

**EXCHANGE RATE MOVEMENT AND STOCK RETURNS IN MOST CAPITALISED ECONOMIES IN SUB-SAHARAN AFRICA****Ibukun Ogunsanya<sup>1</sup> & Temitope Wasiu Adamson<sup>2\*</sup>**<sup>1</sup>University of Hull Business School, Hull, UK.<sup>2</sup>School of Basic and Advanced Studies, Lagos State University, Lagos, Nigeria

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**Abstract**

*In line with the extant literature that financial markets do mutually cooperate, this study investigates the nexus between exchange rate movement and stock returns in the six most capitalised economies in Sub-Saharan Africa (SSA). The study ascertains the relevance of the traditional or portfolio adjustment theory to sub-Saharan Africa's financial markets. The study accounted for heterogeneity and dependence among the cross-sections and applied the Driscoll and Kraay and the Feasible Generalised Least Square econometric procedures on Bloomberg (2023) monthly datasets spanning between 2000:1 and 2022:12. The study findings reveal the nexus between the variables flows from stock returns to the exchange rate in SSA and some consistency with the argument of the portfolio adjustment theory. Estimates of Dumitrescu-Hurlin's (2012) Granger non-causal test also reveal a unidirectional causal relationship between both variables in the most capitalised economies in SSA. Macroeconomic policies that vitiate the limitations of both variables in SSA are recommended.*

**Keywords:** Exchange Rate Movement, Stock Returns, Traditional Approach, Portfolio Adjustment Approach, sub-Saharan Africa

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**Introduction**

The role of a sound financial system in engendering financial stability and economic development cannot be overemphasised (He, Gokmenoglu, Kirikkaleli, & Rizvi, 2021; Raza, Jawaid, Afshan & Karim, 2015). A sound financial system redistributes economic resources that yield returns on investment that promote economic prosperity. It aids funds and assets transactions between lenders, borrowers and investors alike. Fundamentally, it entails the exchange rate and the stock markets. The outcomes of the Asia (1990s) and global (2008) financial crises have motivated interest in the exchange rate-stock prices nexus (Fowowe, 2015). For instance, exchange rate movement shapes macroeconomic, monetary and fiscal outcomes (Haq & Shirwani, 2021; Torres & Jasso, 2017; Lin, 2012; Tsai, 2012; Fowowe, 2015; Olomola & Dada, 2017). It seems to respond asymmetrically to bad and good news (Dodoo et al., 2023; Dada et al., 2023; Gkillas et al., 2018; Salisu & Umar, 2017; Chegini and Bashiri, 2017). Exchange rate movement among other factors is significant to reshaping market dynamics consequential to shocks imposed on the financial market (Agyei et al. 2022; Adam, 2020). It also shapes competitiveness and balance of trade with attendant effects on stock prices and real output (Rai & Garg, 2021; Dornbusch & Fischer, 1980). These buttresses the fact that exchange rate policy may just be an arm of a whole macroeconomic policy framework. Thus, an appropriate exchange rate policy may enhance the attainment of some macroeconomic goals.

Exchange rate movement impacts both input and output price and ultimately influences the competitive behaviour of firms (Joseph, 2002). Also, the future cash flow of firms could be influenced by the volatility in exchange rate movement which shapes the value of firms. To manage risk and select the optimal investment portfolio, knowledge of exchange rates-stock prices nexus is essential for investors since foreign exchange movements could exert varying outcomes on domestic stock returns in an export or import-led economy (Ma & Kao, 1990). However, the relationship between these variables seems murky (Koulakiotis, et al. 2015; Joseph, 2002). The association between these variables is significant in enhancing local and global development. Studies have conceded that both markets must be efficient to enhance macroeconomic performance (Tian, El Houry & Alshater, 2023; Ahmad, Akhter & Azad, 2022) since exchange rates seem to impact stock prices via their influences on a firm's competitiveness (Dornbusch & Fischer, 1980). Incidentally, the surging capital flows and global trade have repositioned the exchange rate to influence stock prices and business profitability (Kim, 2003). Also, the exchange rate-stock prices relationship is critical to investors who seem to rely on the outcomes of the interactions between both variables to anticipate their future trends. This influences the quality and precision of decisions by investors and policy makers.

Combined, the performance of the exchange rate and the stock market influences aggregate demand, investments and general macroeconomic performance (Heimonen, et al. 2017). Interactions among these markets often birth outcomes that are critical to the macroeconomic health of a nation (He et al. 2021). These outcomes shape formulations and implementations of policies designed for the financial market and the macroeconomic environment as a whole. A combination of these outcomes, policy design and implementation influence the opinion and decisions of economic agents (Agyei, et al. 2022). Likewise, it influences portfolio management which enhances the efficient allocation of scarce resources (Tweneboah, Owusu-Junior & Oseifuah, 2019; Owusu-Junior, Adam, & Tweneboah, 2017). Extant literature has argued that the nexus between both variables is influenced by the period, data frequency and scope of the study (Sikhosana & Aye, 2018). International and local investors explore this relationship to keep abreast of the trend of the variables (Mishra, et al. 2007; Phylaktis, et al. 2005; Stavarek, 2005; Nieh & Lee, 2002). An understanding of this trend could empower local and international investors not only to hedge but to also diversify their portfolios.

The implications of the linkages between financial markets have far-reaching effects on international financial decisions and economic policies. Shocks in one market are easily extended to other markets. This outcome undermines the stability of the national and international financial system (Moussa, Bejaoui & Mgadmi, 2020). In the same vein, SSA's reintegration into the global economy has exposed the region to significant capital flows and vulnerabilities. The region is notable for high forex liability, weak monetary policy and shallow financial market which poses a threat to financial stability. Similar to other economies of the world, the exchange rate movement in SSA has also evolved overtime and has experienced persistent fluctuations and interventions in exchange rate management. Individual countries in SSA have adopted varying exchange rate regimes. Some countries in SSA have pegged their currencies to major international currencies while some have often altered their currencies in response to changing realities. Often, exchange rate movement in SSA amplifies rather than absorbs shocks. The dominant foreign currency pricing in SSA downplays the role of the exchange rate in absorbing shocks in SSA. Consequently, most countries in SSA intervene in the local management of exchange rate fluctuations as dictated by capital flows, growth shocks and terms of trade (Blignaut et al. 2010). These shows the peculiarity of the financial market in SSA. Scholars have argued that there is no single solution to address this dilemma. The IMF 2020 Integrated Policy Framework (IPF) opined that reliance on flexible exchange rates alone may not offer a sufficient absolver against external shocks (Basu, et al. 2020). Rather, an adequate policy mix of capital flows, exchange rates and monetary policies is essential. Other scholars and policy makers have argued that the exchange rate regime suitable for a nation depends on the country's peculiar situation and the macroeconomic challenges the country is confronting at the particular time.

