The Impact of Capital Budgeting on Economic Growth in Ghana

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***Abstract*: The aim of this study is to examine the effect of capital budgeting on economic growth as well as the causal relationship between capital budgeting and economic growth in Ghana. The study employed secondary data from the World Development Indicators (WDI) and Ministry of Finance, Ghana, annual data spanning from 1990 to 2021 which was estimated with Autoregressive Distributive Lag (ARDL) cointegration technique. The findings revealed that there was statistically significant long run relationship between capital budgeting and economic growth from the bounds test. Again, capital budgeting significantly relates negatively to economic growth in both long and short run in Ghana. the study found out that Ghana's capital expenditure is mostly spent on unproductive ventures. There were no causal relations between capital budgeting and economic growth in Ghana. The study recommends that government and policy makers should urgently direct capital budget to productive capital ventures with good returns and short payback period.**

***Keywords*: Capital Budgeting, Economic Growth, Efficiency, Fund Utilization, Policy Maker.**

I. INTRODUCTION

Economic growth, according to Heimberger (2021) [15], indicates a steady increase in national revenue or output over a lengthy period of time. This implies that economic growth is a long term rise in the flow of commodities and services in an economy. Economic growth means a long-term increase in output or income. According to Abotsi and Iyavarakul (2015) [1], a rise in an economy's output of goods and services in a given year constitutes economic growth. Osiobe (2019) [27] asserted that economic growth is linked to the development of both physical and human capital as well as the enhanced productivity resulting from technological advancement.

Adzisu (2018) [4] explained that capital budgeting, posited that it is the process of planning, evaluating and selecting the best investment from the possible range of capital investment to achieve a stated objective. The selection of a particular capital investment is based on the most efficient use of funds in anticipation of expected flow of benefit over a period of time. Capital budgeting decision according to Al-Mutairi et al., (2018) [7] is seen as important decision in corporate finance because it creates accountability and measurability. Accountability in the sense that its owners or shareholders would see any firm seeking to make a capital investment without evaluating the risks and potential rewards as beingirresponsible. Furthermore, if a business is unable to evaluate the success of the capital investment decisions it makes, its chances of surviving in the competitive business environment are likely to be slim.

In an attempt to link the relationship between capital expenditure and economic growth, Nyarko-Asomani et al., (2019) [23], argued that the expenditure approach of national income accounting considers government expenditure as a significant component that positively influences the size of the economy.

Problem Statement

Numerous attempts have been made by different economies to find out the right path towards a successful economic growth. Factors that are considered as the principal drivers of economic growth are still not clear within and among countries, including Ghana. The estimation of long-run growth patterns should take public investments into account, according to Solomon and van Klyton (2020) [30]. Tendengu et al., (2022) [31] asserted that economic growth can be achieved by government investment through the injection of income, resulting in greater spending in the general economy.

In 2010, Ghana was considered to have one of the world's fastest-growing economies with 10th highest per capita income in Africa, with low unemployment rate of around 5.2%. The country also recorded highest per capita GDP in West Africa in 2013 (World Development Indicators, 2014). However, the above success begun to erode from 2013 despite the rise in government expenditure over the past years till the present day. With the country's economic growth plummeted from 11.2 in 2010 to around 2% of GDP (WDI, 2021). This is far below compared to her West Africa peers. Against this background, this study seeks to find answers to factors derailing economic growth in Ghana despite huge capital investment made by the state in recent years.

Objectives of the Study

The study's primary objective is to empirically investigate the impact of capital budgeting on economic growth in Ghana. Specific objectives are detailed below:

1. To examine the dynamic effect of capital budgeting on economic growth in Ghana.
2. To examine the causal relationship between capital budgeting and economic growth.

Research Questions

The study seeks to achieve the above objectives with the following research questions:

1. What is the effect of capital budgeting on economic growth in Ghana?
2. What is the causal relationship between capital budgeting and economic growth.

II. LITERATURE REVIEW

Theoretical Literature Review

In trying to unravel various ingredients that propel growth in an economy, economists came out with different growth models. Some of these models are theoretically reviewed below.

Solow Growth Theory

Robert Bob Solow proposed Solow growth theory in 1956. One of the most important things that the model assumes is that both capital and labor have the same returns to scale in production. Thus, $\alpha + \beta = 1$. Constant returns to scale mean that when labor and capital inputs go up by a factor, output also goes up by the same factor.

$F(\lambda Kt, \lambda Lt) = \lambda Yt$

This model has decreasing returns on capital, which means that each extra unit of capital leads to a smaller increase in output (Hartlieb, 2012) [13].

