Capital Structure and Firm's Financial Performance

An Empirical Analysis of the S&P500

Master Thesis

Student name:	**Roanne N. Martis**
Administration number:	**1241840**
Faculty:	**Economics and Management**
Major:	**Master in Finance**
Date:	**2013**
Supervisor name:	**Michel van Bremen**

PREFACE AND ACKNOWLEDGEMENTS

I would like to acknowledge and express my heartfelt gratitude to all those who helped me complete my thesis and supported me throughout my studies. First of all, I would like to thank all the professors for their courses and seminars, especially Prof. Da Rin and Prof. Penas for their capital structure course, which raised and peaked my interest in the study of capital structure. Furthermore I would like to thank my supervisor, Mr. van Bremen. I am extremely grateful for all his valuable comments and guidance throughout the process of writing my Master thesis.

Also, many thanks to my family and friends for their moral support and encouragements in helping me accomplish my academic education. At last, I would also like to thank Tilburg University for their excellent and outstanding level of academic education.

ABSTRACT

This paper examines the impact of capital structure on firm performance and is based on the constituents of the S&P 500. Up until now, there has been almost no study analyzing the determinants of capital structure and the impact of capital structure on firm performance for the constituents of the S&P 500. Given that the S&P 500 is widely regarded as the best gauge of large cap U.S. equities market since 1957, analyzing the relationship between capital structure and firm performance could be pivotal.

Our research is based on panel estimation covering the periods 2003-2008 and 2003-2011. Our models are based on the Return on Assets, Return on Equity and firm's Tobin's Q, to proxy firm's performance.

We find evidence suggesting a negative link between leverage ratios and Return on Assets, while we find no statistical evidence suggesting a relationship with regards to leverage and Return on Equity. Only short-term debt and total debt seem to have a significant negative impact when analyzing the impact of leverage on firm's Tobin's Q. Furthermore, the majority of our control variables proved to have the expected impact on firm performance at our usual confidence levels.

Keywords: Capital Structure; Leverage; S&P 500; Firm Performance; Debt; Equity; ROA; ROE; Tobin's Q

Table of Contents

1. Introduction

On a daily basis we hear corporate officers, professional investors, and analysts discuss a company's capital structure. Many may not know what a capital structure is or why they should even concern themselves with this term, but the concept of capital structure is extremely important. Capital structure not only influences the return a company earns for its shareholders, but also whether the firm survives less fortunate economic shocks. Hence, capital structure is imperative for a firm's survival and growth, as it plays a primary role in its financial performance in order to achieve its long-term goals and objectives.

The current financial crisis has put great pressure on domestic and international firms, especially underperforming firms. The supply of credit has dropped dramatically, while increased risk and an increased cost of capital pressure firms in finding the right balance between debt and equity. Capital structure has been the subject of many extant studies, in which researchers aim to document the link between capital structure and firm performance. From a firm's perspective, finding and operating at the optimum capital structure could be beneficial. Capital structure significantly affects the cost and availability of capital, which in turn will also affect a firm's performance.

The capital structure of companies refers to the way in which the company is financed through a mix of debt and equity capital. It is the proportion of resources attributed to the firm through different sources, which may include internal and external financers. Corporate leverage decisions are, as several theories suggest, thus among the key important decisions made by firm executives. Capital structure, capitalization, financial structure, leverage ratio and invested capital, all have the same meaning, how much money and what type of sources the company has used to build itself up and purchase its assets. The ratio of total debt to total capital employed is referred to as the firm's financial leverage.

Consequently, financial conditions in the corporate sector not only affect firm performance, but they also have a powerful effect on macroeconomic outcomes. As mentioned previously, the capital structure of an organization is of utmost importance to both the managers of firms and lenders, since a wrong mix of leverage may seriously affect the performance and survival of any business. Subsequently an appropriate capital structure is a critical decision for any company. This decision is not only important because of the need to maximize returns to numerous

organizational constituencies, but also because of the impact such decision has on a company's ability to deal with its competitive environment.

Since late 1950s studies of Lintner (1956), Hirshleifer (1958) and Modigliani and Miller (1958) emerged with the focus on capital structure. Recently, capital structure has become one of the most interesting issues in the corporate finance literature, and it has also been one of the main topics amongst the studies of finance scholars such as us. The importance of capital structure derives from the fact that it is strongly related to the ability of firms to fulfill the needs of various stakeholders.

The last era has witnessed a continuous developing of new theories on the issue of capital structure and firm performance. Additional capital structure theories, such as the static trade-off theory and the pecking order theory have emerged over the years.

According to Kraus and Litzenberger (1973), the static trade-off theory assumes that firms trade-off the benefits and costs of debt and equity financing and find an 'optimal' capital structure after accounting for market imperfections such as taxes, bankruptcy costs and agency costs. In contrast, Myers and Majluf (1984) favor the pecking order theory, which suggests that firms should follow a financing hierarchy in order to minimize information asymmetry between parties. So, the pecking order theory predicts that firms prefer to finance themselves internally before opting for debt or equity. It states that only when all internal finances have been depleted, firms will opt for debt and as last resort will turn to equity. Thus firms that are profitable and therefore generate high cash flow are expected to use less debt capital than those who do not generate high cash flow. This theory therefore supports the fact that firms prefer debt rather then equity (Rajan and Zingales, 1995; Wald, 1999; Fama and French, 2002; and Karadeniz et. al, 2009).

Furthermore the agency cost theory is premised on the idea that the interest of the company's managers and its shareholders are not perfectly aligned. It explains the relationship of principal, shareholders of the firm, with agent, management of the firm, in the decision making process regarding the firm's capital structure. Jensen and Meckling (1976) indicate that in the decisions about a firm's capital structure, the level of leverage affects the agency conflicts between shareholders and managers.

After five decades of studies and research, economists have still not reached an agreement on how and to what extent the capital structure of firms' impact their performance. Nonetheless, the studies and empirical findings of the last decades have at least demonstrated that capital structure has more importance than in the simple M&M model.

The aim of our research is to provide better inside into the relationship between capital structure of a firm and its performance for the constituents of the S&P 500. Hitherto, there has been no study analyzing the determinants of capital structure and the impact of capital structure on firm performance for the constituents of the S&P 500. This is quite interesting, since the S&P 500 is widely regarded as the best gauge of large cap U.S. equities market since 1957. This index comprise the 500 leading companies in leading industries of the U.S. economy, capturing around 75% coverage of U.S. equities (S&P, 2013).

Hence, this paper seeks to fill the gap in the literature as a result of limited studies that have been conducted so far in this area using S&P 500 constituents. Throughout our sturdy, we try to address the following research question "How does capital structure affect the financial performance of the constituents of the S&P 500". In order to answer our research question, some important sub-questions are: "What are the main theories with regards to capital structure and its financial performance? How are leverage and a firm's financial performance measured? What exactly are the S&P 500 companies?" Furthermore, our research's contribution to the literature lies on the amount of firms used throughout our study, which is significantly higher, compared to the majority of studies-, as well as focusing our study on one of the world's leading indices.

Our results indicate a consistent and negative link between leverage ratios and Return on Assets. Unfortunately we find no evidence suggesting a link between leverage and Return on Equity. After testing for an impact of leverage on firms performance, measured by their Tobin's Q, we see that only short-term debt and total debt affect performance. Moreover, the bulk of our control variables proved to significantly affect performance while having the expected sign. Furthermore our paper also suggests that ROA and Tobin's Q, as well we total assets, asset tangibility and capital intensity are vital capital structure determinants. We find sufficient evidence suggesting that the Pecking Order theory is more applicable for the constituents of the S&P 500 over the period 2003-2011.

To present our analysis, the remainder of this paper is ordered as follows. Section 2 presents the reader with the necessary information relating to Capital Structure and its relationship with firm performance. Section 3 reports our data sample, research methodology and econometric estimations along with our descriptive statistics. Section 4 presents our empirical results and findings. Section 5 ultimately concludes and discusses the limitations and recommendations of our research.

2. Exploring the literature

2.1 Modigliani & Miller theorem

As previously mentioned, the irrelevance theory of capital structure, which has been introduced by Merton Miller and Franco Modigliani (1958)- denoted by M&M throughout our paper-, was the first breakthrough in relation to the subject of capital structure and its effect on firm performance. They first hypothesized that if markets are perfectly competitive, firm performance will not be related to capital structure, thereby suggesting no significant relationship between a firm's capital structure and its performance. The value of the firm is similarly unaffected by its financial structure. Their assumptions of a perfectly competitive market exclude the impact of tax, inflation and transaction costs associated with raising money or going bankrupt. In addition they also assume that disclosure of all information is credible, thus there is no information asymmetry (Hamada, 1969; Stiglitz ,1974 and Hatfield et. al, 1994).

