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**Does Foreign Exchange Rate Moderate the Relationship Between
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Investigation of Kenya's Economy (1986-2021)**



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Does Foreign Exchange Rate Moderate the Relationship Between Foreign Capital Outflows and Economic Growth? A Panel Data Investigation of Kenya's Economy (1986-2021)

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Abstract

Purpose – This study aims to evaluate the nexus between foreign exchange rate, foreign capital outflow and economic growth in Kenya. This study focused on analyzing the moderating role of foreign exchange rate on the relationship between foreign capital outflow and economic growth in Kenya. The foreign exchange rate is an important measure in the economic development. Its fluctuations affect the levels of foreign capital outflow. The loss of foreign exchange reserve due to foreign capital outflow translates to great amount of savings lost in the country.

Design/methodology/approach – This study employed a Panel Data approach and the World Bank's residual model in the estimation of the magnitude of foreign capital outflow from Kenya during the period between 1986 to 2021.

Findings – The panel data results revealed that the interaction variable MOD_FER had a coefficient of 0.05 and a significant probability value of 0.0001 which is significant at 5 percent level of significance. This means that foreign exchange rate moderated the relationship between foreign capital outflow and economic growth in Kenya during the period of this study. When the relationship with foreign capital outflow was moderated by 0.05 units then GDP grew by 1 unit. As such, foreign exchange rate is a significant factor in the relationship between foreign capital outflow and economic growth in Kenya.

Originality/value – This study calculates the magnitude effect of foreign exchange rate in the relationship between foreign capital outflow and economic growth in Kenya for the first time. In addition, the study calculates the magnitude change of foreign capital outflow for MNE's due to foreign exchange rate oscillations. This study suggests many policy proposals to deal with the challenge of foreign exchange rate, foreign capital outflow and economic growth in Kenya. The results of this study will benefit policy makers by providing them with data-based evidence that will guide them in making appropriate policies that discourage foreign capital outflow and institute proper management of foreign exchange rate to boost economic growth in Kenya.

Keywords: *Foreign Exchange Rate, Foreign Capital Outflow, Economic growth, Panel Data*

Paper type Research paper

Introduction

The global financial market situation has continuously been complicated and has led to serious currency depreciations that has affected economic development of countries, since the financial crisis in the year 2007/2008 (WESP, 2021). The financial market adjustments that has recently occurred such as the famous Brexit, the United States (US) elections, the Russia Ukraine War and the Covid a9 pandemic effects on the financial markets coupled by adjustments in the monetary policy of the European markets and the Central Banks has not made the global economy any better (Liu, 2020). The effects have been felt more so on the foreign exchange rates, outflows of foreign capital and tilted economic growths in the global economy. Sub-Saharan Africa's recovery has been sharply interrupted. Last year, activity in sub-Saharan Africa finally bounced back, bringing GDP growth in 2021 up to 4.7 percent. Unfortunately, growth is expected to slow this year by more than 1 percentage point to 3.6 percent (UNCTAD, 2022).

The Kenya's foreign exchange rate has oscillated between appreciations and depreciations pressures. As a result, very extreme fluctuations have frequently occurred frequently (CBK, 2023). The foreign exchange rate instability usually leads to serious negative effects on any given economy. Further, it leads to a transfer's external risks that would potentially threaten the financial stability, growth and security (Liu, 2020). As such, the government and policy makers must deliberately point out the need for and importance of protecting the financial security of a country. This goes to guarantee the national financial security and create a precedence to enhance a virtuous cycle of a healthy economic and financial development of a country (Bakas & Triantafyllou, 2018). As such, studying the relationship between foreign financial outflows and the foreign exchange rate stability under this background is of great theoretical and practical importance in hedging against a country's financial risks.

Financial markets and institutions do not operate in isolation from the foreign exchange rate fluctuations. There is considerable empirical evidence detailing the existence of risk, return and volatility spillover effects from currency markets to foreign financial flows in the economy (Ahmed, 2020). As such, the financial markets department of the Central Bank of Kenya compiles indicative foreign exchange rates on a daily basis in order to control its effect on the foreign flows and economic growth. These foreign exchange rates are always a reflection of the average buying and selling prices, more on the dollar as the anchor currency of the major participants in the foreign exchange market at the very opening of trade on a daily basis. This provides an accurate indicator for any interested party and more so the foreign investors and the multinational enterprises on the value of the shilling on any particular day (CBK, 2023). The Understanding of the impact and market reaction to the foreign exchange rate policy shocks in the country is very critical for the foreign investors and also the government's policy makers (Zhiwu, Linlin, & Gengming, 2019). This study addresses this pertinent question by directly measuring the effects of exchange rate shocks on the foreign financial flows. When the US dollar loses value against other foreign currencies such as the Euro and the Japanese yen and remain in parity with the sterling before

rebounding and strengthening back against all currencies, it drives significant potential changes in the global investment patterns and can tilt the global financial landscape which is a big financial risk in the global economy (Fadeyi, McGreal, McCord, & Haran, 2022).

