

Cause and Effects of Currency Devaluation on Stock Markets in Sub Saharan Africa

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Abstract

This study examines how stock market in a few Sub-Saharan African (SSA) nations – Nigeria, Cameroon, South Africa, and Kenya – are affected by currency devaluation. Currency devaluation is a tactic used by policymakers to encourage economic growth in developing region. With an emphasis on the stock market returns of these SSA nations, the goal of this study is to ascertain if such devaluations have an expansionary or contractionary effect on their economies. This study adopts the Arbitrage Pricing Theory (APT) to investigate the relationship between currency depreciation and stock market returns using a dataset that spans the years 2003 to 2023 and is derived from the World Bank Development Index (WDI) and other credible sources. Panel cointegration tests and the Dumitrescu-Hurlin panel Granger causality test are used in the analysis to determine the direction of causality. Based on the distinct financial systems and governance frameworks of each country, the research findings indicate that the effects of currency devaluation on stock market returns in SSA nations are complex. The research emphasizes the need for tailored and national policy strategies that target improving stock market performance and overall economic expansion. These observations provide crucial advice for financial stakeholders and policymakers in SSA, highlighting the significance of strategic economic planning and policy implementation to cater for the unique circumstances of each nation.

Keywords: *Currency devaluation, Stock market, Economic growth, Policymakers, Financial systems*

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Background to the Study

Over the years, most of the developing countries especially African countries have embarked on various economic and financial reforms with the view of strengthening their stock market and currency. One of these reforms is currency devaluation as a macroeconomic policy which is often used to promote local content development and encourage exports in any developing economy. When a country's native currency's value is decreased in comparison to the value of other dominant major foreign currencies, it is known as currency devaluation. It means official exchange rate of a nation has been adjusted downward in comparison to other nations which are common practice among developing nations that practices trade openness so as to promote growth and development as the need arises.

Mishkin (2019), states that when a country's native currency's value is decreased deliberately in comparison to the value of other dominant major foreign currencies, it is known as currency devaluation. It means official exchange rate of a nation has been adjusted downward in comparison to other nations which are common practice among developing nations that practices trade openness so as to promote growth and development as the need arises. While for others currency devaluation curbs social and economic problems like inflation, depression and uneven income distribution, given that there are different opinions on whether currency devaluation is contractionary or expansionary.

Additionally, Currency devaluation has garnered attention in the global economy in recent times. Many emerging economies have had currency crises from the 20th century till the present, which has made people wonder if further financial and economic reforms or currency devaluation is the better course of action. There are disagreements over the nature of currency devaluation – whether it is expansionary or contractionary, whether it affects output growth in a positive or negative way, and whether it is wise for a nation with significant foreign debt to devalue its currency (Saibene & Sicouri, 2012). The importance ascribed to currency devaluation is demonstrated by earlier literature and the rate at which the International Monetary Fund invests in research related to it, for instance SAP (1986), with overwhelming evidences shows what exchange market contributes to the process of any economic development that cannot be overlooked, as it serves as a means of raising funds for investment, corporate social responsibility with creation of employment opportunities amidst others.

Moreover, due to overdependence on loans to finance budget and capital projects in SSA countries from developed countries dominated financial institutions has led to the dominance of their currency over developing economies currencies in SSA region. Also, the need for funds for development led to dawn of Stock markets in most SSA countries to source for capital needed for investment. However, the nation's economy may be impacted by the stock market in a different way than the economies of other countries. There are numerous studies that validate stock market as an essential platform for economic growth, for instance Zhongming et al. (2018) ascertain how much Ghana's stock market contributed to the country's economic expansion.

Thus, stock market has been the major driving force towards growth in the financial sector of any economy that will contribute immensely to gross domestic product of any country that has it. According to Ariyo and Adelegan (2005), they stated that if resources traded within stock market are well channeled there will be enhanced contribution to growth when policies are directed toward efficient allocation of resources. However, subsequent study by Musoyaka et al. (2018) to determine the short and long-term relationships between the country's economic growth and its stock market development in Kenya also buttress the need for a viable stock market.

