The Impact of Economic Indicators on Financial Performance of Non-financial Firms on Ghana Stock Exchange

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ABSTRACT

Financial performance is one of the basic indicators that investors and creditors check in accessing the performance of firms. The purpose of this paper is to empirically examine the impact of economic indicators on financial performance of quoted non-financial firms on the Ghana Stock Exchange (GSE). The study focuses on the impact of RealGDP, Exchange rate, Inflation, Unemployment and Interest rate as determinant of economic indicators whereas Sales growth, Company size, Leverage and Efficiency from firms specific are used as controlled variables in checking the effect of these indicators on financial performance of these firms. ROA and ROE were used as proxies for financial performance of the listed firms. The study employed a panel data of 21 listed non-financial firms from the period of 2008 to 2017. The result revealed that Real GDP and inflation have significant positive impact on ROE. On the contrarily, economic indicators used for this study showed no level of significance with ROA. Company size recorded positive and negative significant impact on ROA and ROE respectively, sales growth and efficiency were statistically significant with ROA. The study recommends government and regulatory authorities to come out with good policies that will help boost the economic activities in the country and drop inflation rate since they have the tendency of affecting non-financial firms' performance. Moreover, management must ensure full utilization of its internal resources by focusing on diversification and expansion since company size, efficiency and sales growth affect the return on assets and equity of firms. In addition, management should warily consider inflation rate when making financial decision due to its impact on financial performance.

Keywords : Economic Indicators, ROA, ROE, Firm Specific, Multiple Regression, Non-Financial Firms

JEL classification:E40, E23

I. INTRODUCTION

The performance of firms is crucial to stakeholders since it shows the achievement of the firms over their operational periods. Performance is varied and fitting measure preferred in assessing corporate responsibility in attaining organizational objectives depending on the organization evaluations. Performance of firms comprises of three areas: market product performance (market share, sales, etc), financial performance (ROA, ROI, profit, EM etc.) and shareholder return (economic value added, ROE) (Richard et al., 2009, Kaguri, 2013). Leben and Euske (2006) defines performance as set of indicators which are financial and non-financial that gives ample information on achieving set down targets and goals. There was an emphasis on how performance is dynamic

in the sense that it involves judgement as well as casual models that tells how current operations may influence future outcomes.

According to walker (2001), evaluates firm performance in three different dimensions, the first dimension is how efficient the firm is (converting inputs into finished outputs). The second dimension is in relation to profitability (how firm is able to optimize its resources to outweigh it cost incurred). The last dimension is market premium, how firm's market value exceeds that of the book value. Conforming to (Mutende et al. (2017); Gilchris, 2013), performance of firms can be categorised into financial and non-financial with the financial performance looking at the profitability level of a firm. The financial performance of firms is determined by return on investment, return on assets, return on equity, earnings per share, profit margins, dividend pay-out, etc. Financial performance of every company is determined by the combine impact of macro and micro economic indicators (Egbunike & Okerekeoti, 2018). Macro-economic indicators are the external structures or forces within the economy of a nation which are beyond the reach or control of management of firms (Dioha et al., 2018; Broadstock et al., 2011) while micro-economic indicators are the internal structures or forces within firms which management can control in other to increase production and profitability of the firm (Browne et al. (2001); Boadi et al (2013); Hunjra et al., 2014; Lee (2014); Kaya (2015); Hailegebreal (2016); and Datu (2016)).

Studies conducted in Ghana looked at economic indicators separately on financial performance of the banking industry. The banking industry has gained attention of most researchers in Ghana and has yielded extensive empirical studies on the sustainability of these firms. On the contrary, non-financial firms in Ghana have attracted less attention of these researchers and this has created a gap on the sustainability and performance of these firms. As at 03/09/2019 Ghana Stock Exchange (GSE) had 42 companies listed on its stock market and 27 out of the 42 (64%) are non-financial firms and this comprises of food and beverages, distribution, manufacturing, mining, education and advertisement and production per the stock market categorization (GSE annual report 2018).

Table 1: Sectorial division of Non-financial Firms on GES

Sector	Names of companies	No. of companies
Distribution	Ghana Oil Company Ltd (GOIL)	
	Mechanical Lloyd Company Ltd (MLC)	
	Produce Buying Company Ltd (PBC)	4
	Total Petroleum Ghana Ltd, (TOTAL)	
Food and Beverages	Fan Milk Ltd, (FML)	
	Guinness Ghana Breweries Ltd, (GGBL)	
	Cocoa Processing Company (CPC)	5
	Hords Ltd (HORDS)	
	Samba Foods Ltd (SAMBA)	
Manufacturing	African Champion Industries Ltd, (ACI)	
	Aluworks Ltd, (ALW)	
	Ayrton Drug Manufacturing (AYRTN)	
	Camelot Ghana Ltd, (CMLT)	

	Pioneer Kitchenwear Ltd (PKL)	9
	PZ Cussons Ghana Ltd, (PZC)	
	Sam Wood Ltd. (SWL)	
	Unilever Ghana Ltd, (UNIL)	
	Starwin Products Ltd, (SPL)	
Mining	AngloGold Ashanti (AGA)	
	Golden Star Resources Ltd (GRS)	4
	Tullow Oil Plc (TLW)	
	AngloGold Ashanti Depository Shares (AADS)	
Agriculture	Benson Oil Palm Plantation Ltd, (BOPP)	1
ICT	Clydestone Ghana Ltd, (CLYD)	1
Education	Meridian Marshalls Holdings (MMH	1
Advertisement and production	Digicut Advertising and Production Ltd (DIGICUT)	1
Telecommunication	MTN Ghana (MTNGH)	1

