

## Examining the Factors that Influence Firm Performance in Ghana: A GMM And OLS Approach

Regina Dodoo<sup>1</sup>, Daniel Tetteh Donkor<sup>2</sup>, Michael Appiah<sup>3</sup>

**Abstract:** This research aims to establish the determinants of firm performance in 15 non-financial Ghanaian companies listed on the Ghana Stock Exchange, over a period of 10 years (2008-2017). The analysis is based on two methods of estimation; two-step system generalized method of moments (GMM) and ordinary least square (OLS) method. The new empirical evidence derived from the results of the analysis reveals that firm size (SIZE), growth (GR) and cash flow ratio (CFR), significantly and positively determines firm's performance whereas debt to equity (DE) exerted negative influence on firm performance. Robustness test conducted using the three-stage least-squares regression, indicates similar results with the main findings of the study. These results implies that, firms that rely on debt to execute its operations run at a higher risk of insolvency.

**Keywords:** Firm Performance; Ghana Stock Exchange; Non-Listed Firms; GMM; Panel data

**JEL Classification:** C23; M40; L25

### 1. Introduction

Firm performance is commonly regarded as a necessary qualification for long-term firm existence and success; furthermore, the state of a firm affects the accomplishment of other financial objectives (Gitman, Juchau & Flanagan, 2015). According to Burja (2011) firm performance from the perspective of macroeconomics, is the direct outcome of managing economic assets and ensuring its effective use in operational, investment and monetary ventures.

The study of firm performance is relevant because of its effect on macroeconomic variables such as economic growth and employment. Nonetheless, due to the increasing industrial competition existing in global markets Slater and Olson (2002), enhanced efficiency, technological advancement, pricing pressure, companies are faced with greater struggle in attaining and maintaining performance. However, the economy of Ghana has been facing an increasing growth with Gross Domestic Product (GDP) (World Bank, 2017) influenced by various competitive and strong industries including finance and insurance (Obeng-Krampah, 2018).

<sup>1</sup> Jiangsu University, China, Address: 301 Xuefu Rd, Jingkou District, Zhenjiang, Jiangsu, China, Corresponding author: dodooregina@gmail.com.

<sup>2</sup> School of Business, University of Cape Coast, Ghana, Address: Cape Coast, Ghana, E-mail: kobbytwelve@gmail.com.

<sup>3</sup> Jiangsu University, China, Address: 301 Xuefu Rd, Jingkou District, Zhenjiang, Jiangsu, China, E-mail: dorscon2017@gmail.com.

Prior literature (Goddard, Tavakoli & Wilson, 2005; Lazăr, 2016; Obeng-Krampah, 2018; Pratheepan, 2014) have empirically analysed the determinants of firm performance from several perspectives. However, discrepancies, for instance, in the theoretical point of view, sample size, calculation of variables, and methodologies utilized, does not make direct comparisons of these studies easier (Yazdanfar, 2013). For example while research conducted in Australia by Feeny (2000) focused on a sample of 180,738 tax entities in 1994/95 to 1996/97. Stierwald (2009) also concentrated on a sample of 961 large Australian firms in 1995-2005 to examine the determinants of firm performance. Additionally, the study undertaken by Asimakopoulos, Samitas, and Papadogonas (2009) applied the ordinary least square (OLS) and random and fixed effect method on a sample of 119 Greek non-financial firms listed in the Athens Stock Exchange within the period 1995-2003. Goddard et al. (2005) also uses the two-step system GMM method on a sample of 12,508 firms in service industries in 5 European countries to examine the variables that affect firm performance.

Inclusively, while Obeng-Krampah (2018) employs the random and fixed effect method on 30 firms listed on the Ghana Stock Exchange (GSE) from 2007 to 2015 by measuring firm performance with both ROA and ROE to investigate the role of macroeconomics on firm performance. Prempeh and Nsiah Asare (2016) uses Return on Assets (ROA), Gross Profit Margin, and Tobin's Q Ratio to measure firm performance when examining the effect of Debt Policy on firms' performance of five manufacturing companies listed on the Ghana Stock Exchange (GSE) between 2005 and 2015.

The outcomes from these studies therefore remains mixed. Regardless the various empirical works attempted by many researchers focusing on the variables that affects firm performance, the issue gives room for further studies and must be consequently prioritized for stakeholders such as managers, investors, researchers, practitioners and the government.

This paper contributes to the study by employing current advances in panel data econometrics to analyse the factors that influence firm performance in 15 listed non-financial firms in Ghana, within the period 2008-2017. It further employed the two-step system generalized method of moments (GMM) and ordinary least square method (OLS) to give a new empirical evidence adding to previous literature on determinants of firm performance.

The rest of this paper is organized as follows. Section 2 comprises the literature review. Section 3 describes the research methodology. Section 4 contains the empirical results and discussions. Section 5 includes conclusion, implications, recommendations and limitations.

## **2. Literature Review**

Firm performance is influenced by several factors and this has necessitated attention over the years in different areas of research. A number of empirical studies has been conducted to examine if there is somewhat (positive, negative or no effect) between firms performance and its determinants. Presently, there are two highly contrary theories in the strategy research to elaborate on why certain firms perform in a superior way leading to firm value. They include the; resource-based view (RBV) and market-based view (MBV).

