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FACULTY OF COMMERCE

DEPARTMENT OF ECONOMICS

**ASSESSING THE EFFECTS OF CAPITAL STRUCTURE ON
PERFORMANCE OF NON-FINANCIAL FIRMS LISTED ON THE ZSE**

(2010 – 2016)

BY

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**THIS DISSERTATION IS SUBMITTED TO THE DEPARTMENT OF
ECONOMICS IN PARTIAL FULFILMENT OF THE REQUIREMENTS
OF THE BACHELOR OF COMMERCE IN ECONOMICS HONOURS
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SUPERVISOR’S APPROVAL FORM

The undersigned certify that they have supervised the student, Nkomo Tatenda’s dissertation entitled: Assessing the effect of capital structure on performance of non-financial firms listed on the ZSE (2010-2016), submitted in partial fulfilment of Bachelor of Commerce Economics Honours Degree at the Midlands State University.

SUPERVISOR’S SIGNATURE

CHAPTER 1

CHAPTER 2

CHAPTER 3

CHAPTER 4

CHAPTER 5

DATE /..... /.....

APPROVAL FORM

The undersigned certify that they have supervised, read and recommend to the Midlands State University for acceptance a research project entitled: Assessing the effect of capital structure on performance of non-financial firms listed on the ZSE (2010-2016), submitted in partial fulfilment of Bachelor of Commerce Economics Honours Degree at the Midlands State University.

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DECLARATION

I, Nkomo Tatenda do hereby affirm that this research and its contents represent my own work, and that it has never been previously submitted for a degree at the Midlands State University or any other university.

.....

Students signature

..... /..... /.....

Date

DISCLAIMER

I, Nkomo Tatenda, declare that the views in this research do not represent the views of Midlands State University, the supervisor or any other university.

DEDICATION

This dissertation is dedicated to my mother, the Mabika family and my brother Craig for their unconditional love, tolerance and support.

ACKNOWLEDGEMENT

First and foremost, I would like to give thanks to God Almighty for without His guidance, protection and inspiration this project will not have been fulfilled but with His love and grace it was possible. I would also like to extend my utmost gratitude to my mother for her patience, love and sacrifice and also would like to thank Mr. T Chipunza, my supervisor and Mr. C Dzingirai for their input and support to the research for without their guidance, the research would have been very hard to accomplish. Finally, I give thanks to my family, friends, classmates and all the lecturers in the Economics Department for their support and love.

ABSTRACT

All firms have to make a decision on how to finance their operations. A firm can use retained profit or borrow from financial institutions, or offer securities and shares. Each source of funds has its own advantages and disadvantages. The proportion of debt to equity applied by firms determines the capital structure of a firm. This study therefore investigated the relationship between capital structure and the performance of non-financial companies listed on the Zimbabwe Stock Exchange (ZSE). The study employed an explanatory non- experimental research design. A census of 9 non-financial firms listed on the ZSE, was taken,. The study used secondary panel data contained in the annual reports and financial statements of listed non-financial companies' .The study applied panel data model (fixed effects). Fixed effects least squares regression results revealed that financial leverage had a statistically significant negative association with performance as measured by return on equity (ROE). The study recommended that managers of listed non-financial companies should reduce the reliance on long term debt as a source of finance and also recommended that the government should regulate financial institutions so as to reduce the cost of borrowing.

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ACRONYMS

CATA	-	Current Assets to Total Assets
GDP	-	Gross Domestic Product
LEV	-	Leverage
LLC	-	Levin Lin Chu
LIQ	-	Liquidity
LSDV	-	Least Square Dummy Variable
NSE	-	Nairobi Securities Exchange
OLS	-	Ordinary Least Squares
RBZ	-	Reserve Bank of Zimbabwe
ROA	-	Return on Assets
ROE	-	Return on Equity
RSE	-	Rwanda Stock Exchange
TAT	-	Total Assets Turnover
ZSE	-	Zimbabwe Stock Exchange

CHAPTER ONE

INTRODUCTION

1.0 Introduction to study

Capital structure refers to the long term funding of a firm (Vigario, 2009). Capital structure is determined by the long term debt and equity finance used by firms to finance their operations. The study will try to delineate the correlation amongst capital structure and the financial performance of non-financial firms registered on the ZSE for the period of 2010 to 2016. Capital structure of a firm is measured by the proposition of debt finance to equity capital. Jensen (1986) states that capital structure has been recognised as a vital estimator from a financial economics view since it is connected with firm's ability to convene the demands of heterogeneous stakeholders.

There are two ways that a firm can obtain its funds and these include outer and inner sources. Inner sources of finances include retained profits while outer sources involve loans credit from financial institutions and non-financial institutions, trade credit, issuance of equity shares and selling securities. According to Jensen (1986) the formation of capital structure may affect the governance structure of a company, which in turn might have an effect on company's ability to make strategic decisions.

1.1 Background of the study

The word performance is a controversial aspect in finance because of its multidimensional meaning. According to Mihaela (2012) performance can be viewed from two points, the first point being the financial point of view and the other being organisational perceptive. One can measure the performance of a firm using variables that involve growth, productivity, returns or even customer satisfaction. Financial performance is reflected in profit maximisation, maximising returns on assets and maximising shareholders return and all variables are based on the firm's efficiency. Other authors argue that financial performance is based on returns on investment, earnings per share, growth in sales, market capitalization, residual income and price per earnings ratio. The classical indicators used in financial analysis to estimate performance have been the leverage, liquidity, cash flow, and inventory turnover and receivables turnover ratio. There are also accounting indicators of performance which includes the net profit, EBIDTA, return on assets (ROA), return on equity (ROE), market indicators include market value added and total shareholder return.

Panu *et al* (2006) argue that there is a relationship between corporate governance, ownership and financial performance. Management is faced with which mix of capital structure that enhance its performance. Either managers attract debt or sell securities to the public through the Zimbabwe Stock Exchange as a way of financing a project. Managers often use high debt in the case of a high risk project as noted by some capital structure theories, in this scenario managers, will be avoiding the costs of agency conflicts by not selling shares. However, the use of debt as financing technique has a higher risk of bankruptcy. Some authors argue that firms that use high debt in their capital structure usually invest in projects that are less risky fearing the losses of cash flows thus ending in bankruptcy, adding that equity financed projects turns to be highly risky because firms are not obligated to pay dividends if the project generates less cash flow.

9 firms were considered in this study including Econet, Delta, Boarder Timbers, Dairy Board, National Foods, Riozim, Ariston, Innscor and Colcom. Mashirigwani (2000) state that equity finances are composed of selling financial securities and the issuing shares. Debt finance is in the form of loans short, medium and long term loans provided by the domestic banking sector, mainly commercial banks and the Zimbabwe Development Bank. Short term loans consist of bank overdrafts, bank acceptances and trade credit.

