PressAcademia
www.pressacademia.org/journals/jefa
JEFA
ISSN 2148-6697
Journal of Economics, Finance and Accounting YEAR 2022 VOLUME 9 ISSUE 1

FINANCIAL DEEPENING AND STOCK MARKET PERFORMANCE IN SELECTED SUB-SAHARA AFRICAN COUNTRIES

DOI: 10.17261/Pressacademia.2022.1543
JEFA- V.9-ISS.1-2022(4)-p.30-38

Edward Attah-Botchwey[1], David Mensah Awadzie[2], Williams Agbenyezi[3]
[1]University of Professional Studies Accra, Department of Banking and Finance, Accra, Ghana.
edward.attah-botchwey@upsamail.edu.gh, ORCID: 0000-0003-1140-5786
[2] Accra Institute of Technology, ACCRA, Department of Accounting and Finance, Accra, Ghana.
davidawadzie@gmail.com , ORCID: 0000-0001-5532-2152
[3] University of Professional Studies Accra, Department of Banking and Finance, Accra, Ghana.
10113812@upsamail.edu.gh , ORCID: 0000-0003-2122-1518

Date Received: January 11, 2022 **Date Accepted:** March 21, 2022

To cite this document
Attah-Botchwey, E., Awadzie, D.M., Agbenyezi, W., (2022). Financial deepening and stock market performance in selected Sub-Sahara African countries. Journal of Economics, Finance and Acoounting (JEFA), 9(1), 30-38.
Permanent link to this document: http://doi.org/10.17261/Pressacademia.2022.1543

ABSTRACT

Purpose- The study investigates the effect of financial deepening on stock market performance in selected Sub-Saharan African countries by determining the relationship that exist between financial deepening and stock market performance. Expansion in the financial services to reach out to the underbanked or unbanked in our society enables these individuals to assess banking services, thereby boosting economic activities.

Methodology- The study considers four selected countries in Sub-Saharan African over the period 2001 to 2019. Multiple regression analysis techniques were used with Seemingly Unrelated Regression (SUR) to analyse the data. SUR used in this analysis provides the lowest standard errors of the estimated parameters.

Findings- Ordinary Least Square (OLS) gives consistent results. However, it is not as efficient as the SUR method, which amounts to feasible generalised least squares with a specific form of the variance matrix. It solves the problem of endogeneity. The study conducted Augmented Dicky Fuller (ADF) test, Hausman test, and Bruce Pagan test to avoid any challenges associated with data normality.

Conclusion- The research finds out that broad money supply, a proxy for financial deepening, positively and statistically significantly impacted stock market performance in each of the four countries. It was recommended that all countries involved in this study and others implement policies that seek to enhance financial deepening in increasing broad money supply as a percentage of GDP. The increase in overall money supply allows for investment in productive sectors of the economy.

Keywords: Sub-Saharan Africa, seemingly unrelated regression, Augmented Dicky Fuller, investigates, ordinary least squares.
JEL Codes: E51, F21

1. INTRODUCTION

Many have misconstrued financial deepening with financial inclusion and access. Financial inclusion is the process of bringing the unbanked, underbanked, underserved, or unbanked population into the formal banking system through the use of ATMs, IT-Mobile Money Operability (Momo), Vodacash, and other means (World Bank Report, 2018). Financial inclusion is a method of offering banking and financial services to individuals. It aims is to include everybody in society by giving them essential financial assistance regardless of their income or savings. Also, it focuses on providing financial solutions to the economically underprivileged. Financial access refers to financial services firms focusing exclusively on frontiers and emerging markets. It solely aims to create sustainable impact and maintain environmentally and socially responsible financing, governance, and advisory standards. According to Aizenmen (2005), a country's financial sector is the bedrock of its economic growth, and for that matter, care is paramount. It means it is necessary to open up a country's financial system to improve the financial institutions' profitability and operational efficiency. For this reason, financial sector managers have characterised the financial sector with regulations to monitor activities such as controlling the interest rate, weak banking structures, lack of transparency and inefficient risk management structures, and corporate governance issues, amongst others.