The dynamic relationship between foreign exchange rates and foreign financial flows is of great interest to many academics and researchers, as they play a very important role in the growth of an economy. Nevertheless, the literature in this nexus seems to be limited and largely inadequate, more so on the interactions between currencies and foreign flow of funds in the economy (Mroua & Trabelsi, 2020). With the rapid growth of Kenya's economy since 1964 after the independence of the country, the impact of Kenya's exchange rate policy has increased in importance for international trade, more so in the international commodity, investment and financial markets.

Kenya has considered the US market as well as the China market as their biggest trading partners with a large current account surplus and a fixed exchange rate targeting the US dollar (USD) (CBK, 2023). However, with the current global economic and financial trends, uncertainty has started to grow on the stability of this relationship which has the potential of crippling the world economy. The research on uncertainty is gradually shifting from the securities market to the foreign exchange market but remains limited as this global uncertainty is in its initial stages (Fadeyi et al., 2022). As such, it's necessary for the developing markets to conduct an investigation into the relationship between the foreign exchange rate and their economic growth as well as how the foreign exchange rate movements interact with the flow of foreign capital.

Several studies have been done on the influence of foreign exchange rate in various economies in the world. Husted et al. (2018) comprehensively studied the impact of economic uncertainty, financial and monetary policy uncertainties on the excess return rate of the foreign exchange market. The results provide strong evidence that increase uncertainty in the US real economy or financial markets significantly raises excess returns to the currency carry trade. Liu (2020) investigated the impact of uncertainty on foreign exchange market stability: based on the LT-TVP-VAR model. Very limited attention has been paid in literature on the nexus between foreign exchange rate, foreign financial outflows and economic growth. As such, this study seeks to fill in this research gap by investigating the relationship between foreign exchange rate, foreign capital outflow and economic growth in Kenya. The study will also seek to investigate the magnitude effect of the moderating role of foreign exchange rate in this relationship and offer a platform for policy makers to build up policies that would optimize economic growth in Kenya.

Literature Review

The Investment Diversion Theory

Kindleberger (1966) originated the investment diversion theory. The theory noted that foreign capital outflow widens the savings gap, constrains aggregate investment and decrease economic growth. Skare and Sinkovic (2013) posit that while the investment growth policy enhances economic growth, foreign capital outflow does the opposite. Negative macroeconomic effects often necessitate a country to borrow from abroad to reactivate the economy. The crowding out

effect may result to depreciation of the domestic currency and loss of foreign reserves (Jude, 2014). This theory further demonstrates that following a rise in a country's economic growth, aggregate savings often rise immoderately while aggregate investment rises after a time lag, thereby generating foreign capital outflows in form of external debt repayments, foreign investment outflows and profit repatriations within the lag. This decreases a developing country's capital as well as its investment fund, ultimately affecting the foreign exchange rate as well as economic growth. This theory thus well explored the moderating role of foreign exchange rate in the relationship between foreign capital outflow and economic growth in Kenya.

Foreign Exchange Rate, Foreign Capital Outflow and Economic Growth

The reviewed literature on factors that underscore the foreign capital market flows generally highlights the impact of either the pull or push factors on different types and waves of foreign capital flows (Fadeyi, McGreal, McCord, & Haran, 2022). The choice of the foreign exchange rate regime has profound implications in an economy and permeates a myriad aspects of a country's macroeconomic performance. As such, emerging markets and developing countries, often choose the most suitable regime through a deliberate exploration of such regime on various financial and macroeconomic fundamentals (Ahmed, 2020). As foreign capital outflow involves the demand for foreign currency, it tends to exert pressure on the exchange rate, replicated in the depreciation of a country's local currency (Zakaree & Ayodeji, 2012; Ndikumana & Boyce, 2011). If capital outflow is not well regulated, it would make the foreign exchange rate movement uncontrollable, as foreign capital outflow tends to remain high when the exchange rate is depreciating (Maana *et al* 2015; Auzairy *et al.*, 2016).