On this note, Capital is an essential characteristic of a modern economy that promotes economic sustainability Tokunbo (2005), and SSA countries has embarked on various economic and financial reforms with the view of strengthening the macroeconomic performance of their economies over the years, and one of such reforms is devaluation of these countries' currencies. Despite these reforms, majority of these SSA countries' currencies are nose-diving against the dollar and all other dominant foreign currency in the exchange rate market that makes these countries to seek means of facilitating funds for most of their budgets from foreign financial institutions.

While, Ojuolape et al. (2020) reveals that Currency devaluation has garnered attention in the global economy in recent times because many emerging economies have had currency crises from the 20th century to the present. Whereas, Ochenge et al. (2020) stated low market liquidity obstructs stock price discovery, with a wealth of research indicating that liquidity is valued in the market and it is often associated with stock pricing efficiency depicting the nation's economic growth and stock market liquidity are related. Also, recent study done by Umoru and Omomoh (2023) that deployed the used of Toda yamoto model to determine causal relationship between currency devaluation and stock prices using ten African countries that includes Malaysia and Indonesia that are not African countries created a gap for the need for more comprehensive research in this area of study. Moreover, most of the previous studies were done in isolation and country specific in SSA region couple with recent economic reality of dollarization of the region at this present time of study.

In view of this, it becomes needful to investigate the relationship that exists between currency devaluation and stock market returns in major SSA countries given the fact that some SSA countries has embarked on various economic and financial reforms with the view of strengthening the macroeconomic performance through their stock markets. This research study will make use of four selected SSA countries in the likes of Nigeria, Cameroon, South Africa, and Kenya based on their GDP contribution to the SSA region, with proven history of embarking on currency devaluation as macroeconomic reforms and a viable stock market. This study employs secondary data from 2003 to 2022 sourced from World Bank development index (WDI) and other relevant sources for comprehensive and relevant timeline to analyze the interplay between currency devaluation, stock market returns and economic growth. This gives room to capture impacts of currency devaluation on stock markets in the region for informed policy recommendations and strategic planning.

Literature Review

This part of the study discusses the concept, theories and empirical literature of related study on currency devaluation and stock markets in sub-Saharan Africa. Currency devaluation is the lowering of the value of a country's domestic currency against the value of dominant foreign currencies and it is the downward adjustment of a country's official exchange rate in relation to other countries according to Ojuolape et al (2015). Kidane (1991) also stated that devaluation in developing countries has become a major subject of controversy because for some currency devaluation helps the promotion of local content through export that improves terms of trade and reduces debt burden as well as increase in foreign reserve resulting from income generated by exports while for others currency devaluation curbs social and economic problems like inflation, depression and uneven income distribution.

In the history of global banking and economics, currency devaluation has played a crucial role. It has been shown to have a variety of effects on different economies; while it is advantageous for some economies' commerce, development, and growth, it is detrimental to others. Bouvet (2022) states that currency devaluation is a necessity for growth and development for any country that engages in trade openness. Moreover, the usage of foreign currencies as a medium of trade or exchange, store of value and unit of accounts in African countries shows how fragile the region macroeconomic conditions are in recent years. Therefore, currency devaluation can be used to achieve a trade balance, develop local industry through local content promotion, improve imports and discourage exports.

While on the other hand, Stock markets give players (listed corporations) a way to diversify their risk and source for capital for expansion needed for economic growth. Thus, gives business owners the chance to profit from their investments and receive returns as stated by Brown (2011). Any economy that wants to grow must develop its stock markets since they increase resources according to Mbengue et al. (2023). In SSA, currency devaluation started in the 1990s and continued to 2000s as a result of pressure from political instability, corruption, dwindling foreign reserves and increase debt portfolio on domestic currencies. While in 2010s the region was characterized by economic down turn, overdependence of foreign products that necessitated the need for devaluation to promote local contents. Also, the Covid-19 pandemic, lower global oil prices, trade deficit amidst others in 2020s led to devaluation of the currency of most SSA countries. To this end, it is evident that most SSA had periodic devaluation of its currency from 1990s till 2020s in order to strengthen the region's economy and avoid over reliance on foreign aids.