Harrod-Domar Theory (HDT)

The HDT posited that, in order to keep the income level at the full employment equilibrium level throughout time, the volume of spending created by investment had to be large enough to absorb the extra production coming from investment. Generally speaking, the higher the starting national income is, the greater the capital accumulation, given a constant marginal inclination to save. It follows that the larger the absolute volume of net investment, the more difficult it will be to keep the labor force at full strength. This, in turn, necessitated persistent expansion of the nation's real disposable income. Income growth and capital accumulation go hand in hand. A country's productive potential rises as its access to capital increases. There is a risk of any of the following occurring if the rise in expenses does not lead to an increase in income:

The new capital may be untitled; it may displace older capital, denying it of resources like labor and market access; it may be used in lieu of older capital altogether; and so on (Skin, 2013) [29].

Empirical Review

Empirically, many researchers in an attempt to link the relationship between government expenditure and growth, have relied on Wagner's law. The law emphasizes economic growth as the principal determinant of increase in public sector expenditure, wherein growing economy would provide an opportunity to generate additional tax revenue, thus creating fiscal space for more government disbursement and subsidies (Wagner, 1958) [32].

In studying the impact of aggregate demand on growth, Romer (1996) [28] observed that the Keynesian hypothesis posits that measures aimed at controlling aggregate demand can and should be used to boost economic output. In an attempt to find out the effects of government spending in a growth model, Barro (1990) [8] analysed the relationship that existed between the size of government and rates of growth. It was revealed that an increase in resources devoted to nonproductive government services is associated with lower per capita growth. Therefore, government expenditure which enhances economic growth should be tailored towards productive services.

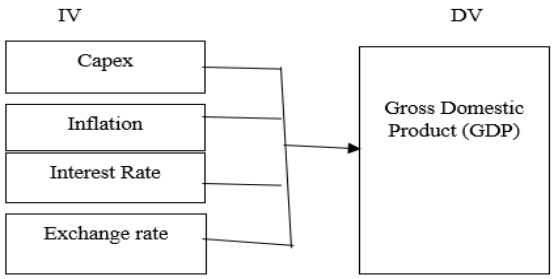
In Ghana, various studies with different variables have established different results. Ho and Iyke (2020) [16], demonstrated that exports, aid and state investment are major factors of growth. On the other hand, Al Arif et al., (2021) [6] reveals that, in addition to exports, political stability, world oil price shocks and government size are major growth factors.

An increase in inflation rate reduces the purchasing power of money (Boako *et al*., 2017) [10], which reduces consumption hence reducing GDP.

Nyarko-Asomani et al., (2019) [23] Interest payments on debt retards the growth of a country owing to the fact that, revenues that can be used for development purposes are rather channelled to the payment of these interest on governments borrowings. Subject to this, the coefficient for interest payment is expected to be negatively related to economic growth. The increased government borrowings (especially domestically) have pushed up other interest rates in the economy, thereby causing an increase in the cost of credit and reducing the volume of investment, hence negatively affecting production which retards growth in the country. This result is confirmed by Mensah and Okyere (2015) [19] which concluded that interest rate has a negative relationship with economic growth in Ghana

Buabin (2016) [11] noted that the influence of exchange rate volatility on investment and hence economic growth hinges on its Real exchange rate, especially in most developing countries, creates an uncertain environment for investment decisions which negatively affects production and hence decreases economic growth performance.

Conceptual Framework



III. METHODOLOGY

Secondary Data Collection, Sample size

This study adopts a quantitative research design so as to examine the trend and impact of capital budgeting on economic growth in Ghana.

This research uses secondary data for the study. Annual data for all the variables under consideration from 1990

to 2021, with a sample size of 31 observations. The study uses yearly data of Gross Domestic Product (GDP) as a proxy for economic growth (dependent variable) with capital expenditure (as a proxy for capital budgeting), interest rate, inflation and exchange rate as independent variables. The data for inflation and exchange rates were sourced from the Ministry of Finance, (MoF). Data on Capital Expenditure, Interest rate and Gross Domestic Product were sourced from the World Development Indicators (WDI) Database of World Bank. The duration was chosen due to data availability. The study would test for the following hypotheses to achieve the stated objectives: Ho: there is no effect of capital expenditure on economic growth, Ho: there is no causality between capital budgeting and economic growth in Ghana.

