International Journal of Accounting Finance and Social Science Research (IJAFSSR)

Vol. 2, Issue.2, Mar-Apr 2024, pp 01-13

www.ijafssr.com

REACTION OF DOMESTIC INVESTMENT DUE TO MOVEMENT OF REAL EXCHANGE RATE: STUDY OF BANGLADESH

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ABSTRACT

This paper investigates how the private sector, along with the government, contributes to economic development in Bangladesh through production, investment, and exports. Specifically, it examines how private domestic investment responds to changes in the real exchange rate, exploring whether investment reacts differently to real depreciations compared to real appreciations. The study utilizes the Johansen Co-integration likelihood approach and VECM methodology to analyze the long-run relationship and detect short-run and long-run causality among variables (Domestic investment, Real Exchange rate, and real income) using annual data spanning from 1976 to 2015. The findings indicate that domestic investment is positively influenced by real income and the real exchange rate, both of which are statistically significant. According to the findings of the VECM analysis, domestic investment and real income converge to equilibrium around 12.5 years and 33.33 years, respectively. In contrast, the exchange rate appears to have already reached equilibrium. Moreover, there is evidence of long-run causality among the variables, with short-run causality running from real income to domestic investment, but no short-run causality from the exchange rate to domestic investment.

KEYWORDS: Domestic investment, Exchange rate, Real income, Responses Johansen Co - integration, VECM.

JEL Classification: A10, E62, F31, G11

1. INTRODUCTION

Private investment is recognized as the primary driver of economic development and growth. In the fiscal year 2017-18, total investment as a percentage of GDP amounted to 31.23 percent, with the private sector contributing 23.26 percent. Within this period, the Bangladesh Investment Development Authority (BIDA) registered a total of 1,745 private projects in FY2016-17, recommending an investment amount of Tk.18,52,618 million. This figure increased to Tk.20, 72,925 million for 1,643 projects in FY2017-18. To attract investment from both local and foreign investors, the government has implemented various effective initiatives. These include the construction of infrastructure facilities, ensuring uninterrupted electricity supply, creating a conducive environment for private investment, and offering incentives such as tax holidays and exemptions (BER 2017-18).

Private domestic investment can be influenced by various factors, including GDP, inflation, savings, research, infrastructure, political stability, and exchange rates. Among these factors, real exchange rates and real income are particularly significant. The exchange rate represents the rate at which one currency can be exchanged for another, essentially the domestic price of a unit of foreign currency. Exchange rates can be categorized as either real or nominal. The real exchange rate disregards the influence of inflation, while the nominal exchange rate considers it (Uddin et al., 2004). Different exchange rate regimes exist, and Bangladesh, an emerging country in the South Asian region, transitioned to a floating exchange rate system effective from May 31, 2003. Prior to this, various pegged exchange rate regimes were in place. Under the floating exchange rate system, the exchange rate is determined by the demand for and supply of respective currencies in the market. Banks now have the freedom to establish their own rates for interbank and customer transactions. Since the adoption of the floating regime, the exchange rate scenario in Bangladesh has seen a depreciation of the domestic currency (Mamun et al., 2013).

Table-1: BD: Official Exchange Rate (OER): Average: per USD

Year	OER	Year	OER	Year	OER	Year	OER
2006	68.933	2009	69.039	2012	81.863	2015	77.947
2007	68.875	2010	69.649	2013	78.103	2016	78.468
2008	68.598	2011	74.152	2014	77.641	2017	80.438

Source: Ceicdata.com / World Bank

Currency depreciation or appreciation exerts contrasting impacts on investment. Typically, when a currency depreciates, domestic investment is expected to rise. This is because exports become relatively cheaper, thus stimulating both domestic and foreign demand and fostering a healthier economic environment. With currency depreciation, the marginal profit from investing an additional unit of capital is likely to increase, as there are higher revenues from both domestic and foreign sales. The impact of real depreciation on domestic investment can be either positive or negative, depending on whether a country's economy is more export-oriented or import-oriented. A real depreciation that enhances the attractiveness of exports tends to boost export volumes. Through multiplier effects, this increase in exports can also elevate real income and, consequently, spur domestic investment. Conversely, a real depreciation that increases the cost of imported inputs can diminish profit margins and deter investment among firms heavily reliant on such inputs. Nevertheless, this impact may be mitigated by the gradual adjustment of wages to offset the inflationary consequences of depreciation. If wages do not keep pace with the inflationary impacts of depreciation, there is a possibility of income and profits shifting from workers to producers (Bahmani-Oskooee and Hajilee, 2018). However investment is often modeled as the following function

