Macroeconomic Impact on the Exchange Rate of SAARC Countries

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Abstract

This paper is established with an intention to examine the impact of major macroeconomic variables which includes real interest rate, inflation rate, unemployment rate, GDP per capita, foreign direct investment inflows, export and import over the exchange rate of the countries who are the member of SAARC. To investigate extensively this research paper considers the economic data from 1971-2015 for the selected 5 members of SAARC which includes Bangladesh, India, Pakistan, Sri Lanka and Nepal. The findings from the OLS regression model indicates interest rate, inflation rate and unemployment rate is negatively and significantly related with exchange rate while GDP per capita and foreign direct investment net inflows have positive significant relationship with exchange rate. The results of this paper approve the null hypothesis for export and import which exhibits that import and export has no significant relationship with exchange rate.

Keywords: Exchange rate, Real interest rate, Inflation rate, GDP per capita, Export, Import, SAARC countries.

JEL Classification: F62.

1. Introduction

The nexus between the vital macroeconomic variables and exchange rate already have drawn attention of many researchers. Over the last few decades the global economy has faced rapid inflation, lowering interest rate, growth of unemployment, instability in export, import and foreign direct investment and all of them has direct casual relationship with exchange rate. Auboin & Ruta (2011) argued that exchange rate has strong relationship with foreign direct investment and labor market. The South Asian SAARC countries are also facing dilemma to manage their exchange rate in the optimal point. Some of the major reasons are higher inflation, lower real interest rate, lower GDP per capita, higher unemployment rate which make the currency weak compared to the developed economy. To facilitate foreign direct investment, export and import, managing the exchange rate with the consent of the impact of major macroeconomic variables is the major challenge which is faced by the countries in this region. Auboin & Ruta (2011) also argued that certainty in exchange rate ensures stability in inflation, higher foreign direct investment which in return boosts the economy. On the other hand, these macroeconomic variables also have direct impact on the exchange rate volatility.

In this era of globalization developing countries are more concerned with the exchange rate as trade is not only domestically take place but also international trade is the major part of trade which eventually promotes domestic trade. Khan et al., (2012) stated that exchange rate is one of most important factor in the open economy which has direct impact on the macro economics factors like foreign direct investment and gross domestic products. The overall impact indicates two ways relationship where exchange rate has impact on the macroeconomic variables as well as macroeconomic variables also directly affects the exchange rate. As a result, from a basic point of view the optimal exchange rate is not only that rate which is determined based on only by considering how much exchange rate will affect the economy. Rather than macro economical issues and their impact on the exchange rate must also be considered. In such a way the developing countries will be in a competitive place.

Many of the previous studies have focused on to what extent exchange rate affects the macro-economic variables. But few research paper focused on to what extent major macro-economic variables affects the exchange rate. This research paper is formed with an aim to determine the relationship between major macroeconomic variables and exchange rate. To answer this question the research paper will examine their relationship with OLS regression model by considering data of 45 years data of 5 members of SAARC. The result of this research paper shows major macroeconomic variables has positive as well as negative significant relationship with exchange rate. However, the results will be complicated and even changed if different model and variables are considered.

2. Literature Review

Since so far numerous investigation conducted to explores the relationship between exchange rate and interest rate. Those investigations contain supportive, opposite and conflicting results. Based on the a comprehensive study conducted by Eichenbaum and Evans (1995) found that there is causal relationship between exchange rate and real interest rate in Japan, France, Germany, United Kingdom and Italy. In another study conducted on the basis of 9 Asian countries Furman and Stiglitz (1998) also found that exchange rate and real interest rate is causally related. Based on the 18 OCED countries Chortareas and Driver (2001) claimed the significant relation between exchange rate and interest rate. Based on the G3 countries Reinhard (2001) and in the same year based on India Pattanoik and Mitra (2001) found the results which also supports the existence of significant relationship between exchange rate and interest rate. Oppose to the above all study, Kaminsky and Schumulker (1998) found that exchange rate and interest rate is not causally related in Malaysia, Philippines, China, Thailand and Indonesia. Moreover, based on a empirical study conducted in 54 middle income middle income developing countries around world Kraay (1998) also found no significant relationship between exchange rate and real interest rate. Calvo (2002) proved that in developing economies the relationship between exchange rate and interest rate is not significant.