Whereas, stock markets are an important and fundamental part of any economy, the ways in which they influence a given country's economy differs across countries. This is because the way that stock exchanges are structured, how they interact with other components of the financial system, the system of national government, and other factors all affect how much of an impact stock markets have on the economy. Since each of these

characteristics is unique in respect to nations, so too is the effect of stock markets on a nation's economy. Stock markets play an important role in economic progress of SSA countries, as it helps improve and strengthens firm's capital and financial position making the capital market the handmaiden of industry and also the most vital component of a free economy system as it manages capital formation.

Stock exchanges trade long-term financial instruments such as common shares, convertible bonds, unsecured lending stock, and debentures. In addition to government bonds, investors trade public securities on stock markets, such as treasury bills, in an attempt to maximize earnings. When it comes to various stock market development measures, SSA stock markets have generally lagged behind those of other developed and rising economies as stated by Jefferis (1995) and Mbengue et al. (2023) that attributes stock underperformance to elements such as the size of the economy as a whole, inexperience with trading a wide range of assets, and government regulations that favor debt financing over equity investment. Moreover, sub-Saharan African stock markets underperformed even before the global financial crisis of 2008, according to Kumeka, Ajayi, and Adeniyi (2022) across a range of market development parameters. Major frontier markets in Sub-Saharan Africa are the Nigerian Stock Exchange (NGSE), the Johannesburg Stock Exchange (JSE), and the Nairobi Stock Exchange (NSE), according to Nellor (2008).

According to Rashid and Jabeen (2016), the idea supports that an increase in real interest rates will result in a decrease in the current value of a company's impending cash flows and returns. Rising interest rates simultaneously induce a flood of capital that pushes the exchange rate lower, a theory that acknowledges that currency rates have an impact on the stock market. In the same vein, Adjasi and Biekpe (2007) also noted that exchange rates balance supply and demand for assets (stocks and bonds) in a stock-oriented model. Therefore, it is non-negotiable that opportunities for parallel exchange rate swings to impact the rate of fluctuations in financial resources exist. The exchange rate and stocks have an unanticipated relationship, according to flow theory, and Joseph (2002) noted that changes in the exchange rate have an impact on input and output prices, which in turn affects how companies operate.

Also, Dornbusch and Fischer (1980) provided evidence in favor of clarifying the basic connection between the stock market and the exchange rate, therefore supporting the flow-oriented argument. Because stock exchanges are frequently the initial stop for international investors wishing to join the stock markets in the Western, Central, Southern, and Eastern SSA regions, in that order. Arbitrage price theory (APT) of Ross (1976), a theory based on competitiveness of financial markets arbitrage in minimizing risk of assets to give same expected return by using multiple factors (economic variables) to describe asset returns, the theory provides a framework that aligns with reality of financial markets as it provides flexibility that allows multiple risk factors.

According to Morales (2008), further investigation is necessary to completely determine the kind of indirect effect that exchange rates have in this respect on the stock market. The

impact of exchange rate volatility on Turkish stock prices between 1999 and 2009 was examined by Kasmann et al. (2011) using the GARCH and OLS valuation models. Their findings imply that fluctuations in exchange rates have a negative impact on profitability. Also, Javangwe and Takawira's (2022) ARDL model results, there is typically a linkage between markets that are regulated in equilibrium. According to Salvatore (2019), currency devaluation promotes export competitiveness and makes import cost more expensive to encourage domestic production, also it attracts foreign direct investment by making the country's asset cheaper to attract foreign investors which will in turn stimulate economic growth. Also, Blanchard (2017) works in his book on macroeconomics delves into various aspect of macroeconomic theory and policies by explaining the effect of exchange rate movements on trade balances, capital flows and overall economic performance with clarity and thorough analysis of macroeconomic concepts that covers economic fluctuations, monetary and fiscal policy, exchange rates and open economy macroeconomics.