$I = f(Y, r)$

Where, I= investment, Y= income and r = interest rate

Investment exhibits a negative correlation with interest rates due to the expenses associated with obtaining funds necessary to purchase investment goods. Conversely, investment demonstrates a positive relationship with income, as higher income levels signify increased opportunities to sell the goods that physical capital can generate (source: Wikipedia).

Therefore the main objective of this study is to:

i. Analyze whether a long-term relationship exists among the variables under examination (domestic private investment, real exchange rate, and real income).

ii. Investigate whether there is any causal relationship among the variables under examination.
iii. Explore the short-term and long-term dynamics among the variables.

This study adds to the body of literature by examining the impacts of real exchange rates and real income on private domestic investment in Bangladesh from 1976 to 2015. The subsequent section reviews existing literature both domestically and internationally in this field. The third section outlines the data and methodology utilized in this research. Following that, the fourth section discusses the findings, while the fifth section offers conclusions, limitations, and recommendations stemming from the study.

2. THEORETICAL BACKGROUND

Since the Keynesian era, investment has gained significant importance due to its impact on the economic growth of a nation. Among various investment theories, the Accelerator Theory of Investment posits that an increase in either demand or income leads to a corresponding rise in investment expenditure (Knox, 1952).

When firms anticipate an increase in demand for their products, they aim to expand their capital stock. Investment, being the inflow into this capital stock, reacts to changes in the expected demand for output. Thus, accelerator models are based on the premise that investment is determined by output growth (Baddeley, 2003). The Flexible Accelerator Theory, also known as Investment Lags, proposes that there are delays in the adjustment process between the output level and the capital stock level. The neoclassical flexible accelerator model proposed by Jorgenson (1967) incorporates the user cost of capital (interest rate, depreciation, and price of capital goods). In this model, firms enhance their market value by adjusting their capital stock to reach an equilibrium point between the market interest rate and the marginal value product of capital, while also considering the accelerator effect to explain investment performance. Tobin's q theory (Tobin, 1969) represents another prominent model of investment, suggesting that investment remains favorable as long as the firm's stock market value exceeds the cost of acquiring the firm in the product market. From these models, it is anticipated that national income influences investment. Bahmani-Oskooee (2016) attempted to integrate the exchange rate, which is expected to have a relationship with investment, to comprehend the substantial import content of intermediate and capital goods. Both in the short run and the long run, it is expected that real depreciation will positively impact investment, particularly in cases of high import content of capital goods and the traded goods sector, respectively (Sioum, 2002).

3. LITERATURE REVIEW

Adekunle et al. (2019) utilized the ARDL Model and revealed that FDI had a significantly positive impact on domestic investment. However, they found that exchange rate and energy infrastructure had a positive but insignificant impact on domestic investment.

Bahmani-Oskooee and Hajilee (2013) examined 36 countries and found that real exchange rate volatility significantly affected domestic investment in 27 out of 36 countries in the short run. Exchange rate uncertainty increased domestic investment in 14 countries, while decreasing domestic investment in 13 countries.

Bahmani-Oskooee et al. (2018) analyzed six emerging markets from 1980 to 2014 and found that the impact of exchange rates on domestic investment is ambiguous and varies by country.

Cambazoglu and Günes (2016) utilized the ARDL model on data spanning from January 2007 to January 2015. They discovered a cointegration relationship between the exchange rate level and FDI inflows in Turkey, particularly in the context of exchange rate fluctuations and private domestic investment.

