



# Budget Deficits and Stock Market Performance in Emerging and Frontier Markets in Africa

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## Abstract

Stock markets provide firms an important source to raise equity capital to finance investment. However, some macro indicators, such as budget deficits, affect these markets and can hinder their performance. In Africa, although the performance of the Stock Exchange has been affected by budget deficits from January 2000 to December 2017, the mechanisms of these relationships have not been studied. The purpose of this research was to examine the relationships between budget deficits and stock markets in Africa. The research questions addressed whether budget deficits had a significant effect on stock market performance. The data used for the study were obtained from the World Bank's World Development Indicators, Association of Security Exchange in Africa and International Monetary Fund financial statistics. The results indicate that a rise in budget deficits, holding other factors constant, negatively affects stock market performance. This might be due to the excessive borrowing of governments from the domestic market, which affects people's willingness to patronise the stock market and to lend to firms for long-term investments. Other factors, such as money supply and GDP growth rate, significantly improve stock market performance. The implication of these results is that the government should manage deficit financing prudently with regard to borrowing to support stock market activities in Africa.

## Subject Areas

Finance

## Keywords

Budget Deficit, Stock Market, Market Capitalization, Stock Prices, Emerging Markets

## 1. Introduction and Background of the Study

Over the last two decades, stock markets' contributions to economic develop-

ment have attracted significant attention from researchers. This has come as a result of the financial liberalisation and reforms in the 1980s and 1990s [1] [2] [3]. Some of the reforms include the removal of credit ceilings, interest rate liberalisation, privatisation of state-owned banks and the promotion of stock market development. These reforms deregulated the financial markets and made them attractive sources of capital for both the private and public sectors, as evidenced by [4]. They also raised long-term funds for financing growth and development, increased liquidity capital and promoted financial independence. In Africa, the number of stock markets has increased dramatically from only eight before 1990 to twenty-nine as of 2018 [5]. Despite this remarkable growth, many of these markets still face the problem of underdevelopment compared to the well-developed stock markets in Europe, Asia and North America, with the exception of the Johannesburg stock market and Egypt market, which are classified as emerging markets by the Morgan Stanley Capital International (MSCI). African stock markets are classified as either emerging or frontier markets. Emerging markets are stock markets in developing economies that have the potential of other markets in industrialised countries. [6] concluded that emerging markets have a higher return with higher volatility than developed markets. Frontier markets, on the other hand, refer to pre-emerging markets that are investable but with low market capitalization. [7] concluded that since the 1980s, frontier markets have been offering returns similar to those of emerging markets. Frontier markets have low correlation with both developed and emerging markets and hence offer good opportunities for diversification to investors.

Despite the rapid growth of stock markets across the African continent in recent years, particularly markets in South Africa, Egypt, Nigeria and Kenya, they are still relatively underdeveloped, comparable to industrialised markets such as London, New York, Japan and the NASDAQ [8]. According to [9], the markets in Africa have been ineffective in raising capital for real investment and suspects that this might be due to some external factors that influence these markets. Stock Market Performance is the indicator of the stock market as a whole or of a specific stock. It gives a signal to investors about their future moves. The movement in the stock prices and the indexes give the idea of the near future trend of the stock, sector or the economy as a whole. Stock Market Indexes typically give the overall performance of the market or of a specific sector. Stock prices are indicative of stock performance. A rising price of a particular stock is perceived as positive news or signal. However, a decrease in stock prices means that there must be some news regarding its performance that is generating negative signals to the market. The critical question that continues to remain unanswered is whether government fiscal policies and institutions have any effect on stock market performance.

Government budgets are crucial to the operation of the economy, as they provide the government the means to spend and to raise revenue. They are used to achieve the various socioeconomic targets of the government and thus ensure the proper utilisation of resources to achieve economic growth and develop-

ment. According to [10], the effectiveness of government budgets in stimulating economic growth in various sectors of the economy depends on whether expenditure is productive or not. [11] concluded that all the regional blocks in Africa (West Africa, North Africa, mid Africa, East Africa and Southern Africa) have had consistently higher expenditures over revenue through a period of thirty-three years (1980 to 2012). Other studies have revealed that government revenue significantly dropped by 22 percent of GDP and expenditures have an unprecedented increase of 28 percent of GDP. This has led to the persistence of budget deficits and the failure of the culture of budget discipline. [12] defines budget deficits as the amount by which government expenditure exceeds the revenues received from all types of taxes.

