Effect of remittances on the real effective exchange rate: The case of Uganda (1999-2016)

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Abstract

Attaining sustainable economic growth and development is one of the fundamental goals for developing economies. Recent studies have shown that remittances can achieve this. However, it is also seen to be detrimental to the sustainability of the economy due to exertion of pressure on the real exchange rate. This paper investigates the effect of remittances on real effective exchange rate in the Uganda over the period 1999-2016, controlling for other fundamental variables like as, real interest rate, gross capital formation and trade openness. The study found no problems of auto correlation, heteroscedasticity multicollinearity. Using Ordinary least square, the study empirically verified that remittances, gross capital formation and real interest rate appreciated the real exchange rate while trade openness depreciates the real effective exchange rate. After ADF unit root tests, Johansen cointegration test confirmed existence of long run relationship between the variables.

Keywords: Remittance, Real Exchange Rate, Time Series, OLS estimation, unit root, cointegration

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1.0 Introduction

Remittances which are one of the biggest foreign exchange source for many countries according to IMF (2009) can be defined as the household's income from foreign economies mainly from the temporary or permanent movement of people to those regions. International Organization for Migration (IOM,2006) broadly defined remittances as the financial flows associated with migration, in other words, personal cash associated with migration, personal cash transfers from a migrant worker or immigrant to a relative in the country of origin. International Labour Organization (ILO, 2000) defines remittances as the portion of migrant workers' earnings sent back from the country of employment to the country of origin.

Remittances are a source of external financing for many developing countries and have been estimated to exceed other types of external funding (such as Foreign direct investment and Official development assistance) in the last few decades world over. According to World Bank (2013) remittances help to decrease the level and severity of poverty most especially in developing countries. This is through the associated positive effects such as higher capital formation, improved health and educational spending, improved information and communication technologies access, promoting small scale and medium investments, as well as contributing to reduction to child labour (Barret, 2013). The role of remittances was also explained by Solimano (2003) who argues that remittances act as a positive development instruments for the receiving economies through their impact on investment, savings growth as well as consumption.

Remittances are a necessary source of financing to many Ugandan and are used to supplement household income for necessities such as food, utilities and education (Ramocan, 2010). However, to this researcher's knowledge, there has not been any study that focuses on the relationship between remittances and the real exchange rate for the Uganda's economy using time series data for the period 1999-2016. This paper argues that remittances increase households' incomes leading to an increase in the demand for goods and services and hence appreciation of the real exchange rate.

Despite the plentiful benefits to the economy, remittances are said to have some macroeconomic challenges most especially for the recipient countries. For example, according to Barajas et al. (2010), remittances may result into appreciation of the real exchange rate which in turn result into a devastating impact on the economy as it relates to its competitiveness internationally. The thinkable effect of remittances on the real exchange rate of the economy raise an important and un negligible area of research in developing countries like Uganda yet are necessary source of financing to many Ugandans and are used to supplement household incomes.

In East Africa, remittances have been increasing over time. According to Adam Mugume, the executive director research and policy Bank of Uganda (2016), East African states received $ 3.5 billion (UGX 11.5 trillion) in remittance in 2015 with Uganda 's remittances growing fastest in the region at 21 percent. He argues that the increase in remittances despite the mid-year predication by Bank of Uganda of a $ 233 million (UGX 777billions) drop was due to the economic environment the economy was facing at that time. Uganda was followed by Kenya with an 8.6 percent increase, pushing its remittances to $ 1.54 billion (UGX 5 trillion) while Rwanda dropped to UGX 514billions. The remittances to Uganda are said to come from UK, USA, Europe, UAE (mainly Dubai), South Africa and Japan and its due to the mobile money transfers that have lowered transaction costs making it possible, efficient and cheaper to send money across borders (Sarah Ssewanyana and Lawrence Bategeka (2010). The remittances are said to have impacted on macroeconomic variables so the purpose of this study is to investigate the effect of remittances of the real effective exchange rate of Uganda

