	2013-14	304223
1998-99	32490	2014-15	341638
1999-00	38036	2015-16	360176
2000-01	42281	2016-17	369955
2001-02	54106	2017-18	424545
2002-03	76100	2018-19	412871
2003-04	112959	2019-20	477807
2004-05	141514	2020-21	576984
2005-06	151622	2021-22	607309

**Source:** Handbook of Statistics on the Indian Economy 2021-22

Table No. 3, shows the foreign exchange reserves ranging from 1990-91 to 2020-2021 depict a trend of impressive growth though with some fluctuations during the periods of worldwide shocks and a tremendous growth trend in recent years. Beginning from a humble 5834 million USD for 1990-91, the reserves expanded through the second half of the 1990s to peak at 38,036 million USD by the year 1999-2000 as the economies began to liberalize and foreign investments started to flow in. In the early 2000s, there was a gradual increase with the reserves surging to 199,179 million USD in 2006-07 expanded by globalization and inflows of foreign capital. However, the 2008 financial crisis resulted in a major drop of 251,985 million dollars in 2008-09, which indicated the susceptibility of the country to

exogenous shocks. Reserves went back up 304,818 million USD by the year 2010/11, however, this growth was intermittent and at moderate rates, growing to 369,955 million USD in the year 2016-17 as there was global economic growth that was mild. There was a dramatic shift later with reserves increasing from 477,807 million USD in the year 2019/20 to 607,309 million USD by the end of 2021-22 because of stimulus expansion and digital economy adoption due to the 2019 pandemic crisis. This trend demonstrates the effect of global forces and their policy instruments on the rate of reserve accumulations as well as the role of economic strength and various investment forms in the management of foreign exchange.

### **Comparison between Exchange Rate and Exchange Reserve**

This section is going to deal with the comparison between foreign exchange reserves and exchange rates during the study period. The comparison is based on three study period phases of foreign reserve and exchange rates. The first phase is from 1990-91 to 2005-06, the second phase is from 2006-7 to 2021-22, and the third phase is the overall phase of the study period. The data analysis of each phase is given below:

**Table No: 4: CAGR of Foreign Exchange Reserves and Exchange Rate**

<b>Years</b>	<b>Growth Rate of Exchange Reserve</b>	<b>Growth Rate of Exchange Rate</b>
<b>1990-91 to 2005-06</b>	24.3	4.7
<b>2006-07 to 2021-22</b>	7.7	4.4
<b>1990-91 to 2021-22</b>	16.2	4.1

**Source:** Author's calculation from Data obtained from the Handbook of Statistics on the Indian Economy 2022-23

Table No. 4 shows the associations between the exchange rate and exchange reserve in India during the study period. The study examines the compounding annual growth rate of the reserve and the exchange rate. During the first phase of the study period, the growth rate of the reserve was 24.3 percent, and the growth rate of exchange was 4.7 percent. In the second phase of the study period, the growth rate of the reserve and exchange rate declined. Again, in the third phase, the growth rate of the reserve increased, and the growth rate of the exchange rate decreased as compared to the second and first phases. The data shows that the depreciation rate of India's currency against the US dollar was higher than in the third phase of the study period. The overall trends of the compound annual growth rate of foreign reserve

and exchange show that as the exchange rate depreciates more, more reserve is accumulated by the government as compared to less depreciation in Indian currency.

### India's Foreign Trade

Foreign trade plays an important role in the international market. It's a system through which the exchange of goods and services is carried out by international traders in the international market. This section is going to discuss India's foreign trade with the rest of the world in terms of exports, imports, and overall trade. The details of the absolute trends of foreign trade and their compound annual growth rate are given below:

**Table No.5: India's Foreign Trade – Rupees (Rs. Crore)**

Year	Exports	Imports	Trade Balance
1990-91	32558	g43193	-10635
1991-92	44042	47851	-3809
2004-05	375340	501065	-125725
2005-06	456418	660409	-203991
2006-07	571779	840506	-268727
2021-22	3147021	4572775	-1425753
2022-23	3620631	5733959	-2113328

Source: Handbook of Statistics on the Indian Economy 2022-23

Table no. 5 shows the absolute trends of India's foreign trade in terms of exports, imports, and overall trade from 1990-91 to 2022-23. The Indian foreign trade during the economic reforms was negative as it was around -10635 crores in which our exports were 32558 crores, and our imports were 43193 crores. Our exports were very low as compared to our imports. The data shows that our foreign trade is always negative because our exports are less as compared to imports. But in absolute terms, the trends have increased since the reforms period.