In view of this, issues affecting most SSA countries are exchange rate pressure faced by local currencies against world dominant currencies recently with interest fixed on United States dollar. Hence, thirst for dollar appetite among SSA countries according to IMF data (2023) states that for the average Sub-Saharan African nation, 84% of exports, 67% of imports, and 60% of external debt are priced in dollars. Compared to 50% and 45%, respectively, in pegged nations, the debt portfolio of non-pegged countries consists of 66% of external debt and 99% of Eurobonds denominated in US dollars. Thus, it appears that most SSA countries makes extensive use of the dollar as a store of wealth and a means of exchange. Also, it is evident that the research study has few related existing empirical studies that delves into the actual subject matter of this research in Africa as several empirical literatures depicts study in Africa are country specific and the need to address anomaly in recent studies by Umoru and Omomoh (2023) that included Asian countries in their study of Africa as a whole.

Methodology

Adopting Arbitrage price theory (APT) based on competitiveness of financial markets arbitrage in minimizing risk of assets to give same expected returns according to provide the theoretical framework for the study based on works from Javangwe (2022) on exchange rate movement and stock market in south Africa, and also works of Ichwanudin (2023) on Indonesian stock exchange testing of arbitrage pricing model amidst others. While Panel co-integration test and Dumitrescu – Hurlin panel Granger causality test (2012) was adopted to investigate the relationship between stock market return and economic growth, the direction of causality and its dynamic interactions, because it gives room for flexibility among lag structures and accommodates different dynamics and relationships among variables as well as insights to long term relationships among variables. This method enables the pooling of data across cross sectional units and allows more observations as well as handles correlations among units in the panel data. It is a modification of the Granger causality test developed in 1969 for analyzing the causal relationships between time series.

Several studies have been carried out using the co integration and granger causality test for instance, Asiamah (2023) in his research that aims to determine whether economic growth and Ghana's financial system are causally related, and Idenyi (2017) explained how Nigeria's economic growth was affected by capital market indicators between 1986 and 2016 amidst others related studies. To estimate for panel co-integration across multiple cross-sectional units,

$$StockR_{it} = \alpha_i + \beta_i CD_{it} + \epsilon_{it}$$

Where $StockR_{it}$ is the dependent variable for unit (i) at time (t), CD_{it} is the independent variable for unit (i) at time (t), α_i is the intercept, β_i is the co-integrating coefficient for unit (i).

To estimate for the causal relationship between currency devaluation (CD) and stock market returns (StockR) using this model, two regression models would be set up as follows:

Restricted model:

$$CD_{it} = \alpha + \sum_{j=1}^K \beta_j CD_{it-j} + \sum_{j=1}^K \gamma_j StockR_{it-j} + \epsilon_{it}$$

Unrestricted model:

$$CD_{it} = \alpha + \sum_{j=1}^K \beta_j CD_{it-j} + \sum_{j=1}^K \gamma_j StockR_{it-j} + \sum_{j=1}^K \delta_j CD_{it-j} + \sum_{j=1}^K \eta_j StockR_{it-j} + \epsilon_{it}$$

Where CD_{it} is the stock market return for country (i) at time (t), $StockR_{it}$ is the economic growth for country (i) at time (t), α is the intercept, β_j γ_j δ_j η_j are coefficients to be estimated, (K) is the lag length and ϵ_{it} is the error term. Given that:

$$CD = f(BOP, EXR)$$

$$Stock R = f(MKTCAP,)$$

Where BOP is balance of payments, EXR is exchange rate and MKTCAP is total market capitalization. Thus, we have;

$$Mktcap = \alpha + \beta_1 BOP + \beta_2 EXR + \mu$$

Results and Findings

Panel Unit root Testing

Using the autoregressive nature of the time series into consideration, unit root testing is an econometric technique that examines if the mean and variance vary over time. a test to ascertain whether a time series' mean, variance, and covariance are time-independent. In short, the goal of the panel unit tests is to verify the heterogeneity assumption.