Budget deficits depress stock prices based on the avenue of financing. [13] argue that an unsustainable deficit will ultimately have to be monetized, which implies that large deficits risk higher inflation, which undermines investors' confidence. Hence, the firm's ability to raise capital on favourable grounds diminishes and crowds out the private sector. As current investment falls, it reduces the future competitiveness of the economy. Large budget deficits could crash a stock market [14]. Budget deficits also affect stock prices through the expected future taxes, especially when taxes are below their revenue maximising level. The Ricardian Equivalence hypothesised that an unsustainable deficit would lead to future tax increases, which may curtail current consumption and reduce stock prices. The average deficit of Africa in 2000 was \$2.3 billion, which increased to \$6.2 billion in 2001. This skyrocketed to \$8.9 billion in 2009. Since then, it has been balancing consistently between two and three billion until 2017, when it recorded one of the lowest of \$1.7 billion [15].

Studies [16]-[21] for developed countries have concluded that budget deficits have a detrimental effect on the performance of stock markets. However, [22] maintains that budget deficits have little effect on stock market performance.

Despite all the numerous empirical studies with conflicting results, most of these studies were conducted on a country-specific basis. Given that stock markets are patronised not just by the country but across the continent, it is important that we properly understand the effect of these deficits on stock market performance. This provides renewed interest in providing further evidence on stock market performance and budget deficits in frontier and emerging markets using panel data methodology and thus contributes to the literature. This study also uses recent updated data and uniquely includes other candidate macroeconomic variables, such as exchange rate, inflation, money supply, interest rate and gross domestic product (GDP), as control variables, which by the literature are believed to be potential systematic risks to stock market performance to evaluate their effect on the frontier and emerging markets in Africa.

## 2. Review of Relevant Literature

There are three conflicting theories that have provided explanations on the relationship between budget deficits and stock performance and are found in the

work of [14] [23]. They include the neoclassicals, Keynesian and Ricardian equivalences. Neoclassicals have argued that one of the effects of financing budget deficits is the crowding out of the private sector. This strand of the theory suggests that when governments finance their activities with deficits, they deny the private sector access to the same funds and hence affect stock market performance. The Keynesian theoretical model, on the other hand, suggests that the financing of budget deficits stimulates aggregate demand and therefore boosts stock performance. Thus, this presents a contrary view to the neoclassical argument of the harmful effect of budget deficits on stock market performance. The Ricardian equivalence hypothesis argues that stock prices and budget deficits have no significant relationship. The hypothesis suggests that parents are altruistic and will bequeath their properties to their children, and this would not affect their demand for stock investment [24], or people rediscount their income to cater to the future tax increase. Thus, each strand of the theoretical literature presents a different argument on the possible effect of budget deficits on stock market performance.

Studies have reported differing findings with respect to the relationship between budget deficits and stock market performance. [16] used the multivariate Granger-causality modelling technique and concluded that budget deficits exert a significant negative effect on stock prices because of the slow dissemination of data information in Canada and market participants in a given month may not have full knowledge of the deficit figures. [25] also examined the efficiency of the Canadian stock market to fiscal policy. The researchers employed the alternative innovative vector autoregression (VAR) estimation method and the impulse response function and concluded that stock returns fully reflect all the available information of monetary and fiscal policies and thus support the efficient market hypothesis. [17] investigated stock markets in Australia and France to determine whether budget deficits influence stock price movement. For Australia, the observation spanned from 1965 to 1995 and that of France was from 1975 to 1993. The study concluded that budget deficits significantly influenced the movement of stock prices, thus violating the efficient market hypothesis.