2.0 Motivation of the study

Remittances are part of the capital inflows needed to achieve economic growth and development. Changes in remittances affect many macroeconomic variables. There has been some studies on the effect of remittance on Gross Domestic Savings in Uganda by Kaberuka et al. (2014) but as per the researcher's knowledge there has not been any study that focuses on the effect of remittances on real exchange rate using time series data for the period 1980-2016. Research of this nature is crucial as Uganda is faced with the challenge of dealing with what may be considered an economic crisis-the continuous rampant depreciation of the shilling. The conclusion made in this paper is that an increase in remittances results into appreciation of the real exchange rate in Uganda.

3.0 Trends in remittances and exchange rate of Uganda

Over the past few decades there has been an increase in international migration from developing to developed countries due to increased wider job opportunities in the developed countries (Hosein et al.,2009). This has resulted into an increase in remittances as showed by table

Table 1: Remittance to Uganda (2007 -2016)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
REM	452	724	781	771	816	913	941	888	902	1016
REER	105.6	109.2	107.3	100	95.8	107.8	109.0	111.1	105.5	102.8

***Source**: World Bank staff calculation based on data from IMF Balance of Payments Statistics Yearbook 2011 and data releases from central banks, national statistical agencies, and World Bank country desks.*

The change in remittances perhaps has partly caused change in the real effective exchange rate. The current study investigates the effect of remittances on REER of Uganda.

4.0 Study hypothesis

H0: There exists no long run relationship between remittances and real effective exchange rate of Uganda

5.0 Problem

Remittances are a source of external financing for many developing economies and have been estimated to exceed other types of external funding such as foreign direct investments and foreign aid over the past few decades. According to the World Bank (2013) remittances generally reduce the level and severity of poverty, thus leading to positive effects such as higher human capital accumulation, improved health and educational spending, improved access to information and communication technologies, enhancing small business investment, better preparedness for adverse shocks such as natural disasters (Solimano, 2003). Despite the numerous benefit, there are an unconcluded debate as to whether remittances, because of the increase in the demand for the local currency and increased spending, result in an appreciation of the real effective exchange rate or not. In Uganda, this has had shocking impact on the country's economy especially as it relates to its competitiveness.

Government has undertaken a number of measures aimed at improving the recording, management and integrity of workers‟ remittances, while at the same time trying to maximize the benefits in terms of their contribution to real exchange rate. Key among these is the review of the law on foreign exchange, the Foreign Exchange Act (2004) and its implementing regulations were gazetted and implemented in 2006 and is operational. The Act repealed the Exchange Control Act of 1996 and legally provides for licensing of the money remittance businesses thus enhancing competition. Furthermore, this law strengthened the capacity of Bank of Uganda to monitor and regulate the transactions in the context of a fully liberalized capital account. Remittance inflows raise an important area for research and hence motivated this study to explore the effect of remittances on the real exchange rate more closely with empirical evidence from Uganda

6.0 Literature reviews

Theoretically, the study was guided by Classical or Developmentalist theory (1950s and 1960s) states that large-scale capital transfer and industrialization to poor countries would move their economies towards rapid economic development and modernization. Neoclassical Theory which states that Capital flows including remittances remittance are expected to go in exactly the

opposite direction as labour migration thus developmental role of migration is entirely realized. Social Network Theory which emphasizes the social rather than the economic role that remittances play in the lives of the migrants and their families.

Empirically, the existing literature on the effect of remittances on real effective exchange rates from an empirical perspective using time series data is quite limited. However there has been some amount of work, mainly panel studies that have been carried out over the last decade. This may be accredited to the fact that there has been a continuous increase in remittances which has captured not only the attention of researchers but also policy makers, academia, and economists.