Furthermore, Agarwal (1981) and Wu (2000) argued that the devaluation of domestic currency imposes a positive effect on exporting firms which enhances their stock prices. Thus, depreciating exchange rates empower the competitiveness of firms in the international market. This enhances increased sales and higher stock prices (Yau & Nieh, 2006). On the other hand, appreciation in exchange rates limits exporters' competitiveness in the international market. This leads to declining profits and market stock prices for the exporting firm. Given these dynamics, exchange rates-stock prices nexus has been examined for other regions (Mroua & Trabelsi, 2020; Sui & Sun, 2016; Chkili & Nguyen, 2014; Liang, Lin & Hsu, 2013; Ülkü & Demirci, 2012; Lin, 2012; Tsai, 2012; Lean, et al. 2011) and limited studies exist for SSA. Also, previous studies seem to have ignored the role of dependence among the cross-sections as influenced by globalisation and the various regional blocs in shaping the outcomes of exchange rates-stock prices nexus. Hence, this study examines the exchange rates-stock returns nexus in the most capitalised nations in SSA. An insight into the nexus between both variables is vital for fund managers and investors who are armed with vital information in constructing a minimum variance portfolio (Amarkhil, Hussain & Ayoubi, 2021). Also, investigating the exchange rates-stock returns relationship is a necessity since both markets are sensitive and essential sectors in any economy. Both sectors seem to be the window with which most economies are exposed to global vulnerabilities (Sikhosana & Aye, 2018).

In addition, the traditional and portfolio adjustment theories give an insight into the need to consider the causal flow of both variables on each other. The traditional approach argued in favour of exchange rates influencing stock prices while the portfolio approach argued otherwise. The debates between these approaches have attracted the attention of scholars to empirically ascertain the causal relationship among these variables. Previous studies have considered the long-run relationship between these variables but evidence shows that examining long-run relationships alone may not verify the existence or otherwise of causal relationship among variables. In addition, while some studies may have examined the causal direction between these variables in other regions, the direction of the relationship between the variables may vary with time scale and market conditions. Generalising the causal flow between these variables in SSA with results obtained from other regions may be misleading. Thus, this study examines the causality between these variables in the most capitalised economies in SSA. Due to data availability, this study considered six (6) most capitalised countries in SSA. These countries include Nigeria, Ghana, South Africa, Kenya, Mauritius, and Namibia. However, exchange rate movement occurs daily, nevertheless, this study shall adopt monthly data to effectively examine the nexus between the variables. The rest of this study is organised as follows; section 2 presents the literature review while section 3 discusses the data and methodology adopted in the study. Data analysis and interpretation of the study results are presented in section 4. The conclusion is in the last section.

## **Literature Review**

### ***Theoretical review***

Extant theories attempted to discuss the theoretical relationship between exchange rates and stock prices. The Dornbusch and Fischer (1980) flow theory attempts to link the national exchange rate to the current account balance. It observed a positive nexus between both variables which flows from exchange rate to stock prices. It also posited that stock price is influenced as the exchange rate shapes the profitability of local firms. That is, the depreciation of local currency in export-led economies spurs further exports as exports of locally produced commodities become relatively cheaper in the international market. This process tends to increase export-oriented domestic firms' anticipated future cash flow with consequent benefits on stock prices. On the contrary, appreciation in local currency limits demand for exported locally produced goods. This is because, as local currency appreciates, commodity prices of exported local production become relatively more expensive. Thus, a decline in exporting firm stock prices.

Frankel's (1983) and Branson's (1983) stock theory argue that varying stock prices lead to changes in exchange rates. It conceded that change in stock price influences demand for money as investment and wealth are affected. The theory also reveals that declining stock prices depreciate local currency and vice versa. This depicts the possibility of varying outcomes between exchange rate and stock price. Extant literature argues that outcomes of the exchange rate-stock price nexus are influenced by the frequency of data employed, the scope of the study, and the country or region being investigated. The theory further argues that the nexus between both variables flows from stock price to exchange rate. As stock price rises, demand for domestic stocks and bonds tends to rise. Thus, as stock price increases, investors are motivated to replace their foreign assets with local assets hereby investing more in local assets (Stavárek, 2005). This engenders rising demand for local currency with a corresponding hike in the rate of interest, and capital inflow which further strengthens the local currency.

### ***Empirical literature***

The significant role of the financial market in macroeconomic stability has engendered the necessity to consider the nexus between exchange rate movement and stock returns. Extant literature is replete with studies attempting to ascertain the nature of association between both variables in regions of the world in line with the traditional and portfolio adjustment theories. Nevertheless, the conclusion of these studies is murky. Most studies documented conflicting results between these variables. While other studies alluded to the traditional theory, some supported the portfolio exchange theory and others were neutral. For instance, Dada, Olaniyi Awoloye and Al-Faryan (2023) employed NARDL and the asymmetric causal approach to ascertain the nexus between both variables in Nigeria. The study employed monthly data covering between 1986 to 2019 to assess the asymmetric structure in exchange rate and stock. Evidence that shocks in the stock market influence the exchange rate and that shocks also exacerbate the stock market was documented. Moreover, evidence of a unidirectional flow from exchange rate to stock returns was also documented. Mroua and Trabelsi (2020) employed GMM and PARDL estimation techniques to investigate the causal relationship between both variables and also considered the effects of the United States dollar on stock markets in BRICS and concluded that exchange rate shapes stock prices.

Reboredo et al. (2016) employed copulas and computed value-at-risk to empirically observe spillovers between the variables in emerging economies. A positive nexus between the variables was reported as well as bidirectional spillover risk effects. Sui and Sun (2016) also observed the spillover effects between both variables in BRICS. The study found a spillover effect in the short-run from exchange rate to stock returns. Also, the study revealed that stock markets in Brazil, China and South Africa are influenced by shocks in the U.S. S&P 500. Fowowe (2015) accounting for structural breaks, investigated the relationship between both variables in Nigeria and south Africa. The multivariate causal technique revealed that in Nigeria, causality flows from exchange rate to stock price while no causal relationship is observed between both variables in South Africa. The study concluded that stock markets in both Nigeria and South Africa are shaped by the international stock markets.

