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The Moderating Effect of Board Efficiency on the Relationship between Corporate Tax Rates and Firm Growth in Sub-Saharan Africa

Emmanuel Okofo-Dartey[1]

Abstract: Even though efficient boards contribute to firms' growth in diverse ways, other factors such as the corporate tax rates in several countries tend to militate against the positive impact efficient boards may have on firms' growth. Using firm and country-level data of 372 non-financial listed sub-Saharan Africa firms spanning 2007 to 2017, this study investigates the moderating effect of board efficiency on the relationship between corporate tax rates and firm growth in sub-Sahara Africa. The study employs the difference and the two-step generalized method of moments (GMM) techniques suggested by Blundell and Bond (1998) to estimate the dynamic panel models specified by the study for the ten years the study covers. The choice of this estimation technique is motivated by its ability to eliminate unobservable heterogeneity and address endogeneity problems usually associated with panel data. The results show that, with efficient boards in place, a reduction in corporate tax rates enables firms in sub-Saharan Africa to grow by increasing the returns on their equities, all other things being equal. Similarly, the results show that firms in sub-Saharan Africa can increase their sales levels even when corporate taxes are raised, as long as efficient boards exist. The implication is that, in the presence of efficient boards, an increase or decrease in corporate tax rates would positively impact the growth of firms in sub-Saharan Africa. Therefore, consideration should be given to the effects of corporate tax rates on firms' growth if firms do not have efficient boards in place.

Keywords- Board efficiency; Corporate tax rates; Firm growth; sub-Sahara Africa; Return on Assets; Sales Growth

JEL Classification: H32; L25; H25

1. Introduction

The increased competitiveness of businesses and the globalization of markets have made economic environments highly unpredictable and less certain for businesses to survive. This situation has made investigating factors that affect firms' growth an essential part of discussions that interest academics and practitioners since these

[1] Department of Financial Intelligence, University of South Africa, Pretoria South Africa, Address: Preller St, Muckleneuk, Pretoria, 0002, South Africa, E-mail: emmanuelokofodartey@yahoo.com.

investigations may bring to fore the various factors that militate against the growth of businesses so that solutions would be found to address them.

An important factor that plays a vital role in ensuring the effective running of these firms to promote their growth is the respective boards of these firms. It is assumed that an effective board enhances the value of firms, positively contributes to maximizing shareholders' returns, and reduces the numerous disagreements between shareholders and managers (Yusoff *et al.*, 2012). Board efficiency is one of the mechanisms of corporate governance (Zabria et al., 2015). A well-established board is assumed to be an active mechanism to govern the behaviour of companies within a given country (Elsayed, 2011) since the board must monitor the effectiveness and efficiency of management. The board of a company has a significant impact on its growth and the performance of its finances (Al-Sahafi et al., 2015; Al-Ghamdi & Rhodes, 2015). Even though efficient boards may contribute to firms' growth in diverse ways, factors such as the corporate tax rates in several countries may affect the positive impact efficient boards have on firms' growth, particularly firms domiciled in sub-Saharan Africa since the average corporate tax levels in this economic region is relatively high (Stotsky et al., 1997). This may be due to the level of tax management in SSA countries. It is suggested that improvements in tax management tend to reduce the financial problems firms bear regarding the payment of specific and corporate taxes and enable firms to obtain adequate resources that could be used to improve their productivity levels. This is consistent with Lazăr and Istrate's (2018) view that a 1 percent upward increment in a specific tax rate of a firm reduces the return on assets by 0.15 percent in their assessment of the influence of firm-specific tax-mix on the performance of firms in Romania.

To date, unfortunately, no study has explored whether corporate tax rates affect the growth of firms in sub-Saharan Africa (SSA), especially when these firms have efficient boards in place. Therefore, considering the important contribution of firms' growth to the economic development of countries globally in addition to the fact that the second rapidly growing continent after East Asia in the world remains Africa (African Economic Outlook (AEO), 2017), and sub-Sahara Africa spearheads the growth of the African continent with an average growth of 4.2% (AEO,2017), it is appropriate to investigate the role corporate tax rates in SSA countries play in influencing the growth of firms in SSA, particularly when these firms have efficient boards in place. This study provides another viewpoint about factors that might impact firms' growth since **countries in SSA have different economic backgrounds different from their peers in advanced economies. Further, SSA firms are subjected to different rules, regulations, and competitive climates. Additionally,** due to the unavailability of data, most studies relating to firm growth primarily focus on firms in developed countries (Calvo, 2006) hence the present study contributes to addressing the sparse empirical literature on firms' growth in

SSA by focusing on whether the growth of firms become affected by corporate tax rates in the presence of efficient boards.
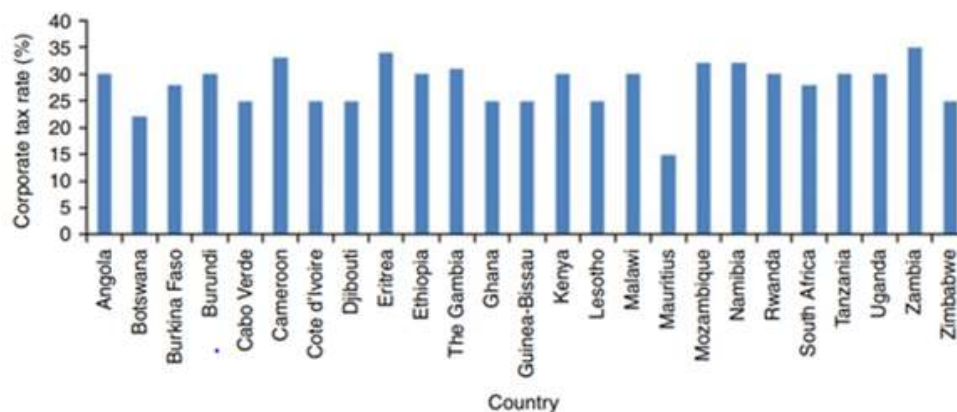
Accordingly, the study adds to the firm growth literature in three dimensions; one, this study compared to prior studies that focused on firms in developed economies use a sample of selected firms from SSA to throw more light on developing economy setting since striking differences exist between firm dynamics in developing and developed countries. Secondly, contrary to previous studies on SSA and other developing countries on firm growth, this study employs unbalanced panel data and uses a two-step system and difference generalized method of moments (GMM) estimating techniques to address endogeneity issues and unobservable heterogeneity.

