

# Effect of Capital Structure on Corporate Performance in Nigeria

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## Abstract

This study investigated the effect of capital structure on corporate performance in Nigerian using randomly selected companies. This was done because it has at been established that an overall good performance of firms in an economy will lead to economic development in the long run. Twenty companies operating in the Nigerian environment were randomly picked and data on their capital structure and profit were picked out from their annual reports for the period under investigation (i.e. 2012-2013). In order to accomplish the set out objectives of this study, a research hypothesis was formulated which was tested via a number of analytical techniques. These are the panel unit root test and the panel least squares regression. Based on the results gotten,  $H_0$  was rejected. The results revealed that capital structure negatively influenced corporate performance. The study ended by recommending that Nigerian companies should use debt as a source of finance sparingly and only when extremely necessary.

**Keywords:** Net income theory, Net operating income theory, Trade-off theory

## 1. Introduction

Capital structure is of serious importance as it plays a phenomenal role in assisting firms to achieve the goals of their stakeholders. According to Riahi-belkaonui (1999), capital structure includes the different kinds of equities and liabilities, stating the proportions of the debt equity mix. Depending on the mix, a firm can be classified as levered or unlevered depending on its use of debt financing or not.

Generally, it is known that firms choose an optimal level of debt that will ensure maximum benefit for its shareholders. It is also a known fact that there is the tax- deductibility advantage of using debts as the interest to be repaid is not taxed, essentially reducing the overall cost of capital (Krishnan and Moyer 1997). However this doesn't go on indefinitely as the costs associated with debt financing increases as the level of leverage increases. Therefore, the firm has to ensure that the debt-equity mix it utilizes must be one that gives optimal or near optimal satisfaction to its share holders.

Inspite of the plethora of literature that abound on capital structure, there is still a lot of debate on the level of impact capital structure has on firm valuation and performance. The purpose of this study is to evaluate empirically the level of this impact.

### 1.1 Statement of the problem

All managers at the helm of financial affairs in corporate organizations have a challenge to constantly deal with; the capital structure that it should employ. In Nigeria, there is no conclusive empirical evidence on the level of impact financial structure has on corporate performance. This creates a problem as it has been established that utilizing the right capital structure will aid the firm to operate more efficiently. Therefore, the fact that Nigerian companies should endeavour to know and strive to attain their optimum debt-equity mix cannot be over emphasized. This in indeed a problem considering the volatile economic conditions and environment the Nigerian companies are made to deal with. Furthermore, if the choice of debt and equity is not critically considered by the manager, using a wrong choice can easily lead the firm to insolvency and liquidity. Therefore the problem of this study is to determine the optimum capital structure that will enable Nigerian companies work more efficiently. Furthermore, most of the previous related studies carried out had flaws as we shall see in the course of reviewing relevant literature. As a result of this, the studies give conflicting results as regards the impact of the debt equity mix on corporate performance. Thus, this study is an attempt to finally put to rest this debate and determine categorically the extent of this impact.

### 1.2 Objectives of the Study

The main objective of this study is to determine the effect of capital structure on corporate performance of selected Nigerian companies. In order to achieve this objective, the following specific objective is spelt out:

- To establish the relationship between the capital structures of Nigerian firms and their profit after tax

### 1.3 Research Question

1. What is the relationship between the capital structures of firms in Nigeria and their profit after tax?

#### 1.4 Research Hypothesis

In the light of the objectives of this research, the following hypothesis is utilized in the null form

$H_0$ : Capital structure does not have significant influence on profit making of a company.

#### 1.5 Scope of the Study

This study covers firms operating in Nigeria. Specifically, it uses 20 companies randomly selected from different sectors of the economy (2 from beverages sector, 1 from agricultural, 1 from engineering and machinery, 2 from the banking sector, 3 from diversified industries sector, 1 from pharmaceuticals, 2 from construction and building, 5 from food producers and processors, 2 from oil and gas and 1 from transport sector). Furthermore, this study covers a period of 2 years between 2012 and 2013.

#### 1.6 Significance of the study

This study is significant in different ways. First of all, it is necessary because of the dire need to maximize firm returns as this will definitely lead to economic development, all things being equal. The debt-equity mix also has an overall implication for the shareholders earnings and risk which will in turn affect the cost of capital and market value of the company. Secondly this study will help to further understand the determinants of firm's financing mix.

This study is also a contribution to the literature and as such will be of immense benefit to researchers and scholars alike.

