

RESEARCH ARTICLE

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Sub-Saharan Africa**

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# Fiscal Policy, Interest Rate Spreads and Stock Markets in Sub-Saharan Africa

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## Abstract

This research study examines the influence of fiscal policy and stock market activity on the lending–deposit rate spread (dSpread) in Sub-Saharan Africa (SSA) using data from four SSA countries: Botswana, Ghana, Mauritius and South Africa. We analyze our data separately and pooled. The findings from the pooled data indicate positive relationship between dSpread and fiscal policy and stock market activity. When examined separately, except South Africa, most Sub-Saharan stock market activity had little or no significant impact on the spread. In terms of the significant factors, the study shows that for the whole of SSA, crowding out and inflation widen the spread while an increase in central bank assets narrows it.

**Keywords:** Fiscal policy; interest rates; stock markets; Sub-Saharan Africa.

## 1. Introduction

Sub-Saharan Africa (SSA) has one of the highest lending rates in the developing world [1, 2]. In 2006, some banks in Ghana were providing loans at about 32% per annum [3]. On the other hand, in more developed economies such as USA, UK and Japan, interest rates dropped to as low as 1% during the financial crisis in order to stimulate economic activity [4, 5]. Despite SSA's high lending rates, deposit rates are usually significantly low. This contributes to the sub-region's wide lending–deposit rate spread (dSpread).

Interest rate margins are of significant importance to an economy. It enhances efficient financial intermediation [6]. This is vital for efficient mobilization of resources for economic and productive activities. This affects the growth and development of an economy. A wide spread makes borrowing costly, constraining economic activity and lowering the returns on savings. This discourages savings and investments [7]. Small and medium-sized enterprises are most adversely affected when spreads are very wide [8, 9].

Folawewo and Tennant [10] investigated the salient factors that determine the spread in SSA and found that there are two main categories of such determinants, namely: microeconomic or industry-specific factors and macroeconomic variables. Some of the industry or market-determinants are: bank size, capital adequacy, fraction of liquid and fixed assets, inefficient banking industry, industrial structure of the banking industry, market power of banks, operating expenses, overhead costs, ownership structure and quality of loan portfolio [11, 12]. On the other hand, macroeconomic variables include: exchange rate volatility, fiscal policy, inflation, interest rate uncertainty, money supply, public sector deficits, reserve ratio and treasury bill rates.

Stock market activities have grown rapidly in SSA, following a series of financial deregulation and measures aimed at mobilizing domestic funds for investment in these economies. SSA countries have realized that the provision of funds to finance domestic capital formulation is critical to the long-term growth and development of their economies after years of decline in traditional sources of investible capital: grants and concessionary loans [2]. Despite the increase in foreign direct investment (FDI) flows in the mid 2000, most SSA economies now face reduced supply of foreign funds from previous sources (such as commercial banks). Consequently, the state in these countries is increasingly resorting to domestic stock markets to source intermediate funds to finance investment projects [13].

In the mid 2000s for instance, developing agencies, especially the World Bank, emphasized capital market development as a means of improving domestic resource mobilization, enhancing the supply of long-term capital and encouraging the efficient use of existing assets in developing economies. Moreover, the debt crisis in the late 2000s served to focus attention on the importance of equity rather than debt, particularly in financing risky projects with long gestation periods in developing economies. Capital markets in SSA economies have served both as instruments of reform for the banking sector and as integral part of the long-term development of the financial system [14]. Stock markets play several key roles. Firstly, they lower cost of equity capital and thereby stimulate investment and growth. Secondly, stock markets contribute to more efficient investment by imposing a degree of control over the investment behavior of companies through continuous monitoring of their share prices. Finally, by attracting foreign portfolio capital, the expansion of stock markets serves to enhance the supply of investable resources in SSA and developing countries. Thus, stock markets serve a significant role in domestic resource mobilization and provision of new equity capital. This is particularly important in emerging capital markets, where early expansion of stock markets is often characterized by an increase in the number of companies going public, or by enhanced offerings of seasoned shares by listed companies [15].

However, despite a decade of existence, most SSA stock markets are small, illiquid and characterized by thin trading except to some extent Nigeria and South Africa. This limits their efficacy [16], by providing an alternative source of capital, it is expected that the establishment of these exchanges would significantly narrow the dSpread. This study examines the effect of fiscal policy and stock market activity on interest rate dSpreads in SSA. The *raison d'être* of this study was to provide more information on the subject matter, since research that considers the effects and linkages between fiscal policy and stock market activity on interest rate spreads in the region is largely limited. While previous research has analyzed the effect of fiscal policy on interest margins, stock market activity has not been included in most of the analyses.