Lastly, a detailed analysis of the growth of firms in SSA countries has not been explored. Therefore, the study brings direct evidence of an investigation that moderates the effect of board efficiency on the relationship between corporate tax rate and firm growth in SSA and adds a valuable contribution to the finance literature. Below are stylized facts about corporate tax rates in sub-Sahara Africa.

1.1. Stylized Facts About Corporate Tax Rates Among Sub - Sahara African Countries

The second fastest-growing continent remains Africa after East Asia (African Economic Outlook (AEO), 2017). Geographically, Sub-Saharan Africa (SSA) is a part of the African continent found south of the Sahara Desert, with approximately 1 million inhabitants residing in 48 countries. These countries are of different sizes and have different economic and political histories, with South Africa and Nigeria giants. Apart from South Africa, in 2015, SSA grew rapidly by 4.2% higher than the continent's average, where East Africa led the way with 6.3% growth (AEO, 2017). Despite this improvement, the issue of unemployment associated with the world's youthful population serves as a challenge for its sustainability. In total, the level of poverty in Africa has reduced from about 56% to 43% in 1990 and 2012, respectively (AEO, 2017).

The figure below illustrates the corporate tax rates of some countries in sub-Saharan Africa. Botswana's 22 percent corporate tax rate is the lowest. Other countries like Cote D'Ivoire, Cape Verde, Ghana, Lesotho, Zimbabwe, and Guinea-Bissau have a 25 percent corporate tax rate. Countries such as Zambia, Cameroon, Eritrea, and Namibia also have corporate tax rates of 35%, 33%, 34%, 32%, respectively.

Figure 1. Corporate Tax Rates among Sub- Sahara African Countries
Source: KPMG Database (2018)

The rest of the study is structured as follows: Section two (2) presents the theoretical and empirical literature review and hypotheses development. Section (3) three describes the data, sample, and research model. The next section presents the empirical results and discussion of the findings, while the final section considers the conclusions and recommendations.

2. Literature and Hypotheses Development

2.1. Theoretical Review

The present study adopts the *resource-based theory* by Penrose (1959) and relies on firm-specific determinants to explain the driving forces behind the growth of firms from sub-Saharan Africa. According to resource-based theory, a firm's resources comprise its assets, organizational processes, firm characteristics, knowledge, and information the firm controls, making it possible for appropriate strategies to be designed for implementation to enhance its effectiveness and efficiency. This theory, therefore, suggests that a firm is made up of a combination of resources. Firm growth also hinges on the type, quantity, and diverse nature of the resources and the effective manner to achieve growth.

First, for firms with low growth potentials, growth depends very much on what is described as the essential resources in the form of human and physical capital. In contrast, for firms with high growth potentials, growth is influenced more by higher resources like R&D and managerial capital. Second, unlike a particular human capital, the general human capital of workers other than specific human capital is very much considered to add enormously to the firms' growth. However, concerning managers, specific knowledge instead of general knowledge is considered more significant. Third, the main distinguishing feature between firms with more

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significant growth potentials and those with low potentials for growth is how effective the essential resources are and not the difference in the amount of resources available to the firms. Fourth, conglomeration and export orientation are considered appropriate tactics that can support the growth of firms compared with just linking up with locally-based firms, foreign firms, and state-owned enterprises.

Regarding the efficiency of boards on firms' growth, the study draws from the *agency theory*, which discusses the separation of shareholders' interests and managers', with the board of directors mostly assuming a supervisory role over managers. The agency theory viewpoint is that a board is one key mechanism for governance that performs an essential duty of controlling what the managers do to reduce the challenges associated with the divergence of ownership and firm control (Fama *et al.*, 1983). The unique function played by boarfirmntinue to be significant that it no longer has to do with just endorsement of managements' strategic decisions (Chen *et al.,* 2015; Cuadrado-Ballesteros *et al*., 2015; Uribe-Bohorquez *et al.,* 2018). The board is expected to resolve management decisions by considering the views of both shareholders and other investors, which could impact important decisions of the firm. Based on this, it is essential to emphasize that the board's responsibility goes beyond monitoring and controlling management to ensure that decisions taken agree with the organization's (Corten *et al.,* 2017).

The impact of changes in the corporate tax rate on the growth of firms and profitability has also not been addressed. Implicit tax theory suggests a direct association between country-level tax rates and firm-level pre-tax returns. On the other hand, implicit tax maintains that any advantage obtained from reducing explicit taxes is removed through pre-tax rate of return reduction leading to equal after-tax rates of return regardless of explicit taxes paid (Scholes *et al.,* 2015). As Salamon and Siegfried (1977) developed, the political power theory stipulates that larger firms have political and economic power than small firms. These large firms make use of their political and economic influences to reduce their tax burdens. They have the financial means to hire experts to plan their taxes for them aggressively and are also able to manipulate the political system to their benefit (Wu *et al.,* 2012). According to Dyreng *et al*. (2008), large firms have smaller corporate tax rates than small firms and support this theory. Rego and Wilson (2012) also suggest that economies of scale have substantial influence in reducing the burden of tax of firms through proper tax planning.

2.2. The Empirics

The finance literature has well-documented issues concerning firm growth, board efficiency, and corporate tax rates (Bigsten *et al.,* 2007; Biesebroeck, 2005; Calvo, 2006; Segarra *et al.,* 2014).

Firms' corporate tax rates affect debt financing since interest payments are usually tax-deductible, whereas dividends are not, as Beke (2011) expressed. Companies desirous of more profits need to equip themselves with external funding sources, usually obtained from debt instead of equity. The reason is that debt is preferred to equity because of the less expensive process of obtaining it. However, Mihai and Mihai (2012) suggest an adverse effect of leverage on the performance of quarrying and mining firms in Romanian. Lazar and Istrate (2018) also found that company size and leverage negatively affect firms' growth and performance.