Lin (2012) employed ARDL to ascertain co-movement between both variables in Asian emerging markets. To observe how outcomes change after critical events, the study controls for market liberalisation and the financial crises. The study findings showed that crises strengthen co-movement between both variables. Thus, the study concluded that co-movement between both variables is influenced by capital account balance in Asian emerging markets. Ülkü and Demirci (2012) considered the joint dynamics of both variables in Europe. The study revealed that in emerging markets, stock returns largely account for co-movement between both variables. Thus, the outcome of the nexus between both variables is shaped by the stock market and dependence on foreign capital. Granger, Huangb and yang (2000) employed the impulse-response technique on flu data to examine the bivariate causal relations between both variables in Asia. The study documented evidence that exchange rates influence stock prices in South Korea and vice-versa in the Philippines. This gives evidence of the traditional theory in South Korea while the portfolio theory is evidence in the Philippines. Evidence from Taiwan, Thailand, Singapore, Hong Kong, and Malaysia also

revealed a strong feedback relationship between both variables while Japan and Indonesia did not show any pattern.

On the other hand, Cavusoglu, Goldberg and Stillwagon (2019) employed the VAR framework on survey data to examine the outcome of the portfolio balance theory on currency returns. The study also considered the prospect theory as well as the expected utility theory. The study findings showed little evidence in support of both the expected utility theory and the portfolio balance theory while evidence showed outcome of the prospect theory is influenced by data. Chkili and Nguyen (2014) adopted univariate and Markov switching estimation techniques to examine the link between exchange rate movement and stock market returns in BRICS nations. Evidence from the study revealed that stock returns evolved in a volatile regime in BRICS. The study also conceded that the stock market influences the exchange rate irrespective of the prevailing economic realities. Liang, et al. (2013) also employed the DOLS estimation techniques to ascertain the link between both variables in ASEAN-5. The study revealed an inverse association between both variables. Hence, the study supported the portfolio balance approach.

Tsai (2012) applied Quantile Regression to verify the nexus between both variables in Asia. The study observed that in the six Asian markets considered in the study, a negative nexus suffices between both variables during both low and high exchange rate eras. Katechos (2011) also verified the association between both variables and revealed a strong link between both variables. Kim (2003) employed ECM to ascertain the nexus between both variables in the USA and documented a positive nexus between the stock price of the S&P 500 and industrial production while conceding an inverse association between stock price and real exchange rate. Hatemi-J and Irandoust (2002) adopted the Toda and Yamamoto Granger non-causal technique to verify the causal association between both variables in Sweden. The study showed a unidirectional causal flow between both variables. The causal flows from stock price to exchange rate. Thus, the rise in stock price is influenced by the appreciation of the local currency in Sweden.

Some other studies suggested a neutral nexus between both variables. For instance, Lean, et al. (2011) tested for structural break, cointegration and causal relationship in eight Asian countries and examined the nexus between the variables. Country-specific-wise, the study revealed that cointegration between both variables held in Korea with unidirectional causal flow from exchange rate to stock price. Panel level-wise, the study documented the absence of cointegration between the variables in Asia. Pan, et al. (2007) also investigated the nexus between both variables in Asia. The study revealed causal relationships in Thailand, Malaysia, Japan and Hong Kong before the era of financial crises in Asia. In Korea, Hong Kong and Singapore, causality flows from the stock market to the currency market while the reversal holds in Malaysia. Within the era of the financial crisis, the study recorded no causal flow between the variables while causality flows from exchange rates to stock prices in Malaysia. Ozair (2006) employed standard granger causality on quarterly data to verify the causal relations between both variables in the USA. The study suggested that cointegration and causality do not exist between the variables in the USA. This is contrary to both the traditional and the portfolio approaches.

Mishra (2004) also employed VAR and granger causality estimation techniques on monthly data in India to examine the nexus between both variables between April 1992 and March 2002. The study revealed that no causality exists between the variables in India. Nieh and Lee (2002) also examined the nexus between both variables in G-7 nations. The outcome of the study also recorded no cointegration between both variables. Bahmani-Oskooee and Sohrabian (1992) in an attempt to investigate the link between both variables observed no cointegration between the two financial variables nonetheless, a bidirectional causal flow between both variables was documented in the short-run. Aydemir and Demirhan (2009) considered the causal link between both variables in Turkey. The study covered between 2001 and 2008 and employed the Toda-Yomamoto causality approach. The study proxy stock prices by technology indices, industrial indices, financial indices, service indices and the national 100. The study's empirical estimations reveal a bidirectional causal link between the variables. On a disaggregated level, the study documented a positive causal association between exchange rate and technology. The causal flow between these variables flows

from technology to exchange rate. Contrarily, the study documented a negative causal link between exchange rate and industrial indices, the financial indices, the service indices and the national 100. The causal flow is from the industrial indices, the financial indices, the service indices and the national 100 to exchange rate.

Kutty (2010) investigated the causal link between the variables in Mexico. The study applied granger causality econometric procedures to weekly data in Mexico and revealed that though there is no cointegration between both variables nevertheless, the short-run documented evidence that stock price impacts the exchange rate. Olweny and Omondi (2011) employed EGARCH and TGARCH to interrogate the effect of macro-economic variables on volatility in stock returns in Kenya. The study employed monthly data between January 2001 to December 2010 to observe the influence of inflation, interest and exchange rates on volatile stock returns in Kenya. The study documented evidence that inflation, exchange and interest rates influence volatility in stock returns. Specifically, the exchange rate recorded a low but positive influence on stock return volatility. The study further gave evidence of a low and significant volatility persistence rate in the exchange rate on stock returns in Kenya. This shows it takes a short while to neutralise stock market shocks in Kenya. Hence, a significant fall in price exposes the stock market in Kenya to higher volatility and vice versa. examined exchange rates in growth-led tourism economies. The study employed a battery of econometric procedures in Sri Lanka between 1995 and 2018. The study observed that the exchange rate boosts tourism.

The review of the literature shows that the nexus between exchange rate movement and the stock price is murky and inconclusive. While some studies support the traditional theory, some studies documented evidence in favour of the portfolio adjustment theory that stock price drives the exchange rate. Other studies are neither in support of the traditional nor the portfolio adjustment theories. Also, the nexus between both variables as documented in extant literature shows how significant the interactions between both variables are in the financial market. Their outcomes are far-reaching with implications on the macro-environment of a nation and the investment decisions of investors. Investors and financial and macroeconomic policy makers alike are keen on recent developments in the financial market. This has influenced the attention the activities in the financial market are getting in recent times.