5.1 Effect of Remittances on Exchange rate

Lartey et al (2012) studied remittances, exchange rate regimes and the Dutch disease. Using disaggregated sectorial data for developing and transition economies, the study shows that rising levels of remittances have spending effects that may lead to appreciation of the real exchange rate. In a similar study, Acosta et al (2009) confirm that remittances lead to real exchange rate appreciation. The study suggests that countries with more sophisticated financial markets are better equipped to alleviate the macroeconomic challenge of appreciation of the local currency whilst maintaining a competitive stance. Using the same data, they also postulate that if depreciation occurs, the amount by which the currency depreciates depends on the ability of the domestic economy to channel remittances towards investment.

In a related study Amuedo-Doras and Pozo (2004) investigated the relationship between remittances and real effective exchange rate in Latin America and Caribbean. Using a panel of thirteen countries over the period 1979-98, they found out that remittances appreciate the real effective exchange rate. Similarly, Barajas et al. (2010) in the study about workers; remittances and equilibrium real exchange rate in Middle East and Central Asia. They used a small open economy model and found out that standard “Dutch Disease” results of appreciation. The same results were confirmed by Humberto et al (2007) in Latin America. This is in line with Hassan

and Holmes (2012 who used a panel co-integration approach to analyze the long-run relationship between the real exchange rate and remittances for less developed economies. The results revealed that remittances lead to real exchange rate appreciation. In contrary, Kemeisha (2013) investigated the effect of remittances on the real exchange rate: The case of Jamaica and found out that remittances depreciate the REER as the coefficient was positive and significant.

Despite their potential positive impacts on economies, other scholars have argued that remittances alone cannot account for exchange rate appreciation. There is need to introduce control variables. These variables perhaps work hand in hand with remittances to impact on the real effective exchange rate and they include; real interest rate, trade openness and gross capital formation and have been discussed below:

Real Interest Rates (RIR) is another identified variable. Taoufik et al., (2015) in their study about the determinants of exchange rate in Thailand. Using E-Views they identified interest rate differentials, manufacturing production index, international reserve, government debt, terms of trade, monetary base to be the key variables to explain exchange rate movements and they found out that interest rate had negative and significant effect in determining g the exchange rate between Thailand's currency (Thai baht) against the USD. In a related study, Gelbard and Nagayasu (2004) studied the determinants of exchange rate in Angola for the period 1992-2002 using Ordinary least square technique and they found out that interest rate was negative and significantly causing a variation in the country's flexible exchange rate system. The negative relationship between interest rate and exchange rate was also found by Effiong (2014). When there is an increase in the interest rate of the economy, foreign direct investment will be attracted in the economy which will in turn help in the appreciation of the local currency exchange rate.

Gross capital formation represents production capacity and potential for economic growth and technological progress of a country. The way real exchange rate responds to capital accumulation depends upon whether capital accumulation takes place mostly in export oriented industries or in industries of import substitutes and non-tradable (Bilal et al, 2011). In contrast Lee (2012) studied the relationship between capital and exchange rate in Malaysia using time series annual data from 1970-2010 and found a positive sign implying that increase in capital depreciate the exchange rate.

Empirical literature in explaining the effect of **trade openness** on real exchange rate remained mixed. Hau (2002) studied exchange rate in 48 countries and he found out that trade openness is inversely related to real effective exchange rate. This is in line with the findings of Syed and Sahar (2017) in Pakistan. In contrast, Mayambala (2016) studies the impact of capital inflows on real effective exchange rate in Uganda and found a positive sign. He argued that a reduction in ratio of tariff revenue to total revenue led to appreciation of the domestic currency. Also Zakaria et al., (2011) in the study about the impact of trade openness on real exchange rate in Pakistan reveal that there is a significant positive effect of trade openness on real exchange rate.