Analysis of Data

Model specification and estimation procedure

The linear time-series model proposed by Muda and Naibaho (2018) [20] was used to estimate the empirical link between capital budgeting and economic development in Ghana. They regressed economic growth against capital expenditure with control variables. The model is adopted and adapted in this study. The functional form of economic growth-capital expenditure model is specified as:

$$\mathbf{GDPt = \alpha CAPEXt + \gamma Xt + \mathfrak{E}t}$$

Where:

GDPt = Gross Domestic Product in year t,

CAPEXt = Represent Capital Budgeting in year t,

Xt = Vector of Controls (Inflation, Exchange Rate and Interest Rate)

α and γ = Parameters and

$\mathfrak{E}t$ = Disturbance Term.

The variables are transformed by their logarithm to make for easy interpretation of regression coefficients in standardized form of percentage and also to reduce the influences of outliers in either the dependent variable or independent variables.

$$\ln GDPt = a0 + a1\ \ln CAPEXt + a2 \ln INFt + a3\ \ln IRt + a4 \ln EXRt + \mathfrak{E}t$$

The Augmented Dickey-Fuller (1979) and the Philip-Perron (1988) unit root tests were used to test for the stationarity of all the variables. The study employs the Autoregressive Distributed Lag (ARDL) method or Bounds testing approach by Pesaran and Shin (1999). The ARDL bounds testing approach estimate the model by Ordinary Least Squares (OLS) in order to test for a long-run relationship among the variables (Gross Domestic Product, Capital Expenditure, Interest rate, Inflation and Exchange Rate) by performing an F-test for the joint significance of the lagged level coefficients. The lag length was employed based on information criteria such as the Akaike Information Criterion (AIC). According to Odhiambo, 2009; Narayan and Smyth, 2006 [21], the AIC criteria is chosen because it does not require any subjective threshold setting. The short-run dynamic parameters would be estimated by an Error Correction Model (ECM) and also be associated with the long-run estimates.

To examine the causality among the variables, the Granger (1996) [12] causality test would be performed in order to assess the linear causation between the concerned variables. The Engle–Granger causality test would be used to perform the VAR framework to examine the relationship between capital expenditure and economic growth as well as the control variables and also to examine the robustness of the outcome.

IV. RESULTS AND DISCUSSION

The section presents the results of the study and its corresponding discussions. The section was presented based on the methodology and the objectives of the study. The presentation started with descriptive statistics to visualize what the various data in the model is showing. This was then followed by unit root test and ARDL Cointegration Procedure. Long run and the short run with ARDL as well as error correction. Granger causality were also conducted which has been presented and discussed accordingly. The discussion ended with the diagnostic test of the model.

Descriptive Statistics

The study employed descriptive statistics to test the behaviour of the various data in the model. The computed descriptive statistics of the variables involved are presented in Table 1. From the table, all the variables have positive average values (means). A careful observation of the series indicates that the mean and the median are close to each other for all variable set except inflation, which suggest that there is minor symmetry of these variables. The result indicates that there is a minimal variation in the variables from their means as indicated by the standard deviations which suggest that there is a slow rate of growth (fluctuation) of these variables over the period.

All the variables are positively skewed except Capital expenditure as observed from Table 1 which indicates that the values are less than their mean values. inflation has leptokurtic kurtosis (fatter tails or extreme outliers or risky), log of GDP and log of interest rate have a platykurtic kurtosis (a thinner tails) whilst log of Capital expenditure and Exchange Rate has mesokurtic (normally distributed). With the exception of inflation which accepted the null hypothesis for the Jarque-Bera statistic. The rest rejected it since the significant level is above 5% indicating that the series are normally distributed.

Table 1. Descriptive Statistics

	GROWTH	LNCAPEX	INTRATE	INF	EXRATE
Mean	5.376395	3.000798	17.71835	19.11521	1.576127
Median	4.772439	3.052346	13.84375	15.46430	0.910158
Maximum	14.04712	3.367370	35.75917	59.46155	5.595708
Minimum	0.513942	2.465052	8.885417	4.865398	0.036763
Std. Dev.	2.553309	0.249802	8.302374	12.93674	1.680298
Skewness	1.290542	-0.590263	0.885460	1.565236	1.151074
Kurtosis	5.855094	2.514967	2.427310	4.871007	3.017271
Jarque-Bera	18.51695	2.036122	4.330164	16.62565	6.625228
Probability	0.276895	0.361295	0.114741	0.000245	0.086421
Sum	161.2918	90.02395	531.5504	573.4563	47.28382
Sum Sq. Dev.	189.0622	1.809627	1998.953	4853.419	81.87864
Observations	30	30	30	30	30

Table 2. Results Of Unit Root Test With Intercept And Trend (Adf And Pp) At Levels