figure 1: Sectorial Distribution of Value and Volume Traded in 2018.
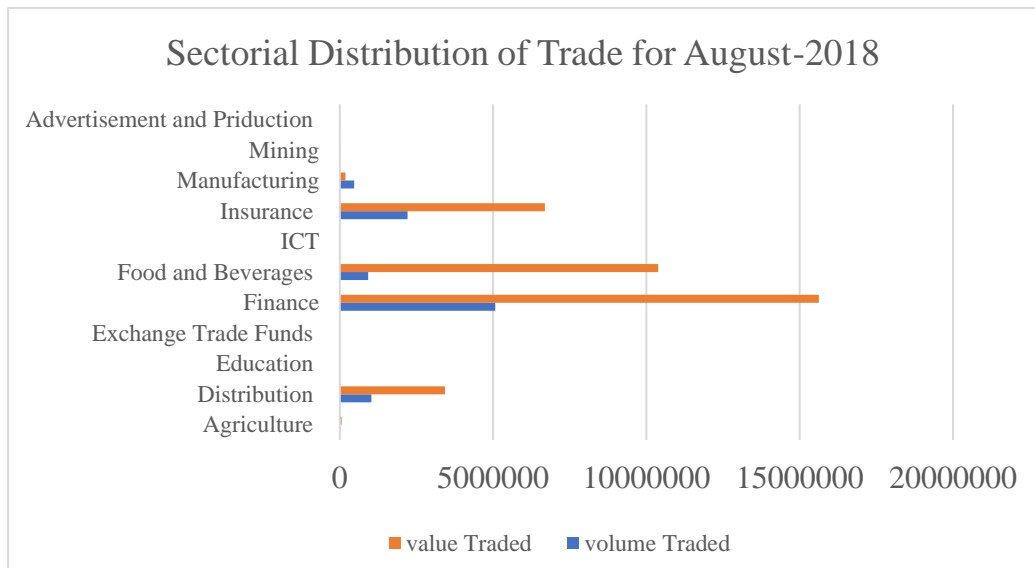
The figure above shows the trade value and volumes of non- financial firms listed in 2018, although it is obvious from the graph that the banking industry has a lot of value and volume traded in 2018 than the non-financial sectors. The non-financial firms contributed about 35% of last year's value and volume traded of which food and beverages took the lead followed by distribution, manufacturing, mining and the rest. Notwithstanding the fact that the sector does not hugely contribute volumes to the stock market but significantly contribute to the economic growth of the nation and this calls for extensive and intensive empirical study as to what hinders the growth of these non-financial firms.

Non-financial firms in Ghana are made of big companies of which some have been in existence since 1990's. Later part of 2018 management from GES suspended PBC, CPC and PKL from operations and were asked to provide all the necessary financial report to management in order to avoid delisting. This raised an eyebrow as

to why these companies were suspended, is it because management of these companies are unable to strategies and adjust that the external pressures exert on these companies or management are unable to managed their internal resources to yield high productivity which will have a long effect on the financial performance of these firms. This study seeks to investigate if economic indicators like RealGDP, exchange rate, inflation, unemployment and interest rate have effect on the financial performance of these firms using sales in growth, efficiency and leverage from firm specific as control variables. The formulated hypotheses backing the study are as follows;

H_1: *RealGDP has significant positive impact on financial performance of non-financial firms.*
H_2: *Exchange rate has significant positive effect on financial performance of non-financial firms.*
H_3: *Inflation has significant positive effect on financial performance of non-financial firms.*
H_4: *Unemployment has significant negative impact on financial performance of non-financial firms.*
H_5: *Interest rate has significant negative influence on financial performance of non-financial firms*

2. Literature review

2.1 Theoretical perspectives

This study is rooted on two theoretical perspectives which are system and resource-based theory. The resource-based theory was proffered in 1984 by Wernerfelt which stated that company or firm strategic resources provides it with golden opportunities which make the firm highly competitive over its rivals. Robinson and Pearce (2011) define this theory as procedure of testing and identifying firm's strategic positioning based on assessing its definite combination of skills, intangibles, capabilities and assets. This theory looks at the internal structures of an organization or firm by viewing and combing the bundle resources and capabilities to improve on firm's productivity thereby by enhancing the average profitability of the firm which will have effect on its financial performance. Most firms develop their competencies from their resources acquired and out of these the firms grow their competitive advantages. The theory helped in explaining the variation in the financial performance of non-financial listed firms on GSE since its addresses internal strengthen of firms.

➢ System theory

Maull and Yip (2009) defined system as a coherent body with boundary which is perceived to have an internal and external component that identifies input and output. They extended the theory as relationships and interactions of organization or firm with its environment and how the environment impacts the firms' internal structures. Nwachukwu (2006) considered system as set of interdependent and related parts that are arranged in way that harmoniously produce a unit whole. Kühn (1974) defined system as set of models whose elements are sufficiently related for attention justification. He extended the theory as controlled and uncontrolled systems where the controlled system detects information then comes up with strategies or decisions to absorb or neutralized the sensed information. The basic aim of these strategies or decisions is to obtain equilibrium.