## 2. Review of Literature

A review of literature on the link between fiscal policy, dSpreads and stock markets illustrates that the architecture of financial systems in SSA is generally characterized by informal and traditional banking institutions. From the literature, there are two main strands of research on the determinants of the interest rate spread. The first school of thought focuses mainly on microeconomic determinants. One of such determinants encompasses the salient features of each bank and the banking industry as a whole [13, 17]. In this vein, researchers examine bank- and industry-specific variables such as administrative costs, bad and doubtful debt provisions, bank risk aversion, bank size, financial statement analysis, market power or industrial structure of the banking industry, ownership structure of bank and staff costs [11, 18–20].

Another microeconomic determinant of spreads is the stock market. Stock markets were expected to significantly boost domestic savings. They allow firms to raise capital at a lower cost, making them less dependent on banks. An efficient stock market provides suppliers of financial resources with a higher real return to their savings, thus increasing this rate. The deposit rate and stock market return are the two main proxies of the return for domestic savings. As such, they are

substitutes and consequently, efficient stock markets are expected to narrow the lending–deposit rate margin [21]. This is achieved in two main ways. Firstly, as firms increasingly use stock markets to raise funds instead of resorting to bank financing, the lending rate should decrease [1]. Secondly, an increase in stock market returns will decrease the attractiveness of bank deposit rates. To attract more deposits, banks will increase the deposit rate. This will narrow the dSpread.

Furthermore, a significant increase in treasury security issuance will decrease the spread while high demand for treasury securities will increase the margin. Also, a lump-sum supply of corporate bonds will reduce the interest rate differential while a significant demand for such securities will widen it. In addition, market sentiment and investor behavior can influence the margin. However, despite the rapid establishment of stock markets and improvements in related financial institutions in SSA over the past two decades, such markets lack depth and liquidity [22]. Based on asset value or capitalization, banks and stock exchanges are the largest and most active financial organizations [15]. Apart from domestic central banks, the afore-mentioned financial institutions have the most significant influence on the interest rate spread. However, Allen *et al.* [2] highlights that SSA's financial systems are mostly incomplete markets, except that of South Africa.

There is the debate, however, about the relationship between equity and debt. Bodie *et al.* [6] argue that issuing both shares and bonds are complementary. This implies that economic agents use both debt and equity in their economic activities. If such is the case, then stock markets should increase the spread. This will occur as both costs of debt and equity rise as more and more of each financial instrument is used by households, firms and the state. On the other hand, if debt and equity are substitutes, they will have a negative relationship. The applicable caveat for the possible opposite relationships between stock markets and the spread, however, is that there needs to be a critical mass of firms listed or desiring to be listed on the stock exchange. In the absence of this, there will be little or no relationship between stock markets and the dSpread.

The second school of thought, however, mainly considers macroeconomic determinants. These comprise of both fiscal and monetary policy variables [10, 18, 23]. Such variables include degree of crowding out, economic development, inflation, money supply, public sector deficits, population and reserve ratio. Some studies, however, combine both micro and macroeconomic variables in their analysis [19, 24].

Fiscal policy may be used as an interventionist policy to influence interest rates. A significant increase in fiscal expenditure implies that the state competes with the private sector for borrowed funds in domestic financial markets. This widens the interest rate spread, thereby crowding out the private sector. Alternatively, a very high tax rate restricts consumer spending and investment expenditure. Domestic demand for debt financing will decrease. To compensate for this, suppliers of credit facilities will significantly decrease the lending rate. This narrows the spread [25]. Another transmission mechanism between fiscal policy and interest rates is public sector transfers. However, such transfers are significantly low in SSA. Therefore, they have little or no effect on the interest margin. An exhaustive survey of the literature indicates that there is no research on the linkage between the spread and stock markets in SSA. This brings to the fore the *raison d'être* of this paper.

### 3. Data and Methodology

There are currently about 20 stock markets in SSA. However, the sample of interest excludes countries that have or are experiencing major civil, *coup d'état*, economic, political or natural disturbances in the considered time period. Such events create noise in the data. Furthermore, countries without sufficient data do not form part of the sample such as Malawi and Zambia. Kenya is excluded from the sample because of the terrorist attacks in 1999 and 2000 as well as the tribal conflicts during the 2008 elections. The pertinent SSA countries examined were: Botswana, Ghana, Mauritius and South Africa. The data encompasses the years 1980 to 2010. Sufficient data for the examined variables prior to 1980 are generally unavailable for the analyzed countries.