[18] studied the relationship between budget deficits and stock market prices of industrialized countries. The countries were Japan, the USA, France and Germany. Employing the Granger causality and vector autoregression (VAR) technique, the study found a negative correlation between government deficits and stock prices in the USA and Germany and a positive correlation for France and Japan. The study therefore concluded that the response by equity markets to rising or falling government budget deficits is not uniform across industrialized countries and may depend on other factors, such as cultural and market-specific variables. [26] investigated the relationship between the government deficit and the stock prices of the USA. The study incorporated the effect of inflation and other demographic structures. The study reported that budget deficits and inflation have a negative influence on stock prices. [27] examined the relationship between stock prices and budget deficits of India and Pakistan from 1990 to

2010. The study reported that there was a positive relationship between stock price and budget deficits in Pakistan, which was because of high developmental expenditure, and reported a negative relationship in India, which was also a result of high current government spending.

[14] argue that the effect of budget deficits on stock markets depends on the condition of the economy. The study argues that during recession, financing of budget deficits has a positive effect on stock prices, and the reverse occurs when the economy is in full employment. [28] investigated the effect of macroeconomic policy actions on stock market development in Ghana. The study used the annual time series data spanning from 1991 to 2011 and employed autoregressive distributed lag (ARDL). The study used market capitalization as a proxy for development. The study concluded that exchange rates and government revenue reduce stock market development. However, government expenditure and the government borrowing interest rate exert no influence on stock market development. [19] used vector auto regression and Granger causality analysis to examine the dynamic link among federal budget deficits, interest rates and the stock market for the United States from 1960Q1 to 2006Q4. The study concluded that budget deficits negatively impeded stock returns, and a large budgetary deficit also affected the interest rate.

[29] employed the VAR and ECM techniques to investigate the effect of budget deficits on stock prices in Nigeria using annual time series from 1984 to 2010. The results revealed that fiscal deficit was negatively related to stock prices. [20] also investigated the causality between the real stock market returns and federal deficit using the structural VAR to account for the arbitrary ergogeneity restrictions on the variables and US quarterly time series observations. The results found evidence of a significant positive relationship between stock market returns and real federal budget deficit returns for both samples. [30] examined the existence of a long-run relationship between budget deficits and stock prices of Bangladesh and whether there was a causal flow between the variables and concluded that there was a causal flow between the two variables. [21] investigated the relationship between budget deficits and stock prices in India from 1988 to 2015. The study concluded that large government spending in India often coincided with higher interest rates, which pushed government toward simulative fiscal actions leading to higher inflation, thus lowering investors' confidence and consequently to a bear market. [31] also investigated whether changes in budget deficits cause changes in stock prices using monthly data adjusted for inflation from January 2008 to December 2015. The results indicated a significant positive relationship between real stock market returns and real budget deficits for both samples. [32] conducted a study on the relationship between budget deficits and stock market performance for a panel of eight African countries from 2000 to 2016. The study utilised the dynamic fixed effect and Granger causality test and reported that there was a significant long-run relationship between stock prices and budget deficits. It also reported that budget deficits depressed stock market performance in the short run but exerted a positive influence on stock market

performance in the long run.

### 3. Empirical Strategy and Data

The model estimated follows the Arbitrary Pricing Theory (APT), developed by [33]. The theory recognises the myriad of systematic factors that influence long-term financial asset returns. The returns of stocks are affected by two factors: systematic factors and unsystematic factors, also known as idiosyncratic risks. The major sources of risks in the portfolio return are the systematic factors. The portfolio returns depend on the same common factors but yield different returns based on the sensitivity of each individual portfolio to the factors. The logic holds that two financial assets that are close substitutes should be sold at the same price. In effect, the difference occurs based on the residual risk or idiosyncratic risks that they bear. Subsequently, they offer the investors the same expected returns as two treasury bills or two shares of the same stocks that offer the same expected returns. The model is represented in Equation (3.1)

$$E(R) = R_f + \Psi_{j1} * (RF_1 - R_f) + \dots + \Psi_{jk} * E(RF_k - R_f) \quad (3.1)$$

In Equation (3.1),  $E(R)$  is the return on the asset,  $R_f$  is the risk free rate of return and  $\Psi_j$  is the asset sensitivity to factor.  $RF_k$  is the risk premium, and  $k$  is the number of systematic factors that affect returns.  $j$  is an asset. The ex post model that captures the unsystematic risks is specified in Equation (3.2).

