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A STUDY ON THE IMPACT OF EXCHANGE RATE ON INDIA'S BALANCE OF PAYMENT

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ABSTRACT:

Exchange rates determine the value of one country's currency to another currency. The balance of payment is a statement that comprises transactions between residents and non-residents of a country with the rest of the world during a given period of time. The purpose of this study is to examine the exchange rates impact on the balance of payment (BOP) in India. The secondary data is used from the RBI (central bank of India) from 2010 to 2020. India's export, import, trade account balance, current account balance and overall balance data were collected for various years. The analysis of the relationship between exchange rates and balance of payment has been done and it was found that the exchange rates will have an influence the balance of payment of the country.

Keywords: Foreign Exchange, Balance of payment, Current Account Balance, Capital Account Balance, Time-Series Models.

JEL Codes: F31, F32, C32

INTRODUCTION:

The Balance of Payments (BOP) is a report that summarizes all transactions between entities in one country and the rest of the globe for a specific time period, such as a quarter or a year. It is a record of all financial exchanges between residents of a nation and the remainder of the world throughout a particular time-frame. When all of the pieces in the BOP are appropriately included, it must be equal to zero. It means that money inflows and outflows should be equal. The balance of payments (BOP), sometimes known as the balance of international payments, is a sum of all transactions made by businesses, individuals and government entities within a country with businesses, individuals and government bodies outside the country. Imports and exports of

merchandise, services and capital, just as move installments like foreign guide and settlements, make up these exchanges. Current account, capital account, reserve account, errors and omissions are all included in the balance of payments. In ideal conditions, the complete of the current account should offset with the capital and finance accounts.

Balance of Payment reflects a country's financial and economic status. Its explanation can be utilized to recognize whether the currency of a nation is appreciating or devaluing. It gives pivotal information for breaking down and appreciating a country's worldwide financial relations. It examines the nation's exports, imports of items and services over a particular time-frame. It helps the public authority in surveying the potential for a specific industry's export development and creating approaches to help such development. It provides the government with a broad view of a variety of import and export levies. The government then takes steps to raise and lower taxes in order to discourage imports and boost exports, accordingly, and to achieve self-sufficiency. If the economy need import support, the government will plan according to the BOP, diverting cash flow and technology to the unfavorable sector of the economy in order to pursue future growth.

Balance of Payment as per IMF:

A balance of payment is a statement that systematically describes an economy's economic transactions with other economies around the world for a given time period. Markets for the transportation of goods, services and financial products are becoming more integrated around the world. Since 1991-92, India has liberalized its international commerce as well. Foreign currencies are used to settle international transactions. Because international trade is facilitated by the use of foreign currency, there must be a linkage between changes in exchange rates of foreign and changes in the balance of payments.

REVIEW OF LITERATURE:

In his study "Balance of Payment Crises in Emerging Markets," **Matthieu Bussiere (2007)** the ratio of short-term debt to international reserves, the growth rate of credit to the private sector, the over-appreciation of the nominal effective exchange rate (in terms of trend), and the contagion of other countries are the main economic variables found to predict crises, according to the report. He emphasized that when a country is confronted with liquidity issues or financial contagion from crises in other emerging markets, policy responses should be especially swift (few months at most months). In a research, **Kumar and et al. (2008)** looked at India after the early 1990s reforms. It finds a growth in exchange rate pass-through to domestic pricing until recent years, contrary to what has been found in several nations. The continuation of rising inflation is a significant reason for the rise in pass-through, according to economic considerations often linked with economic liberalization.

Patricia and Osi (2010) investigated the West African Monetary Zone's BOP equilibrium. Within-country effects of panel data analysis demonstrate that interest rate and production growth have a substantial role in obtaining a favorable BOP, while cross-country effects show comparable conclusions. As a result, they see a tight control on domestic credit creation as a requirement for sustaining BOP stability.