Increased financial globalization has enabled the international markets to open up to foreign investors, making foreign exchange rate a key determinant to economic growth (Ayala et al, 2015). Poorly managed exchange rates can be disastrous for economic growth, and that a competitive currency is key to a successful economic growth strategy (Henry, 2013). Policy makers should seek to ensure effective policies exist to regulate foreign capital outflow, maintain a stable and competitive foreign exchange rate that boosts a country's GDP (Sandra, 2015; Uguru, 2016). The government should consider raising the policy rates to indirectly influence investors to hold their investment portfolios local currency-denominated instruments, as opposed to dollarizing their savings, thereby relieving banks of foreign currency demand pressures (Ahmed, 2020).

Fadeyi, McGreal, McCord, Berry and Haran (2022) evaluated the influence of the global and domestic environment on international real estate investment activities within the London office market over the period 2007–2017. They adopted the use of ARDL approach using the real capital analytics (RCA) international real estate investment data and found out that the study offered insights on the critical differences in the influence of the domestic and global environment on cross-border investment activities in this office market. The study specifically highlighted the significance of the influence of the global environment in the long run. In the short run, the influence of factors reflective of both the domestic and international environment are important

indicating that international capital flows into the London office market is contextualized by the interaction of different factors.

Ahmed (2020) explored Egypt's recent experience with exchange rate policies, examining the existence of spillover effects of exchange rate variations on stock prices across two different de facto regimes and whether these effects, if any, are asymmetric. He used a nonlinear ARDL model which permits testing for the presence of short- and long run asymmetries and found that over the soft peg regime period, both positive and negative changes in EGP/USD exchange rates seem to have a significant impact on stock returns, whether in the short or long run. Short-term asymmetric effects vanish in the free float period, while long-term asymmetries continue to exist. He also found that currency depreciation tends to exercise a stronger influence on stock returns than does currency appreciation.

Mroua & Trabelsi (2020) investigate simultaneously the causality and the dynamic links between exchange rates and stock market indices. It attempts to identify the short- and long-term effect of the US dollar on major stock market indices of Brazil, Russia, India, China and South-Africa (BRICS) nations. They applied a new methodology combining the panel generalized method of moment's model and the panel auto-regressive distributed lag (ARDL) method to investigate the existence of a causal short-/long-run relationships and dynamic dependence among all stock market returns and exchanges rates changes of BRICS countries. They found that exchange rate changes have a significant effect on the past and the current volatility of the BRICS stock indices. Besides, ARDL estimations reveal that exchange rate movements have a significant effect on short- and long-term stocks market indices of all BRICS countries.

Research Methodology

In order to investigate whether foreign exchange rate moderated the relationship between foreign capital outflow and economic growth in Kenya, the following panel regression equation was estimated in order to determine.

$$GDP_{it} = \beta_0 + \beta_1 FPIO_{it} + \beta_2 OFDI_{it} + \beta_3 PR_{it} + \beta_4 FER_{it} + \beta_5 [(FER \times FPIO) + (FER \times OFDI) + (FER \times PR)]_{it} + \dots$$

μ_{it}

Where GDP is economic growth, FPIO is foreign portfolio investment outflows, OFDI is outward foreign direct investment, PR is profit repatriations and FER is the foreign exchange rate. The interaction variable is [(FER × FPIO) + (FER × OFDI) + (FER × PR)] which measures the moderation effect. The data was converted to their natural logs in order to deal with the problems of dispersion or high values and also establish elasticity relationships between the variables. Unit root tests were also conducted on the variables to avoid the problem of having a spurious regression or white noise in the model. The Levin, Lin and Chu T- statistic test for stationarity which is suitable for panel data sets was used for this study. The test covers the most general specification for all the pooled variables with the inclusion of a constant, a trend and lags. A Hausman test was conducted to

determine whether to use the fixed effects model or the random effects model to address the objectives of the study.