#### 1.7 Organisation of the Study

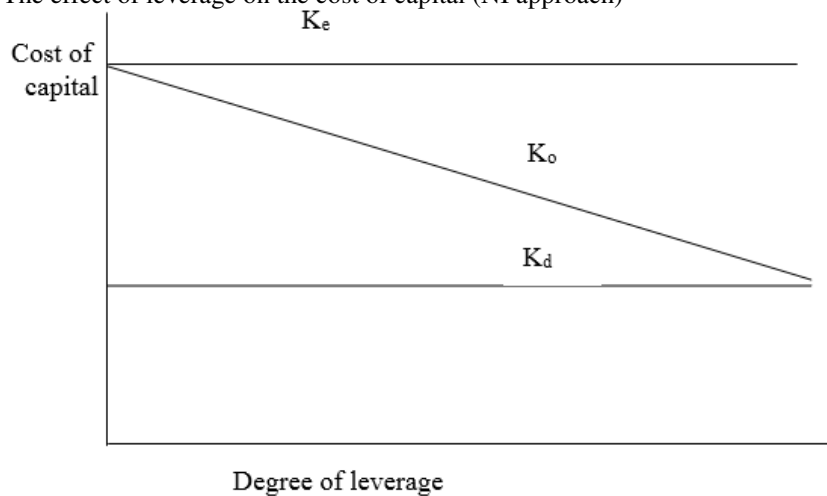
This study is divided into five sections. Section one introduces the background to the study, the objectives of study, the statement of problem, research questions, the hypotheses to be tested, the significance of the study and the scope. Section two reviews the existing literature on capital structure and corporate performance, highlighting the different theories relating to the study. Section three examines the research methodology used in this study. Here, the model, method of data analysis and others are specified. Section four examines the data analysis and interpretation of results. Section five which is the last part deals with the summary of the study, conclusion and recommendations.

## 2. Theoretical framework

### 2.1 The Net Income Approach Theory

This theory was presented by David Durand who suggested that a firm's value could be increased by decreasing the overall cost of capital ( $K_O$ ) of the firm. The theory supports the fact that the use of debt will positively affect the value of the firm indefinitely. This implies that the overall cost of capital or weighted cost can be increased or reduced through the changes in the financial mix or capital structure of the firm. According to Olowe (1998), the net income approach implies that financial leverage can and will affect the value of the firm. If a firm increases the debt in its capital structure, the value of the firm will increase while the overall cost of capital will be reduced. Thus the value of the firm is heavily dependent on debt utilisation. The fact that this theory believes in the indefinite nature of the positive impact of debt implies that the best form of capital structure is where the firm uses 100 percent debt and no equity at all. Brigham (1999) criticized this, saying that the theory will not work in real life situations as no firm in the real world can operate on 100% debt finance. This is because nobody will want to invest in a company that even the owners have no stake in. The theory further assumes that the cost of debt ( $K_d$ ) is always lower than the cost of equity ( $K_e$ ) and that any increase in leverage does not affect the overall confidence level of the investing public. The theory also assumes the absence of tax considerations. All of these give credence to what the theory says about the direct proportional relationship between leverage and firm value. This is seen clearly in the diagram below.

Figure 1  
 The effect of leverage on the cost of capital (NI approach)



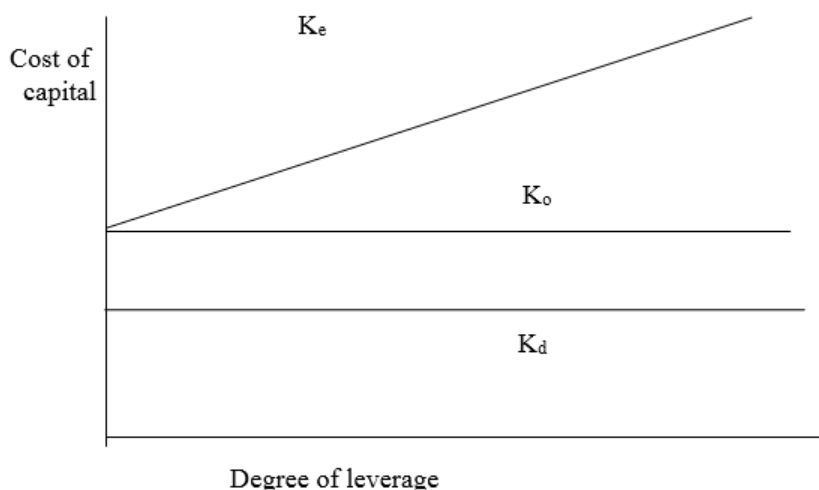
Source: Pandey (2005)

From Fig. 1, it is clearly seen that as financial leverage increases, the weighted average cost of capital ( $K_o$ ) decreases and approaches the cost of debt ( $K_d$ ) since debt is posited to be a cheaper source of finance while the cost of equity ( $K_e$ ) remains constant. An optimum capital structure will occur at the point where the value of the firm is at its maximum and the weighted average cost of capital is at its minimum. An optimum capital structure will occur at the point when the firm is 100% debt financed.