Shaw and McKinnon (1973) define financial deepening as enhancing the financial services tailored to all the levels in the society, thus increasing the availability and accessibility of financial services in an economy. Financial deepening can also be

referred to as the increase in the ratio of the money supply to the price index, which indicates that the liquidity level is high; hence more money is available in the economy. Thus more opportunities exist in that economy, thus, high growth rate and sustainability of the economy. For this, one could say the development of financial institutions leads to the growth of the economy. However, Ngede (2012) affirms that financial deepening amongst financial institutions enhances mobilisation, pooling, and channelling savings into a productive capital pool that enhances economic growth. In a supporting argument by (Gertler and Kiyotaki 2015), financial deepening also refers to the development of the financial system closely intertwined with economic development. Financial deepening has been predominantly viewed as a natural phenomenon in the context of economic development and a precondition of dynamic economic growth. Since the 1090s, there has been a correlation between open capital accounts and increased financial depth and economic expansion in economic literature. Chakraborty (2019) airs that the first group of monetary gurus to express financial deepening was Gurley and Shaw between 1955 and 1967. This pronouncement provided a wide range of changes in financial structure accompanying economic development. The changes include loosening credit constraints, more intensive use of external finance, fewer distortion in the credit market, and a general increase in financial activities.

The bedrock of every economy is its financial deepening as it plays an essential role in economic saving mobilisation and the growth of an economy. Financial deepening broadens its resource base, raises the capital needed to stimulate investment through savings and credit, and boosts its overall productivity as a whole. The design and implementation of effective interventions and programs in these selected countries' banking sector have led to continued growth in financial assets, with a direct contribution from financial intermediaries of a high per cent to the selected countries' GDP. However, economic growth in many countries has fluctuated over time, whether due to financial development or other factors. Therefore, it is essential to assess the effects of financial deepening and stock market performance on economic growth in these countries a. Several studies with mixed results have been conducted across countries to investigate the relationship between financial deepening and economic development. Some studies have used developed and developing cross-countries data sets (King and Levine, 1993). Other studies have used a sub-regional African approach (Nguena and Abimbola, 2013; Ndebbio, 2004). In individual African countries, such as South Africa (Jalil, Wahid, and Shahbaz, 2010); Nigerian (Onwumere, Ibe, Ozoh and Mounanu, 2012; Nzotta, 2009), findings suggested mixed results depending on financial deepening indicators employed.

Further research in Kenya by Odhiambo (2008), Wolde-Rufael (2009), Uddin, Sjö, and Shahbaz (2013), Onuonga (2014) have primarily focused on determining the direction of causality between financial deepening variables and economic growth, with varying conclusions on how both concepts affect each other. There have been many studies on financial deepening and economic growth but non on financial deepening and stock market performance. This study aims to provide further evidence by examining the financial deepening and stock performance in Sub-Sahara Africa between the period 2010-2020.

2. LITERATURE REVIEW

Chapter two reviews the literature on financial deepening and stock market performance. The chapter starts with the definition of concepts, theoretical and empirical studies, and a conclusion. Financial deepening (F.D.) is a term used by economists to refer to increasing financial services. It can refer to both a wider choice of services and better access for different socioeconomic groups. Financial deepening can affect both individuals' and societies' economic situations. For instance, a retired schoolteacher in the village has no idea how to use Mobil Money Operations (Momo), Automated Teller Machines (ATM), Online banking, and other financial deepening services. That has been made available and may better meet the teacher's demands. In another example, the fishmonger or the farmer who lives far in the hitter land and does not know about financial deepening may have their produce go bad if customers or consumers are not readily available. They may find these services more appealing as 'heaven on earth as it will link them to customers across the regions and market sectors, solving their challenge. Levine (2005), as cited by (Linda & Bakang, 2014), defines financial deepening as the interaction among financial institutions, markets, and instruments to make mobilised funds available for productive investment by the borrowing section of the economy.

