

# The Impact of Capital Structure on Corporate Performance: An Empirical Study of Ghanaian Listed Manufacturing Companies

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**Abstract:** The study examined the impact of capital structure on the performance of listed manufacturing firms in Ghana. The study made use of the annual reports of the twelve (12) listed manufacturing companies from 2010 to 2016 financial years. The leverage of the firms was used as a measure of capital structure whilst both return on capital employed (ROCE) and return on equity (ROE) were used as proxies for performance. Ordinary Least Square (OLS) regression model was used to estimate the impact of capital structure (leverage) on the performance of the firms. The study found empirical evidence to support that the capital structure (leverage) had a significant negative impact on both return on capital employed and return on equity of the listed manufacturing firms in Ghana. Additionally, the study provides evidence that the control variables - firm age and industry of the firms - have a significant positive impact on both ROCE and ROE. However, the impact of firm size on ROCE was not significant. Overall, the evidence obtained supports the conclusion that capital structure (leverage) has a negative and significant impact on performance of the Ghanaian listed manufacturing firms. The study, thus, recommends that the management of manufacturing firms consider a reduction in their debt level in order to increase their performance.

**Keywords:** Capital Structure, Leverage, Capital Irrelevance, Agency Cost, Return on Capital Employed, Return on Equity, Ghana.

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## 1. INTRODUCTION

Financing decisions are among the major issues for businesses, both small and large. It is argued that most businesses, more especially small ones collapse or poorly perform due to different challenges facing managers or owners with regards to financing decisions. The decisions made by firms on the use of different forms of financing result in different capital structures, which may have a different impact on performance. Studies on capital structure have been presented from different perspectives, some of which support the earlier theories such as espoused by Modiglian and Miller (1958) on the irrelevance of capital structure; others focusing on pecking order and agency cost theories, which insists that firms should balance their capital structures to create an optimal structure that could enhance their performance.

The implications of capital structure on corporate performance have attracted a lot of studies since Modiglian and Miller (1958) stressed that, under perfect conditions without bankruptcy costs, frictionless capital and with no taxes, the capital structure of the firm has no impact on the value of the firm. Accordingly, different empirical studies have since been conducted to examine the relevance of Modiglian and Miller's theories in businesses. Some of them have supported the irrelevance of capital structure (Carpentier, 2006; Myers, 2001), while other findings have stressed the relevance of capital structure on corporate performances.

As indicated, many researchers have enlightened the importance of capital structure indicating that how a firm is financed is of paramount importance. This suggests that, if a wrong mix of finance is selected, it becomes problematic for both managers and the business entities. The research problem emerges from the fact that the Modigliani and Miller theory asserts that capital structure is not relevant to the financial performance of a firm. This has been supported by other studies (Carpentier, 2006; Myers, 2001). However, many studies provide conflicting results. For instance, Maina and Ishmail (2014) reported that, regardless of the tax benefit, increases in leverage causes a decrease in a firm's performance.

Similarly, Suardi and Noor (2015) are of the opinion that equity holder demand for more return, thus cost of equity rises when debt is used. The authors maintained that, when debt is used, the shareholders have residual claim on company assets and bear additional risk. Debt maturity also has an effect on firm financial performance. Additionally, San and Hang (2011) posit that benefits and cost are tied with the level of leverage so a firm needs optimal capital structure, which maximizes the overall value of companies and minimizes the financial cost and weighted average cost of capital.

The discussion above shows that the relevance of capital structure to the financial performance of companies is immense. However, they mainly focus on developed countries. Similarly, the empirical results have provided conflicting results. Of particular worry is that empirical studies on the impact of capital structure on financial performance of companies have received much less attention in developing countries. However, in Ghana, a few similar studies (Abor, 2007; Kyereboah-Coleman, 2007) used data in different sectors of the Ghanaian economy. Besides, since 2007, no empirical studies have been undertaken on the impact of capital structure on corporate performance in Ghana. Consequently, the inconclusive empirical results and gap in the literature are the additional reasons that provoked the need to examine, empirically, the impact of capital structure on the performance of listed manufacturing companies in Ghana. This study, thus, contributes to the existing literature on the theoretical puzzle of capital structure through the examination of the industry level data.