7.0 Methodology

Based on the empirical literature the following function was developed to estimate the effect of remittances on the real exchange rate. The multivariate function was expressed as equation (1)

$$REER = f(REM, RIR, TOP, GCF, TOP, \mu) \quad (1)$$

$$REER_t = \beta_0 + \beta_1 REM_t + \beta_2 RIR_t + \beta_3 GCF + \beta_4 TOP_t + \mu_t \quad (2)$$

Where, **REER** is the real effective exchange rate. It is the nominal effective exchange rate (a measure of the value of a shilling against a weighted average of USD) divided by a price deflator or index of costs. REM is remittances. It is the percentage of workers' remittances, compensation of employees, over GDP in current USD. RIR is the Real interest rate. It is the lending interest rate adjusted for inflation as measured by the GDP deflator. GCF is the gross fixed capital formation/accumulation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment. TOP is the trade openness. It is the sum of exports and imports of goods and services measured as a share of gross domestic product and is the stochastic error term that is assumed to be distributed with zero mean μ_i and constant variance δ_i^2 that is, $\varepsilon_t \to i.i.d\left(0, \delta^2\right)$. All the variables with the were transformed into natural logarithms so as to avoid outliers, normalize the variables and obtain the rate of change as expressed:

$$\ln REER_t = \beta_0 + \beta_1 \ln REM_t + \beta_2 InRIR_t + \beta_3 InGCF +_t \beta_4 TOP +_t \mu_t \quad (3)$$

8.0Data

The study employs quarterly data for Uganda that spans the period 1999: I-2016: IV. Data on the variables of interest were sourced from the World Development Indicators by World Bank (2017), Bank of Uganda and the international finance statistics published by International Monetary Funds. Some existing annual data was transformed into quarterly data using E-views quadratic match averages.

9.0 Estimation and testing procedures

The first step involves preliminary analysis to study the behavior of variables using the descriptive statistics. The second step involves u**nit root tests,** that is, pre-testing each variable to determine the order of integration. The standard Augmented Dickey-Fuller (ADF) suggested by Dickey and Fuller (1979). The Augmented Dickey-Fuller (Dickey and Fuller, 1979) test is based on the following equations:

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \sum_{j=1}^{k} d_j \Delta Y_{t-j} + \varepsilon_t \quad (4)$$

Where: t denotes the time trend and acceptance of the null hypothesis of non-stationary ε is the white noise error term, Δ is the first difference operator, Y is the times series, α_0 is the

intercept and k is the optimum number of lags of the dependent variable. The variable is said to be stationary if the value of the coefficient α_1 is less than the critical values from ADF table.

Having done the unit root test, the study tests for the assumptions of the classical linear regression model of multicollinearity, Autocorrelation and Heteroskedasticity. we employed the correlation matrix to test for multicollinearity, we employed the Breusch-Godfrey Serial Correlation LM Test for auto correlation then White and Breusch -Pagan /Cook -Weisberg heteroskedasticity Test. We then employed OLS estimation technique. OLS was employed because the assumptions of the CLRM were satisfied. The OLS method has been used in a wide range of economic relationship with satisfactory result. This implies that its error term has a minimum and equal variance and conditional mean value is zero and normally distributed (Gujarat, 2004).

The study then obtained the optimal lag length using the Schwarz Bayesian criterion (SBIC), Akaike information criterion (AIC) and the Hannan-Quinn Information criterion (HQIC)

After the results of ADF indicating that the series were stationary the study estimates the long run relationship/**cointegration**. Using the technique developed in Johansen (1988) and applied in Johansen and Juselius (1990). This technique helps to check whether the results obtained by OLS are spurious or not. Spurious regression is non-sense and therefore never preferred for policy analysis and fore casting. The test uses the **Trace and Max Eigen test Statistic** to identify the number of co integrating variables. The Johansen Co-integration test is conducted under the null hypothesis that there is no long run relationship among the variables. This system approach sets up a non-stationary time series as a Vector

Autoregressive (VAR) process of order ρ in a re-parameterized form as given in equation (5)

$$y_t = \mu + A_1 y_{t-1} + \ldots + A_\rho y_{t-\rho} + \varepsilon_t \quad (5)$$

Where: Y_t is an nx1 vector of endogenous variables that are integrated of order one commonly denoted I (1) and ε_t is an nx1 vector of innovations. This VAR can be re-written as:

$$\Delta y_t = \mu + \Pi y_{t-1} + \sum_{i=1}^{\rho-1} \Gamma_t \Delta y_{t-1} + \varepsilon_t \quad (6)$$

