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TAXATION AND CORPORATE INVESTMENT: A COMPARATIVE ANALYSIS OF NIGERIA AND GHANA

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Abstract

This study examines the effect of taxation on corporate investment in Nigeria and Ghana using panel data that were obtained from financial statements of listed 150 and 48 companies respectively from 1999-2016. The results showed that all explanatory variables used in this study explained 68.4% and 87.2% variation in investment in Nigeria and Ghana respectively. The F-statistic of 8.79 with p of 0.0000 indicates that the model is fit to predict the investment level. The study concludes that corporate income tax and interest significantly affect the level of investment in Nigeria with each variable having a p-value < 5% and negative coefficients parameter of -0.4065 and -0.1646 respectively. Meanwhile exchange rate and import rate are insignificant in explaining the level of investment in Nigeria, with p-values > 5%. However, in Ghana, corporate income tax, interest and exchange rate significantly affect investment given that their p-values are < 5%. These variables have negative coefficients parameters of -0.6575, -0.6652, and 0.3010 respectively while import rate with a positive coefficient of 6.9373, also has a p-value of 0.9437 indicating an insignificant relationship with the level of investment in Ghana. The study recommends that governments should restructure tax rate and its administration in both countries by reducing the company income tax rate from 30 per cent to a lower percentage and enforcing strong macroeconomic policies including stabilization of exchange rate and regulation of interest rate charged by lending institutions with a view to reduce the adverse effect of tax rate on corporate investment.

Keywords: taxation; corporate investment; financial statements; panel data

1. INTRODUCTION

Investment is a vital ingredient in revitalizing an economy and stimulating the growth of such economy. This has prompted many countries to work on developing favorable conditions to promote investment. The level of development of any nation depends on the level of the investment either of private and or foreign direct investment (Mutti & Grubert, 2004). However, one means of generating the amount of revenue for investment is through a well structured tax system. Azubike (2009) is of the opinion that tax is a major player in revenue generation in every society of the world. Taxation is an opportunity for government to collect revenue needed in discharging its pressing obligation such as investment. Nzontta (2007) opined that tax constitute key source of revenue to the federation account shared by the federal, state and local governments. Taxes are imposed on the income or capital of some types of legal entities in order to establish or invest for creating employment opportunity for their citizen, ensuring adequate security, enhance public expenditure, redistribute income, overcome externalities and influence the allocation of resources (Adegbite & Shittu, 2015).

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Taxes imposed by government are in various forms and this includes personal income tax, corporate income taxes, withholding tax, education tax, value added tax, capital gain tax, petroleum profit tax among others.

Investment has been confirmed as the heart of economic growth in many economies, especially in some West Africa countries. Taxes are a crucial factor when making investment decisions. However, the inflow of investment is attracted not only by tax factors but also by other variables. A number of these variables with the exception of tax variable have been discussed extensively in the literature such as finance cost or interest rate, exchange rate and rate of inflation (Anthony, 2013) The inflow of investment brings several benefits in particular by way of economic growth, infrastructure, human resources, technological development, employment generation, economic and social well-being of the people in the country. The sensitivity of investment to tax according to Adegbite and Shittu (2015) varies depending on the conditions of the country, the tax policies of the companies, the investment policies established therein, types of industry, and commercial activity covered.

Although government raises revenue from several other sources such as petroleum, licenses, fees and fines, taxation remains the largest contributor of government revenue even when other sources are put together (Vergara, 2009). This support the assertion made by Azah, (2005) that “taxation has become one of the key sources of domestic revenue. It is a major fiscal tool not only for mobilizing the much needed public revenue but also for directing investment flow and other desirable socio-economic behavior”. Unfortunately, the fact that taxation does not offer any direct benefit to the tax payer in return coupled with some level of illiteracy, tax payers resort to all sorts of illegal methods to either reduce the amount of tax or to dodge the tax altogether. Such activities include falsifying records to over or under invoice goods, increasing allowable deductions and some simply failing to maintain proper records. All these result in low level of tax revenue mobilization that governments continue to experience over the years.