According to Barney (1991), a leading resource-based view (RBV) advocate, resource-based view (RBV) of the company is centered on the resources and competencies of the firm's to illuminate firm performance. From this view, firms with competitive advantage are unique and possess valuable firm-specific resources that competitors are incapable of replicating. The resource-based view (RBV) is

categorized under three main groups: physical, human and organizational capital resources. These assets are utilized by the firms to increase performance.

In contrast, the market-based view (MBV) focuses on the markets in which the firm competes, taking an exterior market angle to face this issue. This mainly concentrates on the state of finished products on the market as a guarantee for greater profits in the future and better firm performance in the interim (Tallman, 1991). From this view, competitive advantage is based on restrictions to competition ascending from the market construction. Firm value is generated from the competitiveness of its exterior product markets. Thus, the market power of the firm describes its performance. The market power can be achieved via monopoly, barriers to entry and bargaining power (Grant, 1991). Thus, the stronger the firms market power, the higher the firm's performance (Makhija, 2003).

The research conducted by Goddard et al. (2005) reports that, market share and liquidity influenced profitability positively whereas size and firms gearing ratio adversely affected profitability. The study employed the two-step system GMM method on a sample of 12,508 firms in 5 European countries. Contradictory, Pratheepan (2014) applied the ordinary Least Square (OLS) and random and fixed effects on a sample of 55 firms between 2003 and 2012. The findings stated that, liquidity and leverage impacted firm performance negatively whiles firm size is positively and statistically significant to firm performance.

Using a sample of 119 Greek non-financial firms listed in the Athens Stock Exchange within the period 1995-2003. Asimakopoulos et al. (2009) finds a positive size and sales growth impact on firm performance whereas leverage exerts negative influence. The outcome was based on utilizing the ordinary least square method (OLS) and random and fixed effect method. This contrasts with Lazăr (2016) who discovers that size and leverage negatively affects firm profitability whereas sales growth proved positive after applying the random and fixed effect method. Yazdanfar (2013) use the SUR model on 12,530 non-financial micro firms in Sweden between 2006 and 2007. The result show that growth exercises positive and significant influence on firm performance. Kaen and Baumann (2003) opposes this result by indicating a significant and negative influence between growth and profitability. In the case of (Coad, 2007; Markman & Gartner, 2002), no connection is found between growth and firm performance.

Feeny (2000) concentrated on a sample of 180,738 tax entities from Australia in 1994/95 to 1996/97. It was documented that firm performance is significantly and positively affected by size whiles the entity's gearing showed negative influence on performance. This does not allow corroboration with Stierwald (2009), who employed the random and fixed effect method on a sample of 961 large Australian firms in 1995-2005. It was realized that size and debt to equity (DE) ratio exercised positive impact on firm profitability. The reason may be that lucrative firms have the advantage to debt financing rather than depending entirely on equity capital.

Oduanya, Yinusa, and Ilo (2018) applied the system GMM on 114 non-financial firms in Nigeria from 1998-2012. The report revealed a positive effect between size and profitability coupled with a negative impact between leverage on profitability. Similarly, Vătavu (2014) applied OLS, fixed and Random effect model and Generalized Method of Moments (GMM) and found size to positively determine firm profitability whereas debt to equity exerts negative effects. Berger and Di Patti (2006) contradicted these results by documenting that increased leverage positively impacts the profitability of firms in the US banking sector.

Other studies from Ghana reported on a negative influence of debt on firms' performance by applying the random and fixed effect method on five (5) manufacturing companies listed on the Ghana Stock Exchange (GSE) between the period 2005 to 2015 (Prempeh & Nsiah Asare, 2016). This does not confirm the outcome of Obeng-Krampah (2018) employing the random and fixed effect method on 30 firms listed on the Ghana Stock Exchange (GSE) from 2007 to 2015. The study finds that, debt affects firm performance (ROA) positively. Boadi, Antwi, and Lartey (2013) adds up by showing that debt positively determines firm performance using Ordinary Least Square Regression on a sample of 16 insurance firms.

The diagram below shows the conceptual framework of the study. This indicates that, Firm size (SIZE), Growth (GR), Debt to Equity ratio (DE) and Cash Flow ratio (CFR) determines firm performance.