## **2. LITERATURE REVIEW**

### **2.1 Capital Structure**

Financing decisions are among the major issues in business firms. Kipesha and Moshie (2014) explained that most of the businesses, especially small ones collapse or perform abysmally due to different challenges facing managers or owners on the financing decisions. Abdabi and Abu-Rub (2012) also contend that a company's decision on the use of different forms of financing results in different capital structures, which may have a different impact on a firm's performance. Over the years, researchers and academicians have undertaken both theoretical and empirical studies on capital structure. It, however, drew the attention of financial economists after Modigliani and Miller's irrelevance theory of capital structure was formulated in 1958.

Pinto and Quadras (2016) defined capital structure as a mixture of a permanent long-term financing of a firm represented by debt, preferred stock, and common stock equity. Soumadi (2012) also defined capital structure as the financing of the overall operations and growth of a firm with a combination of a company's long-term debt, specific short-term debt, common equity, preferred equity and retained earnings. The authors maintained that choice of capital structure is a critical financial decision because it is directly related to the risk and return of a firm. Suardi and Noor (2015) defined capital structure as the permanent financing of a company, which is constituted by long-term debt, preferred stock and net worth.

In related literature, Ebrati et al. (2013) defined capital structure as the combination of internal and external sources of funds utilized by corporations to finance their assets. The authors affirmed that companies have the choice of either using debt or equity to finance their assets but the best is to use a mix of both. Awais et al. (2016) indicated that there are a myriad of financing sources that the firms can depend on to finance their investments. The author provided that financing sources are categorized into two main sources: the internal financing, which comprises equity share, preferred share, reserves and retained earnings; and external financing, which consists of short and long term loans and bonds issuance.

According to Gitman and Zutter (2010), many researches have suggested that there is an optimal capital structure; the one that maximizes the value of shareholders wealth and simultaneously minimizes the cost of capital, thus striking a balance between risk and return. Pinto and Quadras (2016), however, assert that it is not yet possible to provide managers of finance with an accurate mechanism for determining a firm's optimum capital structure. After Modigliani and Miller's (MM) irrelevance theory, many studies have focused on finding the optimal capital structure. Though based on some unrealistic assumptions, for instance, the assumption of perfect capital markets, Modigliani and Miller's theory provides researchers with a basis to perform research on capital structure.

### **2.2 Theories of Capital Structure**

Modigliani and Miller (1958) established the modern theory of capital structure. Myers (2001), however, stated that no universal theory of the capital structure exists, and there is no reason to expect one. However, according to Huang and Pan (2016), there are many conditional theories that exist, each of which helps to understand the debt-to-equity structure that firms choose. The authors further provided that these theories can be divided into two groups: either they predict the existence of the optimal debt-equity ratio for each firm (so-called static trade-off models); or they declare that there is no

well-defined target capital structure (pecking-order hypothesis). Saedi and Mahmoodi (2011) explained that the relationship between decisions about capital structure and corporate performance has been suggested in a number of theories, most famous among these are Modigliani and Miller Theory (1958) and (1963), Agency Cost Theory (1976), Trade Off Theory (1977) and Pecking Order Theory (1984). So far, four major theories of capital structure have emerged; such as the Capital Irrelevance Theory (MM Theory), Trade-off Theory, Agency Costs Theory and the Pecking Order Theory.

### **2.2.1 Capital Irrelevance Theory (Modigliani and Miller Theory)**

Modigliani and Miller (1958) argued that, under very restrictive assumptions of a perfect capital market, investors' similar expectations, tax-free economy and no transaction costs, capital structure do not play any role in determining the value of a firm. Modigliani and Miller (1958) proved, under restrictive assumptions (no taxes and transactions costs) that cost of capital does not have any effect on capital structure and the value of a firm, particularly debt. This then led to calling this the capital irrelevance theory. In other words, the authors maintained that the value of a levered firm equals the value of an unlevered firm.