In addition to providing social amenities, governments also have to provide enough jobs to cater for the employment needs of its citizens but government alone cannot meet the employment demands of the people. There is therefore the heavy reliance on the private investors to create jobs to help the government absorb the unemployed. It is often said that the private sector is the engine of growth of the economy. However, governments must create the right economic environment for the private sector to thrive and this they do through the use of fiscal or economic policies of which taxation policy is one.

Writing under the caption, “Taxes could discourage investment” in the Financial Times issue of Monday, November 21, 2011, the Chambers of Mines (mining body) in reacting to an increase in the corporate tax rate on mining companies from 25 to 35 percent and a windfall tax of 10 percent on mining profits as introduced in the 2012 budget, warned that it could discourage investment. According to Financial Times (2011, November 21 p.36), Toni Aubynn, head of the Ghana Chamber of Mines stated that, “this stance will likely discourage investment and the expansion of current projects”.

So much as the nation wants to raise the maximum tax revenue, it is faced with a problem of ensuring that tax levels do not serve as a disincentive to private investment. What then is the right level of tax rate that will generate the optimum level of tax revenue? and at the same time does not erode the investor’s profits to the extent that they are thrown out of business. After all, profit is the main aim of every private investor. In an attempt to balance the effect of tax on the investor, the tax system provides a lot of tax incentives including tax holidays, investment tax credits, capital

allowances, lower taxes and tax rebates. These incentives go a long way to lessen the tax burden when taken advantage of by the investor.

The tax provides a predictable and stable flow of revenue to finance development objectives (Pfister, 2009). Bird and Zolt (2003) opined that, effective and efficient tax system can assist the government generate enough revenue to take care of its investments, estimated expenditure, meet the needs of the people, and effectively participate in the world economy. Corporate income taxes reduce the amounts of incomes available to the private firms for reinvestment to expand the economy. However, higher taxes are a disincentive to private investment since they erode whatever profits made by firms and hence discourage private investor Edame and Okoi (2014). According to Norgah (1998), an economy of deficits is not attractive to foreign investors and taxation is one of the means of ensuring the avoidance of deficits. However, higher taxes tend to drive out or scare off investors. Corporate tax rate differ across countries and varies according to the company's activities and the economic sector of the country's business.

In West Africa countries such as Ghana, the corporate tax rate is 22% for companies that are not listed on the Stock Exchange and 25% for companies listed on the Ghana Stock Exchange which is lower than that of Nigeria (30%). Also, in Guinea, Gambia, Sierra Leone and Mauritania, the company income taxes are 35%, 31%, 30% and 25% respectively. These different rates suggest the likelihood of different corporate investment as well. The proposition of this relationship is not reflected in any known literature. Thus, this study examines the effect of taxation on corporate investment with the view of examining the effect of tax liability on corporate investment as it varies among West African countries. In the light of the above, the study raised the following research question: what effect does corporate income tax have on investment in West African Countries.

The general objective of this study therefore is to examine the effect of taxation on corporate investment. Specifically the study seeks to assess the relationship between import, exchange rate and interest paid on investment in West African countries. In order to achieve these stated objectives, the following hypotheses were formulated:

- H₀₁: Taxation has no statistical significant effect on investment in West African countries.
- H₀₂: There is no significant relationship between import and investment in West African countries.
- H₀₃: There is no significant relationship between exchange rates and investment in West African countries.
- H₀₄: There is no significant relationship between interest paid and investment in West African countries.

Many research works have been conducted on the effect of taxation on corporate investment across countries like the works of: Edame and Okoi (2014), Adegbite and Shittu (2015), Anthony (2013), Becker, Fuest and Riedel (2012), Tremblay (2010), Tatom (2007) among others. However, within the scope of the empirical research reviewed, none of these literatures made comparison between West Africa countries. Therefore, this study attempts to fill this gap by examining the effect of taxation on sectorial investment between Ghana and Nigeria from 1999-2016. This will aid the policy makers of the two countries to formulate and implement appropriate tax policies to attract investment in the various sectors of the countries under consideration.