Where

$$\Pi = \sum_{i=1}^{\rho} A_i - 1 \quad (7)$$

$$\Gamma_t = -\sum_{j=i+1}^{\rho} A_j \quad (8)$$

If the coefficient matrix pie (Π) has reduced rank r <n, then there exist nxr matrices α and β each with rank r such that Π = α β, and β′ yt,is stationary. r is the number of cointegrating relationships, the elements of α are known as the adjustment parameters in the vector error correction model and each column of β is a cointegrating vector. It can be shown that for a given r, the maximum likelihood estimator of β defines the combination of y_{t-1} that yields the r largest canonical correlations of yt with Δ yt−1 after correcting for lagged differences and deterministic variables when present. The trace test and maximum eigenvalue test, shown in equations (9) and (10) respectively.

$$J_{trace} = -T \sum_{i=r+1} \ln\left(1 - \hat{\lambda}_i\right) \quad (9)$$

$$J_{\max} = -T \ln\left(1 - \hat{\lambda}_{r+1}\right) \qquad (10)$$

Where T is the sample size and $\hat{\lambda}_i$ is the i^{th} largest canonical correlation. If the statistic is bigger than the critical value, the null hypothesis of at most r cointegrating vectors is rejected. The trace tests the null hypothesis of r cointegrating vectors against the alternative hypothesis of n cointegrating vectors while the maximum eigen value tests the null hypothesis of r cointegrating vectors against the alternative hypothesis of r+1 cointegrating vectors.

From the Johansen co-integration test, the researcher found out that the trace-statistic values

were greater than the critical values 5% levels, thus indicating the existence of co-integrating equation then we conducted an **Error correction model (ECM).** The ECM to help us see the short run dynamics of the model. It enables us determine the speed of adjustment from short run to long run equilibrium. They directly estimate the speed at which a dependent variable (REER) returns to equilibrium after a change in other variables.

10.0 Empirical Results

Descriptive statistics of the data were taken on the transformed variables and results of the test are summarized in table 1.

Table 1: Descriptive statistics of variables

Variables	LREER	LREM	LTOP	LRIR	LGCF
Mean	4.662	6.277	3.767	2.567	1.922
Maximum	44.805	6.923	4.029	3.135	3.004
Minimum	0.548	5.451	3.488	1.337	-0.618
Skewness	0.4472	0.609	0.735	0.480	0.628
Kurtosis	0.5262	0.006	0.059	0.436	0.530
Jarque Bera	2.193	2.808	3.98	0.708	4.955
Probability	0.334	0.245	0.955	0.701	0.83

From the above table, looking at the Jarque Bera, skewness and Kurtosis, all the variables satisfy the normality test.

Test for unit root

According to Granger et al (1974), econometric estimations employing time series data encounter the danger of generating spurious results. if the variables are non-stationary, resulting in estimates that are biased and inefficient. It is therefore necessary to test for the presence of any trends or persistence within data that may violate the Classical Linear Model (CLM) assumptions on this model. In this study we used the Augmented Dickey-Fuller (ADF).

Table 2: Augmented Dickey-Fuller (ADF)

Variables	**Intercept**		**Trend &intercept**		**Status**
	Test stat	5 % level	**Test stat**	**5 % level**	
LREER	-2.875	-3.00	-2.60	-3.60	**Non stationary**
DLREER	-3.485	-3.00	-4.53	-3.60	**Stationary**
LREM	-1.105	-3.00	-2.11	-3.60	**Non stationary**
DLREM	-3.931	-3.00	-3.840	-3.60	**Stationary**
LRIR	-4.714	-3.00	-4.505	-3.60	**Stationary**
LTOP	-1.340	-3.00	-1.786	-3.60	**Non stationary**
DLTOP	-4.227	-3.00	4.134	-3.60	**Stationary**
LGCF	-3.182	-3.00	-3.498	-3.60	**Non stationary**
DLGCF	-4.549	-3.00	-4.262	-3.60	**Stationary**

We reject the H0 of existence of unit root if the test stat is > 5% level of significance.