### 2.2 Net operating income approach

According to this theory, the value of the firm is not affected by the leverage. Thus the overall cost of capital ( $K_o$ ) is assumed to be constant here. This theory was also given by David Durand. The assumption in this case is that the market capitalizes the value of the firm as a whole. The use of the cheaper debt leads to the situation where the shareholders are apprehensive as to the health status of the company since they are risk averse (Riahi-Belkaoui, 1999). Therefore the cost of equity ( $K_e$ ) also goes up. Thus, according to this theory, the weighted average cost of capital and the total value of the firm are independent of each other as the firm's price is not affected no matter the level of leverage utilized. The NOI approach is seen clearly in figure 2 below.

Figure 2  
 The effect of leverage on the cost of capital (NOI approach)



Source: Pandey (2005)

From Fig. 2 above, the overall cost of capital ( $K_o$ ) and Cost of debt ( $K_d$ ) are constant while the cost of equity ( $K_e$ ) increases linearly with leverage. As the cost of capital is constant at any level of leverage, there is no unique optimum capital structure in this approach. This is because the advantage of using debt is exactly offset by the disadvantage of increase in cost of equity. (Pandey, 2005) The two equal and opposite effects ultimately

lead to the overall cost of capital remaining constant.

### 2.3 Traditional approach

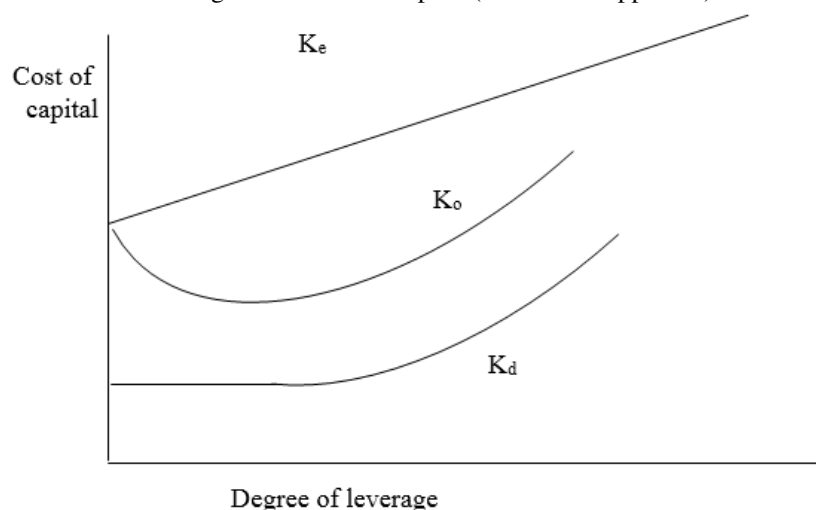
The theories identified above are two extreme cases. They were both criticized as having theoretical assumptions that were inapplicable in the real world. Based on this fact, Ezra and Solomon came up with the traditional theory which is an intermediate position with respect to the previous two. This theory assumes that there is a judicious mix of debt and equity that will make the overall cost of capital ( $K_o$ ) to be at its minimum and as such at this point, the value of the firm is maximized. The theory further implies that at moderate levels of debt the disadvantage of an increase in equity as a result of leverage is more than offset by the lower cost of debt. The underlying assumptions here are as follows:

- The overall cost of capital initially drops as leverage increases
- The cost of debt is initially constant as leverage increases.
- The cost of equity rises at an increasing rate.

Critics to this theory argue that it implies that investors value levered firms much more than unlevered ones and are even willing to pay a premium for it. However this fact has not been proven beyond reasonable doubt. Another argument of the critics is that there isn't enough reason to assume that investors' perception about risk of leverage is different at different levels of leverage. The traditional approach can be seen clearly in figure 3.