The pertinent variables are central bank assets as a percentage of GDP (dCBAAsset), degree of crowding out (dCrowd), stock market dummy, lending–deposit rate spread (dSpread), exports as a percentage of GDP (dEX), final consumption expenditure as a percentage of GDP (dFCons), inflation (dInfl), stock market capitalization as a percentage of GDP (dMCAp), stock market turnover ratio (dTurnrat) and trend. The degree of crowding out (dCrowd) is proxied by credit to government and state-owned enterprises as a percentage of GDP [10].

We relate the dSpread ( $INT_i$ ) to a variety of correlates, which include economic variables such as dCBAAsset, dCrowd, stock market dummy, dSpread, dEX, dFCons and dInfl; and stock market variables such as dMCAp and dTurnrat.

We state the null hypothesis,  $H_0$ , as fiscal policy and stock markets have no impact on the dSpread. The alternative hypothesis,  $H_1$ , states otherwise. Following [16, 17, 19–21], we test the null hypothesis with a regression model of the following form:

$$INT_i = \alpha_i + \sum_{i=1}^k \beta_{i1}^j x_{i1}^j + \sum_{i=1}^k \beta_{i2}^j x_{i2}^j + \varepsilon_i \quad (1)$$

where  $INT_i$  represents the dSpread for country  $i$  with constant term  $\alpha_i$ . The vector of each fiscal policy indicator is  $\sum_{i=1}^k \beta_{i1}^j x_{i1}^j$  with  $\beta_{i1}^j$ , multiplied by its respective regression coefficient,  $x_{i1}^j$ . The vector of stock market indicators multiplied by their respective regression coefficients represents  $\sum_{i=1}^k \beta_{i2}^j x_{i2}^j$ , with the error term denoted as  $\varepsilon_i$ . It aggregates the effect of all other variables that may determine the interest rate margin but are not included in the model.

*A priori*, an increase in dCBAAsset should decrease dSpread while dCrowd is expected to increase the interest rate margin. Furthermore, as dEX, dMCAp and dTurnrat rise, they ought to narrow the spread. On the other hand, dFCons and dInfl will increase dSpread.

Due to the time-series nature of the data and their non-stationary nature, we suspected that autocorrelation may exist. Thus, to address this potential problem, we conducted unit root tests using the augmented dickey fuller process. The first-difference of the examined data were stationary. These were used for the analysis because using the level raw data would have led to non-stationary heteroscedastic regressions. As such, only stationary data were used in the empirical analysis. All the data used in the regression were co-integrated of the first order. To address other potential anomalies related to using time-series data, the Cochrane–Orcutt iterative regression procedure was used to compute the regression results (see for example Greene [26]). The results presented in Table 2 illustrate that, generally, by using the adopted technique, the rhos of the regressions are made more statistically significant. Furthermore, this methodology enhances the consistency and efficiency of the regression results. Consequently, the validity of inferences based on the empirical results is well improved (see Afful and Okeahalam [16] for further discussion of this empirical methodology).

However, with respect to Ghana, significant gaps in the dependent variable precluded the use of the Cochrane–Orcutt regression procedure. Therefore, an ordinary least squares regression was computed using the first-difference variables. This may be adapted as a first-step approximation of the actual Cochrane–Orcutt regression for the country if data had been available. We use STATA for the analysis and the empirical results are presented in Table 2.

#### 4. Results

Table 1 presents the descriptive statistics of the data for the individual sampled countries and pooled data for SSA. Table 2 contains the Cochrane–Orcutt regression results for the individual sampled countries and that of the combined data for SSA. We discuss each country and the whole of SSA as follows:

#### 4.1. Botswana

Table 1 indicates that Botswana has the highest dCBAsset of 1051% when compared to the second highest Ghana's of 19.21%. However, its dCrowd indicator is the second lowest of about 15%. This implies that there may be little or no crowding out in its economy. Furthermore, although it has the second highest average dEX ratio of 52.32%, it has the lowest dFCons ratio. As well, it has one of the lowest average dInfl rates. In addition, it has the highest average FDI to GDP ratio. The foregoing illustrates that it is one of the most prudently managed as well as economically stable economies in SSA.

