Effect of Debt Financing on Profitability of Listed Agricultural Companies In Nigeria

Charles U. Dioha
Department of Accounting and Management, Nigeria Defence Academy, Kaduna, Nigeria.
cdioha@ymail.com

Aondofa Kamaluga
Department of Accounting and Management, Nigeria Defence Academy, Kaduna, Nigeria.
kmalugaa@gmail.com

Abstract
The purpose of this research was to examine the effect of debt financing on the profitability of listed agricultural companies in Nigeria. The study used a sample of 4 listed agric companies in Nigeria. Secondary data from financial statements of the agric companies were used in the study. The data was analyzed using multivariate regression analysis. The results from the study showed that long-term debt finance had a significant negative effect on profitability of listed agricultural companies in Nigeria. The study concluded that long-term debt in the capital structure of the agric companies should be kept at a moderate level to improve their profitability. The study recommends that agricultural companies should be mindful of the level of debt they incur into their businesses so as to avoid it having a negative effect on profitability.

Key Words: Agricultural businesses, Debt financing, Profitability, Long-term debt, Debt ratio.

1.0 Introduction
The Nigerian economy experienced an unprecedented economic recession caused by a decline in the price of its main export product; the crude oil. The Gross Domestic Product (GDP) continually declined over a period of the second and third quarters in the year 2016 due to negative growth rates in the manufacturing and agricultural sectors. (National Bureau of Statistics, 2016). The economic decline resulted in a harsh environment for firms to operate and many had to downsize, while some closed down entirely and moved operations abroad. The level of interest rates were high and unstable to enable firms carry out accurate capital budgeting. Investments declined resulting in deterioration of key infrastructures in key industries like the Agricultural sector.
Agricultural businesses are considered important in both developed and developing countries. They produce goods and services which help to increase economic growth and contribute significantly to employment creation. Although they play this crucial role in economic growth and employment their operations are often crippled by lack of adequate financing from financial institutions.
Banks are experiencing liquidity challenges partly due to the Treasury Single Account system of banking introduced into the public sector by the government. Most banks only have deposits which are short-term in nature and this has compromised their intermediary role as they are not able to give long-term loans to enable firms to invest in machinery and equipments which are long-term projects. The inability of banks to issue long-term loans and liquidity challenges of banks is affecting agricultural businesses’ access to financing from banks. The operations of agricultural businesses require capital which can be raised in different ways. One way of raising this capital is through long-term debt finance from financial institutions.
Debt finance can be short-term or long-term in nature. Agric businesses can use debt finance to start-up or expand their operations. The purposes of finance are investing in capital projects and meeting working capital requirements. Marcouse, Gillespie, Martin, Surridge, and Wall (2003) wrote that both working capital and money for capital expenditure have to be found before business starts to generate any income. Paul & Cong (2004) stated that working capital is needed for the day to day running of a business.
Government has made many attempts to revive the agricultural sector of the economy through many economic policies geared towards diversification of the Nation’s economy. Special funds have been provided for agricultural businesses to access, and also subsidies have been placed on many agricultural inputs. But despite all these efforts put in place to boost the profitability of agricultural businesses in the country, the issue of inadequate funding and modern infrastructures is still a problem in the agricultural sector.

Many agricultural businesses use debt to finance their operations and investments, and this is supported by the government through the Central Bank by providing soft loans to these agric businesses. But despite these soft loans, some of these agric businesses are still making losses. It is based on this problem that this study tries to answer the question: What is the effect of debt financing on the profitability of listed agricultural businesses in Nigeria?

The objective of this study is to examine the effect of debt finance on the profitability of listed agricultural companies in Nigeria from the year 2011 to 2015.

The following hypotheses are formulated for the study:

- Debt capital has no significant relationship with profitability of listed agricultural companies in Nigeria
- Debt financing has no significant effect on the profitability of listed agricultural companies in Nigeria

Agricultural businesses are important in the economic growth of any country. Therefore this study will help to establish if debt financing is one of the factors that are constraining the profitability of agricultural businesses in Nigeria.

The study could be useful to the government as it is seeking for ways to diversify the economy through export of agricultural products. Also the study can serve as a reference for future researchers who might want to carry out a study on the factors affecting profitability of agric businesses in Nigeria.

Section 2 of this study reviews the concept of debt financing and profitability, previous empirical literatures on the effect of debt financing on profitability, and a theory on debt financing. Section 3 deals with the methodology that was adopted for the study. Section 4 presents the data collected and analysis of results, and finally, section 5 carries the conclusion drawn and recommendations made.

