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Determinants of Balance of payments – Evidence from India and US

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ABSTRACT

Balance of Payments is one of the most widely used methods to monitor all international monetary transactions at a specific period of time. Balance of Payments is one of the most widely accepted methods to analyse the performance of a nation. Apart from this, it also acts as an accurate determinant for growth analysis. With the help of balance of payments, a country is able to maintain and manage the exchange rate adjustment mechanism. Balance of Payments is one of the few mechanisms that help identify the economic conditions of a nation. India has had a deficit Balance of Payments for quite a long time now and it is highly vital to understand how macroeconomic variables tend to impact Balance of Payments of a nation. Various studies have been conducted to analyse how macroeconomic variables like GDP, Exchange Rates, Inflation rate and Interest rates tend to impact the Balance of Payments of a nation. However, the extent to which these variables impact the Balance of Payments of a nation is often questioned. The main purpose of the study is to analyse the impact of macroeconomic variables like GDP, Inflation, Exchange Rates and Interest Rates on Indian and U.S Balance of Payments. The study was conducted for a period of 17 years i.e. 2000-2017 and correlation and regression along with descriptive statistics was used. The study shows that exchange rates and inflation have a significant impact on the Indian and U.S Balance of Payments.

Keywords: Balance of Payments, Macroeconomic variables, GDP, inflation, exchange rate.

INTRODUCTION:

Balance of Payments is one of the few mechanisms that helps analyse the economic conditions of a nation. It is one of the most widely used methods in order to analyse the economic performance of the nation. It includes trades carried out by both the public and private sectors are accounted for in the balance of payments in order to determine how much funds are flowing in and out of a country.

The balance of payments is divided into 3 major categories. These categories include current account, capital account and financial account. India has been in a deficit Balance of Payments for a long time now. Balance of Payments can be impacted by changes in macroeconomic variables like GDP, Inflation, Interest Rates and Exchange Rates. David K. Eiteman, (1979). Numerous studies have been conducted to analyse how these macroeconomic variables tend to influence the Balance of Payments of a nation. However, no study has focussed on analysing the impact of all the four macroeconomic variables on Balance of Payments. However, the question that also arises is till what extent these macroeconomic variables tend to impact the surplus or deficit nature of Balance of Payments. The present study aims to seek answer to reasons for deficit BOP and to analyse how these macroeconomic variables tend to impact the Balance of Payments of nation.

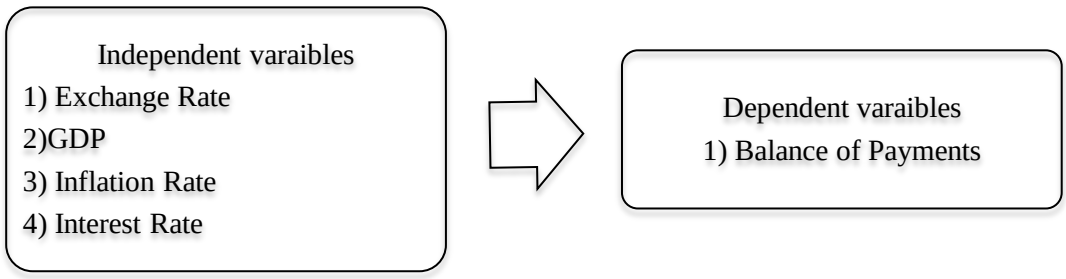
LITERATURE REVIEW:

Nianlu and Xiaowei, (1993) have analysed the impact of GDP and Exchange rate on the Balance of Payments of China. The results reveal that there is a strong significant impact of exchange rate on BOP of China. Boateng and