2.2 Empirical review

2.2.1 Economic indicators and firms' financial performance

Gikombo and Mbugua (2018) explored the effect of some selected macro variables on performance of Kenya's listed commercial banks. Evaluations were made on 44 listed banks on real interest rate, inflations, GPD and exchange rate taking ROA and ROE as a measure of profitability. The study concluded that GDP, real interest

rate, exchange rate and inflation were statistically significant at 0.005 using ROA as a measure of profitability. Nevertheless, ROE had GDP, exchange and real interest rate to be statistically significant at 0.005. Owolabi (2017) researched on economic characteristics and financial performance of Nigeria's manufacturing companies listed on NSE. A secondary data was extracted from NES library and annual financial reports of these companies from 2010 to 2014. A diagnostic test of Hausman specification was carried out and a fixed effect was used. The study looked at government expenditure, exchange rate fluctuations, inflation and interest rate as economic characteristics and the performance of these companies was expressed as ROE, EPS, Tobin's Q and ROA. From the findings of the study inflation, government expenditure, interest and exchange rate were a statistically significant and had a negative relationship with ROA and EFS. Again, the results revealed a negative insignificant relation between economic characteristics and ROE. Mwangi and Wekesa (2017) explored the influence of economic factors on Kenya's Airways performance. Using both primary and secondary data, the study adopted the stratified random sampling in selecting 74 out of the 245 targeted working staff for its primary data collection and the financial annual report of the airways for (2013/2014 and 2014/2015) for its secondary data. The research used descriptive research design, multiple regression and content analysis and its finding was that economic factors have a significant influence on the organizational performance of these Kenya Airways.

Rao (2016) explored the relationship of financial performance and macroeconomic indicators on five listed petroleum firms on Nigeria's stock exchange. The macroeconomic factors discussed were exchange rate, GDP growth, interest rate, inflation and oil price from 2004 to 2015. The results revealed that interest rate and oil price have significant impact on financial performance of the petroleum firms. Darfor and Agyapong (2010) delved into the effect of macroeconomic indicators on stock price of commercial banks. The outcome was that exchange rate and inflation have no significant influence on Ghana Commercial Bank stock price however, stock price of GCB positively influences the stock price of Standard Chartered Bank as well as Social Security Bank. Onwachukwu (2015) explored the significant impact of unemployment on Nigerians economy, using OLS and Augmented Dickey-Fuller methods from 1985 to 2010. The study disclosed that unemployment has no significant effect on the economic growth of Nigeria.

Chioma, Adanma and Clementina (2014) conducted an empirical study on the effect of inflations on bank performance in Nigeria. Findings came out that there was no significant relationship between bank performance, inflation and investment decision. Kiganda (2014) examined the effect of macroeconomic factors on profitability level of commercial banks in Kenya a case of equity bank limited from 2008 to 2012. The study focused on inflation, exchange rate and real GDP as macroeconomic variables on profitability. Data was obtained from WDI, the financial statements and annual reports of these banks. The study used OLS and was established that inflation, GDP and exchange rate have no significant influence on banks profitability. Tapa et. al. (2016) investigated the unemployment-stock market relationship in South Africa. The study employed a quarterly data from 1994: Q1 to 2016: Q1. It was established that unemployment as macroeconomic indicator was not a good predictor for return on stock market.

Otambo (2016) established the influence of macro factors on financial performance of Kenya's from 2006 to 2015. ROA was used as a proxy for financial performance of the firms while quarterly exchange rate (USD/KSH), inflation, GDP and interest rate were used in measuring these macroeconomic variables. The outcome revealed that exchange rate and interest rate have negative effect on performance however, interest

rate and GDP positively affected performance while inflation had no significant effect on performance. Udu (2015) investigated the effect of environmental factors on business operations in Nigeria from 1981 to 2013. The study looked at economic indicators like unemployment, inflation, exchange and interest rate as against business operations which was proxied as real GDP. The research adopted an OLS estimator and the findings reals that unemployment and interest rate had a significant effect on business operations. Shahid (2014) conducted a research on effect of inflation and unemployment on economic growth in Pakistan. A time series data was extracted from world data bank from 1980 to 2010. The outcome revealed that unemployment and inflation were on first difference.

Kanwal and Nadeem (2013) examined the impact of macroeconomic variables on profitability of the public listed commercial banks in Pakistan. The period of the study was within 2001 and 201. POLS was adopted to survey the impact of inflation, real interest rate, GDP on profitability which was proxied as equity multiplier ratios (EM), ROE and ROA. Results revealed a strong positive relation between real interest rate, ROE, EM and ROA. Again, GDP showed a positive insignificant influence on ROA but negative insignificant effect on EM and ROE. Lastly inflation had a negative relationship with EM, ROE and ROA. Jaradat (2013) explored the impact of inflation and unemployment on Jordanian Gross Domestic Product (GDP). A time series data was collected from 2000 to 2010. It was concluded that unemployment had significant negative on GDP. Aburime (2008) examined the determinants of banks profitability on macroeconomic evidence from Nigeria from 1980 to 2006. The regression results showed that inflation, interest rate and exchange rate regime significantly affect profitability of banks in Nigeria.

2.2.2 Economic indicators, firm specific and financial performance

Chinedu et al. (2018) studied into macroeconomic factors, firm characteristics and financial performance of listed manufacturing companies in Nigeria. The study investigated on GDP, interest rate, exchange rate and inflation as macroeconomic factors and size, leverage and liquidity as firm characteristics. ROA was used as a proxy for performance. The study employed multiple linear regression in verifying the hypotheses set. The findings came out that there was no significant influence or impact of exchange and interest rate on ROA but there was significant effect of GDP and inflation on ROA while size, leverage and liquidity shown a significant impact on ROA. Dioha et al. (2018), investigated the effect to firms' specifics on profitability level of consumer goods companies listed on Nigerian's Stock Exchange. Using a panel data technique of random and fixed effect models in examining this impact, Hausman specification test attested that random effect was applicable for the study. The findings came out that leverage, growth of sale and firm size have significant impact on profitability level of these firms while firm age and liquidity had no significant effect on profitability. Alomari and Azzam (2017) delved into the effect of macro and micro factors on performance of 24 listed Jordanian insurance companies from 2008 to 2014. The study considered leverage, under writing risks, market share, liquidity, size of company as micro factors while GDP and inflation as controlled macro-economic indicators, using ROA as a proxy for profitability. The study conducted reviewed that under writing risk, leverage and liquidity have a negative significant impact on performance, market share and company size have positive significant effect on profitability. Again, inflation had insignificant impact on the profitability on these insurance companies. Rani and Zergaw (2017) explored into bank specific, industry specific and macroeconomic determinants of bank profitability. The research proxied profitability as ROE and net interest margin. The macroeconomic determinants used for this research were inflation, GDP, average exchange rate and tax rate whereas the bank

specific checked on the capital adequacy, earnings, management efficiency and liquidity. The findings revealed that macroeconomic determinants have a positive but insignificant effect on ROE but management efficiency had a significant effect on ROE.