Figure 3

The effect of leverage on the cost of capital (Traditional approach)



Source: Pandey (2005)

In Fig. 3 above, the overall cost of capital initially experiences a decline with an increase in the debt-equity mix. After a while, it levels up and then begins to increase in the same direction as the increase in leverage. Therefore it is clear that the range at which the overall cost of capital levels up is the optimal capital structure. According to Owualah (1998), the debate on optimal capital structure has shifted from whether it exists or not to determining the optimal structure for any particular company as well as understanding the underlying influences. These underlying influences affect firms' performance and vary from country to country. Hence, there is a need to establish how capital structure factors affect performance of Nigerian firms and to what degree.

### 2.4 Modigliani and Miller Theory

The Modigliani and Miller (MM) theory proved under a very restrictive set of conditions that a firm's value is unaffected by its capital structure thus implies that the financing choice of firms is irrelevant. They found out that for firms in the same risk class, the total market value is independent of the debt-equity mix is given by capitalizing the net operating income by the capitalization rate of that risk class. They also concluded that as leverage increases the weighted average cost of capital remains constant. Thus, they believed that financial leverage is directly proportional to the cost of equity. Their conclusions however depended heavily on the underlying assumptions they made. These are;

- Firms with the same degree of business risk are in a homogenous risk class
- Investors have homogenous expectations about earnings and risks
- There is an existence of perfect capital markets
- Interest rate on debt is the risk-free rate

e. All cash flows are perpetuities

f. There is no tax

Due to the impossibility for these assumptions to hold in real life, they made changes to their theory, especially to accommodate for the effect of taxes. In a later article, they showed that the value of a firm actually increases with debt due to the tax deductibility of interest rate charges. The implication of this is that a firm can actually increase its value with leverage and thus the optimum capital structure is reached when the firm employs an adequate proportion of leverage.

### 2.5 Trade-off theory

This refers to the fact that a company chooses its debt-equity ratio by balancing the costs and benefits associated with it. It was postulated by Kraus and Litzenberger. The cost of debt financing is seen as bankruptcy and non-bankruptcy costs. The benefit associated with leverage is seen as the tax benefit. Thus, the marginal benefit of further leverage declines as the marginal cost increases and optimum is reached when the two of them are balanced. This theory was criticized by Miller who compared this balancing as akin to balancing between the horse and rabbit content in a stew of one horse and one rabbit. In other words Miller implied that taxes are large and sure. However, on the other side of the divide, bankruptcy costs are small and rarely occur. Thus if this theory is true, according to Miller, the firms should have a higher degree of leverage than is seen in reality. Of all the theories considered here, this work concentrates on the pecking order theory in order to ascertain if capital structure affects firm value.

## 3. Research methodology

### 3.1 Research design

A research design can be seen as the structure of a study. It is the glue that binds all the elements in a research work. It can also be seen as the research blueprint which shows how the major parts of the research work together to achieve the research objective(s). These parts are the research questions, research variables and data analysis (Wikipedia, 2015). Indeed, the quality of any research is enhanced if an appropriate research design is utilized. Therefore, this study utilized the ex-post facto design (Quickmba, n.d.) to empirically analyze the effect of capital structure on corporate performance between two years; 2012 and 2013.

### 3.2 Sources of data

The data used for this study were generally extracted from secondary sources. These secondary sources included websites and annual reports of the companies under consideration. The data are shown in Appendix 1.

### 3.3 Method of data collection

This paper made use of the desk research method. This is a method of data collection in which data was gotten from government agency publications and internet.

### 3.4 Problems associated with data collection

The major challenge encountered during the process of data collection was the inability to get information on companies that used preference share as part of their capital structure. Therefore, only debt and equity were considered when looking at the capital structure of the companies under scrutiny.

### 3.5 Techniques of data analysis

After careful collation and tabulation of the data extracted from the various sources mentioned above, the next step was the analysis of the data. The method of data analysis utilized here is the Panel regression analysis method. This method involves the combination of time series and cross sectional data. Panel data are said to be repeated observations on the same cross section, typically of individual variables that are observed for more than one time period (Wooldridge, 2003). Panel data is an important method of longitudinal data analysis because it allows for a number of regression analyses in both spatial (units) and temporal (time) dimensions. The spatial aspect refers to a number of cross-sectional units of observation, which could be countries, states, firms (as used in this study), commodities, and so on while the temporal aspect refers to regular episodic observations of a set of variables in the cross-section units over a particular period of time (2012 – 2013 in this case). Panel data also provides a major means to analyse data longitudinally especially when the data are from various sources and the time series are rather short for separate time series analysis. Even in a situation when the observations are long enough for separate analyses, panel data analysis gives a number of techniques that can help examine changes over time common to a particular type of cross sectional unit. The combination of time series with cross-section data made possible by the use of panel data regression technique, usually improves the degree of freedom and quantity of data which may not be possible when using only one of them (Gujarati, 2003).