Figure 1: Trends of Variables

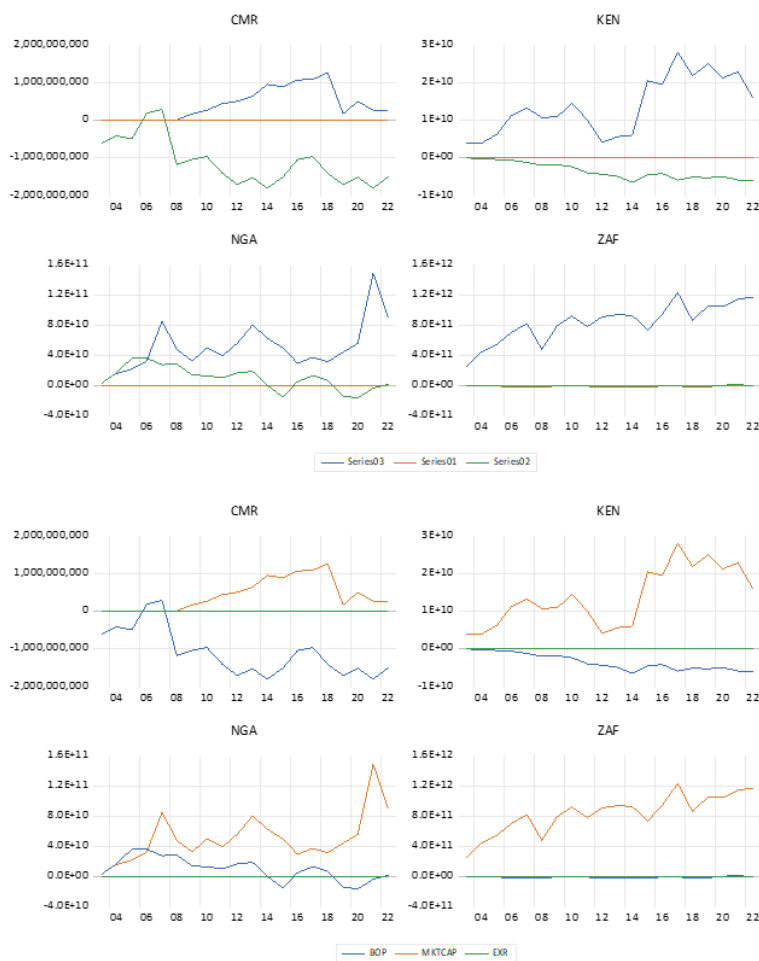


Table 1: Descriptive Statistics of the Data

	MKTCAP	EXR	BOP
Mean	2.38E+11	208.4587	-8.66E+08
Median	2.66E+10	108.0443	-1.70E+09
Maximum	1.23E+12	623.7597	3.65E+10
Minimum	7077000	6.359328	-2.14E+10
Std. Dev.	3.84E+11	217.0715	1.16E+10
Skewness	1.370331	0.878678	1.236939
Kurtosis	3.207282	2.144210	5.065144
Jarque-Bera	23.92162	12.09882	32.88549
Probability	0.000006	0.002359	0.000000
Sum	1.18E+13	15842.86	-6.58E+10
Sum Sq. Dev.	1.11E+25	3534003.	1.00E+22
Observations	76	76	76

For panel root using Im, Pesaran and Shin (2003),
 Null: Panel data has unit root (assume individual unit root process) (non-stationery)
 Alt: Panel data has no unit root (Stationery)

Table 2: Panel unit Root Test: BOP

Method	Statistic	Probability	Cross-sections	Observations
Null ; Unit root				
Levin, Lin & Chut	-2.44669	0.0072	4	72
Null; Unit root				
Im,Pesaran and Shin W-stat	-1.41297	0.0788	4	72
ADF-Fisher Chi-square	14.0773	0.0798	4	72
PP-Fisher Chi-square	7.53199	0.4805	4	76

Table 3: Panel Unit Root Test: EXR

Method	Statistic	Probability	Cross-sections	Observations
Null ; Unit root				
Levin, Lin & Chut	2.14978	0.9842	4	72
Null; Unit root				
Im,Pesaran and Shin W-stat	2.63058	0.9957	4	72
ADF-Fisher Chi-square	2.64860	0.9544	4	72
PP-Fisher Chi-square	5.07173	0.7499	4	76