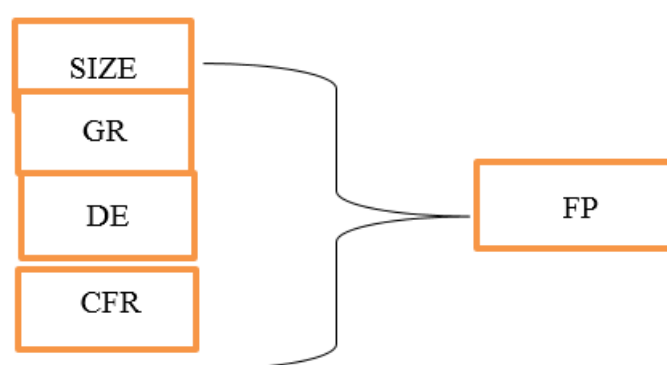


Figure 1. Conceptual Framework

## Data

The main source of the data is from the Ghana Stock Exchange (GSE). Information is wisely collected from the annual reports of 15 Non-financial firms listed on the Ghana Stock Exchange (GSE) from 2008 through to 2017. Out of the 42 listed firms in Ghana, 15 Non-financial firms fully met the criteria for the sample size. Thereafter, all other listed firms for which did not meet the requirement, were deleted. The criteria included; (1) all those companies who have been in existence during the period of analysis and; (2) firms who consistently made their annual reports available on the Ghana Stock Exchange (GSE) during the sample period.

The dependent variable used for the study is firm performance measured by an accounting based measurement; Return on Assets (ROA). Return on assets (ROA) is defined as the Net Income divided by total assets. Return on Assets (ROA) is calculated as;

$$\text{ROA} = (\text{Net Income}) / (\text{Total Assets}) \quad (1)$$

## Independent Variables

Earlier research proposes that firms size (SIZE), growth (GR), debt to equity ratio (DE) and cash flow ratio (CFR) may influence its performance; the size of firms, their growth rate and the availability of funds have a more prominent assortment of capabilities and can appreciate economies of scale, which may affect the results and the deductions (Abata & Migiro, 2016; Deloof, 2003; Frank & Goyal, 2003; Jermias, 2008; Ramaswamy, 2001; Salim & Yadav, 2012). These studies utilizes firms size (SIZE), growth (GR), debt to equity ratio (DE) and cash flow ratio (CFR) as independent variables. Table 1. gives a summary of variables and equivalent measurements.

**Table 2. Variables Definition**

Variable	Measurement
<b>Dependent Variable</b>	
Return On Asset (ROA)	Net Income/ total assets
<b>Independent Variables</b>	
Firm size (SIZE)	Natural logarithm of total assets
Growth (GR)	Percentage changes in sales growth
Debt-Equity Ratio (DE)	Total debt/total equity
Cash Flow Ratio (CFR)	Operating cash flows/current liabilities

*Source: Authors Composition*

### 3.1. Model

To estimate the outcome of the impact of firm performance of Non-financial listed Ghanaian firms and its determinants, a regression model is developed. The model is as follows:

$$FP_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 GR_{it} + \beta_3 DE_{it} + \beta_4 CFR_{it} + \epsilon_{it} \quad (2)$$

In which FP stands for Firm performance, (SIZE) is Firms size, (GR) is sales growth, (DE) is Debt to equity ratio, (CFR) is cash flow ratio,  $\alpha$  is the intercept, i and t represents firm and time individually,  $\beta_1 \dots \beta_4$  are the coefficients of the independent variables and  $\epsilon$  is the error term.

### 3.2. Method

To capture the influence of firms size (SIZE), growth (GR), debt to equity ratio (DE), cash flow ratio (CFR), and firm performance, the study employed a popular statistical method; ordinary least square method (OLS) and a dynamic panel estimator; two-step system generalized method of moments (GMM). The two-step system generalised method of moments (GMM) initially explained by Hansen (1982) and later appeared in (Arellano & Bond, 1991; Goddard et al., 2005) and many others utilizes a huge cross-sectional data groups and few time-series measurement (large N and smaller T). The two-step system generalized method of moments integrates a covariance matrix for the disturbance term determined by utilizing the remains of the one-step estimator. With the use of fewer samples in two-step system GMM, the asymptotic standard errors are biased in a descending manner (Bond, Bowsher, & Windmeijer, 2001). The two-step system generalized method of moments (GMM) was included to capture endogeneity issues, which when ignored can affect the magnitudes or the assessed co-efficient signs (Wintoki, Linck, & Netter, 2012).

The dynamic model employed to analyse the performance of firms is as follows:

$$\Delta Y_{it} = \alpha + \delta Y_{i,t-1} + \beta_1 X_{it} + \gamma t + \epsilon t \quad (3)$$

In which  $i=1, \dots, N$  and  $t=1, \dots, T$ ,  $\alpha_i$  is the unknown intercept for each entity,  $Y_{it}$  is the dependent variable and  $\beta$  is the coefficient for the independent variable  $\epsilon$  is the error term, i is the entity and t is time.

Thereafter, the model is reformed to fit into the study in the equation below:

$$\Delta FP_{it} = \alpha + \delta FP_{i,t-1} + \beta_1 SIZE_{it} + \beta_2 GR_{it} + \beta_3 DE_{it} + \beta_4 CFR_{it} + \gamma t + \epsilon t \quad (4)$$

In which FP stands for Firm performance, (SIZE) is Firms size, (GR) is sales growth, (DE) is Debt to equity ratio, (CFR) represents cash flow ratio,  $\alpha$  indicates the intercept, i and t represents firm and time

individually,  $t-1$  is the lag variable,  $\beta_1 \dots \beta_4$  are the coefficients of the independent variables,  $\gamma_t$  is the time effect and  $\epsilon_t$  are the error terms.

