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# Impact of exchange rate, inflation rate and interest rate on balance of payment: A study from India and Pakistan

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## Abstract
Exchange rate is a significant factor in international macroeconomics; it affects are witnessed in the recent past on different currency crises in many economies and has attracted focus of policy makers around the globe. Exchange rate has proved its behavior in determining the country economic position in this age of globalization and trade liberalization. This is a comparative study of balance of Payment (BOP) of two countries: Pakistan and India. Literature shows that BOP should be stable it should not be in deficit and in surplus because in both conditions it is unfavorable. So this research study investigates the fluctuation in three significant rates of any economy i.e. inflation rate, interest rate and foreign exchange rate on BOP. Results showed that inflation and foreign exchange rate has positive effect wile interest rate have negative effect on BOP in both countries.

## Keywords
Exchange Rate, Interest Rate, Inflation Rate, Balance of Payments

## 1. Introduction & Background

Balance of payments (BOP) provides detailed information concerning the demand and supply of a country's currency and plays a very important role in economic development of a country. BOP should be stable it should not be in deficit and in surplus because in both conditions it is unfavorable. BOP can also be used to evaluate the performance of the country in the international economic competition. Moreover, the effect of increase and decrease in balance of trade is observed in determination of balance of payments (BOP) of country. BOP is established method which is used for the accounting of any country's total payments made during the specific period of time and the receipts collected from any other country from private sector or government exchange sources. Therefore, accounting equation of balance of payments illustrate receipts (which are generated from exports, foreign tourist payment in country, income from the overseas investment of country, gift and aid received from other country and money received from the country assets payments by foreigners)and payments ( to any imports of overseas products & equipment, made as return on foreign direct investments, on acquisition of foreign assets, and payments made in shape of gift and on overseas services purchased). To keep this balance in equilibrium, from past few years 'government's started paying valuable attention to correctly execute the economic policies to elevate export to other countries, and to reduce imports at the same time. However, in countries having stability and consistency at policy level, this long term macroeconomic policies act as catalyst in achievement of their balance of payments objectives. Conversely, many developing countries are with unsuccessful implementation of these policies resulted in negative growth.

In this study we are comparing the BOP of Pakistan and India through different variables such as: exchange rate, interest rate, and inflation rate. From many years, BOP of both the countries is in deficit. The capital account of a country tends into surplus due to the down ward tendency of the currency value. If the capital account goes into surplus it creates a huge affect on the BOP of a country [1]. The economic crisis in the country can cause a huge affect on the BOP. The regulatory bodies of the countries applied many test to solve this problem [2]. The natural resources of a home country can be depleted in any foreigner country and it also can be imported from other countries. While on other hand these can also be exported to other countries which make the deficit in BOP [3]. Regulatory bodies used the method of devaluation for the betterment of exports and for the improvements of BOP and also to reduce the real exchange rate [4]. IMF lend money to developing countries for the improvement of their economy, but it also has some adverse affects on them such as, recurrent payments, force for downward tendency of currency and also has a role in financial crisis. Question arise why IMF only lend money to some countries? [5]. Increased trend of urbanization play a vital role for the development of industrial growth rate and expand the ratio of exports which in turn support BOP. Regulatory bodies also make policies for improvement [6]. Foreign direct investment (FDI) also has a strong impact on BOP. Inward FDI results the BOP in surplus and due to outward FDI the BOP shrinks. Test was applied and result was that continuous growth in outward FDI did not show negative impact; it may show positive impact on BOP [7]. Due to corruption there is a negative impact on both host and home country, which is not better for BOP. The result has shown that the foreign investors invest the money where there is no corruption [8]. In recent years multinational banks loan increased in the economies especially where deposits, profit opportunities and inward FDI were greater and it had positive impact on BOP [9]. It is attempted to display the relationship between governance infrastructure and FDI and explained two stages of estimation procedure. First with that governance of the country did not receive the FDI, means there would be negative impact on BOP and governance structure is ineffective. Second with that if the country received the FDI then governance infrastructure would be well organized and had a positive impact on BOP [10]. The interest rate was low in countries. In this regard three factors were evaluated such as: debt, structure of debt, and policies for maintenance of foreign reserves. This study had been evaluated from India [11]. There was another comparative study of less developed countries that the two foreign investment debt and FDI which is less risky. From investigation it was concluded that FDI was less risky then compare to debt but the investor should be much efficient [12]. Exports of a country raised the accounts of the BOP of that country [13]. Exchange rate policies had a great affect on the exports of the country. Another factor which affected the exports of country was Black Market Premium (BMP) which reduced or increased the demand and supply of the dollar [14]. On the other hand home savings did not play a positive role in the stock market and there were many problems to attract foreign investors in home stock market. Also the home commercial banking loan did not positively affect the home savings. These were the major factors for the deficit of BOP of the home country, study evaluated from India [15]. Foreign trade had an important role to maintain. BOP of any country. There was need of many policies to attract foreign investors by authorizing them many benefits for the developments of home country [16]. From a study it was viewed that affective fiscal adjustments used as the base to increase the level of savings. But many countries set aside the fiscal adjustments which plays a poor role in the BOP of home country [17].