Ghareli and Mohammadi (2016) conducted a research on the effect of macro-economic variables and firm characteristics on the quality of financial reporting on 91 listed firms on Tehran Stock Exchange. The study employed spearman correlation and multiple linear regression in testing hypotheses set. The result came out that from 2005 to 2013 there were insignificant effect of inflation, interest rate, GDP and exchange rate on financial reporting however, on the side of firm specific leverage and size have a significant influence on financial reporting. Boadi et.al. (2016) delved into the role of bank specific macroeconomic and risk determinants of banks profitability in Ghana on rural banking industry. The study adopted fixed effect panel regression estimator in analyzing the annual financial reports and economic indicators from 2005 to 2013. The outcome concluded that GDP and inflation have significant influence on determining the profitability of rural and community banks (RCBs) but efficiency and bank size were insignificant to RCB profitability. Pantea, Gligor and Anis (2014) conducted a study on the determinants of economic factors that affect Romanian firms' financial performance. The study considered 55 Romanian industrial companies quoted on Bucharest Stock Exchange over a period of 14 years. The results from the panel data collected and analyzed shown that firm size has significant strong correlation with performance while sales growth has no linkage with performance. Anbar and Alper (2011) conducted an empirical evaluation on macro determinant of commercial banks profitability in Turkey from 2002 to 2010. Banks profitability was proxied as ROA and ROE as dependent variables on banks specific and macro determinants. The study employed a balance panel data set and results showed that interest rate effect commercial banks profitability.

2.2.3 Conceptual Framework backing the study
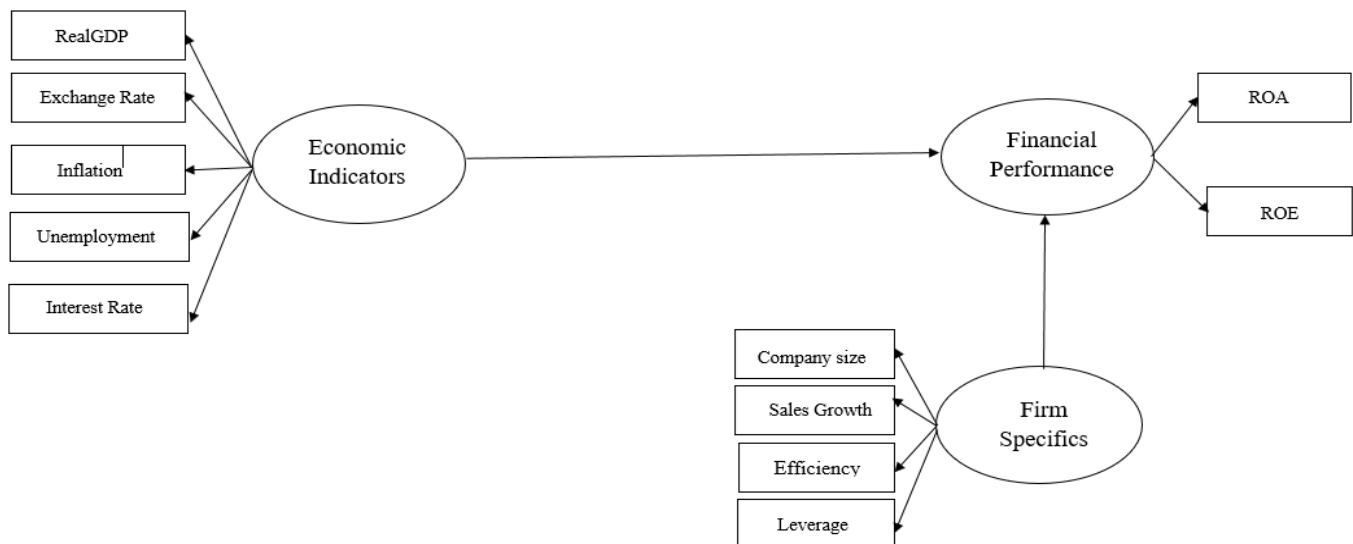
Source: Researcher

3 Data and Methodology

This research work adopts a descriptive approach as its research design. The study targeted all listed non-financial firms on GSE from 2008 to 2017 but due to data availability, the population size of 27 listed firms reduced to 21 firms. In order to achieve objectives of this study, a panel data was extracted from IMF, Central Bank of Ghana and annual financial report of the individual listed non-financial firms. The data collected was quantitative in nature. The study employed multiple regression as a technique for data analysis which ascertain the impact of economic indicators on financial performance of these non-financial firms, taking ROA and ROE as proxies for performance. STATA 15 was used in analyzing the panel data collected and the results obtained were used in testing for the formulated hypotheses. A Hausman test was carried out as to whether fixed or random effect was best fit for the study. Out of literature the following regression models were composed

$$Y_{it} = \alpha_{it} + \beta X_{it} + \mu_{it} \quad \text{.. (1)}$$

$\alpha_i = (i=1....n)$ is the unknown intercept for each entity (n entity-specific intercepts).

Y_{it} is the dependent variable (DV) where i = entity and t = time.