There were various criticisms, which encouraged M&M to issue an alteration to their first theory, which is referred to as MM2. In their revised proposition they incorporated tax benefits as determinants of capital structure. The vital characteristic of taxation is the acknowledgement of interest as a tax-deductible expenditure. According to M&M a company that respects its tax obligations, benefits from partially offsetting interest, namely the tax shield, in the form of paying lower taxes. Thus, M&M indicate that companies can maximize their value by employing more debt due to tax shield benefits allied with the use of debt. Hence, firms benefit from taking on more leverage. M&M show that firm value and firm performance is an increasing function of leverage due to the tax deductibility of interest payments at the corporate level (Modigliani & Miller, 1963).

In reality markets are inefficient, due to taxes, information asymmetry, transaction costs, bankruptcy costs, agency conflicts and any other imperfect elements. When taking these elements into consideration, the M&M theorem tends to lose the majority of its explaining power. Even though M&M theory was heavily criticized of some weaknesses and its irrelevant assumptions of the real world, this theory still provides the foundation for many other theories suggested by other researches.

2.2 Static trade-off theory

According to Kraus and Litzenberger (1973), the static trade-off theory assumes that firms trade-off the benefits and costs of debt and equity financing and find an optimal

capital structure after accounting for market imperfections such as taxes, bankruptcy costs and agency costs. The theory states that there is a benefit to financing with debt, specifically the tax benefit. However there is also a cost of financing with debt, namely the indirect bankruptcy costs and the more direct financial distress costs of debt. This is thus the trade-off that all firms, whom are maximizing value, should focus on when choosing the amount of debt and equity needed to finance their operations. Needless to say, there is a maximum point where the marginal benefit of further increases in debt declines as debt increases, whereas the marginal cost increases.

Hence, this static trade-off theory of capital structure states that optimal capital structure is obtained where the net tax advantage of debt financing balances leverage related costs such as financial distress and bankruptcy, holding firm's assets and investment decisions constant. Baxter (1967) & Altman (1984, 2002) in view of this theory, claim that issuing equity means moving away from the optimum and should therefore be considered bad news. According to Myers (1984), firms adopting this theory could be regarded as setting a target debt-to-value ratio with gradual attempt to achieve it. However, Myers (1984) suggests that managers will be reluctant to issue equity if they feel it is undervalued in the market. The consequence is that investors perceive equity issues to only occur if equity is either fairly priced or overpriced.

According to Van der Sar (2011) leverage enhances firm's performance by limiting conflicts between shareholders and managers as a result of having excess cash. Ebaid (2009) argued that leverage mitigates lower agency costs, since the firm's reputation and the managers' wages are at stake. On the other hand however, higher leverage also means that the firm has higher commitment to fulfill its future obligations, in terms of principal and interest payments. Furthermore, higher leverage ratios also lead to higher costs relating to financial distress. Miller (1977) documented that the cost related to financial distress is not material compared to the benefits of higher leverage ratios. Moreover, the trade-off theory suggests that those firms with higher levels of retained earnings, i.e. profitable firms, tend to have higher debt levels because they can more effectively use the tax shields on interest. Besides, since these companies have higher operating profits, the probability and costs of financial distress for them are also lower. Consequently, the trade-off theory expects a positive association between firms' leverage ratios and their performance. (Myers, 1984; Myers and Majluf, 1984; Karadeniz et al., 2009; Chakraborty, 2010).

2.2.1 Empirical results on the Trade-Off Theory

In 1966 Wippern investigated the relationship between financial leverage and firm performance. In his study he used debt to equity ratio as financial leverage indicator and earnings to market value of common stock as performance indicator. His results indicated that leverage has a positive effect on firm performance.

Capon et al. (1990) conducted a meta-analysis from 320 published studies related to financial performance, and found a positive relationship between usage of leverage levels and financial performance. In 1995 Roden and Lewellen analyzed the impact of capital structure on performance for 48 US based firms with a leveraged buyout during the period 1981 through 1990, using multinomial logit models. Their results indicate a positive relationship between firm performance and its leverage policy based on tax considerations. Their findings therefore are consistent with the trade-off theory. Moreover, the findings of Dessi and Robertson (2003) indicate a positive relationship between financial leverage and expected performance. They argue that low growth firms attempt to depend on borrowing to exploit the expected growth opportunities and investing the borrowed money in profitable projects, which will then increase the firm's performance.

Abor (2005) carried out regression analyses to analyze the impact of leverage ratio on firm performance between Ghanaian listed firms over the period 1998 to 2002. Throughout his analysis, he compared the capital structures of publicly quoted firms, large unquoted firms and small and medium enterprises. He based his models on three measures of leverage, namely, short-term debt over total assets, long-term debt over total assets and total debt over total assets, on performance, measured by the Return on Equity. His results indicate that there exists a significantly positive relationship between the short-term and total debt and Return on Equity.

Arbiyan and Safari (2009) also documented similar results, after analyzing the impact of leverage ratios of 100 Iranian publicly listed firms on their performance over the period 2001 to 2007. They found that short-term and total debts are positively related to profitability measured by ROE, but found a negative relationship between long-term debts and ROE.

Furthermore, Salteh et al. (2009) studied the link between capital structure and firm performance for 28 firms listed on the Tehran Stock Exchange for the period 2005 through 2009. They illustrate that when firm performance is measured by Return on Equity and Tobin's Q, it reflects a significant positive link with capital structure. They

used several proxies to measure leverage ratios, namely short-term debt to total assets, long-term debt to total assets, total debt to total assets and total debt to equity.

Finally, Ari (2011) used eastern Asian companies as a sample and found a positive relationship between firm performance and leverage ratios. In 2012 Umar et al.'s findings also suggest a positive link between firm performance and leverage, where they measured performance and leverage by respectively earnings per share and current liabilities to total assets. They used an exponential generalized least squares approach to study the top 100 firms on the Karachi Stock Exchange over the period 2006 to 2009 and they document consistent findings supporting the trade-off theory.

2.3 Pecking order theory

Unlike the trade-off theory, the pecking order theory does not assume an optimal level of capital structure. As previously indicated Myers & Majluf (1984) favor the pecking order theory, which incorporates the assumptions of information asymmetries and transaction costs. This pecking order theory therefore suggests that firms should follow a financing hierarchy in order to minimize information asymmetry between parties. It states that companies prioritize their sources of financing, from internal financing to equity financing, according to the principle of least effort or of least resistance, preferring to raise equity as a financing means of last resort. So, the pecking order theory claims that internal funds are used first and only when all internal finances have been depleted, firms will opt for debt. When it is not sensible to issue any more debt, they will eventually turn to equity as a last financing resource.

Summarizing, theory predicts that more profitable firms that generate high cash flows are expected to use less debt capital than those who generate lower cash flows. The pecking order theory argues that businesses adhere to a hierarchy of financing sources and prefer internal financing when available. However, when external financing is required, firms prefer debt over equity. Equity entails the issuance of additional shares of a company, which generally brings a higher level of external ownership into the company. Hence, the form of debt that a firm chooses can act as a signal for its need of external finance.

Thus firms that are profitable and therefore generate high cash flows are expected to use less debt compared to those who do not generate high cash flows. This theory therefore suggests that firms prefer debt to equity. (Muritala, 2012)

All of the previously mentioned mechanisms suggest that the pecking order theory claims a negative relationship between capital structure and firm performance, since more profitable firms opt to use internal financing over debt.

2.3.1 Empirical results on the Pecking Order Theory

Hitherto, extant literature on the pecking order theory has provided mixed evidence regarding the impact of capital structure on firm performance.

Analyzing data from the New York Stock Exchange covering various sectors over the period 1971 to 1989, Shyam-Sunder and Myers (1999) find evidence in favor of the pecking order theory. On the other hand, Frank and Goyal (2003) found little support for the pecking order theory, while they also used American publicly traded firms covering the period 1971 to 1998. They argued that net equity issued as opposed to net debt issued, are more closely correlated with financing deficit. They also highlighted that the pecking order hypothesis seems to be more applicable for data prior to 1990. Further, Fama and French (2005) examined the financing decisions of numerous individual firms and detected that these decisions are in conflict with the pecking order theory. They also discovered that while equity is supposed to be the last financing alternative, most firms issue some sort of equity every year.