Modigliani and Miller (1963) later presented a new proof that cost of capital had an effect on capital structure, and therefore affects the value of the firm with unrealistic assumptions that there are existing taxes, which indicate that borrowing gives a tax advantage, where the interest is deducted from the tax and this results in a tax shield. This, the author argued, in turn reduces the cost of borrowing and then maximizes the performance of a firm. This requires the firm to make a trade-off between the cost of debt from one side and the benefits of using debt from the other.

Different studies have since been conducted to examine the relevance of Modigliani and Miller's (1963) theories in the business environment. Some of them (Carpentier, 2006; Myers, 2001) have supported the irrelevance of capital structure while other findings have stressed the relevance of capital structure in business firms. Siddiqui and Shoaib (2011), however, challenged the assumptions underlining the Modigliani and Miller (1963) theory by arguing that the determination of optimal capital structure in reality is not an easy job. The author argues that a firm may need to issue different kinds of securities in a combination of debt and equity to meet an exact mixture that can make best use of its value; and having succeeded in doing so, the firm has achieved its optimal capital structure.

### **2.2.2 Pecking Order Theory**

The pecking order theory was developed by Myers and Majluf (1984) who suggests that firms prefer internal sources of finance. This theory posits that, if firms have high profits, then internal financing would be used to finance new projects, which can maximize the value of shareholders. Myers and Majluf (1984) further stated that, in a case where external finance is required, firms are most likely to issue the safest security; to start with debt then possibly convertible debt and lastly, equity. In this case, if it so happens that retained earnings are not enough, debt financing is preferred and if additional financing is required, equity is issued. The authors argued that the choice of retained earnings is preferred because it has nearly no cost.

Myers and Majluf's (1984) argument was that businesses cling to a pecking order of financing sources and internal financing is preferred when available. The authors argued that, in situations where external financing are required, debt would be preferred over equity. A number of studies have been conducted that have either supported or challenged the pecking order theory. Pandey (2005) agreed with the argument made by Myers and Majluf (1984) when he indicated that managers always prefer to use internal finance and would only resort to issuing shares as a last resort. Pandey further maintained that the pecking order theory was able to explain the negative inverse relationship between profitability and debt ratio within an industry. Other researchers like Ebrati et al. (2013), Awais et al. (2016) and Kanwal et al. (2017) have all considered the pecking order theory as an appropriate description of medium sized enterprises' financing practices. This, they argued, is because debt is the largest source of financing and that firms who might not want to dilute their ownership interest resort to debt financing.

### **2.2.3 Trade-off Theory of Capital Structure**

The trade-off theory was developed by Miller (1977) who posited that a company considers costs and benefits of a particular capital before deciding how much debt finance and how much equity finance to be used. This theory suggests that profitable firms would prefer debt financing for increasing the shareholder wealth. It further asserts that debt in a firm's capital structure gives more tax benefits. This assumes that, if a firm has low profits, then there is a high likelihood of bankruptcy if it uses more debt. Myers (2001) noted that the trade-off theory calls for moderate debt ratios. The author

argues that the purpose of the trade-off theory of capital structure is to explain the strategy a firm uses to finance investments, which may be by equity and sometimes by debt. Within the trade-off theory, Gitman and Zutter (2010) posit that there is a debt pecking-order where bank debt is preferred to market debt due to the lower implied bankruptcy costs. Myers (2001) indicated that a company would borrow up to the point where the marginal value of tax shields on additional debt is offset by the increase in the present value of possible costs of financial distress.

#### **2.2.4 Agency Theory**

Soumadi (2012) studied the relationship between capital structure and the value of a firm through the new agency theory. This theory points to the potential conflict between shareholders and managers on one hand, and the potential conflict between shareholders and debtors on the other hand. According to this theory, Myer (2001) argues that a potential conflict between shareholders and managers emanates when the shareholders choose the manager as an agent to manage the firm in order to maximize their wealth. However, the managers focus on the highly profitable and risky projects to achieve their interests first. This is where managers consider incentives and rewards before the interest of the shareholders, which is to maximize the firm value.