Financial deepening refers to the condition, costs, risks, quantity, and options available to potential borrowers become more favourable. It is the process that marks an improvement in quantity, quality, and efficiency of intermediary financial services (Sackey & Nkrumah, 2012). It is clear from the definitions that the financial gurus are only concerned with economic systems, the improvement of the quality and quantity of service, and the efficiency of the financial intermediary services. Financial deepening, in our view, refers to the vehicle of bringing together all savers, sellers, lenders and surpluses on one hand and spenders, buyers, borrowers and deficits on the other hand through middlemen called financial institutions. It is a way of diversifying risk. Quality and quantity refer to excellence and unique touch to service rendering to the international standard from the definition above. The amount relates to the expansion of financial activities across the length and breadth of the country.

However, the above services or activities cannot work independently but in a particular system called a financial system. An economic system is a set of institutions, such as banks, insurance companies, and stock exchanges, which permit the exchange of funds between borrowers and lenders, savers and spenders, surplus units and deficit units. Borrowers, lenders, and

investors exchange current funds to finance projects for consumption or productive investments and pursue a return on their financial assets.

Also, it is challenging to talk about financial deepening without financial development as they both intertwine. Financial development increases a country's resilience and boosts economic growth. Financial development means some improvements in producing information about possible investments and allocating capital, monitoring firms and exerting corporate governance, trading, diversification, management of risk, mobilisation and pooling of savings easing the exchange of goods and services. Financial development is often measured by financial depth, such as the stock of private credit and market capitalisation as a share of GDP. Such a measure focuses on the quantity aspect of economic development.

2.1. Theoretical Review

2.1.1. Theory of Financial Intermediation

Financial Intermediation theory advocates that financial intermediaries play a crucial role in the growth process by transferring financial resources from the net savers to net borrowers, thus influencing investment and economic growth. The theory suggests that financial intermediaries can overcome a market failure and resolve an information asymmetry problem by transforming the risk characteristics of assets. These asymmetries in credit markets arise because borrowers generally know more about their investment projects than lenders do. Information failures lead to specific transaction costs, and financial intermediaries appear to overcome these costs, at least partially. According to (Toby 1963 & Benston and Smith, 1976), the idea of transaction costs encompasses not only exchange or monetary transaction costs but searches monitoring and auditing costs. The work of Schumpeter (1912) supports the view that well-functioning financial intermediaries can promote overall economic efficiency. By pooling and allocating funds, financial intermediation fosters entrepreneurship and innovation, necessary components for economic development.

2.1.2. Theory of Financial Liberalization

Financial Liberalisation refers to liberalising the financial sector to create a favourable environment to increase the money demand in the economy. It is assumed to occur in two ways; (i) By increasing the financial resources to lead the supply-induced demand for money (ii) By creating a suitable environment to make investments in the economy. The theory of financial Liberalisation pioneered by McKinnon (1973) and Shaw (1973) advocates for the Liberalisation of the financial sector as an effective way to accelerate growth. The theory suggests that the Liberalisation of financial markets allows financial deepening, which reflects the increasing use of financial intermediation by savers and investors and the monetisation of the economy. In other words, domestic savings are increased by lowering financial market frictions, and foreign capital is attracted. The theory is based on the premise that the higher the actual interest rate, the greater the degree of financial deepening, the more savings. Financial saving will be allocated and invested more efficiently than if saving is invested directly in the sector in which it takes place, without financial intermediation (Thirlwall 2005). The McKinnon-Shaw theory of financial Liberalisation suggests a complementarity relationship between the accumulation of money balances (financial assets) and physical capital accumulation in developing countries, leading to economic growth.

2.1.3. Financial Repression Theory of Financial Deepening

McKinnon & Shaw (1973) compounded the financial repression theory. This theory recognised the need for a developed financial system that immensely contributes to economic growth. It focuses on financial structure policies that will lead to effective operation without any manipulation. The theory developers recognised that financial repression is associated with the low development of an economy. Nnanna and (1998) supported this assertion, and the economy is related to distorted interest rates, volatile inflation, low savings, low level of financial intermediation, and investment levels in an economy. In supporting argument by Nzotta and Emeka (2009), the financial repression policies are vital for the operation of the financial institutions since financial intermediation is essential in the growth of an economy. This theory initiated the development of financial deepening that influenced the financial aspect of financial performance.