2.0 Review of Related Literature

Firms need capital in their operations. They can finance their operations using retained earnings, debt and equity. Debt finance is raised by borrowing from financial institutions. Studies have been carried out focusing on the effect of debt financing on performance of firms. The results from these studies are inconsistent. Cecchetti, Mohanty, and Zampolli (2011) studied the real effects of debt on firms and concluded that moderate debt level improves welfare and enhances growth but high levels can lead to a decline in growth of the firm.

Reinhart and Rogoff (2009) argued that debt impacted positively to the growth of a firm only when it is within certain levels. When the ratio goes beyond certain levels, financial crisis is very likely. The argument is also supported by Stern Stewart and Company which argues that a high level of debt increases the probability of a firm facing financial distress.

Over borrowing can lead to bankruptcy and financial ruin (Cecchetti et al., 2011). High levels of debt will constrain the firm from undertaking projects that are likely to be profitable because of the inability to attract more debt from financial institutions. The nature of debt is an important determinant of profitability of a firm. If a firm has access to long-term debt finance, it can invest in new capital and equipment which helps to increase productivity and hence, make the firm more profitable.

The inability to access long-term finance can force firms to use short-term debt to finance long-term projects. This will create mismatches of assets and liabilities and depletes working capital. Depletion of working capital will negatively affect firms operations.

It is crucial that the primary source of loan repayments should be cash flows from the project. A high proportion of debt in the capital structure of a firm will harm investment using internal funds. A firm with a high debt ratio will channel most of its income to debt repayments thereby forgoing investment using internal funds. As more debt is employed in the capital structure of a firm, the business risk also
increases. He and Matvos (2013) stated that leveraging may increase the risk of bankruptcy and financial distress during temporary industry and economy-wide downturns. It will become increasingly difficult to attract more debt for investment purposes as creditors will charge high interest rates to compensate for the high business risk. Creditors will be reluctant to lend more funds to a highly indebted firm which can result in underinvestment. Firm operations will be affected if insufficient investment is undertaken. It based on this that different studies have tried to study the relationship between debt finance and profitability of firms.

**Empirical Review**

Ebaid (2009) examined the relationship between debt level and financial performance of companies listed on the Egyptian stock exchange. The study used return on assets, return on equity and gross profit margin as dependent variables and short-term debt, long-term debt and total debt as independent variables. The results from the study showed that there was a negative impact of short-term debt and total debt on return on assets (ROA). The study also concluded that there was no significant relationship between long-term debt financing and ROA. Ebaid also concluded that there was insignificant relationship between total debt, short-term debt and long-term debt and financial performance measured by gross profit margin and ROE.

Ahmad, Abdullar and Roslan (2012) carried a study in Malaysia which sought to investigate the impact of capital structure on firm performance by analyzing the relationship between return on assets (ROA), return on equity (ROE) and short-term debt and total debt. The study established that short-term debt and long-term debt had significant relationship with ROA. It was also established that ROE had significant relationship with short-term debt, long-term debt and total debt. Maritala (2012) examined the optimal level of capital structure which enabled a firm to increase its financial performance. The study found that there was a negative relationship between the firm’s debt ratio and financial performance measured by return on assets and return on equity.

Soumadi and Hayajneh (2012) studied the relationship between capital structure and corporate performance on Jordanian shareholdings firms. The study used multiple regression model by ordinary least squares (OLS) to establish the link between capital structure and corporate performance of firms over a period of 5 years. The results showed that capital structure was associated negatively and statistically with the performance of the firms in the sample. Another finding from the study was that there was no significant difference to the impact of financial leverage between high financial leverage firms and low financial leverage firms in their performance. The study also concluded that the relationship between capital structure and firm performance was negative for both high growth firms and low growth firms.

Saeed, Gull, and Rusheed (2013), examined the impact of capital structure and corporate performance using multiple regression models to estimate the relationship between capital structure and corporate performance of the banking sector. The findings from the study showed that there was a negative relationship between capital structure and performance of the banking industry.

Fosu (2013) did a research in South Africa which investigated the relationship between capital structure and corporate performance paying particular attention to the degree of competition. The paper examined the extent to which the relationship between capital structure and corporate performance depended on the level of product market competition. The findings from the research showed that there was positive relationship between capital structure and corporate performance. The study also found out that product market competition enhanced the performance effect of leverage.