In this research, **Michel Ruta and Marc Auboin (2011)** examine a wide range of economic knowledge on the relationship between currencies and trade. The influence of exchange rate volatility and currency mismatch on international trade is specifically addressed. Two key topics are investigated: the influence of exchange rate volatility and currency misalignments on international trade. Exchange rate fluctuation has a detrimental (though little) influence on trade flows on average. The size of this effect is determined by a variety of factors, including the presence of hedging instruments, the structure of production (for example, the proportion of small businesses), and the presence of hedging mechanisms.

In this study, **Joseph and et al (2011)** employs a quintile regression model to do an empirical investigation about the effect of GDP and exchange rate on foreign exchange reserve based on relevant data from 1985 to 2010. The findings reveal that both GDP and exchange rate have a significant impact on the level of foreign exchange reserves, with the effect of exchange rate being higher than GDP at the median, middle, and lower quintiles, and lower than GDP at the higher quintile.

Study by **Habib Ahemed and colleagues (2011)** examine the impact of the currency rate on macroeconomic aggregates in Nigeria. The research explores the probable direct and indirect association between real exchange rates and GDP growth using annual time series data for the period 1970 to 2009. There is no indication of a substantial direct association between changes in the exchange rate and GDP growth, according to the estimation results.

Imoisi (2012) investigated Nigeria's BOP tendencies. The findings reveal a substantial relationship between the BOP, exchange rate, and interest rate; as a result, the author suggests increasing non-oil exports through a more diverse productive base as a means of correcting the current account deficit in the BOP.

Shi Jun-Guo and colleagues (2012) used a quintile regression model to do an empirical study regarding the effect of GDP and exchange rate on foreign exchange reserve using data from 1985 to 2010. This study employs a quintile regression model to produce an empirical investigation regarding the effect of GDP and exchange rate on foreign exchange reserve, using data from 1985 to 2010. The findings reveal that both GDP and exchange rate have a significant impact on the level of foreign exchange reserves, with the effect of exchange rate being higher than GDP at the median,

middle, and lower quintiles, and lower than GDP at the higher quintile.

In this research, **Qaisar ABBAS and et al. (2012)** looked at the relationship between gross domestic product, inflation, and the real interest rate and the exchange rate. This study used data from 10 African countries spanning 15 years, from 1996 to 2010. In order to explore the link between inflation, interest rate, and GDP, three independent variables were used: inflation, interest rate, and GDP.

In his study "India's Balance of Payments: 1990-91 to 2014-15," **Panchanan Behera (2016)** stated that the invisible account and capital account were crucial in preventing the BOP crisis. Because of open imports, the trade deficit is a source of concern. Investment, including FDI and FPI, can result in payment system reversals and currency crises. In the absence of market mechanisms, it seems prudent to rely on short-term selective limits on trade and capital flows to minimize short-term volatility.

Ms. Lovely Srivastava, Dr. Ambalika Sinha, and Ms. Geetu Yadav (2016) concluded that export and import are both essential causes for trade imbalances in their study titled "A Trend Analysis of Trade Imbalance of Indian Balance of Payment (Bop)." A trade imbalance is created by the discrepancy between export and import. It can result in trade surpluses or deficits. The trade deficit widens as a result of variables such as exchange rate volatility, currency devaluation, economic imbalance, and the global crisis. It also slows the country's development. The results of these actions were reflected in the trade balance in 2013-14, which showed a decrease in the trade deficit.

Mrs. K. Geetha Rani, V. Aghalya, and G.G. Gayathiri (2017) stated in their study "Balance Of Payments Problems of Developing Countries with Special Reference to India" that the 1991 balance of payments crisis prompted policymakers to rethink trade strategy and embrace a "outward-looking strategy." Several reforms in the fiscal, financial, industrial, and commercial sectors were adopted by the government. Enhanced trade openness, excellent export performance, a reasonable current account deficit, and increased non-debt capital flows such as foreign investment, inflation management, industrial contentment, and general redevelopment are some of the significant results of trade sector reforms.

In their article titled "A Study on Analysis of Bop Trends with Reference to India," **Ch. Hymavathi and Dr. K. Kalpana (2017)** stated that in the capital account, exports decreased in 2011-2016 while imports increased first and subsequently decreased in 2011-2016. Foreign investment (including portfolio and direct investment) decreased in the current account from 2011 to 2016. Forces that produce balance of payments imbalances include population expansion, demonstrative effects, cyclical variations, natural factors, globalization, and inflation.