#### 4. Results and Analysis

**Table 2. Descriptive Statistics**

	Obs.	Mean	Std. Dev.	Min.	Max	Skewness	Kurtosis
ROA	150	0.0053	0.4850	-5.6487	0.7656	-10.6432	124.8778
SIZE	150	4.6006	0.8196	2.5093	5.9545	-0.4201	1.9953
GR	150	0.0175	0.0551	-0.2074	0.5214	4.3695	50.9801
DE	150	2.7978	11.7833	-64.6981	119.1720	5.3257	71.7982
CFR	150	0.3265	0.7158	-1.6939	4.4039	2.7880	15.2323

*Source: Authors Composition*

This section reveals the characteristics of the study variables by using the mean, standard deviation, minimum, maximum, skewness and kurtosis. The mean, lowest and highest values of the dependent variable, Return of Assets (ROA), is 0.0053%, -5.6487 and 0.7656 respectively. The sample firm size (SIZE) average about 4.6006% of total assets with skewness and kurtosis of -0.4201 and 1.9953 individually. The mean growth (GR) of firms is 0.0175% reflecting low sales. The company uses about 2.7978% of shareholders equity and debt to run the company's asset on the average. It records a least minimum value of -64.6981 and highest value of 119.1720. It as well has a standard deviation of 11.7833, which is greater than the mean. Therefore, the volatility of debt to equity (DE) is excessive.

**Table 3. Correlation Results on Return on Assets (ROA)**

Variable	ROA	SIZE	GR	DE	CFR
ROA	1.0000				
SIZE	0.2750	1.0000			
GR	0.3222	0.0534	1.0000		
DE	0.0258	0.1673	-0.0035	1.0000	
CFR	0.2000	0.1024	-0.0082	-0.0467	1.0000

*Source: Authors Composition*

The relations of the explanatory variables are indicated in this section. In general, the relationship between the dependent variable Return of Assets (ROA) and independent variables (SIZE, GR, DE, and CFR) are positively related, while Debt to Equity (DE) and Growth (GR) are negatively related. Furthermore, a negative relationship is observed between Cash flow ratio (CFR), Growth (GR) and Debt to Equity (DE) with correlations coefficients of -0.0082 and 0.0467.

**Table 4. Regression Results**

	Two Step System GMM	OLS
	ROA	ROA
L1	0.3748 (0.0414)***	
SIZE	0.4509 (0.1941)**	0.1425 (0.0449)***
GR	3.3695 (0.6481)***	2.7349 (0.6543)***
DE	-0.00247 (0.0021)	-0.0002 (0.0031)
CFR	0.1176 (0.0650)*	0.1203 (0.0506)**
CONS	2.1157 (0.9245)	-0.7370 (0.2068)

Source: Authors Composition: Standard errors are reported in parentheses, \*\*\*, \*\*, \* means significance level at 1%, 5%, and 10% respectively.

The results reveals positive connection between firm size (SIZE), growth (GR), and cash flow ratio (CFR) with firm performance (ROA). Findings from both methods shows that the coefficients of these independent variables SIZE, GR, and CFR are statistically significant. Nonetheless, debt to equity (DE) ratio recorded negative results at no significance level for both methods with firm performance (ROA), illustrating that, the selected listed Ghanaian firms are not taking advantage of their non-operational debt.

The estimated coefficient of firm size (SIZE) came out to be positive and statistically significant at 5, 1% in the OLS and two step system GMM each. This reveals that firm size (SIZE) is an important determinant of firm performance. This can further be explained that a 1% increase in the size of a firm, leads to about 0.45 and 0.14% increase in firm performance (ROA) on the average in the two-step GMM and ordinary least square method (OLS) respectively. The results are in the same direction with (Bhatia & Srivastava, 2016; Mathuva, 2015; Odusanya et al., 2018; Pratheepan, 2014; Vātavu, 2014; Yazdanfar, 2013), documenting that firm size is positively connected to firm performance. It connotes that larger firms tends to have greater capital coupled with the advantage of economies of scale unlike smaller firms. Additionally, report from Asimakopoulos et al. (2009) by employing the OLS and fixed and random effects expatiate that larger firms have better cost advantage in terms of negotiating power over input prices compared to smaller firms, thus, improved performance. On the other hand, (Dhawan, 2001; Lazăr, 2016; Margaretha & Supartika, 2016; Ramasamy, Ong, & Yeung, 2005) observed negative results between firm size (SIZE) and firm performance. Seelanatha (2011) utilized a simple linear regression reported mixed results on 31 firms in China following the dependent variable measurement used on firm performance in that study.