Canbaloglu and Gurgun (2017) investigated 25 emerging markets and developing economies (EMDEs) and found that exchange rate uncertainty and economic growth positively and significantly influenced domestic investment. However, they noted that the impact of the global financial crisis and real exchange rate had a negative effect on domestic investment.

Chowdhury (1993) examined G-7 countries from 1973 to 1990 and utilized a multivariate error-correction model. The study concluded that exchange rate volatility had a significant negative impact on export volume in G-7 countries.

Jayaraman (1996) investigated the primary factors influencing private investment in six South Pacific Developing Member Countries (SPDMCs). The study revealed that real exchange rate instability had a detrimental effect on private investment.

Kilicarslan (2018) investigated real effective exchange rate volatility in Turkey using the GARCH model. They concluded that an increase in domestic investment, money supply, and trade openness leads to an increase in real effective exchange rate volatility, while an increase in FDI, output, and government expenditures decreases real effective exchange rate volatility, utilizing the FMOLS method.

Kogid et al. (2012) applied the ARDL bounds test and ECM based ARDL approach to illustrate the influence of exchange rates on economic growth. The study indicated that both nominal and real exchange rates had a positive effect on the economic growth of Malaysia. However, only the real exchange rate exhibited a significant impact.

Latief and Lefen (2018) investigated exchange rate volatility in seven SARRC countries using panel data from 1995 to 2016. They discovered that exchange rate volatility had a significantly negative impact on international trade and FDI inflows in countries associated with the One Belt and One Road initiative.

Maepa (2015) utilized VAR multivariate Johansen Co-integration and Granger Causality approaches to investigate the relationship between exchange rates and various types of investments in South Africa. In the short run, an insignificant relationship was observed between exchange rates and various types of investments. However, in the long run, a negative relationship between them was identified.

Mamun et al. (2013) employed the Ordinary Least Squares (OLS) method to investigate the effect of depreciation on domestic output growth and price levels. The study revealed that depreciation had an expansionary impact on output levels and price levels.

Mujahid and Zeb (2014) applied Granger Causality tests to time series data from 1980 to 2012 and found a long-run relationship between exchange rates and GDP in Pakistan. However, no causal relationship was detected between the two examined variables.

NjindanIyke and Ho (2017) analyzed annual data from 1980 to 2015 and revealed that exchange rate uncertainty had differential effects on domestic investment in the short run. They observed that the current level of uncertainty promoted investment in the short run, while previous levels of uncertainty deterred investment. However, in the long run, exchange rate uncertainty had a positive effect on domestic investment.

Oniore et al. (2016) from Nigeria observed that the depreciation of the currency and interest rates did not stimulate private domestic investment activities. However, private domestic investment was positively influenced by infrastructures, government size (measured by the ratio of government spending to Gross Domestic Product), and inflation rates.

Reviewing the existing literature, there appears to be a gap in conducting studies in this area in Bangladesh.

Ruzima and Boachie (2018) utilized ARCH-based measures to assess exchange rate volatility and collected cross-country (BRICS) data from 1997 to 2015. Their analysis revealed that exchange rate volatility had a detrimental effect on private investment, as confirmed by both random and fixed effects, as well as GMM estimations.

Segun and Adedayo (2018) examined the impact of exchange rates on the industrial output of the Nigerian economy from 1986 to 2016. They found that exchange rates had a significantly positive impact on industrial output during this period.

Soleymani and Akbari (2011) employed a GARCH (1,1) approach to assess exchange rate uncertainty in fifteen Sub-Saharan African countries. Their findings indicated a negative association between exchange rate uncertainty and investment. Additionally, the share of investment from GDP growth was found to be minimal in these countries.

Uddin et al. (2014) investigated a significant positive correlation between exchange rates and economic growth, supported by the long-run equilibrium relationship between exchange rates and economic growth. Additionally, there was found to be a bidirectional causality between the two variables (exchange rates and economic growth) over the period 1973 to 2013.

Yusoff and Febrina (2014) examined the short-run and long-run relationships among variables including economic growth, domestic investment, real exchange rate (RER), and trade openness. They discovered that all variables positively impacted the economic growth of Indonesia. Trade openness and gross domestic investment both contributed to economic growth unidirectionally. From variance decomposition, trade openness and RER were identified as important factors, while domestic investment was deemed unimportant for explaining the variation in GDP.