In 1986 Kester recorded a negative link between capital structure and firm performance in the US and Japan. Similar results, negative relationship between capital structure and firm performance, were reported for US firms by Friend and Lang (1988) as by Titman and Wessels (1988). In 1995 Rajan and Zingales used data from F7 countries and recorded a negative relationship between firm leverage and firm performance. Wald (1999) found similar results for the developed countries, while Wiwattanakantang (1999) also reported a negative relation between book leverage and market leverage and ROA for 270 Thai firms.

Fama and French also tested the pecking order and the trade-off theories on more than 3000 firms in their publication of 2002. Their study covered the period 1965 to 1999. Their models were based on both cross-section and time series methods in order to check for robustness of their results. They support the pecking order theory by documenting a negative relationship between a firm's leverage and its performance.

In 2001 Minton and Wruck examined domestic financial conservative firms and their capital structure over the period of 1974 to 1998 and they concluded that the performance of low leverage firms outweigh the performance of high level firms. This

thus indicates that there is a negative relationship between leverage and a firm's performance.

Abor (2007) used a panel data approach on 160 Ghanaian and 200 South African SMEs, where he tested the relationship between leverage ratios and performance of the firms. He suggests that higher leverage ratios would negatively affect a firm's performance, since firms rely extremely on borrowing they will not receive tax shields and this lead to an increase in borrowing costs, which may expose the firms to bankruptcy risks and reduce the return. Zeitun and Tian (2007) focused their study on capital structure choices affecting corporate performance during 1989 to 2003, whereby their dataset comprised 167 Jordanian companies. Zeitun and Tian concluded that capital structure has a significant and negative effect on firm performance. They used both market performance measures such as market value of equity to book value of equity as for accounting measures such as Tobin's Q, ROA, ROE and EBIT.

Salteh et. al (2009) used three performance measures, namely Return on Equity, Tobin's Q and Return on Assets. They suggest a positive link between leverage and firm performance when ROE and Tobin's Q were used to measure firm performance. Nevertheless, when testing the impact of leverage on performance using the ROA, there seems to be a negative impact.

Onaolapo (2010) use data from Nigerian firms and found a negative relationship between firm's debt ratio and a firm's ROA or ROE. In 2010 Chakraborty used two performance measures including ratio of profit before interest, tax and depreciation to total assets and ratio of cash flows to total assets. They also employed two leverage measures including ratio of total borrowing to asset and ratio of total liability to total liability plus equity. Their results illustrate a negative relation between leverage and performance. Majumbar and Chibber (1997), Fama and French (2002), Booth et al. (2001), Chiang et al. (2002), Chen (2004), Deesomsak et al. (2004), Karadeniz et al. (2009) also indicate a negative relationship between financial leverage and performance.

Finally, Muritala (2012) analyzed the impact of leverage on performance for ten Nigerian firms over the period of 5 years and document a negative link, while Soumadi and Hayajneh (2012) suggest a similar link after analyzing 76 firms listed on the Amman stock market. Also, Adekunle and Sunday (2010) performed panel least square tests to study the impact of debt ratio on firm performance- measured as ROE and ROA- and suggest that higher levels of leverage negatively affect performance,

thus a negative link exists. Finally, by means of panel least squares, Manawaduge et. al (2011) also recorded a negative link between leverage and firm performance. Their study entailed 155 firms in Sri Lanka and covered the period 2002-2008.

2.4 Hypothesis

By creating different models, we attempt to answer the following research question, "How does capital structure affect the financial performance of the constituents of the S&P 500?" It is only logical to assume that the answer is not as straightforward as one might suggest. Therefore, we aim to analyze different aspects of capital structure and firm performance by addressing the following hypotheses:

The pecking order theory suggests that profitable firms will use less debt as they have more retained earnings to finance their projects. Contrary to the pecking order theory, the static trade-off theory implies that higher profitability will lead to higher debt due to lower bankruptcy probability and higher debt ratings. Evidence have shown greater support for the pecking order theory, therefore the following hypothesis will be tested:

H1: There is a negative link between leverage ratio and firm's performance

Furthermore, the findings of Shepherd (1989) suggest that larger firms are better able to leverage their market power, which in turn will affect profitability, while Penrose (1959) argue that larger firms benefit from economies of scale, which can also have a positive impact on performance.

H2: There is a positive link between firm's size and it's performance

According to Stinchcombe (1965), older firms achieve experience-based economies and can avoid the liability of newness. Therefore a positive relationship is expected between age and firm's performance.

H3: There is a positive link between firm's age and its performance

At last, Mackie- Mason (1990) argues that firms with high fraction of tangible assets in the asset base, makes debt choice more likely, which will ultimately influence firm performance. Moreover, Akintoye (2008) argues that firms, with high investments levels in tangible assets, will have lower costs relating to financial distress, compared to firms relying mostly on intangible assets. Hence the hypothesis to be tested is:

H4: There is a positive link between firms' asset tangibility and it's performance

3. Data Methodology

The following study has two main objectives: firstly, it will empirically examine the determinants of the firms listed on the S&P 500's capital structure based on the capital structure theories presented in Chapter 2, and secondly it will test the impact of capital structure of these firms on their performance.

3.1 Sample Description

Our analysis is based on firms listed on the S&P 500[1]. The S&P 500 is widely regarded as the best gauge of large cap U.S. equities market since 1957. This index comprises the 500 companies in leading industries of the U.S. economy, capturing around 75% coverage of U.S. equities (S&P, 2013). This suggests our study will focus on the largest 500 firms in the United States, which also means that our dataset comprise of highly liquid firms. Financial data relating to our sample was obtained from Wharton Research Data Services (WRDS) over the period 2003-2008 and 2003-2011 and consists of the firms' annual financial reports and income statements. The sample was reduced due to lack of some company data. All companies with missing data from 2003 through 2006 were excluded from our sample, this accumulated to a total of 26 companies. Our sample was thus reduced to a total of 474 companies.

3.2 Data

We start our study by analyzing the determinants of capital structure for the firms listed on the S&P 500. We follow a similar approach as Buferna et. al (2005), where they focus on three key capital structure theories for the Libyan market. They suggest that some main factors determining firms' leverage ratio are asset tangibility, firm growth and firm size, while the study of Prahalathan (2010) also include profitability as a significant factor. These are classified as our main independent variables. As a first step, we attempt to gain valuable insight into the above-mentioned theories, namely pecking order theory and trade-off theory, by performing our econometric estimation. Keeping in line with previous studies, such as those of Saeedi and Mahmoodi (2011) and Masnoon and Anwar (2012), we also proxy leverage using three different measures (i) Short-term debt/ Total assets, (ii) Long-term debt/ Total assets and (iii) Total liabilities/ Total assets.

[1] Table 11.1 - 11.4 in Appendix contains a list of all the firms included in this study.

After looking into the determinants of capital structure for the firms listed on the S&P 500, we extent our analysis to study the impact of capital structure on firm performance. We will test our three proxies of leverage on firm performance. Existing documentation is based on different measurements of firm performance. These can be split into accounting measurements, such as Return on Equity, Return on Assets and gross profit margin, and into market measurements, which is described by the famous Tobin's Q (Ebaid, 2009; Salin and Yadav, 2010). Accordingly our analysis will also include both accounting and market measurements in order to keep in line with current literature. To proxy performance, we measure the performance of the concerning firms on the S&P 500 by Return on Equity (ROE), Return on Asset (ROA) and Tobin's Q. The first proxy for performance is Return on Equity and it is calculated by dividing the Net Income (Loss) by the book value of equity as stated on the balance sheet, while our second proxy is the Return on Assets, and this is calculated as net income divided by total assets. Finally, our third performance proxy is Tobin's Q, which is estimated by dividing the market value of the firm by its total assets. These financial performance indicators have been widely used by previous studies, such as those of Kapopoulos and Lazaretou (2007), Zeitun and Tian (2007a and 2007b); Thomsen et. al (2006), Demsetz and Villalonga (2001), Agrawal and Knoeber (1996), Morck et. al (1988) and Lemon et. al (2008). These three performance estimations will be used as the dependent variables of our models.