Although modern computerized statistical tools and empirical studies are implemented, but the conflicting results still exists. In Indonesia, Korea, Philippines and Thailand Chow and Kim (2004); in East Asian countries Bautista (2006), all of these scholars found significant positive relationship between exchange rate and real interest rate. In developing countries Brazil, Mexico, Peru, Korea, Philippines, Thailand and in four developed countries Canada, Germany, U.S.A and Italy Hratkovska et al., (2008) found the positive and significant relationship between exchange rate and interest rate. In Mercosur countries Belke et al., (2004) also found significant relationship between these variables which is consistent with Hratkovska et al., (2008). On the other hand, oppose to the above listed results in Indonesia, Korea, Malaysia and Thailand Choi and Park (2008) found that there is no significant relationship between exchange rate and real interest rate. Moreover, based on a comprehensive study conducted in 22 developing countries around the world Goderis and Ioannidou (2008) also found that no significant relationship between exchange rate and interest rate. Based on the economy of U.S.A. Hamrita and Trifi (2011) also claimed that exchange rate and real interest rate are not momentously related.

Based on an empirical study conducted by Federal Reserve Bank of Kansas (1986) found that in the U.S economy exchange rate is negatively related with real interest rate. But Haikko (1996) observed that exchange rate of dollar and interest rate is correlated. Through Vector auto-regression model by considering the daily interest rate and exchange rate from July 1997-1998 of Asian countries, Goldfaijn and Baig (1998) stated that exchange rates and interest rate are strongly related. But again, based on the 80 currency crises (1980-1998), by conducting an extensive study to investigate the linkage between exchange rate and real interest rate Goldfajn and Gupta (1999) found that there is significant positive relationship between exchange rate and interest rate as, because of the increase of interest rate, exchange rate also appreciated.

From the perspective and intention of describing the impact of the inflation over the exchange rate, Nurkse and Ranger (1994) stated that through exchange rate the rate of a currency of country can be determined based on when foreign transaction take palce. As a result, exchange rate involves the relative price of domestically produced products which are internationally traded which in return allow the exchange rate to have worldwide impact on the price level. Madura (2008) suggested that inflation depreciate the value of domestic currency which in return increase import but provide downward pressure on export. Sodersten and Reed (1994) also stated that inflation is one of the major causes behind the currency depreciation of any country. By implementing the data of 1970-2010 of the Nigeria, Oriavwote and Eshenake (2012) claimed that there is a significant relationship between exchange ate and inflation. They also claimed that in Nigeria the volatility of exchange rate is heavily depends on the inflation. Ahmed and Ali (1999) found that for any country implementation of monetary policy should be focused on inflation and exchange rate as simultaneous targets. Broll & Eckwert(1999) described that as lower inflation is related to the fixed exchange rate so that it is more difficult for developing countries to make an efficient entrance in the international capital market. Analyzing the dynamic relationship of exchange rate and inflation rate in developing countries, Bleaney and Fieldong (1999) found that when a developing country implements pegged-floating exchange rate system they gain the control over the inflation. But when a developing country implements or follows floating exchange rate they have very little control over the inflation as the cost of that country can be increased by 10% in every years. By conducting an extensive study based on the panel data of 1990-2007 of Asian countries Kim et al., (2010) postulated that the relationship between exchange rate and inflation is momentous. The results of their study also showed that the exchange rate of Indonesia, South Korea, Thailand and Philippines was depreciated as the inflation was increased. However, an interesting finding comes out from the investigation based on 9 Asian countries during 1992-1998 where Furman and Stiglitz (1998) postulated that depreciated exchange rate has more momentous effect on the countries with low inflation than the countries with high inflation.