Another viewpoint related to agency cost is explained by Fosu (2013). Fosu (2013) asserts that, as a firm is expected to achieve new growth opportunities in the future, high growth firms will take out more loans and issue new bonds as compared to low growth firms. If the firm wants to issue debt in the future, the firm will be exposed to bankruptcy risk by reason of increasing the debt costs, leading to a reduced firm performance. Soumadi (2012) asserts that agency theory can be likened to bankruptcy risks from another viewpoint, which suggests that managers consider bankruptcy as a high cost. Since bankruptcy is considered as a high cost for the managers, it may refer to their fears from losing control benefits of the firm and their reputation. When this happens, the debt creates an incentive to work harder for the managers. This encourages the managers to utilize the best invested opportunities and this will lead to a reduction in the likelihood of bankruptcy and therefore it will reduce debt cost and enhance the firm's performance.

From the above discussion, one important theme stands out. The basic theme that drives all the theories of capital structure is to ascertain whether the capital structure has any impact on firm's performance or not. The decision therefore depends on the size of the firm, the objectives of both the management and the shareholders and the relative advantages of the various sources of capital.

#### **2.3 Empirical Evidence: The Effect of Capital Structure and Firm's Performance**

Many studies have tried to establish the effect of capital structure on the performance of a firm. Pathak (2011) established that the level of debt has a substantial negative association with firm performance. Margaritis and Psillaki (2010) used a sample of both low and high growth French firms for the period 2003 to 2005 and found that leverage had a positive effect on firms' efficiency over the entire sample. Fosu (2013) used panel data made up of 257 South African firms over the period 1998 to 2009 to investigate the link between capital structure and firm performance. The author found a positive and significant relationship between financial leverage and firm performance. Salim and Yadav (2012) studied the relationship between capital structure and firm performance in Malaysian companies during 1995 to 2011 using a sample of 237 firms. It was revealed in their analysis that firm performance measured by ROA, ROE and EPS had a negative relationship with the capital structure while Tobin's Q had a significant positive relationship with short-term loans and long-term loans.

In the same manner, Dessi and Robertson (2003) found that financial leverage affect positively on the expected performance. The authors found that low growth firms seek to rely on borrowings to employ the expected growth opportunities and invest these borrowings in profitable projects, thereby increasing the firm performance. Margraves and Psillaki (2010) proved that financial leverage (debt ratio) correlated positively and significantly with firm performance (added value, labor and capital): the same results were found by Ebrati et al. (2013). Similarly, an investigation was made by Abor (2005) to establish the relationship between capital structure and profitability of firms listed in Ghana Stock Exchange for the period 1998 to 2002. Using regression analysis, the author witnessed a significantly positive relationship between Returns on Earnings (ROE) and the short-term debt and total debt ratio, with a negative relationship with long-term debt.

Conversely, some researchers observed a weak to non-existent relationship between the performance of a firm and the capital structure. For instance, Huang and Pan (2016) conducted a study in China to investigate whether capital structure had any impact on the financial performance of listed commercial banks. The results obtained suggested that return on

equity (ROE) had a significant negative linear relationship with the proportion of the largest shareholders, capital adequacy ratio, non-performing loan ratio and loan-to-deposit ratio. Suardi and Noor (2015) found that debt equity ratio had a negative and significant impact on return on equity in Indonesia. Phillips and Sipahioglu (2004) reported no significant relationship between capital structure and firm performance for publicly traded UK housing firms.

Many of the studies in the developing countries, however, established a negative impact of capital structure on performance. For instance, Maina and Ishmail (2014) examined the effect of capital structure on the performance of companies listed on the Nairobi Securities Exchange (NSE). The study used ten years of annual reports of the company to perform a regression analysis and established a negative and significant impact of capital structure on performance. Mwangi, Makau and Kosimbei (2014) also conducted a study to examine the relationship between capital structure and performance of non-financial firms listed on the Nairobi Securities Exchange. The annual reports of a sample of 42 firms were used to examine the relationship between capital structure and performance of the companies through an explanatory non-experimental research design and a generalised least square regression analysis. The regression results showed that the financial leverage of the firms had a significantly negative impact on both return on equity (ROE) and return on assets (ROA).