2.1.4. Schumpeterian Theory of Innovation

This theory was developed by John Schumpeter 1934 which emphasised the need to incorporate entrepreneurship and innovation to order to capture the opportunities for value creation and expansion of the operations in the firm through having a calculated risk-taking, having proactive managers and leaders recognise opportunities through intellectual capital of entrepreneurs to maximise on the return on assets and expansion of the financial position of the firm. The theory recognises that technological improvement is one of the innovations that have expanded the business operation, thereby influencing profitability.

2.2. Empirical Literature Review

Studies both local and international have a rationale for the effect of financial deepening on stock market performance. Demirguc-Kunt and Huizinga (2000), on the impact of the financial deepening on the bank profitability considering the cyclical

movements, showed that the banks' profitability is correlated with the business cycle. Also, it showed that there was a positive correlation relationship between financial deepening and profitability. Hence, financial deepening was essential in the financial sector, which influences the performance of the banking sector. Bikker and Hu (2002) established their study on the impact of financial deepening on bank profitability, taking into account the cycle relationship in the United States. It was revealed that deepening the financial assets, increasing the credit facilities, and expanding the financial services influences the profitability of the commercial banks in the United States. Also, the study identified some common elements in the external environment as determinants of profitability, such as the size of the banks, the capital structure of the banks, risk management, and expenses management. The finding showed that there is a significant and positive relationship between size and bank profitability. Goddard (2004) studied the impact of financial deepening on the small and medium-sized banks to capital and profitability.

The study established little savings experienced in the small and medium-sized banks, leading to the slow growth rate of profitability. Thus, there was a need for risk management in the banking sector to influence the financial deepening inherent in the banking business. The study further recognised that poor quality of the financial services, low level of liquidity is the primary cause of the bank failures. (Ndebbio 2004) airs that financial deepening as catalyse of growth positively affects the country's per capita growth. It shows that primarily in every economy, financial deepening stands tall in terms of its positive effect on GDP and economic development in general. For this reason, financial service expansion should be encouraged amongst all Sub-Sahara Africa countries to include the unbanked and underbanked in our society hence boosting economic activities. Also, another study confirms a single long equilibrium relationship between financial deepening, growth, and a set of control variables as evidence points to a bi-directional causality between financial deepening and growth (Apergis, Filippidis & Economidou, 2007).

According to (Okoli 2010), examining the relationship between financial deepening and stock market returns and volatility in the Nigerian stock market found a negative association with conditional volatility in both models. Furthermore, financial deepening affects the stock market negatively in model 1 and positively in model 2. Moreover, the relationship between financial deepening and conditional volatility can be described as negative. And positive for Models 1 and 2, respectively. Evidence shows that financial deepening is essential for economic growth, as no country could do without it. Paramati (2011) conquers that financial deepening is a necessary causal factor of economic growth. However, the strength of the evidence varies across countries and across the proxies used to measure financial deepening. The causal relationships are also predominately long-term in nature. Therefore, government policies to promote financial deepening in these countries must be persistent and sustainable to foster economic development.

According to Ochanda (2014), credit accessibility and financial innovation had positive effects on the growth of SMEs. He concluded that financial deepening has a positive impact on the development of SMEs in Nairobi County in Kenya. As these activities form part of the country's nationwide economy, economic growth and GDP would also affect them. In a further study, ((Linda & Bakang, 2014) proxied financial deepening with liquid liabilities, credit to the private sector, commercial-central bank assets, and commercial bank deposits. It was concluded that financial deepening has a positive and statistically significant effect on GDP and the other.

Consequently, a study by (Alenoghena 2014) established that stock market capitalisation, limited money diversification involving credit to the private sector, and interest rate significantly impacted the country's economic growth during the study period. Further, it was revealed that they were not significant in explaining the trend in economic development; they exhibited a robust coefficient in the process. To support this argument (Alrabadi & Kharabsheh, 2016) conclude that there is no statistically significant effect of financial deepening on economic growth in the short run. However, the cointegration tests show a statistically significant long-run equilibrium relationship between the two variables regardless of the proxy used for financial deepening. Moreover, the Granger causality test shows a bi-directional causality between economic growth and financial deepening when the latter is measured by the amount of credit granted to the private sector. (Best, Francis & Robinson, 2017), studied financial deepening and economic growth in Jamaica.