## 2. Methodology

### 2.1. Balance of Payments

The Balance of Payments is a record of a country's transactions with the rest of the world. It shows the receipts and payment from trade. It consists of the current and financial account. If country's inflation rate will increase relative to foreign country with which it trade its current account will expected to decrease due to increase in imports, and decrease in export, that have negative effect on the development of economy.

### 2.2. Interest Rate

An interest rate is the price a borrower pays for the use of money they borrow from another burrower, for instance a small company might borrow capital from a bank to buy new assets for their business, and the return a lender receives for deferring the use of funds, by lending it to the borrower. Interest rates are fundamental to a Capitalist society. Interest rates are normally expressed as a percentage rate over the period of one Gregorian year. Interest rate plays a major role in BOP.

### 2.3. Foreign Exchange Rate

Exchange rate is defined as the number of unit of one currency that is purchased with one unit in term of another currency. Exchange rate is very important factor which influence BOP. Exchange rate of Pakistan and India is very low which is unfavorable to BOP. In review of existing literature so far, it is observed that exchange rate plays critical role in international monetary transactions of an economy. Balance of Payments is a summary statement of these international transactions. In other words, balance of payment is used for the accounting of any specific country's total payments made during the certain period of time along with the receipts collected from any other country from private of government exchange sources.

### 2.4. Inflation Rate

Inflation rate refers to a general rise in prices measured against a standard level of purchasing power. Inflation is also measured by comparing two sets of goods at two points in time; the most well-known measures of Inflation are the CPI which measures consumer prices. The rise in inflation will decrease the growth of economy; Inflation hurts standard of living because people have to pay more and more for the same goods and services. If income doesn't increase at the same rate as inflation, then standard of living will decline.

# 3. Results

## 3.1. Regression Analysis of Pakistan

For conducting research data is collected for inflation, exchange rate and interest rat and balance of payment. The data of exchange rate (ER) and balance of payment (BOP) is collected from International Financial Statistics (IFS). By analyzing the regression between BOP and the three rates, following equation is found which is given below:

BOP = 37 + 28.5 inflation rate - 37.9 interest rate + 10.2 foreign exchange

***Table 1.** Regression Analysis of Pakistan*

| Predictor | Coef | St. Dev | T value | P |
|---|---|---|---|---|
| Constant | 36.8 | 170.0 | 0.22 | 0.830 |
| Inflation rate | 28.542 | 9.416 | 3.03 | 0.006 |
| Interest rate | -37.91 | 16.05 | -2.36 | 0.027 |
| Foreign exchange rate | 96.10 | 1.677 | 6.09 | 0.000 |
| S = 134.4 | $R^2$=81.0% | $R^2$dj=77.7% | | |

$R^2$ =81.0 % means there exist strong relationship between independent variables (inflation rate, foreign exchange rate, and interest rate) and dependent variable (BOP). The coefficient of inflation rate=28.52 have positive and highly significant impact on the BOP. Interest rate has negative but significant impact on the BOP. The coefficient of foreign exchange rate=96.10 also have positive and highly significant impact on the BOP. For all independent variables the null hypothesis is rejected, the alternative is accepted. The results of the ANOVA for Pakistan are presented in Table 2.