X_{it} represents independent variables (IV),

β is the coefficient for that IVs',

μ_{it} is the error term

Y_{it} = f (ROA and ROE) .... (2)

X_{it} = f (Economic indicators; controlled variables) .... (3)

X_{it} = f (RGDP, ExR, INFL, Unemp, Tbill, SalesG, ComS, Eff and Lev) .... (4)

From [eq. 2 and 4] eq.1 then becomes

$$ROA_{it} = \alpha + \beta_1 RGDP_t + \beta_2 ExR_t + \beta_3 INFL_t + \beta_4 Unemp_t + \beta_5 Tbill_t + \beta_6 SalesG_{it} + \beta_7 ComS_{it} + \beta_8 Eff_{it} + u_{it} .... (1)$$

$$ROE_{it} = \alpha + \beta_1 RealGDP_t + \beta_2 ExR_t + \beta_3 INFL_t + \beta_4 Unemp_t + \beta_5 Tbill_t + \beta_6 SalesG_{it} + \beta_7 ComS_{it} + \beta_8 Lev_{it} + u_{it} .... (2)$$

4. Results and Discussions

Table 2: Descriptive Statistics

Variables	Mean	Std. Dev	Variance	Minimum	Maximum	Skewness	Kurtosis
ROA	-0.0133333	0.41963	0.1760893	-5.6	0.8	-11.32738	151.2255
ROE	-0.4152381	5.890626	34.69948	-80.7	12.9	-12.29992	166.7124
RGDP	7.2	3.096394	9.587656	3.6	14	0.6868108	2.851301
ExR	2.51	1.176218	1.383488	1.2	4.4	0.4502098	1.522168
INFL	13.85	3.594164	12.91801	8.7	19.3	-0.0323116	1.529136
Unemp	6.0172	0.7090211	0.5027109	4.657	6.806	-0.6080053	2.032148
Tbill	19.087	5.255516	27.62045	10.67	25.79	-0.3328633	1.581771
ComS	5.157619	1.321795	1.747143	2.5	8.3	0.5757627	2.772549
SalesG	0.2690476	0.8298521	0 .6886546	-1	8.7	6.287462	57.22944
EFF	1.409048	1.592165	2.534989	0	14.4	3.628228	24.2708
Lev	0.1433333	0.2106684	0.0443812	0	1	1.740033	5.883979
	210	210	210	210	210	210	210

Descriptive statistics in shown in **Table 2** with total observation of 210. The means of ROA and ROE are 0.0133 and 0.4153 standard deviations of 0.4196 and 5.8906, variances of 0.1761 and 34.6995 respectively. The dependent variables are negatively skewed and heavily denser at the tail since k>3. RealGDP recorded mean, standard deviation and variance of 7.2, 3.0964 and 9.5877respectively and its distribution is positively skewed with coefficient of 0.6868. ExR has 2.51, 1.1762 and 1.3849 as corresponding mean, standard deviation and variance. The kurtosis of ExR was less than 3 which indicate a lighter dense at the tail ends of the distribution. INFL and Unemp recorded 13.85, 3.5942, 12.9180 and 6.0172, 0.7090, 0.5021 as respective mean, standard deviation and variance. Along the same line 19.087, 5.2556 and 27.6204 were the respectively mean, standard deviation and variance from 2007 to 2017. The controlled variables from 2008 to 2017 exhibited positively skewed with SalesG and Lev depict excess kurtosis

4.4 Regression Analysis

Correlational Matrix of Studied Variables

Correlation measures the direction and strength that exist within a linear relationship of two variables. The result in **Table 3 and 4** shows the correlational matrix of financial performance as measured by ROA and ROE. A positively correlated coefficient indicates an increment in an explanatory variable having a corresponding increment in the financial performance of these firms, likewise a reduction in an explanatory variable will lead to a reduction in the financial performance. On the other hand, negative correlation means a fall in the explanatory variable will cause a rise in the financial performance (any other variable in comparison) and vice versa. This study regards any absolute value above 0.7 as a strong relationship.

Table 3 : Correlation Matrix for ROA

Variables	ROA	RGDP	ExR	INFL	Unemp	Tbill	ComS	SalesG	Eff
ROA	1.0000								
RGDP	0.1022	1.0000							
ExR	-0.0573	0.5300	1.0000						
INFL	-0.0370	-0.7738	0.2618	1.0000					
Unemp	-0.0737	-0.3658	0.850	-0.0456	1.0000				
Tbill	-0.1072	-0.5144	-0.0425	0.5611	-0.1068	1.0000			
ComS	0.0725	-0.0405	0.1255	0.0072	0.1170	-0.0388	1.0000		
SalesG	-0.2614	0.1151	-0.0746	-0.1051	-0.0592	0.0571	-0.0729	1.0000	
Eff	-0.2723	0.0169	-0.0533	-0.0466	0.0072	0.0237	-0.0700	0.0998	1.0000

From the above, there exist a positive but weak correlation between ROA, RGDP and one control variable ComS. On the contrarily, ROA disclosed a negative and weak relationship with ExR, INFL, Unemp, and Tbill together with two of firm specific controlled variables (SalesG and Eff). RGDP is positively and weakly correlated with ExR, SalesG and Eff. Besides this, is negatively and weakly correlated with Unemp, Tbill and ComS. Conversely showed a strong and negative relationship with INFL. ExR is strongly and positively related with Unemp but weakly with INFL and ComS, diversely negatively and weakly correlated with Tbill, SalesG and Eff. INFL is weakly positively correlated with Tbill and ComS but negatively related with Unemp, SalesG and Eff. Unemp is positively and weakly related to ComS and Eff but negatively correlated with Tbill and SalesG. Tbill revealed positive but weakly correlation with SalesG and Eff but negative relationship with ComS.