The positive coefficient of growth (GR), which is a measure of the firm's sales, is premised on the point that a percentage increase in growth (GR) on the average, will enhance the firm performance (ROA) to about 3.36 and 2.73% at a significance level of 1% in both methods. Accordingly, when current year's sales records more than proportionate increase than the previous year's sales, revenue increases. The relationship reveals that, listed firms in Ghana are likely to engage in expensive strategies of increasing their customer base by publicising, upgrading, and innovating in order to achieve greater sales and dampen new competition (Goddard et al., 2005). The presence of growth (GR) attracts meaningful investment ventures which influences the firm's performance. Studies such

as (Asimakopoulos et al., 2009; Claver, Molina, & Tarí, 2002; Davidsson, Steffens, & Fitzsimmons, 2009; Durnev & Kim, 2005; Fitzsimmons, Steffens, & Douglas, 2005; Gompers, Ishii, & Metrick, 2003; Henry, 2008; Obeng-Krampah, 2018; Samiloglu & Demirgunes, 2008), also reports positive relation between growth (GR) and firm performance. The result explains that, firms that experience increased growth in sales perform better than businesses with fewer sales. Additionally, Papadogonas (2005) established that growth in sales encourages profits for larger firms than smaller ones. Conversely, Kaen and Baumann (2003) find a significant and negative influence between growth and profitability. Nonetheless, the research executed by, (Coad, 2007; Markman & Gartner, 2002) reports no relationship between the growth and firm performance.

The debt to equity (DE) ratio exercises adverse and no statistical significant impact on firm performance in both methods. Consequently, an increase of 1% in debt to equity ratio would cause a decrease of up to 0.24 and 0.0002% each in firm performance (ROA). The negative coefficient of debt to equity ratio (DE) is in similitude with studies by (Abata & Migiro, 2016; Akbar, Poletti-Hughes, El-Faitouri, & Shah, 2016; Al-Jafari & Samman, 2015; Asimakopoulos et al., 2009; Lazăr, 2016; Pratheepan, 2014; Prempeh & Nsiah Asare, 2016; Seelanatha, 2011). Maximization of profits for firms with higher debt to equity (DE) ratio is unpredictable as more of the firm's assets are channelled to the settlement of debts thereby diminishing resources. Such firms are likely to suffer, as a percentage of its resources are directed into servicing debts reducing the portion that belongs to shareholders. The effect also denotes that, there is a higher risk of insolvency for firms with greater debt to equity (DE) ratio. Contradictory, (Burja, 2011; Stierwald, 2009), documented a significant positive impact of debt to equity (DE) ratio on the performance of Romanian and Large Australian firms respectively. Boadi et al. (2013) confirms this findings with positive affiliation between leverage and firm performance using Ordinary Least Square Regression on a sample of 16 insurance firms in the Ghanaian setting.

Finally, a positive effect is realised between cash flow ratio (CFR) and firm performance (ROA) of listed firms in Ghana implying that the firms are more liquid, thus perform better. The direct relationship indicates that a 1% rise in liquidity, represented by cash flow ratio (CFR) leads to an increase of about 0.11 and 0.12% at 10% and 5% significance level separately in firm performance (ROA). The findings obtained signifies that listed Ghanaian firms with greater levels of cash flow ratio (CFR), have the tendency to be more profitable. The outcome of this study confirms the argument of Goddard et al. (2005) after investigating the impact of size, market share, liquidity and capital structure on firm performance in 5 European countries on a sample of 12,508 firms by utilizing the two-step system GMM method. The results further explains that firms with higher liquidity, have the advantage of making use of projects that ensures growth and have better capacity to effectively deal with potential changes in competitive markets. From the perspective of Deloof (2003), the higher the company's liquidity level, the easier they can accomplish short-term obligations, adding to increased firm performance. Neither does the results from these studies allows corroboration with the conclusions of Delen, Kuzey, and Uyar (2013) for obtaining a negative relationship between cash flow ratio (CFR) and firm performance (ROA). The assertion was that, managers with more cash for business operations face the issue of over-investment which affects firm's profitability negatively. Outcomes from (Adams & Buckle, 2003; Pratheepan, 2014) employed Ordinary Least Square (OLS) and Random and fixed effect model and adds up to the literature on negative influence between cash flow ratio (CFR) and the profitability of firms. Revelations from Nunes, Serrasqueiro, and Sequeira (2009) documented mixed results on liquidity and profitability by focusing on service industries in Portuguese.



The results explained above combines both findings from the two-step system generalized method of moments (GMM) and ordinary least square method (OLS). Both methods revealed similar outcomes concurrently. The results vividly depicts that, in spite of utilizing the two-step system generalized method of moments (GMM) and ordinary least square method (OLS) to analyse firm performance, the findings are the same and clearly show that firms performance increases if a company develops its firm-specific resources.

**Table 5. Diagnostic Test**

Tests	Results	
AR (1)	0.436	
AR (2)	0.301	
Sargan Test	0.000	
Hansen Test	0.179	
No. Of Insts.	13	
Prob> F	0.000	0.0000
No.Groups	15	
Obs/Group: Min	9	
Obs/Group: Avg	9.00	
Obs/Group: Max	9	
R-squared		0.2017

*Source: Authors Composition*

This study further adds some diagnostic test to the research to check the validity of the two-stage framework GMM method. From the report, AR (1) test rejects the null hypothesis of the non-appearance of 1st Order Serial Autocorrelation. To add to it, AR (2) test identifies no evidence of the 2nd Order Serial relationship. Nonetheless, as supported by Roodman (2009), the cross section of instruments stimulates unfairness of finite test bias and has the probability of reducing the validity of the Hansen J-test. In the same vein, the number of lags used in this study is restricted to one and employs the “collapsed option” approach represented by Roodman (2009) in Stata. The null hypothesis was discarded based on the Hansen test of over-identifying restraint showing that the instruments are important (for instance, no connection with the error term). In a nut shell, this study as well dismisses the erroneous assumption of the discrepancy in-Hansen heterogeneity test. Both regression methods records a Prob > F value of 0.0000, indicating model fitness. The results also recorded an R-Squared of 20%.