According to Hanlon & Heitzman (2010), a corporate tax rate refers to the average rate of tax that a firm pays on its pre-tax profits and is calculated by dividing a tax liability by pre-tax income (Hanlon *et al.,* 2010). That is the tax rate upon which a firm's pre-tax profits are taxed (Jon 2012). Indeed, the effect of corporate tax rates on firms' growth can either be positive or negative. Lower corporate tax levels take away some financial burden on firms, enabling firms to obtain adequate resources to improve productivity. This is consistent with the findings of Lazăr and Istrate (2018) that a percentage increase in overall firm-specific tax rate decreases the return on assets by 0.15 percent through their investigation on the effect of firm-specific tax-mix on the performance of firms in Romania. Equally, Federici and Parisi (2015) reveal that corporate tax rates decrease after assessing 880 Italian firms from 1994 to 2006. They suggest that a percentage rise in the effective tax rate and the marginal tax rate is accompanied by a 0.112 and 0.017 percent decrease in investment at the firm level.

Further, Belotti et al. (2016) examined the impact of local taxes on the performance of firms in Italy from 2001 to 2010. They found that an increase in local tax rate leads to a decline in employment, capital, sales, and total productivity by 0.11, 0,3, 0.21, and 0.14 percent, respectively. Additionally, Fisman and Svensson (2007) also studied how payment of bribes and taxes relate to firms' growth in Uganda from 1995-19915 and revealed that bribery and taxation relate negatively with firm growth. Derashid and Zhang (2003) add that corporate taxes correlate negatively with firm sizes in Malaysia, while Richardson and Lanis (2007) corroborate this by stating that corporate tax rates have a significant negative relationship with firm sizes after investigating publicly listed firms in Australia from 1997 to 2003. As corporate tax rates rise, a firm experiences a decline in its market value.

Nevertheless, as the tax protections of the firm increase, the firm may decide to raise some more debt, just that the firm becomes constrained financially following the continuous fall in its market value. Consequently, firms' leverage levels tend to rise initially with increased corporate tax rates after that fall. Following the preceding discussion, this study agrees with Hanlon & Heitzman (2010) that corporate tax rate is the average tax rate a firm pays on its pre-tax profits and is calculated by dividing a tax liability by pre-tax income.

Concerning board efficiency, Gavrea and Stegerean (2012) suggest that an inverse relationship exists between the size of a board and how the firm performs, while Conheady et al. (2015) also maintain that a board's level of efficiency can enhance the financial performance of the firm and assist in reducing the imbalance in the information that exists between the firm and the market. An efficient board similarly tends to imbue a higher amount of confidence in shareholders. Therefore, it can be maintained that an efficient board may contribute to the positive valuation of a firm in the capital market due to the trust that the players in the market have in the board. The literature confirms a connection between well-managed firms and their growth. For instance, Gompers et al. (2003) found that corporate governance of which efficient board is part is strongly associated with stock returns, while Selvaggi and Upton (2008) suggest that a collection of firms that are efficiently managed generate higher returns when adjusted for risk and has lower volatility of share-price returns. Using FTSE Eurotop 300, Bauer et al. (2004) found a direct relationship between firms' valuation and critical corporate governance variables, of which board efficiency is an example. However, the relationship deteriorates sharply when differences among the countries are taken care of.

In line with the discussion thus far, the present study investigates whether corporate tax rates influence the growth of firms in SSA in the presence of efficient boards. This is justified because the study provides another viewpoint about factors that may impact firms' growth in SSA since countries in SSA have different economic backgrounds that are entirely different from their peers in developed markets. Firms in SSA are also subjected to different competitive and country-specific regulatory environments. Additionally, due to the unavailability of data, most studies relating to firm growth primarily focus on firms in developed countries (Calvo, 2006) hence the present study contributes to addressing the sparse empirical literature on firms' growth relating to SSA firms by focusing on how the corporate tax rates of firms affect their growth in the presence of efficient boards.

Based on the preceding discussion, therefore, this study puts forth the following hypothesises for testing:

H1: *the corporate tax rates of firms in sub-Sahara Africa negatively influence their growth.*

H2: *there is a positive relationship between efficient boards and firms' growth in sub- Saharan Africa.*

H3: *In the presence of efficient boards, corporate tax rates positively impact the growth of firms in sub-Sahara Africa.*

3. Methodology

3.1. Data and Sample Considerations

According to the United Nations Development Programme (UNDP) (2018), there are forty-Six (48) countries in the SSA region. The study employed up to ten years of financial data from annual reports of publicly traded companies of non-financial firms from SSA countries. The use of listed firms is primarily due to data availability and reliability. Country-level data are also taken from the online edition of the Global Competitive Index in the Global Competitiveness Report published by the World Economic Forum (WEF). From African Market.com, there are fourteen (14) active stock markets in the sub-region.

Consequently, only countries with active stock exchanges were selected for this study. Bourse Regionale des Valeurs Mobilieres (BRVM) were excluded from the study. This is because BRVM is a bloc of stock exchange serving the 6 West African Economic and Monetary Union (WAEMU) countries, namely, Cote d'Ivoire, Burkina Faso, Mali, Niger, Senegal, and Togo, and therefore, firms listed on this market cannot be linked to any particular country factor. Again, firms listed on BRVM were excluded because financial reports of these firms were not in the English language and not country-specific. This study excluded the North African countries due to their significant cultural and financial management practices, different from SSA.

Consistent with Kyereboah-Coleman (2007) and Baik (2007), all firms from the finance sector (that is, insurance, bank, unit trusts firms) were excluded from this study because these firms are subject to different regulatory requirements. Being strictly controlled by regulations and governments cause these firms to have a different environment for engaging in financial statement malpractices from other industries (Kitiwong, 2014). The final sample thus comprises 327 firms across 11 SSA countries for the years 2007-2017.

To investigate the moderating effect of board efficiency on the relationship between corporate tax rates and firm growth in SSA, after taken away companies with multiple information in addition to variables that have missing economic and financial information, the sample finally becomes 327 listed companies with firm-year observations (3270 firms) for ten years from 2007–2017 for 11 SSA countries to test the hypotheses stated in sections 2.2 and 3.2 of the study.