The influence of capital-structure choice on firm performance in Egypt was examined by Ibrahim (2009). Ibrahim's study was premised on a sample of non-financial listed firms for the period 1997 to 2005 and multiple regression analysis was used. Ibrahim's results suggested that the performance of a firm has a weak to non-existent relationship with capital structure choice. In Jordan, Zeitun and Tian (2007) investigated the effect of capital structure on the performance of 167 Jordanian companies. The authors used panel data of 15 years and found that the capital structure of the companies had a negative and significant impact on the performance of the companies. Awais et al. (2016) conducted a study to establish the impact of capital structure on the performance of companies listed on the Karachi Stock Exchange. The annual reports of 100 companies were analysed through regression analysis with the help of STATA. The study established that both short term and long-term debts decreases the performance of the companies. Similarly, Kanwal et al. (2017) examined the impact of capital structure on the performance of listed non-financial firms in Pakistan. The authors provided evidence to show that both short term and long-term debt had a significant negative impact on the financial performance of the companies. The empirical review provided above gives conflicting results on the impact of capital structure on the performance of firms. The observation made is that, whilst studies conducted in the developed countries point to a positive impact, those conducted in developing countries largely indicates a negative impact.

### **3. METHODOLOGY**

#### **3.1 Research Design**

The study adopted quantitative, descriptive and correlational research approaches. In addition, the study employed secondary data collection techniques. The population of the study is all the twelve (12) manufacturing companies that were listed on the Ghana Stock Exchange as at 28<sup>th</sup> February, 2017. The study made use of the annual reports of the manufacturing companies from 2010 to 2016 financial years. As a result, panel data of ninety six (96) annual reports were used for the analysis. All the data obtained for the study were obtained from the website of the Ghana Stock Exchange (GSE). Specifically, the statement of profit or loss and other comprehensive income and the statement of financial position of the companies were used for the examination. The study used a linear regression model to establish the impact of capital structure on the performance of listed manufacturing companies in Ghana.

#### **3.2 Econometric Model**

A linear regression model was used to establish the impact of capital structure on the performance of listed manufacturing firms in Ghana. The explanations of the variables in the regression model are provided below.

**Performance Measurement:** Many measurement variables have been used to assess the performance of a firm. The most common variables used as a measure of a company's performance are: Sales/Revenue, Gross Profit Margin (GPM), Operating Profit, Net Profit, Net Profit Margin (NPM), Return on Capital Employed (ROCE), and Return on Equity (ROE). In this study, two performance measurement variables, namely Return on Capital Employed (ROCE) and Return on Equity (ROE), are used. These performance variables have been frequently used by many researchers (Maina and Ishmail, 2014; Suardi and Noor, 2015; Awais et al., 2016; Huang and Pan, 2016; Kanwal et al., 2017) to assess the performance of firms. Return on Capital Employed (ROCE) is defined as the ratio of profit after tax (PAT) to the total

assets of a firm. The Return on Equity (ROE) is also defined as the ratio of earnings after preference dividends to the book value of total equity. Consequently, ROCE and ROE are the dependent variables of the regression model.

**Capital Structure Measurement:** The main variable of interest to this study is ‘leverage’, which is the measure of the capital structure of the firms. In this study, leverage is defined as the ratio of interest bearing debts to total assets. It indicates the percentage of the total assets that is financed by interest bearing debts. Leverage (LEV) is thus the independent variable of the econometric/regression model.

**Control Variables:** Empirical studies show that, apart from ‘leverage’, other variables may potentially have an impact on performance of companies. The elimination of these variables may lead to an omitted variable bias. As a result, a set of control variables are added to the model to address the potential of the omitted variable bias. Consequently, size of firms (natural logarithm of total assets), firm age (number of years of listed on GSE), and the firm industry (Ind) are introduced as control variables.

Based on the foregone discussion, the following regression models are put forward to test the impact of capital structure on the performance of listed manufacturing firms in Ghana.

$$ROCE = \beta_0 + \beta_1LEV + B_2SIZE + B_3AGE + B_4IND + \epsilon$$

$$ROE = \beta_0 + \beta_1LEV + B_2SIZE + B_3AGE + B_4IND + \epsilon$$

The variables in the model are explained in Table 1 below.