**Table 1: Descriptive statistics (average for 1980–2010).**

Variables	Botswana	Ghana	Mauritius	South Africa	SSA
	Fiscal policy indicators (%)				
dCBAsset	1051	19.21	5.46	1.52	269.30
dCrowd	15	82.86	0.65	36.15	33.67
dEX	52.32	24.20	57.89	27.3	40.43
dFCons	63.3	93.63	78.8	77.94	78.42
dInfl	10	30.78	8.07	10	14.71
dFDI	3.55	1.98	1.25	0.81	1.9
dSpread	4.46	4.1	8.18	4.18	5.23
Stock market indicators					
dMCap	19.27	13.3	35.11	164.82	58.13
dTurnrat (or dTurn)	3.73	2.32	5.29	32	10.83

The results illustrate that in Botswana, an increase in dCBAsset decreases the dSpread. This may imply that a rise in such assets reduces domestic macroeconomic risk. This form of risk is exacerbated by insufficient reserves of the central bank to sustain the economy. One possible reason for the negative relation between central bank assets and the interest rate margin is that it increases the financial capacity and flexibility of the country. Furthermore, it decreases sovereign risk premium, consequently narrowing the dSpread rate margin. Table 1 illustrates that Botswana has the highest dCBAsset ratio as well as the second lowest dCrowd average. With central bank assets being a multiple of more than a 1000 of domestic GDP, fiscal risks are significantly lowered. However, state borrowing is only 15% of GDP. This implies that the central bank, banker of the state, has more than sufficient reserves to pay for its current domestic borrowing. Consequently, instead of keeping such resources in a bank, by borrowing domestically, the state is injecting such resources into the economy to be used for economic and productive purposes.

The stock market dummy is significant. However, it is positively related to the spread. This may imply that debt and equity are complements in Botswana. Alternatively, it may be due to government borrowing from domestic sources mainly from the stock market by issuing treasury debt securities. This may be the case if such debt is obtained by issuing treasury securities. The adjusted  $R^2$  is only 0.308. This may imply that the dCrowd, dEX, dFCons and dInfl are not significant determinants on the dSpread in Botswana.

#### 4.2. Ghana

For Ghana, Table 1 indicates that Ghana has the second highest dCBAsset. However, it has the highest dCrowd. This has adverse implications on the dSpread as indicated in the regression results. While Ghana has the lowest dEX ratios, it has the highest dFCons ratios. The average dInfl rate is the highest for the sampled countries. Both its FDI to GDP ratio and dSpread are neither the

highest nor lowest. On the other hand, Ghana has the lowest dMCap as well as the least dTurnrat. These demonstrate that the country has the smallest and least active or liquid stock markets.

Irregular gaps in the dependent variable of Ghana precluded the use of the Cochrane–Orcutt procedure. Rather, an ordinary least squares (OLS) regression was conducted using first-order co-integrated variables. All variables were stationary of the first order.

The results in Table 2 indicate that unlike Botswana, in Ghana an increase in dCBAAsset increases the dSpread. This anomaly may be explained by the possibility that as the banker to the state (the central bank), an increase in its assets implies that government has much more resources to spend. This results in increased fiscal expenditure resulting in a widening of the spread. This is highly plausible considering the fact that the central bank is not completely independent as its Governor and Deputy Governor are political appointees that are almost always changed when there is a new ruling party after national elections. Furthermore, an increase in public sector debt crowds out private sector economic activities by increasing the lending rate, which widens the dSpread. This is in consonance with prior expectations [11]. On the other hand, an increase in exports decreases the dSpread. *A priori*, a rise in exports increases domestic revenue. This reduces the use of debt by the state as it increases its revenue. With less demand for fiscal debt, the margin should decrease. Similarly, an increase in FDI narrows the spread. Theoretically, an increase in external capital inflows to finance domestic physical and real investments will decrease demand for debt for such activities.