Zardashty (2014) applied GARCH models to analyze time series data spanning from 1961 to 2008 in order to assess uncertainty in exchange rates. The findings revealed that real exchange rate uncertainty significantly negatively impacted the private investment to GDP ratio in Iran. Additionally, the import of capital commodities and inflation also exhibited negative impacts on the private investment to GDP ratio.

4. DATA AND METHODOLOGY

This study utilizes annual data from 1976 to 2015 on Private Investment, Real income, and Exchange rate in Bangladesh. The primary data source is the World Development Indicator database published by the World Bank. The dependent variable in this paper is private real domestic Investment, which is measured by gross capital formation in real terms. The independent variables include real income (Y), measured by real GDP, and the real exchange rate (REX), where an increase in the exchange rate indicates currency depreciation and vice versa. All data are logarithmically transformed to account for the proliferate effect of time series.

4.1 Unit root test

In order to assess the stationarity of the selected time series data, this study employs unit root tests such as the Augmented Dickey Fuller (ADF), Phillips-Perron (PP), and KPSS tests. Unit root tests are utilized to determine whether the variables - private investment (as the dependent variable) and real income, exchange rate (as independent variables) - are integrated or exhibit any causal relationship. Stationary time series are typically preferred in empirical studies, where a series is considered stationary if its mean and auto-covariance do not vary with time.

To examine whether each variable in the time series is integrated and possesses a unit root, the study employs the widely used ADF and PP unit root tests. These tests entail a null hypothesis suggesting the presence of a unit root (indicating non-stationarity) against an alternative hypothesis indicating stationarity. Conversely, the KPSS test posits a null hypothesis suggesting the absence of a unit root (indicating stationary) against an alternative hypothesis indicating non-stationarity. If the computed F-statistic surpasses the critical values outlined by Dickey-Fuller (1981) in the ADF and PP tests, the null hypothesis is rejected, signifying that the series is stationary. Conversely, if the computed F-statistic falls below the critical values, the null hypothesis is not rejected, indicating that the series is non-stationary. The reverse is true for the KPSS test (Gujarati, 2012).The test is based on the following regression equation.

$$\Delta Yt = \beta 1 + \beta 2 + \alpha Yt\text{-}1 + \Omega i \sum^{m}{}_{i=}1\ \Delta Y_{t}\text{-}1 + u_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where ΔYt represents the first difference of Yt, defined as Yt - Yt-1, and Y is the variable under consideration. The parameter m denotes the number of lags in the dependent variable, and u_i represents the stochastic error term. The null hypothesis of a unit root suggests that the coefficient of Yt-1 is equal to zero.

Co-integration test:

To test for co-integration, either the Engle–Granger (EG) or Augmented Engle–Granger (AEG) Test is utilized. In the first step, the co-integration of variables is demonstrated, followed by the calculation of residuals using Ordinary Least Squares (OLS) in the second step. If variables such as LnI (Natural Log of investment), LnY (Natural Log of real income), and LnECH (Natural Log of Exchange rate) are co-integrated, it implies they are integrated in the same order. In contrast to the Engle–Granger method, the Johansen Co-integration test (Johansen, 1988; Johansen and Juselius, 1990) is performed exclusively on variables integrated of order one. Johansen and Juselius (1990) specify two likelihood ratio test statistics to ascertain the number of co-integrating vectors. Critical values for both test statistics are provided by Johansen and Juselius (1990).

Both the maximum and trace tests have nonstandard distributions under the null hypothesis, which are approximated using critical values derived from Monte Carlo methods. In the alternative hypothesis of the trace test, it necessitates that the co-integrating vector is either equal to or less

than r+1, whereas r+1 is upheld for the maximum Eigen value test. When conducting the Johansen test, lnI is used to represent investment, lnY for real income, and lnECH for exchange rate.