Results

Table1: Summary statistics

	LN_GDP	LN_FPIO	LN_OFDI	LN_PR	LN_FER
Mean	1.229575	21.53296	21.75882	22.95632	4.114706
Median	1.545507	21.98226	21.91164	23.37228	4.324849
Maximum	2.128503	25.70966	28.02187	25.30448	4.728636
Minimum	-1.461018	16.08565	13.54338	19.66922	2.775223
Std. Dev.	0.862899	2.787498	3.158391	1.804555	0.562751
Skewness	-1.661849	-0.480563	-0.415703	-0.582966	-1.433292
Kurtosis	4.844879	2.467572	3.019288	2.080312	3.804230
Jarque-Bera	119.2170	9.959746	5.705758	18.19310	73.12877
Probability	0.000000	0.006875	0.057678	0.000112	0.000000
Sum	243.4558	4263.527	4308.245	4545.351	814.7117
Sum Sq. Dev.	146.6850	1530.718	1965.160	641.5145	62.38775
Observations	198	198	198	198	198

GDP had a nominal mean of 1.22 and a standard deviation of 0.86 meaning that GDP was not volatile or deviate much during the period of study. FPIO had a mean of 21.53 and a standard deviation of 2.79 indicating that there were small deviations from the mean during the period of study and that FPIO was stable. The nominal mean of OFDI was 21.75 with a standard deviation of 3.15 signifying stability in OFDI. Profit Repatriations was also stable during the period of study with a nominal mean of 22.96 and a standard deviation of 1.8. The Foreign exchange rate did not deviate much during the period of study with a mean of 4.11 and a standard deviation of 0.6. None of the variables was normally distributed. All had probability values of less than 0.1 which means they were all significant at 10 percent level of significance.

Table 2: Correlation analysis

Correlation	LN_GDP	LN_FPIO	LN_OFDI	LN_PR	LN_FER
LN_GDP	1.000000				
LN_FPIO	0.010345	1.000000			
LN_OFDI	0.177592	0.191477	1.000000		
LN_PR	0.024676	0.854434	0.189041	1.000000	
LN_FER	-0.083503	0.875206	0.135606	0.902456	1.000000

FPIO, OFDI and PR had correlation coefficients of 0.01, 0.18 and 0.02 respectively with GDP signifying weak positive correlations. FER had a correlation coefficient of -0.08 signifying a weak negative correlation with GDP. None of the independent variables had a high correlation with GDP.

Unit root tests

Intercept and level I (0)

Gross Domestic Product (GDP)

GDP was found to be stationary at intercept and level I (0) because the Levin, Lin & Chu t^* statistic had a probability value of 0.0000 which is significant at 5% level of significance. Therefore, we rejected the null hypothesis that GDP had a unit root.

Table 3: Unit root test for Gross Domestic Product (GDP)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t^*	-6.12840	0.0000	7	203
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-8.24925	0.0000	7	203
ADF - Fisher Chi-square	90.2104	0.0000	7	203
PP - Fisher Chi-square	90.2485	0.0000	7	203

Foreign Portfolio Investments Outflows (FPIO)

The Levin, Lin & Chu t^* statistic for FPIO had a probability value of 0.0374 which is significant at 5% level of significance. Therefore, we reject the null hypothesis that FPIO had a unit root.

Table 4: Unit root test for Foreign Portfolio Investments Outflows (FPIO)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t^*	-1.78223	0.0374	7	196
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	1.64625	0.9501	7	196
ADF - Fisher Chi-square	4.01948	0.9953	7	196
PP - Fisher Chi-square	1.50809	1.0000	7	196

Outward Foreign Direct Investment (OFDI)

OFDI was found to be stationary at intercept and level I (0) because the Levin, Lin & Chu t^* statistic had a probability value of 0.0000 which is significant at 5% level of significance. Therefore, we rejected the null hypothesis that OFDI had a unit root.

Table 5: Unit root test for Table 4: Unit root test for Foreign Portfolio Investments Outflows (FPIO)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t^*	-4.91071	0.0000	7	229
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.45651	0.0003	7	229
ADF - Fisher Chi-square	34.5526	0.0017	7	229
PP - Fisher Chi-square	32.3975	0.0035	7	229

Profit Repatriations (PR)

The Levin, Lin & Chu t^* statistic for PR had a probability value of 0.0054 which is significant at 5% level of significance. Therefore, we reject the null hypothesis that PR had a unit root.

Table 6: Unit root test for Profit Repatriations (PR)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t^*	-2.54739	0.0054	7	245
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	0.29832	0.6173	7	245
ADF - Fisher Chi-square	8.14388	0.8817	7	245
PP - Fisher Chi-square	8.55022	0.8587	7	245

Foreign Exchange Rate (FER)

FER was found to be stationary at intercept and level I (0) because the Levin, Lin & Chu t^* statistic had a probability value of 0.0000 which is significant at 5% level of significance. Therefore, we rejected the null hypothesis that FER had a unit root.