Firm growth refers to an improvement in specific characteristics associated with a firm, such as employment levels, profit, sales, among others, from one point in time to another (Hakkert et al., 2006). The firm's growth can be assessed by the extent to which the various resources available to the firm, such as capital and labour are being effectively utilized to bring about positive returns and outcomes. It can also be determined by the extent to which knowledge obtained can be organized and

transformed into marketable products and services using the firm's laid down structures and practices (Nickell, *et al*, 1997). Of the various firm growth measures, the parameters usually used are Return on Equity (ROE), Return on Assets (ROAs), Sales growth, and Tobin's Q (Liu *et al*., 2015: García-Meca *et al*., 2015; Park *et al*., 2011; Pletzer *et al*., 2015; Terjesen *et al.,* 2016). Therefore, similar to the above-stated studies, the present study employs ROE and Sales growth to measure SSA firms' growth. Board efficiency refers to how management becomes accountable to the firm's board of directors and other investors. According to the Global Competitive Index of the World Economic Forum (WEF), World Governance Indicators by Kaufmann *et al*. (2011), it ranges from 1 to 7 where; 1 = not at all; 7 = to a great extent. The corporate tax rate is the average tax rate a firm pays on its pre-tax profits and is calculated by dividing a tax liability by pre-tax income (Hanlon *et al*., 2010).

To address potential endogeneity linked to omitted variables, several country and firm-specific variables have been used to take care of the relationship among board efficiency, corporate tax rate, and firm growth (Wooldridge, 2010). Among these selected control variables are foreign ownership, Tobin's Q (a proxy for the firms' growth opportunities), total assets (a proxy for firm size), ROA (return on assets), financial leverage (FinLEV), ethics (measured as the level of corporate ethics of firms in handling politicians, other firms and public officials). It ranges from 1 to 7 where 1 signifies extremely poor – among the worst in the world; and 7 = excellent – among the best in the world for country i in year t), and economic growth (changes in GDP).

3.3. Model Specification

The study hypothesizes a positive relationship between corporate tax rate and firms' growth in the presence of efficient boards. This relationship was tested following Minton and Schrand (1999) through a dynamic panel model to eliminate unobservable heterogeneity using both the difference and the two-step GMM estimators on an unbalanced panel data of 327 non-finance listed firms from sub-Saharan African from 2007 to 2017.

The analysis of this study starts with the estimation of models (1), (2), (3), and (4) as stated below, where two proxies for firm growth are employed (that is, Sales growth and ROE) as dependent variables and regressed separately on other independent variables.

Since issues that bother on endogeneity and serial correlation tend to be present in most corporate finance research studies due to several independent variables (Mark and Hankins, 2012), it is relevant to use an appropriate estimation technique to handle these challenges. As a result, the dynamic panel models below were estimated

using the Blundell and Bond (1998) estimation technique for the ten years the study covers. The estimation technique is motivated by the fact that it corrects for endogeneity problems associated with panel data. It also has the lowest root mean squared errors (RMSE) compared with other estimation techniques, making it the best estimation technique for panel data models (Mark *et al*., 2012). The first differencing of the equations will eliminate the firm and country-specific fixed effects.

$$FGR_{SALESit} = \beta_0 + \beta_1 Tax_{it} + \beta_2 LEV_{it} + \beta_3 TQ_{it} + \beta_4 Fsize_{it} + \beta_5 FOWNER_{it} + \beta_6 GDPGR_{it} + \beta_7 ETHICS_{it} + B_8 ROA + y_{it} + \varepsilon_{it} \quad (1)$$

$$FGR_{ROEit} = \beta_0 + \beta_1 Tax_{it} + \beta_2 LEV_{it} + \beta_3 TQ_{it} + \beta_4 Fsize_{it} + \beta_5 FOWNER_{it} + \beta_6 GDPGR_{it} + \beta_7 ETHICS_{it} + B_9 ROA_{it} + y_{it} + \varepsilon_{it} \quad (2)$$

$$FGR_{SALESit} = \beta_0 + \beta_1 Tax_{it} + \beta_2 BODEFF_{it} + \beta_3 (Tax_{it} * BODEFF_{it}) + \beta_4 LEV_{it} + \beta_5 TQ_{it} + \beta_6 Fsize_{it} + B_7 FOWNER_{it} + \beta_8 GDPGR_{it} + \beta_9 ETHICS_{it} + B_{10} ROA_{it} + y_{it} + \varepsilon_{it} \quad (3)$$

$$FGR_{ROEit} = \beta_0 + \beta_1 Tax_{it} + \beta_2 BODEFF_{it} + \beta_3 (Tax_{it} * BODEFF_{it}) + \beta_4 LEV_{it} + \beta_5 Fsize_{it} + B_6 FOWNER_{it} + \beta_7 TQ_{it} + \beta_8 GDPGR_{it} + \beta_9 ETHICS_{it} B_{10} ROA_{it} + y_{it} + \varepsilon_{it} \quad (4)$$

where; *FGR* denotes firm growth, which is proxied by Sales growth and increase in Return on Equity (ROE) of the SSA firms. The independent variables of interest are board efficiency (BODEFF) and the interactive term between the corporate tax rate and board efficiency (*BODEFF*TAX*) of firms in SSA. The interaction variable measures whether in the presence of efficient boards, corporate tax rates influence the growth of firms in sub-Sahara Africa. The study includes independent variables such as firm size (proxied by total assets), financial leverage (FinLEV), Tobin's Q (TQ), foreign ownership (FOWN), GDP growth rate (ΔGDP), ethical behaviour (ETHICS) of firms, and ROA. y_{it} denotes firm or industry and location effects while ε_{it} is the stochastic error term assumed to be independently and identically distributed with zero mean and constant variance. A priori, the study predicts a positive relationship between FOWN, GDPGR, ROA, ETHICS, TOBIN'S Q, BODEFF, BODEFF*TAX and TASSETS and growth of firms in SSA. At the same time, a negative prediction is made for the firms' corporate tax levels and their growth.