	ADF					PP		
Variables	t- Statistics	Lag	Prob.	I(d)	t- Statistics	BW	Prob.	I(d)
GROWTH	-3.600961	0	0.0467	I (0)	-3.581781	3	0.0486	I (0)
LNCAPEX	-2.759464	1	0.2223	I (0)	-2.714840	2	0.2381	I (0)
LNINTRATE	-2.046754	0	0.5524	I(0)	-2.046754	1	0.5524	I (0)
INF	-4.423166	1	0.0077	I (0)	-4.355944	13	0.0087	I (0)
EXRATE	0.561648	0	0.9990	I(0)	0.431516	1	0.9985	I(0)

Note: D denotes the first difference, I(d) is the order of integration and BW is the bandwidth

Unit Root Test Results

As presented in Tables 2. The ADF test for unit root was conducted with constant and linear trend in the model for all the variables used in the study. The test rejects the null hypothesis that is "there is a unit root" if the absolute value of the test statistic is more than the p-value. However, if the p-value of the test statistic is less than the desired significance level, the series is considered stationary. At levels, economic growth and inflation were stationary at 1% significance level in ADF and PP respectively as illustrated in Table 2. However, at first difference, all the variables were stationary at 1% significance level except as indicated in Table 3. Therefore, the variables are a combination of I (0) and I (1).

Table 3. Results Of Unit Root Test With Intercept And Trend (Adf And Pp) At First Difference

	ADF					PP		
Variables	t- Statistics	Lag	Prob.	I(d)	t- Statistics	BW	Prob.	I(d)
D(GROWTH)	-6.898180	0	0.0000	I (1)	-16.04191	28	0.0000	I (1)
D(LNCAPEX)	-9.783213	0	0.0000	I (1)	-9.785683	2	0.0000	I (1)
D(LNINTRATE)	-9.911244	0	0.0000	I (1)	-9.911244	0	0.0000	I (1)
D(INF)	-4.141889	0	0.0076	I (1)	-4.198480	13	0.0064	I (1)
D(EXRATE)	-4.275821	0	0.0108	I (1)	-4.276197	1	0.0108	I (1)

Note: D denotes the first difference, I(d) is the order of integration and BW is the bandwidth

ARDL Cointegration Test Results

The study performed cointegration analysis in order to determine the existence of long-run equilibrium relationship amongst the variables used in the study. As already established above that the variables are integrated of both I (0) and I (1), the cointegration analysis using the ARDL bounds test by Pesaran et al. (2001) basic requirement has been fulfilled by the series and therefore the study proceeded with the analysis. The study then tests for the presence of long run relationship among the variables used in the model which is the first phase in the ARDL approach to cointegration.

The study found out that cointegration (long run relationship) exist between economic growth and the independent variables used in the model as a result of the ARDL bounds test displayed on Table 4, the null hypothesis of no cointegration was rejected at 1% significance level for Economic growth as far as f and t test are concern.

Table 4. Bounds Test For The Existence Of Cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.802017	10%	3.03	4.06
k	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
Actual Sample Size	27		Finite Sample: n=35	
		10%	3.374	4.512
		5%	4.036	5.304
		1%	5.604	7.172
			Finite Sample: n=30	
		10%	3.43	4.624
		5%	4.154	5.54
		1%	5.856	7.578
t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.447293	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Note: k is the number of regressors used in the model.
Source: Computed by the author, 2022

From the table above 4, the F- statistic is 4.802017 whilst the t-statistic is -4.447293 which is higher than both the lower and the upper bounds at 5% significant level respectively meaning

that the dependent variable (DV) and the independent variables (IV) have long run relationship.

Results of Long Run Analysis

The study proceeded with the analysis of the dynamics of the long run relationship of which the ARDL framework was employed which has been displayed in Table 5 below. The ARDLs ability to analyze both short run and long run association between the dependent variable (DV) and the independent variables (IV) at a go is one of its advantages.

Table 5. Long Run Results

Levels Equation				
Case 5: Unrestricted Constant and Unrestricted Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNCAPEX	-9.387237	3.193965	-2.939055	0.0148
INTRATE	-0.138138	0.131382	-1.051425	0.0178
INF	-0.392970	0.197174	1.993010	0.0742
EXRATE	-2.173805	0.845513	-2.570989	0.0278
EC = GROWTH - (-9.3872*LNCAPEX -0.1381*INTRATE - 0.3930*INF - 2.1738*EXRATE)				

The study's findings are in line with expectations from Classical and Neoclassical economists who contend that government expenditure stunts economic expansion (Romer, 1986 [28]; Lowenberg, 1990, quoted in Nyasha & Odhiambo, 2019) [24]. The Classicals, the Neoclassicals, and the proponents of public choice theory are at the extremes of the spectrum of theorists of capital budgeting and growth. They contend that government spending negatively affects economic growth because it crowds out vital private sector investments owing to resource limitations. Consequently, there is a bad relationship between the two (Nyasha & Odhiambo, 2019) [24]. Public choice theorists believe that as government size expands, and given the distorting effects of taxes, government levels of inefficiency will always increase, and as a result, government expenditure will limit economic growth.

