SHORT AND LONG RUN EFFECTS OF EXCHANGE RATE VOLATILITY ON FOREIGN DIRECT INVESTMENT IN KENYA

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Abstract

Foreign Direct Investment is a significant factor in enhancing Kenya's economic growth and development. However, exchange rate volatility appears to be a disincentive to this aspect owing to the risks it possesses to foreign direct investments. This study investigates the short and long run effects of exchange rate volatility on foreign direct investment on Kenya. The study uses annual secondary data set for the period 1980 to 2014. The study addresses two specific objectives: to investigate the effect of the short-run and to measure the effects of exchange rate volatility in the long-run. The short run effect of exchange rate volatility on foreign direct investment was achieved by estimating an error correction model, while the long run effects were estimated using a multiple regression. Results indicate that the error correction term is statistically significant at five percent, with a value of -0.73. This implies a percentage of 73 percent of disequilibrium is corrected within a year. In the long run, the exchange rate volatility coefficient is negative and statistically significant at five per cent. An increase in exchange rate volatility by one per cent unit will lead a reduction of foreign direct investment by 10.19 per cent. The empirical results obtained in this paper recommend the Kenyan government to implement exchange rate policies that promote stability of exchange rate, which could help reduce exchange rate volatility in order to attract more FDI.

Keywords: FDI, Exchange Rate, Exchange Rate Volatility, Openness, Inflation, GDP

INTRODUCTION

Foreign Direct Investment (FDI) is made to the effect that a lasting interest is gained for an enterprise out of an economy of the investor in question. Two key terms; control and controlling interest are used to differentiate between FDI and portfolio investment since for the latter, owners do not have a lasting control. Despite the distinguishing feature, there appears no general agreement as to what makes up a lasting control. To this effect, International Monetary Fund (2000) defines a controlling interest as a ten per cent constituent of the overall shareholding capacity.

There are three main classifications based on the perspectives. Accordingly, FDI can be placed into three categories namely; import substituting FDI, Export increasing FDI, and Balance of payment deficit FDI. Import substituting FDI takes place when the imports of a particular product/service are substituted through production of similar goods within the confines of the investment-receiving country. Export increasing FDI is concerned about the search for new raw materials, new inputs, and intermediate products to the country targeted for foreign investment. Lastly, balance of payment deficit FDI is an FDI strategy which aims to close the balance of payment gap through allowing of investors from oversees to take up investments in the domestic market.

Foreign Direct Investment (FDI) has been debated, amongst many scholars, for a long period of time. This is majorly because of the increasing benefits that are derived from FDI by both parties; Multinational Corporation and the recipient economy (Crowley, 2010). Foreign direct investment encompasses a long-term relationship between a foreign investor located in a foreign country and a parent enterprise located in the home country to where the investor targets for investment thereby providing a significant level of control and influence to the foreign investor regarding the management of the home enterprise in the other foreign economy (Agyire&Kyereboah, 2008).

Despite this significant control given to foreign investors, resident enterprises derive major benefits from the relationship. One of the benefits is that foreign investment (FI) leads to positive externalities which emerge in form of technology spillovers and transfers. Positive externalities, in particular, are viewed as important as it is argued that the difference between the poor countries and the rich countries lies in the 'idea gaps', and it's argued that one way of transferring the business know-how and technological is through the FDI (Glass &Saggi, 2007). It's also argued that these transfers may carry with them substantial spillover effects that could positively impact the entire economy, and therefore it will not only boost the productivity of receiving firms but all other firms as well. (Tsikata& Asante 2000) add to this line of argument by stating that FDI offers a distinctive contribution hence enhancing the development through

providing resources that come as a package whose other aim is to complement other financial inflows.

For a long time, Kenya has taken a leading position in economic stability in East Africa; being the largest and most advanced economy. Studies on FDI in Kenya have shown a "not-constant trend" in both relative and absolute terms (Kinuthia, 2010). Kenya has retained its advantage in FDI allocation in the region mainly because of its relatively better trained workforce and its logistics location, which is considered central (Nyabiage, 2011). To this end, in Kenya, foreign investors have had a tendency of making investments which are considered relatively smaller but numerous in count and spread across a number of sectors (Otieno, 2014). Some of the sectors to benefit significantly in the economy are Oil industry, Real estate, Transport, Horticulture, Export diversification and Manufacturing (FKE, 2009).