**Table No.6: CAGR of India's Foreign Trade**

Years	Exports	Imports	Trade Balance
1990-91 to 2005-06	19.2	19.9	21.8
2006-07 to 2022-23	12.2	12.8	13.8
1990-91 to 2022-23	15.9	16.5	18.0

Source: Author's calculation based on Data obtained from the Handbook of Statistics on the Indian Economy 2022-23

Table No. 6 shows the compound annual growth rate of India's foreign trade from 1990-91 to 2022-23. As per the growth rate, during the first phase of the study period, the import growth rate was higher as compared to the export growth rate. The same pattern is followed in the second phase too. The overall growth rate of exports during the study period was 15.9 percent, and imports were 16.5 percent. The results show that during the study period, the trade balance was negative as exports were less as compared to imports in the Indian foreign trade market. Another interesting growth rate was the overall trade growth, which is the combination of exports and imports. During the first phase, the overall trade growth was very high, it was 21.8 percent as compared to the second phase, which was 13.8 percent. The overall trade growth was 18.0 percent during the entire study period. The overall conclusion about the trade growth rate shows that India's foreign trade was growing with 18 percent the 1990-91 to 2022-23.

### **Share proportion of India's Foreign Trade in World Trade**

This section deals with the share percentage of India's exports and imports in world trade from 1948 to 2021 as selected years. The table discusses the merchandise exports share and imports share in total world merchandise trade. These details are given below:

**Table: No.7: World merchandise Exports and imports**

<b>Year</b>	<b>Share of Exports</b>	<b>Share of Imports</b>
1948	2.2	2.3
1953	1.3	1.4
1963	1.0	1.5
1973	0.5	0.5
1983	0.5	.07
1993	0.6	0,6
2003	0.8	1.0
2021	1.8	2.6

Source: World Trade Statistical Review 2022,

Table No. 7 shows the Share proportion of India's Foreign Trade in World Foreign Trade since 1948. As per the World Trade Statistical Review Report 2022 published by the World Trade Organisation (WTO), the share proportion of India's exports and imports in the world exports and imports in 1948 was 2.2 percent and 2.3 percent, respectively. Slowly, the proportion of these exports and imports in total world exports and imports declined rapidly. At the end of 2003, the contribution of India's share of exports to world exports reached 0.8

percent, and India's share of imports to world imports reached 1.0 percent. As per the latest date in the year 2021, this share proportion has increased as exports are 1.8 percent and imports are 2.6 percent of total world exports and imports. These trends now show the progress of India's foreign trade in the world economy.

### Foreign Investment Inflows

This section deals with the foreign investment inflows in India during the post-economic reforms period in absolute terms as well as the compound annual growth rate of foreign investment inflows in India. These analyses are as follows:

**Table No.8: Foreign Investment Inflows**

Year	Direct investment	Portfolio investment	Total (A+B)
	Rs. Crore	Rs. Crore	Rs. Crore
1990-91	174	11	185
2004-05	27188	41854	69042
2005-06	39674	55307	94981
2018-19	301932	-1857	300075
2019-20	396955	7395	404350

Source: Handbook of Statistics on the Indian Economy 2020-21

Table No. 8 shows the absolute trends of foreign investment inflows in India in the forms of foreign direct investment, foreign portfolio investment, and total investment inflows. In absolute terms, the foreign direct investment in India during 1990-19 was Rs. 191 crore, which was much less. It was a crisis period for the Indian economy. During the crisis period, the government of India adopted an open economic policy for foreign investment. Since then, the investment has increased. At the end of the financial year 2019-20, the total investment inflows in India reached up to Rs. 404350 crores, of which direct investment was Rs. 396955 crores and portfolio investment was Rs. 7395 crores. The portfolio investment declined sharply due to the recessionary trend in the global economy in the recent past.