Vector Error Correction Model (VECM):
If non-stationary time series is integrated of order I(1) and found to be cointegrated we can proceed with VECM to examine the short-run and long-run dynamics of the series. Conventional ECM for co integrated series is given bellow-

$\Delta yt = \beta 0 + \square\ \beta i\ \Delta y\ t\text{-}i + \square\ \delta 1, \Delta x\ t\text{-}i + \Phi\ Zt\text{-}1 + \mu t$ …….(2)

Z is the E($i=1$ d is the ($i=1$ esidual from the following long-run cointegrating regress:

$Yt = \beta 0 + \beta 1\ Xt + \xi t$…….. (3)

And is defined as $Zt\text{-}1 = ECTt\text{-}1 = yt\text{-}1 - \beta 0 - \beta 1\ Xt\ \text{-}1$…….. (4)

The coefficient of ECT Φ is the speed of adjustment because it measures the speed at which y returns to equilibrium after a change in x.

Econometric Model:
The study specifies the following econometric model:
Domestic Investment =β0 + β1 real income + β2 real exchange rate + Ɛi…… (5)
Where Ɛi = error term which represent the variables that affect private domestic investment but are not taken into consideration

5. RESULT DISCUSSION
According to the methodology mentioned above, sets of data are examined & empirical results are presented in this section. All variables are tested for the unit root to find out whether they are stationary or non-stationary. Here test is applied in series in level and first differences with lag parameter determined by Akaike information criterion. The results are obtained by using econometric software EViews version 7 and are reported in following table.

Unit root test (ADF, PP, KPSS) for lnPrivate Investment, lnIncome, lnExchangerate:
Here the following table represents the results of unit root test among the variables

Table-2: Unit root test (ADF) intercept & trend with intercept presented below

Variables	Augmented Dickey Fuller (Intercept)		Augmented Dickey Fuller (Trend and Intercept)	
	Level	1st Diff.	Level	1st Diff.
Ln Investment	2.787548	5.544863***	2.924868	4.080556***
Ln Income	4.506631	4.914243***	0.464947	8.407136***
Ln Exchange rate	4.527940	9.471096***	4.561393	9.365945***

Notes: ***, **, and * denote rejection of the null hypothesis (variables are unit root/non-stationary) at the 1%, 5%, and 10% significance levels, respectively.

Table -3: Unit root test (PP and KPSS) intercept & trend with intercept

Variable	Intercept		Trend and intercept	
	PP	KPSS	PP	KPSS
	1st difference	1st difference	1st difference	1st difference
Ln Investment	0.0000	0.201028	0.0006	0.132874
L Income	0.0001	0.631832	0.0000	0.114730
L Exchange rate	0.0000	0.460445	0.0000	0.486842

The results of unit root test are presented in table(1) and in table (2) (AD, PP and KPSS) indicate that, at first differences of the variables Private Investment (LnI), Real Income (Ln Y), Exchange Rate (LnECH) are statistically significant at 1% significance level I(1). All the data exhibit stationary when differenced once. With estimates the value with trend (trend + intercept) & without trend (intercept) both are stationary in the first differences but not in level. From the point of view of the entire test, first difference is accepted for all the variables (lnI, lnY, lnexchange rate).

Co-integration test

Johansen co-integration test is used to estimate the long-run relationship among the Private Investment, Real income & Real Exchange rate. For co-integration test we use lnI, lnY and lnECH. The Johansen test statistics indicate rejection of the null hypothesis of no co-integrating vectors using both the trace and maximal eigen-value forms of the test. For the trace test or max eigen-value test, the null of no co-integrating vectors is rejected if the trace statistic or max statistic is greater than the 5% critical value.

Table-4: Unrestricted Johansen Co -integration Rank Test (Trace and Max-Eigen)

Maximum Rank	Eigen Value	Trace Statistic	Critical Value	Max-Eigen statistic	Critical Value
None*	0.608209	59.16848	29.79707	36.54401	21.13162
At most 1*	0.331042	22.62448	15.49471	15.67932	14.26460
At most 2*	0.163125	6.945164	3.841466	6.945164	3.841466
* signifies rejection of the hypothesis at the 0.05 significance level.					