Government policies on FDI

For the past decades, Kenya had been recognized to contain one of the most open FDI establishments in the whole of Africa. The chief restrictions were only available via the Trade Licensing Act (1968). However, the FDI related restraints had not been effected in the recent years. Apart from the restrictions of this Act, they only formal limits on FDI had been placed on the insurance sector as well as the telecommunications industry where foreign ownership of firms was constrained 77% and 70% respectively. However, for companies listed in the stock exchange the foreign ownership limitation was capped at 25 per cent. In addition no screening procedures were required for foreign companies before their approval.

In the year 2004, a new FDI regime was created, which, reversed this approach. Accordingly, the result points out at a replacement of one of the most liberal FDI regimes with a more restrictive one. One of the restrictions is contained in the Investment Promotion Act (2004), which was approved by the head of state as at the end of the year 2004. This restriction entailed the introduction of a threshold amount of investments accompanied by prior screening of all foreign companies seeking to make investments in Kenya. This regime brought about major impediments to flows of FDI. In addition, a formal distinction between foreign and domestic investors was introduced by way of mandatory application of investment certificate by the Kenya Investment Authority (KIA) that requires that any foreign investor wishing to do their investments in Kenya have a legal insurance certificate."

There are various conditions to be fulfilled prior to the award of the Investment Certificate to a prospective foreign investor. The first condition stipulates that be at least be an equivalent of $500,000. In addition, the investment to be undertaken must be deemed to offer benefit to the Kenyan populace based on the following parameters, employment creation to

Kenyan citizens, technological and skill acquisition by the citizens and contribution to the basket of government revenues by way, say tax. Other conditions that are evaluated are the ability to also contribute to foreign earnings as well as uptake of domestic inputs. However, these two do not form part of the previously stated three requirements.

This act has enabled the government to implement FDI promotion policies such as the setting up of a regulatory stance which has enhanced access to the market through formulation of trade agreements as well as lowering of tax rates on the foreign sources of income. The government in an aim to improve the manufacturing industry in Kenya to world class has funded benchmarking sectorial and firm-based programs (UNCTAD, 2011). The government has also lifted up minimum capital requirements for FDI investment in Kenya in order to bar less beneficial investments and attract economic improving FDI's.

Government policies on Exchange Rate in Kenya

The exchange rate regimes in Kenya can be characterized into three: fixed, floating and crawling peg exchange rate regimes. The country operated under the fixed exchange rate policy since independence to 1982. The exchange rate controls were instituted in the early 1970s due to the balance of payment crisis in 1971/1972 with an aim of preserving foreign exchange as well as management of pressures resulting from balance of payments (Ndung'u, 2000). These measures were abandoned in the year 1982 and paved way to crawling peg policy as a result of frequent fluctuation in exchange rates that the Kenyan shilling suffered in 1974 and 1981.

Kenya adopted the crawling peg regime between the years 1982 and 1990. However, due to a problem of misalignment of real exchange rate the policy was abolished in the year 1993 and a floating exchange rate policy was adopted with an aim of mitigating this problem (Otieno, 2014). As a result, the value of the Kenyan Shilling strengthened for a brief period as compared to the dollar from the crawling peg period upto the year 1995. However, it depreciated significantly until 2004. The shilling later strengthened as it appreciated consistently from 2004 to 2007 and this was attributed to increased export earnings, a favorable macroeconomic environment, increased foreign exchange flows, and remittances growth (Otieno, 2014). The currency later weakened against the dollar from 2008 to 2011, majorly due to the effects of global financial crisis (KNBS, 2012). However, in 2012 it stabilized due to a stringent monetary policy stance implemented by the Central Bank of Kenya during the first half of that year (World Bank, 2013) but later depreciated in 2013 and 2014. Figure 1 represents movements of real exchanges within the 1980-2014 period.