Consequently, the reviewed literature has revealed that previous studies had concentrated on other regions of the world. Mroua and Trabelsi (2020), Sui and Sun (2016), Chkili and Nguyen (2014) considered the nexus between both variables in BRICS nations; Nieh and Lee (2001) for G-7 nations; Liang, Lin and Hsu (2013), Lin (2012), Tsai (2012), Lean, Narayan and Smyth (2011), Pan, Fok and Liu (2007), Granger, Huangb and yang (2000) for Asian emerging markets; and Ülkü and Demirci (2012) for Europe while other studies have considered country specific research like Ozair (2006), Kim (2003) for the United States of America; Hatemi-J and Irandoust (2002) for Sweden; Dada, Olaniyi Awolaye and Al-Faryan (2023) for Nigeria; Fowowe (2015) for Nigeria and South Africa; and Mishra (2004) for India. Incidentally, limited studies have considered SSA.

**Data and Methodology**

*Model specifications*

To examine the relationship between exchange rate movement and stock price in SSA, this study adopts the empirical model of extant studies in the literature (Dada et al. 2023; Sui & Sun, 2016; Bahmani-Oskooee & Saha, 2015; Reboredo et al., 2016; Fowowe, 2015). Thus, the empirical model for this study is stated as follows:

$$EXR = f(SR) \tag{1}$$

$$SR = f(EXR) \tag{2}$$

Where  $SR$  is stock returns and  $EXR$  is the exchange rate.

Extant literature has argued in favour of inflation and interest rates among other macroeconomic variables as significant factors in influencing the movement in exchange rates and stock returns (Kutty, 2010). Hence, this study controls for interest and inflation rates in both the traditional model (equation 1) and the portfolio adjustment model (equation 2). Thus, equations (1) and (2) are specified in line with the traditional and the portfolio approaches to exchange rates-stock prices nexus while controlling for interest rate and the inflation rate respectively.

Imputing econometric procedures, the model becomes

$$EXR_{i,t} = SR_{i,t} + IR_{i,t} + CPI_{i,t} + \varepsilon_{i,t} \quad (3)$$

$$SR_{i,t} = EXR_{i,t} + IR_{i,t} + CPI_{i,t} + \varepsilon_{i,t} \quad (4)$$

In econometric form, equations 3 and 4 can be expressed as;

$$EXR_{i,t} = \beta_0 + \beta_1 SR_{i,t} + \beta_3 IR_{i,t} + \beta_4 CPI_{i,t} + \varepsilon_{i,t} \quad (5)$$

$$SR_{i,t} = \beta_0 + \beta_2 EXR_{i,t} + \beta_3 IR_{i,t} + \beta_4 CPI_{i,t} + \varepsilon_{i,t} \quad (6)$$

Where  $EXR$  captures the exchange rate,  $SR$  captures the stock returns,  $IR$  captures the interest rate and  $CPI$  represents the inflation rate. Also,  $\beta_i$  represents the coefficients of independent variables while  $\varepsilon_{i,t}$  is the error term.

Following the traditional theory, the study expects stock returns ( $SR$ ) and the rate of inflation ( $CPI$ ) to positively influence the exchange rate while the outcome of interest rate ( $IR$ ) on the exchange rate could be positive or negative as expressed in equation 5. In equation 6, following the portfolio theory, a positive nexus is expected between the exchange rate, rate of inflation and stock returns while the outcome of the rate of interest ( $IR$ ) on stock returns is expected to be positive or negative.

Mathematically, from equations 3 and 4, the a priori expectation is given as;

$$\beta_0 > 0; \beta_1 < 0; \beta_2 < 0; \beta_3 < /> 0; \text{ and } \beta_4 > 0$$

### **Techniques of estimation**

The outcomes of extant studies on the nexus between exchange rate movement and stock price are murky. As conceded by the traditional theory, studies have documented evidence of a positive nexus between the variables (Dada et al. 2023; Mroua & Trabelsi, 2019; Sui & Sun, 2016; Reboredo et al. 2016; Fowowe, 2015; Lin, 2012; Ülkü & Demirci, 2012). This implies that exchange rate movement influences stock prices. Some other studies documented evidence supporting the portfolio adjustment theory stating that stock price shapes exchange rate movement (Cavusoglu et al. 2019; Chkili & Nguyen, 2014; Katechos, 2011; Tsai, 2012; Liang et al. 2013). This implies a positive nexus between both variables. Other studies established a neutral association between both variables (Fowowe, 2015; Lean, et al. 2011; Pan et al. 2007; Ozair, 2006; Mishra, 2004; Nieh & Lee, 2001; Bahmani-Oskooee & Sohrabian, 1992). These studies neither support the traditional nor the portfolio theories. The study also controls for interest rates and inflation (Kim, 2003). Both the interest rates and inflation exert some influence on both variables. A hike in interest rates could force investors to readjust their investment portfolios. Abandoning local stocks for more profitable investment will cause a decline in local stock prices. Likewise, a hike in the rate of interest could lead to a fall in capital expenditure. This consequently reduces sales, earnings, dividends, and stock prices. Inflation exposes firms to uncertainties in future cash flows. Though expected inflation seems to hike the nominal interest rate, nevertheless, controlling for inflation and interest rates would enable the study to capture the

effects of the rate of interest on both variables (Kim, 2003). Thus, this study seeks to ascertain the association between exchange rate movement and stock price as expressed in equations 5 and 6.

Globalisation and the formation of regional blocs have enhanced connectivity among countries. This has made it easier to transfer shocks between and amongst varying economies (Ali et al. 2022). The possibility of Cross-Sectional Dependence (CSD) among cross-sections dictates relevant estimation techniques to apply to avoid biased results (Bayar & Sezgin, 2017; Tita & Aziakpono, 2016). Thus, the Driscoll and Kraay (1998) estimator along with the Feasible Generalised Least Square (FGLS) estimation technique are adopted to verify the nexus between the variables in SSA. The FGLS is expected to correct any deficiency attached to the use of just one econometric procedure in the econometric analysis. Evidence of the robustness of the Driscoll and Kraay (DK) estimator in addressing CSD is documented in the literature (Adamson et al, 2022; Baloch & Wang, 2019; Kongbuamai, Bui, Yousaf, & Liu, 2020; Nathaniel, 2021; Olaniyi, 2022). It is acknowledged to give reliable and consistent results even with CSD (Deutsch, Keil, & Laamanen, 2011; Sarkodie & Strezov, 2019). CSD is a major challenge with panel data. It is capable of yielding inconsistent estimates (Sarkodie & Strezov 2019). In the event of CSD, probable panel-level heteroskedasticity, correlation and cointegration among the variables, the DK estimator along with the FGLS estimation technique which also controls for heteroscedasticity and serial correlation is used to estimate equations 4 and 5. Both the DK and FGLS estimators are estimated in line with equations 4 and 5. Thus, the Driscoll and Kraay (1998) estimator is expressed as;