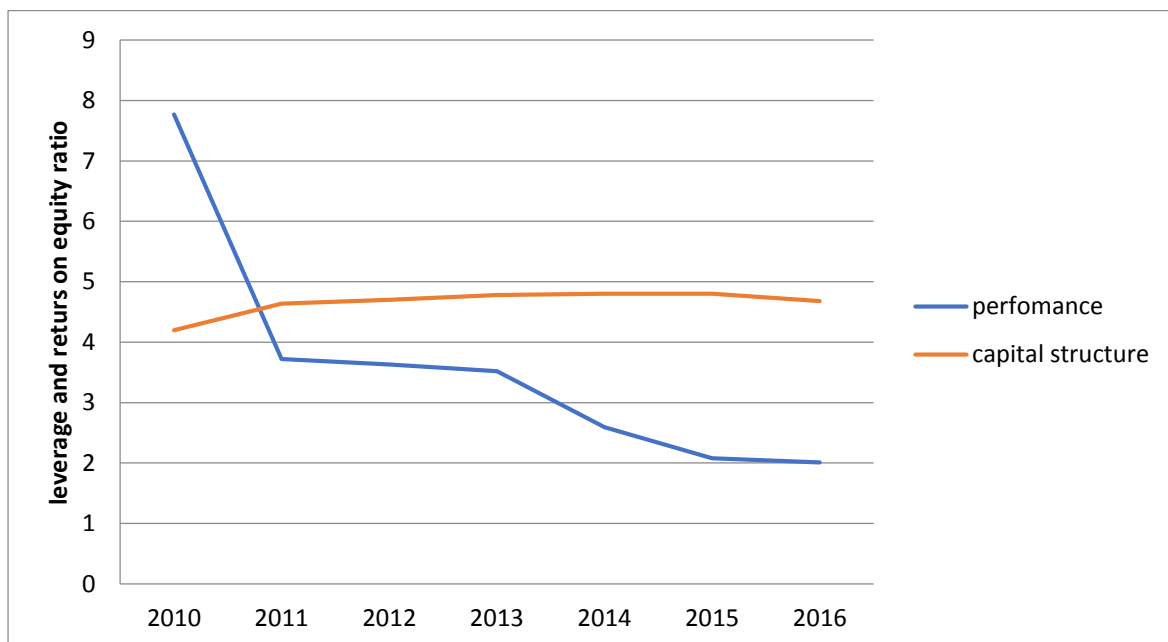


Figure: 1.1 Trend of firms performance and capital structure in percentages (2010 – 2016)

Source: Appendix 1

Capital structure was at its lowest point in 2010 according to figure 1.1, this is shown by low leverage ratio of about 4.2% meaning that debt finance may have been low or equity finance high as compared to the other years as in figure 1.1. Inversely, performance was at its peak as the returns on equity is high as compared to other following years. The capital structure or leverage is trending positively either meaning that firms are applying more debt to equity or firms are reducing equity finance. Firms' performance is declining over the years showing an inverse relationship between capital structure and firm performance. This scenario might have been caused by dollarization which was meant to curb hyperinflation. Dollarization made the general public and investors to have low confidence in the abilities of financial institutions and hence adopted a tendency of excluding financial institutions in their transactions. Chikoko (2012) argue that most of company's activities were conducted outside the financial system and banks were used only for transitory transactions.

During 2012 and 2013 capital structure increased and this increment might have been a result of elections, which force many investors to reduce their participation in the local business as they fear for the unknown given the history of the country. This may have lead firms to borrow money from financial institutions, thus increasing debt and reducing equity finance.

Firms performance is declining according to the figure 1.1 and it had a sharp decline in 2013 which could have been caused by the inability of banks to mobilise capital for loans forcing firms to downsize their operations (Mutenheri and Munangangwa 2015). From 2014 up to 2016 Zimbabwe was facing cash shortages which might have lead the public not to deposit money in the banks hence making it difficult for banks to issue loans and overdrafts to firms, hence causing firms performance to fall.

Performance of Zimbabwe Stock Exchange in the past

The Zimbabwe Stock Exchange opened in 1896 and it became open to external investment in 1993. Thereafter, external investors have increased their participation in trading on the ZSE, hence increasing the local bourse of the stock market up to the time it found itself as one of Africa's top stock exchange market based on the market value of firms' shares. Mutenheri and Green (2003) present that 404.7 million shares valued at Z\$1.3billion were traded in 1995 compared to 450.8 million shares worth Z\$1.44 billion in 1994, showing a decrease of about 10 % in the number of shares sold. The year of 1996, the Zimbabwe Stock Exchange market capitalization surged by 165% from Z19.9 billion to Z52.8 billion, making it one of the fast merging market performers. The authors suggest that this might have been due to the listing

of Ashanti Goldfields following its takeover of Cliff Resource. With approximately 40 % performance of the Zimbabwe Stock Exchange linked to agriculture yield, the industrial index increased from 3971 to 8787 between the periods of January 1996 to December 1996. A sum of 722.7 million shares were purchased and sold at value of Z2.6 billion, an increase of 78.6% in shares traded as compared to 1995. Chikoko and Muparuri (2013), argue that between 1994 to 1996 market capitalization rose at an average of 36 % in US dollar terms.

Number of shares traded in 1997 totalled 1.19 billion shares worth Z6.45 billion (Mutenheri and Green, 2003). The value of shares traded in 1997 more than doubled as compared to the total value of shares in 1996 which is Z 2.6 million. The market improved in spite of turbulent trading through the final quarter of the year resulting from the collapse of the Zimbabwe dollars at the exchange market due to unbudgeted payment of gratuities to war veterans and the participation of Zimbabwe in the DRC conflict.

During 1998, Zimbabwe Stock market, at some point in time was considered to be amongst the most capable rising markets in the continent, the ZSE saw falling turnover to an estimate of 60% in the 1997's volume and about 88% worth of shares bought, this is according to (Njanike *et al*, 2009). The researchers state that this problem might have resulted from high interest rates which attracted investors to the high profitable capital market and also due to loss of faith resulting from various factors including stated intentions by the government to acquire commercial farms for resettlement. This might have led to the collapse of the Zimbabwean dollar and social unrest including mass stay away.

According to Njanike *et al*, (2009) from 2002 to 2008, the Zimbabwean economy went through a phase of economic chaos and dwindling performance. In spite of the dwindling economy, the stock market responded in reverse to the determinants that influenced the economy inversely. Speculation raised the stock exchange's performance as investors hedged against hyperinflation, which reached unsurpassed inflation levels of 231 million percent in July 2008(Reserve Bank of Zimbabwe, 2008). Stock markets were regarded as a store of value for the investor's assets. In this period investors lost confidence in the economy, therefore, there was extraction of both external investment and internal investment capital. The uncertainty around the indigenous policy saw ZSE records reducing in volume and value of share prices. Chihava (2014) state that in 2013 trading on the ZSE rose, the value and numbers of shares bought by foreigners rose by 29 % and 34 % respectively.

1.2 Problem Statement

When firms raise capital to finance their projects, managers should take into account the cost of capital. A firm can raise capital through applying for a debt or equity, thus each source of finance has its costs and effects on financial performance. The different sources of finance have different costs and benefits to the firm, some sources are regarded to be more beneficial than others. To maximise firm benefits, the firm should continuously employ the source of finance that yields high benefits until the benefits are equal to the other source of capital benefits, thus an optimal capital structure. As shown in figure 1.1 firms performance is declining shown by a downward trend, while capital structure has a positive trend, could the decline in firms performance be due to capital structural changes or be due to other factors other than capital structure.