$$E(R_j) = R_f + \Psi_{j1} * (RF_1 - R_f) + \dots + \Psi_{jk} * E(RF_k - R_f) + \Omega_j \quad (3.2)$$

$\Omega_j$  is added to Equation (3.1) to capture the unsystematic or idiosyncratic events. This theory adopted from [34] incorporated factors that influence the determination of stock prices, which include unexpected inflation, industrial production changes, unexpected shifts in risk premiums and the movement in the interest rate structure. Equation (3.2) indicates that the actual returns comprise the expected return on risk free and the sensitivity of a factor time factor movement plus idiosyncratic or residual risk. The empirical study suggests a 4-factor model that effectively captures the influence of the systematic elements on stock returns.

$$SP = F(INF, IP, RP, INT) \quad (3.3)$$

Other studies, such as Darrat (1988), incorporated other variables, such as budget deficits, into Equation (3.3) to capture the relationship with stock prices. The augmented APT function is specified in Equation (3.4).

$$SP = F(INF, IP, RP, INT, BD) \quad (3.4)$$

where  $SP$  is stock prices;  $INF$  is inflation;  $IP$  is industrial production;  $RP$  is risk premium;  $INT$  is interest rate; and  $BD$  is budget deficits. Similar to the work of Ali and Hasan (1993), the inclusion of budget deficits is not a proper argument of the stock price function since it is not part of the APT. However, budget deficit is included to capture the sensitivity effect on stock prices.

Equation (3.5) is the functional model adopted from Equation (3.4) without

risk premium and industrial production due to unavailability of data for those variables.

$$Y_{it} = f(BD_{it}, EXC_{it}, MS_{it}, INF_{it}, INT_{it}, GDP_{it}) \quad (3.5)$$

$Y_{it}$  Denotes the stock prices and market capitalization for country  $i$  at time  $t$ ,  $BD_{it}$  Denotes budget deficits for country  $i$ ,  $EXC_{it}$  represents the official exchange rate, and  $MS_{it}$  represents the money supply.  $INF_{it}$  represents inflation, and  $GDP_{it}$  represents the growth of gross domestic product.

For estimation purposes, Equation (3.5) is indicated in Equations (3.6). The  $\alpha$ 's are the coefficients to be estimated, and  $\varepsilon_{it}$  is the random error term. The study estimated both fixed and random effects models for the effect of budget deficit on stock market performance. The Hausman test was further used to establish the most appropriate of the two models.

$$\ln Sp_{it} = \alpha_0 + \alpha_1 BD_{it} + \alpha_2 \ln EXC_{it} + \alpha_3 \ln MS_{it} + \alpha_4 \ln INF_{it} + \alpha_5 \ln INT_{it} + \alpha_6 \ln GDP_{it} + \varepsilon_{it} \quad (3.6)$$

The objective of this study is to investigate the dynamic relationship between budget deficits and stock performance for a panel of twenty emerging and frontier African markets. The panel data set is an annual time series covering the period of 2000-2017, and it contains data for Botswana, Egypt, Ghana, Ivory coast, Kenya, Libya, Malawi, Mauritius, Morocco, Namibia, Nigeria, Rwanda, South Africa, Sudan, Swaziland, Tanzania, Tunisia, Uganda, Zambia and Zimbabwe. The choice of period for the study was based on the data availability and the need to balance the data set. Stock prices and market capitalization were taken from the African security exchange association (ASEA), and budget deficits, which comprise primary balance and interest payments on debt, were taken from IMF international financial statistics. Inflation, official exchange, money supply and interest rate were obtained from the World Bank world development indicators (2018). The study uses the main index of stock prices as a proxy for stock market performance [32]. Market capitalization captures the company value used as a proxy for stock market development [28]. Stock prices and market capitalization are measured in US dollars. [35] [36] proposed the exchange rate as a potential variable that determines stock market performance and development. It is therefore included in this study to recognise the openness of African markets to capital movement as the result of advanced technology. The increase in capital mobility and international trade has made the exchange rate an important determinant of stock markets and the business environment [33]. According to [37] and [38], interest rate is an important variable that measures financial risk in shaping portfolio decisions by investors and as a macroeconomic variable that influences the stock market. Studies such as [39] and [40] stated that the interest rate has an effect on stock market performance. The reason is that a lower interest rate reduces the cost of borrowing for firms with higher future profitability prospects and higher dividends to shareholders and eventually improves stock market performance.