Ogebe, Ogebe and Alewi, (2013) investigated the impact of capital structure on corporate performance in Nigeria from 2000 to 2010. The study paid particular attention to macroeconomic variables (Gross Domestic Product and inflation) on firm performance. The study concluded that there was a significant negative relationship between capital structure and corporate performance.

Mumtaz, *et al* (2013) carried out their study in Pakistan. They wanted to establish the relationship between leverage and firm performance. The findings from the study showed that financial performance of firms was significantly negatively affected by their capital structure.
Yazdanfar and Ohman (2015) carried out an empirical study on debt financing and firm performance. The purpose of the study was to examine the relationship between debt level and performance of small and medium-sized enterprises in Sweden. They used three-stage least squares (3SLS) and fixed-effects models to analyze a comprehensive, cross-sectional sample of 15,897 Swedish SMEs operating in five industry sectors during the 2009-2012 period. The study found that debt ratios, in terms of trade credit, short-term debt and long-term debt, negatively affect firm performance in terms of profitability.

A more recent research by Nassar (2016) studied the impact of capital structure on the financial performance of industrial companies in Turkey. The annual financial statements of 136 industrial companies listed on the Istanbul Stock Exchange (ISE) were used for the study, which covered a period of 8 years from 2005-2012. He used multivariate regression analysis to test the relationship between capital structure and firms financial performance. To measure firm performance, he used indicators such as Return on Asset (ROA), Return on Equity (ROE) and Earnings per Share (EPS) and then Debt Ratio (DR) as variable for capital structure. The results of the research showed that there is a negative significant relationship between capital structure and firms performance.

From the studies reviewed, it can be seen that the effect of debt financing on profitability is a well debated issue. Most of the studies concluded that there is a negative significant relationship between debt finance and profitability, except for Fosu (2013) that argued that there is a positive relationship between debt finance variables and profitability variables. Also Ebaid (2009) posited that there is no significant relationship between debt finance variables and financial performance proxies.

It is based on this divergence of views that this study attempts to find out the effect of debt financing on the profitability of listed agricultural companies in Nigeria, so as to take a position on the relationship between debt financing and profitability. Also to the best of the author’s knowledge, most of the studies carried out in this area in Nigeria have focused on other sectors like the Banking sector and Manufacturing companies. But this study is focusing on the agricultural sector because of how important debt finance is to its operations.

**Theoretical Review**

**Net Income Theory**

The Net Income approach puts forward the argument that leverage or capital structure can affect the cost of capital and hence the value of a firm. David and Olorunfemi (2010) found that the overall cost of capital will be reduced and the value of a firm increased as the ratio of debt in a firm’s capital structure is increased. They went on to state that as the ratio of debt is increased in the capital structure, the WACC falls and approaches a minimum cost of capital. The Net Income approach assumes that an optimum capital structure exists and will be attained when the value of the firm is maximized. This occurs when the weighted average cost of capital is at its minimum. The argument is based on the reasoning that since interest on debt is tax deductible, as debt is moderately increased, the weighted average cost of capital falls leading to an increase in the value of the firm. The weighted average cost of debt will fall because the moderate increase in debt does not increase the overall risk of the firm and hence the shareholders will not increase their required rate of return. However, as more and more debt is employed, an optimal point will be reached. Any further increase in the debt ratio will result in an increase in weighted average cost of capital as the overall risk of the firm is increased and the shareholders will ask for an increase in their required rate of return on capital.

This theory is the theory on which this study is based upon, because it relates the level of debt in the capital structure of a firm to the value of the firm. The level of debt finance that a firm employs has an effect on its value, and this value depends on how profitable the firm is in its operations. This theory provides the main theoretical underpinning of the study and determines to a great extent the formulation of the study hypotheses, informs the research methodology and statistical technique used in the study.

**3.0 Methodology**

This study adopts the descriptive research design method. The population selected for the study is all the listed agricultural companies in the Nigerian Stock Exchange as at 31st December, 2015. The
sample of the study is made up of 4 out of the 5 listed agricultural companies in the population; the only one which did not form part of the sample (Livestock Feeds Plc) is because it had no long-term debt in its capital structure.