Table 4: Panel Unit Root Test: MKTCAP

Method	Statistic	Probability	Cross-sections	Observations
Null ; Unit root				
Levin, Lin & Chut	-1.03391	0.1506	4	68
Null; Unit root				
Im,Pesaran and Shin W-stat	-0.61584	0.2690	4	68
ADF-Fisher Chi-square	8.39571	0.3958	4	68
PP-Fisher Chi-square	12.4391	0.1327	4	72

Figure 2: Graph for all the countries and variables

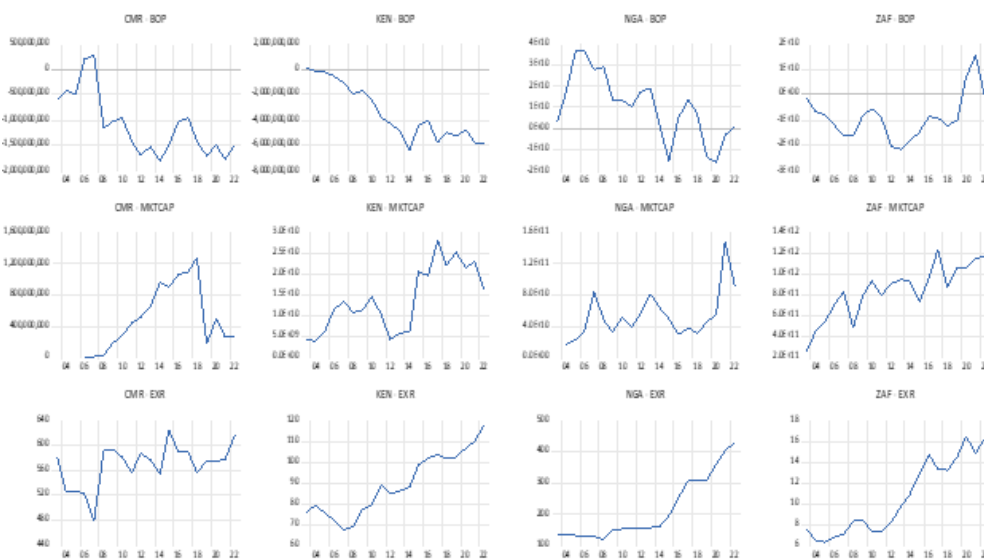


Table 5: Panel Co-Integration

Alternative hypothesis common AR coefficients (with dimension)

	Statistic	Probability	Weighted statistic	Probability
Panel v-statistic	-0.079363	0.5316	-0.287964	0.6133
Panel rho-statistic	0.228519	0.5904	0.176372	0.5700
Panel PP-statistic	-0.448020	0.3271	-0.701772	0.2414
Panel ADF-Statistic	-4.260448	0.0000	-2.339157	0.0097

Alternative hypothesis individual AR coefficients (between- dimension)

Group rho-Statistic	1.082001	0.8604
Group PP-statistic	-0.281984	0.3890
Group ADF Statistic	-2.486519	0.0064

Table 6: Cross section specific results

Philip-Peron results (non- parametric)

Cross ID	AR(1)	Variance	HAC	Bandwith	Observations
CMR	0.362	1.38E+17	1.38E+17	0.00	16
KEN	0.561	9.06E+17	8.02E+17	2.00	19
NGA	0.436	1.17E+20	8.77E+19	5.00	18
ZAF	0.514	4.44E+19	3.88E+19	3.00	19

Augmented dickey fuller results (parametric)

Cross ID	AR(1)	Variance	Lag	Max lag	Observations
CMR	0.252	1.43E+17	1	-	15
KEN	0.461	8.89E+17	1	-	18
NGA	0.119	6.56E+19	1	-	17
ZAF	0.175	3.45E+19	1	-	18

Table 7: Pooled OLS regression
Dependent Variable: MKTCAP (Panel least squares)