Table 4 : Correlation Matrix for ROE

Variables	ROE	RGDP	ExR	INFL	Unemp	Tbill	ComS	SalesG	Lev
ROE	1.0000								
RGDP	-0.0147	1.0000							
ExR	0.0554	0.5300	1.0000						
INFL	0.0668	-0.7738	0.2618	1.0000					
Unemp	0.0597	0.3658	0.8501	-0.0456	1.0000				
Tbill	0.0850	-0.5144	-0.0425	0.5611	-0.1068	1.0000			
ComS	-0.2242	-0.0405	0.1255	0.0072	0.1170	-0.0388	1.0000		
SalesG	-0.0142	0.1151	-0.0746	-0.1051	-0.0592	0.0571	-0.0729	1.0000	
Lev	-0.2076	-0.0918	0.1438	0.0726	0.0945	0.0058	0.6603	-0.0957	1.0000

Table 4 shows the financial performance (ROE) is weakly and positively correlated with ExR, INFL, Unemp and Tbill but negatively related with RGDP, ComS, SalesG and Lev. RGDP shows strong and negative correlation with INFL but weakly with Tbill, ComS and Lev. on the other way around showed positive but weak relationship with ExR, Unemp and SalesG. ExR exhibited a strong positive relationship with Unemp but weakly with INFL and diversely, showed a weak negative correlation with Tbill, SalesG and Lev. INFL is weakly and positively correlated with Tbill, ComS and Lev but negatively with Unemp, and SalesG. Unemp revealed a weak positive relationship with ComS and Lev but negatively with Tbill and SalesG. Moreover, Tbill exhibited a weak positive relation with SalesG and Lev but negatively with ComS.

4.1.5 Model Form Determination

The Hausman's test was adopted to make a choice between the fixed and random effect model. The test analysed the null hypothesis of random effect as against the alternative hypothesis of fixed effects (Durbin,

1954; Hausman, 1978; Wu, 1973). The Hausman test for ROA model showed a Chi2 of 66.19 which was statistically significant at the 1% level (p= 0.0000). The study therefore failed to accept the null hypothesis of random effects and concluded that the fixed effects estimator was best fit for ROA model. However, the Hausman test for the ROE model showed a Chi2 of 2.72 which was statistically insignificant (p=0.9507). Therefore, the study failed to reject the null hypothesis of random effect. This implies, the random effects estimator was more appropriate for the ROE model than the fixed effects estimator.

Table 5: Panel Data Model Estimation Results for ROA and ROE.

Variable	ROA		ROE	
	Fixed Effects	Random Effects	Fixed Effects	Random Effects
Constant	-0.8057007	-0.1182089	-14.38961	-20.67032
	(0.647059)	(0.6486682)	(11.26844)	(10.2814)
RGDP	0.0141353	0.0176744	0.6521985*	0.6300382*
	(0.0152503)	(0.0166332)	(0.2661435)	(0.2655619)
ExR	-0.0596437	-0.024209	0.2493406	0.0523876
	(0.0471698)	(0.0510164)	(0.8239354)	(0.8122209)
INFL	0.0062469	0.0077881	0.4385421***	0.4317785***
	(0.0132944)	(0.0145088)	(0.2320609)	(0.2317203)
Unemp	0.0164102	0.0038156	1.951605	1.879807
	(0.0782242)	(0.0849702)	(1.358184)	(1.353476)
Tbill	-0.0029742	-0.0041728	0.1392576	0.1446471
	(0.0057203)	(0.0062318)	(0.0998891)	(0.0995194)
ComS	0.1913533*	0.035889	-2.153576***	-0.7527619***
	(0.0657613)	(0 .0297265)	(1.156657)	(0.4482203)
SalesG	-0.0993475*	-0.1090947*	-0.4561519	-0.336088
	(0.0284306)	(0.0306466)	(0.4962181)	(0 .482781)
Eff	-0.1762846*	-0.1196153*	-	-
	(0.0216273)	(0.0193739)		
Lev	-	-	-4.132118	-3.43247
			(3.191747)	(2.646651)
R-Square	9.32%	13.9%	8.61%	9.86%
Observations	210	210	210	210
Number of Groups	21	21	21	21
Hausman test:				
Chi-Square (8)	66.19		2.72	
Prob>Chi-Square	0.0000		0.9507	

NOTE: *, ** and *** denote significance at 0.01, 0.05 and 0.1 level of significance respectively. Standard errors are put in parentheses.

H₁: RGDP has significant positive impact on firm's financial performance of listed non-financials firms.

From the regression outcome of both ROA and ROE, RGDP in **Table 5** revealed a positive impact on financial performance but statistically insignificant with ROA and significant with ROE with respective beta coefficients of 0.0141 (p-value > 0.1) and 0.6301 (p-value < 0.05). Meaning for a given non-financial firm as RGDP varies across time by one-unit ROE increases by 0.630, on the other hand one unit of average effect of RGDP over ROA changes across time and between firms by 0.0141. With reference to H₁, ROE confirms the formulated hypothesis that RGDP has significant positive effect on financial performance and this is in consistent with the studies of (Gikombo and Mbangua,2018; Boadi et. al. 2016; Hong and Razak, 2015; Osamwonyi and Michael, 2014; Murungi, 2014). Diversely, Rani and Zergaw (2017) on a study on banking sectors in Ethiopia recorded an insignificant positive impact of GDP on ROE.

Conversely ROA does not support the formulated hypothesis although RGDP showed positive impact on ROA but statistically insignificant. This finding is consistent with researches of (Alper and Anbar, 2011; McDonald and Schumacher, 2009; Vong et al, 2009; Sufian and Chong, 2008; Athanasoglou and Staikouras 2006; Naceur, 2003; Demirguc-Kunt and Huizinga, 1999) but inconsistent with (Chinedu et. al., 2018; Ismail et al 2018; Alomari and Azzam, 2017; Otambo, 2016; Chen-Ying 2014; Khrawish, 2011; Sufian and Haiss et al 2009).