The study used secondary data obtained from the published financial statements of the listed agricultural companies. The secondary data collected were on Return on assets, earnings per share, and debt ratio from the companies’ records. The duration of the study is 5 years; from 2011-2015. The data were analyzed using multivariate regression analysis. A multivariate regression model was formulated for the data analysis. The model is given as:

\[
\text{Profitability} = \text{Constant} + \text{Debt Ratio} + \text{Error Term}
\]

Profitability is measured by Returns on Assets (ROA) and Earnings per Share (EPS). Return on Assets (ROA) is measured as Profit before interest and taxes divided by Total assets. Earnings per share (EPS) is measured as Profit after interest and taxes divided by Average outstanding equity shares. Debt Ratio (DR) is measured as Long term debt divided by Equity + Reserves + Long term debt expressed in percentage. 

\[b_0\] is the constant in the model 
\[\varepsilon\] is the error term

Therefore, the econometric model is expressed as:

\[\text{ROA}_t + \text{EPS}_t = b_0t + b_1\text{DR}_t + \varepsilon_t\]

4.0 Results and Discussion

This section presents the results of data analysis and test of the hypotheses formulated earlier under introduction. First, the descriptive statistics table, followed by the correlation matrix table and the multivariate regression result table are presented and analyzed.

Table 4.1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>roa</td>
<td>20</td>
<td>7.0395</td>
<td>14.24768</td>
<td>-13.05</td>
<td>34.69</td>
</tr>
<tr>
<td>epsnaira</td>
<td>20</td>
<td>1.315</td>
<td>2.760441</td>
<td>-1.78</td>
<td>7.22</td>
</tr>
<tr>
<td>debtratio</td>
<td>20</td>
<td>37.0005</td>
<td>11.50023</td>
<td>14.54</td>
<td>59.13</td>
</tr>
</tbody>
</table>

Source: STATA 12 output, 2017

From Table 4.1, the mean value for debt ratio is 37.0% for the listed agricultural companies, while return on assets and earnings per share have average values of 7.04% and 1.32 naira within the period of the study respectively. The minimum value for debt ratio is 14.54% while the maximum value is 59.13%.

Return on assets recorded a minimum value of -13.05% and maximum of 34.69%, while Earnings per share a minimum value of -1.78 naira and maximum of 7.22 naira within the study period. The reason for the negative values in the descriptive statistics results is because two (FTN COCOA PROCESSORS PLC AND ELLAH LAKES PLC) out of the four companies sampled made losses within the period of the study.

The Correlation Matrix Table

The table below shows the correlation values between the independent variable (debt ratio) and the dependent variables (ROA and EPS).

Table 4.2: Correlation Matrix
Table 4.2 shows that the independent variable (Debt ratio) has a significant relationship with the dependent variables Return on assets and Earnings per share at the 0.05 level of significance. From the correlation coefficients, it shows that the relationship is a strong negative significant relationship. This means that an increase in debt ratio will bring about a decrease in both dependent variables. From this result, we reject the first null hypothesis formulated for the study which states that: Debt capital has no significant relationship with the profitability of listed agricultural companies in Nigeria.

**Multivariate Regression Result Table**

The table presents the multivariate regression results of the dependent variables (ROA and EPS) and the independent variable (Debt Ratio) used in the study. Multivariate regression model was used to carry out the analysis because the dependent variable of the study (Profitability) was measured with two proxies.

\[
\text{PROFITABILITY} = \beta_0 + \beta_1 \times \text{DR}_{it} + \epsilon_{it}
\]

Table 4.3: Multivariate Regression Result

```
. mvreg roa epsnaira = debtratio
```

<table>
<thead>
<tr>
<th>Equation</th>
<th>Obs</th>
<th>Parms</th>
<th>RMSE</th>
<th>&quot;R-sq&quot;</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>roa</td>
<td>20</td>
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<td>7.744648</td>
<td>0.0123</td>
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<td>epsnaira</td>
<td>20</td>
<td>2</td>
<td>1.850245</td>
<td>0.5744</td>
<td>24.29143</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

|                | Coef. | Std. Err. | t   | P>|t|  | [95% Conf. Interval] |
|----------------|-------|-----------|-----|------|---------------------|
| roa            |       |           |     |      |                     |
| debtratio      | -.6795089 | .2441711 | -2.78 | 0.012 | -1.192493 - .1665244 |
| _cons          | 32.18167 | 9.43992   | 3.41 | 0.003 | 12.34913 52.0142    |
| epsnaira       |       |           |     |      |                     |
| debtratio      | -.1819167 | .0369102 | -4.93 | 0.000 | -0.259462 - .1043713 |
| _cons          | 8.046007 | 1.426987 | 5.64 | 0.000 | 5.048019 11.044     |