***Table 2.** ANOVA for Pakistan*

| Source | DF | SS | MS | F |
|---|---|---|---|---|
| Regression | 4 | 1770291 | 442573 | 24.49 (0.000) |
| Error | 23 | 415562 | 18068 | |
| Total | 27 | 2185853 | | |

The high value of F statistic and extremely low p value (given in parenthesis below F value) support the regression model.

## 3.2. Regression Analysis of INDIA

By analyzing the regression between BOP and the three rates, following equation is found which is given below:

BOP =- 528 + 132 Inflation rate - 196 interest rate + 96.1 foreign exchange

$R^2$=77.1% mean the model is better fit. The coefficient of inflation rate has but insignificant effect on BOP at 5% level of significance. The coefficient of interest rate is negative and insignificant. The coefficient of foreign exchange rate=96.0 have positive impact and highly significant effect on the BOP. The results of the ANOVA for India are presented in Table 4. Table 4: ANOVA for India

***Table 3.** Regression Analysis of India*

| Variable | Coef | St Dev | T value | P |
|---|---|---|---|---|
| BOP | -527.5 | 970.7 | -0.54 | 0.592 |
| Inflation rate | 132.30 | 76.21 | 1.74 | 0.096 |
| Interest rate | -196.1 | 105.5 | -1.86 | 0.076 |
| Foreign exchange rate | 96.10 | 14.13 | 6.80 | 0.000 |

S = 835.5, $R^2$= 77.1%, $R^2$ (adj) = 73.2%

***Table 4.** ANOVA for India*

| Source | DF | SS | MS | F |
|---|---|---|---|---|
| Regression | 4 | 54200323 | 13550081 | 19.41 (0.000) |
| Error | 23 | 16054776 | 698034 | |
| Total | 27 | 70255099 | | |

The high value of F statistic and extremely low p value (given in parenthesis below F value) support the regression model

## 3.3. Analysis of Pakistan's BOP Over Last Years

Effect of inflation on BOP: Value of inflation rate decrease from 1980 to 1990 and it increased from 1990 to 1995 and reached at the peak point and then decrease up to 2000 the inflation rate at 2003 the value is 3.1% is low in previous 30 years. The rate raised up to 2008 which shows the instability in the country changing of policies and country's conditions unstable law and order situation, The coefficient of inflation rate=28.52 shows its positive impact on the BOP. The 1% changes in value of inflation cause the change in value of BOP by 28.52%.The graph shows there is not trend exist in value of inflation.

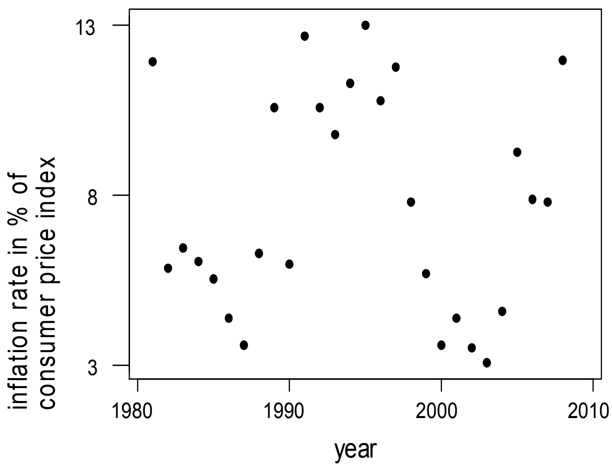


***Figure 1.** Inflation rate of Pakistan*

Effect of interest rate on BOP: Inflation rises then the required interest rate also increases. The high interest rate prefers the investors to invest in those countries. The graph shows the value of interest rate decrease from 1981 to 1987 due to decrease in inflation rate. In 1998 the value of interest rate is high that was 12.14% and then it declined up to 2004 and after it started to increase and in 2008 it was 7.4% and the foreign direct investment value increased from 2005 to 2008. The coefficient of interest rate=-37.91 shows its negative impact on the BOP. 1% change in value of interest rate will cause the decrease in value of BOP by 37.91%. The graph shows there is no trend exists in value of interest.