There are 18 countries in West Africa, 8 of this countries (Benin, Burkina faso, Guinea, Guinea Bissau, Niger, Senegal, Togo, Mali) has a joint stock exchange called Bourse Regionale des Valeurs Mobilières (BRVM) just for the purpose of regulations but with no companies listed on it, 3

countries (Cape Verde, Ivory coast, Sierra Leone) are just filling for the opening of a Stock Exchange market as at February 11, 2018. 5 countries (Gambia, Liberia, Mauritania, Saint Helena and Sou tome and Principe) do not have a Stock Exchange market at all; as such, they are currently not filling for one. This leaves this study with just 2 countries (Nigeria and Ghana). This study focused on companies listed on the Nigeria Stock Exchange and Ghana Stock Exchange (excluding financial sector that is highly regulated).

2. LITERATURE REVIEW

Taxation is an instrument employed by the government for generating public funds (Anyaduba, 2004). It is a required payment imposed by the government on the income, profit or wealth of individuals, group of persons, and corporate organizations. (Piana, 2003) opined that it is a result of the application of tax rate to a tax base. According to (Brautigam, 2008) a well-designed tax system can help governments in developing countries prioritize their spending, build stable institutions, and improve democratic accountability. Tax is a mandatory financial charge or some other types of levy imposed upon a tax payer by a government organization in order to fund various public expenditures. It is a means by which governments finance their expenditure by imposing charges on citizens and corporate entities in order to encourage or discourage certain economic decisions. A failure to pay or evasion of or resistance of taxation is punishable by law.

Investment is the allocation of money or other resources such as time in the expectation of some future benefits, it is the purchase of goods that are not consumed today but are used in the future to create wealth. From the theory of investment, it is the change in capital stock during a period. The investment flow in a period can be calculated as the difference between the capital stock at the end of the period and the capital stock at the beginning of the period. (Haavelmo, 1960) Thus, the investment flow at time period t can be defined as: $It = K_t - K_{t-1}$. Where, K_t is the stock of capital at the end of period t and K_{t-1} is the stock of capital at the end of period $t-1$ (and thus at the beginning of period; Haavelmo, 1960). For the purpose of this study, investment is any expenditure that is aimed at increasing the value of a business. Thus investment in non-current assets is aimed at increasing value of a business and is not made by the government.

Corporate income tax is a tax levied on the profit of incorporated entities of a country. Corporate income tax rate varies with country. Corporate income tax is a “Double Edged Sword”. If it is not handled well, it can serve as a disincentive to investment instead of helping generate the much needed revenue for economic development. This is because, as taxes become so high that investors cannot pay, they fold up. Corporate income reduces the disposable income and hence contributes to determining how much profit must be ploughed back into the business if any. It is therefore imperative to determine an optimum level of corporate income tax rate that maximizes tax revenue and ensures maximum private investment. The effect of corporate income tax on private investment can either be positive or negative (Norgah, 1998).

Import duty is a tax collected on imports by custom authorities of a country. It is usually based on the value of the goods that are imported. Depending on the context, import duty may be referred to as custom duty, tariff or import tax. For instance, increase in import tax might discourage companies from investing in productive non-current assets, which are not produced locally.

Interest rate is the rate at which the commercial banks lend to their customers. It is also known as the lending rate. This rate is the price of money or capital and like all prices it is determined by the forces of demand and supply of money. In other words, it is the price that a

borrower pays to be able to use someone's money, capital or resources now rather than at a point in time in the future. It can also be referred to as the cost of capital to the investor who borrows from the surplus spending units to enable him finance his investments. An increase in lending rate negatively affects private sector investment since investors can borrow less all things being equal. A fall in the lending rate on the other hand, all other things remaining the same puts investors in a better position to borrow more. This has a positive effect on private sector investment because there is excess liquidity at a lower cost.