OBJECTIVES:

1. To evaluate the impact of exchange rate on the imports and exports of India.
2. To analyze the impact of exchange rate fluctuation on the balance of payment of India.

HYPOTHESIS:

1. There is no significant difference between the exchange rate fluctuations and exports of India.
2. There is no significant difference between the exchange rate fluctuations and imports of India.
3. There is no significant difference between the exchange rate fluctuations and overall balance in the BOP of India.

RESEARCH METHODOLOGY:

The present study is analytical in nature and the data required for the study are collected from secondary sources like journals, articles, working papers, RBI website etc. The collected data on the imports, exports and the BOP of India are converted into tables and graphs. Then it is analyzed using percentage analysis and other statistical tools like Trend Analysis and ANOVA. The statistical analysis was done using SPSS software.

DATA ANALYSIS AND INTERPRETATION:

Table 1: Balance of payment of India (US \$ million)

Year	Exchange Rate (Against US \$)	Export	Import	Trade Account Balance	Current Account Balance	Capital Account Balance	Overall Balance
2010-2011	45.5626	256159	383481	-27322	-48053	63740	13050
2011-2012	47.9229	309774	499533	-189759	-78155	67755	-12831
2012-2013	54.4099	306581	502237	-195656	-88163	89300	3826
2013-2014	60.5019	318607	466216	-147609	-32296	48787	15508
2014-2015	61.1436	316545	461484	-144940	-26859	89286	61406
2015-2016	65.4685	266365	396444	-130079	-22151	41128	17905

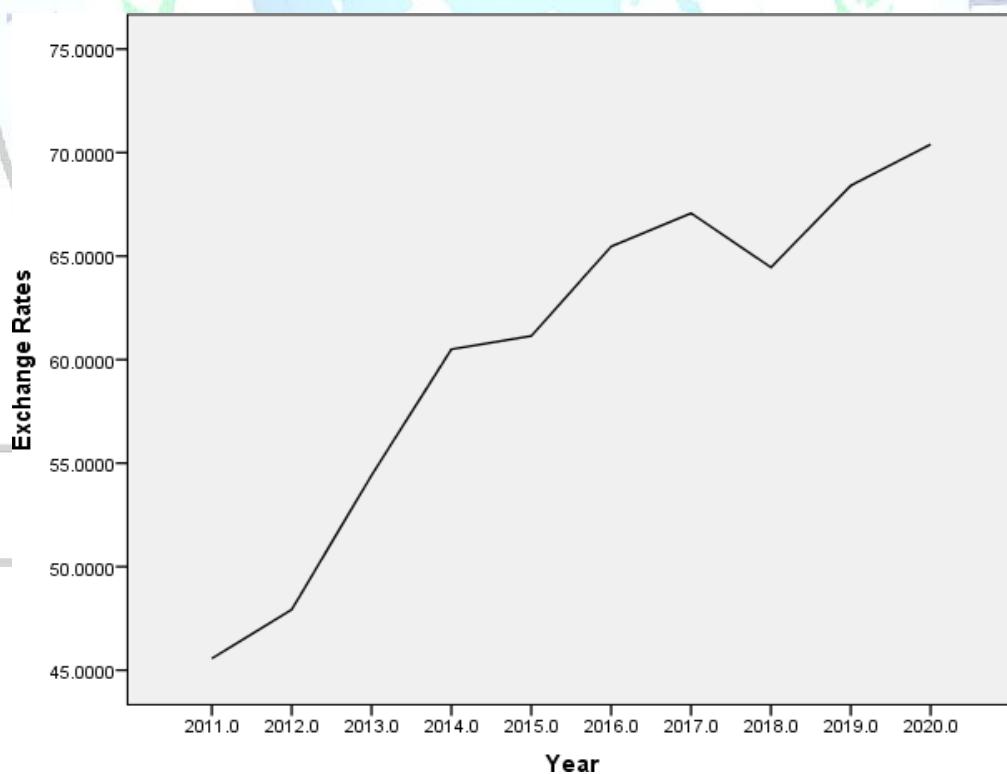
2016-2017	67.072	280138	392580	-112442	-14417	36447	21550
2017-2018	64.4549	308970	469006	-160036	-48717	91390	43574
2018-2019	68.4089	330078	514078	-180300	-57300	54400	-3300
2019-2020	70.3942	313361	474709	-157500	-24700	83200	-59500