**Table No.9: Compound Annual Growth Rate of Foreign Investment Inflows**

Year	Direct investment	Portfolio investment	Total (A+B)
	CAGR (%)	CAGR (%)	CAGR (%)
1990-91 to 2004-05	43.5	80.2	52.7
2005-06 to 2019-20	17.9	-13.4	10.9
1990-91 to 2019-20	30.6	25.2	30.4

Source: Authors own calculation based on Data obtained from the Handbook of Statistics on the Indian Economy 20220-21

Table No. 9 shows the compound annual growth rate of foreign investment inflows in India since the economic reforms period. As we have divided the three phases of the study, during the first phase of the study period, the growth rate of foreign inflows in India in terms of direct investment and portfolio investment was very high as compared to the second phase of the study period. The overall growth rate of foreign direct investment and portfolio investment was 30.6 percent and 25.2 percent, respectively, during the study period. The total compound annual growth rate of total investment inflows in India was 30.4 percent, which is a kind of positive sign for the overall economic growth and development of the country.

### **Foreign Exchange Rate, Exchange Reserve, and Trade in India**

The exchange rate fluctuations have a direct and indirect impact on the world's economies. There is an association between foreign exchange rates, foreign exchange reserves, and foreign trade not only in India but also all over the world. This section tries to examine the compounding growth rate of foreign exchange reserves and total capital flows. Total foreign trade and exchange rates.

**Table No. 10: Compound Annual Growth Rate of India's Trade, Exchange Rate, and Reserve**

End of Financial Year	Total Foreign Trade	Foreign Exchange Reserve	Foreign Exchange Rate
	CAGR (%)	CAGR (%)	CAGR (%)
1990-91 to 2005-06	21.8	24.3	4.7
2006-07 to 2021-22	13.8	7.7	4.4
1990-91 to 2021-22	18.0	16.2	4.1

**Source:** Author's calculation based on the data collected from the Handbook of Statistics on the Indian Economy 2022-23

Table No. 10 shows the association between selected variables such as the foreign exchange rate, foreign exchange reserve, and foreign trade in India. The above table shows the compounding annual growth rate, which is divided between three study phases from 1990-91 to 2005-06, from 2006-07 to 2021-22, and from 1990-91 to 2021-22. During the first phase of the study period, the overall trade balance growth rate was 21.8 percent, the foreign exchange reserve growth rate was 24.3 percent, and the exchange rate growth was 4.7 percent. During the second phase of the study period, the growth rate of all the variables

declined, which shows that as the domestic currency rate appreciated, it had an impact on India's foreign exchange reserve and India's foreign trade during the study period. During the entire phase of the study period, India's overall foreign trade growth was 18 percent, foreign exchange reserve growth rate was 16.2 percent, and exchange rate growth was 4.1 percent. There is an interconnection between the exchange rate, the exchange reserve, and foreign trade, which plays an important role in India's overall economic growth and development. In the overall concluding observation, the relationship between these variables is very complex and dynamic too. Any deviation between these variables has an impact on the overall economic stability and performance of the country. The government of India and other authorities look after the situation and monitor, and manage these things to ensure a better and more stable economic environment for the country.

### **India's Balance of Payment Indicators to GDP**

This section deals with India's balance of payment indicators to GDP ratio from the economic reforms period. Table no. 7 indicates the exports to GDP ratio and imports to GDP ratio from 1990-19 to 2021-22. The details of these ratios are as follows:

**Table No. 11: Indian Balance of Payment Indicators to GDP**

Year	Trade		Year	Trade	
	Exports/ GDP	Imports/ GDP		Exports/ GDP	Imports/ GDP
1990-91	5.8	8.7	2006-07	13.7	20.3
1991-92	6.8	7.8	2007-08	13.7	21.2
1992-93	7.6	9.8	2008-09	15.8	25.7
1993-94	8.1	9.6	2009-10	13.6	22.4
1994-95	8.2	11.0	2010-11	15.3	22.9
1995-96	9.0	12.1	2011-12	17.0	27.4
1996-97	8.7	12.5	2012-13	16.8	27.5
1997-98	8.6	12.3	2013-14	17.2	25.1
1998-99	8.1	11.3	2014-15	15.5	22.6
1999-00	8.2	12.1	2015-16	12.7	18.8
2000-01	9.7	12.4	2016-17	12.2	17.1
2001-02	9.2	11.6	2017-18	11.7	17.7
2002-03	10.4	12.5	2018-19	12.5	19.1
2003-04	10.9	13.2	2019-20	11.3	16.9