$$\gamma_{i,t} = \vartheta_{i,t}\theta + \mu_{i,t}, i = 1 \dots N, t = 1 \dots T \quad (7)$$

where  $\gamma_{i,t}$  is the dependent variable while  $\vartheta_{i,t}$  is a vector of independent variables with a  $(K + 1) \times 1$  vector with 1 as the first element among the unknown coefficients of  $(K + 1) \times 1$  vector.  $i$  is each cross-sectional unit and  $t$  is time. The DK estimator is the square root ( $\sqrt{ST}$ ) of the diagonal elements of the asymptotic covariance matrix. Following Driscoll and Kraay (1998), the model is specified as thus

$$V(\hat{\beta}) = (x'x)^{-1}ST(x'x)^{-1} \quad (8)$$

The study also seeks to investigate the causal link between the exchange rate movement and the stock prices in SSA. Given that the direction of causality between exchange rates and stock prices is dynamic, this study tries to empirically examine the causal link between exchange rates and stock prices in SSA. To estimate and achieve the stated objective, the study adopts the Dumitrescu and Hurlin (DH) (2012) Granger non-causality test. This estimation technique, among variables of interest, investigates the direction of causality. It is a variant of the Granger (1969) non-causality test for heterogeneous panel data models with fixed coefficients. It also accommodates variants of heterogeneity such as the heterogeneity of the causality relationships and that of the regression model applied in the Granger causality test. Dumitrescu and Hurlin test above vector error-correction model (VECM) causality is robust for CSD and heterogeneity (Vo, Nguyen & Tran, 2019). It is composed of both the  $W$ bar and the  $Z$ bar-statistics. The former captures average test statistics and the latter exhibits standard normal distribution. The estimation results from the DH test could give three (3) possibilities; bi-directional causality, unidirectional causality or no causality among variables of interest. The DH equation is expressed as:

$$\gamma_{i,t} = \phi_i + \sum_{i=1}^p \xi_i^{(p)} \gamma_{i,t-n} + \sum_{i=1}^p \pi_i^{(p)} \chi_{i,t-n} + \mu_{i,t} \quad (10)$$

Where;

$\pi_i^{(p)}$  and  $\xi_i^{(p)}$  represents the regression coefficients and the autoregressive parameters respectively. The coefficient  $\phi_i$  and  $\pi_i = (\pi_i^{(1)}, \dots \dots \pi_i^{(p)})$  and intercept is fixed.  $\chi$  and  $\gamma$  are the underlying variables for  $n$  cross-section in  $t$  time. The test hypotheses are expressed below:

$$H_0: \beta_1 = 0$$



$$H_1: \begin{cases} \beta_i=0 \\ \beta_i \neq 0 \end{cases} \quad \forall_i = 1, 2 \dots N \text{ and } \forall_i = N+1, N+2 \dots N$$

Table 1: Presentation of Variable, Measurement and Sources

Variable	symbol	Source	Definition
Exchange rates	EXR	BLOOMBERG, 2023	This is defined as units of domestic currency per US dollar
Stock returns	SR	BLOOMBERG, 2023	This is defined as the dividend plus the percentage change in stock prices.
Interest rates	IR	BLOOMBERG, 2023	This is a market-determined rate based on the demand and supply of money in the money market
Inflation	CPI	BLOOMBERG, 2023	This measures prices paid by consumers for a basket of consumer goods and services

## Data Analysis and Interpretation

### *Preliminary analyses*

It is essential to pay attention to normality, variability and distribution of relevant datasets. This is necessary to avoid inherent problems with the panel dataset. Descriptive properties and correlation amongst cross-sections in SSA are presented in Tables 2 and 3 respectively. For the study period, exchange rates (EXR) had a mean value of 72.08524 with a median value of 22.83820. Its maximum value is 460.8200 with a corresponding minimum value of 1.413000 and has a spread of 104.4207. Thus, on average, the exchange rate is 72.08, with a corresponding lower median value of 22.83, depicting a right-skewed foreign exchange price. This shows the exchange rates in most countries in SSA are lower than the region’s average. The average and median rate of exchange rates lie between a minimum of 1.41 in Ghana in 2010 and a maximum of 460.82 in Nigeria in 2022. The lowest and highest exchange rates in SSA are recorded by Ghana in April 2010 and Nigeria in December 2022 respectively. A relatively high standard deviation value of 104.42 indicates foreign exchange in SSA spreads away from its mean value. Also, the average stock returns (STR) in SSA is 0.001219 as presented in Table 2. This is slightly higher than its median value of 0.001118. This indicates a right-skewed stock return in SSA. This implies most countries in SSA experienced stock returns rates lower than the mean stock returns. For the period covered in the study, stock returns in SSA are highest in Ghana with a maximum value of 0.402532 as of December 2022 while Namibia experienced the lowest stock returns in SSA with a minimum value of -0.308265 as of March 2020. Relative to both the mean and median values of 0.001219 and 0.001118 respectively, the standard deviation recorded a higher value of 0.065333. This indicates most countries in SSA recorded stock return rates dispersed from the mean value.

Among the variables of interest, stock returns are the least volatile variable with a standard deviation of 0.065333 while foreign exchange was the most volatile with a standard deviation of 104.4207. Skewness statistics revealed that all variables of the study were positively skewed except stock returns. Moreover, the coefficient of kurtosis in Table 2 indicates that foreign exchange, stock returns, interest rates and inflation are leptokurtic (peaked) with regards to normal distribution since their coefficients of kurtosis are greater than 3. Also as shown in Table 2, the Jarque-Bera statistics did not exceed the 5 per cent level of significance (in absolute value) for all variables thus, we reject the null hypothesis and accept the alternative hypothesis that variables are not normally distributed. This is often the case with panel data as influenced by both the country-specific effects and unobserved heterogeneity amongst the cross-sections. This necessitates further testing for other probable econometric problems such as Serial correlation and Unit roots test. The correlation matrix as presented in Table 3 showed no evidence of multicollinearity among the variables.

This is further confirmed by the less than 2 coefficient value of the Variance Inflation Factor (VIF) as presented in Table 4.