4. Results and Discussion

4.1. Descriptive Statistics

Table 1 presents the descriptive statistics for all the variables used in the estimations. The average increase in the level of ROE of firms in SSA is 2.73%, while the minimum (-4.2) and maximum (5.7%) do not indicate a widespread increase in ROE. The growth rate in Sales as a share of the firms' total growth shows an average value of 9.76%, greater than the growth rate of ROE. The standard deviation is about 4.14%, suggesting that, on average, Sales growth as a share of the total growth of the firms deviates from the mean by about 4.14%. The average level of Bodeff is 0.714 for firms in sub-Sahara Africa, which suggests a relatively low efficiency for these firms for the period covered for the study, with the minimum and maximum being (0.602 and 0.797), which do not show any widespread difference in board efficiency levels among the firms. The mean for the interaction between the Bodeff and corporate tax rate is 0.492%, while the minimum and maximum values are (0 and 1.187). The standard deviation is 0.543%, implying that the interaction deviates from the mean by .543%. The minimum and maximum corporate tax rates are (1.16 and 1.695). In contrast, the average corporate tax rate (TAX) for the firms is 1.51% which appears very low and surprising since the literature (Stotsky *et al.*,1997) suggest an average corporate tax rate for firms in sub-Sahara Africa to be around 22% (Stotsky et al., 1997). The average GDPGR among firms from sub-Sahara Africa is 3.77%, while the minimum and maximum values are (-17.67 and 19.68) respectively, which again does not show a huge disparity in terms of the growth in GDP of countries in sub-Sahara Africa.

Table 1. Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
ROE	2,234	2.7324	1.0385	-4.1799	5.695
Sales	2,642	9.7644	4.1374	-3.5405	19.5165
FOwn	3,578	4.928	.4693	3.23	6.25
Bodeff	3,578	.7139	.0529	.602	.797
BodeffTax	3,596	.4923	.5427	0	1.187
Tax	1,635	1.509	.0743	1.1614	1.695
GDPGR	3,597	3.7696	4.234	-17.669	19.675
ROA	2,724	1.9165	1.0741	-4.6052	6.1322
ETHIC	3,578	1.3957	.12887	1.1346	1.6371
FinLev	3,270	3.8722	47.539	.779	2677.353
TobinsQ	2,574	997.863	18612.88	-10657.01	456983
LTAssets	3,338	3.4178	1.125	-1.1221	7.2199

Table 2. Multicollinearity Test

VARIABLE	Sales	ROE	FOwn	Bodf	BodfTax	Tax	GDPGR	ROA	Ethics	FinLev	TobinsQ	LTASSETS	VIF
Sales	1.000												2.7
ROE	0.0480	1.0000											1.9
FOwn	-0.3839	0.0275	1.0000										1.5
Bodf	-0.1997	-0.0572	0.5767	1.0000									3.0
BodfTax	0.0416	-0.0545	0.3322	0.8342	1.0000								1.4
Tax	0.4182	0.0030	-0.4141	-0.2262	0.3475	1.0000							1.5
GDPGR	0.1266	0.0601	-0.3034	-0.7289	-0.5988	0.1775	1.0000						2.9
ROA	-0.0286	0.7476	0.0319	-0.0411	-0.0267	0.0260	0.0485	1.0000					1.5
ETHIC	-0.3461	-0.0304	0.5420	0.7980	0.5746	-0.3447	-0.4105	0.0067	1.0000				1.5
FinLev	0.0453	0.2150	-0.0205	-0.0517	-0.0339	0.0252	-0.0030	-0.1378	-0.0724	1.0000			2.0
TobinsQ	-0.0497	0.0739	0.0604	-0.0354	-0.1436	-0.1961	0.0672	0.0703	0.0006	0.0016	1.0000		1.6
LTASSETS	0.6402	-0.0133	-0.3039	-0.1748	0.0028	0.3104	0.0393	-0.0392	-0.3435	0.0482	-0.0739	1.0000	1.7

** – Significant at 0.01; ** – Significant at 0.05; and * – Significant at 0.1

Table 2 displays the results of the correlation matrix showing the relationship existing among the independent variables and the dependent variables (that is, Sales growth and ROE). The correlation analysis is meant to identify issues of multicollinearity. A correlation value of more than 0.7 among the independent variables suggests the presence of multicollinearity. From the above, the highest correlations are found between ROA and ROE, BodeffTax and Bodeff, and GDPGR and Bodeff. All the other variables have correlation values of less than 0.5. This indicates that the independent variables do not exhibit problems of multicollinearity. For robustness check, the variance inflation factor (VIF) was also conducted. The VIF results of the variables do not indicate the presence of multicollinearity. The results provide evidence of a VIF of less than ten (10), the threshold suggested by (Menard, 2002). The table shows FOWN having a negative relationship with TAX, GDPGR, LTASSETS, and Finlev, while it has a positive association with Bodeff, Bodefftax, ROA, Tobin's Q and ETHIC. The Bodeff variable also has a positive relationship with Bodefftax, ETHICS, but is negatively related to the other variables. The corporate tax variable relates negatively to Tobin's Q and ETHICS, but positively related to the LTASSETS, Finlev, LROA, and GDPGR. Concerning ROA, it has a negative association with Finlev and LTASSETS but it relates positively ETHICS and Tobin's Q. Equally, while the GDPGR variable relates negatively to Finlev and ETHICS, it relates to LTASSETS, Tobin's Q and ROA, positively. Further, SALES growth negatively relates to the FOWN, Bodf, ROA, ETHICS and Tobin's Q but positively relates to Bodefftax, Tax, GDPGR, Finlev and

LTASSETS. Finally, the ROE is positively associated with FOWN, TAX, GDPGR, LROA, Finlev and Tobin's Q, but negatively relates to the other variables.

Table 3 presents the regression output of the firm growth models given in equations (1) and (2). We used two GMM estimation techniques to estimate our model: the difference and two-step system GMM with orthogonal deviations option, which handles unbalanced panel data. Two measures of firm growth were used, the ROE and the Sales Growth of the firms. System GMM uses the levels equation and the AB type orthogonality conditions to obtain equations in levels and the other difference. The second equation provides additional instruments and increases efficiency (Blundell & Bond, 1998).