1.3 Objective of the study

- To investigate the effect of capital structure on performance of non-financial firms listed on the Zimbabwe Stock Exchange.

1.4 Hypothesis

- H_0 : Leverage is inversely related to firm performance.
- H_1 : Leverage is positively related to firm performance.

1.5 Justification of the study

Some theories including cost of capital, agency cost, trade off, free cash flow, signalling theories state that capital structure is positively interrelated to firm's performance and the studies were conducted in non-African countries. Onaolapo and Kajola (2010) found a significant negative impact of leverage on financial measures of performance in Nigeria. Mwangi, M. (2010) examined the association between capital structure and performance of 27 selected firms listed on Nairobi Stock Exchange (NSE) excluding banks during the period 2001 to 2010. The researcher found that there is a significant positive relationship between equity and firm performance, on the other hand, debt and firm's age has an inverse correlation with Return on Assets (ROA) and Return on Equity (ROE).

Mwangi *et al* (2014) examined the correlation between capital structure and firm performance of non- financial firms listed on (NSE). The research used leverage as a proxy of capital structure and used financial ratios to measure firm performance, which are Return on Assets and Return on Equity. The researcher found a negative relationship between leverage and firm

performance. Some studies considered financial leverage as a dependent variable and investigated its determinants. Zheka (2010), show that, the profitability has no effect on leverage. Most researches which investigate the effect of capital structure on firm performance use micro variables that can be controlled by the firm as explanatory variables. In conclusion, there is no consensus on the relationship between capital structure and firm's performance because some scholars found that there is a negative relationship between performance and capital structure, while others claim that there is a positive relationship. Furthermore, different authors used different proxies of variables of interest, some used liquidity ratio as a measure of capital structure, and this study will focus on debt to equity as a measure of capital structure.

1.6 Organisation of the rest of the study

This research has five chapters, where chapter one marks the starting of this study, where the exploration of objectives and the inquiries are characterized. Chapter two is basically writing audit, where history theoretical and empirical hypothesis done by different analysts are transformed to reinforce the review. Chapter three gives a foundation on how the research was done; it is fundamentally the exploration of techniques utilized by the study. The chapter gives an outlay of the study's research method and systems utilized to examine data. The forth chapter will show results of the study and the interpretation of the findings. Chapter five will provide the conclusion of the research findings and will also give policy recommendations and suggestions for future studies.

1.7 Limitations

The results may not represent the result of all firms listed in the ZSE and also the exclusion of the financial firms' results in sample selection bias. Secondly, the data which the study is to use might be accurate as some managers have a tendency of window dressing their financial statements in order to attract investment, as a result the findings of this study may be biased. Not every firm in Zimbabwe publishes their financial statements, hence the study is only limited to few firms that are listed on the ZSE.

1.8 Delimitations

The results of the study may represent the factors affecting the whole Zimbabwean business environment, as the sample size is good enough to represent all firms listed on the ZSE.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Capital structure theories try to answer the question whether change in capital mix influence the value of a firm. There are many approaches to this namely Modigliani and Miller's approach, pecking order, trade off, agency cost, signalling and free cash flow theory. Moreover, many scholars have researched on the significance and effect of capital structure on performance of a firm.

2.1 Theoretical Review

2.1.1 Modigliani and Miller's Theory

Modigliani and Miller (1958) claimed that the value of the company does not rely on the company's debt to equity ratio or financial leverage; hence the theory of cost of capital claims that owners of the firm are indifferent about firm's capital structure. The authors used an economy without taxes and any transaction costs, further assuming that the cost of borrowing is the same for investors as well as firms and that there is no information asymmetry as supported by (Stigles, 1974). The theory postulates that, the value of the company is affected by its future growth prospect. If investors do not predict attractive growth prospects in a firm, the market performance of the company would not be great. The theory also suggests that debt holders and equity shareholders have a similar priority, that is, earnings are shared equally amongst them. The second proposition of the theory is that, increase in debt component will result in shareholders perceiving a high risk and in return, shareholders will look forward to higher return, thereby increasing the cost of equity.

Modigliani and Miller (1963) then introduced taxes into their theory in cost of capital and show that, debt is positively related to the value of the firm due to tax. Interest on debt is a tax-deductible cost; the company effectively decreases its tax expenses as it employs additional debt. As debt to equity ratio increases, the firm's market value will increase by the present value of the interest tax shield. The theory advocates for that as long as the tax shield exceeds cost of distress, that is, the cost of bankruptcy, increasing debt to the capital structure will increase the value of the firm, until bankruptcy cost exceeds the tax shield. Modigliani and Miller found that leverage positively affects the performance of a firm.

2.1.2 The Trade – off theory

The trade off theory emanated from the research by Kraus and Litzenberger (1973), who formally introduced the interest tax shield related with debt finance. The trade-off theory postulates that managers try to balance the advantage of interest tax shield against the cost of financial distress (Myers; 2001). The price of financial distress includes the cost of bankruptcy and the cost of agency problem, bankruptcy cost can be categorized under indirect and direct costs. Baxter (1967) shows that direct costs of bankruptcy comprise legal and administrative legal expenses and inter alia incurred by a company that goes bankruptcy. Indirect cost involves the lessening in the market value of the company due to the company's incapability to service its debt obligations.

The theory forecasts that, companies have a target debt ratio and this ratio will vary from company to company. It also predicts that, companies with "safe tangible assets" will encompass less risk of financial distress and therefore, will be more likely to use more debt relative to equity. On the other hand, firms with risk assets are more exposed to financial distress, and will be expected to borrow less; Raman and Zingales (1995) confirmed the prediction. Thirdly, the trade-off theory foretells that higher marginal tax rates will be accompanied by higher levels of financial leverage because of the tax deductibility of interest. Firms with higher marginal tax rates are expected to borrow more and businesses with low marginal tax rates employ more equity compared to debt. In conclusion the theory state than capital structure proxy by leverage has a positive impact to firms performance.

2.1.3 Agency Costs Theory

The theory was proposed by Jensen and Meckling (1976) explaining the correlation between capital structure and firm performance. Agency costs are related to conflicts of interest amongst agents (shareholders, managers and creditors). There might be two types of agency problem, the first one being the conflict between managers and shareholders and secondly, conflicts of interests between shareholders and creditors.

When managers do not own 100 % of the firm's shares, agency problem is most likely to arise. Jensen (1986) takes into account the advantage of debt as a constraint of managerial discretion. The author argues that firms with low debt take less effective projects and generate lower return. Oppositely, firms that have high debt in its capital structure choose a more effective way to distribute these few cash flows. According to Grossman and Hart (1982) firms that are equity financed have low risk of bankruptcy; managers have little incentive to be more effective

as dividends are not an obligation to the firm in the case of poor performance. As debt is added in the capital structure, managers are disciplined as debt gives incentives for managers to be more effective to avoid bankruptcy. The agency problem states that a rise in the financial leverage is followed by improved company performance. Jensen and Meckling (1976) postulate that, highly indebted companies prefer less risk projects.