To determine whether there exists any relationship between exchange rate and unemployment rate many previous study took effective efforts where Apergis (2000), Djivre and Ribon (2000), Filztekin (2004), Milas and Legrenzi (2006), Ngandu (2008), Broll and Sabine (2010), Nyahokwe and Ncwadi (2013) and Abdul Rahim et al., (2013) all of these researchers postulated that the exchange rate is positively and momentously related with unemployment rate. Contrary to above all listed results Mohammadi and Gholami (2008) disapproved the existence of the significant relationship between exchange rate and unemployment rate. Based on the selected 10 Asian countries as sample Niaz et al., (2012) suggested that exchange rate has positive and strong impact over the unemployment rate. Based on the South Korea, Singapore Chang and Shen (2011) also found significant positive relationship between exchange rate and unemployment rate. In this study they implement two determinants for exchange rate instability. For both determinants they found that instability in exchange rate has significant influence over the unemployment rate. For G-7 countries Knetter (2008) also found the results which are consistent with those results where positive significant relationship was found.

Based on the only focusing the impact of the exchange rate on unemployment rate, Akpan (2009) found that exchange rate and unemployment rate are positively related. But by considering other associated variables Nucci and Pozzolo (2009) and Goldberg and Tracy (1999) analyzed that average hourly earnings, hours and employment are significantly influenced by the exchange rate. Based on the empirical study conducted in China Hua (2000) and Paulo et al., (2009) claimed that through technological channel, export volume and efficiency channel appreciation of the currency has negative impact on the employment of China. Based on the manufacturing, non-manufacturing sectors Ewing and Yang (2009) postulated that in long term employment of manufacturing sectors has a strong relationship with exchange rate where no relationship between exchange rate and non-manufacturing sectors were found. Based on the trading and non-trading sectors Ngandu (2009) found that currency appreciation has negative relationship with traded sectors where positive relationship with non-traded sector. Moreover, Abdulnasser and Manuchehr (2006) also found that in an appreciation of 1% exchange rate causes decrease in tradable jobs by 0.95%. Demir (2010) claimed that change in the standard deviation of exchange rate destroyed employment rate by 1.4%-2.1%. Based on the volatility of exchange rate of Euro in ten CEEs economies Belke (2005) and based on the volatility of Canadian dollar Danny and Terence (2007) found that volatility of exchange rate has significant positive relationship with unemployment rate. By conducting an empirical study to find the relationship between exchange rate and unemployment rate based on the Latin American countries where Argentina, Brazil, Chile and Mexico was considered as sample Frenkel and Ros (2006) approved the significant relationship between exchange rate and unemployment rate by rejecting the null hypothesis of no relationship between them.

With the panel of 60 developing and developed countries of 1965-2003 time series data Calderon (2005) constructed fundamentals-based indexes of exchange rate where he found that GDP per capita is negatively correlated with exchange rate. In this study the asymmetric and non-liner relationship between exchange rate and GDP per capita was also become evident. The same result was also become evident when Balassa-Samuelson effect index was utilized instead of fundamentals-based indexes. In another extensive study based on the 58 developing countries with the data of time series 1960-1999 Gala (2008) also found negative relationship between GDP per capita and exchange rate. On the other hand, based on the panel of 184 countries around the world with the time series of 1960-2004 which was considered as sample, Rodrik (2008) test the asymmetries between developing and developed countries. In this study he claimed that those developing countries which has GDP per capita less than $6000 also has significantly positive relationship with exchange rate undervaluation. For such developing countries undervalued exchange rate is more momentous for developing countries than for developed countries.