Table 3. Dynamic Panel-Data Estimation, Difference & Two-Step SYS GMM before

Variables	Dependent variable: Return on Equity (ROE)			Dependent Variable– Sales Growth	
	Difference GMM	System GMM		Difference GMM	System GMM
ROE (-1)	-0.1159***	.2645***	SalesGR (-1)	0.3334***	.9932***
	(0.0532)	(.8566)		(0.0693)	(.0056)
FOwn	1.5977**	-38.956***		-0.9639	-.6219
	(0.9116)	(20.6744)		(0.6289)	(.6480)
Tax	-1.1628 ***	-4.742		-0.0039	.0054
	(0.2872)	(6.513)		(0.0042)	(.0055)
GDPGR	0.1891***	2.8314***		-0.1369***	-.5199
	(0.0984)	(1.414)		(0.0311)	(.0452)
ROA	0.7590***	7.552***		0.0111***	.0289***
	(0.0452)	(1.738)		(0.0022)	(.01453)
Ethics	0.1369	4.6882		0.0299	.1856***
	(0.2111)	(4.014)		(0.1850)	(.0947)
FinLev	0.9272***	9.9546***		0.0669***	.0092**
	(0.1506)	(2.896)		(0.0277)	(.0052)
LTASSETS	-0.1630	-.2023		0.4952***	.0165
	(0.1768)	(.8423)		(0.1258)	(.0182)
Tobin's Q	-0.0094	2.494***		-0.0575	1.61e-06**
	(0.0968)	(.8423)		(0.0489)	(8.38e-07)
cons	18.0168			-7.2880	
	(17.634)			(4.9873)	
Observations	602	909		658	836
Number of id	200	233		212	228
Instruments	36	42		37	66
AR (2)	0.8770	0.081		0.2125	0.793
Hansen test	0.4165	0.127		0.5609	0.062

the Introduction of the Interactive Term

Notes: This table provides dynamic panel data regression results of the corporate tax rate on the growth of firms from sub-Saharan Africa. Two estimation techniques were used (Difference and System GMM), and two different measures for firm growth (ROE and Sales Growth) were used. Standard errors are provided in parenthesis below the coefficients estimates. AR (2) is used to test for serial autocorrelation, and the Hansen test is used to test for over-identification of the instrument. * Significant at the 10% level., ** Significant at the 5% level, and *** Significant at the 1% level.

The results of table 3 above indicate that the lagged ROE coefficient is negative and statistically significant at 1% from the difference estimation technique. However, the two-step system GMM estimates indicate that the lagged ROE and Sales Growth are positive and statistically significant at 1% for the two firm growth measures used

(ROE and Sales growth). This means that the previous growth of firms in Sub-Saharan Africa in terms of their ROE and Sales is vital in explaining their current growth. The coefficients estimated range from 0.2645 to 0.9932 for the two firm growth measures, implying that a percentage increase in the previous ROE and Sales of firms in SSA results in the growth of around 26 % to 99% in their Sales and ROE, respectively, all other things being equal. The implication of this is that, as the ROE and the Sales of these firms appreciate, it positively affects the overall growth of these firms. The possible reason could be that, for instance, since Sales growth has an influence on internal motivation, retention of talented employees as well as on investments in new equipment and technology (Brush et. al., 2000), managers of these firms decide to focus on how to increase sales to grow their firms to achieve these stated desirable objectives of firm growth.

The study predicted a positive relationship between foreign ownership (FOWN) and the growth of firms in sub-Saharan Africa. Consistent with the prediction, the results show that the coefficient for FOWN on the firms' growth measure of ROE is positive and statistically significant at 5% from the differenced GMM estimation technique. This suggests that as the number of foreign ownerships in firms in SSA increases, it assists the growth of these firms. A plausible explanation could be that, as maintained by Choi & Park (2019), foreign investors offer managers the needed motivation to focus on providing long-term value for the shareholders by disciplining and monitoring the activities of the managers. It also appears that foreign investors invest in well-performing firms and serve as effective monitors (Ferris *et. al.,* 2015). The present study's finding is similar to Shikha and Anjala (2017) that foreign ownership has a positive and significant impact on firm growth.

Regarding the impact of the corporate tax rate on the firms' growth as measured by their ROE, the study hypothesized a negative relationship between the corporate tax rate of the firms and an increase in their ROEs. Confirming this hypothesis of the study, the coefficient for the corporate tax rate is negative and statistically significant at 1% for the difference GMM estimation technique. The coefficient estimated is -1.1628, suggesting that if corporate tax rates of firms in SSA increase by 1%, the returns on their equities decrease by 116.3%. This finding is in line with Kijewska's (2016) views that as the corporate tax rate increases, the tax effect decreases, and firms keep a smaller percentage of their pre-tax earnings. Other things being equal, the firm's ROE decreases.

For the coefficient of economic growth (GDPGR), the study predicted a positive relationship between the economic growth of sub-SSA countries and firms' growth in these countries. Consistent with this prediction, the coefficient is positive and statistically significant at 1% for the two estimation techniques of difference GMM and system GMM techniques for the firms' growth measure of ROE but negative and statistically significant using the difference GMM for the Sales growth.

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The estimated coefficients range from 0.1891 to 2.8314 for the ROE, and it is -0.1369 for the Sales growth, implying that an improvement in the economic growth of SSA countries by 1% increases the ROE of firms in these countries by about 2.83%. The study's positive relationship between economic growth and ROE appears contradictory to Ritter's (2005) position that GDPGR and ROE have a negative relationship. A further contradiction to this finding of the study is seen in the GDPGR coefficient of -0.1369, which is statistically significant 1% but shows a negative relationship between GDPGR and Sales growth for SSA firms, indicating that as economies in SSA improve, growth in sales of firms in these countries declines, other things remaining constant. This is a surprising finding since the improvement in economic performance should reflect growth in sales to demonstrate how well firms relate to the environment within which they operate.