Our analysis applies the same approach as the studies carried out by Kyereboah and Coleman (2007), Umar et. al (2012) and others who also tested the link between leverage ratios and firm performance. As previously mentioned, we also proxy leverage using three different measures (i) Short-term debt/ Total assets, (ii) Long-term debt/ Total assets and (iii) Total liabilities/ Total assets. These three proxies for leverage will be included in our models as our main independent variables. By constructing different models, with each model solely focusing on one specific leverage proxy, we check for consistency of our findings, while attempting to differentiate between the impacts of these leverage proxies.

We try not to overestimate the impact of capital structure on firm performance by including additional variables in our models, which also affects performance. Once more, we try to align our tests with other studies. Taking the methodologies of Abor (2007), Kyereboah and Coleman (2007), Krivogorsky et. al (2009), Jermais (2008) and Tanveer and Sajid (2012) into consideration, firm specific characteristics, such as firm size and asset growth, might also affect its performance. Therefore, our models

also include firm size and asset growth as control variables. The size of the firm is calculated by taking the log of the firm's total sales rather than the firm's assets itself to avoid any misspecification. Asset growth is estimated as the annual percentage change of assets of the firms as proposed by Manawaduge et. al (2011) and Ahmad et. al (2012). Furthermore other additional variables will also be incorporated in our models as control variables, namely asset tangibility, asset turnover and firm age. Asset tangibility[2] denotes gross fixed assets as a proportion of the total assets, while asset turnover is estimated as sales revenue over total assets, as proposed by Muritala (2012). Moreover, firm age was estimated by looking at the IPO date (year) of each firm, which was deducted from the period 2003 through 2011, and added with 1 in order to replace zeros.

3.3 Descriptive statistics and correlation matrix

Table 1 contains the descriptive statistics of the variables for our study for the period of 2003 up to 2011, while table 10 in the appendix contains the same information for the period 2003 to 2008.

The results of table 1 show that the mean (median) of the performance measures Return on Equity, Return on Assets and Tobin's Q are 0.183 (0.146), 0.063 (0.056) and 1.982 (1.582), respectively. This suggests that on average firms listed on the S&P 500 have recorded sound performance. The mean of Tobin's Q is 1.98, which reveals that the market values of the firms listed on the S&P 500 are greater than their book values. Since their price to book ratio is greater than 1, the market expect these firms to grow in the future as the market price also takes any future earnings into consideration at the current price. The lowest ROE, ROA and Tobin's Equity are -113.46, -0.85 and 0.09 respectively, while the highest ROE, ROA and Tobin's Q are 141.74, 09.0 and 15.65 respectively.

The mean (median) for short-term and long-term debt to total assets are 0.397 (0.365) and 0.197 (0.172), respectively, suggesting that on average the firms listed on the S&P 500 use relatively more short-term than long-term debt.

The mean (median) for the total debt to total assets is 0.594 (0.593), indicating that more than 50% of the total assets are financed with debt. As already mentioned, the mean total debt ratio is 60 percent, which indicates that most of the S&P 500 firms are highly levered. However, most of these debts are short-term debts (40%) as opposed to long-term debt (20%). Furthermore, the leverage of firms varies substantially

[2] Asset tangibility = (total assets – intangible assets)/total assets (Muritala, 2012)

across firms as shown in the standard deviation coupled with the minimum and maximum values. Leverage ratios exhibit a significant amount of convergence over time; firms with relatively high leverage tend to move toward more moderate levels of leverage. Despite this convergence, leverage ratios are remarkably stable over time; firms with relatively high (low) leverage tend to maintain relatively high (low) leverage for over 20 years.[3]

Looking at the data relating to asset tangibility and asset turnover, we see that both have a very high mean value of 0.81 and 0.85 respectively. High asset tangibility indicates that the proportion of the firms' fixed assets to the total assets is about 81%. The average age of the firm is about 23.6 years. This shows that the firms listed on the S&P 500 index are not relatively young. The average firm size is 3.83, while the average asset growth is 3.15.

A similar pattern emerges when looking at the results of table 10. The only large difference is that the standard deviation of ROE is 3.101 in 2003-2011, while it was 3.704 in 2003-2008. A plausible reason for this is that due to the credit crisis the market values dropped, which leads to a drop in Tobin's Q.

Table 1 Descriptive statistics for the period 2003-2011

Descriptive statistics for the period 2003-2011								
	Mean	Sd	p25	Median	p75	Min	Max	N
Return on Assets	0.063	0.078	0.025	0.056	0.099	-0.853	0.902	4287
Return on Equity	0.183	3.101	0.087	0.146	0.220	-113.457	141.742	4287
Tobin's Q	1.982	1.374	1.158	1.582	2.340	0.093	15.647	4287
Short term debt/Total Assets	0.397	0.202	0.262	0.365	0.482	0	2.381	4287
Long term debt/Total Assets	0.197	0.162	0.075	0.172	0.288	0	1.511	4287
Total debt/Total Assets	0.594	0.221	0.452	0.593	0.738	0	2.386	4287
Asset Tangibility	0.813	0.196	0.686	0.887	0.979	0.093	1	4287
Asset Turnover	0.851	0.727	0.361	0.677	1.099	0	5.745	4287
Firm Size	3.832	0.575	3.450	3.819	4.179	-0.710	5.637	4287
Firm Age	23.638	17.735	11	18	33	1	97	2540
Asset growth	3.153	51.307	-0.016	0.064	0.186	-0.998	2228.191	4283
Number of firms								

Table 1.1 reports the desctiptive statistics of our sample for the period 2003-2011. Return on equity is estimated as Net Income (Loss) over total equity, Return on Assets is calculated as net income divided by total assetsand Tobin's Q is estimated as the ratio of the market value of the firms to total assets. Asset tangibility denotes gross fixed assets as a proportion of the total assets and asset turnover is estimated as sales revenue over total assets. Firm size is calculated as the log of total assets, while firm age is estimated by substracting the first ipo date from the period 2003-2011 and afterwards adding 1 to avoid zeros. Asset growth denotes the annual percentage change of the firm's assets.

[3] Master in Finance, Capital Structure course, Fabiana Penas, slide class 3, Back to the Beginning.

Next we analyze the correlation between our variables in order to get a better understanding of our sample. In addition, we also test for significance levels. Table 2 indicates correlation for the variables for the period 2003 through 2011, while table 11 in the appendix illustrates the same but for the period 2003-2008.

Table 2 Correlation matrix for the period 2003-2011

Correlation matrix for period 2003-2011											
	ROA	ROE	Tobin's Q	STD/TA	LTD/TA	TD/TA	Asset Tangibility	Asset Turnover	Firm Size	Firm Age	Asset Growth
ROA	1.000										
ROE	-0.030	1.000									
	(0.0525)										
Tobin's Q	0.475	0.010	1.000								
	*(0.000)****	*(0.5022)*									
STD/TA	-0.158	0.011	-0.206	1.000							
	*(0.000)****	*(0.463)*	*(0.000)****								
LTD/TA	-0.227	0.005	-0.187	-0.280	1.000						
	*(0.000)****	*(0.765)*	*(0.000)****	*(0.000)****							
TD/TA	-0.312	0.014	-0.326	0.710	0.477	1.000					
	*(0.000)****	*(0.373)*	*(0.000)****	*(0.000)****	*(0.000)****						
Asset Tangibility	0.031	0.009	0.044	0.245	-0.098	0.152	1.000				
	*(0.040)***	*(0.550)*	*(0.004)****	*(0.000)***	*(0.000)****	*(0.000)****					
Asset Turnover	0.258	0.022	0.236	-0.022	-0.163	-0.139	0.023	1.000			
	*(0.000)****	*(0.152)*	*(0.000)****	*(0.160)*	*(0.000)****	*(0.000)****	*(0.128)*				
Firm Size	-0.017	0.021	-0.248	0.351	-0.079	0.263	-0.010	0.262	1.000		
	(0.253)	*(0.173)*	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.507)*	*(0.000)****			
Firm Age	0.043	0.022	-0.121	0.060	0.020	0.069	-0.003	0.050	0.329	1.000	
	*(0.032)***	*(0.272)*	*(0.000)****	*(0.003)****	*(0.316)*	*(0.001)****	*(0.866)*	*(0.012)***	*(0.000)****		
Asset Growth	-0.026	-0.002	-0.031	0.075	-0.025	0.051	0.027	-0.039	0.060	-0.008	1.000
	*(0.084)**	*(0.908)*	*(0.041)***	*(0.000)****	*(0.106)*	*(0.001)****	*(0.075)**	*(0.010)***	*(0.001)****	*(0.687)*	

Table 2 shows the results of the correlation test. Significance level of 1%, 5% and 10% are denoted by ***, ** and *, respcetively.