Ayentimi, (2013) examined the BOP for Ghana utilizing a financial approach with the guide of econometric models. It demonstrates that the adjusting of installment disequilibrium in Ghana is not impact just by financial factors. Out of the money related autonomous factors three were observed to be critical. Household credit and financing cost are adversely identified with net outside resources while GDP development is particularly related. Kennedy, (2013) made an attempt to know how the determinants of adjust of installments, for example, different macroeconomic factors prompt alterations in expelling disequilibrium to be determined of installments position. Results exhibit that elements, which indicated non-stationary direct, were insignificant in choosing the adjust of installments as time goes on. The examination also reveals that FDI and Exchange rates are the standard determinants of Balance of Payments. Kandil, (2009) examined disaggregated evidence for channels of interaction between currency fluctuations and the balance of payments in an example of developed and developing nations.
Mohammad Shafiur Rahman Chowdhury (2006) focused on analysing the economic condition on Bangladesh's BOP condition. In his examination, he tosses light upon how exchange progression and GDP development will prompt better BOP. Akira Uegaki (2008) made a comparative analysis between China, India and Russia under the condition of Globalization. In her study she has found the similarities and differences between the above country's financial issues with respect to BOP. Ram Kumar Shrestha (2011) studied the monetary approach to BOP in Nepal. In his study he has also have explained how monetary factors impact BOP in Nepal. Pavel Trunin (2012) explored about the Impact of the Balance of Payments Capital Account on Macroeconomic Processes in Russian Federation. In his study he throws light upon the various factors that influence the international flow of funds in Russia. Based on the above discussion it is understood that, not adequate importance has been given to analyse the impact of Balance of Payments on Indian economy. Hence this study focuses on analysing the impact of GDP, Inflation, Exchange Rates and Interest Rates on the Indian and U.S Balance of Payments.

DATA AND METHODOLOGY:

Period of study is 17 years starting from 2000-2017. Data for Balance of Payments of both the countries and all the macroeconomic variables have been collected for the stated time frame. The reason for this is that on 25th May 2000, the foreign exchange markets and announces moves to stabilize after the currency hit a record low against the U.S. dollar. Trading Point (2017). Conceptual framework of the analysis is given below.



The statistical tools which are used to find out the impact of macroeconomic variables on BOP includes correlation, regression along with descriptive statistics.

RESULT AND DISCUSSION:

This paper focuses on analysing the impact of GDP, Inflation, Exchange Rates and Interest Rates on the Indian and U.S Balance of Payments. Data of the independent variables i.e. Exchange Rates, Inflation Rates, Interest Rates and GDP growth Rate and the dependent variable i.e. Balance of Payments has been collected for a period of 17 years i.e. from 2000-2017. Collected data is analyzed and the results of the Descriptive Statistics, Correlation and Regression is presented below.

Table 1: Descriptive Statistics for BOP and Macroeconomic Variables (India)

Descriptive Statistics	BOP Data	GDP	Inflation	Interest Rates	Exchange Rates
Mean	-23,78,59,98,229.4	0.8284	0.7816	0.84	1.70
Median	-22,45,68,38,009.6	0.8555	0.7678	0.86	1.68
Standard Deviation	27385441211	0.1413	0.2020	0.10	0.07
Skewness	-1.044256493	-0.6383	0.1291	-0.86	0.66
Kurtosis	0.814346234	-0.8372	-0.4443	-0.37	-0.90

Authors Own Calculation:
Table 1 shows the descriptive statistics for the Dependent Variables BOP of India and independent variables GDP, Inflation, Interest Rates and Exchange Rates. From the table it can be seen that BOP, GDP and Interest rates is negatively skewed. On the other hand Inflation and Exchange Rate is positively skewed.

Table 2: Descriptive Statistics for BOP and Macroeconomic Variables (U.S.A)

Descriptive Statistics	BOP USA	GDP U.S.A.	Inflation	Interest Rates	Exchange Rate
Mean	5,33,41,75,29,412	0.3516	0.2853	0.53	1.70
Median	5,00,44,50,00,000	0.3802	0.3965	0.56	1.68
Std Dev	126019000000.00	0.1628	0.3740	0.16	0.07
Skewness	-0.495981123	0.3317	-2.9739	0.39	0.66
Kurtosis	-0.807374029	0.1265	10.2982	1.00	-0.90

Authors Own Calculation:
Table 2 shows the descriptive statistics for the Dependent Variables BOP of USA independent variables like GDP, Inflation, Interest Rates and Exchange rates. From the table it can be seen that Inflation has high negative skeweness and on the other hand Exchange Rate is positively skewed.

Table 3: Correlation Analysis (India)

Correlation	GDP	Inflation	Interest Rates	Exchange Rates
BOP (India)	-0.22625225	-0.75540834	-0.382258666	-0.055901751

Authors Own Calculation:
From Table 3 it can be said that correlation analysis is used to measure how pair of data is related to each other. From the table it can be concluded that the GDP, Inflation, Interest Rates and Exchange Rates are all negatively correlated with the Balance of Payments. It can be seen that Exchange Rate and Balance of Payments are also negatively correlated.

Table 4: Correlation Analysis (U.S.A)

Correlation	GDP	Inflation	Interest Rate	Exchange
BOP	-0.188832722	-0.522200825	-0.060396817	0.235449708

Authors Own Calculation:
From Table 4 it can can be concluded that the the Exchange Rate and BOP is positively correlated. On the other hand, GDP, Inflation and Interest Rates are negatively correlated. Interest rates and Balance of Payments are highly negatively correlated.