The study focused on whether liquid bank reserves to bank assets ratio and domestic credit to the private sector as a percentage of GDP strengthen financial deepening on the real sector and spur economic growth in Jamaica. Their study covered 1980 and 2014 with three proxies for financial deepening. It was found that Jamaica should first concentrate on developing its financial sectors, which can spur higher levels of economic growth in the real sectors of the economy. On interest rate reforms, Odhiambo (2019) opines that financial deepening positively impacts Kenya's interest rate reforms and economic development. Annual time series data was used from 1968 to 2004 and cointegration, and correlation models were applied. In affirmation, (Okeya & Dare, 2020) reveal that financial deepening has a significant positive effect on stock market development in the long run but negatively affects Nigeria's short run. They employed the Augmented Dickey-Fuller unit root test, Johansen cointegration test, Vector auto-regression, and Vector error correction mechanism.

2.3. Conceptual Framework

A conceptual framework is a tool that shows the relationship between the dependent variable and the independent variable. Kombo and Tromp (2009). It, however, provides an understanding of the subsequent findings by showing the relationship between the variables. This study shows how financial deepening affects stock market performance.

Table 1: Conceptual Framework

Independent Variable	Dependent Variables	Control Variables
Financial Deepening (M2)	Stock Market Performance Stack Value in Trade	GDP GOVT TO

3. DATA AND METHODOLOGY

This chapter expounds on the type of methodology adopted by this study to address the intended objectives. It provides an in-depth description of the population and the sample size, the source of data, and the study's design, which comprises variables and their justification and the research model(s) used for the estimations. The study adopted a quantitative research approach which is generally associated with the positivist paradigm. The study involved a sample of four (4) countries in Sub-Sahara Africa with a reasonable number of data points of the selected variables during the study period. The countries include South Africa, Kenya, Nigeria, and Ghana. In Sub-Sahara Africa, South Africa is advanced in terms of the stock market, followed by Kenya, Nigeria, and Ghana being the least. However, Ghana, Kenya and Nigeria, and South Africa are relevant in the international dispensation.

For this reason, the researcher deemed to do this comparative study whether there will be any policy relevance (accept or reject of hypothesis). The independent variable will constitute broad money (M2), GDP per capita, government expenditure, and trade openness, while the dependent variable is made of the stock value in business. The study used the annual data of these selected countries over 19 years, ranging from 2001 to 2019. The study used the secondary data in the estimations to achieve the test for the objectives outlined in the introductory chapter. The data is obtained from three credible sources: the World Bank's Development Indicators (WDI), International Monetary Fund (IMF) database, and the various selected countries' stock exchanges for conformity. The research was conducted using Panel Data from 2001 to 2019. The study used a panel dataset from four (4) selected Sub-Saharan African countries

The Seemingly Unrelated Regression (SUREG) model, as advanced by Zellner (1962), was adopted to estimate the four models simultaneously as a system of equations. According to Cameron and Trivedi (2010), the SUR model consists of *m* linear regression equations for *N* individuals. The *jth* equation for an individual is:

$Yij = Xij\,'\,\beta j + \mu ij$ (1)

Where, $Xij\,'$ is a column vector and the number of observations J is assumed to be significant, to do the analysis, we believe J → ∞ since the number of equations M remains fixed. With all observations stacked, the model for the jth equation can be written as:

$Yj = Xj\beta j + \mu j$ (2)

Where Yi and μi are M×1 vectors, Xi is an M × ki matrix, and βi is a ki × 1 vector.