Figure 1: Exchange rate and FDI in Kenya from 1971 to 2014
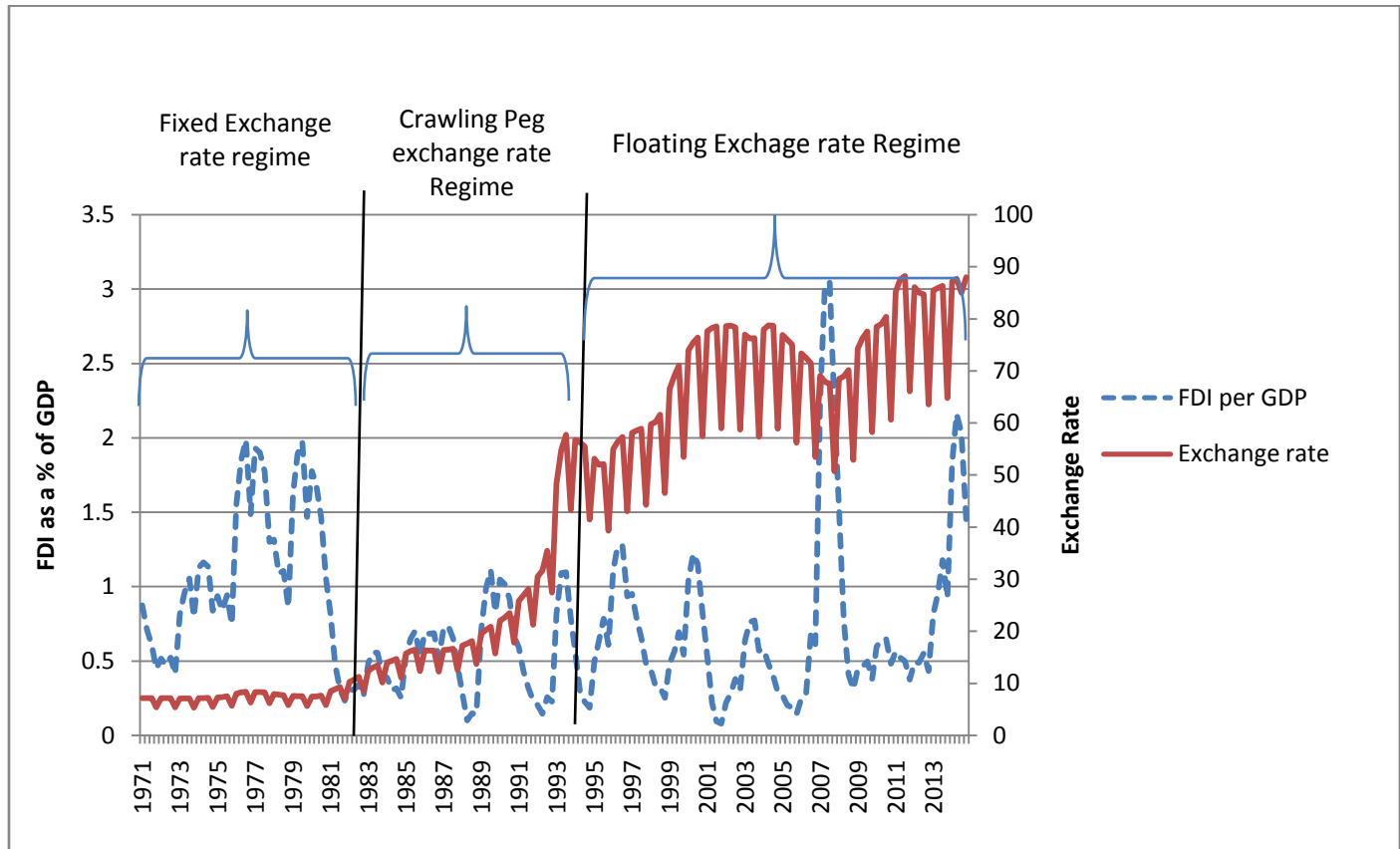
Source: IMF, World development indicators

It's clear from figure 1 that the past years have been characterized by volatile exchange rates and thus have been creating uncertainty in the investment market meaning potential foreign businesses are naturally exposed to risks of exchange rate volatility in their investments to Kenya (Otieno, 2014). Figure 1 shows that during the fixed exchange rate period, the central bank was able to maintain very low exchange rates and this was coupled by high FDI inflows. However, when the country shifted to the crawling peg exchange rate system, the country's exchange rate began to rise steadily and the FDI inflows decreased substantially. When the country changed to a floating exchange rate system in 1993, the exchange rate continued to rise, though not at the high rate as it was in the previous regime, and was accompanied by high FDI inflows notably in the years 2007 and 2014.