**Table 6. Robustness Test**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZE	0.1525	0.0433	3.52	0.000
GR	2.7147	0.6432	4.22	0.000
DE	-7.950	0.0006	-0.01	0.989
CFR	0.0045	0.0097	0.47	0.639

*Source: Authors Composition*

The study continues to test for the robustness of the results above by employing the three-stage least-squares regression. The results reveals that firm size (SIZE) and growth (GR) have a significant impact on return on assets (ROA) at 1% level each. Findings from the two-step system generalized method of moments (GMM) and ordinary least square method (OLS) are similar to the results above.

## **6. Conclusion**

This paper utilized current development in panel data econometrics to explore the determinants of firm performance by applying the two-step system GMM and ordinary least square method (OLS) on a sample of 15 non-financial listed firms in Ghana from 2008-2017. The results realised by applying the two methods are similar, approving the outcome from the test for robustness. The empirical outcome suggests that firm size (SIZE), growth (GR), and cash flow ratio (CFR) has a positive impact and statistically significant in both methods. Whereas debt to equity ratio (DE) revealed negative effects on firm performance. The result was further tested with the three-stage least-squares regression and the findings were consistent with the main results of the study.

The implications from the study is that larger firms tends to have greater capital coupled with the advantage of economies of scale unlike smaller firms. Larger firms also have better cost advantage in terms of negotiating power over input prices. Again, in the presence of growth (GR), firms are probable to attract meaningful investment ventures to influence performance. Firms that experience increased growth in sales perform better than businesses with fewer sales. Accordingly, the higher the company's cash flow ratio (CFR), the easier they can realise short-term obligations, putting them in a better state to sustain increased firm performance. In a nut shell, firms with higher debt to equity ratio (DE) tends to utilize more of its profits in a bid to settle debts. These firms as well run at a higher risk of insolvency.

## **7. Recommendations**

In regard to these results, smaller firms can improve upon their operations under a more technological efficient condition to enable them perform better in a competitive market. It is also pertinent to decrease the cost of borrowing to the actual sector of the economy to ensure a reduction in cost price, to improve output and firm performance. Furthermore, relevant macroeconomic programmes such as credit mechanisms (interest rate reduction) should be instituted by the government to regulate debt servicing and limit the influence of inflation on the economy in the long run. Firms should take advantage of debt financing rather than mismanage resources to increase performance. Additionally, they can solicit for long-term monetary leverage other than short-term to give them enough room to operate and service their debt over the period.

## **8. Limitation**

The study is limited such that it was conducted on only 15 non-financial firms listed on the Ghana Stock Exchange in the period 2008-2017 representing a faction of firms in Ghana. Therefore, the outcome might not be the same if research is conducted on all firms and on financial firms listed on the Ghana Stock Exchange. Most of the data on listed firms were unavailable.