The researcher then stacks the m equations to give the SUR model as:

$$\begin{pmatrix} y_1 \\ y_2 \\ \vdots \\ y_m \end{pmatrix} \equiv \begin{pmatrix} x_1 & 0 & \cdots & 0 \\ 0 & x_2 & \ldots & \vdots \\ \vdots & \vdots & \ddots & 0 \\ 0 & \ldots & 0 & x_m \end{pmatrix} \begin{pmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_m \end{pmatrix} + \begin{pmatrix} \mu_1 \\ \mu_2 \\ \vdots \\ \mu_m \end{pmatrix}$$

In this way, the models that are to be estimated are displayed below:

$SMKP_{it} = \delta_0 + \delta_1 FinD_{it} + \delta_2 Govt_{it} + \delta_3 GDP_{it} + \delta_4 TO_{it} + \varepsilon_{it}$ (3)

$SMKP_{it} = \alpha_0 + \alpha_1 FinD_{it} + +\alpha_2 Govt_{it} + \alpha_3 GDP_{it} + \alpha_4 TO_{it} + \varepsilon_{it}$ (4)

$M2_{it} = \beta_0 + \beta_1 FinD_{it} + +\beta_2 Govt_{it} + \beta_3 GDP_{it} + \beta_4 TO_{it} + \varepsilon_{it}$ (5)

$SMKP_{it} = \phi_0 + \phi_1 FinD_{it} + \phi_2 Govt_{it} + \phi_3 GDP_{it} + \phi_4 TO_{it} + \phi_5 YE + \varepsilon_{it}$ (6)

$M2_{it} = \varkappa_0 + \varkappa_1 FinD_{it} + \varkappa_2 Govt_{it} + \varkappa_3 GDP_{it} + \varkappa_4 TO_{it} + \varkappa_5 CE + \varepsilon_{it}$ (7)

Where FinD is the financial deepening, SMTP is the Stock market performance, GDP is the Per Capital Gross Domestic Product, GOVT is the Government Expenditure, TO is the Trade Openness, YE is the Year effect and CE is the Country effects were used as dummy variables.

The financial deepening variable is proxied by M2, representing the monetisation variable or broad money stock and is defined by money and quasi-money (M2) as a percentage of GDP. The monetisation variable is designed to show the actual size of the financial sector of a growing economy. Therefore, this variable is expected to increase over time if the financial industry develops faster than the real sector on the one hand and decreases if the financial sector grows slower than the real sector. According to other researchers, board money stock as a ratio of GDP is used as a typical indicator of the financial depth of the economy (see Goldsmith, 1969; King and Levine, 1993a).

4. FINDINGS AND DISCUSSIONS

4.1. Descriptive Statistics

This section discusses the findings of the study using the econometric techniques discussed earlier. The discussions are boarded on descriptive statistics, pre-estimating tests, the Pearson correlation matrices of the various models, and a detailed dynamic panel result in analysis, emphasising the link between financial deepening and stock market performance.

Table 1: Result of Descriptive Statistics

	SMK	M2	FIND	GDP	GOVT	TO
Mean	69.69455	39.47946	49.12682	4.845820	12.67969	56.60847
Median	15.05339	34.35490	21.25696	5.238528	12.99592	55.92946
Maximum	352.1564	80.79989	160.1248	15.32916	21.29574	110.0459
Minimum	2.240000	11.30051	8.084343	-1.616869	0.951747	20.72252
Std. Dev.	100.2030	19.93705	54.46925	2.974570	5.547306	18.50248
Skewness	1.411163	0.774958	1.132071	0.583766	-0.106958	0.595715
Kurtosis	3.410745	2.330719	2.420152	4.744090	1.977844	3.538071
Jarque-Bera	25.75841	9.025560	17.29813	13.94911	3.453450	5.411921
Probability	0.000003	0.010968	0.000175	0.000935	0.177866	0.066806
Observations	76	76	76	76	76	76

Note: Financial deepening (FinD) is the enhancement of the financial services that are tailored to all the levels in the society, Stock Market Performance (kt) is the indicator of the stock market as a whole or a specific stock, broad money (M2) is a proxy of financial deepening which refers to funds and quasi-money as a percentage of GDP, Gross domestic product per capita (GDP) is the gross domestic product divided by the total population, Government expenditure (Govt) is referred to money spent by the public sector on the acquisition of goods and provision of services such as education, healthcare, social protection, etc. and Trade openness (TO) is the sum of imports and exports normalised by GDP.