ROA is negatively correlated with short-term debt over total assets, long-term debt over total assets, total debt over total assets, firm size and asset growth, however this correlation is significant for all variables, except for firm size. ROA is also positively correlated with asset tangibility at 5% confidence level, asset turnover at 1% and firm age at 5%.

Tobin's Q on the other hand is correlated and significant at 1% with all variables. It is negatively correlated with short-term debt over total assets, long-term debt over total assets, total debt over total assets, firm size, firm age and asset growth. Furthermore Tobin's Q is positively correlated with asset tangibility and asset turnover both at 1% significance level.

Table 2 also indicates that there is a significant correlation between several independent variables, such as between short-term debt and asset tangibility (significant at 1%), short-term debt and firm size (significant at 1%), short-term debt and firm age and asset growth (significant at 1%); as for long-term debt and asset turnover (significant at 1%), long-term debt and asset tangibility (significant at 1%) and long-term debt and firm size (significant at 1%). Furthermore total debt is also

significantly correlated at 1% with asset turnover, asset tangibility, firm size, firm age and asset growth.

The dissimilarities between the period 2003 through 2011 and 2003 through 2008 are that asset ROA had a significant correlation with asset growth for the first period, but no significant relationship for the latter period. This is also the same for the correlation between Tobin's Q and asset growth.

3.4 Methodology

This section introduces the econometric estimations used throughout our study. The determinants of capital structure for the firms listed on the S&P 500 are evaluated by performing OLS regressions. Three regression models are used in this study based on the model used by Ram Kumar Kalkani et. al (1998), with some modifications in the explanatory variables. As already mentioned previously, we use three different measures for leverage, specifically short-term debt ratio, long-term debt ratio and total debt ratio. But for this particular test we only use total debt, in order to keep in line with previous documentations. The independent variables are the three different performance measures used throughout our study, namely ROA, ROE and Tobin's Q over total assets. Moreover, we use size[4], asset tangibility, sales growth, capital intensity and total tax rate. Next, we include a dummy variable in our models controlling for the years 2008 through 2011 in order to analyze whether the financial crisis has had any significant impact on our outcome.

Based on the dependent variable, an econometric model has been used to estimate the determinants of capital structure. Our used benchmark model is as follows:

$$Leverage_{i,t} = \beta_0 + \beta_1 Performance_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t}\,, \qquad (1)$$

where *Leverage* denotes total debt over total assets, while *Performance* denotes the performance measures of firms. *Controls* denote a vector containing the control variables mentioned above, which also affects leverage. Here $\varepsilon_{i,t}$ denotes the idiosyncratic error, whereas i and t denote firm and time specific effects.

[4] Size is measured as the log of total assets, whereas for the next test it is measured as the log of total sales

Furthermore, we test the relationship between firms listed on the S&P 500 over the period 2003 through 2011. By using panel dataset we try to reduce any collinearity in our models.

Next, we analyze the impact of leverage on a firm's performance by using the following benchmark estimation:

$$Performance_{i,t} = \beta_0 + \beta_1 Leverage_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} , \quad (2)$$

where *Performance* denotes the firm's performance measure, while *Leverage* denotes the leverage ratios of firms and i and t denote firms and time effects, respectively. *Controls* denote a vector containing control variables, which also affect firm performance. Once more, $\varepsilon_{i,t}$ denotes the idiosyncratic error. As previously mentioned we use three different measures for firm performance. It is first measured by Return on Assets, after which we will alter the performance indicator and re-estimate our models, based on Return on Equity and Tobin's Q, respectively. The same methodology will apply for the variables denoting leverage ratios, with regards to short-term debt, long-term debt and total debt ratios.
We start by analyzing the impact of leverage, asset tangibility and asset turnover on the firms listed on the S&P 500's performance, after which we also gradually include more control variables in our benchmark models. These are firm size, firm age and asset growth percentage. Larger firms are in a more mature phase and are more diversified and are thereby not experiencing "excessive" returns. (Rajan and Zingales, 1995; Jermais, 2008); while growth in sales indicates higher cash flow available to fulfill any commitment to debt holders and shareholders (Minton and Wruck, 2001). By testing three different performance measures, we attempt to gain more insight into the underlying relation between market and accounting indicators and leverage ratios.

Moreover, we test the relationship between firms listed on the S&P 500 over the period 2003 trough 2008 and 2003 through 2011, by performing OLS estimation. This is done in order to check for any robustness of our results. By using panel dataset we try to reduce any collinearity in our models. And by including firm and year fixed effects we try to analyze the variations within/ across our dataset more thoroughly.

Next, we also estimate the economic impact of 1 standard deviation (sd) change on our performance indicators, which we report in table 6. The economic impact will be estimated by the following estimation:

$$Economic\ Impact = {(sd_n * \beta_n)}\Big/{mean\ (performance_n)} \quad (3)$$

where sd denotes the standard deviation of the variables, β denotes the Beta coefficient of our previous estimations and mean relates to the mean of our variables. We only estimate the magnitude of 1 sd change for leverage coefficients which proved to significantly affect performance.

Furthermore we will look into the difference between low capital structure and high capital structure firms, and whether or not this affects the performance any differently. In order to do this, we estimate the average leverage ratios over the same period, this in order to identify our base group and our control group of firms with the highest and the lowest leverage ratios. We identify the 20% of firms with highest and the lowest leverage ratios, respectively. This is done for the period 2003 through 2008 as for 2003 through 2011. We will have thus two regressions for each year and two regressions using each leverage measure on each firm performance. We test whether there is a significant difference in impact of leverage on performance for our 12 sub samples-6 sub samples for each time period. We try to keep in line with existing literature of (Minton and Wruck, 2001). This outcome will be illustrated in table 7 and 8 below.

Thus, our benchmark estimations are denoted by:

$$Performance_{i,t} = \beta_0 + \beta_1 Leverage_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t}, \quad (4)$$

where our main variable of interest is denoted by *Leverage*, while the interpretation of the remaining variables remains unchanged.

4. Empirical Results

This section presents our main findings relating to the impact of capital structure on firm performance in a structured method. Our hypotheses will be thoroughly addressed in this section as to gain insight into the different aspects of capital structure and firm performance. We start by looking at the main determinants of capital structure over our study period, after which we test the impact of capital structure on firm performance. After analyzing the effect of capital structure on firm performance, we also test whether this impact differs between high and low leverage firms. All our models include fixed and firm effects in order to better assess the link between capital structure and firm performance.

4.1 Determinants of Capital Structure

Table 3: Capital Structure Determinants

Capital Structure Determinants			
	ROA	**ROE**	**TOBIN'S Q**
Determinants	**1**	**2**	**3**
Constant	0.1382	0.1827	0.3064
	(0.663)	*(0.574)*	*(0.340)*
Performance	-0.5564	0.0006	-0.0283
	*(0.000)****	*(0.527)*	*(0.000)****
Size	0.1205	0.1372	0.1100
	*(0.000)****	*(0.000)****	*(0.000)****
Asset tangibility	0.1174	0.0946	0.1116
	*(0.000)****	*(0.000)****	*(0.000)****
Sales Growth	0.0000	0.0000	0.0000
	(0.575)	*(0.561)*	*(0.588)*
Capital Intensity	0.0019	0.0035	0.0034
	*(0.000)****	*(0.000)****	*(0.000)****
Total Tax Rate	-0.0022	-0.0052	-0.0044
	(0.749)	*(0.456)*	*(0.518)*
Dummy Variable	0.0029	0.0080	-0.0010
	(0.667)	*(0.248)*	*(0.885)*
# of observations	3343	3343	3343
R-squared	0.241	0.203	0.225
Adj. R-squared	0.239	0.201	0.223

*This table illustrates the results of capital structure determinants. With total debt as dependent variable, Return on Assets, Return on Equity and Tobin's Q as proxies for perfromance. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Several researchers have analyzed the impact of external and firm internal factors on capital structure. Some key examples are the findings of Afza and Hussain (2011), Barton and Gordon (1988), Drobetz and Fix (2003), Sheikh and Wang (2011) and Sayilgun et al. (2006) and Bevan, Rajan and Zingales (1995) and Dandbolt (2002).