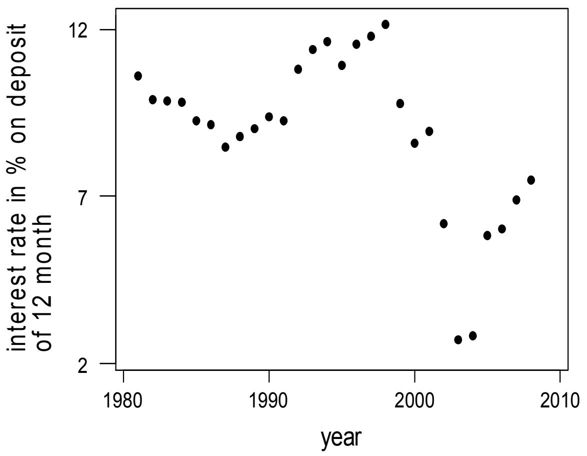


***Figure 2.*** *Interest rate of Pakistan*

The graph shows the value of Pakistani currency decreased in previous years against US$. In 2008 the Pakistani currency depreciated by 70.41 against the US$ due to rise in inflation that is 12%.The coefficient value 10.218shows that exchange rate have positive relationship with the BOP. That shows 1% change in value cause 10.218% effect on BOP. The graph shows there is no trend exists in value of foreign exchange rate.

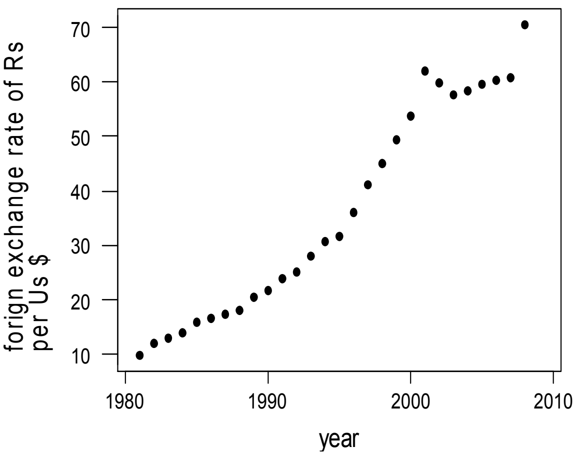


***Figure 3.*** *Foreign exchange rate of Pakistan*

### 3.4. Analysis of India's BOP Over Last Years

The value of inflation is high at 1991 that is 13.8% than the previous years and remained constant in 2003 and 2004 that is 3.8% and again rise in 2008 but the increasing rate is less than Pakistan's inflation rate. The coefficient value 132.30 shows that the inflation rate has positive relation with the BOP of India. Inflation has strong impact on BOP of India than the Pakistan. The graph shows there is no trend exists in value of inflation.