The results of the descriptive statistics of the dependent and independent variables are shown in table 1 above. The descriptive statistics of the data are shown in six columns containing the variables SMK, M2, FIND, GDP, GOVT, and TO. SMK obtained a mean of 69.69% on the table, with a maximum of 352 and a minimum of 2.24%. The meaning of M2 is 39.48%, with a maximum of 80.80% and a minimum of 11.30%. FIND obtained a mean rate of 49.13%, a maximum of 160, and a minimum of 8.08%. The average GDP rate was 4.85%, with a high of 15.33% and a low of -1.62%.GOVT obtained a mean rate of 12.68%, with a maximum of 21.30% and a minimum of 0.95%. The mean of TO was 56.60%, with a maximum of 110, with a minimum rate of 20.72%.

4.2. Correlation Matrix

The performed correlation analysis measured the strength and the direction of the linear relationship between two variables. The correlation tests show a positive relationship between a dependent variable and all explanatory variables except GDP, which offers a week negative relationship with SMKT.

Table 2: Result of Correlation Matrix

	SMKT	M2	FIND	GDP	GOVT	TO
SMKT	1.000000	0.916417	0.964924	-0.464116	0.758268	0.006837
M2	0.916417	1.000000	0.956252	-0.493132	0.894633	0.142117
FIND	0.964924	0.956252	1.000000	-0.456808	0.800728	0.039629
GDP	-0.464116	-0.493132	-0.456808	1.000000	-0.434724	0.123675
GOVT	0.758268	0.894633	0.800728	-0.434724	1.000000	0.237074
TO	0.006837	0.142117	0.039629	0.123675	0.237074	1.000000

4.3. Results of Validity and Reliability

The appropriateness and accuracy of the Seemingly Unrelated Regression (SUR) technique adopted are based on the validity of several tests. These test results are provided in tables 3 and 4 below. The order of integration was tested using Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1972) unit root tests. Unit root tests are conducted to verify the stationarity properties (i.e., absence of a trend and long-run mean reversion) of the time panel data to avoid spurious regression. The results show that stock market performance (SMTP) and GDP were stationary at a level (0.0358 and 0.0107 respectively) whiles broad money (M2) gave 0.0053, Government expenditure (GOVT), 0.0001, and trade openness (TO), 0.0003, which were all stationary at first difference.

Table 3: Augmented Dickey-Fuller (ADF)

	SMTP	M2	GOVT	GDP	TO
Level	0.0358**	0.935	0.3367	0.0107*	0.6159
1st Difference	-	0.0053**	0.0001**	-	0.0003**

Table 4: Hausman (1978) Specification Test

	Coef.
Chi-square test value	32.933
P-value	0

The Hausman test was performed to help choose whether to use the fixed or the random effect model in analysing panel data. When the p-value of the Hausman test was significant at 0, we reject the null hypothesis in favour of the alternative, which means that the fixed effect model is appropriate in this regard. From table 4 above, the p-stat of the Hausman test is statistically significant because $prob < 0.05$. We, therefore, resort to using the fixed-effect model in the subsequent analysis. The fixed effect model is also appropriate for studying variables that can change over time but are not likely to vary across entities. Given that macroeconomic variables are expected to change over time, this study has produced the best results to help make the needed policy recommendations.

Table 5: Breusch–Pagan Test

	Coef.
Chi-square test value	0.00
P-value	1.00

The study also conducted the Breusch–Pagan test of independence. According to Trevor Breusch and Adrian Pagan (1979), "the Breusch–Pagan test of independence examines the presence of heteroskedasticity. The Breusch–Pagan test was a chi-squared test with the test statistic distributed with k degrees of freedom theoretically; if the test statistic has a p-value below an appropriate threshold (e.g., p < 0.05), the null hypothesis homoskedasticity is rejected, and heteroskedasticity assumed.

From our test result, as shown in Table 5, the Breusch–Pagan test statistic of chi2 = 0.00 has a P-value = 1.0000. It means the test statistic is not significant, and thus, we fail to reject the null hypothesis of homoskedasticity. The overall fitness of the four models was also using the R-squared, resulting significantly throughout the four models, 0.857, 0.931, 0.945, and 0.975, respectively. Finally, the F Statistic of each of the four models is significant at 1%, as shown in Table 4.5 below. This is evident that the independent variables used in each of the four models are jointly significant and are appropriate.