There may be an agency problem between shareholders and debt holders. Shareholders may prefer high risk projects and require higher return, whereas, creditors prefer projects with less risk and agree with inferior return. Hence, shareholders might desire investments with greater risk than what creditors might favour. In the scenario that the risk project is thriving, shareholders will receive extra return, while the debt holders will earn a fixed amount. In the event that the project fails all losses will be between shareholders and debt holders. As a consequence, more indebted firms take lower risk projects. According to Myers (1977) underinvestment could be caused by the discrepancies in goals between shareholders and debt holders.

2.1.4 Pecking- Order Theory

Myers and Majluf (1984) favour the pecking order theory because it incorporates the assumptions of transaction costs and information asymmetries. The theory recommends that, in order for firms to minimise information asymmetry costs, firms should pursue a financing hierarchy. The pecking order theory states that firms firstly opt for internal financing to equity financing; according to the theory equity financing is a last resort. Profitable firms prefer internal funds and if the firm requires more funding it may choose among the different external sources in such a way to minimise information asymmetry costs. Most likely, firms will opt for debt as it is less costly than equity. Only then, when debt is no longer sensible to issue, the firms will eventually face to equity as a last funding source. Summarising, the theory argues that profitable firms are expected to apply less debt finance than firms which generate lower cash flows. The theory shows that companies prefer low debt to equity; the prediction is confirmed by (Muritala, 2012). The pecking order theory claims that, there is a negative relationship between capital structure and firm performance.

2.1.5 Signalling Theory

This theory can be best explained using two hypotheses:

- (a) Implied Cash Flow Hypothesis

This hypothesis is based on the knowledge that managers have more information than investors. The hypothesis claims that managers, use financing decisions to communicate their confidence in the firm's prospects and, in case where management believes that the firm is undervalued, to raise the value of the share. Increasing debt in the capital structure has been an effective signalling tool. Debt obligates the firm to repay the credit and paying interest rates until the debt matures, with a potential serious consequence on default. Therefore, issuing more debt can serve as a credible signal of bigger future cash flows. Conversely, increasing equity signals that the future cash flows might be disappointing.

(b) Information Asymmetry Hypothesis

Myers and Majluf (1984) assumed that the company's managers have superior information about the true value of the firm. If managers' hold favourable information that is yet to be reflected on the market, the spread of such news will result in a larger increase in share prices than in bond prices. Managers that think that the shares are undervalued will choose to issue debt rather than equity in order to avoid diluting the value of existing shareholders. Conversely, managers will issue equity when they believe that the firm shares are overvalued.

Table 2.1: Summary of capital structure theories

Theory	Relationship between capital structure and performance
Modigliani and Miller's Theory	Positive
Agency Cost Theory	Negative
Pecking Order Theory	Negative
Signalling	Positive
Trade off Theory	Positive

2.2 Literature Review

Mwangi (2010) examined the association between capital structure and performance of 27 selected firms listed on Nairobi Stock Exchange (NSE) excluding banks during the period 2001 to 2010. The researcher considered capital structure in terms of debt and equity. The objective of the study was to assess the correlation between debt and firm performance, to assess the relations between equity and company performance and also to investigate the effect of firm age on performance. The study used financial ratios such as, Return on Equity (ROE) and Return on Assets (ROA), as proxies of performance. The study used secondary data obtained from audited annual financial statements from NSE. The study used multiple regression analysis arguing that it is the best for providing a means to investigate quantitative relationship between variables. The researcher found that there is a significant positive relationship between equity and firm performance; on the other hand, debt and firm's age have an inverse correlation with ROA and ROE.

Mwangi *et al* (2014) examined the correlation among capital structure and company's financial performance of non- financial firms listed on the Nairobi Securities Exchange (NSE). The research used leverage as a proxy of capital structure and used financial ratios to measure firm performance, which are Return on Assets and Return on Equity. Explanatory non- experimental research design was used in the research because the authors believed that the research design seeks to establish causal relationship between variables. A survey of 42 non-financial firms listed on the Nairobi Securities Exchange was observed, extracting data from the Nairobi Securities Exchange handbooks for the period 2006 to 2012. The research made use of panel data models. The regression results exposed that leverage had a significant negative impact on firm performance as calculated by the financial ratios. The study recommended that managers should decrease the reliance on debt as a source of funding its projects. The study supports the findings of pecking order theory and the agency costs theory. The study concluded that agency theory is not applicable to non-financial firms listed in NSE. Using the current liabilities to finance assets would increase performance, as current liabilities are less expensive than long term debt and moreover, the research found that increasing current assets enhances performance.

Lavorskyi (2013) investigated the correlation connecting capital structure and company performance. The chief hypothesis being that, financial leverage influences firm performance positively by disciplining management, signalling effects and tax shield. The research used 16.5 thousand companies in Ukraine over the period of 2001- 2010. Leverage was used to

measure capital structure and financial ratios to measure firm performance. The study used “company-level financial data set” found on National Statistics Committee of Ukraine. The researcher found that leverage is negatively related to firm performance. The results from the study by Lavorskyi are not consistent with the trade off, net income approach, free- cash- flow, Modigliani and Miller (1963) and signalling theories of capital structure. However, the soundness of pecking order theory and agency costs theory was supported.

Mauwa *et al* (2016) explored the effect of capital structure on financial performance of firms listed on Rwanda Stock Exchange (RSE). A census of 6 firms was conducted using both primary and secondary data. The study used purposive sampling technique to sample the respondents that participated in the study. Data was analysed using descriptive statistics and the study found that capital structure is negatively and significantly related to firm performance. The results supported the pecking order theory and opposing the signalling, trade off, net income theories of capital structure.

Another study on capital structure effect on firm’s performance was done by Onaolapo *et al* (2010). The researchers investigated the impact of capital structure on firm performance in Nigeria from 2000 to 2010. The study considered some macroeconomic variables (inflation and GDP) impact on company performance. A static panel analysis was used and leverage was used to measure capital structure, while performance was measured by return on investment. The study found that financial leverage is negatively related to firm performance, providing a strong support of the traditional theory of capital structure. The authors recommended that managers should employ more equity than debt, in spite of the fact that debt enhances performance. Debt will increase performance up to a certain point were any increase in debt will affect firm performance negatively.

A significant negative relationship between capital structure and firm performance was found by Mawanza and Mugumisi (2013) in their study of capital structure and corporate performance in a case of hospitality and tourism sector in Zimbabwe. The study used four listed firm on the Zimbabwe Stock Exchange that belong to the hospitality and tourism sector over the time frame from 2009 to 2013.

Zheka and Vitality (2010) believe that capital structure does not only affect the return a firm earns for its shareholders, but also determines the survival of a firm in less fortunate economic shock, thus capital structure is imperative for a firm’s growth and survival. Debt finance comes in the form of bond issues, short term and long term loans and equity financing is in form of

selling shares. Williamson (1988) argues that the choice of capital structure is of importance as it shows the proposition of control over company by managers and shareholders. When the company is more equity financed, managers have less control over the firm's projects, hence managers are less effective. On the other hand, as supported by Myers (1977) when the firm's capital structure is more of debt finance, managers will have a power over the operations of the firm, thus managers being effective, hence debt is a tool to discipline managers. Power to control operations affect performance, hence to maximise performance managers have to carefully consider the capital structure decision, which is a complex task as leverage varies from one firm to another.