Therefore, we start by identifying some significant factors affecting our firms' capital structure and their leverage ratio. Our results are presented in table 3, where we test the impact of several factors on the total debt over total assets ratio. Model (1) suggests a negative link between Return on Assets and total debt ratio, suggesting that profitability causes lower leverage levels. Our result provides sufficient support for the pecking order theory. In addition, we also find evidence suggesting bigger firms to have higher leverage ratio. This is in line with our expectations, since the findings of Anotoniou et al. (2002), Bevan and Danbolt (2002), Hamafaier (1994), Rajan and Zingales (1995), Titman and Wessels (1998) and Deloof and Verscheueren (1998) also suggested a positive link between firm size and leverage levels. Titman and Wessels (1998) argue that large firms are more diversified, thus they have less chances of filing for bankruptcy. Moreover, the direct bankruptcy cost does not significantly influence leverage in large firms as direct bankruptcy cost is usually fixed and reduces as size increases. Our results indicate that larger firms, and firms with higher level of fixed assets on their balance sheet, tend to have higher leverage ratios. The argument could be made that these firms have more collateral, which facilitates the credit provided by financial fund providers. Our results are also in line with our expectations, since firms with more tangible assets, have a larger ability to issue secured debt. A firm with large amount of fixed assets can borrow at a relatively lower rate of interest, by providing the security of these assets to creditors as collateral. Booth et al. (2001), Titman and Wessels (1998), Rajan and Zingales (1995) and Friend and Lang (1988) also documented a positive and significant relation between asset tangibility and leverage.

Sales growth, which has been used as a proxy for firm growth, appears to have no significant impact on leverage levels of firms- the same applies for the factor tax rate. The rationale is that higher tax rates leads to higher tax shield benefits, thereby leading to higher leverage ratios. However, we do not find evidence supporting this link. On the other hand, our results suggest that capital-intensive firms, such as IT-firms, appear to have higher leverage ratios. One reason for this phenomenon is that capital-intensive firms have higher demand for long-term debt, due to larger financial requirements, while collateralizing their assets for access to credit. Finally, model (1) also comprises a dummy, representing the crises year 2008-2011, although we find no evidence suggesting a difference between the pre- and the crisis years in relation to capital structure determinants.

Model (2) reports the determinants of capital structure but focuses on Return on Equity instead of Return on Assets. We find no evidence suggesting a link between Return on Equity and leverage ratios, while total assets and asset tangibility both show the expected sign and are significant at the 1% confidence level. Once more, higher levels of capital intensity triggers higher leverage ratios, whereas tax rates and crisis dummy have not indicated a statistical link at our usual confidence levels.

Finally, we also test the impact of altering Return on Equity on capital structure by substituting this factor with the firms' Tobin's Q. our results are reported in model (3) in table 3. In contrast to model (2), the performance indicator suggest a positive and significant link, addressing the issue that profitability substitutes debt levels. When measuring performance in Tobin's Q, are results are aligned with the pecking order theory. However, the impact of total assets and asset tangibility and capital intensity on leverage ratio proof to be extremely robust at the 1% confidence levels. As already mentioned before, large firms tend to hold more debt, as they can be regarded as 'too big to fail' and therefore have better access to the capital market. Theory suggests that firms with high levels of tangible assets on their balance sheet tend to get credit easier, as they have collateral to provide to their lenders. This is also in line with the pecking order theory, since the pecking theory suggest that capital intensity and asset tangibility should have a positive link with leverage, whereas performance should have a negative impact on leverage. We expected the crisis year dummy to have any impact on the capital structure of firms, however we find evidence suggesting otherwise.

4.2.1 Capital Structure and Firm Performance

After addressing the main determinants of capital structure for firms, we test the impact of leverage on firm performance. We start by analyzing the impact of capital structure over the period 2003-2008, after which we extend our study period to 2003-2011 to check for consistency of our results. Throughout our paper, the results in relation to the period 2003-2011 will be presented, while the results covering the period 2003-2008 are presented in Tables 12 through 15 in the Appendix.

Table 4: Relationship between Return on Assets and Leverage 2003-2011

Return on Assets 2003-2011									
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Constant	-0.0131	7.1514	7.1510	-0.0012	6.5617	6.5616	0.0468	4.3898	4.3891
	(0.598)	*(0.074)**	*(0.057)**	*(0.962)*	*(0.080)**	*(0.080)**	*(0.059)**	*(0.238)*	*(0.239)*
Leverage	-0.1345	-0.1150	-0.1150	-0.1239	-0.1032	-0.1032	-0.1480	-0.1228	-0.1229
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Asset turnover	0.0762	0.0706	0.0706	0.0639	0.0625	0.0625	0.0727	0.0675	0.0675
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Asset tangibility	0.0542	0.0636	0.0636	0.0220	0.0361	0.0361	0.0416	0.0612	0.0612
	*(0.000)****	*(0.002)****	*(0.002)****	*(0.132)*	*(0.070)**	*(0.070)**	*(0.004)**	*(0.002)****	*(0.002)****
Firm size		0.0703	0.0703		0.0574	0.0574		0.0596	0.0596
		*(0.000)****	*(0.000)****		*(0.000)****	*(0.000)****		*(0.000)****	*(0.000)****
Firm age		-0.0838	-0.0838		-0.0767	-0.0767		-0.0519	-0.0519
		*(0.047)***	*(0.047)***		*(0.069)**	*(0.069)**		*(0.215)*	*(0.215)*
Asset growth			0.0000			0.0000			0.0000
			(0.884)			*(0.913)*			*(0.857)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	4287	2540	2540	4287	2540	2540	4287	2540	2540
R-squared	0.504	0.518	0.518	0.506	0.521	0.521	0.522	0.531	0.531
Adj. R-squared	0.440	0.453	0.453	0.442	0.457	0.457	0.461	0.468	0.468

*This table illustrates the results of the impact of Leverage on Performance and controlled for year and firm fixed effects. With performance measure Return on Assets as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Table 4 provides the results in relation to the impact of leverage ratio on Return on Assets. Model (1) represents our benchmark model relating to leverage ratios and short-term debt, while controlling for the impact of asset turnover and asset tangibility on Return on Assets. We find sufficient evidence suggesting that leverage ratio negatively affect a firm's Return on Assets, while asset turnover and asset tangibility positively and significantly affect performance. Firms with higher levels of asset tangibility tend to have more flexibility when making financing decisions, since companies with higher tangible assets are faced with less bankruptcy risk.

After this, we estimate model (2), which in addition to asset turnover and asset tangibility also controls for firm size and firm age. More established and mature firms tend to achieve higher Return on Assets, as they have gained market experience and survived throughout the years. Larger firms can also benefit from economies of scale as proposed by Penrose (1959), whilst leveraging their market power to achieve greater performance (Shepherd, 1989). When firms grow older, they are usually more experiences. During their growth phase, firms invest in research and development, store their human capital resource, and gradually discover their core business and competitive advantage. Hopenhayn (1992) recorded that older firms are expected to experience better performance. However, our results are not in line with this firm age theory, since the results show a negative link in (2) and (3).

However, it also shows that firm size has a positive impact on ROA in models (2) and (3). Our results are thus in line with theory, as Shepherd (1989) documented that larger firms are better able to leverage their market power, which in turn will affect profitability, while Penrose (1959) argue that larger firms benefit from economies of scale, which can also have a positive impact on performance. However, mature firms have little growth potential compared with smaller firms, thereby having a lower price-to-book ratio compared with smaller firms with higher levels of growth opportunities.

Finally, model (3) is an extension of model (2) by including asset growth as an additional factor in our study. The results relating to impact of short-term debt on Return on Assets of firms suggest higher leverage negatively affect S&P 500 companies' performance-all at the 1% confidence interval. Our results are in line with the findings of Abor (2005), Ebaid (2009), Sheikh and Wang (2011) and Khan (2012), where they document that short-term debt negatively affects Return on Assets. Next, we test the implications of long-term debt on Return on Assets. Our results in models (4), (5) and (6) suggest that long-term debt have a negative and significant impact on firms' Return on Assets. Thus in all of these 3 models, we find statistical evidence that long-term debt negatively affects Return on Assets at the usual confidence levels of 1%, even after controlling for additional factors such as asset turnover, asset tangibility, firm size, firm age and asset growth rates of firms. Our results are in line with the findings of Abor (2007), where he documents that long-term debt negatively affects Return on Assets, because of the high level of reliability on borrowing of firms, which leads to higher bankruptcy costs. The majority of our control variables have proven to be significant and with the expected sign at our usual confidence intervals. The same interpretation as for models (1)-(3) is also applicable here.