According to the Table 5 above, capital budgeting has a negative impact on Ghana's economic growth. In the long run, a one percent increase (decrease) in capital budgeting will cause an almost 94 percent decline (increase) in economic growth, according to the coefficient of -9.39 at a 5 percent significant level.

The above finding is consistent with recent empirical research, such as that of Hasnul (2015) [14], who in Malaysia, conducted a study to investigated the relationship between government spending and economic growth from 1970 to 2014. The study's findings also supported the notion that Malaysia's economic growth is negatively impacted by government spending on the housing industry and the development category. In Ghana, Ackah et al., (2015) [2] looked into government spending and economic growth. They concluded that government capital spending had a significant negative effect on economic growth using an ARDL model with annual data spanning from 1970 to 2010. This is in contrast with Nyarko-Asomani et al., (2019) [23], who found that government capital expenditure was positively related to economic growth in Ghana.

The research consistently finds a negative correlation between interest rates and economic growth, with a coefficient of -0.14 at a 5% level of significance. According to the findings, a 1 percent point change in the interest rate causes a long-term decrease (increase) in economic growth in Ghana of about 14 percent. Since Nyarko-Asomani et al., (2019) [23] confirmed that interest payments on debt slow a country's growth since income that could be used for development are instead directed to the payment of these interest on governments borrowings, the conclusion is strongly supported by the research.

The increased government borrowing (particularly domestically) has raised other interest rates throughout the economy, increasing credit costs and lowering investment levels, which negatively affects production and slows down the nation's growth. Mensah and Okyere (2015) [19], who found that interest rates have a bad association with economic growth in Ghana, support this finding. The results also support a recent study by Berko et al., (2022) [9], which found that although interest rate spread is a statistically significant driver of economic development in Ghana, it has a negative influence over the long term for the same reasons as previously mentioned.

The outcomes supported the a priori prediction that there is a negative correlation between inflation and economic growth. A percentage point (1%) increase (reduction) in inflation will result in a decrease (increase) of about 39 percent in economic growth, according to the long-run coefficient of -0.39, which is barely significant. Boako et al., (2017) [10] observed that an increase in inflation rate diminishes the purchasing power of money, which reduces consumption and lowers GDP. This conclusion is consistent with findings of Akinsola and Odhiambo (2017) [5]. In a recent study, Osei-Bonsu et al. (2021) [26] found a long-term inverse relationship between Ghana's inflation and economic growth.

The results showed that Ghana's economic growth is negatively impacted by exchange rates, with a co-efficient of -2.17 at a 5 percent significant level. The results confirm Buabin's (2016) [11] conclusions that the influence of exchange rate volatility on investment, and hence economic development, depends on Real exchange rates, particularly in the majority of emerging nations, make investment decisions unpredictable, which has a negative impact on production and lowers economic growth performance. According to the estimation results and conclusion reached by Adjei (2019) [3], exchange rate volatility significantly hampered economic growth over the period, both in the short and long terms. This is due to the high level of risk associated with investing, which discourages expansion and trade on a global scale

Short Run Analysis

Table 6 shows the results of the short-term investigation into the link between the dependent variable and

the regressors. At a 1% level of significance, the ECM, which measures adjustment speed, has a coefficient of -0.95, which is excellent for the model. This shows that the rate of adjustment from short run to long run is what causes any annual aberration in economic growth returns to be fixed. In other words, 95% of the disequilibrium from the prior year may be fixed this year. This shows a strong convergence rate and that the model tends toward equilibrium at a rate of 95% yearly.

Table 6: Short Run And Error Correction Analysis.