H₂: Exchange rate has significant positive effect on financial performance on non-financial firms.

ExR revealed statistically insignificant impact on financial performance of non-financial firms. ExR affected ROA negatively with a beta coefficient of -0.0596437 (p-value > 0.1) whereas ROE had a beta coefficient of 0.0523876 (p-value > 0.1) which shows a positive influence on ROE. Meaning a unit increase in ExR will cause an average effect of 0.0596437 in ROA across time and a unit change in ExR will cause a variation of 0.023876 in ROE. Hence, we failed to accept the formulated hypothesis. This outcome is in line with Owlabi (2017) in Nigeria which showed that exchange rate has no significant influence on ROA. Again, Rain & Zergaw (2017), Rao (2016) Ghareli & Mohammadi (2016) and Darfor & Agyapong (2010) recorded similar effect with financial performance of firms. On contrary, in Kenya Otambo (2016) and Gikombo & Mbugua (2018) reported a significant negative effect of exchange rate on ROA.

H₃: Inflation has significant positive effect on financial performance of non-financial firms.

INFL reported a positive impact on financial performance, significant with ROE and insignificant with ROA with 0.4317785 (p-value < 0.1) and 0.0062469 (p-value > 0.1) as respective beta coefficients, meaning for a given firm as INFL changes across time by a unit, ROE increases by 0.4317785 while a unit variation in INFL causes an average effect on ROA by 0.0062469 among firms over time. ROA does not support the formulated H₃ but ROE does support the hypothesis. Current findings do not support the results of Rani and Zergaw (2017) who reported a positive insignificant of inflation on ROE of banking sector in Ethiopia. Owoputi et. al. (2014) also established a positive significant effect of inflation on ROA and ROE, which is not consistent with that of the findings of ROA in this study. Adanma and Clementina (2014) explored the relationship between inflation and bank's performance and the effect of this on lending decisions. It was discovered that inflation has no significant relationship with bank's performance.

H4: Unemployment has significant negative impact on financial performance of non-financial firms listed on GSE.

From **Table 5** Unemp revealed a respective positive beta coefficient for both ROA and ROE as 0.0164102 and 1.879807 which are statistically not significant. 0.0164102 represents an average effect of Unemp over ROA when Unemp changes across time by a unit however, Unemp varies across time by same unit ROE increases by 1.879807. The finding of Tapa et. al. (2016) investigated the unemployment-stock market relationship in South Africa. The study employed a quarterly data from 1994: Q1 to 2016: Q1. It was established that unemployment as macroeconomic indicator was not a good predictor for return on stock market and it confirms that of Onwachukuwn (2015).

H5: Interest rate has significant negative influence on financial performance.

The study recorded a negative beta coefficient of -0.0029742 (p-value > 0.1) for ROA and a positive beta of 0.1446471 (p-value > 0.1) which were statistically not significant at all levels. The negative beta coefficient represents a variation in Tbill causes an average effect of 0.0029742 on ROA between firms. Additionally, a variation in Tbill across time by a unit causes ROE to increase by 0.1446471. This outcome supports the findings of Owolabi (2017), Otambo (2016), Gado (2015), Enyioko (2012) and Kandir (2008) that interest rate has no significant effect on performance of firms. On the contrarily, Mwangi and Wekesa's (2017); Rao (2016); Ogunbiyi and Ihejirika (2014); Osamwonyi and Michael (2014) and Murungi (2014) established interest rate to have a significant influence on firm performance.

Discussion on controlled variables

ComS (company size) was statistically significant for both ROA and ROE with respective coefficients of 0.1913533 and -2.153576 (p-values < 0.01). outcome confirms the finding of Egbunike and Okerekeoti, (2018) who explored macroeconomic factors, firm characteristics and financial performance concluded that firm size has a significant positive effect on performance; Knápková and Chandrapala (2013) found firm size to have a significant positive influence on ROA. But inconsistent with the findings of Bist et.al. (2017) who discovered firm size to have a negative insignificant effect on performance.

SalesG (sales growth) showed a p- value of 0.000 level of significance with only ROA with coefficient of -0.0993475 although ROE had a negative coefficient of -0.336088, it was statistically insignificant. Hunjra et al. (2014); Markman and Gartner, (2002); Cowling, (2004) conducted an empirical study on impact on micro-economic variables on firm performance and discovered that growth had a positive significant influence on ROE which is inconsistent with the current findings of this study. Musah et al. (2019) found growth to have positive and significant on ROA and insignificant with ROE

Eff (Efficiency) recorded a significant beta coefficient of 0.1762846 with ROA. A study conducted by Hongxing, Muhammad and Gulzara (2018) in Pakistan on profitability revealed that operational efficiency had negative and significant influence on banks' profitability. Musah et al. (2019) discovered that efficiency significantly affected ROA negatively, which does not support the outcome of this study.

Lev (Leverage) revealed an insignificant impact on ROE with a coefficient of 4.132118, the finding of this study is contrarily to Lasisi et al. (2017) who in the agricultural sector reported a significant negative impact of leverage on ROE, likewise Bist et. al. (2017) in Nepal recorded significant effect of leverage on performance.