**Table 1: Explanation of Variables**

Variables	Explanation of Variables	A Priori
ROCE and ROE	Return on Capital Employed and Return on Equity respectively (Proxies for Performance): Dependent Variables	+
LEV	Leverage of the Firms (ratio of interest bearing debt to total assets): Independent Variable	-
SIZE	Natural Logarithm of Total Assets: Control Variable	+
AGE	Age of Firms (Years of listing on GSE): Control Variable	+
IND.	Industry of the Firms: Control Variable	+
$\beta_0$ ,	Constant	+
$\beta_1, \beta_2, \beta_3, \beta_4$	Coefficient of Slope of the Regression Line	
$\epsilon$	The Random Error Term	

## 4. RESULTS AND DISCUSSION

### 4.1 Descriptive Statistics

As presented in Table 2, the mean value of the return on capital employed (ROCE) of the firms was 2.24% with a standard deviation of 12.36. In addition, the minimum and maximum return on capital employed (ROCE) of the firms were -36.67% and 30.86% respectively. The positive mean of the return on capital employed (ROCE) indicates that the manufacturing companies were, on average, profitable even though a number of the companies were operating at a loss as reflected in the negative minimum values observed for the return on capital employed (ROCE). Similarly, the mean value of the return on equity (ROE) was 2.71% with a standard deviation of 14.245. Additionally, the minimum return on equity (ROE) of the firms was -38.31 and the maximum return on equity (ROE) was 34.72. The mean result of 2.71 for the return on equity (ROE) suggests that, on average, the firms were operating at a profit. However, as the negative minimum value shows, some of the firms were also operating at a loss.

Table 2 further shows that the mean value of the financial leverage of the firms is 21.3%. This result suggests that, on average, the listed manufacturing companies were not highly geared. The result further indicates that the greatest proportion of their assets were financed by equity capital. The standard deviation of 21.65 indicates a large variation in the financial leverage of the listed manufacturing firms as evidenced by the fact that the observed minimum leverage was 0.00 while the maximum leverage was 98.47. On the other hand, the average assets (size) of the manufacturing firms was GHS 67,400,000.00. Similarly, the minimum and maximum assets of the listed manufacturing firms were GHS 1,090,000.00 and GHS 480,700,000.00 respectively. Clearly, there is a wide disparity among the companies with respect to the total assets of the companies, as shown by the standard deviation of 98.35.

**Table 2: Descriptive Statistics**

	Observations	Mean	Std. Dev.	Maximum	Minimum
ROCE	96	2.24	12.36	30.83	-36.67
ROE	96	2.71	14.245	34.72	-38.31
LEV	96	21.3	21.65	98.47	0.00
SIZE (Millions of Cedis)	96	67.4	98.35	480.7	1.09
AGE	96	17.6	3.5	26	11

#### 4.2 Correlation Matrix among Variables

Table 3 presents the results on the relationships among the variables. It can be ascertained from Table 3, that the correlation coefficient ( $r$ ) among the variables is small. The result shows that some of the variables had positive correlation coefficients. ROCE and ROE particularly had positive and strong correlation ( $r=0.52$ ). Similarly, there are other significant correlation among the variables. For instance, the correlation between ROCE and size of the firms ( $r = 0.23$ ) and ROCE and industry of the firms ( $r = 0.13$ ) were positive. On the other hand, a negative significant relationship was observed between ROCE and leverage ( $r = -0.31$ ) and ROE and leverage ( $r = -0.26$ ). Nonetheless, most of the cross-correlational coefficients for the variables are relatively small and insignificant. As can be observed, none of the correlation coefficients is more than 0.6, suggesting that the study did not show any serious multicollinearity issue.

**Table 3: Correlation Matrix**

Variables	1	2	3	4	5	6
1. ROCE	1					
2. ROE	0.52*	1				
3. LEV	-0.31*	-0.26*	1			
4. SIZE	0.25**	0.28**	0.13	1		
5. AGE	0.23**	0.25	-0.17	-0.08***	1	
6. IND	0.13	0.18	0.11***	0.09	0.04	1

\* = Significant at 0.01; \*\* = Significant at 0.05 and \*\*\* = Significant at 0.10

#### 4.3 Regression Results

This section presents the regression results on the impact of capital structure on the performance of listed manufacturing firms in Ghana.