Khan et al., (2012) stated that in an open economy exchange rate is one of the most important factors which has direct impact on the macroeconomic variables such as foreign direct investment and gross domestic product. Fontage and Revil (2001), Bleaney and Greenaway (2001), Kiyota (2004), Chen and Rau (2006), Kyereboah and Tettey (2008) for Ghana, Vita and Abbot (2008) for Pakistan, Nyarko and Barnor (2011) for UK, Nyarko and Amponsah (2011) for Ghana all of them found that the instability of exchange rate has inverse relationship with foreign direct investment inflows. While Aizenman (1992) argued that in the long run the fluctuation of exchange rate has positive significant relationship with foreign direct investment inflows. Froot and Stein (1991) described the role of the exchange rate over the foreign direct investment inflows of the host countries. The study was conducted in sector-level of United States which showed that dollar depreciation leads to the increase of the inflows of foreign direct investment due to the increase of the investors' wealth and reduction of the cost of investment. This study also revealed that there is a significant negative relationship between exchange rate and foreign direct investment inflows in manufacturing industry. Based on the cost of labor, this study also indicates that the depreciation of currency of the host country reduces the cost of production which in return attracts numerous foreign investors. Kogut and Chang (1996) stated that fluctuation of exchange rate is the most vital component of foreign direct investment of Japanese electronics firms operating in United States. Firoozi (1997) found that exchange rate and foreign direct investment is correlated. Based on the Korean exchange rate, Jeon and Rhee (2008) observed that foreign direct investment inflows and exchange rate

is significantly related. But Chowdhuary and Wheeler (2008) found the mixed results of the association of exchange rate instability and foreign direct investment inflows. Morrissey and Gorg (2009) and Arratibel and Zdzienicka (2011) for European Union to Central and Eastern Union documented that uncertainty of exchange rate is inversely related with foreign direct investment. But Cushman (1988) observed that in United States exchange rate fluctuation has positive relation with foreign direct investment. Baek and Okawa (2001) postulated that the appreciation of yen enhance foreign direct investment by Japan in the manufacturing industry. Moreover, Gottschalk and Hall (2008) documented that there is a positive association between uncertainty of exchanges rate in Japan and the foreign direct investment of South Asian countries. Osinubi and Amaghionyeodiwe (2009) documented that in Nigeria the real foreign direct investment is increased because of the depreciation of their domestic currency. By implementing the East Asian countries as sample Dhakal et al., (2010) claimed that uncertainty of exchange rate has direct positive impact over the foreign direct investment inflows of the selected countries. Takagi and Shi (2011) proved that increase in foreign direct investment promotes the uncertainty of exchange rate but it also appreciates the Japanese currency yen against the host Asian countries. Nagubadi and Zhang (2011) claimed that depreciation of currency and uncertainty of the exchange rate of the host country strongly influences the bilateral foreign direct investment (FDI) between United States and Canada.

With the perspective of defining the exchange rate risk from point of view of importer and exporter, Rogoff (1998) explained that exchange rate risk is one of the largest risks for international traders. They always try to avoid exchange rate risk as many others business risks are already exist. Bake et al., (2002) documented that both in the long run and short run the uncertainty of exchange rate is negatively related with export. Kemal (2006) stated that in Pakistan uncertainty of exchange rate is positively related with export but negatively related with import. Javed and Farooq (2009) argued exchange rate volatility is the most influential factor which has direct impact on the decision of export and import. Instability of exchange rate indicates how much should be manufactured, exported and imported. It also permits the incentives for the domestic investors to earn higher profit by investing in the foreign currency as it is greatly acknowledged that exchange rate uncertainty is the key for higher profitability. Mustafa and Nishat (2004) postulated that when the exchange rate system is moved from fixed to flexible it faces volatility which has direct negative impact on the export. Payaslioglu and Polit (2013) volatility of exchange rate works as an opportunity for the investors to invest in the foreign currency and gain higher return. Baldwin and Krugman (2003) proved that uncertainty of exchange rate has significant impact on the export performance. This study also revealed that exporting firm takes the opportunity of currency depreciation. Kandil and Mirzaie (2006) claimed that appreciation of domestic currency lower the cost of raw material and intermediate goods which enhance the ability of the firm to supply more finished products that leads to exports. They also argued that appreciated local currency reduces the competitiveness of domestic producers which ultimately reduce the export performance and increase the volume of import. Dincer and Kandil (2000) argued that exchange rate should be in an optimal level as it has significant impact on the export and import. Rehman et al., (2012) discussed that because of the floating exchange rate Pakistani rupee depreciated which creates opportunity as well as drawback. Because of the depreciated Pakistani rupee foreign goods will be expensive and domestic goods will be cheaper which in return increase the demand for the local products. To increase the trade balance foreign country will also promotes domestic products. On the other hand, depreciated currency makes the export cheaper for Pakistan and import will be expensive.