The study hypothesized a positive relationship between the ROA and the growth of firms in SSA. Consistent with the hypothesis, the coefficient of the ROA is positive and statistically significant at 1%. The estimated coefficients are (0.7590 and 7.55) for ROE and (0.0111 and .0289) for growth in Sales. The positive relationship is robust for the two estimation techniques, the difference, and the system GMM and for the two firm growth measures of ROE and Sales growth measures used, suggesting that increases in the level of profits of firms in SSA contribute to their growth. The reason may be that, possibly, the profit levels of SSA firms as measured by their return on assets (ROA) serve as the springboard for these firms to invest in activities capable of improving their sales and return on their equities. This finding confirms Dewi & Novitasari's (2021) position that return on assets positively affects growth.

Concerning Ethics, the study hypothesized a positive relationship between Ethics and the growth of firms in SSA. Confirming the prediction of the study, the Ethics coefficient is positive and statistically significant at 1%, with an estimated coefficient value of 0.1856 from the system GMM estimation for the firms' Sales growth measure. This suggests that if firms' ethical standards in SSA improve by 1%, their sales will grow by about 19%, all other things being equal. Therefore, the implication is that if the management of firms in SSA puts up good ethical standards regarding how they manage their firms, it is likely to impact these firms' growth positively.

The study also hypothesized a negative relationship between financial leverage (FinLev) and firms' growth in SSA. Inconsistent with the results, the coefficient for Finlev levels of the firms is positive and statistically significant at 1%. The estimated coefficient values range from 0.9272 to 9.9546 for ROE and 0.0669 .0092 for Sales growth.

The indication is that a decrease in the debt levels of firms in SSA can significantly increase the ROEs and Sales of firms in SSA. The positive relationship is strong for

the two estimation techniques, the difference, the system GMM, and the firm growth measures of ROE and Sales growth measures employed. This suggests that, as the Finlev levels of firms from SSA increase, they experience growth in sales while their ROEs also appreciate. A reasonable explanation may be that whenever the debt levels of these firms increase, it allows them to put measures in place to increase the returns on their equities (ROE) and increase their sales. This finding of a positive association between financial leverage and firm growth is consistent with previous views expressed by Farooq *et al.* (2016) and Zhao et al. (2012) that financial leverage is positively linked with firms' growth.

Further, the study hypothesized a positive relationship between the sizes of firms in SSA and their growth. In line with this prediction, the coefficient is positive and statistically significant at 1% from the difference GMM estimation for the firms' sales growth.

The estimated coefficient is 0.4952, suggesting that a 1% increase in the total asset base of these firms is likely to contribute to growth in sales by about 50%, all other things being equal. This may be due to the fact that, as the firms generate more sales, they tend to invest more resources in productive assets to sustain these high sales. However, the finding appears contradictory to Abeyrathna *et al.* (2019) that a negative and statistically significant relationship exists between firms' total assets and their growth.

Lastly, the study predicted a positive association between Tobin's Q and the growth of firms in SSA. In line with the expectation of this study, the coefficient for the firms' growth opportunities as measured by their Tobin's Q ratio is positive and statistically significant at 1% for the two measures of firm growth (ROE and Sales growth) from the system GMM estimation. This means that as the opportunities for growth for firms in SSA continue to improve, they take advantage of these opportunities to increase the returns on their equities and boost their sales levels. This finding is largely in the same wavelength as the views espoused by Fu et al. (2016) that firms with higher Tobin's Q ratios tend to exhibit superior performances in the future and concludes that Tobin's Q ratio of firms has a more significant impact on its future performances and growth.

4.2. The Moderating Effect of Board Efficiency on the Relationship between Corporate Tax Rates and Firm Growth in SSA.

To determine whether corporate tax rates impact firms' growth in SSA, an interactive term of board efficiency is introduced as shown in the firm growth models in equations (3) and (4). Table 4 shows results from the interaction of board efficiency on the relationship between corporate tax rates and firm growth.

Table 4. Dynamic Panel-Data Estimation, Difference & Two-Step SYS GMM after Introducing the Interactive Term (Tax*Bodeff) on Firm Growth Measures of Sales Growth and ROE

Dependent variable: Return on Equity (ROE)			Dependent Variable= Sales Growth		
Variables	Difference GMM	System GMM		Difference GMM	System GMM
ROE (-1)	-0.1243***	.18881***	LogSales (-1)	0.2895***	.9984***
	(0.0555)	(.0665)		(0.0726)	(.0078)
FOwn	1.9712***	13.0877***		-0.5586	.4034
	(0.8823)	(4.8468)		(0.5407)	(.2855)
Bodeff	-3.0092*	6.6634***		-0.2696***	.8982
	(1.6868)	(2.2123)		(0.1282)	(.9919)
TaxBodeff	0.1422***	-.02637***		0.0074***	-.0100
	(0.0465)	(.00971)		(0.0036)	(.0076)
Tax	-7.5695 ***	.1108***		-3.1336***	3.5784
	(2.1980)	(.0437)		(1.2816)	(2.4271)
ΔGDP	0.1618***	.2985***		-0.0924***	-.0090
	(0.0791)	(.1005)		(0.0390)	(.0074)
ROA	0.7700***	.8196***		0.0111***	.0158*
	(0.0448)	(.0674)		(0.0022)	(.0091)
Ethics	-0.7369***	-.5941***		0.0256	.37699***
	(0.3509)	(.2788)		(0.2307)	(.1755)
FinLev	0.9526***	.2416***		0.0376	.00589
	(0.1463)	(.0265)		(0.0258)	(.0052)
LTAssets	-1.40E-06	.0232		0.7984***	.0011
	(1.19E-06)	(.0267)		(0.1455)	(.02085)
Tobin's Q	0.0003	-.0132		-0.0575	1.61e-06**
	(0.0003)	.0173		(0.0489)	(8.38e-07)
cons	-13.6693***			-7.2880	
	(5.0758)			(4.9873)	
Observations	602	820		658	886
Number of id	218			228	
Instruments	39	67		37	67
AR (2)	0.917	0.672		0.883	0.527
Hansen test	0.813	0.388		0.5051	0.111

This table provides dynamic panel data regression results of the moderating effect of board efficiency on the relationship between corporate tax rate and the growth of firms in sub-Saharan Africa. Two estimation techniques were used (Difference and System GMM), and two different measures for firm growth (ROE and Sales Growth) were used. Standard errors are provided in parenthesis below the coefficients estimates. AR (2) is used to test for serial autocorrelation, and the Hansen test is used to test for over-identification of the instrument. *, **, *** represent 10%, 5% and 1% significant levels respectively.