ARDL Error Correction Regression				
Dependent Variable: D(GROWTH)				
Selected Model: ARDL(1, 1, 3, 3, 3)				
Case 5: Unrestricted Constant and Unrestricted Trend				
Date: 11/01/22 Time: 01:12				
Sample: 1990 2020				
Included observations: 27				
ECM Regression				
Case 5: Unrestricted Constant and Unrestricted Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.10953	3.481232	6.063811	0.0001
@TREND	0.480422	0.125726	3.821188	0.0034
D(LNCAPEX)	-11.77473	1.834097	-6.419907	0.0001
D(INTRATE)	-0.334595	0.136946	-2.443271	0.0347
D(INTRATE(-2))	-0.481922	0.104099	-4.629459	0.0009
D(INF)	0.244652	0.053136	4.604238	0.0010
D(EXRATE)	-3.156222	1.564525	-2.017367	0.0713
CointEq(-1)*	-0.952033	0.164207	-5.797769	0.0002
R-squared	0.884068	Mean dependent var		0.076166
Adjusted R-squared	0.784698	S.D. dependent var		2.976293
S.E. of regression	1.381018	Akaike info criterion		3.789703
Sum squared resid	26.70097	Schwarz criterion		4.413624
Log likelihood	-38.16099	Hannan-Quinn criter.		3.975227
F-statistic	8.896731	Durbin-Watson stat		2.369514
Prob(F-statistic)	0.000131			
* p-value incompatible with t-Bounds distribution.				

From the Table, the short-run result of capital budgeting follows the long run results of an inverse relationship between capital budgeting and economic growth with a coefficient of -11.8 at 1% significant level. The result indicates that, in the short-run a 1% point increase in capital budgeting will lead to a decrease in economic growth by 118%. Okoye et al., (2019) [25] finding follows found evidence of the short-run negative impact of current expenditure on economic growth.

The rest of the variables followed the long run results except inflation which had a positive relation with economic growth in the short run. With a coefficient of 0.25 at 1% significant level. The results means that a 1 percent increase in inflation in the short run leads to approximately 25% increase in economic growth in the short run in Ghana. The findings follow Mavikela et al., (2018) [18] examined how inflation and economic growth are related in South Africa and Ghana and concluded on a positive impact of inflation on GDP growth in Ghana at a high inflationary level. Kankpeyeng et al., (2021) [17] found out the general level of inflation has a positive effect on GDP growth and is statistically significant at a 1% significance level.

The Results of the Granger Causality Test

The study investigated the direction of causality between capital budgeting and economic growth as well as the other control variables. The study employed the ever- popular granger causality developed by Granger (1981) and as specified in the previous chapter.

As illustrated on the table below, there is no causality between capital budgeting as well as the other control variables and economic growth, industry productivity growth rate as well as gross fixed capital formation. The result is consistent with Nasiru (2012) [22] who examined the causality analysis and cointegration of government expenditure and economic growth in Nigeria employing Bounds Test approach to cointegration based on unrestricted Error Correction Model and Pair wise Granger Causality tests. The study confirmed no causal relationship exist between government expenditure and economic growth in Nigeria.

Table 7: Granger Causality Test

Pairwise Granger Causality Tests			
Date: 11/02/22 Time: 13:25			
Sample: 1990 2020			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LNCAPEX does not Granger Cause GROWTH	29	0.70807	0.5026
GROWTH does not Granger Cause LNCAPEX		0.58473	0.5650
LNINRATE does not Granger Cause GROWTH	28	0.91535	0.4145
GROWTH does not Granger Cause LNINRATE		0.89244	0.4234
INF does not Granger Cause GROWTH	29	0.01236	0.9877
GROWTH does not Granger Cause INF		1.34494	0.2795
EXRATE does not Granger Cause GROWTH	29	1.62236	0.2183
GROWTH does not Granger Cause EXRATE		1.13444	0.3382
LNINRATE does not Granger Cause LNCAPEX	28	1.87408	0.1762
LNCAPEX does not Granger Cause LNINRATE		0.85357	0.4389
INF does not Granger Cause LNCAPEX	29	0.04577	0.9553
LNCAPEX does not Granger Cause INF		0.51969	0.6012
EXRATE does not Granger Cause LNCAPEX	29	0.54572	0.5864
LNCAPEX does not Granger Cause EXRATE		1.56309	0.2301
INF does not Granger Cause LNINRATE	28	1.02021	0.3763
LNINRATE does not Granger Cause INF		2.86901	0.0772
EXRATE does not Granger Cause LNINRATE	28	0.72625	0.4945
LNINRATE does not Granger Cause EXRATE		0.24163	0.7873
EXRATE does not Granger Cause INF	29	2.15779	0.1375
INF does not Granger Cause EXRATE		0.73977	0.4878

Source: Computed by the author, 2022

Diagnostics

To test the stability, normality, serial correlation as well as heteroskedasticity, diagnostics were employed for the study to be able to achieve the targeted objectives. The test for serial correlation and heteroskedasticity indicates that the data set is stable since the probability values are greater than the rule of thumb (5%). From the table, probability value of 0.0724 indicating the null hypothesis of no serial correlation cannot be rejected.