For trace test the null of no co-integrating vectors is rejected since the trace statistic of 59.16848 is greater than the 5% critical value of 29.79707. Moving next test to the null of at most 1 co-integrating vectors, the trace statistic is 22.62448 while the 5% critical value is 15.49471, so the null hypothesis of the existence of at most 1 co-integrating vectors is rejected at 5%. Moving on to test the null of at most 2 co-integrating vectors, the trace statistic is 6.945164, while the 5% critical value is 3.841466, so the null hypothesis is rejected at 5%. Finally, from trace statistic the above results indicate the existence of at least three co-integrating equation among the variables in the series. Similarly, the max-Eigen value test results also indicate the existence of at least three co-integrating equations among the variables in the series at 0.05 levels.

Table-5: presents the values of the normalized co-integrating coefficients.

Long-run impact of Ln private Investment, Real income and Exchange rate of Bangladesh (1976 – 2015)			
Variables	**Normalized Co-integrating Coefficient**	**Standard Error**	**T-Stat**
LnI(Private investment)	1.000000		
LnY(real income)	-2.397565	(0.13346)	-17.96467**
LnREX(real exchange rate)	- 0.227548	(0.07526)	-3.02349**

The values of the normalized co-integrating coefficients indicate that in the long run real private investment is positively related with real income and real exchange rate. Here, the outcome demonstrates that when exchange rate enhances (real depreciation for local currency) by 1% private investment will increase by 0.22% and if real income increases by 1% then private investment increases by 2.39% which are statistically significant.

Vector Error Correction Model (VECM):
VECM is constructed only if the variables are cointegrated and it is formed to examine long run and short run dynamics of the cointegrated series. Here in presence of cointegration, we can apply VECM to examine the causality between the examined variables. Estimated VECM with LNINV as target variable

$\Delta LNINV_t$= -0.084678 ect$_{t-1}$ + 0.358754 $\Delta LNINV_{t-1}$ + 0.195345 $\Delta LNINV_{t-2}$ – 1.384618 $\Delta LNGDP_{t-1}$ – 0.557381 $\Delta LNGDP_{t-2}$ – 0.010184 $\Delta LNEX_{t-1}$ – 0.012772 $\Delta LNEX_{t-2}$ + 0.125214 ……..(6)

Table 6: VECM (Speed of Adjustment)

Cointegrating equations	Coint Eq1	SE	T-STAT
D(LNINV)	-0.084678	(0.03461)	[-2.44648]
D(LN_GDP)	-0.030433	(0.01326)	[-2.29530]
D(LNEX)	1.936662	(0.96407)	[2.00883]
C	25.90981		

The estimated error correction coefficient in above table indicates that about 8 percent error is corrected in each year for LNINV. So LNINV becomes in equilibrium after 12.5 years in case of any shock. About 3 percent deviation of the LNGDP from its long run equilibrium level is corrected each year and LNEX is in already equilibrium.

Granger Causality under VECM:
We already have run the VECM test to derive the long run and short run causality under VECM model, we use the system equation originated from the VECM result. This will help us to determine long run and short run causality.

Table 7: (Given in Annex-1): Estimating Long-run Causality

Table 6 indicates a probability value of 0.0207, which is below the critical value of 0.05. Given the significant probability value and the negative coefficient sign, we infer the presence of long-run causality from LNGDP and LNEX to LNINV. That is independent variables have an influence on dependent variables which means that income and exchange rate have influence on domestic investment in the long run. Now we want to check whether there is short run causality or not. For this to check we will proceed with Wald Test Statistics and we have the following null hypothesis:

1. Null: there is no short run causality running from LN GDP TO LN INV [(i.e. C(4)= c(5) =0]
2. Null: there is no short run causality running from LNEX to LNINV [(i.e. C(6)=c(7)=0]

Table 8: Estimating Short Run Causality Wald Test Result

Null Hypothesis	df	F statistic	Chi-square	Prob.	Decision
C(4)= c(5) =0	(2, 29)	3.398635	6.797269	0.0334	Causality LNGDP TO LNINV
C(6)=c(7)=0	(2, 29)	2.226806	4.453612	0.1079	No causality LNEX TO LNINV

Note: Normalized Restriction (=0). Restrictions are linear in coefficients.