To thoroughly address the impact of leverage on Return on Assets of firms, we also test the impact of total debt on firm performance. Model (7) suggests a direct negative link between total debt and Return on Assets at the 1% confidence level. Our results of model (8) and (9) also suggest a negative link between total debt and Return on Assets at the 1% confidence levels. The majority of our control variables have proven to be significant and with the expected sign at our usual confidence intervals. In both model (8) and (9), we find no evidence suggesting firm age and asset growth to significantly affect our dependent variable. Our results present sufficient evidence in supporting the Pecking order theory, which suggest a negative link between leverage

ratios and Return on Assets. In addition, the results in relation to the study period 2003-2008 do not differ significantly from our results over the period 2003-2011.

After analyzing the impact of leverage on Return on Assets, our study focuses on the impact of leverage on Return on Equity. Based on the theory of Saeedi (2011), we expect little or no evidence suggesting a significant link between leverage and Return on Equity. Table 12 in the appendix presents our results in relation to the impact of leverage on Return on Equity. Our results indicate no link between our main variable, leverage, and our dependent variable, performance. Similar findings have been documented by Ebaid (2009), Tang and Jang (2007), Kyerebach and Coleman (2007), where they suggest no statistical evidence exist linking capital structure to Return on Equity.

Table 5: Relationship between Tobin's Q and Leverage 2003-2011

Tobin's Q 2003-2011									
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Constant	-0.4541	-35.2704	-35.2621	-0.7893	-3.9989	-3.9946	-0.4278	-35.9552	-35.9406
	(0.173)	*(0.528)*	*(0.529)*	*(0.019)***	*(0.944)*	*(0.944)*	*(0.210)*	*(0.525)*	*(0.526)*
Leverage	-1.1653	-2.1761	-2.1755	0.0767	0.0137	0.0139	-0.5165	-0.8843	-0.8839
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.632)*	*(0.951)*	*(0.951)*	*(0.000)****	*(0.000)****	*(0.000)****
Asset turnover	0.5560	0.8881	0.8880	0.4882	0.7901	0.7900	0.4996	0.8053	0.8052
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Asset tangibility	1.8983	2.2906	2.2906	1.7332	1.8346	1.8348	1.7511	1.9905	1.9905
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Firm size		-0.1488	-0.1487		-0.2176	-0.2174		-0.2692	-0.2690
		(0.209)	*(0.210)*		*(0.073)**	*(0.073)**		*(0.024)***	*(0.024)***
Firm age		0.4081	0.4080		0.0526	0.0525		0.4197	0.4195
		(0.516)	*(0.516)*		*(0.934)*	*(0.934)*		*(0.509)*	*(0.510)*
Asset growth			0.0001			0.0002			0.0001
			(0.847)			*(0.790)*			*(0.824)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	4287	2540	2540	4287	2540	2540	4287	2540	2540
R-squared	0.707	0.704	0.704	0.704	0.697	0.697	0.705	0.700	0.700
Adj. R-squared	0.669	0.664	0.664	0.666	0.656	0.656	0.667	0.660	0.659

*This table illustrates the results of the impact of Leverage on Performance and controlled for year and firm fixed effects. With performance measure Tobin's Q as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Lastly, we present our findings relating to the impact of capital structure on the performance indicator Tobin's Q in table 5. We find a strong and negative impact of short-term debt on firm performance in models (1) through (3). All these relationships show a significant effect at the 1% confidence level. Higher levels of asset turnover and asset tangibility indicate a robust and positive impact. Models (2) and (3) extends model (1) by also controlling for the impact of firm size, firm age and asset growth.

However none of these three factors suggest having any impact on performance. We find thus that short-term debt negatively affects Tobin's Q of firms over the period 2003-2011. This is in contrast with the documentations of Salteh et al. (2009), as they have suggested a positive link between these factors. This is not in line with expectations, as theory suggests a strong positive link between short-term debt and performance. Whereas asset turnover and asset tangibility are significant, firm size, firm age and asset growth are not, although most of them show the expected sign. In contrast to our previous models, we expect firm size to negatively affect Tobin's Q, since more mature and established firms tend to have less growth potential than younger firms. The market provides a premium for these smaller growth firms, which translates into higher price-to-book ratios for these younger firms.

When we test for the impact of long-term debt on Tobin's Q of firms, we find no evidence suggesting any significant link in any of the 3 models – our results are presented in table 5 as models (4) through (6). There is however evidence supporting a weakly negative link between firm size and Tobin's Q for the models (5) and (6). Asset tangibility and asset turnover are also positively and significantly related to Tobin's Q, as shown in model (4), (5) and (6).

Table 5 also presents the results of the link between total debt and Tobin's Q, belonging to models (7) through (9). The results are similar to the results relating to the impact of short-term debt to Tobin's Q in models (1) through (3) where leverage levels appear to negatively affect performance for all 3 models. Evidence thus show, that total debt has a negative impact on Tobin's Q. Asset turnover and asset tangibility also have the same effect they had through models (1) to (3). Our control variable firm size in models (8) and (9) show the expected sign and is also a factor influencing performance. Unfortunately, we do not find evidence supporting the theory of Zeitun and Tian (2007) where they argue that firms with growth opportunities may be able to generate profit from investments, thereby contributing to performance.[5]

Models (1) through (3) show consistent results with our results covering the period 2003-2008, albeit the period 2003-2008 comprises far less observations. Models (4) through (6) show that for the period 2003-2008 long-term debt has a significant and positive effect on Tobin's Q, however there was no significant evidence for any of this during the period 2003-2011. As for asset turnover and asset tangibility, they show the same results as model (4) through (6) for the period 2003-2011, while models (7) through (9) suggest no evidence of any kind between total debt and

[5] Further research is advised, by analyzing the book to market ratio instead.

Tobin's Q. Only asset turnover and asset tangibility show a positive and significant link with regards to Tobin's Q in models (7) through (9), when comparing our two study periods.

The results suggest that market perceive high leverage firms to perform badly, since they have increased their commitment to future payments. This will results in lower free cash flow and lower cash available for paying out dividends to shareholders.

4.2.2 Economic Impact of Leverage ratios

Next we estimate the marginal effect and the economic impact of leverage on performance. Prior to estimating the economic impact, we estimate the marginal effect of our main variables. We do this by multiplying the standard deviation by the coefficient of the leverage ratio variables, which proved to be significant in tables 4 and 5, respectively[6]. The results of these estimations are the marginal effects of 1 sd change from the leverage ratios on our dependent variables. Next, we estimate the economic impact of 1 standard deviation (sd) change on our performance indicators, which we report in table 6. As we only expect to give a broad impression on the impact of 1 sd change of leverage ratios on performance, we have created subsamples relating to specific industries or firms. Our results should be based on an 'on average' basis for the constituents of the S&P 500. Unfortunately, we cannot compare our results with previous documentations since no benchmark is available. Therefore, we urge the reader to analyze these results with caution.

As our results in tables 4 and 5 indicate, leverage negatively affects firms' return on asset and their Tobin's Q. In table 6, model (1) refers to the outcome of model (1) in table 4, while model (2) refers to model (2) in the previous tables, and so on. We start by looking at the impact of 1 sd increase of short-term debt- relating to calculations 1-3 in table 6, which is 20.2%, on Return on Assets. Our calculations show a decrease in average Return on Assets in the range of 37% to 43.2%, depending on the particular model. Similarly, the results pertaining to long-term debt suggest 1 sd increase of 16.2%, result in a drop in Return on Assets ranging from 26.6% to around 31.9%. However, the results relating to total debt suggest a larger drop in the range of 43.1% to 52% as a result on an increase of 1 sd- which is 22.1% for total debt.