Exchange rate is the rate at which a country's currency can be exchanged for another. , the domestic private investor who depends on imports for his operations is faced with the price at which to convert his money for the currency of the imports. A depreciation of the exchange rate renders the imports more costly since he has less from the conversion. Thus a positive or a negative effect on private investment is expected.

This study is anchored on accelerator theory as the theoretical framework. The Accelerator Theory views that there is a relationship between tax laws and investments behavior founded upon some theoretical beliefs put forward by some scholars. Lipsey, (1979) opined that the determinants of investments are national income, rate of investment and expectations. The level of demand for goods is the prime determinant of investment; He stated further that the higher the level of demand and income, the higher the willingness amongst firms to invest, because of the favorable expectations about the future. These are strong boarder to the ability of firms in obtaining funds by borrowing. Therefore they tend to finance their investments more from retention out of profits. Higher level of demand will possibly result in higher profit which means more for retention and thus limits the ability to invest.

In a comparative study of investment incentives in relation to the life span of projects. Musgrave and Musgrave (1976), Brown (1962) and McLure (1962) argued that accelerated depreciation favors long-live investments as compared with investment tax credit and vice-versa for short lived investment initial allowance which is a form of accelerated depreciation was showed by Black (1959) as favoring long-live investment relatives to investment allowances and vice-versa for short-lived ones.

On the other hand, Sandomos (1974) analysis suggested accelerated depreciation favored short-lived capital. This different definitions of accelerated depreciation rate to the capital stock while Broadway, (1978) applied it to the capital as written down for tax purposes it must be stated Sandomos' method of calculating depreciation is similar to that of Nigerian methods as contained in the finance (Miscellaneous Taxation provision Decree 1985). The Accelerated cost recovery system (ACRS) which is another way of expressing accelerated depreciation was been criticized as generating adequate allowance for depreciation relative to economic depreciation (Tax Reform Act 1985) because it is used on cost rather than on current cost. Also it has been criticized for failure to consider the issues of fluctuating inflation.

Several studies have worked on this area. Some of which are: Ofoegbu, Akue and Oliver, (2016) which examined the effect of tax revenue on the economic development of Nigerian, and ascertain whether there is any difference in using Gross Domestic Product in establishing the relationship. The study used annual time series data for the period 2005-2014 to estimate a linear model of tax revenue and human development index using ordinary least square (OLS) regression technique. Findings show a positive and significant relationship between tax revenue and economic development. The result also reveals that measuring the effect of tax revenue on economic

development using HDI gives lower relationship than measuring the relationship with GDP thus suggesting that using gross domestic product (GDP) gives a painted picture of the relationship between tax revenue and economic development in Nigeria.

Chude and Chude, (2015) ascertained the impact of taxation on the profitability of companies in Nigeria. The study used secondary sources of data and a time series econometric technique with an error correction model tested the variables most likely to impact on profitability of companies in Nigeria. The study revealed that the level of company tax has significant effect on the profitability, that company income tax (CIT) has significant effect on profitability.

Madugba, Ekw and Kalu (2015) worked on corporate tax and revenue generation in Nigeria: The study tested the relationship between Petroleum Tax Income (PTI) on Total Consolidated Revenue (TCR) and the relationship between Companies Income Tax (CIT) on Total Consolidated Revenue. Pearson correlation and simple regression was used to analyze the data and the result revealed a positive significant relationship between Companies' Income Tax (CIT) and Total Consolidated Revenue (TCR). The regression result revealed a negative significant relationship between Petroleum Tax Income and Total Consolidated Revenue and Companies Income Tax and TCR. Adegbite and Shittu (2015) assessed the effect of corporate tax on investment in Nigeria and also examined the impact of corporate tax revenue on economic growth in Nigeria. Secondary data was obtained from Central Bank of Nigeria, Statistical Bulletin from 1993 to 2013 and multiple regressions analysis was employed to analyzed the relationship between the dependent variable (Gross Domestic Product (GDP)) and independent variables (company income tax, value added tax, petroleum profit tax and inflation). The study finds that corporate income tax has positive significant impact on revenue profile in Nigeria with the Adjusted R2 of 95.3% which directly enhanced growth in Nigeria.