## References

- Abata, M. A. & Migiro, S. O. (2016). Capital structure and firm performance in Nigerian-listed companies. *Journal of Economics Behavioral Studies*, 8(3), pp. 54-74. [https://doi.org/10.22610/jebvs.v8i3\(J\).1289](https://doi.org/10.22610/jebvs.v8i3(J).1289).
- Adams, M. & Buckle, M. (2003). The determinants of corporate financial performance in the Bermuda insurance market. *Applied Financial Economics*, 13(2), pp. 133-143. <https://doi.org/10.1080/09603100210105030>.
- Akbar, S.; Poletti-Hughes, J.; El-Faitouri, R. & Shah, S. Z. A. (2016). More on the relationship between corporate governance and firm performance in the UK: Evidence from the application of generalized method of moments estimation. *Research in International Business Finance*, 38, pp. 417-429. <https://doi.org/10.1016/j.ribaf.2016.03.009>.
- Al-Jafari, M. K. & Samman, H. A. (2015). Determinants of profitability: evidence from industrial companies listed on Muscat Securities Market. *Rev. Eur. Stud.*, 7, pp. 303-311. <https://doi.org/10.5539/res.v7n11p303>.
- Arellano, M. & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The review of economic studies*, 58(2), pp. 277-297. <https://doi.org/10.2307/2297968>.
- Asimakopoulous, I.; Samitas, A. & Papadogonas, T. (2009). Firm-specific and economy wide determinants of firm profitability: Greek evidence using panel data. *Managerial Finance*, 35(11), pp. 930-939. <https://doi.org/10.1108/03074350910993818>.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, 17(1), pp. 99-120. <https://doi.org/10.1177/014920639101700108>.
- Berger, A. N. & Di Patti, E. B. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking Finance*, 30(4), pp. 1065-1102. <https://doi.org/10.1016/j.jbankfin.2005.05.015>.
- Bhatia, S. & Srivastava, A. (2016). Working capital management and firm performance in emerging economies: evidence from India. *Management Labour Studies*, 41(2), pp. 71-87. <https://doi.org/10.1177/0258042X16658733>.
- Boadi, E. K.; Antwi, S. & Lartey, V. C. (2013). Determinants of profitability of insurance firms in Ghana. *International Journal of Business Social Research*, 3(3), pp. 43-50.
- Bond, S.; Bowsher, C. & Windmeijer, F. (2001). Criterion-based inference for GMM in autoregressive panel data models. *Economics Letters*, 73(3), pp. 379-388. [https://doi.org/10.1016/S0165-1765\(01\)00507-9](https://doi.org/10.1016/S0165-1765(01)00507-9).
- Burja, C. (2011). Factors influencing the Companies' Profitability. *Annales Universitatis Apulensis: Series Oeconomica*, 13(2), pp. 215-224.
- Claver, E.; Molina, J. & Tarí, J. (2002). Firm and Industry Effects on Firm Profitability: a Spanish Empirical Analysis. *European Management Journal*, 20(3), pp. 321-328. [https://doi.org/10.1016/S0263-2373\(02\)00048-8](https://doi.org/10.1016/S0263-2373(02)00048-8).
- Coad, A. (2007). Firm growth: a survey. No. 2007-03. *Papers on Economics Evolution*. <http://ideas.repec.org/p/mse/cesdoc/r07024.html>.
- Davidsson, P.; Steffens, P. & Fitzsimmons, J. (2009). Growing profitable or growing from profits: putting the horse in front of the cart? *Journal of business venturing*, 24(4), pp. 388-406. <https://doi.org/10.1016/j.jbusvent.2008.04.003>.
- Delen, D.; Kuzey, C. & Uyar, A. (2013). Measuring firm performance using financial ratios: A decision tree approach. *Expert Systems with Applications*, 40(10), pp. 3970-3983. <https://doi.org/10.1016/j.eswa.2013.01.012>.
- Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of business finance Accounting*, 30(3-4), pp. 573-588. <https://doi.org/10.1111/1468-5957.00008>.
- Dhawan, R. (2001). Firm size and productivity differential: theory and evidence from a panel of US firms. *Journal of economic behavior organization*, 44(3), pp. 269-293. [https://doi.org/10.1016/S0167-2681\(00\)00139-6](https://doi.org/10.1016/S0167-2681(00)00139-6).
- Durnev, A. & Kim, E. H. (2005). To steal or not to steal: Firm attributes, legal environment, and valuation. *The Journal of Finance*, 60(3), pp. 1461-1493. <https://doi.org/10.1111/j.1540-6261.2005.00767.x>.
- Feeny, S. (2000). Determinants of profitability: an empirical investigation using Australian tax entities: Melbourne Institute of Applied Economic and Social Research, *Working Paper*, 1.