**Table 2: Cochrane–Orcutt regression results.**

Variables	Botswana	Ghana <sup>#</sup>	Mauritius	South Africa	SSA
Constant	0.13 (0.6)	1.5* (0.2)	–	–1.9** (0.015)	2.5** (0.44)
<b>Fiscal policy indicators</b>					
dCBAAsset	–0.01* (0.03)	0.5** (0.05)	–	0.8** (0.004)	–0.1** (0.02)
dCrowd	–0.06 (0.05)	0.5* (0.08)	–4.7* (1.9)	–0.01* (0.0)	1.4** (0.4)
dEX	–0.03 (0.1)	–1.1* (0.1)	0.03 (0.05)	–	–0.03 (0.07)
dFCons	–0.02 (0.1)	–0.1 (0.05)	0.3* (0.1)	–	0.3* (0.13)
dInfl	0.2 (0.13)	–0.1* (0.02)	–0.2 (0.08)	0.08** (0.0)	0.07** (0.02)
dFDI	–	–0.7* (0.08)	–	–	0.2 (0.3)
<b>Stock market indicators</b>					
dMCap	–	–	–0.08* (0.03)	0.01** (0.0001)	0.05 (0.03)
dTurnrat	–	–	–	–0.002 (0.0001)	–0.2 (0.12)
Dummy	2.6** (1)	–	3.61** (0.8)	–	–
Trend	–0.1 (0.06)	–	–0.2** (0.04)	0.05** (0.0005)	–0.1** (0.03)
<b>Regression diagnostics</b>					
F-statistic	2.71	27.40	3.43	59955	5.97
Probability > F	0.0376	0.0357	0.033	0.0038	0.0065
R <sup>2</sup>	0.4872	0.99	0.63	1.00	0.87
Adjusted R <sup>2</sup>	0.3077	0.95	0.45	1.00	0.72
Root mean square of errors	1.46	0.34	0.77	0.002	0.70
Durbin–Watson statistic	2.577	2.2	2.23	3.25	3.03
Rho	–0.47** (0.07)	–	–0.213	–0.8** (0.0009)	0.9** (0.44)

Source: Own computation.

<sup>#</sup>The regression did not use a Cochrane–Orcutt procedure due to irregular and missing data. Such regressions were computed using OLS and first-order co-integrated variables.

The values in parentheses are standard errors of the coefficients.

\*\*\*Regression coefficients are significant at a 5% and 1% critical value respectively.

The lending rate should decrease, narrowing the dSpread. Contrary to theory, an increase in dInfl decreased the margin. However, considering that lending rates in the country are quite high at about 30–35% during the first decade beginning from the year 2000, it may be that a borrowing rate ceiling has been attained [27]. If such is the case, banks may be seeking to enlarge their deposit (monetary) base by attracting savings by increasing their deposit rate. One consequence of this is narrowing the spread.

Although the stock market variables were included in the regression, they were dropped during computation. This may possibly imply that in Ghana, the stock market had little or no effect on the spread. This may be due to the fact that on average, Ghana has the lowest stock market capitalization to GDP ratio of 0.4992% with South Africa having the highest of almost 12%.

#### 4.3. Mauritius

Table 1 indicates that Mauritius has a low ratio of dCBAAsset. This raises concerns about the sufficiency of such assets and reserves for the economy. However, it has the lowest dCrowd and highest dEX. On the other hand, its dFCons is relatively high. Thus, perhaps income from exports and related economic activities may be used to finance internal consumption. In addition, Mauritius has the lowest average dInfl rates and one of the lowest mean FDI rates. Despite some of the favorable economic indicators, the country has the highest dSpread. These indicators may suggest the existence of some underlying fiscal and macroeconomic challenges. This is highlighted by the finding where the trend variable is positive and significant. It implies that over time, the dSpread has been increasing in Mauritius.

The regression results indicate that for the fiscal policy variables, while an increase in public sector debt decreases the margin, an increase in dFCons increases it.

With respect to stock market variables, dMCap decreases the spread. This may result from the alternative to raise capital funds from the exchange instead of borrowing. Consequently, these two sources of funding are substitutes. On the other hand, the establishment of a stock exchange has increased the margin over time in Mauritius. However, it may be inferred from the trend variable that over time, the dSpread has been decreasing. Together with the dummy coefficient, this may suggest that the formulation and implementation of economic reforms, institutions and liberalization may have rather increased the disparity between the lending and deposit rates. Such a situation may point to a possible anomaly in the banking industry. This may be the case where the banks wield significant market power as oligopolists.