The study uses M2, which comprises M1 (demand deposits, traveller checks and other checkable deposits), saving accounts and time deposits. Money supply (M2) captures the impact of monetary policy on stock market performance. Some studies have argued that money supply has an inverse relation with stock prices [29] and [34]. Others have argued that the money supply has a direct relationship with stock prices [34]. The inclusion of inflation in this study captures the possible indirect influence of budget deficits on stock prices via the consumer price index. Investigation in the financial literature has revealed an inverse relationship between inflation and stock returns [35] [41]. According to [11], GDP per capita is proxied as economic growth. Therefore, any slight change in GDP, whether an increase or a decrease, has a significant impact on stock markets. A nonperforming economy reflects low earnings for industries, which translates into lower stock prices and vice versa. Investors therefore pay critical attention to positive and negative GDP growth when assessing their investment ideas or investment strategies. All variables are in natural logarithmic form except budget deficits, which have negative values.

## 4. Presentation and Discussion of the Results

### 4.1. Descriptive Statistics

The descriptive statistics of a balanced panel of the twenty African stock markets from 2000 to 2017, consisting of the mean, the standard deviation, the minimum and the maximum values, are summarised in **Table 1**.

In the descriptive statistics reported in **Table 1**, the average stock price over the entire sample is \$17469.88, indicating the performance of the company's stock prices over the period. If Company XYZ's stock price is trading above the mean, it could indicate that the stock is overvalued. The mean also measures the

**Table 1.** Summary statistics of the variables.

Variables	Observation	Mean	Standard Deviation	Minimum	Maximum
Stock prices (\$US)	360	17469.88	89634.6	0.0430	1,143,261
Market capitalization (\$US)	360	151.764	852.735	0.0017	14340.53
Budget deficits (\$US)	341	-188.316	151.836	-544.6	-0.114
Official exchange rate (\$US)	307	161.503	412.251	0.444	3611.224
Money supply (\$US)	360	40.07	153	0.0794	122.78
Inflation (%)	360	8.37	2.66	3.477	32.90
Interest rate (%)	360	25.18	56.84	0.1875	578.98
GDP growth rate (%)	360	5.777	7.7890	0.0395	123.13

**Source:** Author's construction.



expected prices or the centre of location of the stock prices in Africa. Fundamental analysis, which involves the use of past prices, always relies on the average performance over the year to make their investment decision. It has a standard deviation of \$89634.6. The high standard deviation indicates that African stock markets are highly risky. Since the standard deviation is higher than the mean, it implies that the stock prices are highly volatile in Africa between the countries. The minimum and maximum values of stock prices are \$0.0430 and \$1,143,261, respectively. Market capitalization is recorded in billions. It has a mean value of \$151.764 and a standard deviation of \$852.73, meaning that the market sizes in Africa do not vary significantly across countries. It has maximum and minimum values of \$14340.53 and \$0.0017, respectively. Budget deficits are also recorded in billions. It has a mean value of \$188 and a standard deviation of \$151. The maximum and minimum values for the variable are \$0.114 and \$544.6, respectively.

In addition, the mean of the official exchange rate is \$161.50, with a corresponding standard deviation of \$412.251. The mean value represents the average rate of depreciation of the local currency to the US dollar or the expected rate of appreciation of the US dollar. The variable recorded a maximum value of \$3611.22 and a minimum value of \$0.444. Money supply is recorded in billions. It has a mean, maximum and standard deviation of \$40.07, \$122.78 and \$153, respectively. The mean value of \$40.07 represents the expected rate of money growth in the economy. Inflation also recorded a mean, maximum and standard deviation of 8.37%, 32.90% and 2.66%, respectively. The mean value of 8.7% captures the average price increase in the economy. In addition, the interest rate has a mean of 25.18%, measuring the expected increase in the lending rate. a standard deviation of 056.84% and a maximum value of 578.98%. Gross domestic product growth has a mean of 5.77%, representing the average rate of increase in goods and services in the economy. The maximum and minimum values were 123.13% and 0.039%, respectively, with a standard deviation of 7.78%. It is evident from the descriptive statistics that market capitalization is the most dispersed with a standard deviation of \$852, while inflation is the least dispersed with a standard deviation of 2.66%.