2004-05	12.0	16.8	2020-21	11.1	14.9
2005-06	12.8	19.1	2021-22	13.6	19.6

Source: Handbook of Statistics on the Indian Economy 2022-23

Table No. 11 shows India's balance of payment indicators to its GDP, such as exports to GDP, Imports to GDP, etc., as per the report published by the RBI 2022-23, which shows the proportion of exports to national GDP. In the year 1990-91, when structural reforms were started by the government of India to boost the Indian economy, the proportion of exports to GDP and imports to GDP was 5.8 percent and 8.7 percent. During the global financial crisis, the trends of export and imports to GDP ratio reached 15.8 and 25.7 in 2008-09, but immediately after the global financial crisis in the world economy, the share percentage declined slowly. After that, the share proportion of these trends is based on fluctuations in terms of GDP at the end of the financial year 2021-22, the export-to-GDP ratio was 13.9, and the imports-to-GDP ratio was 19.6 percent. These indicators are very important for the overall development and growth of India's foreign trade since the study period.

#### Regression Equation Model Based on the Selected Variables

The statistical method of the regression equation model used three variables: foreign trade, foreign exchange reserve, and foreign exchange rate. Out of the three variables, two are independent variables and one is an dependent variable. The regression equation is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon \quad (1)$$

**Table No. 12: Regression Analysis**

Regression Statistics					
Multiple R	0.915463603				
R Square	0.838073609				
Adjusted R Square	0.827626745				
Standard Error	33300.12381				
Observations	34				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	1.77917E+11	88958596480	80.22250626	5.55167E-13
Residual	31	34375845627	1108898246		
Total	33	2.12293E+11			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	-17596.26471	29362.30253	-0.599280819	0.553340565	-77481.07554
Exchange Reserves (US \$) Million	-0.408745389	0.071334549	-5.729977853	2.65083E-06	-0.554233161
Foreign Exchange Rate	563.049675	869.3714634	0.647651434	0.521978364	-1210.045114

**Source:** Author's Own Calculation based on the data collected from the Handbook of Statistics on the Indian Economy 2023-24.

### Regression Equation

The regression equation is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon$$

Based on the "Coefficients" in the output:

- **Intercept** ( $\beta_0$ ) = -17596.26471
- **Exchange Reserves** ( $\beta_1$ ) = -0.408745389
- **Foreign Exchange Rate** ( $\beta_2$ ) = 563.049675

Thus, the estimated regression equation is:

$$Y = -17596.26471 - 0.4087X_1 + 563.05X_2$$

### Interpretation of the Regression Analysis

#### Regression Statistics Analysis

- The multiple R with 0.9154 indicates a solid correlation between independent and dependent variables.
- The R square with 83.8 % of the variability in the dependent variable is explained by the regression model which is very high in this scenario.
- The adjusted R square indicates the variance of the model. According to the results even after adjustment, the model explains 82.76 % of the variance in this analysis.

### ANOVA Analysis

The result of the ANOVA explains the statistically significant variables between the selected variables. As per the results, the F -statistics is 80.22 with a significant F value of 5.55167F-13, which is very close to zero and indicates that the overall regression model is statistically significant. That shows the significant effects on the dependent variables.

### **Regression Coefficient Analysis**

**Intercept of the Variable( $\beta_0$ ):** The coefficient intercept is -17596.26, the predicted value of the dependent variable in case both independent variables are zero.

**Foreign Exchange Reserve ( $\beta_1$ ):** The coefficient of the independent variable X1 is -0.4087 with the T-Stats of -5.7299, and the P-value is 2.65E-06. Regression results reveal that the P-value of foreign exchange reserve is very low, which is less than 0.05, which means foreign exchange reserves have a significantly negative effect on foreign trade. The result says that for every one-unit increase in foreign exchange reserve, the foreign trade is expected to decrease by 0.4087 units, holding other independent variables, which is the foreign exchange rate.

**Foreign Exchange Rate ( $\beta_2$ ):** The coefficient value of the foreign exchange rate is 563.05, with a T-statistic of 0.6477 and a P-value of 0.5219. This shows a very high P-value greater than 0.05. This suggests that the foreign exchange rate does not statistically explain the dependent variable in this regression model.

### **Observations on the Regression Analysis:**

1. The regression analyses reveal that the model is statistically significant, suggesting that the predictor explains a substantial portion of the variation in the dependent variables.
2. The independent variable, the exchange reserve, has a significant negative effect on the dependent variable, foreign trade in India, and the foreign exchange rate is not significantly important for foreign trade in India.