After considering above all the discussions, arguments and counter arguments this paper will fundamentally focuses on to determine in what extent exchange rate have impact on the economic growth of the SAARC countries. To investigate this research paper will consider fives SAARC members out of eight. However, it should be noted that based different selected variables, previously many researchers found significant positive or significant negative relationship while others found no relationship. As a result, this research paper will investigate and explore the relationship between major macroeconomic variables and exchange rate in the light of previous research papers' arguments, discussions and findings.

3. Methodology

Based on the demonstrated discussions in the literature review, in order to explore the relationship between exchange rate and economy, this research paper will investigate to answer the following established central research question.

1. Is there any significant relationship between exchange rate and major macro-economic variables of SAARC countries?

To answer to the central question the developed central hypothesis is as:

H1: There is significant relationship between exchange rate and major macro-economic variables of SAARC countries.

Against the null hypothesis which is there is no relationship between exchange rate and major macro-economic variables of SAARC countries.

3.1 Identifying Variables

3.1.1 Dependent Variable

Exchange rate: Zahoor (2009) described that exchange rate defines how much of other currency can be eared by exchanging someone's national currency. Javed and Faroogq (2009) explained that exchange rate means how much the domestic currency can be changed with the other national currency. From a very basic understanding, exchange rate is the value or price of one currency in term of another currency.

3.1.2 Independent variables

Real interest rate: Real interest rate is adjusted to eliminate the inflationary effect on the currency which in return indicates the actual cost of funds for borrower and the real yield for the lender. Real interest rate is calculated as, Real interest rate = Nominal interest rate - Inflation.

Inflation rate: According to World bank definition, "Inflation rate is estimated by the consumer price index which indicates the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may fixed or changed at specific interval, such as yearly." In simple term inflation rate is the increase rate of the price of the goods and services, usually annually.

Unemployment rate: Unemployment rate can be defined as the percentage of total labor force that is not employed but seeking employment and willing to do work. More broadly, the unemployment rate is the percentage of employable people of a country's workforce who are over 16 years old but lost their jobs or unsuccessful to join in any jobs but actively seeking for jobs. It is calculated as, Unemployment rate = (Number of employed / Total labor force) * 100.

GDP per capita: GDP per capita is the average income per person in a country. In another word, an approximate value of goods and services produced by per person of a country. The formula is GDP per capita = Gross domestic products / Total population.

Foreign direct investment net inflows: According to the World Bank, "FDI inflows are value of the inward direct investment made by the non -resident investors in the reporting countries." In another word foreign direct investment net inflows is the value of the total investment invested by the non-resident in the domestic country.

Export: Export is one of the most crucial activities in the international trade. The export function is generated only when goods and services which are produced in one country is sold or traded in another country.

Import: Import is another one of the most vital function of international trade which opposite to the export. The function of import is generated only when goods and services which are produced in one country is brought into another country.