Edame and Okoi (2014) used ordinary least square method of multiple regression analysis to examine the impact of taxation on investment and economic growth in Nigeria from 1980-2010. The annual data were sourced from the Central Bank of Nigeria statistical bulletin. The result of the analysis reveals an inverse relationship between taxation and investment. The economic implication of the result is that a one percent (1%) increase in CIT will result in decrease in the level of investment in Nigeria. Consequently, an increase in PIT will result in decrease in the level of investment. The result therefore showed that taxation is negatively related to the level of investment and the output of goods and services (GDP) and is positively related to government expenditure in Nigeria.

Becker, Fuest and Riedel, (2012) measured the relative importance of quality and quantity effects of corporate taxation on foreign direct investment. They conclude that booth effects of corporate tax have a negative impact on foreign direct investment. Djankov, Ganser, McLiesh, Ramalho, and Shleifer, (2010) estimated the relationship between corporate taxation and private investment with a sample comprising 85 countries included 27 high income, 19 upper-middle income, 21 lower-middle income, and 18 low income countries. In addition to 22 rich OECD countries, 10 are in East Asia, 17 are in Eastern Europe, 13 in Latin America, 6 in the Middle East, 14 in Africa, and 3 in South Asia. The findings of the study revealed a consistent and large adverse effect of corporate taxation on both investment and entrepreneurship. A 10 percent increase in the effective corporate tax rate reduces the investment to GDP ratio by about 2 percent.

Tremblay, (2010) brought out that the absence of a neutral relationship between corporate taxes and investment to the human capital. In his study, he comments negative relationship after adhering employee and company investing to the human capital and positive relationship after

adhering only company investment to the human capital. Tatom, (2007) also investigated the importance of tax policy for investment in Morocco and whether there are opportunities to accelerate economic growth through tax reform. Morocco has extremely high taxes, especially the individual income tax, social insurance or payroll taxes and the value added tax. The corporate tax rate is among the highest in the region as well. He agreed that higher corporate tax rates tend to raise the cost of capital to firms and reduce investment. It is important to have a mix of tax rate reductions to achieve economic development since corporate tax rate cuts offer the most visible incentives to attract new business ventures from domestic and foreign investors.

Romer and Romer (2007) investigated the impact of changes in the level of taxation on economic activity. The study used the narrative record - presidential speeches, executive-branch documents, and Congressional reports - to identify the size, timing, and principal motivation for all major postwar tax policy actions. Their findings revealed a powerful negative effect of tax on investment. They also found out that legislated tax increases designed to reduce a persistent budget deficit appear to have much smaller output costs than other tax increases. Mutti and Grubert, (2004) carried out research on the impact of taxes on the horizontally integrated international organizations which are considering foreign investment. They conclude that foreign investment is sensitive to the host country tax rates and this sensitivity is greater in developing than in developed countries and it increases overtime.

Based on empirical research reviewed on the effect of taxation on corporate investment across countries, none of the literatures made comparison between West Africa countries therefore this study filled this gap by examining the effect of taxation on corporate investment in various sectors between Ghana and Nigeria from 1999-2016.

3. DATA AND METHODOLOGY

This study adopted the work of Adegbite and Shittu, (2015) whose model was given as:

$$INV = f(CIT, IMPT, EXCH, INTR)$$

$$INV_{it} = \alpha_{it} + \beta_1 CIT_{it} + \beta_2 IMPT_{it} + \beta_3 EXCH_{it} + \beta_4 INTR_{it} + \mu_{it}$$

Where: INV = Investment; CIT= Company Income Tax; IMPT = Import rate; EXCH = Exchange rate; INTR = Interest rate; μ = error term; α = Intercept of the regression line. β_1 to β_6 = estimated coefficients.