##### 4.3.1 The Impact of Capital Structure on Return on Capital Employed (ROCE)

Table 4 presents the results of the impact of capital structure on the return on capital employed (ROCE) of the listed manufacturing firms. It can be observed from Table 4 that the leverage of the firms has a negative impact on the return on capital employed. The coefficient of leverage as presented in Table 4 is -0.2749, which means that, holding the other variables constant, the leverage or capital structure of the firms has a -27.49 percent impact on return on capital employed. Specifically, the result suggests that, when all variables are held constant, an increase in the leverage level of the firms result in a 27.49 percent decrease in return on capital employed. The level of impact of leverage on the ROCE is also statistically significant ( $p = 0.0327$ ). In addition, the evidence shows that the size (total assets) of the firms has a positive but insignificant ( $p = 0.0613$ ) impact on ROCE. With a coefficient of 0.02281, the size (total assets) of the firms result in a 22.81 percent increase in ROCE, provided all the other variables remain unchanged.

Similarly, the results show that the age of the firms has a positive and significant ( $p = 0.0482$ ) impact on ROCE. With a coefficient of 0.2465, it means that older firms are likely to have a higher ROCE up to 24.65 percent more than younger firms, subject to keeping the other variables unchanged. The evidence presented in Table 4 further shows that the industry characteristics of the firms has a positive and significant ( $p = 0.0475$ ) impact on ROCE. It can further be ascertained that the  $R^2$  and Adjusted  $R^2$  of the model are 0.738 and 0.695 respectively. The  $R^2$  of 0.738 means that about 73.8 percent of the variations in the dependent variable (ROCE) is explained by the independent variables. Further, the probability of the F-statistic is 0.000, which is less than the ' $\alpha$ ' of 0.05, suggesting that the model is a good fit.

**Table 4: Impact of Capital Structure on Return on Capital Employed (ROCE)**

Variables	Coefficient	Std. Error	t-statistics	Probability
Constant	38.64	2.9754	12.315	0.001
LEV	-0.2749	0.0159	7.689	0.0327
SIZE	0.2281	0.0158	3.215	0.0613
AGE	0.2465	0.0067	4.025	0.0482
IND	0.1157	0.0126	2.585	0.0475
$\alpha$	0.05			
$R^2$	0.738			
Adjusted $R^2$	0.695			
F-Statistics	135.45			
Probability of F-Statistic	0.000			

#### 4.3.2 The Impact of Capital Structure on Return on Equity (ROE)

Table 5 presents the results of the impact of capital structure on the return on equity (ROE) of the listed manufacturing companies in Ghana. As can be seen from Table 5, the capital structure (leverage) of the manufacturing firms has a negative impact on the return on equity of the firms. The leverage of the firms has a coefficient of -0.2635, suggesting that the leverage of the firms has a -26.35 percent impact on return on equity. Similarly, the impact of capital structure (leverage) on the ROE of the listed manufacturing firms in Ghana is statistically significant ( $p = 0.00338$ ). It can further be ascertained from Table 5 that the size (total assets) of the firms has a positive and significant ( $p = 0.472$ ) impact on the return on equity of the listed manufacturing firms in Ghana. As shown in Table 5, the size (total assets) of the firms has a coefficient of 0.2164, which indicates that the size of a firm has a 21.64 percent impact on the ROE of the firms.

With regards to the age of the firms, the study ascertained that the age of the firms has a positive and significant impact on return on equity (ROE). Similarly, the industry of the firms had a positive and significant impact on ROE. The  $R^2$  and Adjusted  $R^2$  of the model are 0.698 and 0.662 respectively, indicating that about 69.8 percent of the variations in the dependent variable (ROE) is explained by the independent variables. It is further noted that the probability of the F-statistic is 0.001, which is less than the ' $\alpha$ ' of 0.05, indicating that the model is a good fit.