Identification of dependent variable and independent multiple simpler variables for major macroeconomic variables lead us to answer the following individual research questions:

1. Is there any significant relationship between exchange rate and real interest rate?

2. Is there any significant relationship between exchange rate and inflation rate?

3. Is there any significant relationship between exchange rate and unemployment rate?

4. Is there any significant relationship between exchange rate and GDP per capita?

5. Is there any significant relationship between exchange rate and foreign direct investment net inflows?

6. Is there any significant relationship between exchange rate and export?

7. Is there any significant relationship between exchange rate and import?

These research questions lead us to test the following sub-hypotheses:

H1A: There is significant relationship between exchange rate and real interest rate.

H1B: There is significant relationship between exchange rate and inflation rate.

H1C: There is significant relationship between exchange rate and unemployment rate.

H1D: There is significant relationship between exchange rate and GDP per capita.

H1E: There is significant relationship between exchange rate and foreign direct investment net inflows.

H1F: There is significant relationship between exchange rate and export.

H1G: There is significant relationship between exchange rate and import.

Against the sub-null hypotheses of there is no significant relationship between exchange rate and each of the selected variables.

Table 1: Variables and their respective symbols are given below:

Variables	Symbol
Exchange rate	EXR
Real interest rate	REA
Inflation rate	INF
Unemployment rate	UNR
GDP per capita	GDC
Foreign direct investment net inflows	FDI
Export	EXP
Import	IMP

3.2. Model

Exchange rate (EXR) is the dependent variable in the OLS regression model. Real interest rate (REA), Inflation rate (INF), Unemployment rate (UNR), GDP per capita (GDC), Foreign direct investment inflows (FDI), Export (EXP), Import (IMP) all these independent multiple simpler variables are implemented to more concretely define and measure the independent construct major macroeconomic variable. Based on the dependent variable the regression model is demonstrated below:

$$\text{EXR}_{it} = \alpha 0 + \alpha 1 REA_{it} + \alpha 2 INF_{it} + \alpha 3 UNR_{it} + \alpha 4 GDC_{it} + \alpha 5 FDI_{it} + \alpha 6 EXP_{it} + \alpha 7 IMP_{it} + \varepsilon_i$$

3.3. Data and Sample

This research paper considers the 5 countries which are Bangladesh, India, Pakistan, Sri Lanka and Nepal out of 8 countries which are the members of SAARC. For the selected 5 sample countries, latest 45 years data with a time series of 1971-2015 is considered. As a result, the number of observations for dependent variable and each of the independent variables are 225. Convenience sampling method was implemented to collect sample data of sample countries who are the members of SAARC. The acquired data is analyzed and interpreted by utilizing E-views 8.0 statistical software.

3.3.1 Scope of the Study

• This research paper does not consider all of the 8 countries who are the members of SAARC due to the insufficient data of the selected variables of those countries.

• This research paper does not consider any data for the selected variables before 1971 with a view to maintaining equal number of observations for each of the variables.

• The scope of the study is limited to few multiple simple variables and determinants of major macroeconomic variables such as interest rate, inflation rate, unemployment rate, GDP per capita, foreign direct investment inflows, export, and import.

4. Findings and Analysis

4.1 Regression

In the above demonstrated regression model, the Exchange rate (EXR) is regressed against selected multiple simpler variables for major macroeconomic variables construct which are Real Interest rate (REA), Inflation rate (INF), Unemployment rate (UNR), GDP per capita (GDC), Foreign direct investment net inflows (FDI), Export (EXP), and Import (IMP).

Table 2: The results of the regression estimation are illustrated below:

Independent Variables	Coefficient	Std. Error	T-Statistic	Probability Value
Constant (C)	48.59224	4.159932	11.68102	0.0000
Real Interest rate (REA)	-0.446781	0.207292	-2.155323	0.0322
Inflation rate (INF)	-0.927950	0.290036	-3.199430	0.0016
Unemployment rate (UNR)	-3.291732	0.436052	-7.548942	0.0000
GDP per capita (GPC)	0.000253	2.20E-05	11.48515	0.0000
Foreign direct investment net (FDI)	12.10083	2.213456	5.466938	0.0000
Export (EXP)	-0.046143	0.097822	-0.471702	0.6376
Import (IMP)	0.050004	0.098727	0.506485	0.6130

Significance level is 20%.