Nkomo (2017) study investigates the effect of capital structure on financial performance of firms. The main hypothesis being that capital structure measured as debt to equity proportion affects financial performance negatively. The study assumes that debt finance is more expensive than equity finance; hence more debt will increase firm's expenses and also huge debt causes firms to take low risk projects and miss opportunity of investments that are highly profitable. The study used firms listed on the ZSE and expects debt to equity ratio to be negatively related to firm performance.

2.3 Conclusion

Conclusively, the chapter provided the empirical and the theoretical views of how capital structure can affect financial performance. The behaviour of capital structure is different among regions and continents as shown by the different results found from different country studies. The next chapter will on the methodology used by the researcher to carry out the investigation.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter seeks to give a detailed outlay of the study's research methods including sampling technique, data collection methods, research design and methods used to analyse data.

3.1 Model Specification

The model was adapted from Mwangi *et al* (2014) which exploited panel multiple linear regression model using pooled Ordinary Least Square method and the research exploited the fixed effects least square dummy variable regression model.

$$ROE_{it} = \beta_{0it} + \beta_1 LEV_{it} + \beta_2 LIQ_{it} + \beta_3 CATA_{it} + \beta_4 TAT + \varepsilon_{it}$$

Where ROE_{it} is the dependent variable representing performance of firm i at time t and measured as net income divided by total equity.

B_0 is a constant

B_1, B_2, B_3, B_4 are regression coefficients which represents the degree in which financial performance changes as the independent variable change by one unit.

LEV_{it} is debt to equity ratio or leverage of firm i at time t and measured as (total debt / total assets).

TAT_{it} is total asset turnover of firm i at time t and measured as sales / total assets.

LIQ_{it} is liquidity of firm i at time t and measured as current assets / current liabilities.

$CATA_{it}$ is total current assets to total assets current asset / total assets of firm i at time t .

ε_{it} is the error term.

3.2 Variable justification

3.2.1 Leverage (LEV)

Leverage is a measurement to calculate how much debt of a firm used to finance its assets relative to the amount of value represented in shareholder's equity. Financial decisions influence shareholder's dividends and affect the cost of capital, hence affecting the market

performance of a firm (Pandey, 2007). Aquino (2010) state that, high debt in the capital structure is associated with better firm performance, thus a positive relationship between debt and performance. According to Crossman and Hart (1982), firms that are heavily financed by equity have less incentive to be more efficient as compared to high debt financed firms, thus high debt ratio in the capital structure brings better performance. However, in Zimbabwe the cost of capital is high, thus debt finance will increase the firm's expenses hence affecting performance negatively.

$$LEVERAGE = TOTAL DEBT / TOTAL ASSETS$$

3.2.2 Liquidity (LIQ)

According to Muturi (2013) liquidity is the cash available for the future, after considering the financial obligation corresponding to the present period. In absence of external funding, a firm can use its liquid assets to finance its investments hence affecting performance. Liquidity is measured by current ratio which is calculated as the ratio of current assets to current liabilities. Almajali *et al* (2012) found a positive relationship between liquidity and firm's performance, as measured by current ratio using regression analysis. The research expects a positive sign in the relationship between the two variables.

$$LIQUIDITY = CURRENT ASSETS / CURRENT LIABILITIES$$

Source: Almajali *et al* (2012)

3.2.3 Total current assets to total assets (CATA)

Total current assets to total assets are also known as the working capital management. Firms can use current assets to finance their investments, thus a large amount of current assets is likely to increase performance. Mwangi *et al* (2014) investigated the effects of capital structure on financial performance of non-financial firms listed on the Nairobi Securities Exchange using total current assets to total assets ratio as another explanatory variable for performance. The authors found that current assets to total assets were positively related to performance. This study expects a positive relationship between firm's performance and total current assets to total assets.

$$CATA = CURRENT ASSETS / TOTAL ASSETS$$

Source: Mwangi *et al* (2014)

3.2.4 Total assets turnover (TAT)

Asset turnover ratio is used as efficiency indicator with which a firm can deploy its assets in generating sales. The higher the ratio the better the firm's performance, thus assets turnover should be positively related to performance. Mwangi *et al* (2014) used assets turnover ratio as an independent variable of performance and found that assets turnover is positively related to performance but its effects were found to be insignificant. This study expects a positive relationship between assets turnover and financial performance.

$$TAT = REVENUE / TOTAL ASSETS$$

Source: Mwangi *et al* (2014)

3.3 Diagnostic Tests

Multiple linear regressions employed in the research uses assumptions which, when violated, leads to biased and inconsistent estimators (Gujarati, 2004). The study carried out post estimation checks in order to see if any of the classical linear regression assumptions were violated and takes remedial measures prior to final estimation. Tests conducted comprise tests for variable significant, multi-collinearity, model specification, and panel effects, panel unit root test and co-integration.

3.3.1 Multicollinearity

Multicollinearity refers to the existence of a perfect linear relationship among the explanatory variables and this will result in high variance in the estimators compromising the precision of estimation. Correlation analysis was used to test for multicollinearity and when the correlation coefficients of the explanatory variables are less than 0.8 implies that the research does not parade severe multicollinearity.

3.3.2 Model Specification and Panel effects

The presence of panel effects in the data makes the Ordinary Least Square model not ideal. The Hausman test was done to test for the presence of panel effects and specification of the model. The Hausman test specifies which best regression model to use between fixed effect and random effect model. It basically tests whether the unobservable errors are related with regressors. The null hypothesis is that, difference in coefficient is not systematic meaning that the unobservable errors are not correlated suggesting that random effects model is appropriate, against the hypothesis that, unobservable errors are correlated. When the obtained p-value is less than 5% significant level, reject the null hypothesis and conclude that the errors are

correlated and in this case fixed effects regression model will be utilised otherwise we do not reject the null hypothesis and use the random effects.

3.3.3 Panel unit root

The panel unit root of the variables was done using the Levin-Lin-Chu test (2002). The null hypothesis being that the panel contain unit root against the alternative that the panel is stationary. The decision rule being to reject the null hypothesis if the p-value is less than 5% significant level and conclude that the variable is stationary otherwise does not reject. To correct the error of unit root, the non-stationary variable will have to be differenced until it is stationary.

3.3.4 Co-integration

Co-integration exists when the regression variables are stationary at different levels, when co-integration sets in; it means that there is a long run correlation between the variables. Panel unit root test for the residual was conducted to test for co-integration. If the residual is stationary or white noise, there will be a problem of long run relationship between the variables and will conclude that co-integration is present, on the other hand if the residual is not stationary, the model will be free from co-integration.

3.3.5 Significance of the variables

The Wald test was conducted to test if the independent variables in the model are significant by looking at their dual significance. The null hypothesis is that estimators are equal to zero in opposition to the alternative that estimators are not zero. When the p-value is less than 5% significant level, reject the null hypothesis and conclude that the variables are significant.