The results from table 2 show that all the variables (except RIR) were non stationary. We fail to reject the null hypothesis of unit root. Therefore, it was necessary to first differentiate them to make them stationary hence they were integrated of order one**.**

Testing for the assumptions of the classical linear regression model.

It is noteworthy that failure to verify the assumptions underlying the OLS regression may produce misleading results. Firstly, the assumption of linearity was evident as all variables were linear in parameter. Next the model was tested for the presence of **multicollinearity.** Whenever there is a perfect linear combination amongst the explanatory variables, OLS cannot produce estimates that are unique. We used the correlation matrix

Table 3: Pair-ways correlation matrix

Variable	LREER	LREM	LRIR	LTOP	LGCF
LREER	1.000				
LREM	-0.1803	1.000			
LRIR	0.2753	| -0.0233	1.000		
LTOP	-0.1846	0.718	-0.0777	1.000	
LGCF	-0.2280	-0.4908	0.0680	-0.2501	1.000

If the coefficient of correlation between two variables is 0.8 or above then variables are collinear and cannot appear in the same regression model (Gujarat, 2003). From our table it can be seen that there was no problem of multicollinearity.

Another assumption of the OLS model is **homoskedasticity**, that is, the variance of the residuals should be consistent, or else it will be described as heteroskedastic (non-constant errors). A formal test for heteroskedasticity was conducted using the White test for heteroskedasticity and the Breush Pagan test. The null hypothesis of both tests is that there is constant variance amongst the errors. The results lead to a failure to reject the null hypotheses of homoskedacticity of the residuals for both tests as the p-values for the White and Breush Pagan test were 0.3738 and 0.3274 respectively.

Next, the residuals were tested to ascertain if they were serially correlated. This was done formally using the Breush-Godfrey test statistic. The p-values was 0.1539. The Ordinary Least Squares (OLS) technique was then applied to determine the effect of remittances on the real exchange rate in Uganda.

Table 4: OLS Estimation results of the effect of remittances of exchange rate

Variable	**Coefficient**	**Std. error**	**t-stat**	**Probability**
Remittance	-0.138 *	0.068	-2.03	0.063
Real interest rate	-0.004 *	0.0025	1.97	0.071
Trade openness	0.006	0.004	-1.40	0.184
Gross capital formation	-0.009**	0.003	-2.53	0.025
Constant	5.265 ***	0 .284	18.49	0.000
R-squared	0.841			
Adj R-squared	0.780			

****** means significant at 1%, ** means significant at 5% and * means significant at 10*. Probabilities are in parenthesis.***

The regression produced a high adjusted R-squared value of 0.780. This means that the explanatory variables account for 78.1 percent of the variation in the real exchange rate. The model is therefore of a good fit. All the variables except trade openness were statistically significant.

Remittances variable was statistically and negatively rated to real effective exchange rate of Uganda. Holding other variables constant, a unit increase in remittances will appreciate the real effective exchange rate by 0.138. This is in line with the findings of Lartey (2012), and Barajas et al. (2010).

Gross capital formation has a **negative and significant** effect on REER of Uganda. A one-unit increase in gross capital formation appreciates the real effective exchange rate by 0.009 percent holding other factors constant. The increase in capital formation implies increased national savings and foreign reserves. The increase in national saving which generates a lower interest rate leading to a long-run appreciation as found by Cantor and Driskill (2000). The real interest rate was negative and significantly related to REER. An increase by one unit in in real interest rate causes a country's currency to appreciate by 0.004 percent holding other factors constant. This is because a higher interest rate provides higher rates to lenders there by attracting more foreign capital which causes an appreciation in the exchange rate. The higher interest rate means that savings locally gives more returns. The investors often move funds to such countries (This is known as hot money flows). **Trade openness** is **positive** but in significantly related to REER.The intercept is 6.8378 and was significant. This means that if all the independent variables are held constant, then the REER of Uganda will be 6.8378.