R-squared	56.4378%
Adjusted R-squared	55.0335%

From the regression estimation it is evident that interest rate, inflation rate, unemployment rate, GDP per capita and Foreign direct investment all of these are significantly related with Exchange rate as their probability values (P-values) are less than 20% (two tail test, each tail 10% or .10). As a result, for these variables we can reject the null hypothesis and support the alternative hypothesis. The respective T-statistic values for real interest rate (-2.155323), inflation rate (-3.199430), unemployment rate (-7.548942), GDP per capita (11.48515) and Foreign direct investment net inflows (5.466938) are significantly different from "0" which indicates that their significant relationship is not occurred simply by chance or for sampling error. The coefficient value indicates that if one independent variable is changed by 1% then how much the dependent variables will be changed by holding other independent variables constant. The coefficient values also indicate whether the relationship between dependent variable and each of independent variables is positive or negative.

In this research paper based on the regression results it is exhibited that real interest rate has significant negative relationship with exchange rate which is consistent with previous study (Federal Reserve Bank of Kansas, 1986). This result may shade the light of those results where significant positive relationship was found (Belke et. al., 2004). Inflation rate has significant negative relationship with exchange rate. This result is also consistent with previous research result (Kim et al., 2010). Unemployment rate has significant negative relationship with exchange rate and that

result is consistent with Ngandu (2009). GDP per capita is significantly and positively related with exchange rate and this result is also consistent with Rodrik (2008). Foreign direct investment net inflows have positive and significant relationship with exchange rate which is consistent many previous results (Firoozi, 1997, Jeon and Rhee, 2008, Froot and Stein 1991) where positive significant relationship was also found.

On the other hand, export and import both of these variables have no significant relationship with exchange rate as their probability values are more than the desired significance level. The t-statistic values for these variables also indicate that their relationship is occurred simply by chance as those values are very close to "0". As a result, for export and import variables this research paper is failed to reject null hypotheses which indicates no significant relationship. This findings ay shade the light of many other previous research paper where significant relationship was found (Mustafa and Nishat, 2004, Payaslioglu and Polit, 2013, Baldwin and Krugman 2003).

Moreover the regression estimation respectively has R-squared and Adjusted R-squared values of 56.4378%, 55.0335%. This indicates the chosen independent variables can explain the 56.4378% variation of the dependent variables in this model. But Adjusted R-squared is the modified version of R-squared which indicates the more precise result by considering only those independent variables which are actually associated with dependent variables. As a result, based on the Adjusted R-squared value it is evident that the selected independent variables can reasonably explain the variation of dependent variable by 55.0335%.

5. Conclusion

Based on the results of this research paper it can be evidently claimed that major macroeconomic variables has significant impact on the exchange rate in this SAARC region. Arguments will be raised when other significant macroeconomic variables will be considered. In this way different regression model may provide different results. Moreover, this research also provides some different results based on approving null hypothesis for export and import. In such case argument can be predominated based on other previous research where significant relationship was found. But it should be noted that the regression result is also varied when economic data based on the economic level as well as region is different. From this research paper it can be postulated that in this SAARC region as all the countries are developing countries, here exchange rate is highly sensitive and greatly influenced by the major macro-economic variables. Both the international and domestic macroeconomic variables are influential here as the currency of each country is weak relative to the developed countries' currency. In this regard, from the perspective of sensitivity issue of exchange rate of SAARC members they need to implement effective exchange rate policy by analyzing other macro-economic variables more extensively. Because exchange rate influences the overall economic activities while macroeconomic variables also influence the exchange rate which in return contributes towards the enhancement of economic activities that may ultimately contribute towards the overall growth of the economy.

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