Source: www.rbi.org

Table 1 presents the Balance of payment of India from 2010-11 to 2019-20. The details in the table clearly show that there is a depreciation of Indian rupee against US\$ and the amount of imports is more than exports since 2011. Trade account and Current account are in deficit since 2011 to 2020 and Capital Account is in surplus since 2011 to 2020. From the table we can clearly infer that India's Imports are more than exports.

TIME SERIES ANALYSIS:

Graph 1: Trend analysis of exchange rates



From the above graph 1, Exchange rates are increasing over the years from 2011-2017. Only during 2017-2018, exchange rates have decreased, again it continued to increase from 2018- 2020. The exchange rates were at Rs.45.56 in 2011, Rs. 47.92 in 2012, Rs. 54.40 in 2013, Rs. 60.50 in 2014, Rs. 61.00 in 2015, Rs. 65.50 in 2016, Rs. 67.07 in 2017, Rs. 64.45 in 2018, Rs. 68.41 in 2019, and Rs. 70.39 in 2020.

2014, Rs. 61.14 in 2015, Rs. 65.46 in 2016, Rs.67.07 in 2017, Rs.64.45 in 2018, Rs.68.40 in 2019 and Rs.70.39 in 2020. The annual growth rate of exchange rate is 5.449% and the percentage increase in exchange rate from 2011 to 2020 is 54.59.

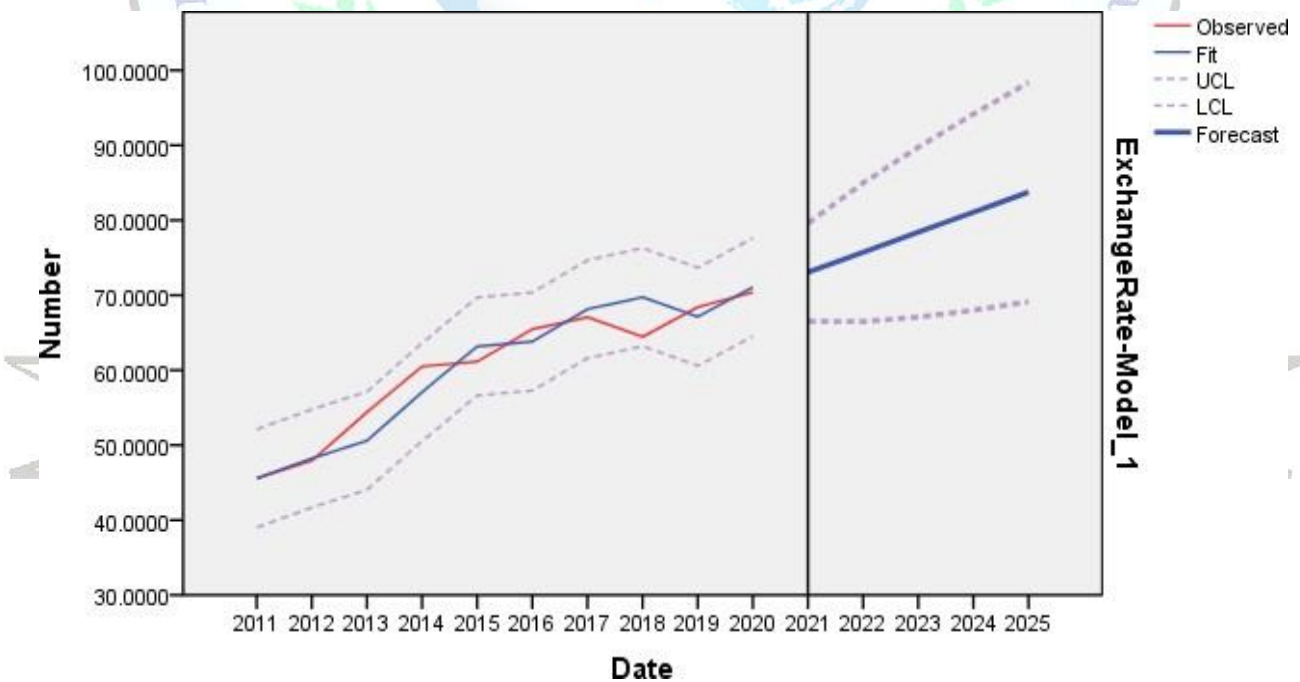
This clearly indicates that there is an increasing trend in the exchange rate because higher interest rates offer lenders in an economy a higher return relative to other countries. Therefore, higher interest rates attract foreign capital and cause the exchange rate to rise. The opposite relationship exists for decreasing interest rates i.e, lower interest rates tend to decrease exchange rates which is seen from the year 2017-2018.