Therefore, the main aim of this research is to develop a formal understanding of how FDI flows to the country are affected by the volatility of real exchange. This is necessary because Kenya needs to attract high FDI inflows in the light of the rising fluctuations in the Kenyan shilling against major currencies in the world.

Research Problem

Constant fluctuations in the exchange rate make prediction of the future rates difficult in the long-run and short-run, hence causing uncertainty in the global investment market. Due to these uncertainties, potential investors are exposed to risks of exchange rate fluctuation if they decide to do their investments in Kenya. Literature has shown that exchange rate uncertainty has a profound and far-reaching implication on the overall FDI attractiveness. Caporaleet. al., (2009) made a suggestion that from the onset of the collapse of Bretton Woods's system in the year 1973, the various countries' exchange rates have been undergoing frequent fluctuation, creating uncertainties which have put the investors in a dilemma as to how these changes are interpreted.

Resulting from this indecisiveness, investors may postpone the investment which leading to a reduction/slump in the flows of FDI. Froot and Stein (1991) confirmed this assertion as their research found mixed reactions from investors towards exchange rate depreciation. This uncertainty in the investor's reaction to depreciation in exchange rate was also experienced in the 1980s when the U.S dollar had a really high value yet it received a relatively smaller amount of FDI. Therefore, there is need to determine the effect of exchange rate volatility on FDI in Kenya, both in the short and long run.

LITERATURE REVIEW

Theoretical Literature Review

Various theories have been developed to explain how different variables affect FDI movements. For example, Neoclassical Trade Theory explains that capital flows from one country to another depending on factor endowments; Portfolio theory which argues that investors' primary consideration when selecting portfolio is returns and risk; Ownership advantage theory states that FDI requires market imperfection to flourish and internalization theory framework which asserts that special advantages lead to FDI inflows (for example, ownership, location and internationalization advantages). Other theories include the agency and the flexible accelerator theory.

Empirical Literature Review

Empirically, using USA time series data, Cushman (1985) found out that the degree of foreign exchange rate volatility is directly proportional to FDI flows, Goldberg &Kolstad (1995) found that if factors of production are presumably fixed, and that investors are risk averse, there will exist no relationship in statistical terms between FDI and exchange rate uncertainty. Again, they suggested that when firms engage in FDI they are availed a possibility to shift their production

when responding to exchange rate risk and due to the fact that this option positively correlates to exchange rate variability, further volatility would result into more FDI. Blonigen (1997) shows that exchange rate changes have a profound effect on acquisition FDI primarily meant industries specializing in technology in which specific corporate specific assets were likely of great importance.

Using a panel data set covering 27 countries for a period ranging from 1982 to 2002, Jeanneret (2007) found U-shaped, non-uniform relationship that exists between FDI and exchange rate while Xiong (2005) find that combined bilateral rates of exchange and exchange rate volatility for negatively affect FDI outflows for Australia but for Canada, United Kingdom and Japan, only bilateral exchange rate that had a significant effect. Recent studies, for example, by Osinubi and Lui (2009) found a positive correlation between exchange rate volatility and FDI, Ogunleye (2009) found out that exchange rate volatility (caused by inflation and shocks on foreign reserves) had a negative impact on FDI flow while Ojung'a and Elly (2013) find a weak positive relationship between FDI inflows and foreign exchange volatility using annual time series data set for Kenya for the period 1981 to 2010.

Overview of Literature

There is no clear relationship between exchange rate volatility and FDI that can be deduced from these studies. Some studies assert a positive relationship exist between exchange rate volatility and FDI (for example Osinubi and Lui, 2009)), others a negative relationship (for example Ogunleye, 2009) while others find a non-uniform relationship (see for example, Jeanneret, 2007). Most of the studies reviewed did not distinguish between effects of exchange rate volatility in the short and long run. The current study is going to consider this.