### **Challenges**

There are various challenges faced by India's foreign trade and exchange rate, such as inflation, fiscal deficit, decisions in the world economy, and depreciation of the Indian currency against foreign currencies. One of the major challenges that the Indian currency is facing now is the depreciation of the Indian currency against foreign currencies. When a domestic currency is weak against foreign currency, imports become costlier, and the entire Burden falls on the consumers. Weekly currency is putting more pressure on the Indian economy as the economy needs to keep more money to buy foreign goods which resulting in trade deficits in our foreign trade.

### **Suggestive Measures to Improve India's Foreign Trade**

There are numerous steps taken by the government of India for the improvement of India's foreign trade, but more steps are needed in the future too. These steps include improving proper infrastructure, liberalizing the norms for international traders, improving the clearance system, and encouraging innovation in the Indian market. These steps play an important role in growing India's foreign trade. In India, post-pandemic situation, one of the major obstacles that India is facing is to boost the manufacturing and service sector. To boost these sectors, we need raw materials for which some of the industries are dependent on foreign countries. If the Indian economy is trying to boost the manufacturing and service sectors, it needs to have a kind of trade policy that helps our secondary and service sectors and makes it more competitive in the current environment.

### **Conclusion**

Fluctuations in exchange reserves and rates play a crucial role in determining the dynamics of international trade worldwide. It leads to uncertainties and risk factors for exporters, importers, and overall trade in the country. It also affects the decision-making process of traders all over the world. We have used secondary time series data to determine the association between the exchange rate and its impact on exchange reserves and Indian foreign trade from 1990-91 to 2023-24. In the end, the overall statistical result shows that the exchange reserve significantly impacts foreign trade. It means increasing the foreign reserve can stabilize the trade metrics, as it strengthens. Another analysis shows that the forex rate does not impact India's foreign trade due to the high p-value. The result suggests that the trade balance may depend more on the forex level than on the exchange rate changes. The overall outcome reveals that maintaining the health reserve in the account is good for improving the trade short-term.

### **References**

- Bhattacharyya, R., & Rit, B. (2018). On the Relationship between the Nominal Exchange Rate and Export Demand in India. *South Asian Journal of Macroeconomics and Public Finance*, 7(2), 260-282. <https://doi.org/10.1177/2277978718795777>
- Government of India (2022), "Economic Survey 2022.23" Government of India, India. Gupta, Dr. Shuchi, *An Analysis of Indian Foreign Trade in the Present Era* (April 2019). Available at SSRN: <https://ssrn.com/abstract=3540833> or <http://dx.doi.org/10.2139/ssrn.3540833> Iqbal, J., Nosheen, M. & Wohar (2023), "M. Exchange rate volatility and India-US commodity trade: evidence of the third country effect". *Indian Economic Review*. (2023). <https://doi.org/10.1007/s41775-023-00182-z>

Mayuresh S. Gokhale & J. V. Ramana Raju (2013), "Causality between Exchange Rate and Foreign Exchange Reserves in the Indian Context" Global Journal of Management and Business Research, Finance, Volume 13 Issue 7 Version 1.0, Double Blind Peer Reviewed International Research Journal, Global Journals Inc. (USA), Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Mehtiyev, J., Magda, R., & Vasa, L. (2021). Exchange rate impacts on international trade.

Economic Annals-XXI, 190(5-6(2)), 12-22. doi: <https://doi.org/10.21003/ea.V190-02>

Reserve Bank of India (2022-23), "Handbook of Statistics on the Indian Economy 2022-23"

Reserve Bank of India, India

Reserve Bank of India (2021-22), "Handbook of Statistics on the Indian Economy 2021-22"

Reserve Bank of India, India

Sarkar P. (1994), "India's balance of payment and exchange rate behaviour since 1971: A new approach", Economic and Political Weekly, January 1-8. Vol. 29, No. 1/2.

Sokolova, M.V. (2017). "Exchange Rates, International Trade, and Growth: Re-Evaluation of Undervaluation". ADBI Working Paper 684. Tokyo: Asian Development Bank Institute.

Available: <https://www.adb.org/publications/exchange-rates-international-trade-and-growth>.

WTO (2022), World Trade Statistical Review 2022, World Trade organization