- Fitzsimmons, J.; Steffens, P. & Douglas, E. (2005). Growth and profitability in small and medium sized Australian firms. *Proceedings AGSE Entrepreneurship Exchange, Melbourne*. <https://doi.org/10.2139/ssrn.1263734>.
- Frank, M. Z. & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of Financial Economics*, 67(2), pp. 217-248. [https://doi.org/10.1016/S0304-405X\(02\)00252-0](https://doi.org/10.1016/S0304-405X(02)00252-0).
- Gitman, L. J.; Juchau, R. & Flanagan, J. (2015). *Principles of managerial finance*. USA: Addison Wesley.: Pearson Higher Education AU.
- Goddard, J.; Tavakoli, M. & Wilson, J. O. (2005). Determinants of profitability in European manufacturing and services: evidence from a dynamic panel model. *Applied Financial Economics*, 15(18), 1269-1282. <https://doi.org/10.1080/09603100500387139>.
- Gompers, P.; Ishii, J. & Metrick, A. (2003). Corporate governance and equity prices. *The quarterly journal of economics*, 118(1), pp. 107-156. <https://doi.org/10.1162/00335530360535162>.
- Grant, R. M. (1991). The resource-based theory of competitive advantage: implications for strategy formulation. *California management review*, 33(3), pp. 114-135. <https://doi.org/10.2307/41166664>.
- Hansen, L. P. (1982). Large sample properties of generalized method of moments estimators. *Econometrica: Journal of the econometric society*, pp. 1029-1054. <https://doi.org/10.2307/1912775>.
- Henry, D. (2008). Corporate governance structure and the valuation of Australian firms: is there value in ticking the boxes? *Journal of Business Finance Accounting*, 35(7-8), pp. 912-942. <https://doi.org/10.1111/j.1468-5957.2008.02100.x>.
- Jermias, J. (2008). The relative influence of competitive intensity and business strategy on the relationship between financial leverage and performance. *The British Accounting Review* 40(1), pp. 71-86. <https://doi.org/10.1016/j.bar.2007.11.001>.
- Kaen, F. R., & Baumann, H. D. (2003). *Firm size, employees and profitability in US manufacturing industries*. Whittemore School of Business and Economics, University of New Hampshire Durham, USA, pp. 1-71. <https://doi.org/10.2139/ssrn.382402>.
- Lazăr, S. (2016). Determinants of firm performance: evidence from Romanian listed companies. *Review of Economic Business Studies*, 9(1), pp. 53-69. <https://doi.org/10.1515/rebs-2016-0025>.
- Makhija, M. (2003). Comparing the resource-based and market-based views of the firm: empirical evidence from Czech privatization. *Strategic Management Journal*, 24(5), pp. 433-451. <https://doi.org/10.1002/smj.304>.
- Margaretha, F. & Supartika, N. (2016). Factors affecting profitability of small medium enterprises (SMEs) firm listed in Indonesia Stock Exchange. *Journal of Economics, Business Management*, 4(2), pp. 132-137. <https://doi.org/10.7763/JOEBM.2016.V4.379>.
- Markman, G. D. & Gartner, W. B. (2002). Is extraordinary growth profitable? A study of Inc. 500 high-growth companies. *Entrepreneurship theory practice*, 27(1), pp. 65-75. <https://doi.org/10.1111/1540-8520.t01-2-00004>.
- Mathuva, D. (2015). The Influence of working capital management components on corporate profitability. *Research Journal of Business Management*, 4(1), pp. 1-11. <https://doi.org/10.3923/rjbm.2010.1.11>.
- Nunes, P. J. M.; Serrasqueiro, Z. M. & Sequeira, T. N. (2009). Profitability in Portuguese service industries: a panel data approach. *The Service Industries Journal*, 29(5), pp. 693-707. <https://doi.org/10.1080/02642060902720188>.
- Obeng-Krampah, D. K. (2018). *The Impact of Macroeconomic Factors on Firm Performance*. Department of Economics, University of Ghana.
- Odusanya, I. A.; Yinusa, O. G. & Ilo, B. M. (2018). Determinants of firm profitability in Nigeria: Evidence from dynamic panel models. *SPOUDAI-Journal of Economics Business*, 68(1), pp. 43-58.
- Pratheepan, T. (2014). A Panel Data Analysis of Profitability Determinants: Empirical Results from Sri Lankan Manufacturing Companies. *International Journal of Economics, Commerce Management*, 2(12), pp. 1-9.
- Prempeh, K. B. & Nsiah Asare, E. (2016). The Effect of Debt Policy on Firms Performance: Empirical Evidence from Listed Manufacturing Companies on The Ghana Stock Exchange. *MPRA Paper 75200*, University Library of Munich, Germany, pp. 1-12.

- Ramasamy, B.; Ong, D. & Yeung, M. C. (2005). Firm size, ownership and performance in the Malaysian palm oil industry. *Asian Academy of Management Journal of Accounting Finance*, 1, pp. 181-204. <https://doi.org/10.1002/smj.204>.
- Ramaswamy, K. (2001). Organizational ownership, competitive intensity, and firm performance: An empirical study of the Indian manufacturing sector. *Strategic Management Journal*, 22(10), pp. 989-998.
- Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The stata journal*, 9(1), pp. 86-136. <https://doi.org/10.1177/1536867X0900900106>.
- Salim, M. & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia-Social Behavioral Sciences* 65, pp. 156-166. <https://doi.org/10.1016/j.sbspro.2012.11.105>.
- Samiloglu, F. & Demirgunes, K. (2008). The effect of working capital management on firm profitability: Evidence from Turkey. *The International journal of applied Economics Finance*, 2(1), pp. 44-50. <https://doi.org/10.3923/ijaef.2008.44.50>.
- Seelanatha, L. (2011). Determinants of firms' performance: Some Chinese evidence. *Investment Management Financial Innovation*, 8(3), pp. 28-38. <https://doi.org/10.1177/1536867X0900900106>.
- Slater, S. F. & Olson, E. M. (2002). A fresh look at industry and market analysis. *Business Horizons*, 45(1), pp. 15-22. [https://doi.org/10.1016/S0007-6813\(02\)80005-2](https://doi.org/10.1016/S0007-6813(02)80005-2).
- Stierwald, A. (2009). Determinants of firm profitability-the effect of productivity and its persistence. *Melbourne Institute of Applied Economic Social Research*, 25, pp. 1-23. <https://doi.org/10.1002/smj.4250120907>.
- Tallman, S. B. (1991). Strategic management models and resource-based strategies among MNEs in a host market. *Strategic Management Journal*, 12(S1), pp. 69-82.
- Vătavu, S. (2014). The Determinants of Profitability in Companies Listed on the Bucharest Stock Exchange. *Annals of the University of Petrosani Economics*, 14(1), pp. 329-338.
- Wintoki, M. B.; Linck, J. S. & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, 105(3), pp. 581-606. <https://doi.org/10.1016/j.jfineco.2012.03.005>.
- Yazdanfar, D. (2013). Profitability determinants among micro firms: evidence from Swedish data. *International Journal of Managerial Finance*, 9(2), pp. 150-160. <https://doi.org/10.1108/17439131311307565>.