The descriptive statistics only summarise and describe the data set. Beyond that, it cannot be used in reaching conclusions regarding any of the research questions posed in this study.

## 4.2. Estimated Results

The results from the fixed effects and random effects estimates of the effect of budget deficit on stock market performance are presented in **Table 2**. The Hausman specification test shows that the most appropriate model is the Random effects model; hence, I discuss the results for the Random effects model. The results are presented in four columns; **Table 2**, column 1 and 2 present the results for the entire model, while **Table 2**, column 3 and 4 present the results excluding the two emerging markets, South Africa and Egypt. The results

**Table 2.** Empirical results.

Variables	Results for the entire sample		Results without frontier markets	
	REM	FEM	REM	FEM
	1	2	3	4
Constant	7.987*** (1.128)	8.052*** (1.077)	8.116*** (1.210)	8.292*** (1.173)
Budget deficit	-0.194*** (0.045)	-0.193*** (0.046)	-0.198*** (0.049)	-0.194*** (0.050)
Exchange rate	-0.089*** (0.029)	-0.082*** (0.031)	-0.089*** (0.029)	-0.084*** (0.031)
Money supply	0.042 (0.096)	0.040 (0.099)	0.042 (0.101)	0.034 (0.104)
Inflation	-0.044 (0.417)	-0.050 (0.420)	-0.133 (0.452)	-0.152 (0.454)
Interest rate	-0.213 (0.140)	-0.213 (0.144)	-0.277 (0.148)	-0.298* (0.153)
GDP growth rate	0.156* (0.086)	0.150* (0.086)	0.172* (0.090)	0.161* (0.091)
R-squared	0.108	0.114	0.091	0.095
F-statistic (p-value)	0.000***	0.000***	0.000***	0.000***
Number of obs	322	322	287	287
Number of groups	20	20	18	18

Notes: p values in parentheses below estimates. \*, \*\* and \*\*\* indicate significance at 10%, 5% and 1%, respectively. F-statistic is for the joint significance of the coefficients of the explanatory variables.

presented in (Table 2 column 1) indicate that budget deficits have a significantly negative impact on stock market performance. A percentage increase in budget deficits will reduce stock market performance by 19.4%. The interest rate became insignificant for the stock market performance. Budget deficits negatively affect stock market performance in frontier markets. The coefficient of  $-0.198$  is significant at the 1 percent significance level. The results show that a one percent increase in budget deficits would lead to a decrease in stock prices by 19.8 percent. Similarly, a percent decrease in budget deficits will increase stock performance by 19.8 percent. Gross domestic growth rate has a positive significant effect on stock market performance. It is significant at one percent.

### 4.3. The Hausman Test

The Hausman test was conducted to determine the most appropriate model between the fixed effect model and the random effect model. The results from the test failed to reject the null hypothesis of the random effect model being preferred to the fixed effect model. These results are shown in Table 3.

**Table 3.** Hausman test for the fixed effect versus random effect.

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**Test: difference in coefficients not systematic (Random effect)**

$$\text{Chi2}(6) = (b - B)'[(V_b - V_B)^{-1}](b - B)$$

$$= 0.78$$

$$\text{Prob} > \text{Chi2} = 0.9926$$


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Source: Author's computation using Stata 13.

From the above diagnostic, the random effect model is suitable for the estimation of the relationship between budget deficits and stock market performance.