Table 8: Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.846545	Prob. F (2,16)	0.1899
Obs*R-squared	5.250904	Prob. Chi-Square (2)	0.0724

The null hypothesis of heteroskedasticity cannot also be rejected with probability value of 0.8761 which is above 5% significance level as the rule of thumb.

Table 9: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.381118	Prob. F (9,18)	0.2669
Obs*R-squared	11.43743	Prob. Chi-Square (9)	0.2469
Scaled explained SS	4.493393	Prob. Chi-Square (9)	0.8761

Per the normality test conducted, the model can be said to be normally distributed. The skewness has a value of -0.32 which is closer to zero indicating that the distribution is negatively skewed. The kurtosis also has a value of 2.90 which is also above positive two (+2) and lastly the Jarque-Bera is not significant (coefficient of 0.784496, p< 0.05). The result is displayed on figure 4.1 below:

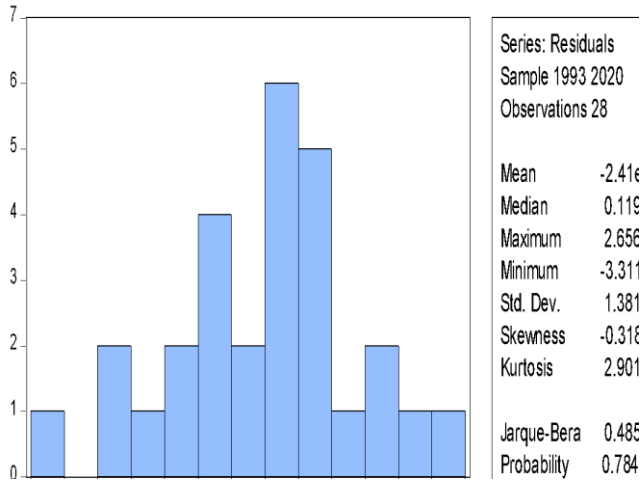


Figure 2: Normality Test

V. CONCLUSIONS AND RECOMMENDATIONS

The empirical results of inflation and stock market returns was presented in this section. It started with the descriptive statistics of the data set which proved that the data set was normally distributed and good for analysis. The time series properties of the data set were also examined using ADF technique of which proved a mixture of stationarity at first and second difference. The study further conducted the cointegration test using ARDL technique which indicated that, there was a long run relationship among the variables.

Both long run and short run estimates using the ARDL levels and error correction revealed a significant negative relationship between capital budgeting and economic growth with the speed of adjustment of approximately 95%, meaning that any disequilibrium in the short run will be corrected in the long run. Finally, there was no causality between capital budgeting and economic.

The study recommends that government and policy makers should direct capital budget to productive capital ventures that has a higher NPV as well as NFV in order to be able to pay itself in the near future. Future research can consider disaggregating the expenditure to find out its specific effect on economic growth.

REFERENCES

[1] Abotsi, A. K., & Iyavarakul, T. (2015). Tolerable level of corruption for foreign direct investment in Africa. Contemporary Economics, 9(3), 249–270. https://doi.org/10.5709/ce.1897-9254.240.

[2] Ackah, I., Adu, F., and Ohene-Manu, J. (2014). Government Expenditures and Economic Growth dynamics in Ghana. International of Economics and Empirical Research, (August), 180–198. Retrieved from https://www.researchgate.net/publication/270337848

[3] Adjei, E. (2019). Exchange rate volatility and Economic growth in Ghana. International Journal of Business and Social Science Vol. 10 • No. 4 • April 2019 doi:10.30845/ijbss.v10n4p13

[4] Adzisu, C. (2018). Capital Budgeting. University of Cape Coast.

[5] Akinsola, F. A., & Odhiambo, N. M. (2017). Inflation and economic growth: A review of the international literature.

[6] Al Arif, M. N. R., Arisman, A., & Harahap, D. (2021). Export, Political Stability, and Growth in Developing-8 Countries. Studies of Applied Economics, 39(2).

[7] Al-Mutairi, A., Naser, K., & Saeid, M. (2018). Capital budgeting practices by non-financial companies listed on Kuwait Stock Exchange (KSE). Cogent Economics & Finance, 6(1), 1468232.

[8] Barro, J. (1990) Government Spending in a Simple Model of Endogenous Growth. Journal of Political Economy, 98, 5: s103-126.