The model was modified to include interest paid also known as finance cost incurred by corporations because it has a direct influence on retained earnings available to corporations for reinvestment in place of the prevailing interest rate used by Adegbite and Shittu, (2015).

$$INV = f(CIT, IMPT, EXCH, INTR)$$

$$INV_{it} = \alpha_{it} + \beta_1 CIT_{it} + \beta_2 IMPT_{it} + \beta_3 EXCH_{it} + \beta_4 INTR_{it} + \mu_{it}$$

Where:

INV = Investment.

CIT= Company Income Tax

IMPT = Import rate

EXCH = Exchange rate

INTR = Interest paid/ finance cost

μ = error term

α = Intercept of the regression line

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β_1 to β_6 = estimated coefficients.

Table 3.1 Variables measurement and *a priori* expectation

Abbreviation of Variables	Measurement	Expected sign
INV	Measured by non-current assets (i.e the aggregate of Property, Plant and Equipment, intangible assets and investment in subsidiary)	
CIT	Measured by tax liability (tax paid by corporations) annually.	negative
IMPT	Annual import as a percentage of GDP	negative
EXCH	Annual average exchange rate	negative
INTR	measured using the interest payments on loans or finance cost of each year	negative

Source: Authors' Computation, (2018).

Notes: A positive sign '+' indicates direct impact; whereas a negative sign '-' indicates an inverse impact of independent variables on Investment.

This study made use of secondary data covering variables in table 3.1 which were sourced from financial statement of 150 and 48 corporations (various sectors) listed on the Nigeria Stock Exchange and Ghana Stock Exchange respectively. Other data sources used include the Central Bank of Nigeria (CBN) statistical bulletin (various issues), National Bureau of statistics (NBS) and World Development Indicators (WDI). The population of the study covers all sector aside financial institutions. This study adopted the "*ex-post facto*" research design. This type of research design allows us to use an already available dataset. Descriptive analysis, correlation matrix and cross sectional dependency test were conducted that suggest the appropriateness of Ordinary Least Square Regression Analysis Technique and Pearson product moment correlation in examining the influence of and/or relationship between taxation and investment. The population of the study covers 2 West Africa countries (Nigeria and Ghana) out of 18 over a period of 18 years (1999-2016).

4. FINDINGS AND DISCUSSION

Table 4.1 shows the descriptive statistics of dependent and independent variables for companies from various sectors in Nigeria and Ghana from 1999 to 2016. Thus, the total observations for each dependent and explanatory variable in Nigeria are 162 (panel data of 9 sectors for 18 years), while that of Ghana are 108 (panel data of 6 sectors for 18 years) Therefore, the mean, standard deviation, minimum and the maximum values of independent variable and explanatory variables are reported. The measures of dispersion of the model variables are measured by standard deviation values as shown in Table 1.

Table 4.1: Descriptive Statistics

Variables	Nigeria				Ghana			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max.
INTR	19.22469	1.073205	18.19412	21.81113	21.63600	14.52368	2.800000	51.94982
CIT	19.36578	2.317074	15.48828	22.57446	23.32400	4.244138	18.36000	36.09000
INV	16.62445	2.464750	11.71953	19.42569	45.85600	9.751200	29.10000	64.10000
IMPT	16.19777	1.768290	13.76912	19.65018	8.166000	5.033238	10.82390	44.96800
EXCH	128.2333	92.08180	150.0000	301.0000	105.0000	81.23693	120.0000	280.0000

Source: Authors' Computation, (2018).

Evidence from Table 4.1 reveals that in Nigeria the average amount of interest paid (INTR) by companies from various selected sectors in the stated period is 19.22469 ranging from 18.19412 to 21.81113 with standard deviation of 1.073205. On the other hand, the average corporate tax paid by companies from various selected sectors represented by company income tax (CIT) is 19.36578 varies from 15.48828 to 22.57446 with standard deviation of 2.317074. Also, the amount of investment (INV) measured by the aggregate of all investment of companies from selected sectors in Nigeria ranges from 11.71953 to 19.42569. It has a mean of 16.62445 showing the deviation of 2.464750 from its mean value. The standard deviation for import (IMPT) and exchange rate (EXCH) are 1.768290 and 92.08180 respectively, showing ranging from 13.76912 and 45.00000 to 19.65018 and 301.0000 for (IMPT) and (EXCH) respectively.