FORECASTING CURVE:

Table 2: Model Statistics

Model	Number of Predictors	Model Fit statistics		Ljung-Box Q(18)	
		Stationary R-squared	R-squared	Statistics	DF
Exchange Rate-Model_1	0	.515	.903	.	0

Graph 2: Exchange rates forecast



The Stationary R-squared value is found to be 0.515 and R-squared value is found to be 0.903.

The table 3 shows the exchange rates prediction for the next five years i.e., from 2021 to

2025.

The predicted exchange rates are obtained from the forecasting analysis of exchange rates and year. From the analysis, Exchange Rates are predicted for 5 years. From the graph 2, it can be inferred that as the year increases, exchange rates are also increasing and hence they are directly proportional to each other. Since R-squared value is 0.903 which is above 0.7.

Table 3: Predicted Exchange Rates from 2021-2025

Year	Predicted Exchange Rates	Lower Cut-off Exchange Rates	Upper Cut-off Exchange Rates
2021	73.0686	66.5245	79.6126
2022	75.7422	66.4925	84.9919
2023	78.4158	67.0893	89.7423
2024	81.0894	68.0119	94.1669
2025	83.7630	69.1427	98.3834

HYPOTHESIS TESTING:

H1: There is no significant difference between the exchange rate fluctuations and exports of India.

Change in the exchange rates is a regular phenomenon due to which there is a fluctuation in the exports. Hence the above hypothesis tends to prove that there is a difference between the exchange rates and exports of India.

Descriptive Statistics

	Mean	Std. Deviation	N
Exchange Rate (AgainstUS \$)	60.533940	8.5814120	10
Export	300657.800	24417.6165	10

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69.397	1	69.397	.936	.362 ^b
	Residual	593.369	8	74.171		
	Total	662.766	9			