3.4 Data type and source

3.4.1 Research Design

A research designs a blue print that shows a detailed outline of how a research has been conducted (Christensen, 2011). The research adopted an explanatory non-experimental research design. Kerlinger and Lee (2000) state that explanatory study design is suitable where the study is trying to explain how the phenomenon operates by labelling the independent variables that create change in the dependent variable. Therefore, this study used explanatory non experimental seeking to capture the relationship between financing decisions and performance of non-financial firms listed on the ZSE.

3.4.2 Sampling Technique

The target population of the study comprised of all 51 non-financial firms listed on the ZSE, 9 firms were considered including Econet, Delta, Boarder Timbers, Dairy Board, National Foods, Riozim, Ariston, Innscor and Colcom. Firms in financial segment were excluded from the research to avoid inconsistency allied with firms that are highly monitored and regulated by the Reserve Bank of Zimbabwe (RBZ). Some firms were excluded because of missing financial data and some were delisted from the ZSE. The study used a sample to represent the whole target population. The study considered 9 firms because it is a justifiable sample size. The firms were chosen randomly, thus employing a random sampling technique. Each and every non-financial firm had an equal probability of being chosen.

3.4.3 Data Collection Method

The study entirely relied on secondary data or quantitative data. The data was acquired from published audited annual financial reports of the selected non-financial firms for all the variables in the research. The data capturing involved the tracking of a cross section of 9 non-financial companies listed on the ZSE over the period 2010-2016. The data will be captured in panel form. Panel data refers to the pooling of observations on the same cross section, normally of households, countries and firms, observed over time. As such panel data includes both cross sectional and time series effects; therefore, the data set is usually larger than unblended cross sectional or time series data. For the fact that independent variables vary over two dimensions (firms and years) the estimators based on panel data are usually more precise than time series and cross sectional.

3.5 Conclusion

This chapter gave the research methods adopted in this empirical analysis. The study indicated the methods of data collection, analytical structure and justification of the included variables. A layout of detailed diagnostic tests was also specified in the chapter to confirm the significance and effectiveness of the model. The next chapter will focus on the results presentation and analysis of the regression model.

CHAPTER FOUR

RESULTS PRESENTATION AND ANALYSIS

4.0 Introduction

This chapter deals with the presentation, interpretation and analysis of regression results conducted using Stata 13. Diagnostic tests were done to test the validity and the authenticity of the whole model.

4.1 Diagnostic Test Results

Diagnostic tests were conducted before passing the conclusion on the estimated results of the research. Tests undertaken include Hausman test, Panel Unit Root tests, Multi-collinearity and Wald test.

4.1.1 Model Specification Test

When carrying out a research, one should utilise a correctly specified model. To test which model to use Hausman test was conducted which specifies the best regression model to use between fixed effect and random effect model. It essentially tests whether the errors are related with regressors. The null hypothesis is that difference in coefficient is not systematic meaning that the errors are not correlated.

Table 4.1 Summary of Hausman test Results

Test	p-value	Chi2 (4)	Remark
Hausman	0.0000	49.60	Fixed effect

Source Appendix 2

The p-value is less than 0.05 hence based on the decision rule we reject the null hypothesis and conclude that errors are correlated and the fixed effect model was utilised.

4.1.2 Panel Unit Root test

Panel unit root for variables was done using the Levin-Lin-Chu test (2002). The null hypothesis being that the panel encompass unit root against the alternative that the panel is stationary. Failing to reject the null hypothesis means that the variable will be non-stationary, thus to correct the error, the non-stationary variable will have to be differenced until it is stationary.

Table 4.2 Summary of Panel Unit Root Results

Estimator	LLC-statistic	p-value	Order of Integration	Remark
ROE	-1.7113	0.0435	I(0)	Stationary
LEV	-1.402	0.0000	I(1)	Stationary
LIQ	-10.1772	0.0000	I(0)	Stationary
CATA	-10.4764	0.0000	I(0)	Stationary
Tat	-2.0607	0.0197	I(0)	Stationary

Source Appendix 3, 4, 5, 6, 7 respectively

The results above show that the variables: ROE, LIQ, CATA and TAT are of stationary at I (0) and LEV is stationary after first differencing the variable. This means that the variables are stationary at different levels.

4.1.3 Co-integration Test Results

Co-integration is present when two or more variables in a time series have long run relationship among the variables (Gujarati, 2004). The research used the panel unit root of the residual to test the presence of a long run relationship. Variables are co-integrated when there is unit root on the residual.

Table 4.3 Unit root on residual

Estimator	LLC	p-value	Order of Integration	Remark
Residual (r1)	-6.5373	0.0000	I(0)	Stationary

Source Appendix 8

According to the findings by the researcher, the residual has no unit root, thus it is white noise and it can be concluded that the variables have a long run relationship.

4.1.4 Significance of the model

The Wald test was employed to test the significance of the model by looking at the joint significance of the regressors. The null hypothesis is that the variables are not significant to the model.

Table 4.4 Wald Summary Results

Test	p-value	F statistic	Remarks
Wald	0.0000	8.95	Variables significant to the model

Source Appendix 9

The p-value is 0.0000 which is less than 0.05, thus rejecting the null hypothesis and concluding that the exogenous variables are statistically significant to the model.

4.1.5 Multi-collinearity Test

To test for multi-collinearity, the correlation matrix was employed. When the correlation coefficients of the variables are more than 0.8 we conclude that there is severe multi-collinearity otherwise there exists severe correlation among the variables.

Table 4.5 Correlation Matrix

Variables	LEV	LIQ	CATA	TAT
LEV	1.0000			
LIQ	0.2914	1.0000		
CATA	0.0374	-0.3683	1.0000	
TAT	0.1037	0.1620	0.1573	1.0000

Source Appendix 10

According to the results found by the study, the correlation coefficients are less than 0.8; hence we conclude that there is no severe multi-collinearity.

4.2 Results Presentation

The table below shows the results of fixed effect regression model.

Table 4.6 Regression results

Variable	Coefficient	Std error	t statistic	p-value
LEV	-4.317078	0.8163073	-5.2	0.000
LIQ	-0.3669328	0.1689779	-2.17	0.035
CATA	2.566162	1.012236	2.54	0.014
TAT	0.0853918	0.2604887	0.33	0.744

Source Appendix 11

R-squared = 0.8120

Adjusted R-squared = 0.7669

F statistics = 18

After regressing the model, the specified model is as follows:

$$ROE_{it} = 202.9226 - 4.317078LEV_{it} - 0.3669328LIQ_{it} + 2.566162CATA_{it} + 0.0853918TAT_{it}$$

4.3 Interpretation of Regression Results

The above model estimate ROE as a proxy of measuring the performance of firms. The study used fixed effects regression model. According to the findings, about 81% variation in the dependent variable (roe) is explained by the included explanatory variables and only about 19% in variation of the return on equity is explained by other variables.