Variable	coefficient	Std error	t-statistic	Probability
C	4.13E+11	4.96E+10	8.327755	0.0000
EXR	-8.84E+08	1.65E+08	-5.354954	0.0000
BOP	-10.17642	3.094291	-3.388772	0.0016
R-Squared			0.371663	
Adjusted R squared			0.354448	
Standard error of regression			3.09E+11	
Sum of squared residuals			6.96E+24	
Log Likelihood			-2116.966	
F-Statistic			21.58980	
Prob (F-Statistic)			0.000000	
Mean dependent var			2.38E+11	
S.D dependent var			3.84E+11	
Akaike info criterion			55.78857	
Schwarz criterion			55.88058	
Hannan-Quinn criterion			55.82534	
Durbin- Watson statistic			0.179322	

Table 8: Pairwise Dumitrescu Hurlin Panel Causality Tests

Null hypothesis	W-Stat	Zbar-Stat	Prob
MKTCAP does not homogeneously cause BOP	0.25584	-0.97408	0.3300
BOP does not homogeneously cause MKTCAP	0.81785	-0.36547	0.7148
EXR does not homogeneously cause BOP	2.49267	1.49397	0.1352
BOP does not homogeneously cause EXR	7.50876	7.04576	2E-12
EXR does not homogeneously cause MKTCAP	3.68837	2.74301	0.0061
MKTCAP does not homogeneously cause EXR	0.48505	-0.72586	0.4679

According to the results, the exchange rates (EXR) are typically non-stationary across a range of tests, the market capitalization (MKTCAP) is generally stationary based on unit root tests, and the balance of payments (BOP) generally exhibits symptoms of stationarity with certain tests rejecting the null hypothesis of a unit root. Although there are conflicting results from the panel co-integration approach, there are hints of a long-term equilibrium relationship between BOP, MKTCAP, and EXR. While Pairwise Dumitrescu Hurlin Panel Causality Tests suggest that BOP considerably induces EXR, and EXR significantly causes MKTCAP according to the causality test.

Understanding the relationship between the independent variables EXR, or exchange rates, and BOP, or balance of payments, and the dependent variable MKTCAP, or market

capitalization, is the goal of the regression study in the research. This depicts a rise in exchange rates is linked to a fall in market capitalization, according to the significant negative coefficient for exchange rates (EXR). In particular, MKTCAP drops by 884 million units for every unit rise in EXR. Also, a decline in market capitalization is correlated with an increase in the balance of payments, as seen by the substantial and negative coefficient for BOP. MKTCAP falls by about 10.18 units for every unit rise in BOP.

In summary, the interdependence of market capitalization, exchange rates, and balance of payments is emphasized by panel co- integration and causality results, which also underscore the significance of considering both long-term linkages and short-term changes in economic modeling. While the findings of the regression show a substantial correlation between market capitalization (MKTCAP) and the independent variables balance of payments (BOP) and exchange rates (EXR). Since EXR and BOP both have negative coefficients, it can be inferred that rising levels of both variables are linked to falling levels of MKTCAP. About 37.17% of the market capitalization variance can be explained by the model, which is a moderately strong fit to the economic data. The F-statistic and its p-value both show that the entire model is very significant.

Conclusion and Recommendations

One of the main conclusions drawn from this research in Sub Saharan African is that there is a moderately strong correlation between market capitalization and exchange rates rising, market capitalization falling and the balance of payments rising. The model also explains approximately 37.17% of the variance in market capitalization indicating a moderately strong relationship. Hence, the economic implications of this study in selected SSA countries includes the need for balance of payment management, maintaining exchange rate stability, coordination of monetary and fiscal policies, prioritizing financial market development and economic diversification.

This study recommends putting in place monetary measures designed to keep exchange rates stable, creating plans to strengthen the balance of payments, enhancing the resilience of the financial market infrastructure by strengthening it, ensuring that the fiscal and monetary authorities are acting in a cogent and coordinated manner and encouraging economic diversification in production of capital goods to lessen reliance on primary product like oil, gold and other solid minerals that yields good foreign earnings in the SSA region. Adopting these policy proposals can help governments foster a more stable and conducive economic climate that guarantees sustained economic development, fosters market capitalization expansion, and lessens the negative consequences of exchange rate volatility and balance of payments problems.

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