**Table 5: Impact of Capital Structure on Return on Equity (ROE)**

Variables	Coefficient	Std. Error	t-statistics	Probability
Constant	39.46	3.2541	11.655	0.001
LEV	-0.2635	0.0259	6.981	0.0338
SIZE	0.2164	0.0197	2.945	0.0472
AGE	0.2265	0.0079	3.872	0.0459
IND	0.0895	0.0142	3.026	0.0427
$\alpha$	0.05			
$R^2$	0.698			
Adjusted $R^2$	0.662			
F-Statistics	140.65			
Prob. of F-statistic	0.00			

## 5. DISCUSSION

From the analysis above, it is evident that capital structure (leverage) has a significant negative impact on both return on capital employed (ROCE) and return on equity (ROE) of the listed manufacturing companies in Ghana. This means that an increase in the leverage of the firms would result to a decrease in both the return on capital employed (ROCE) and return on equity (ROE) of the listed manufacturing companies in Ghana. This result is in contrast with the agency cost theory of capital structure which predicts a positive impact of leverage on both return on capital employed (ROCE) and return on equity (ROE). Besides, this result is inconsistent with the Modigliani and Miller theory of capital irrelevance, which postulates that capital structure has no effect on the performance of a firm. What might have accounted for this negative impact of leverage on performance is the high interest rate on debt contracted by the firms in Ghana. In Ghana, interest rates hovered around thirty five percent (35%) per annum (at 31<sup>st</sup> December 2017). This means that interest paid on debt is such that it would consume almost all the profits of these firms. Additionally, the interest bearing debt normally restricts the use of the company assets, especially when the assets are used as collaterals. This limits the space with which these firms can use the assets to generate income. In addition, the existence of debt binds the firms to fixed interest and principal payments in the future. This forces managers to postpone available net present value projects. All these would eventually have a negative effect on the profitability of the firms.

These findings are consistent with the majority of similar studies conducted in developing countries. For instance, the findings confirm the evidence provided by Maina and Ishmail (2014) when they examined the effect of capital structure on the performance of companies listed on the Nairobi Securities Exchange (NSE). The authors established a negative and significant impact of capital structure on performance. Similarly, the findings are similar to the findings of Mwangi, Makau and Kosimbei (2014), where their regression results showed that the financial leverage of the firms had a significantly negative impact on both return on equity (ROE) and return on assets (ROA). Huang and Pan (2016) revealed that the return on equity (ROE) had a significant negative linear relationship with the capital adequacy ratio, non-performing loan ratio and loan-to-deposit ratio. Suardi and Noor (2015) found that debt equity ratio had a negative and significant impact on return on equity in Indonesia. On the other hand, the results are not in agreement with the findings of Dessi and Robertson (2003), Abor (2005), Margraves and Psillaki (2010) and Ebrati et al. (2013) who found that capital structure had a positive impact on the performance of companies.

## 6. CONCLUSION

The study examined the impact of capital structure on the performance of listed manufacturing firms in Ghana. Both return on capital employed (ROCE) and return on equity (ROE) were used as proxies for performance. The Ordinary Least Square (OLS) regression model was used to estimate the impact of capital structure (leverage) on the performance of the firms. The study found empirical evidence to support that capital structure (leverage) has a significant negative impact on both return on capital employed and return on equity of listed manufacturing firms in Ghana. The study further provides evidence that the control variables - firm age and industry of the firms - have a significant positive impact on both ROCE and ROE. However, the impact of firm size on ROCE was not significant. Overall, the evidence obtained show that capital structure (leverage) has a positive and significant impact on performance of the Ghanaian listed manufacturing firms.

## 7. PRACTICAL IMPLICATION AND RECOMMENDATIONS

The empirical results of the study shows that capital structure has a significant negative impact on both return on capital employed (ROCE) and return on equity (ROE). This means that the performance of the firms reduces as leverage increases. The management of companies must therefore consider the impact that leverage will have on their performance before adjusting their debt levels. Similarly, investors must consider the leverage level of firms before making any investment decision. The study further recommends that the management of the firms must consider a reduction in their debt level in order to increase their performance. The implication of the result is that managers can increase the performance of their firms if they reduce or moderate the leverage of the firms.

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