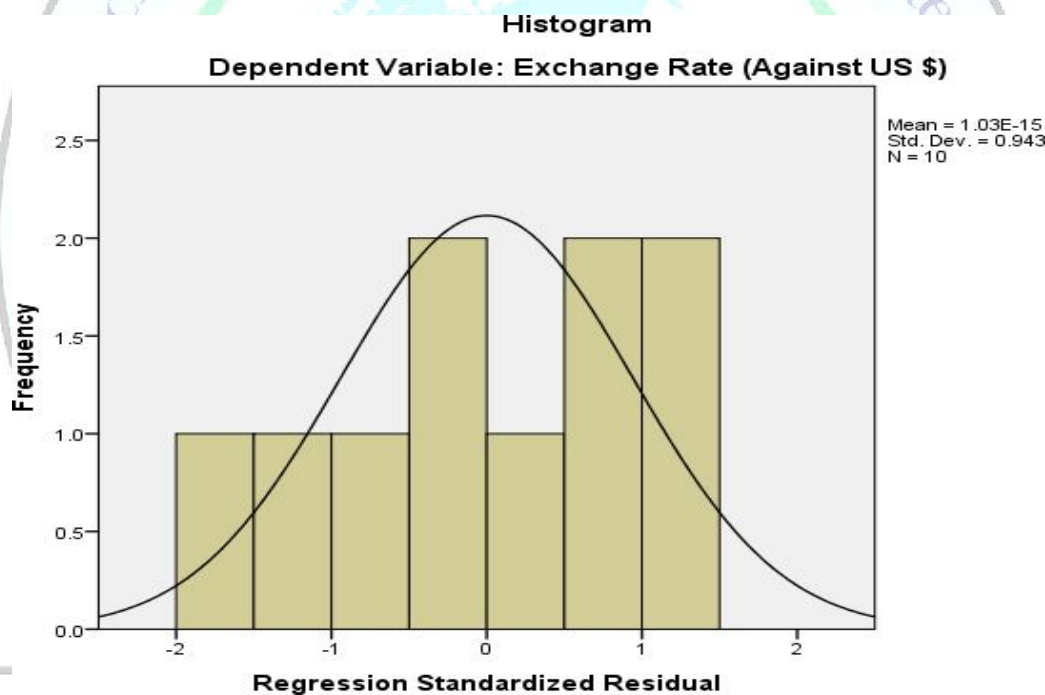
a. Dependent Variable: Exchange Rate (Against US \$) b. Predictors: (Constant), Export

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations
		B	Std. Error	Beta			Zero-order
1	(Constant)	26.342	35.453		.743	.479	
	Export	.000	.000	.324	.967	.362	.324

Test Result:

Graph 3: Frequency of exchange rate fluctuations and exports



The Mean and Standard deviation of the Dependent Variable is 60.53 and 8.58 for 10 years. Mean and Standard deviation of Independent Variable is 300657.80 and 24417.61 for 10 years. F value is 0.936, Beta value is 0.324. From the above analysis, the Value of Significance is 0.362 and the test value is 0.967. Since Significance value i.e, $0.362 > 0.05$, significant difference exists between exchange rates and exports, also when the significance value of 0.362 is compared with test value of 0.967, difference of 0.605 is seen and this difference implies that there exists a difference between the fluctuations of exchange rate and the exports.

H2: There is no significant difference between the exchange rate fluctuations and imports of

India.

Change in the exchange rates is a regular phenomenon due to which there is a fluctuation in the imports. Hence the above hypothesis tends to prove that there is a relationship between the exchange rates and the imports.

Descriptive Statistics:

	Mean	Std. Deviation	N
Exchange Rate (Against US \$)	60.533940	8.5814120	10
Import	455976.800	48175.2282	10

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.778	1	2.778	.034	.859 ^b
	Residual	659.988	8	82.498		
	Total	662.766	9			

a. Dependent Variable: Exchange Rate (Against US \$)