### 3.6 Model specification

As a follow up to the hypotheses earlier formulated, a regression model is formulated to capture the effect of capital structure variables on performance. This model will help in testing the stated hypotheses of the study and

in achieving the objectives earlier stated, keeping in mind the method of data analysis to be employed. In this study, the capital structure variables utilized are debt and equity due to the inability to get data on companies with preferred stock. In order to measure the performance of the companies, profit after tax was used as a proxy for it. In order to measure the leverage of the firms, the ratio of long term debts to total assets (LTD/TA) was used as a proxy for it. Therefore the functional model is stated below as;

$$P = f(L)$$

Where,

P = profit

L = Leverage = LTD/TA

This model is estimated using the fixed effect panel method because of the fact that it has few time series (2 years) and large cross sections (20 companies). This method aids in ensuring that the results arrived at are efficient and reliable as it tends to avoid the loss of degree of freedom.

The empirical form of the model is as seen below

$$\Delta P_{it} = \alpha_i + \beta_{ij} \Delta L_{it} + \mu_{it}$$

Where,

$P_{it}$  = vector of the dependent variables (Profit) of all the firms

$\alpha_{it}$  = vector of constant parameter,

$L_{it}$  = vector of the independent variables (LTD/TA) of all the firms.

$\beta_{it}$  = vector of coefficients of the independent variables

$\mu_{it}$  = the error term

i = individual unit (e.g. a firm) in a cross section,

t = time dimension

**Apriori expectation:** Based on theoretical evidence, (Tian and Zeitun, 2007), it is expected that there will be significant negative relationship between the performance of the firms and their capital structure. i.e.  $\beta_{ij} < 0$ .

#### 4. Data presentation and analysis

##### 4.1 Data presentation

In this section, the necessary data collected were presented, analyzed and interpreted in order to arrive at cogent conclusions. The data needed here are as follows:

- 1) Long term debt of the companies
- 2) Total equity of the companies
- 3) Profit after tax of the companies

As previously mentioned, preferred stock was discarded as none of the companies under consideration utilised it. All of these data are presented in the appendix 1. The companies used for this study are diverse and from different sectors of the economy as seen thus;

1. Beverages sector - 2 companies
2. Agricultural sector - 1 company
3. Engineering and machinery sector - 1 company
4. Diversified industries sector - 3 companies
5. Banking sector - 2 companies
6. Pharmaceuticals sector - 1 company
7. Construction and building sector - 2 companies
8. Food producers and processors sector - 5 companies
9. Oil and gas sector - 2 companies
10. Transport sector - 1 company

##### 4.2 Data analysis

The data presented in the appendix was analyzed using Eviews 7 statistical software. The regression equation as stated before was

$$\Delta P_{it} = \alpha_i + \beta_{ij} \Delta L_{it} + \mu_{it}$$

The first test done was the panel unit root test on the variables of interest. This has been shown to be of a higher degree of accuracy when dealing with panel data (Breitung 2000). This test is done using individual fixed effects as regressors and automatic lag difference term and bandwidth selection. The result is as shown in appendix 2.

The result indicates the presence of a unit root. After modification to cater for the unit root, the panel least squares regression is carried out using fixed effects. The result of this regression is shown in appendix 3. From the results it can be seen that the independent variable has a negative and significant relationship with the



dependent variable. This implies that the ratio of long term debt to total assets has a negatively significant relationship with the profit of the companies under consideration. The adjusted  $R_2$  is also at an acceptable level. The adjusted  $R_2$  is 0.9456 for the fixed effects model. This indicates that more than 90% of the variation in profit as a measurement of performance of the Nigerian firms is explained by the variations in their total leverage. The F-statistics and Durbin-Watson (DW) statistics also indicate that the regression equations are significant. The DW statistics of 1.923161 further indicates that the regression equation is free from the problem of autocorrelation. The implication of this is that the estimated equation can be relied upon in making valid inference about the influence of the explanatory variables on the market performance of Nigerian firms. Thus, based on the results, the null hypothesis is rejected.