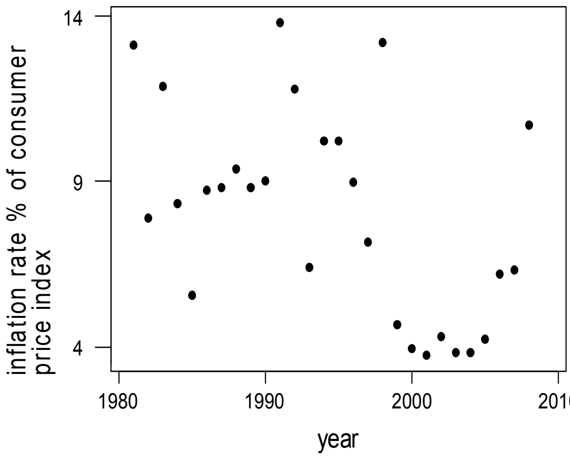


***Figure 4.*** *Inflation rate of India*

The value of interest rate was constant from 1981 to 1984 and increased in 1986 and then again was constant at 1999.The interest rate rose in 1995 and reached its highest value of 12.25 and then decreases again up to year 2004 and after this it started to increase in 2008 that attracted more FDI than the Pakistan's economy. The coefficient value -196.1 shows that have negative relationship with the BOP, that shows 1% increase in interest rate value have decreased the value of BOP by 196.1. The graph shows there is no trend exists in value of interest.

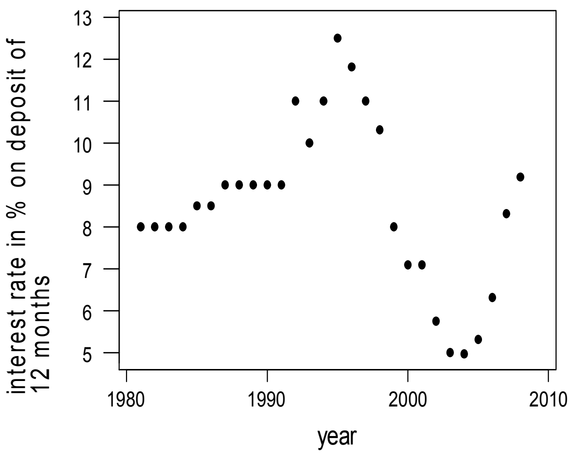


***Figure 5.*** *Interest rate of India*

The value of Indian currency decreased against US$ but the decrease in value of Pakistani currency is more than India's currency. The value of Indian currency is 43.51 at 2008 the value decreased less than Pakistani currency at same year is 70.41 against US$. The coefficient value 96.1 shows that have positive relations ship with BOP. The graph shows there is no trend exists in value of foreign exchange rate.

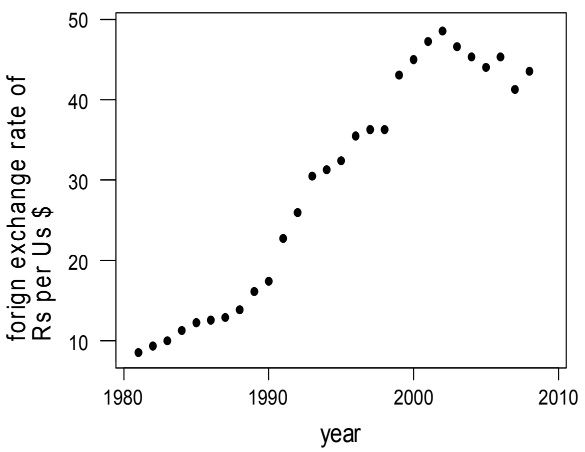


***Figure 6.*** *Foreign exchange rate of India*

# 4. Conclusion

Balance of payments provides detailed information concerning the demand and supply of a country's currency. Balance of payment plays a very important role in economic development of a country. From this study we concluded that the inflation rate and foreign exchange rate have positive effect on the BOP of both the countries and interest rate has negative effect on them. This is also examines that from this study management of both the countries take help to solve the problems for instability of BOP. Countries alike Pakistan and India, it is crucial to have appropriate monitoring systems coupled with suitable macroeconomic policies policy mix for attracting foreign inflow in the markets. Furthermore, these established monitoring at different government levels (i.e. planning commission, State Banks, Ministries like commerce, trade, industries and Custom Department, Bureau of statistics) can act as a supervisory body for the implementation of economic policies. Likewise, for making viable environment for foreign investor consistency must be developed with the international exchange markets, this helps in achievement of reasonable balance of payments goals and for having consistent exchange rates this which will help in long run.

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