Table 7: Unit root test for Foreign Exchange Rate (FER)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.32309	0.0000	7	244
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.70439	0.0001	7	244
ADF - Fisher Chi-square	36.6110	0.0008	7	244
PP - Fisher Chi-square	40.5121	0.0002	7	245

Panel Regression Equation**Hausman test**

The Chi-square test statistic was 2.57 with an insignificant probability value of 0.77 which was insignificant at 5 percent level of significance. This therefore meant that the null hypothesis was rejected in favor of the random effects model. Therefore, we accept the random effects model as suitable for this study.

Table 8: Hausman test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.570576	5	0.7658

Table 9: Random Effects Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_FPIO	-0.243368	0.088367	-2.754077	0.0065
LN_OFDI	-0.154873	0.052445	-2.953036	0.0035
LN_PR	-0.143469	0.116194	-1.234745	0.2184
LN_FER	-4.883499	1.009193	-4.839013	0.0000
MOD_FER	0.051781	0.012960	3.995369	0.0001
C	13.65889	3.896067	3.505816	0.0006
Effects Specification				
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			0.806405	1.0000

Weighted Statistics

R-squared	0.164023	Mean dependent var	1.229575
Adjusted R-squared	0.142253	S.D. dependent var	0.862899
S.E. of regression	0.799171	Sum squared resid	122.6253
F-statistic	7.534266	Durbin-Watson stat	2.119666
Prob(F-statistic)	0.000002		

Unweighted Statistics

R-squared	0.164023	Mean dependent var	1.229575
Sum squared resid	122.6253	Durbin-Watson stat	2.119666

The interaction variable MOD_FER had a coefficient of 0.05 and a significant probability value of 0.0001 which is significant at 5 percent level of significance. This means that foreign exchange rate moderated the relationship between foreign capital outflow and economic growth in Kenya during the period of this study. When the relationship with foreign capital outflow was moderated by 0.05 units then GDP grew by 1 unit.

Conclusions

This paper investigates whether the foreign exchange rate has moderated the relationship between foreign capital outflow and economic growth in Kenya. The study attempts to answer one question. Has the effect of foreign capital outflow on economic growth been influenced significantly by the foreign exchange rate for Kenya? Empirical results show that foreign portfolio investment outflows, outward foreign direct investments, and foreign exchange rates had significant effects on economic growth. The significant relationships were inverse which implies that foreign capital outflow affected economic growth negatively through foreign portfolio investment outflows, outward foreign direct investments, and the foreign exchange rate. Profit repatriations had no significant effect on economic growth, but a negative coefficient indicates they have an inverse relationship.

The interaction variable had a positive and significant coefficient indicating that the foreign exchange rate moderated the relationship between foreign capital outflow and economic growth. From the empirical findings, we can infer that foreign capital outflow constrained resources and subsequently affected economic growth negatively. Foreign capital outflow has a detrimental effect on economic growth. The results indicate that Kenya must pursue policies geared towards the reduction of foreign capital outflow in order to increase local resources for investments and subsequently spur economic growth. Foreign exchange rate can be used to control foreign capital outflow and the effect it has on the economy.

This study therefore concluded that foreign exchange rate moderated in the relationship between foreign capital outflow and economic growth in Kenya during the period of this study. As such, when foreign capital outflow was subjected to the foreign exchange rate moderation by 0.05

percent, then there was a 1 percent economic growth in the country. As such, the policy makers should be keen of this magnitude effect of foreign exchange rate towards the behaviour of foreign capital outflow and economic growth. The central bank of Kenya should raise policy rates to incentivize people to hold their investments in local currency-denominated financial instruments, as opposed to the desire of dollarizing their savings, a move that would adequately relieve commercial and investment banks of foreign currency demand pressures and contribute positively to this debate.

This study therefore suggests changes in the policy development of the country in that, as much as the government is busy attracting foreign direct investments in the country, the right balance of trade needs to be reviewed. The regulators should also consider developing sound policy measures to prevent financial risk. Policy makers should embrace the fact that foreign capital outflow is not necessarily bad for the economy. If well managed, it has its advantages and its role in promoting economic growth in Kenya. As such, this study has offered a platform for policy makers to re-evaluate the existing policies and make deliberate efforts to amend them in order to optimize economic growth in Kenya.

This study invites more research with additional other key variables such as trade mis-invoicing, transfer pricing, interest rates and inflation to confirm the results of this study. Specific research is invited to confirm why profit repatriations have no effect on economic growth as has been demonstrated in this study. Further, more research is invited to investigate the critical elements or factors of foreign capital outflow that would promote economic growth in Kenya as has been suggested by the results of this study.

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