Table 2: Descriptive statistics of the variables

Variables	Obs	Mean	Std dev	Min	max
EXR	936	72.08524	104.4207	1.413	460.82
SR	936	0.0012192	0.0653332	-0.3058257	0.04025319
IR	936	10.31956	4.491928	2.25	32.59
CPI	936	7.017628	5.969762	-1.42	54.1

Note: EXR, SR, IR and CPI represent exchange rates, stock returns, interest rates and inflation respectively.

Table 3: Correlation matrix of the variables

	EXR	SR	IR	CPI
EXR	1.0000			
SR	-0.0042	1.0000		
IR	0.1213	-0.0368	1.0000	
CPI	0.4370	-0.0132	0.6509	1.0000

Note: EXR, SR, IR and CPI represent exchange rates, stock returns, interest rates and inflation respectively.

Table 4: variance inflation factor

Variable	VIF	1/VIF
IR	1.74	0.575545
CPI	1.74	0.576224
SR	1.00	0.998446
Mean VIF	1.49	

Note: SR, IR and CPI represent exchange rates, stock returns, interest rates and inflation respectively.

### ***Cross-sectional dependence test and homogeneity tests***

Panel data is bedevilled with some issues. However, cross-sectional dependence (CSD) and slope homogeneity tests are necessary before any further analysis (Pesaran, 2007; Adamson, et al. 2022). Globalisation plays no small role in enhancing connections amongst nations and this promotes possibilities of transferring shocks between and amongst economies of the world. This affirms probable dependence amongst cross-sections. Ignoring dependence amongst cross-sections gives a biased panel unit root estimation (Adamson, et al. 2022). Ascertaining probable dependence amongst cross-sections is essential when analysing the relationship amongst variables based on historical evidence which may result in a contagious spillover effect on the real economy. Consequently, accepting or rejecting the null hypothesis of independence amongst cross-sections influences the homogeneity or otherwise of the panel. Adoptable unit root tests are influenced by the outcome of the homogeneity test (Münyas, 2020). Thus, it is necessary to verify external shocks' effects on individual economies in SSA while also investigating responses to these shocks within the various income groups.

As presented in Tables 6 and 7, Pesaran and Yamagata (2008) slope homogeneity test is adopted. The delta tilde (Delta ( $\tilde{\Delta}$ )) and corrected delta tilde (Delta adjusted ( $\tilde{\Delta}adj$ )) coefficients are generated SSA. With a probability value of less than one per cent ( $< 1\%$ ), the null hypothesis of homogeneity is rejected. Thus, the alternative hypothesis of heterogeneity is accepted accordingly. Furthermore, the Pesaran Scaled LM, Breusch-Pagan LM and Bias-corrected scaled LM methods are carried out to ascertain if the series are cross-sectionally dependent or otherwise. Estimations results as shown in Table 5 reveal dependence amongst cross-sections. Thus, we reject the null hypothesis of cross-sectional independence at a 1 per cent level of significance. This implies connectivity amongst economies of the various panels, and ease with

which shocks are transferable amongst and between them. Country-specific effects in analyzing relationships amongst variables might result in biased conclusions about the region.

Table 5: Cross-Sectional Dependence Tests

	EXR	SR	IR	CPI
Breusch-paga LM	1152.003* (0.0000)	969.496* (0.0000)	2254.678* (0.0000)	471.918* (0.0000)
Pesaran scaled LM	66.6155* (0.0000)	54.8347* (0.0000)	137.7928* (0.0000)	22.7162* (0.0000)
Bias-corrected scaled LM	66.1944* (0.0000)	54.4136* (0.0000)	137.3718* (0.0000)	22.2951* (0.0000)
Pesaran CD	21.8352* (0.0000)	8.9141* (0.0000)	47.4692* (0.0000)	7.7160* (0.0000)

SOURCE: Authors' compilation, 2022

Note: \* indicates significance at 1 per cent and the probability values are in parenthesis.

Table 6: Slope Homogeneity Test Results

Dependent variable: EXR

	Delta ( $\tilde{\Delta}$ )	Delta adjusted ( $\tilde{\Delta} a d j$ )
Model	26.732* (0.000)	27.171* (0.000)

SOURCE: Authors' compilation, 2022

Notes: \*\*\* indicates a 1 per cent significance level and the probability values are in parenthesis.

Table 7: Slope Homogeneity Test Results

Dependent variable: SR

	Delta ( $\tilde{\Delta}$ )	Delta adjusted ( $\tilde{\Delta} a d j$ )
Model	1.805*(0.000)	1.834* (0.000)

SOURCE: Authors' compilation, 2022

Notes: \*\*\* indicates a 1 per cent significance level and the probability values are in parenthesis.

**Panel unit roots tests**

Since the various CSD tests and slope homogeneity tests revealed dependence amongst cross-sections and heterogeneous features across units, a panel unit root test with heterogenous properties is conducted to ascertain stationarity or otherwise of variables. Testing for unit roots is essential to avoid spurious regression. Dependence amongst cross-sections renders first-generation Unit root tests inefficient. This necessitates the adoption of a second-generation test. This includes both the cross-sectionally augmented DF (CADF) and cross-sectionally augmented IPS (CIPS). CIPS and CADF are robust for both the CSD and heterogeneity slope.

Results presented in Table 8 show the respective unit roots results. Specifically, the results in Table 8 show the panel Unit roots test with individual effects for SSA. CIPS and CADF estimation results indicate that exchange rate (EXR), stock returns (SR), interest rates (IR) and inflation rate (CPI) are all stationary at first difference I(1). Hence, we concluded that all the variables in SSA are stationary at first difference. Since the orders of integration have not exceeded one (1), it justifies a method of analysis that accommodates orders of integration not exceeding one (1). Hence, all methods employed in this study such as Driscoll and Kraay standard error (DK), the Feasible Generalised Least Square (FGLS), Fully-Modified Ordinary Least Square (FMOLS), and the Dynamic Ordinary Least Square (DOLS) are all considered appropriate for the study.

Table 8: Unit Root Tests

Variable	CIPS Level	1 <sup>st</sup> Diff	CADF Level	1 <sup>st</sup> Diff
EXR	-2.305	-3.625*	-2.066 (0.523)	-2.780* (0.000)
SR	-2.667	-4.215*	-2.306 (0.712)	-3.030* (0.000)
IR	-2.135	-3.618*	-3.619 (0.845)	-2.695* (0.000)
CPI	-2.425	-4.755*	-1.739 (0.479)	-3.286* (0.000)

SOURCE: Authors' compilation, 2022

Notes: \* denote significance at 1 per cent level. T-bar and p-values are reported for the CADF test. SR, IR and CPI represent exchange rates, stock returns, interest rates and inflation respectively.