#### 4.4. Discussion of Results

**Table 2** presents the estimated results of the effects of budget deficits on stock market performance in Africa. The results indicate that budget deficits negatively affect stock market performance in Africa. The results further revealed that a 1 percent increase in budget deficits would lead to a decrease in stock prices by 19.4 percent. Large budget deficits in Africa reduce the growth of stock market activities through discouragement of investments. Most governments in developing countries finance budget deficits through treasury bills and the issuance of local bonds, and as a result, they increase the interest rate of treasury bills to attract investors. When this occurs, there is movement of funds from the stock markets to the money market which is risk-free, hence leaving the stock markets empty. It is also not uncommon in Africa for governments to create wealth through money creation (redenomination of the currency and addition of new notes), especially during election periods. This creates inflation and hence reduces the level of confidence of investors to invest in the stock markets. Large and persistent budget deficits become a threat to investors and other stock market participants. Budget deficits in Africa may also be interpreted as an increase in taxes, which makes the demand for investment poorer for people. Slow dissemination of budget deficit data causes the inability of stock markets to incorporate budget deficit information. Furthermore, budget deficits negatively impede stock prices. From theory, large budgetary deficits affect the interest rate. In addition, it reduces business capital spending and consumption expenditure, thus undermining real economic activities. The implication is that participants in the markets are not always aware of the full impact of budget deficits and, if even aware, do not consider it as a relevant variable in stock pricing. This result lends support to [16] [18] [19], who also found negative relationships in industrialised economies. However, the results contradict the works of [17] [20] [30] [31].

The results from the REM also show that the exchange rate has a negative and statistically significant effect on stock market prices. The results further revealed that a one percent increase in the official exchange rate would lead to a decrease in stock performance by 0.089 percent. This is consistent with the study's a priori expectation that exchange rate movement will affect stock prices in Africa. This is because the depreciation of a currency results in capital outflow or capital

flight, which depresses the stock markets in Africa. In the era of unstable exchange rates, people are more likely to move their investments where there is some stability. The results are consistent with [8] [42], who found a negative relationship between exchange rates and stock prices, however, [43] [44] found otherwise. According to [44], currency appreciation often improves stock returns in the German financial market but drag returns downwards in the UK and Canadian markets. This evidence provides a further basis to push for export-oriented industrialization to cushion the currencies in many of these frontier markets.

The results from **Table 2** further confirm that the GDP growth rate positively influences stock market performance. More specifically, a percentage increase in the GDP growth rate results in an increase in stock prices by 0.156 percent. This is also consistent with the study's a priori expectations that growth in income will encourage people to invest given the possibility of excess funds from income. Additionally, investors always like to invest in countries whose economies are performing well and hence have a positive relationship. Empirical works with similar findings include [8] [45] [46]. The above studies concluded that stock markets provide an environment for raising capital through share issuance trading and diversification away from unsystematic risks.

## 5. Summary of the Findings

This study investigated the effects of budget deficits on stock market performance using a panel data set covering 20 frontiers and emerging countries, classified as African countries by the World Bank over the sample period 2000 to 2017. Following standard theoretical and empirical literature on the relationship between budget deficits and stock market performance, the study estimated the random effect model. The study measured market performance by using the main index of stock prices. The study presents the Arbitrary Asset Pricing Model underpinning the theoretical framework of the study. The theory presents the analysis of how equity prices are determined based on systematic risk and idiosyncratic risks. It also presents the earnings of equity, which consists of risk-free earnings such as government treasury bills and the risk premium. The equity premium is for the compensation of investors for the risk by investing in stocks whose prices are very volatile.

The results indicate that a rise in budget deficits worsens stock market performance in African countries, sending a signal to policy makers on the need to control and contain budget deficits in the region. In addition, while the official exchange rate has a negative effect on stock market performance, growth in GDP per capita improves stock market performance. Based on the empirical evidence, the study concludes that African stock markets are not efficient with respect to budget deficits. The coefficients were significant with negative effects on market performance. From a policy perspective, government spending in terms of deficit financing should be effectively managed to create a conducive environment for stock market development. Governments should maintain moderate deficits

to avoid pressure on interest rates. This could be achieved by undertaking pre-feasibility studies, introducing sunset clauses to government-funded programmes and cutting funds on ineffective programmes.

## Conflicts of Interest

The author declares no conflicts of interest.

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