Table 6: Comparison of regression results, correlation results and hypotheses of ROA

| Variable | Regression Coefficient | Significant | | Coefficient | | |
		p-value	Significant /Not	Expected Results	Regression Results	Correlation Results
RGDP	.0141353	0.355	No	Positive	Positive	Positive
ExR	-.0596437	0.208	No	Negative	Negative	Negative
INFL	-.0062469	0.639	No	Negative	Negative	Negative
Unemp	.0164102	0.834	No	Positive	Positive	Negative
Tbill	-.0029742	0.604	No	Negative	Negative	Negative
ComS	.1913533	0.004	Yes	Positive	Positive	Positive
SalesG	-.0993475	0.001	Yes	Positive	Positive	Negative
Eff	-.1762846	0.000	Yes	Negative	Negative	Negative

$$ROA_{it} = -0.806 + 0.014RealGDP_t - 0.060ExR_t - 0.006INFL_t + 0.016Unemp_t - 0.003Tbill_t + 0.191ComS_{it} - 0.10SalesG_{it} - 0.176Eff_{it} + u_{it} \dots\dots\dots (1)$$

Table 6 shows the comparative results of regression, excepted, correlation and hypotheses of ROA. The study expected RGDP to have a positive impact on ROA which was confirm by both regression and correlation results, however it was statistically not significant. ExR was expected to have a negative and significant effect on ROA. The results of correlation and regression affirm that of the expected result nonetheless the relationship showed no level of significance. INFL equally validated that direction of the expected result by correlation and regression but was statistically insignificant. Unemp result affirmed that of the expected and the regression but was not supported by the correlational result and showed no level of significance. Tbill results attested to the expected results which showed negative impact on ROA; however, it was statistically insignificant at all levels. On the contrarily, all the controlled variables were statistically significant and conformed to the expected results except SalesG whose correlational result was different.

Table 7: Comparison of regression results, correlation results and hypotheses of ROE

| Variable | Regression Coefficient | Significant | | Coefficient | | |
		p-value	Significant /Not	Expected Results	Regression Results	Correlation Results
RGDP	.6300382	0.018	Yes	Positive	Positive	Negative
ExR	-.0523876	0.949	No	Negative	Negative	Positive
INFL	.04317785	0.062	Yes	Negative	Positive	Positive
Unemp	1.879807	0.165	No	Positive	Positive	Positive
Tbill	.1446471	0.146	No	Negative	Positive	Positive
ComS	-.7527619	0.093	Yes	Positive	Negative	Negative
SalesG	-.336088	0.486	No	Positive	Negative	Negative
Lev	-3.43247	0.195	No	Negative	Negative	Negative

$$ROE_{it} = -20.670 + 0.630RealGDP_t + 0.052ExR_t + 0.043INFL_t + 1.880Unemp_t + 0.145Tbill_t - 0.753ComS_{it} - 0.336SalesG_{it} - 3.432Lev_{it} + u_{it} \ldots \ldots \ldots (2)$$

Table 7 shows the comparative results of regression, excepted, correlation and hypotheses of ROE. It was estimated that RGDP will have a positive significant influence on ROE which was affirmed by the regression result but was otherwise with correlational result. ExR recorded negative impact on ROE which was statistically insignificant but the relationship between ExR and ROE showed differently. INFL recorded significant impact on ROE but regression and correlation results were different from the expected estimated result. The result of regression and correlation of Unemp affirmed that of the expected results but showed no significant impact on ROE. Finally, the reported direction of Tbill on correlation and regression showed differently as estimated with ROE. However, Tbill was statistically insignificant at all levels. With respect to the controlled variables from firm specific Lev showed consistency with the expected result but was statistically insignificant. Diversely, ComS and SalesG recorded different results from the expected result but only Com was statistically significant.

5. Conclusion and policy implications

There are a lot of economic indicators that positively or negatively affect the performance of non-financial firms listed on GSE but this research work employed five (5) of these economic indicators; Real GDP, Exchange rate , Inflation, Unemployment and interest rate and investigated their impact on financial performance of these firms using firm specific like company size, growth in sale, leverage and efficiency as controlled variables. A panel data was extracted from IMF, Central Bank of Ghana and annual financial report of the individual listed 21 non-financial firms within the period of 2008 to 2017 (10years) with 210 observations, using GLS estimator it was established that economic indicators have no significant impact on financial performance using ROA as a proxy for performance, although all the controlled variables were significant. In contrast, Real GDP and Inflation showed a positive significant effect on ROE with exchange rate, unemployment and interest having insignificant influence on ROE.

The Ghanaian economy has delineated volatility in economic indicators like GDP, inflation, exchange rate etc. which hinder the performance of non-financial firms, therefore government and regulatory authority should come out with good policies that will boost economic activities and drop inflation since they have the tendency of affecting non-financial firms' performance.

Management must ensure full utilization of its internal resources by focusing on diversification and expansion since company size, efficiency and sales growth affect the return on assets and equity of firms. Moreover, management should warily consider inflation rate when making financial decision due to its impact on performance.

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Appendix

Latent Variables	Observed Variables	Indicators Name	Measurement/Definition
Financial Performance	ROA	Return on Assets	$\dfrac{Net\ Income}{Total\ Asset}$
	ROE	Return on Equity	$\dfrac{Net\ Income}{Total\ Equity}$
Economic Indicators	RealGDP	Real GDP	
	ExR	Exchange Rate	Exchange rates for the period under consideration
	INFL	Inflation	Inflation values for that period under consideration
	Unemp	Unemployment Rate	Unemployment rate within the period under consideration.
	Tbill	Proxy for Interest Rate	91-days of Treasury bill rate.
Controlled Variables (Firm specific)	SaleG	Sales Growth	$\dfrac{Sale\ of\ current\ year - sale\ of\ previous\ year}{Sale\ of\ previous\ year}$
	ComS	Company Size	Log of Total Assets
	EFF	Efficiency	$\dfrac{Gross\ Revenue}{Total\ Asset}$
	LEV	Leverage	$\dfrac{Long\ Term\ Debt}{Total\ Asset}$