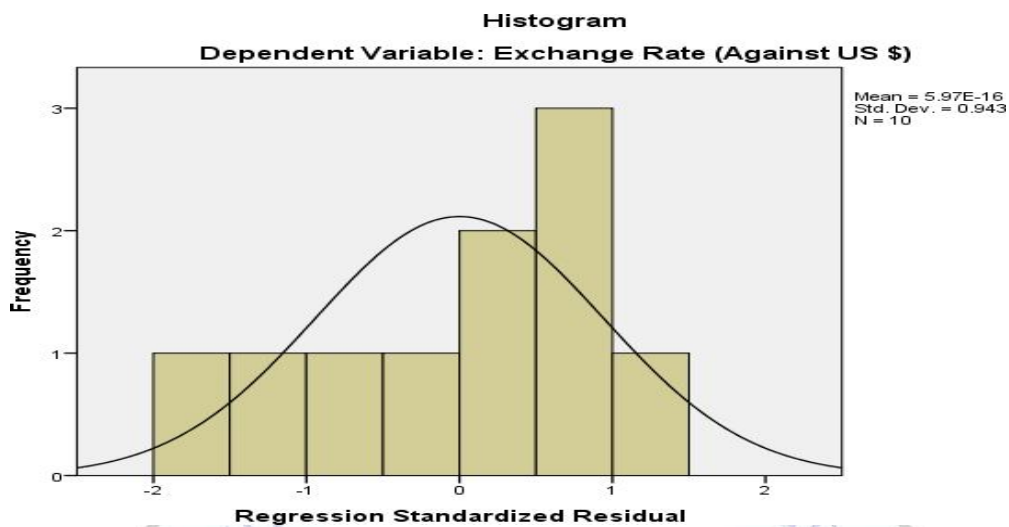
b. Predictors: (Constant), Import

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.	Correlations
		B	Std. Error	Beta	t		Zero-order
1	(Constant)	55.276	28.800		1.919	.091	
	Import	1.153E-5	.000	.065	.183	.859	.065

Test Result:

Graph 4: showing frequency of exchange rate fluctuations and imports



The Mean and Standard deviation of the Dependent Variable is 60.53 and 8.58 for 10 years. Mean and Standard deviation of Independent Variable is 455976.80 and 48175.22 for 10 years. F value is 0.034, Beta value is 0.065. The Graph shows a normal distribution with a shape of bell curve. From the above analysis, the Value of Significance is 0.859 and the test value is 0.183. Since Significance value i.e., $0.859 > 0.05$, significant difference exists between exchange rates and imports, also when the significance value of 0.859 is compared with test value of 0.183, difference of 0.676 is seen and this difference implies that there exists a difference between the fluctuations of the exchange rate and the imports.

H3: There is no significant difference between the exchange rate fluctuations and overall balance in the BOP of India.

Change in the exchange rates is a regular phenomenon due to which there is a fluctuation in the overall balance. Hence the above hypothesis tends to prove that there is a relationship between the exchange rates and the overall balance.

Descriptive Statistics

	Mean	Std. Deviation	N
Exchange Rate (Against US \$)	60.533940	8.5814120	10
Overall Balance	10118.800	32611.6784	10

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
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1	Regression	5.654	1	5.654	.069	.800 ^b
	Residual	657.112	8	82.139		
	Total	662.766	9			

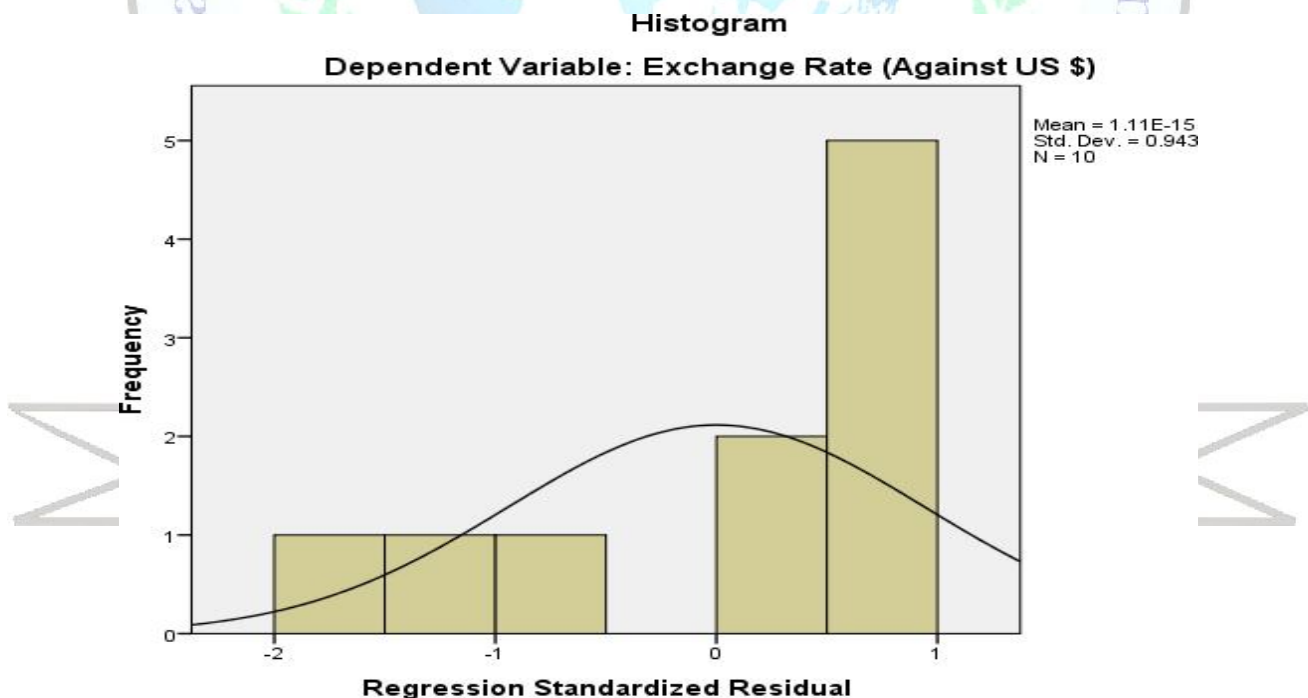
- a. Dependent Variable: Exchange Rate (Against US \$)
- b. Predictors: (Constant), Overall balance