Meanwhile, in Ghana the overall average of amount of interest (INTR) paid under the study was 21.63600 ranging from 2.800000 percent to 51.94982 with the deviation of 14.52368 from the mean. The mean of corporate income tax (CIT) was 23.32400 with a standard deviation of 4.244138 over the period under study while it ranges from 18.36000 to 36.09000. Furthermore, investment (INV) demonstrates a minimum of 29.10000 and maximum of 64.10000 with an average value of 45.85600 showing 9.751200 deviations from its mean. The standard deviation for import (IMPT) and exchange rate (EXCH) are 5.033238 and 81.23693 respectively, ranging from 10.82390 and 120.0000 to 44.96800 and 280.0000 for (IMPT) and (EXCH) respectively. Therefore, the study discovered that the mean average for all the variables, except IMPT and EXGR recorded for Nigeria is greater than that of Ghana.

The existence of the problem of multicollinearity was tested using variance inflation factor (VIF) as contained in Table 4.2.

Table 4.2: VIF Test of Multicollinearity

Variable	Nigeria	Ghana
	VIF	VIF
INTR	3.21	1.18
CIT	1.92	0.90
IMPT	2.86	1.15
EXCH	4.36	3.83

Source: Authors' Computation, (2018).

Table 2 shows no serious multicollinearity problem in both Nigeria and Ghana. Therefore, the results show that there is absence of multicollinearity problem in both Nigeria and Ghana since all the variance inflation factors between the independent variables were less than 10.0. To choose the best model between the pooled OLS and random effect model, Lagrangian multiplier test was conducted for the two countries (Nigeria and Ghana) as presented in Table below.

Table 4.3: Langranger Multiplier Test

	Nigeria		Ghana	
Test summary	Chi2(1)	Prob > Chi2	Chi2(1)	Prob > Chi2
Breusch-Pagan	2.45	0.000	1.38	0.010

Source: Authors' Computation,(2018).

Table 3 reports the results of Breusch-pagan lagrangian tests for both Nigeria and Ghana. In this Table, the probabilities of Breusch-Pagan LM tests in both Nigeria and Ghana is less than 5 percent level of significance. This implies that the random effect model is appropriate due to the evidence of significant differences across sectors in both countries. It also implies that the variables cannot be pooled together, therefore rendering the pooled OLS inappropriate. Hausman Test was performed to detect which panel regression model should be used in order to give a more consistent and efficient result. The panel regression model includes fixed effect model and random effect model. The fixed effect model assumes that the influence of explanatory variables on the dependent variable is the same (Arellano & Bond (1991). However, the random effect model assumes that the relationship between the dependent variable and the explanatory variable is not fixed but random (Bourbonnais (2009). The result is shown in the table below:

Table 4.4: Result of Hausman Test

	Nigeria		Ghana	
Test Summary	Chi-sq. Statistic	p-value	Chi-sq. Statistic	p-value
Cross-section Random	11.34	0.20	19.26	0.06

Source: Authors' Computation, (2018.)

Table 4.4 shows that the probability of cross-section random exceeds 5 per cent level of significance. The null hypothesis (H_0) which indicates the presence of random effect is rejected only if p -value of chi-square is lesser than 5 per cent significance level, otherwise we do not reject H_0 . Thus, the model chosen is a random effect since the probability value of chi-square in both Nigeria and Ghana are more than the 5 per cent significance level, which means that we do not reject H_0 . Therefore, there is enough evidence to conclude that random effect model is more consistent and efficient.