METHODOLOGY

This study employed non experimental time series research design owing to the fact that there was no control over variables by the researcher. The study used annual time series secondary data for Kenya for the period for the periods 1980 to 2014.The data scope was much informed by availability of data for the entire variables in the study period characterized by three exchange rate regimes. The sources of the data included; statistical abstracts, economic surveys, African development indicators, UNCTAD, World Bank development indicators, world tables, African economic and financial data and Central Bank of Kenya's quarterly economic reviews and annual reports. Data was checked for consistency before actual estimations were done. The study adopted the methodology used by Osinubi (2009) to find out the effect of exchange rate volatility on FDI.

FDI=f (EXR, EXCV, RGDP, OPEC, INF) …………………………………….. (1.11)

Where;FDI - foreign direct Investment, EXR is Exchange rate, EXCV is exchange rate volatility RGDP is the real GDP , OPEC is openness of the economy and INF refers to inflation rate. The linear model is then specified as;

FDI$_t$=$\beta_0 + \beta_1 EXC_t + \beta_2 EXCV_t + \beta_3 RGDP_t + \beta_4 OPEC_t + \beta_5 INF_t + \varepsilon$………….…… (1.12)

ANALYSIS AND RESULTS

Short run Effect of Exchange Rate Volatility on FDI

 Variables were tested for stationarity to avoid spurious results. Augmented Dickey Fuller technique was used. Apart from inflation and openness which were stationary (weakly) at level, all the other variables were found to be non – stationary. However, they were all stationary at level (see table A.1, Appendix). Johansen co – integration test was then used to model long run relationship. Results indicated presence of four co-integrating vectors/equations at five per cent level of significance. Co-integrating vectors are a manifestation of a long run relationship between FDI and explanatory variables. The co – integration results are shown in Tables A.2 and A.3. Presence of co – integration implied existence of short run relationship which was modelled using an error correction mechanism. A parsimonious model was used compared to the over-parametised model as it has lower AIC and SC values. The parsimonious error correction model results are presented in Table A.4.

Real GDP growth rate in the previous two periods was significant and had a positive relationship with FDI inflows in the current period. This is depicted by the positive co-efficient of 0.042395 in the first lag and 0.105493 in the second lag. The positive relationship implies that when Kenya's GDP is high it's more likely to generate more domestic saving and investment which would in turn attract more FDI. In sum, much of the preconditions for sustained flow of FDI to Kenya depend on all enabling conditions for high level of growth.

As was expected, in the short-run, the relationship between the previous period inflation rates and FDI in the current period was negative and statistically significant at 5 percent with a coefficient of -0.044125 and -0.06204 in the first and second lag respectively. These negative impacts of inflation rate on FDI inflow can be explained by the fact inflation in any form constitute a burden on business and would definitely make investors cautious in investing when the inflation rates are high.

Exchange rates in the first lag (previous period) showed a significant negative relationship with real inward FDI. This is revealed by its coefficient which is -0.055832. However, the effect of exchange rate two periods behind was insignificant but still negative as

seen in the over parametised model. The negative impact implies that that high exchange rates in the current period discourage FDI inflows in the next period.

The co efficient of independent variable which is the main focus of this research, exchange rate volatility, was statistically at 5 percent and had a negative relationship with the FDI inflows with a coefficient of -4.03487 and -2.49253 in the first and second lags respectively. These findings were consistent with our expectations. This implies that real exchange rate volatility in the current period, a measure of risk, discourages the future inflow of FDI. The study found that a 1 unit increase in real exchange rate volatility one period behind causes FDI inflows to fall by 4.03487 units in the current period and also a 1 unit increase in real exchange rate volatility two periods behind causes a fall in FDI flows by 2.49253 units in the current period.