### ***Co-integration test***

Relative sensitivity to dependence amongst cross-sections necessitates the need to ascertain the long-run relationship among variables. This study employs Westerlund's (2007) co-integration test. Its consistent estimates under mild assumption stand out. Its power increases with bootstrap hence, its estimates are relatively reliable. Westerlund's (2007) panel co-integration test is a robust and efficient estimate even in the presence of CSD. Therefore, the study opts for Westerlund's (2007) co-integration estimation technique to examine long-run association amongst variables. Co-integration results are presented in Tables 9 and 10 respectively for SSA. Results as presented in the various tables affirm long-run association amongst the variables. For series with dependence amongst cross-sections, the Bootstrap p-value is considered while for series with independence amongst cross-sections, the p-value is sufficient. Significance (at 1%, 5% or 10%) of a minimum of any two of the four statistics is sufficient to ascertain the existence of cointegration amongst the variables.

For SSA as shown in Tables 9 and 10, the panel reveals results for both the constant and no trend and the constant with trend. In both occasions, a minimum of two statistics are significant. Using the bootstrap p-value since there is dependence amongst cross-sections, the four (4) statistics as shown in Table 9 where exchange rate is the dependent variable are significant under the constant and no trend column while three (3) of the statistics are significant at various levels under the constant with trend column. Also, as presented in Table 10, where stock returns are the dependent variable, the results reveal both the constant and no trend and the constant with trend. In both occasions, all the statistics are significant. Using the bootstrap p-value since there is the presence of CSD amongst the cross-sections, the four (4) statistics as shown in Table 10 are significant under the constant and no trend column and also all the statistics are significant at various levels under the constant with trend column at 1per cent level of significance respectively.

Conclusively existence of long-run relationship amongst the variables in SSA as shown in Tables 9 and 10 respectively informed the use of techniques such as the Driscoll and Kraay standard error (DK), the Feasible Generalised Least Square (FGLS), Fully-Modified OLS (FMOLS), and the Dynamic OLS (DOLS) to estimate effects of each independent variable on the dependent variable in the long run.

Table 9: Co-integration Analysis  
Dependent variable: EXR

Statistics	Constant and no trend			Constant and trend		
	Test value	p-value	Bootstrap p-value	Test value	p-value	Bootstrap p-value
Gt	-1.315**	0.000	0.060	-2.014	0.000	0.280
Ga	-1.211*	1.000	0.000	-11.467*	1.000	0.000
Pt	-4.147*	0.000	0.020	-8.374*	0.341	0.000
Pa	-1.596*	1.000	0.000	-12.791*	1.000	0.020

Notes: \*\*\*, \*\*, and \* denote significance at 1, 5, and 10 per cent level respectively.

Table 10: Co-integration Analysis  
Dependent variable: SR

Statistics	Constant and no trend			Constant and trend		
	Test value	p-value	Bootstrap p-value	Test value	p-value	Bootstrap p-value
Gt	-16.101*	0.000	0.000	-15.900*	0.000	0.000
Ga	-190.092*	0.000	0.000	-189.308*	0.000	0.000
Pt	-40.733*	0.000	0.000	-40.142*	0.000	0.000
Pa	-198.401*	0.000	0.000	-196.990*	0.000	0.000

Source: Author’s compilation, 2022.

Notes: \*\*\*, \*\*, and \* denote significance at 1, 5, and 10 per cent level respectively.

***Discussion of results***

The study employs the Driscoll and Kraay (DK) fixed-effects estimator and the Feasible Generalised Least Square (FGLS) estimation technique to verify the nexus between exchange rate movement and stock returns in SSA. Both the Driscoll and Kraay (DK) and Feasible Generalised Least Square (FGLS) estimation techniques are estimated in line with equations 5 and 6. Descriptive statistics and correlation amongst variables presented in Tables 11 and 12 show consistencies and no threat of multicollinearity in the panel set. Also, both the CIPS and CADF unit root tests showed no variable is stationary beyond the first difference. Thus, this justifies the appropriateness of both the Driscoll and Kraay (DK) estimator and the Feasible Generalised Least Square (FGLS) estimation technique.

Estimation results of both DK and FGLS estimators are similar in terms of the direction of the relationship in both models 1 and 2. The results of DK and FGLS estimators presented in Table 11 for models 1 and 2 reveal that stock returns (SR), interest rate (IR) and inflation rates (CPI) conform with the a priori expectations by having the expected signs. However, in Model 1, the effect of stock returns on the exchange rate is negative and significant. Both estimates of DK and FGLS showed that stock returns have a negative and significant effect on exchange rates in the top most capitalised economies in SSA. Stock markets in SSA are often not robust enough to exert a positive influence on the exchange rate in sub-Saharan Africa. The size of most economies in sub-Saharan Africa is small and often dependent on capital flows from abroad. This finding is consistent with Bekhet and Mugableh (2012), Pal and Mittal (2011), and Erdem et al. (2005) which conceded that more cash flow can be attracted into the domestic economy via the depreciation of local currency which enhances the competitiveness of local goods in the international market and vice versa.

The effect of exchange rate movement on stock returns is negative but not significant in model 2. This indicates an adverse effect of movement in exchange rates on stock returns in the most capitalised economies in SSA. An adverse effect of exchange rates on stock returns signifies that movement in domestic currency would limit the competitiveness of the products of local firms. This will further reduce the firms' profit and their respective stock returns. Also, most firms in SSA import their raw materials from abroad. As a result, depreciation in local currency will increase the volume of local currency needed to acquire the inputs needed for production. This will have a declining effect on the firm's profit and its stock prices because the firm's profits seem to correlate with its stock prices. This finding supports previous studies like Okere et al. (2021), Gokmenoglu et al. (2021), and Bahmani-Oskooee and Saha (2015) which documented evidence that exchange rate movement does not influence stock returns in developing economies.

Also, as presented in Table 11. In both models 1 and 2, interest rates exerted a negative and significant effect on exchange rates in model 1 but exerted a negative and insignificant effect on stock returns in the top most capitalised economies in SSA. Inflation rates are positive on both exchange rates and stock returns as presented in Table 12. Inflation brings uncertainty to the financial market. Investors are often wary of markets characterised by instability. Most economies in SSA are often limited by uncertainties which often lead investors to economies with a high degree of certainty. This often leads to a decline in local stock returns as investors seek more stable economies to invest. This is similar to the findings of Rjoub et al. (2009) but contrary to Bekhet and Mugableh (2012), and Sohail and Hussain (2009). Also, the negative effect of interest rates on exchange rate movement reveals that as foreign interest surpasses the local interest rate, there will be massive capital outflow which will reduce the stock prices of local firms. Also, a rise in interest rates seems to make investors to rather choose to invest in bonds. This could also lead to a declining stock price. Hence, interest rates seem to negatively affect stock prices and the exchange rate in the most capitalised economies in SSA. This finding is consistent with Peiro (2015), McMillan (2005), and Paul and Mallik (2003).