ROA = 32.18167 – 0.67951(\text{DR}_{it}) + \epsilon_{it}

EPS = 8.046007 – 0.18192(\text{DR}_{it}) + \epsilon_{it}
From the table above, the R-square values are showing that changes in debt ratio will cause a 30% change in ROA and 57.4% change in EPS. This signifies that debt ratio is a determinant of both dependent variables. The probability F-values of the regression are significant at 0.0123 and 0.0001, this shows that the model formulated for the study is fit for the data. The multivariate regression result shows the effect of debt ratio on both dependent variables separately. For return on assets (ROA), the table shows that debt ratio has a p-value of 0.012, a t-value of -2.78, and a coefficient of -0.6795. This means that debt financing measured by debt ratio has a significant negative effect on profitability measured by return on assets. This result implies that an increase in debt ratio will cause a 0.68 decrease in return on assets. For earnings per share (EPS), the result shows that debt ratio has a p-value of 0.000, a t-value of -4.93 and a coefficient of -0.1819167. The p-value is showing a significant value below the 0.01 significance level. This result means that debt ratio has a very significant negative effect on earnings per share. This also implies that debt financing measured by debt ratio has a significant negative effect on profitability measured by earnings per share. An increase in debt ratio will cause a 1.8% decrease in earnings per share.

**Test of Hypothesis**

Based on the results of the multivariate regression analysis which shows that debt financing significantly affects profitability, we therefore reject the null hypothesis formulated for the study which states that: Debt financing has no significant effect on the profitability of listed agricultural companies in Nigeria.

**Discussion of Finding**

The result of this study shows that debt financing measured by the proportion of long-term debt in a sampled agricultural company’s capital has a significant negative effect on the profitability of the company. This result is in line with the results of Nassar (2016), Yazdanfer and Ohman (2015), and Mumtaz et al (2013). They also found in their studies that debt capital has a significant negative effect on profitability. These results can be linked to the theory adopted in the study, which states that a certain level of debt has to be maintained in the capital structure so as to keep the cost of capital at its minimum. Debt finance comes with a cost, which is interest. Therefore, even though agric companies need long-term debt financing to fund their investment activities, they still need to be mindful of the amount of debt they incur into their capital structure. The finding of this study is not consistent with the findings of Ebaid (2009) and Fosu (2013). Ebaid (2009) argued that there is no significant relationship between debt finance variables and profitability variables, while Fosu (2013) concluded that there is a positive relationship between debt finance and profitability.

**5.0 Conclusion and Recommendations**

This study set out to examine the effect of debt financing on the profitability of listed agricultural companies in Nigeria. From the findings of the study, this conclusion was made. The study concludes that profitability in a firm was negatively affected by the level of debt financing in its capital structure. The level of debt financing must be moderate to avoid large interest payments which can prevent agric companies from investing using internal sources of finance (retained earnings). Internal sources of finance are cheaper than external sources. The risk is also lower when internal sources of finance are used. Though agricultural companies need debt finance to invest in capital projects like purchasing modern equipments and machinery, they still need to be aware to keep the level of debt in their capital structure moderate, so as to avoid having a high cost of capital which will negatively affect profit. From the above conclusions, the following recommendations are made. Agric businesses should use moderate debt levels in their capital structure to avoid paying a high cost of capital. High levels of interest payments reduce the availability of internal funds for investment. It is also recommended that banks charge lower interest rates to encourage agric businesses to borrow. High interest rates deter investors from using debt financing. Agric companies should also go for long-term loans instead of short-term loans to enable them to invest in capital equipments and machinery, because it is difficult to make loan repayments of short-term debt financing that was used for long-term investments. Ideally
the primary source of loan repayment should be cash inflows generated from the project in which the loan was invested. If the level of debt finance is well managed, and properly invested, agric businesses will become more profitable and this will help the entire economy.

References


**APPENDIX A**

**DATA USED FOR THE STUDY**

Listed Agricultural Companies on the Nigerian Stock Exchange as at 31st December, 2015

1. PRESCO PLC
2. FTN COCOA PROCESSORS PLC
3. OKOMU OIL PALM PLC
4. ELLAH LAKES PLC
5. LIVESTOCK FEEDS PLC

<table>
<thead>
<tr>
<th>COMPANIES</th>
<th>YEARS</th>
<th>ROA (%)</th>
<th>EPS (Naira)</th>
<th>DEBT RATIO (%)</th>
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<td>1</td>
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<td>8.52</td>
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*Livestock Feeds Plc was not included in the Sample.