The above table reveals that there is short run causality running from LNGDP to LNINV but no short-run causality running from LNEX to LNINV

6. CONCLUSION

The paper tried to investigate whether there is a link between investment and exchange rate in Bangladesh. In this study, both theoretical and empirical literatures were evaluated. Annual time series data for the period 1976-2015 was used for the purpose of running the analysis. It is known that when Currency depreciates, export as well as local output through multiplier affects increases. As a result to meet up the higher local and foreign demand firms accelerate their investment. On the contrary, the firms, which depend largely on imported inputs, reduce their investment on account of high cost of production. Here, the outcome demonstrates that when exchange rate enhances (real depreciation for local currency) by 1% private investment will increase by 0.22% and if real income increases by 1% then private investment increases by 2.39% which are statistically significant. The VECM results indicate that domestic investment and real income achieve equilibrium after approximately 12.5 years and 33.33 years, respectively. Notably, the real exchange rate is already at equilibrium. Furthermore there is long-run Causality among the variables and short-run causality running from real income to domestic investment but no causality from exchange rate to domestic investment in short-run. So, it can be stated that if exchange rate increases (real depreciation for local currency) private investment of the export oriented firms will improve. Thus it is necessary for the firms to become export oriented & depend on domestic inputs. Here, we focused on the effect of real exchange rate only on the private investment. But the foreign investment is also affected by exchange rate. Besides real exchange rate, interest rate and other variables also have effect on investment. In this paper, we use gross capital formation to represent investment. According to World Bank (2017), the quality of data of gross capital formation depends on the accounting system of government. But the government accounting system of developing countries has a tendency to be feeble.

Above all, here we tried to represent the original relationship between the real exchange rate and domestic private investment of Bangladesh as its economic growth largely influenced by private investment and exchange rate.

As Bangladesh is trying to graduate towards developing country status, it is urgent to increase investment both in home and abroad. Fiscal policy affects private investment through budgetary imbalance (Jayaraman1996).If it is possible to increase the investment then both employments and output will increase which lead to increase economic growth. So it is necessary to give proper attention on fiscal policy and stabilize the exchange rate as it affects domestic investment, increase the incentives and propose more policies to decrease production cost. The banking sectors are also need to keep stable to ensure free flow of capital to raise investment.

REFERENCES

Adekunle A.O., Abdullahi, B. I Gbadebo, A. O. & Fakunmoju, S. K. (2019). An Empirical Analysis of Effects of Foreign Direct Investment, Exchange Rate and Energy Infrastructure on Domestic Investment in Nigeria. Journal of Management, Economics, and Industrial Organization, 3(1), 1-17

Baddeley, M.C. (2003). Investment Theories And Analysis. Palgrave, London.

Bahmani-Oskooee, M., &Hajilee, M. (2013). Exchange rate volatility and its impact on domestic investment. Research in Economics, 67(1), 1-12.

Bahmani-Oskooee, M., Halicioglu, F., & Neumann, R. (2016). Domestic investment responses to changes in the real exchange rate: A symmetries of appreciation versus depreciation. International Journal of Finance & Economics, 23(4), 362- 375.

Cambazoglu, B., &Günes, S. (2016). The relationship between foreign exchange rate and foreign direct investment in Turkey. Economics, Management and Financial Markets, 11(1), 284.

Canbaloglu, B., &Gurgun, G. (2017). The Impact of Exchange Rate Uncertainty on Domestic Investment: Panel Evidence from Emerging Markets and Developing Economies. In Financial Management from an Emerging Market Perspective. IntechOpen.

Chowdhury, A. (1993). Does exchange rate variability depress trade flows? Evidence from error correction models. Review of Economics and Statistics.

Engle, R. F. (1982). Autoregressive conditional heteroscedasticity with estimates of thevariance of United Kingdom inflation. Econometrica, 50(4), 987–1007. http://dx.doi.org/10.2307/1912773

Engle, R. F., & Granger, C.W.J. (1987). Cointegration and Error Correction: Representation, Estimation and Testing. Econometica, 55, 251-276.