## 5 Conclusions and recommendations

The study examined the effect of leverage of performance of Nigerian companies. The results from the analysis of data led to the decision that too much leverage is not good for Nigerian companies. This is due to the fact that Nigeria is a developing country and thus Nigerian companies have high growth potential and as such debt financing in such conditions are detrimental to company profit (McConnell and Servaes 1995).

Based on this fact, this study recommends that Nigerian companies should use debt as a source of finance sparingly and only when extremely necessary. This is because despite the fact that the value of a business can be enhanced through debt, a point is reached when further increase in debt becomes detrimental. As such, each firm should establish its optimum debt-equity ratio that maximizes its value.

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**APPENDIX 1  
COMPANIES' DATA**

COMPANY	YEAR	LTD/TA	PROFIT
GUINNESS	2012	0.365048	14,301,431
GUINNESS	2013	0.340277	11,779,956
NIG. BREWERIES	2012	0.439758	38,042,714
NIG. BREWERIES	2013	0.263044	43,080,349
PRESKO	2012	0.322361	3,549,719
PRESKO	2013	0.385012	1,293,971
JULIUS BERGER	2012	0.866778	7772055
JULIUS BERGER	2013	0.860969	4733213
LEVENTIS	2012	0.180128	1118993
LEVENTIS	2013	0.186082	1350568
PZ LTD.	2012	0.099728	609532
PZ LTD.	2013	0.09729	2221447
TRANSCORP LTD	2012	0.360647	2539177
TRANSCORP LTD	2013	0.21841	2821012
ACCESS BANK	2012	0.402618	35,815,611
ACCESS BANK	2013	0.415602	26,211,844
GTBANK	2012	0.392289	85263826
GTBANK	2013	0.432333	85545510
GLASCO SMITHKLINE	2012	0.133569	2752863
GLASCO SMITHKLINE	2013	0.146233	2915896
DANGOTE CEMENT	2012	0.175092	146,016,119
DANGOTE CEMENT	2013	0.14782	210,262,754
ASHAKA CEMENT	2012	0.142062	3,124,848
ASHAKA CEMENT	2013	0.209886	2,824,311
FLOURMILLS LTD	2012	0.351999	8,896,718
FLOURMILLS LTD	2013	0.328558	8,782,913
HONEYWELL	2012	0.232135	2600712
HONEYWELL	2013	0.665333	2843520
NESTLE LTD.	2012	0.464038	21,137,275
NESTLE LTD.	2013	0.458551	22,258,279
CADBRY	2012	0.125273	4,287,779
CADBRY	2013	0.166433	6,023,219
_DANGOTE SUGAR	2012	0.084334	10,796,416
_DANGOTE SUGAR	2013	0.096013	13,537,612
FORTE LTD	2012	0.21852	654,461
FORTE LTD	2013	0.410616	4,583,232
OANDO LTD	2012	0.457244	4,379,446
OANDO LTD	2013	0.110151	2,350,574
REDSTAR	2012	0.009551	252,258
REDSTAR	2013	0.028522	246,720

Source: Annual reports of selected companies



## APPENDIX 2 PANEL UNIT ROOT TEST ON VARIABLES

Panel unit root test: Summary

Series: POP

Date: 7/10/15 Time: 06:00

Sample: 2012 2013

Exogenous variables: Individual effects

User-specified lags: automatic

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections
Null: Unit root (assumes common unit root process)			
Levin, Lin & Chu t*	0.6238	0.0050	40
Null: Unit root (assumes individual unit root process)			
Im, Pesaran and Shin W-stat	231.55	0.5242	40
ADF - Fisher Chi-square	202.867	0.6001	40
PP - Fisher Chi-square	137.573	0.3523	40

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

## APPENDIX 3 PANEL LEAST SQUARES REGRESSION

Dependent Variable: PROFIT

Method: Panel Least Squares

Date: 7/10/15 Time: 10:22

Sample: 1 506

Periods included: 30

Cross-sections included: 92

Total panel (unbalanced) observations: 506

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.993272	0.134738	4.74632	0.0000
LTD/TA	-0.625400	0.104012	6.012746	0.0000

### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.918370	Mean dependent var	9.942268
Adjusted R-squared	0.945612	S.D. dependent var	0.408758
S.E. of regression	0.130249	Akaike info criterion	-1.063668
Sum squared resid	6.887683	Schwarz criterion	-0.228384
Log likelihood	369.1080	Hannan-Quinn criter.	-0.736071
F-statistic	46.13805	Durbin-Watson stat	1.923161
Prob(F-statistic)	0.000000		

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