Table 11: Estimated results from DK and FGLS

Model 1 DV (EXR)	DK	FGLS	Model 2 DV (SR)	DK	FGLS
STR	-10.2809* (-2.17)	-10.2809* (-2.23)	EXR	-5.27e-06 (-0.17)	-5.27e-06 (-0.23)
IR	-6.5875* (-3.29)	-6.5875* (-7.53)	IR	-0.00074 (-0.360)	-0.0007 (-1.16)
CPI	10.8680* (4.03)	10.8680* (16.52)	CPI	0.00026 (0.773)	0.0002 (0.49)
CONST	63.8107* (3.41)	63.8107* (8.42)	CONST	0.00746 (1.25)	0.0074 (1.33)

Source: Authors' compilation, 2023.

Note: \* represents statistical significance at the 1per cent level; t-statistics are in parentheses.

***Robustness check***

To ascertain the correctness or otherwise of the baseline estimation results, this study adopts the Fully Modified OLS (FMOLS) by Pedroni (2000) and the Dynamic OLS (DOLS) by Stock and Watson (1993). Pedroni (2000) initially developed the FMOLS regression technique which is a residual-based test which provides efficient results for cointegrated variables. Moreover, FMOLS is considered a reliable estimate because it eliminates the problems of endogeneity and serial correlation among the variables (Hamit-Haggar, 2012). Stock and Watson (1993) developed a DOLS estimation in 1993. DOLS also eliminates correlation among regressors (Kao and Chiang, 2001). Table 12 confirms the robustness of the estimation

results presented in Table 11. Employing the Fully Modified Ordinary Least Square (FMOLS) and the Dynamic Ordinary Least Square (DOLS), the effects of each variable considered on the dependent variable exhibited similar signs as already discussed in Table 11. Thus, similar explanations apply.

Table 12: Robustness check

Model 1 DV (EXR)	FMOLS	DOLS	Model 2 DV (SR)	FMOLS	DOLS
STR	-19.73* (-11.44)	-41.24* (-11.46)	EXR	-0.00 (-1.24)	-0.00 (-1.28)
IR	-2.29* (-4.47)	-2.26* (-4.45)	IR	-0.00 (-0.38)	-0.00 (-1.07)
CPI	2.80* (2.23)	1.90* (2.07)	CPI	-0.00 (-1.16)	0.00* (4.39)

Source: Authors' compilation, 2023.

Note: \* represents statistical significance at the 1 per cent level; t-statistics are in parentheses.

**Further analysis**

Coefficients obtained from DK, FGLS, FMOLS and DOLS undoubtedly offer significant inferences but do not reveal causal relationships among variables of interest. Thus, it is of interest to this study to ascertain the causal relationship between exchange rate movement and stock returns in SSA. Rather than employ first-generation panel Granger causality techniques (e.g., pairwise and VECM Granger causality tests), this study employs the Dumitrescu-Hurlin [DH] (2012) Granger non-causality test in heterogeneous panels to ascertain causality or otherwise between exchange rate movement and stock prices in the top most capitalised economies in SSA. DH is robust to issues of heterogeneity and dependence amongst cross-sections even in the absence of long-run relationships (Cointegration) amongst the series. It also accommodates stationarity of varying degrees amongst the variables. Estimates of Dumitrescu-Hurlin's (2012) Granger non-causality test presented in Table 13 give evidence of unidirectional causality between the variables under investigation. That is, there is a unidirectional causality between exchange rate (EXR) and stock returns (SR) in the most capitalised economies in SSA.

Table 13: Dumitrescu and Hurlin causality test

Null hypothesis	W-stat	Zbar-stat	Prob	Conclusion
SR $\nrightarrow$ EXR	5.4527	4.2052	0.0000	Unidirectional Causality
EXR $\nrightarrow$ SR	0.8050	-1.4626	0.1436	

Source: Authors' Compilation, 2022

**Conclusion**

This study ignites a reexamining of the nexus between the exchange rate movement and the stock returns in SSA. The study investigated the relationship between exchange rate movement and stock returns in most capital economies in SSA. The study conceded that the extent of exchange rate movement and stock return in SSA flows from stock returns to exchange rate movements. This finding gives empirical evidence in support of the portfolio adjustment approach which argues that in the exchange rates-stock returns nexus, the relationship flows from the stock returns to exchange rate movements. This indicates that activities in the stock markets in SSA shape the movements in the exchange rate markets. Thus, the movements in exchange rate markets in SSA are influenced by the outcomes of the stock markets. As stock returns in SSA are influenced by an unstable social, political and macroeconomic environment, the prevalent socioeconomic issues of income inequality and poverty, weak institutional environments and low

productivity which characterise countries in SSA influence movements in the exchange rates markets. Hence, this is evidence that the twin financial markets issues of high exchange rate movement and low stock returns in SSA can be addressed with stable macroeconomy policies. This will also enhance a deeper inclusion in the financial market.

The nature of the relationship between exchange rate movement and stock returns in SSA has important welfare and investment implications in light of recent literature emphasising the nexus between the variables as the main drivers of the financial market, hence, there is a need to pay attention to the prevailing movement in exchange rates and low returns in the stock markets in SSA to achieve a sustainable and stabilised financial market. A stable financial market is necessary to ensure sustainable growth and development. Therefore, policymakers in SSA should seek to tackle the fluctuation in the financial market by designing appropriate policies targeted at factors essential for a stable stock market and generally enhancing macroeconomic stability. This is necessary given the positive impacts of the financial market on economic growth and development in SSA.

This study investigated the role of exchange rate movement and stock returns in enhancing the financial market in the most capitalised economies in SSA without investigating the threshold at which both financial market variables will enhance financial market stability. This constitutes a limitation as well as a gap for further research. Other researchers can embark on this study for the panel and country-level studies to domicile the findings and proffer country-specific recommendations. Moreover, there is a consensus in extant literature that the financial market policies should be accompanied by other complementary policies and institutional development. Further research in this area can be conducted to examine the threshold effects of institutional development on the nexus between exchange rate movement and stock return that can ensure financial market stability in the most capitalised economies in SSA.

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