Table 5: Regression Analysis (India)

Regression Statistics	
Multiple R	0.818059515
R Square	0.66922137
Adjusted R Square	0.558961827
Standard Error	18186864562
Observations	17
Significance F	0.006569375

	Coefficients	Standard Error	t-Stat	P-value
Intercept	111631000000	41302943797	2.702728128	0.01921216
GDP	-1563183812	2428326887	-0.643728742	0.531861838
Inflation	-4405711641	1483112821	-2.970584286	0.011688488
Exchange rate	-1433870348	605822666.2	-2.366815287	0.035607173
Interest rate	-3110397700	3313873556	-0.938598787	0.366445249

Authors Own Calculation:
From table 5 it can be identified that the p value for GDP is 0.531861838 that is more than 0.05, thus null hypothesis is accepted.
From table 5 it can be concluded that for inflation the p value 0.011688488 which is less than 0.05, thus null hypothesis should be rejected and alternate hypothesis should be accepted.
From table 5 it can be concluded that for exchange rate thep value is 0.035607173 which is less than 0.05, thus null hypothesis should be rejected and alternate hypothesis i.e. H1 should be accepted.
From table 5 it can be identified that the p-value for interest rate is 0.366445249 that is more than 0.05, thus null hypothesis is accepted.
Thus it can be concluded that Inflation and Exchange rates have significant impact on India's Balance of Payments, while on the other hand GDP and Interest rates don't impact the value of Balance of Payments significantly. R-squared value for India is 0.66922137 which explains that almost 66.92% of variations in the Balance of Payments are because of the independent variables.

Table 6: Regression Analysis (U.S.A)

Regression Statistics	
Multiple R	0.710166611
R Square	0.504336615
Adjusted R Square	0.339115487
Standard Error	1.02447E+11
Observations	17
Significance	0.059703106

	Coefficients	Standard Error	t Stat	P-value
Intercept	-1.18115E+12	3.65695E+11	-3.22986662	0.007221092
GDP	-6959571062	18136394211	-0.38373510	0.707887171
Inflation	-78780292072	28012247624	-2.81235169	0.015680858
Exchange rate	92618874532	39274342490	2.358253981	0.036165964
Interest rate	9796969331	5068033636	1.933090827	0.077165861

Authors Own Calculation:
From table 6 it can be identified that the P value for GDP is that is 0.707887171 is more than 0.05, thus null hypothesis should be accepted.
From the above table it can be concluded that for inflation the p value which 0.015680858 is less than 0.05, thus alternate hypothesis should be accepted.
From table 6 it can be concluded that for exchange rate the p value is 0.036165964 which is less than 0.05, thus null hypothesis should be rejected and alternate hypothesis should be accepted.

From Table 6 it can be identified that the p-value for interest rate is 0.077165861 that is more than 0.05, thus null hypothesis is accepted.

Thus it can be concluded that Inflation and Exchange rates have significant impact on U.S.A.'s Balance of Payments, while on the other hand GDP and Interest rates don't impact the value of Balance of Payments significantly. R-squared value for U.S.A. is 0.504336615 that explains that almost 50.43% of variations in the Balance of Payments are because of the independent variables.

CONCLUSION:

From the study it can be concluded that and from analysis and interpretation that India has been in a deficit balance for almost a period of 10 years, i.e. Indian Balance of Payments has been underperforming. It can also been that U.S.A's Balance of Payments has been in a deficit balance for almost about a period of two decades now. The negative Balance of Payments is a negative economic indicator for the country. From the analysis and interpretations various relationships are established between the dependent and independent variables which are BOP and GDP, exchange rate, interest rate and inflation and it can be concluded that the various fluctuations in BOP of both the countries i.e. India and U.S.A. can be explained by the independent variables i.e. Exchange rate, GDP, Interest rates and Inflation as the F-statistic is significant at 1% level.

For the study multiple regression and Correlation have been performed to calculate the results which shows that for Indian Balance of Payments is affected by a change in the exchange rate and inflation rate. On the other hand, GDP and Interest rate don't have a significant impact on the Balance of Payments of India. From Multiple Regression and Correlation it can be concluded that U.S.A.'s Balance of Payments is affected by changes in exchange rate and inflation, on the other hand interest rates and GDP growth rate have had no impact on the Balance of Payments of U.S.A.

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