Granger, C. W. J. (1969). Investigating Causal Relations by Econometrics Models and Cross Spectral Methods.Econometrica, 37 (3), 434-438.

Gujrati, D.N. (1995). Basic Econometrics, McGraw Hill Book Co. Singapore. Jayaraman, T. K. (1996). Private investment and macroeconomic environment in the

South Pacific Island countries: a cross-country analysis (No. 14). Investment (macroeconomics). https://en.wikipedia.org/wiki/Investment (macroeconomics) accessed date 3/5/19, time: 3:40 pm

Jorgenson, D.W. (1967). "The Theory of Investment Behavior." In Determinants of Investment Behavior, edited by Robert Ferber. National Bureau of Economic Research. Cambridge: Massachusetts.

Kilicarslan, Z. (2018). Determinants Of Exchange Rate Volatility: Empirical Evidence For Turkey. Journal of Economics Finance and Accounting, 5(2), 204-213.

Knox, A.D (1952). The Acceleration Principle and the Theory of Investment: A Survey.EconomicaNew Series,19(75), 269-297.

Kogid, M., Asid, R., Lily, J., Mulok, D., &Loganathan, N. (2012). The Effect of Exchange Rates on Economic Growth: Empirical Testing on Nominal Versus Real. IUP Journal of Financial Economics, 10(1).

Latief, R., &Lefen, L. (2018). The effect of exchange rate volatility on international trade and foreign direct investment (FDI) in developing countries along "one belt and one road". International Journal of Financial Studies, 6(4), 86.

Mamun, A., Chowdhury, A. H., & Basher, S. (2013). Effects of exchange rate variation on price level and output growth in Bangladesh. Mediterranean Journal of Social Sciences, 4(6), 205.

Maepa, M. M. (2015). The effects of exchange rate volatility on South African investments (Doctoral dissertation).

Mujahid, N., &Zeb, A. (2014). Impact of Devaluation on GDP of Pakistan. International Journal of Economics and Empirical Research (IJEER), 2(8), 345-349.

NjindanIyke, B., & Ho, S. Y. (2017). Exchange rate uncertainty and domestic investment in Ghana. Cogent Economics & Finance, 5(1), 1362157.

Oniore J.O., Gyang E., and Nnadi K.U. (2016). The Impact of Exchange Rate Fluctuations on Private Domestic Investment Performance in Nigeria. IOSR Journal of Economics and Finance, e-ISSN: 2321-5933, p-ISSN: 2321- 5925.Volume 7, Issue 3. Ver. I , PP 07-15 www.iosrjournals.org

Ruzima, M., &Boachie, M. K. (2018). Exchange rate uncertainty and private investment in BRICS economies. Asia-Pacific Journal of Regional Science, 1-13. Volume 2, Issue 1, pp 65–77

Segun, O. M., &Adedayo, A. O. (2018). Measuring the Impact of Exchange Rate on Industrial Output in Nigeria. European Journal of Marketing and Economics, 1(2), 87-93.

Soleymani, M., &Akbari, A. (2011). The relationship between exchange rate uncertainty and investment in some of Sub-Saharan African Countries. Int J Bus Public Manag, 1(1), 51-57.

Sioum, A.S., (2002) "Private Investment And Public Policy In Sub-Saharan Africa: An Empirical Analysis". Working Paper 356.

Tobin, James (1969) "A General Equilibrium Approach to Monetary Theory." Journal of Money, Credit and Banking 1(1): 15-29.

Uddin, K. M. K., Rahman, M. M., & Quaosar, G. A. A. (2014). Causality between exchange rate and economic growth in Bangladesh. European Scientific Journal, ESJ, 10(31).

Yusoff, M. B., & Febrina, I. (2014). Trade openness, real exchange rate, gross domestic investment and growth in Indonesia. Margin: The Journal of Applied Economic Research, 8(1), 1-13.

Zardashty, G. R. (2014). The impact of real exchange rate uncertainty on private investment in Iran. Kuwait Chapter of Arabian Journal of Business and Management Review, 33(2541), 1-12.