The lag length determination

In order to get the lag length for cointegration analysis, we used the Schwarz Bayesian criterion (SBIC), Akaike information criterion (AIC) and the Hannan-Quinn Information criterion (HQIC),

Table 5: Optimal lag length

lags	AIC	HQIC	SBIC
0	-0.473251	-0.494378	-0.245016
1	-2.69175	-2.81851	-1.32234
2	-5.80829	-5.67229	-3.15251
3	-312.868*	-313.164*	-309.673*

All the criteria have identified the optimal number of lags to be three**.** Asymptotically, the SBIC is consistent, in that it will select the true model if, among other assumptions, the true model is among the candidate models considered and developed by Gideon E. Schwarz and published in 1978.

Johansen Cointegration test results

Having obtained the optimal number of lags and confirming that series are stationary, the Johansen Co-integration test was used to find out the long run relationship between the study variables.

Table 6: Johansen Co integration rank of VECM (with intercept)

H0: No Cointegration				
Rank	Trace stat	5% critical value	Max-Eigen value	5% critical value
None	99.871 *8	68.52	12.577 **	33.46
1	51.293 **	47.21	29.068 **	27.07
2	16.224	29.68	29.365**	20.97
3	12.859	15.41	14.859	16.07
4	2.870	3.76	2.900	3.76
5	1.080	1.062	1.70	2.89

***** Means significant at 5 percent level.***

The trace stat results indicate that there is one cointegrating vector while the max -Eigen value stat indicate two cointegrating vector. To solve this disagreement, the study relied on the Trace stat because of its superior power. This means that there is a long run relationship exists among the study variables.

After establishing that all variables are stationary and cointegrated, Error Correction Model (ECM) was estimated. The ECM allows the long run behavior of the dependent variable to converge to the long run equilibrium relationship while allowing for a wide range of short run dynamics.

Table 7: Engle Granger Error Correction Model

Variable	**Coefficient**	**Standard errors**	**Prob.**
ECT	-0.0321	-0.0321	-0.03
DLREER_1	-0.332	0.4798	0.69
DLEER_2	0.0669	0.7369	0.09
DLREM_1	-0.008	0.2012	0.04
DLREM_2	-0.1220	0.1791	-0.68
DLRIR_1	-0.0129	0.0381	0.734
DLRIR_2	-0.0345	0.0309	0.265
DLTOP_1	0.2010	0.2671	0.452
DLTOP_2	0.3061	0.2860	0.285
DLGCF_1	0.0117	0.0219	0.591
DLGCF_2	.0317615	0.0375437	0.398
Constant	-.0317576	0.0502165	0.527

The coefficient of the error correction term (ECT) is -0. 0321 and it carries the correct(negative) sign and is statistically significant at 5%. The speed it corrects the disequilibrium is 3.21 percent quarterly.

11.0 Conclusion and policy suggestions

External funding is intended to be beneficial to recipient economies. Despite this, previous studies have shown that it has posed some macroeconomic challenges as it has resulted in real exchange rate appreciation which erodes the competitive nature of the economy. This study, using OLS estimation procedures, shows that capital inflow in the form of remittances results in real exchange rate appreciation. Therefore, it revokes the possible positive effects that were theorized to result in depreciation which would adversely affect the country's competitiveness. Therefore, it can be concluded that remittances through their impact on the real exchange rate affect Uganda's competiveness negatively. This study is in line with Hassan and Holmes, 2012. In the wake of this finding, an important question arises. This is: why does Uganda continue to perform poorly on the international market with such continuously depreciating currency?

- The main policy suggestion from these findings is the need for effective policies to be implemented to channel remittances towards investment purposes especially as it relates to the productivity sector.
- The government should increase gross capital formation so as to reduce on the depreciation of the shilling.
- There is need to increase the real interest so as to encourage savings which can be channeled into investments needed to achieve economic growth and development of the economy

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