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
		1	(Constant)	60.780		
	Overall Balance	-2.430E-5	.000	-.092	-.262	.800

Test Result:

Graph 5: Frequency of exchange rate fluctuations and overallbalance in BOP



The Mean and Standard deviation of the Dependent Variable is 60.53 and 8.58 for 10 years. Mean and Standard deviation of Independent Variable is 10118.80 and 32611.67 for 10 years. F value is 0.069, Beta value is -0.092. From the above analysis, the Value of Significance is 0.80 and

the test value is -0.262. Since Significance value i.e, $0.80 > 0.05$, significant difference exists between exchange rates and overall balance, also when the significance value of 0.80 is compared with test value of -0.262, difference of 1.062 is seen and this difference implies that there exists a significant difference between the fluctuations of exchange rate and the overall balance.

FINDINGS OF THE STUDY:

- There is a depreciation of Indian rupee against US\$ and the amount of imports is more than exports since 2011. Trade account and Current account are in deficit since 2011 to 2020 and Capital Account is in surplus since 2011 to 2020.
- There is an increasing trend in the exchange rate because higher interest rates offer lenders in an economy a higher return relative to other countries. Therefore, higher interest rate attracts foreign capital and causes the exchange rate to rise and vice versa.
- There is a significant difference between the exchange rate fluctuation and the imports and exports in India.
- There exists a significant difference between the fluctuations of exchange rate and the overall balance.

CONCLUSION:

The study explains the exchange rates, export, import and balance of payments to show the effect of exchange rates on the balance of payments. If imports are larger, the domestic currency (rupee) will appreciate and the value of the domestic currency in international trade would decrease. There is excessive demand for foreign currency. The trade account balance is in deficit as a result of exchange rates, which has an impact on India's BOP as well as the current account balance of payment. The exchange rate between a country's currency and foreign monetary forms may fluctuate because of changes in the nation's BOP. The change in strength of relative currency, mainly affects the BOP and vice-versa.

The relationship between balance of payments and exchange rates under a floating-rate exchange system will be determined by supply and demand for the country's currency as well as all transactions with other countries. The information contained in the balance of payments is interesting to some extent, i.e. as long as it explains the level of the exchange rate, because the balance depicts the state of some country's economic ties with the rest of the world. Based on the mechanistic effect of such imbalance on the demand and supply of cost estimates, the deficit or surplus in the balance of payments account may explain the level of the exchange rate. As a result, a deficit raises demand for cost estimates, causing the national currency's market value to fall. Multiple relationships are developed between the exchange rate and external economic and financial reports, and they obstruct the interpretation of the balance of payments.

PRACTICAL IMPLICATIONS:

Developing countries like India should continuously monitor their exchange rate fluctuation for the betterment of the overall health of the economy. BOP statistics are used in many ways with different goals by both the private and the public sector. These statistics tell the magnitude to which countries are living within their means. The BOP analysis is useful in ex post analysis. Practical analysis of the exchange rate fluctuations helps to know the origins and developments of financial crises and there by the policy makers can take corrective measures for the economic sustainability.

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