Table 4.5: Estimation of Panel Data Regression (Random Effect)

Variables	Nigeria			Ghana		
	Coefficient	Std. Error	p-value	Coefficient	Std. Error	p-value
INTR	-0.164630	0.121299	0.0068	-0.665299	0.088565	0.0000
CIT	-0.406559	0.134617	0.0029	-0.657506	0.217709	0.0058
EXCH	0.094102	0.110941	0.4044	0.301018	0.129820	0.0289
IMPT	0.000516	0.000757	0.5012	6.937305	0.000971	0.9437
C	24.43744	1.749787	0.0000	11.48913	6.188993	0.0152
R-squared	0.684649			0.872646		
Adj. R ²	0.518193			0.852270		
F-statistic	8.797514			42.82588		
Prob(F-stat.)	0.000141			0.000000		
Durbin-watson	1.958203			1.818170		

Source: Authors' Computation, (2018).

Table 4.5 shows that the coefficients of determination (adjusted R²) is 0.6846 which indicates that the explanatory variables explains 68.46% variability in investment level, while the remaining 31.54% of investment variance is explained by other variables outside the regression model. Table 4.5 also shows that all independent variables have significant effect on Investment level simultaneously as evidenced from the probability value (F-statistics) of 0.00 and ($P < 0.05$).

As shown in table 4.5, amount of interest paid by listed companies from various sectors has a negative effect on the level of investment in both Nigeria and Ghana at 1% level of significance, coeff. = -0.164630, p -value = 0.0068. One possible explanation of this negative relationship is that an increase in the amount of interest paid by companies from various sectors will not only leads to a decline in companies' profit available for investment but as well as reduce companies' demand to finance their investments through borrowing in both Nigeria and Ghana. In other word, an increase in inflation rates directly affects the interest rate which increases the amount of interest paid by companies which in turn decline the level of investment. This result is in conformity with not only the previous work of Agbebite and Shittu (2015) and also with the *a priori* expectation.

The result also shows that corporate income tax (CIT) as a proxy for the amount of tax paid by companies from various sectors has a significant negative effect on the level of investment made by the companies in both Nigeria and Ghana with probability value of 0.0029 and 0.0058 respectively. This indicates that in Nigeria and Ghana, there are evidences that amount of tax paid by companies from various sectors have significant effects on the amount of earnings that will be retained for the future investment. This is consistent with the *a priori* expectation and the previous work of Edame and Okoi (2014), Becker, *et al* (2012), Djankov, *et al* (2010).

Concerning the exchange rate, findings of this study show that exchange rate has insignificant effect on the level of investment in Nigeria, although this effect is positive with coeff. = 0.094102, p -value = 0.4044. Contrarily, it is significant at 5 per cent level of significance in Ghana. This result indicates that an increase in exchange rate in Ghana affects the level of investment by 0.301018 with the probability value of 0.0289. This is also consistent with the previous work Adegbite and Shittu (2015).

Lastly, the results show that import rate has positive but insignificant in affecting the level of investment with coeff. = 0.000516, p -value = 0.5012 in both Nigeria and Ghana. One possible explanation is that the import rate during the study period does not affect the level of investment in companies from various selected sectors, particularly with unstable exchange rate of Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

The findings of this study showed that corporate income tax and interest paid significantly affect the level of investment in Nigeria. An increase in the amount of tax paid will reduce the amount of retained earnings available for reinvestment and also increase in the percentage of interest paid on borrowing will discourage corporations and in turn reduce the amount available for investment. Meanwhile exchange rate and import rate are insignificant in explaining the level of investment in Nigeria. However, in Ghana corporate income tax, interest and exchange rate significantly affect investment while import rate is insignificantly related to the level of investment in Ghana. Therefore, finding of this study accept the null hypothesis that indicate a relationship between corporate income tax and investment in Nigeria and Ghana.

Therefore, to improve the level of investment in the two countries (Nigeria and Ghana), it was recommended that government should restructure tax rate and its administration in both countries to reduce the adverse effect of tax rate on corporate investment. This restructuring can take the form of reduction of company income tax rates, strong macroeconomic policies such as stabilization of exchange rate and regulation of interest rate charged by lending institutions.

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