#### 4.4. South Africa

In Africa, South Africa is an outlier. It has the largest and most developed economy. Due to its past apartheid political system, it was primarily a closed economy until that institution was disassembled and democracy was adopted in 1993. As such, compared to other SSA countries, South Africa had different economic and social indicators. Table 1 presents the descriptive statistics and averages, of the variables used in the regression analysis. The table illustrates that within the examined period, South Africa had the lowest ratio of central bank assets to GDP. This suggests heavy dependence on such reserves for state spending. This is buttressed by the country having the second highest degree of crowding out. During the apartheid times, the country was mainly a closed economy. In such instances, it could not borrow from external agencies or sovereign countries. For this reason, it borrowed heavily domestically from banks as well as its stock market. The dEX ratio for South Africa are quite low, 27.3%. On average, between 1980 and 2010, South Africa spent about 77.94% of dFCons and had one of the lowest dInfl rates. Due to its past, the country had the lowest average FDI to GDP ratios. This, however, is in contrast to it having the largest dMCap ratio due to its significant domestic patronage. This is also borne out by it having the largest dTurnrat, implying that it has the most active and liquid stock market on the continent.

The results indicate that an increase in dCBAsset widens the dSpread in South Africa. Without external financing, an increase in dCBAsset may signal prior adverse expectations from the state leading to an increase in such resources to address potential risks. Also, possibly as the banker of the state, an increase in such assets may be a precursor to the disbursement of such funds to the state. As the state borrows from the financial system, this increases the lending rate widening the dSpread. Contrary to theory, as the dCrowd increases, the dSpread narrows. A possible explanation of this may be that as fiscal debt increases, without external financing for banks, financial institutions need to grow their deposit base to supply funds to the state. In order to attain this, they increase their deposit rate by larger margins while the lending rate rises at a slower rate. Therefore, in South Africa, dCrowd influenced the deposit rate more significantly than the lending rate. In line with theoretical expectations, dlInfl and the margin are positively related.

Regarding the stock market, an increase in dMCap increases dSpread. This may imply that debt and equity were mainly used as complementary sources of financing. As such, due to little or no external financiers or investors, the state as well as the private sector depended mainly on domestic financing. Prior to 1994, the ratio of FDI to GDP was never higher than 0.6%. For the SSA countries examined, this was one of the lowest.

#### 4.5. Sub-Saharan Africa

This dataset comprises the mean of the summed data values for all the countries examined above. As such, this dataset is more robust. It may be more representative of the impact of fiscal policy and stock markets on the dSpread in this region.

dCBAsset have a negative effect on the dSpread. This implies that as dCBAsset increases, the dSpread margin decreases. The results also show an inverse relationship between risk premia and domestic banking resources. In addition, an increase in fiscal debt increases the dSpread which is indicated by the dCrowd variable. Similarly, an increase in dFCons increases the dSpread. This occurs as such expenditure is financed by domestic debt. Increased demand for such financing increases the lending rate, which in turn widens the dSpread. Furthermore, an increase in dlInfl increases the dSpread. The dlInfl primarily affects nominal variables but in order to earn a constant or eroding real return, banks and related financial institutions respond by increasing the lending rate. As already mentioned, this expands the dSpread.

The results further illustrate that except South Africa, stock markets have little or no effect on the dSpread in SSA. This may be because of the minuscule number of listed firms as compared to the total number of business enterprises in such economies. It is therefore not surprising that more than 90% of firms in Africa make greater use of credit (debt) from banks and related financial institutions rather than issue shares on a stock exchange. For example, the average ratio of dMCap during the examined years for South Africa was almost 12%. For the rest of SSA, it ranged from 0.5% to 2.9%. Hence, South Africa is an outlier. It is in this regard that [13, 28, 29], the rapid and excessive push to establish independent national stock markets may be a wasted effort. Rather, the effectiveness and impact of such institutions is made more pertinent as they attain the requisite critical mass.

Although the signs of the fiscal policy and stock market variables are in consonance with theory, their sizes are not significantly large. Combined with an adjusted  $R^2$  of 0.72, this may suggest that there are other pertinent variables in these economies that explain the interest rate spread, apart from fiscal policy and stock markets.

#### 5. Conclusion

This research paper examines the effect of fiscal policy and stock markets on the dSpread in SSA. It develops a regression model with a vector of fiscal policy and stock market variables. Only stationary variables are used in the analysis. Regression models are computed for individual countries as well as for SSA as a whole.

This study finds that for the individual countries, some fiscal variables have different effects on the spread. Excluding South Africa, the rest of Sub-Saharan African countries depict that fiscal variables have the expected effect on the dSpread. Unfortunately, stock markets have little or no effect on the same dependent variable. This creates concerns about the efficacy of stock markets in SSA. Despite the high expectations underlying the establishment of such financial institutions, these results indicate that in SSA, stock exchanges face significant challenges and impediments to their success.

### Competing Interests

None declared.

### Authors' Contributions

Both authors contributed equally to this work.

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