The error correction term (ECM), which indicates the speed of adjustment has a value of -0.730117. It is considered as correctly signed and also statistically significant at 5 percent. This implies that there is a percentage of 73 disequilibrium in the short run as well as inconsistencies which are being adjusted and corrected in the long run. The negative sign is a confirmation of existence of equilibrium in long term. In addition, it is noted that the absolute value is less than unity; hence a confirmation of error correction mechanism to correct departures of short run equilibrium as it follows the long term path to attain an equilibrium. In conclusion the deviations of FDI that could appear in an initial period could as well be corrected as it follows through the long run path.

The findings of this study point to a situation of comparability to other studies (to a larger extent). In addition, the results agree with previous literature despite the inadequacies that were previously identified owing to previous studies focusing on single countries as well as being scarce. On this, Kehinde (2009), while evaluating the case of South Africa and Nigeria documented similar results on the examination of the link between FDI and exchange rate volatility. Overall, in the long run, there is a stronger relationship than in the short run. This is agreement with theoretical frameworks that point to the fact of tolerance by firms to risks up to a given level if they are adequately compensated. Despite this aspersion, exchange rate shocks, when they persist, lead to a negative reaction by foreign investors.

The Long-run Effect of Exchange Rate Volatility on FDI

The effect of exchange rate volatility on FDI in the long run was determined using a multiple regression. The results are indicated on Table A.5 (Appendix).

The model's Adjusted R-squared of 56 per cent is fairly impressive implying that most of the variation in FDI is explained by the estimated model. In line with expectations, in the long run, the exchange rate volatility coefficient is negative as well as statistically significant at 5%

with t-statistic of -2.396 and probability of 0.0400. This concludes that an increase in exchange rate volatility by one unit will lead a reduction of FDI by 10.19 units. This agrees with the conclusions made by studies of Udoh & Egwaikhide (2008). The coefficient of inflation rate was also negative and significant at 1 percent, according to expectations. It had a coefficient of -0.019217 and t-statistic of -6.62169. By this, a one unit increase in inflation rate will lead to a 0.019 unit reduction in foreign direct investment in Kenya. This implies that inflation rate, in the long run, has adverse effects on FDI flow into Kenya. This agrees with conclusion made by works of Udoh & Egwaikhide (2008) and Okwuchukwu (2015)

The coefficient of exchange rate contrary to expectation was positive (0.018916) but no sufficient evidence was established for its significance as indicated by the t-statistic of 1.297404 and probability value of 0.2047. However, real growth of GDP and openness in the economy were correctly signed and statistically significant at 1 percent and 5 percent respectively with their coefficients of 0.633079 and 0.408440 and t-statistic of 4.32504 and 3.222635 respectively. This implied that in the long run, a one unit increase in real gross domestic product would lead to a 0.633079 unit increase in FDI while a one unit increase in the degree of openness in the economy would lead to a 0.40844 unit increase in FDI. This is in line with the findings, of Osinubi and Amaghionyeodiwe (2009) and Nyabiage (2011).

SUMMARY AND CONCLUSION

The ECM model was used to estimate the short run effects. The study finds that the effect of real exchange rate volatility in the previous period on FDI in the current period is also significant and negative as in the long run. The coefficient of Inflation rate in the previous period is also significant at 5 percent and negative in its effect on the current FDI value. On the other hand, the coefficients of GDP growth and trade openness are positive but only GDP growth is significant in their effect on FDI inflows in the short run. However, the coefficient of exchange rate remains negative and insignificant in its effect on FDI even in the short-run.

The Long-run regression model revealed that exchange rate volatility has a negative and significant impact on FDI in the long-run. The coefficients of GDP growth rate, Openness in the economy and Exchange rate all had positive impacts on FDI inflows in the long run and were statistically significant at 5 percent apart from the coefficient of Exchange rates. The coefficient of inflation rate was also significant at 5 percent and had a negative effect on FDI inflows in the long run.

SUGGESTIONS FOR FURTHER RESEARCH

This paper has pointed out that the impact of exchange rate shock has been strong in the long run than the short run. However, the paper did not attempt to address how investors react to this risk. In countries with developed financial system, it can be expected that investors might withdraw their share of investment in stock markets. However, there is no such market to rely on in these countries. The result shows that firms do react to exchange rate volatility and future FDI inflow is impacted by the exchange rate volatility happening today. However, the channel remains uninvestigated. The channel through which investors decide to with draw investment in return for the unpredictable exchange rate market remains unclear. Do they liquidate the currently operating firm or do they reduce the operating cost of the firm in production? What is really their reaction? This appears to be an area ripe for further research.