Table 6: Main Results

VARIABLES	(SMTP) Model 1	(M2) Model 2	(SMTP) Model 3	(M2) Model 4
M2	7.073***		2.786***	
	(0.380)		(0.824)	
SMTP		0.135***		0.0501***
		(0.00726)		(0.0148)
GDP	1.338	-0.215	1.329	-0.291*
	(1.643)	(0.225)	(1.256)	(0.166)
GOVT	-8.355***	1.264***	1.938	0.0979
	(1.466)	(0.156)	(1.674)	(0.226)
TO	-0.479**	0.0625*	0.0734	0.295***
	(0.242)	(0.0338)	(0.515)	(0.0594)
Constant	-82.99***	11.53***	-125.9***	-1.628
	(18.10)	(2.485)	(42.26)	(6.009)
Year Effect	No	No	Yes	Yes

Country Effect	No	No	Yes	Yes
Observations	76	76	76	76
R-squared	0.857	0.931	0.945	0.975

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results show that broad money supply, a proxy for financial deepening, has a positive and statistically significant impact on stock market performance in each of the four models. This is in agreement with the study carried out by (Okeya & Dare, 2020). Their analysis confirmed that financial deepening has a significant positive effect on stock market performance in the long run but negatively affects the short run. From the table, a unit increase in broad money ($M2$) will increase stock market performance in model one by 7.073, model two by 0.135, model three by 2.786, and model four by 0.0501 in stock market performance 1% significant level all other things being equal. It is shocking to infer from the table that GDP has no statistically significant impact on stock market performance.

Government expenditure has a negative statistically significant impact on stock market performance in model one, positive and statistically significant coefficient in model two, respectively. A unit increase in government expenditure will decrease stock market performance by eight units in model one and increase stock market performance by 1.264 respectively at a 1% significant level holding other factors constant. It has largely agreed with the finding of (Okoli, 2010) who argued that financial deepening has no relation with government expenditure; therefore, both do not relate. Again, trade openness returned negative on the one hand and positive while being statistically significant coefficients in models one and four respectively but insignificant positive coefficients in models two and three.

Concerning year and country effects, table 4.4 shows neither year effect nor country effect for models 1 and 2. However, the results were different for models 3 and 4, indicating year and country, respectively. As inferred from the table, financial deepening reduced from 7.073 units to 2.786 from models 1 and 3, respectively. In the same vein, stock market performance has also witnessed a downward trend from 0.135 to 0.0501 between model 2 and model 4. Finally, trade openness has also increased from -0.479 to 0.295, showing a large positive significant change. It might result from the global economic crunch and selected countries' specific challenges through various financial reforms.

5. CONCLUSION, RECOMENDATIONS AND PUBLIC IMPLICATIONS

Although both trade openness and government expenditure determine the level of stock market performance, financial deepening predicts stock market performance better as it recorded the highest result in table 4.4 above. Conversely, GDP does not predict stock market performance in any of the four models specified. These results indicate that to predict stock market performance, one needs to consider the level of financial deepening first before any other variable. This variable is the most critical predictor of stock market performance in Ghana, Kenya, Nigeria, and South Africa. This is an explicit endorsement of literature as it confirmed in various studies that financial deepening is a catalyst of economic growth and a significant contributor to GDP.

From the findings above, the study recommends the following: Firstly, all countries involved in this study and other Sub-Sahara African countries should implement policies that seek to enhance financial deepening in the form of an increase in broad money supply as a percentage of GDP. The increase in overall money supply allows for investment in productive sectors of the economy. Secondly, to intensify policies that increase access and usage of financial services to include members of the public that were excluded from the formal banking system. This is because monetary deepening policies broaden the financial sector's scope of activity, increase traditional financial institutions' financial assets, and give economic agents more opportunities to save and invest. Thirdly, GDP does not significantly affect the performance of stock market performance in any of the models. Governments should invest less in GDP or diverse investments meant to boost GDP for more productive use. Again, because GDP relates negatively to all the variables, it is in the interest of economic growth that governments in the countries studied drop any attempt to boost GDP.

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