The study hypothesized a positive relationship between board efficiency (Bodeff) and the growth of firms in the SSA. Consistent with this prediction, the results as displayed in Table 4 reveal that the board efficiency (Bodeff) coefficient is positive (6.6634) and statistically significant at 1% for the firm growth measure of ROE based on the system GMM estimation technique. This means that, as the efficiency levels of boards of firms from sub-Sahara Africa improve, they contribute meaningfully to their growth. The possible reason could be that these firms consider efficient boards as an important way of monitoring the behavior of managers and

guiding them to be able to identify and implement policies that would make them grow and protect shareholders' interests.

Additionally, an efficient board encourages higher transparency in companies and improves the oversight level of the firms (Adams *et al.,* 2007). However, contrary to the study's prediction of a positive relationship, the Bodeff coefficient is negative (-0.2696) but statistically significant at 1% for the firm growth measure of Sales growth from the difference GMM technique, suggesting that a decline in the efficiency levels of boards of firms from sub-Sahara Africa allows managers of these firms to initiate measures that would contribute to improving the level of their sales to achieve the eventual growth they so desire.

The study hypothesized that in the presence of efficient boards, corporate tax rate (Bodeff*Tax) levels positively impact the growth of firms in SSA. Contrary to this hypothesis, the result showed that the coefficient of the interactive term between board efficiency and the corporate tax rate is negative (-.02637) and statistically significant at 1% from the GMM estimation technique for the firm growth measure ROE. This implies that a reduction in corporate tax rates for firms from sub-Sahara Africa enables them to grow when they have efficient boards in place, other things remaining the same. This finding is similar to the earlier view expressed by Lee and Swenson (2012) that corporate tax rates have a negative relationship with the share price owing to the significant impact of a long-term continuous reduction in the rate corporate tax rate on the value of the shareholders and market. Nonetheless, consistent with the positive relationship hypothesized by the study, the coefficient for the interactive term between the board efficiency and the corporate tax rate is positive (0.0074) for Sales growth. This shows that the effect of an increase in the corporate tax rate on the growth of firms in SSA when they have inefficient boards is 0.74%, suggesting that even if corporate taxes are raised for these firms, with efficient boards in place, they can grow by increasing the level of their sales. The reason could be similar to the views expressed by Rego (2003) and Derashid and Zhang (2003) that firms that make attractive profits tend to have lower costs regarding tax planning since they possess adequate resources to invest in activities that relate to the planning of their taxes, which confirms that as the corporate taxes of these firms increase their value also improve. Armstrong *et al.* (2010) also suggest that the payment of high levels of taxes makes the amount of information on individual firms available to other users apart from listed firms increase, thereby reducing conflicts of interest amongst shareholders and other investors.

5. Specification Tests

It is always essential to test the validity of the models and instruments used in dynamic panel analysis. Dynamic panel estimation techniques take care of issues of

heteroscedasticity and endogeneity. Nevertheless, the differenced equations can produce serial correlation (Baum *et al.,* 2013). To confirm the existence of second order autocorrelation, the Arellano and Bond AR (2) tests were conducted. The AR (2) test results do not provide any evidence of second-order autocorrelation because, in all the models, the AR (2) test is above 5%. Therefore, the study rejects the presence of autocorrelation of order 2. The moment conditions also needed to be tested for over-identifications (Roodman, 2006). The Hansen-Sargan tests for all the models show that the instruments are correctly identified. The coefficients of the lagged dependent variables are also less than one, which is consistent with dynamic stability. What this confirms is that the models are well specified.

6. Concluding Remarks and Recommendations

The study investigated the moderating effect of board efficiency on the relationship between corporate tax rate and firms' growth in sub-Saharan Africa. Firm growth was defined as improvement in specific attributes of a firm, such as the profit levels, employment, and sales, among other attributes from one period to another (Hakkert & Kemp, 2006). The growth of firms may be measured by the capability and the effectiveness of managers of these firms to properly use its specific resources such as capital and labour. The firm growth is also determined by how the firm obtains knowledge and uses it to transform the available resources into marketable goods and services through the firms' laid down structures and practices (Nelson *et al*., 1982; Nickell, 1996; Nickell *et al.,* 1997). The study used ROE and Sales growth as proxies for firm growth. Sales growth is the percentage growth in the net sales of a firm from one fiscal period to another. The ROE is calculated by taking the profit after tax and preference dividends of a given year and dividing it by the book value of equity (ordinary shares) at the beginning of the year. To ensure the robustness of the results, two estimation techniques were used, the difference GMM and the two-step system GMM. The system GMM is superior in providing additional instruments of the levels equations and the orthogonal deviations and improves the estimation efficiency. The study finds direct sub-Saharan African evidence that, with efficient boards in place, a reduction in corporate tax rates for firms in sub-Saharan Africa enables them to grow by increasing the returns on their equities, all other things being equal. Similarly, with efficient boards in place for these firms, even if corporate tax rates are increased, they can also grow by increasing their sales levels. The implication, therefore, is that, in the presence of efficient boards, either an increase or decrease in corporate tax rates would impact positively on the growth of firms in sub-Sahara Africa, after controlling for possible financial leverage challenges, sizes of these firms, their ethical behaviour, return on their assets (ROA), the economic sizes (GDP) of sub-Saharan African countries these firms are located and growth opportunities. Firms should consider the effects corporate tax rates could have on

their growth if they do not have efficient boards in place. This study shows that not only are corporate taxes an essential determinant of firm growth in sub-Saharan Africa, but the efficiency levels of boards also have an important influence on the growth of sub-Saharan African firms. Therefore, this study recommends that a further study that will use data on only financial institutions in sub-Sahara Africa for comparative analysis and conclusion to be drawn. Nevertheless, this study makes a valuable contribution to the body of knowledge by suggesting that corporate tax rates can positively affect the growth of firms when efficient boards exist.

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