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APPENDICES

Table A.1: ADF unit root tests results at level and first difference.

Variables	Level		First Difference	
	Constant without trend	Constant with trend	Constant without trend	Constant with trend
FDI	-0.5381	-1.628	-6.8804***	-6.904***
GDP growth rate	-0.6295	-1.287	-3.4365**	-3.638**
Exchange rate	-0.9416	-1.614	-5.4382***	-5.3933***
Exchange rate Volatility	-0.9213	-1.6748	-5.6899***	-5.6324***
Openness in the economy	-1.9371	-3.9007*	-5.9731***	-5.8772***
Inflation	-2.8543	-3.4164*	-6.2848***	-6.1685***
Interest Rate	-3.6703**	-3.8249**	-	-
Money Supply	-1.4412	-2.7655	-5.7242***	-5.9201***
External Debt	-3.5302**	-3.7128**	-	-

Source: Authors computations, 2016

Table A.2 Johansen Co-integration test results (trace)

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.965030	253.3509	95.75366	0.0000
At most 1 *	0.899434	149.3993	69.81889	0.0000
At most 2 *	0.729494	78.19414	47.85613	0.0000
At most 3 *	0.644323	37.66280	29.79707	0.0051
At most 4	0.136595	5.617061	15.49471	0.7402
At most 5	0.033741	1.064038	3.841466	0.3023
Trace test indicates 4 cointegratingeqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Authors Computations, 2016

Table A.3 Johansen Co-integration test results (maximum Eigenvalues)

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.965030	103.9516	40.07757	0.0000
At most 1 *	0.899434	71.20515	33.87687	0.0000
At most 2 *	0.729494	40.53134	27.58434	0.0006
At most 3 *	0.644323	32.04574	21.13162	0.0010
At most 4	0.136595	4.553023	14.26460	0.7969
At most 5	0.033741	1.064038	3.841466	0.3023
Max-eigenvalue test indicates 4 cointegratingeqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Authors Computations, 2016

Table A.4: Parsimonious error correction model

Error Correction:	Coefficients	Standard error	T-statistic
ECM (-1)	-0.730117	(0.33144)	[-3.37951]
D(GDP(-1))	0.042395	(0.01132)	[3.74514]
D(GDP (-2))	0.105493	(0.05269)	[2.00207]
D(INFLATION (-1))	-0.044125	(0.01553)	[-2.84189]
D(INFLATION (-2))	-0.06204	(0.02581)	[-2.40305]
D(EXCHANGE_RATE (-1))	-0.055832	(0.02701)	[-2.06709]
D(VOLATILITY(-1))	-4.03487	(1.32453)	[-3.04627]
D(VOLATILITY(-2))	-2.49253	(0.92222)	[-2.70274]
C	0.166025	(0.12356)	[1.34372]
R-squared	0.524334	**DW-statistic**	2.30267
Adj. R-squared	0.457587	**Akaike AIC**	1.026862
Schwarz SC	1.414711		

Source: Authors Computations, 2016

Table A.5 Long-run relationships results

Variable	Coefficient	Std. Error	T-Statistic	Prob.
Gross Domestic Product Growth rate	0.633079	0.146375	4.32504	0.0002**
Inflation Rate	-0.019217	0.004158	-6.62169	0.0000**
Official Exchange Rate	0.018916	0.014580	1.297404	0.2047
Trade Openness	0.408440	0.126741	3.222635	0.0331*
Exchange rate Volatility	-10.1934	4.25364	-2.39639	0.0400*
C	-0.457766	0.932720	-0.490786	0.6273
R-squared	0.626619			
Adjusted R-squared	0.568105			
F-statistic	4.419489			
Prob(F-statistic)	0.0024			
Durbin-Watson stat	2.197797			

Source: Authors Computation, 2016

Note: ** indicates 1% level of significance, * indicates 5% level of significance.