4.3.1 Leverage (LEV)

Leverage was found to be statistically significant in the research since it had a p-value of 0.000 less than 5%. As expected, a negative relationship between performance and leverage was obtained and this is shown by the negative sign of the coefficient of -4.317078. A unit increase in leverage or debt to equity ratio will lead to 4.317078 decreases in financial performance measured by leverage. According to the regression results we do not reject the objective null hypothesis, that debt to equity ratio is inversely related to performance. The results are consistent with the Pecking Order Theory, and also the results corroborate with the research conducted by Mwangi *at el* (2014) and Lavorskyi (2013). However, the findings contradict with the findings by, Javed and Akhtar (2012) and Modigliani and Miller (1963).

4.3.2 Liquidity (LIQ)

The study found a statistically significant effect of liquidity on financial performance since it has a p-value of 0.035 which is smaller than 0.05. Liquidity is inversely related to financial performance as shown by the negative coefficient of -0.3669328. A unit increase in liquidity holding other variables constant will cause performance to fall by 0.3669328. The findings contradict with the study expectations also contradicts with research done by Xu and Banchuenvit (2013), which saw a positive relationship between leverage and return on equity.

4.3.3 Total current assets to total assets ratio (CATA)

The results show that total current assets to total assets ratio of 2.566162 was statistically significant at 5% interval level. The results show that total current assets to total assets ratio (CATA) is positively related to financial performance measured by return on equity. The study found that by holding other variables in the model constant, a unit increase in the total current assets to total assets ratio will lead to 2.566162 increase in return on equity. These findings confirm to the results of Mwangi *at el* (2014) and Afza and Nazir (2007), they postulate that performance is positively correlated with total current assets to total assets.

4.3.4 Total asset turnover (TAT)

The regression show that total asset turnover is insignificantly positively related to return on equity, this is shown by the p-value which is 0.744 which is greater than 0.05.

4.5 Conclusion

In conclusion, chapter four presented the results of the regression and analysed those results. The next chapter will suggest policy recommendations to the stakeholders of firms based on the results found by the research.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.0 Introduction

This is the last section of the research and it holds the researcher's summary, conclusion based on the result shown in chapter four and proceeds to give policy recommendations.

5.1 Summary of the study

The research investigated the effect of capital structure on financial performance of non – financial companies listed on the ZSE and capital structure was measured as the leverage ratio and performance represented by return on equity. The study used panel regression model using leverage, liquidity, total current assets to total assets ratio and total asset turnover as explanatory variables. The study found that about 81% variation in financial performance was due to the explanatory variables and only 19% variation was from other variables not included in the model. The study found that leverage was negatively related to return on equity supporting the study's expectations. Financial performance was also significantly negatively related to liquidity, thus a unit increase in the liquidity ratio will result in a decrease in the performance of the firm by 0.3669328. Total current assets to total asset ratio and the total assets turnover were found positively related to return on equity, however, the total assets turnover has a small or no effect on performance.

5.2 Conclusion

The study established that further increase of debt finance will reduce the performance of the firm. The research also found that the performance of a company may be improved by using more current liabilities to finance for assets, this is so because current liabilities are less expensive than long term debt.

5.3 Policy Recommendations

The findings of this research have tangible policy implication at the micro and macro level. The research found that financial performance decreases as financial leverage is increased. Hence the recommendations on leverage (LEV) variable are that company managers should reduce financial leverage by employing more equity or by reducing debt in order to enhance performance. The research additionally recommends that the Government should control the financial sector through various fiscal and monetary policies in order to decrease the price of

borrowing assuming that various firms heavily rely on external funds in funding their capital needs. The cost of borrowing in Zimbabwe is relatively high thus increasing the expense of using debt as a financing tool for firms operating locally, hence reducing performance.

The recommendation on Liquidity (LIQ) variable to non-financial firms listed on the ZSE is that firms should choose aggressive financing strategies in order to increase performance. This means that the firms should concentrate on applying more current liabilities to finance their assets.

On the variable of CATA, the study recommends that firms should use more current assets as compared to noncurrent assets; hence non financial firms listed on the ZSE should use less fixed assets and more off current assets.

5.4 Suggestion for Further Research

This study only focused on the effect of capital structure on performance, but did not take into consideration the factors affecting capital structure decisions, so a study should be conducted on finding the determinants of capital structure because there are natural and controllable forces that push firms to act in certain behaviour in determining the ways of raising capital.

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APPENDICES

Appendix 1: DATA SET IN PECENTAGES

company	year	ROE	LEV	TAT	CATA	LIQ
1	2010	1.2	4.0	6.0	1.5	6.2
1	2011	-2.2	5.7	6.9	1.4	3.9
1	2012	-0.3	4.3	5.2	2.2	9.7
1	2013	1.3	5.5	3.8	2.3	6.9
1	2014	0.3	6.0	4.1	3.0	8.6
1	2015	-3.6	7.0	2.5	2.3	7.8
1	2016	0.1	6.2	1.9	2.0	7.3
2	2010	0.7	2.7	1.0	1.5	9.2
2	2011	0.5	2.8	1.5	1.0	9.4
2	2012	0.2	3.2	1.8	2	5.8
2	2013	0.1	3.4	1.5	7	7.3
2	2014	-0.9	3.7	1.2	6	5.8
2	2015	-0.5	3.8	1.2	6	4.2
2	2016	-3.5	4.3	2.1	5	9.1
3	2010	2.4	3.1	14.0	5.4	30
3	2011	2.1	2.9	14.1	5.3	29
3	2012	1.9	2.7	14.7	5.3	29
3	2013	0.6	2.8	16.3	5.1	25
3	2014	1.7	2.7	15.5	5.2	30
3	2015	1.9	2.5	14.5	4.6	28
3	2016	1.7	2.4	13.3	4.6	31
4	2010	1.6	3.4	13.8	3.4	13.7
4	2011	1.6	3.2	14.9	4	17.1
4	2012	1.5	3.3	14.5	4.2	18.2
4	2013	-0.5	3.3	14.8	4	16.9
4	2014	0.1	3.9	13.1	4	10.2
4	2015	0.4	3.9	13.1	4.3	15.1
4	2016	-0.9	4.1	12.5	3.8	14.7
5	2010	2.2	3.6	11.0	3	11.6
5	2011	2.5	3.9	11.8	2.9	8.8
5	2012	2.8	4.2	11.9	3.7	15.4
5	2013	3.0	3.8	11.2	3.8	17.1
5	2014	2.6	3.3	9.7	3.7	13.6
5	2015	2.0	3.1	8.7	4.2	29.1
5	2016	1.6	3.0	7.7	4.3	31.3
6	2010	7.2	5.8	9.2	2.4	9.6
6	2011	4.8	5.4	7.7	16	9.8
6	2012	4.2	5.3	7.5	2.1	6.6
6	2013	2.8	5.1	6.8	2.7	11.7
6	2014	2.0	4.9	6.4	1.8	6.5
6	2015	1.1	4.7	5.9	1.9	8.0