[9] Berko, D., Hammond, P. and Amissah, E. (2022). The Effect of Interest Rate Spread on Economic Growth: Ghana's Perspective, International Journal of Business and Management Review, Vol.10, No.2, pp.1-24

[10] Boako, G., Acheampong, A.I. & Ibrahim, M. (2017). Determinants of Bank Credit in Ghana: A Bound-testing Cointegration Approach. African Review of Economics and Finance. 9(1)

[11] Buabin, P., C, (2016). Effect of Exchange Rate Volatility on Economic Growth in Ghana: An Empirical Investigation. Master's thesis, Department of Economics, University of Cape Coast, Cape Coast-Ghana.

[12] Granger, C. (1996). The typical spectral shape of an economic variable. Econometrica, 34, 150-161.

[13] Hartlieb, M., (2012). Analysis of economic growth in Germany based on the growth models of Solow-Swan, Kaldor and Romer.

[14] Hasnul, A. G. (2015). The effects of government expenditure on economic growth: the case of Malaysia.

[15] Heimberger, P. (2021). Do Higher Public Debt Levels Reduce Economic Growth? JEL classification: E62; F34; O11; O47

[16] Ho, S. Y., & Iyke, B. N. (2020). The determinants of economic growth in Ghana: New empirical evidence. Global Business Review, 21(3), 626-644.
[17] Kankpeyeng, J. G., Mahama, I. and Abubakar, M. (2021). Impact of Inflation on Gross Domestic Product Growth in Ghana. Ghana Journal of Development Studies, Vol. 18 (2)
[18] Mavikela, N., Mhaka S., and Phiri A. (2018). The inflation – growth relationship in SSA Inflation targeting countries. MPRA Paper No.82141, October
[19] Mensah, A.C., & Okyere, E. (2015). REAL ECONOMIC GROWTH RATE IN GHANA: THE IMPACT OF INTEREST RATE, INFLATION RATE AND GDP. Global Journal of Management and Business Research, 4, 206-212.
[20] Muda, I., & Naibaho, R. (2018, March). Variables influencing allocation of capital expenditure in Indonesia. In IOP Conference Series: Earth and Environmental Science (Vol. 126, No. 1, p. 012066). IOP Publishing.
[21] Narayan, P.K.& Smith, P. (2006). The saving and investment nexus for china: evidence from cointegration tests", Applied Economics, 37, 1979-1990.
[22] Nasiru, I. (2012). Government Expenditure and Economic Growth in Nigeria: Cointegration Analysis and Causality Testing. Academic Research International. Vol. 2, No. 3, (2012): 718-723
[23] Nyarko-Asomani, A., Bhasin, V. K. and Aglobitse, P. B. (2019). Government Capital Expenditure, Recurrent Expenditure and Economic Growth in Ghana. Ghanaian Journal of Economics, Vol. 7, December 2019 Journal compilation ©2019 AREF Consult.
[24] Nyasha, S. and Odhiambo N. M. (2019). The Impact of Public Expenditure on Economic Growth: A Review of International Literature. Folia Oeconomica Stetinensia. Volume 19 (2019) Issue 2. DOI: 10.2478/foli-2019-0015
[25] Okoye, L.U., Omankhanlen, A.E., Okoh, J.I., Urhie, E. and Ahmed, A. (2019). Government expenditure and economic growth: The case of Nigeria. Proceedings of SOCIOINT 2019-6th International Conference on Education, Social Sciences and Humanities 24–26 June 2019. Istanbul, Turkey, 1184–1194.
[26] Osei-Bonsu, A., Abotsi, A. K. and Carsamer, E. (2021). Insurance and Economic Growth in Ghana. Journal of Economic and Administrative Sciences, Emerald Publishing Limited 1026-4116. DOI 10.1108/JEAS-09-2020-0158
[27] Osiobe, E. U. (2019). A literature review of human capital and economic growth. Business and Economic Research, 9(4), 179-196.
[28] Romer D. Advanced Macroeconomics, the McGrow-Hill Co. Inc., Singapore; 1996.
[29] Skin, M., (2013). HARROD-DOMAR GROWTH MODEL, 2013.
[30] Solomon, E. M., & van Klyton, A. (2020). The impact of digital technology usage on economic growth in Africa. Utilities policy, 67, 101104.
[31] Tendengu, S., Kapingura, F. M., & Tsegaye, A. (2022). Fiscal Policy and Economic Growth in South Africa. Economies, 10(9), 204.
[32] Wagner, A. (1958). Three extracts on public finance. In R. A. Musgrave & A. T. Peacock (Eds.), Classics in the theory of public finance (pp. 119–136). Macmill.