6	2016	0.6	4.5	5.4	2	7.8
7	2010	1.3	3.8	19	1.9	14.4
7	2011	2.6	4.9	21	4.4	9.7
7	2012	3.0	4.4	21.9	4.5	11.7
7	2013	2.5	4.5	18.8	4.2	10.6
7	2014	2.5	4.2	18.4	4.6	14.0
7	2015	1.1	4.2	9.6	5.5	15.5
7	2016	1.1	4.2	13	4.8	13.5
8	2010	0.8	5.0	20.5	5.6	13.6
8	2011	1.3	4.7	24.5	5.7	15.6
8	2012	2.6	4.4	27.6	5.9	17.2
8	2013	1.9	4.7	27.1	6.7	16.6
8	2014	2.3	3.9	28.6	6.9	20.9
8	2015	2.6	3.5	25.4	6.7	23.4
8	2016	2.5	3.7	23.6	6.4	20.7
9	2010	52.5	6.4	4.8	5.8	7.4
9	2011	20.3	8.3	5.5	4.4	5.5
9	2012	16.8	8.0	6.1	5.1	7.7
9	2013	20.0	8.3	8.8	4.9	7.7
9	2014	12.7	9.9	5.6	4.8	5.2
9	2015	13.7	9.8	5	4.7	7.3
9	2016	14.9	9.7	5.3	4	6.2

APPENDIX 2

Hausman test

```
. hausman fixed random
```

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
lev	-4.317078	-1.031799	-3.285279	.2386795
liq	-.3669328	-.5195659	.1526331	.
cata	2.566162	4.045611	-1.479449	.331534
tat	.0853918	-.4968377	.5822295	.1708564

```
      b = consistent under Ho and Ha; obtained from xtreg  
      B = inconsistent under Ha, efficient under Ho; obtained from xtreg
```

```
Test: Ho: difference in coefficients not systematic
```

```
      chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)  
              =      49.60  
Prob>chi2 =      0.0000  
(V_b-V_B is not positive definite)
```

APPENDIX 3

Unit root test for roe

```
. xtunitroot llc roe
```

```
Levin-Lin-Chu unit-root test for roe
```

```
Ho: Panels contain unit roots          Number of panels =    9  
Ha: Panels are stationary              Number of periods =    7
```

```
AR parameter: Common                  Asymptotics: N/T -> 0  
Panel means:  Included  
Time trend:  Not included
```

```
ADF regressions: 1 lag
```

```
LR variance:  Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-2.2110	
Adjusted t*	-1.7113	0.0435

APPENDIX 4

Unit root test for lev

```
. xtunitroot llc D.lev
```

```
Levin-Lin-Chu unit-root test for D.lev
```

```
Ho: Panels contain unit roots      Number of panels =      9  
Ha: Panels are stationary          Number of periods =     6
```

```
AR parameter: Common              Asymptotics: N/T -> 0  
Panel means:  Included  
Time trend:   Not included
```

```
ADF regressions: 1 lag
```

```
LR variance:   Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-1.3e+02	
Adjusted t*	-1.4e+02	0.0000

APPENDIX 5

Unit root test for liq

```
. xtunitroot llc liq
```

```
Levin-Lin-Chu unit-root test for liq
```

```
Ho: Panels contain unit roots      Number of panels =      9
Ha: Panels are stationary          Number of periods =     7

AR parameter: Common              Asymptotics: N/T -> 0
Panel means:  Included
Time trend:   Not included
```

```
ADF regressions: 1 lag
```

```
LR variance:   Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-11.5178	
Adjusted t*	-10.1772	0.0000

APPENDIX 6

Unit root test for cata

```
. xtunitroot llc cata
```

Levin-Lin-Chu unit-root test for cata

Ho: Panels contain unit roots	Number of panels =	9
Ha: Panels are stationary	Number of periods =	7

AR parameter: Common Asymptotics: N/T -> 0

Panel means: Included

Time trend: Not included

ADF regressions: 1 lag

LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-10.9013	
Adjusted t*	-10.4764	0.0000

APPENDIX 7

Unit root test for tat

```
. xtunitroot llc tat
```

```
Levin-Lin-Chu unit-root test for tat
```

```
Ho: Panels contain unit roots      Number of panels =    9  
Ha: Panels are stationary          Number of periods =    7
```

```
AR parameter: Common              Asymptotics: N/T -> 0  
Panel means:  Included  
Time trend:   Not included
```

```
ADF regressions: 1 lag
```

```
LR variance:   Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-2.7035	
Adjusted t*	-2.0607	0.0197

APPENDIX 8

Cointegration

Unit root of the residual (r1)

```
. xtunitroot llc r1
```

```
Levin-Lin-Chu unit-root test for r1
```

```
Ho: Panels contain unit roots          Number of panels =    9  
Ha: Panels are stationary              Number of periods =    7
```

```
AR parameter: Common                  Asymptotics: N/T -> 0  
Panel means:  Included  
Time trend:   Not included
```

```
ADF regressions: 1 lag
```

```
LR variance:    Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-7.3784	
Adjusted t*	-6.5373	0.0000

APPENDIX 9

Wald Test

```
testparm roe lev cata tat liq
```

```
( 1) lev = 0  
( 2) liq = 0  
( 3) cata = 0  
( 4) tat = 0
```

```
F( 4, 50) = 8.95  
Prob > F = 0.0000
```


APPENDIX 10

Multicollinearity Test

```
. estat vce, correlation
```

```
Correlation matrix of coefficients of xtreg model
```

e(V)	lev	liq	cata	tat	_cons
lev	1.0000				
liq	0.2914	1.0000			
cata	0.0374	-0.3638	1.0000		
tat	0.1037	0.1620	0.1573	1.0000	
_cons	-0.6902	-0.3587	-0.4933	-0.6045	1.0000

APPENDIX 11

Regression results

Fixed effects (LSDV) regression

```
. xi: regress roe lev liq cata tat i.company1
```

```
_.company1      _Icompany1_1-9      (naturally coded; _Icompany1_1 omitted)
```

Source	SS	df	MS	Number of obs =	63
Model	314661.669	12	26221.8058	F(12, 50) =	18.00
Residual	72843.4103	50	1456.86821	Prob > F =	0.0000
				R-squared =	0.8120
				Adj R-squared =	0.7669
Total	387505.079	62	6250.08193	Root MSE =	38.169

roe	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lev	-4.317078	.8163073	-5.29	0.000	-5.956679 -2.677476
liq	-.3669328	.1689779	-2.17	0.035	-.7063349 -.0275307
cata	2.566162	1.012236	2.54	0.014	.5330262 4.599298
tat	.0853918	.2604887	0.33	0.744	-.4378152 .6085988
_Icompany1_2	-53.70635	32.24768	-1.67	0.102	-118.4777 11.06503
_Icompany1_3	-104.303	54.81716	-1.90	0.063	-214.4065 5.800521
_Icompany1_4	-100.5272	40.64316	-2.47	0.017	-182.1614 -18.89304
_Icompany1_5	-61.61254	34.90153	-1.77	0.084	-131.7143 8.489255
_Icompany1_6	22.00687	21.83399	1.01	0.318	-21.848 65.86173
_Icompany1_7	-74.12388	47.83372	-1.55	0.128	-170.2007 21.95297
_Icompany1_8	-113.989	76.58565	-1.49	0.143	-267.8158 39.83782
_Icompany1_9	281.2318	44.02932	6.39	0.000	192.7963 369.6673
_cons	202.9226	58.32987	3.48	0.001	85.76362 320.0816