[6] Since we find no statistical evidence suggesting a link between leverage and performance, we do not include these estimations in our calculations

Since we find no evidence suggesting a link between leverage and Return on Equity, we were not able to calculate the marginal effect for these models. Next, we apply the same methodology to leverage outcomes on Tobin's Q. The results pertaining to Tobin's Q suggest a much smaller impact for the two leverage measures- short-term debt and total debt. For short-term, the range drop is between 11.9% and 22.2%, compared to the 37% to 43.2% relating to Return on Assets. Total debt's impact ranges from 5.7% to 9.8%, suggesting a 1 sd increase in total leverage ratio leads to a drop of 5.7% to 9.8% in performance. Our results suggest that, on average, relatively small changes in leverage ratios triggers large drops in performance levels. However, to specifically quantify the impact of leverage on performance, based on 1 sd change, future research could look at specific industries over time.

Table 6: Marginal Effect & Economic impact of Leverage on ROA and Tobin's Q 2003-2011

Marginal effect & Economic Impact of Leverage on Return on Assets 2003-2011									
	Short-term Debt			Long-term Debt			Total Debt		
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Leverage Marginal Effect	-0.0272	-0.0232	-0.0232	-0.0201	-0.0167	-0.0167	-0.0327	-0.0271	-0.0271
Leverage Economic Impact	*-43.2%*	*-36.9%*	*-37.0%*	*-31.9%*	*-26.6%*	*-26.6%*	*-52.0%*	*-43.1%*	*-43.1%*
Marginal effect & Economic Impact of Leverage on Tobin's Q 2003-2011									
	Short-term Debt			Long-term Debt			Total Debt		
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Leverage Marginal Effect	-0.2353	-0.4395	-0.4393	N/A	N/A	N/A	-0.1140	-0.1951	-0.1950
Leverage Economic Impact	*-11.9%*	*-22.2%*	*-22.2%*	*N/A*	*N/A*	*N/A*	*-5.7%*	*-9.8%*	*-9.8%*

This table reports how a 'reasonable' change in X affects thedependent variable (Y).We do this by multiplying one standard deviation by the coefficient of X and this yields the change in Y, which is called the marginal effect.
This table reports the results of a 1 sd change of leverage on performance. These tests only include our main variable, leverage ratios. The economic impact has been estimated by $(sd_n * B_n)/mean(performance_n)$*, where we take the sd and mean for each leverage variable over the entire sample. Therefore, the results should be interpreted on an average basis. thus we divide the marginal effect with the mean of performance.*

4.3 Difference between high and low leverage firms on firm performance

After testing the determinants of capital structure and the impact of capital structure on firm performance, we study the difference in impact by focusing solely on the top and bottom quintile of our dataset. We first calculate the average leverage ratios per firm over the study period. After we identify, based on the calculated averages, the

top and bottom quintile, we drop the remaining 60% of our dataset for this particular test. After we have identified our subsamples, we test our estimations on our 36 subsamples. For each leverage ratio and performance indicator, we have 2 subsamples, of which 1 relates to the upper quintile and the other to the bottom quintile. Our results are presented in tables 7 and 8.

Table 7: Difference in Performance between High and Low leverage firms using ROA as performance indicator

Difference in Performance between High and Low leverage firms using ROA as performance measure 2003-2011						
	Short-term		Long-term		Total Debt	
Determinants	**HIGH**	**LOW**	**HIGH**	**LOW**	**HIGH**	**LOW**
Constant	0.0055	1.4655	5.4290	-0.3451	0.5992	-0.5649
	(0.943)	*(0.183)*	*(0.003)****	*(0.000)****	*(0.000)****	*(0.000)****
Leverage	-0.0828	-0.2984	-0.0941	0.0091	-0.1467	-0.1080
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.867)*	*(0.000)****	*(0.000)****
Asset turnover	0.0395	0.2075	0.1384	0.1085	0.0545	0.0734
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.003)****	*(0.000)****
Asset tangibility	0.0603	-0.0304	-0.2568	0.1076	-0.2249	0.1381
	*(0.017)***	*(0.500)*	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Firm size	0.0014	0.0655	0.0466	0.0547	-0.0804	0.1317
	(0.922)	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Firm age	0.0001	-0.0787	-0.1713	-0.0010	0.0016	0.0024
	(0.696)	*(0.131)*	*(0.002)****	*(0.079)**	*(0.000)****	*(0.100)**
Asset growth	0.0000	0.0009	0.0000	0.0000	0.0000	0.0005
	(0.544)	*(0.557)*	*(0.986)*	*(0.730)*	*(0.864)*	*(0.499)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	432	708	519	685	418	710
R-squared	0.832	0.531	0.446	0.720	0.785	0.563
Adj. R-squared	0.803	0.460	0.355	0.677	0.748	0.498

*This table illustrates the results of the impact of High and Low Leverage on Performance and controlled for year and firm fixed effects. With performance measure Return on Assets as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Table 7 contains the results pertaining to the impact of high and low leverage on Return on Assets over the period 2003-2011. We see that short-term debt affects return on asset; regardless if the firm belongs to the top or bottom quintile- the results are both strongly significant at our usual confidence levels, albeit the magnitude of the impact is larger for the bottom quintile of firms. The same conclusion can be documented for asset turnover, as it appears that low leverage firms have a larger impact on Return on Assets compared to their high leverage peers. However, when looking at asset tangibility, we find that only high leverage firms are positively

affected by this factor, while the bottom quintile suggests no evidence exist. The results of firm size indicate a mixed-picture, where low leverage suggests a positive effect on Return on Assets, while high leverage firms show no indication of this link. Neither firm age nor asset growth does appear to affect performance of firms.

Table 7 reports that high leverage firms negatively affect return on asset, while we find no evidence suggesting this link for low leverage firms. However, the variables asset turnover, asset tangibility, firm size and firm age appear to have a significant impact on performance for both subsamples. As suggested by our results, in most cases the impact of these factors for low leverage firms appear to be larger compared to their peer group. When looking at the results relating to total debt, we see that leverage negatively affect performance, while asset turnover and firm age suggest a positive link with performance. Asset tangibility negatively affects performance for the high leverage firms, while our results suggest a positive link for low leverage firms. Our results pertaining to the study period 2003-2008 show a similar pattern and are presented in tables 18-20 in the Appendix.

Table 8: Difference in Performance between High and Low leverage firms using Tobin's Q as performance indicator

Difference in Performance between High and Low leverage firms using TOBIN'S Q as performance measure 2003-2011						
	Short-term		Long-term		Total Debt	
Determinants	**HIGH**	**LOW**	**HIGH**	**LOW**	**HIGH**	**LOW**
Constant	6.2387	-22.5199	40.5050	5.5056	5.8202	8.6874
	*(0.008)****	*(0.220)*	*(0.006)****	*(0.001)****	*(0.009)****	*(0.000)****
Leverage	-3.3390	-0.5532	1.4191	-2.0315	-1.3755	-2.4918
	*(0.000)****	*(0.634)*	*(0.000)****	*(0.175)*	*(0.003)****	*(0.000)****
Asset turnover	1.0394	2.3983	0.9740	1.2872	2.1063	0.7354
	*(0.022)***	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.009)****
Asset tangibility	1.7605	3.0128	0.5211	1.4562	1.6517	3.4993
	*(0.022)***	*(0.000)****	*(0.378)*	*(0.040)***	*(0.159)*	*(0.000)****
Firm size	-1.0933	-0.1702	0.4200	-1.7138	-1.6702	-1.5619
	*(0.014)***	*(0.410)*	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Firm age	0.0002	1.1110	-1.3197	0.0326	0.0292	-0.0625
	(0.980)	*(0.201)*	*(0.004)****	*(0.046)**	*(0.000)****	*(0.021)***
Asset growth	0.0000	0.0344	-0.0001	0.0001	0.0000	0.0058
	(0.996)	*(0.172)*	*(0.974)*	*(0.933)*	*(0.953)*	*(0.680)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	432	708	519	685	418	710
R-squared	0.779	0.674	0.792	0.686	0.815	0.666
Adj. R-squared	0.742	0.624	0.758	0.638	0.784	0.616

*This table illustrates the results of the impact of High and Low Leverage on Performance and controlled for year and firm fixed effects. With performance measure Tobin's Q as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Finally, we follow the same approach as before and present our findings in table 8, which relates to Tobin's Q. Short-term debt negatively affects performance for the upper quintile, while the lowest quintile's performance is not affected by short-term debt levels. As expected, asset turnover and asset tangibility both have a positive impact on performance, albeit the impact is larger for the lowest quintile subsample. However, firm size proved to negatively affect performance for the upper quintile, suggesting that larger firms have lower Tobin's Q. This is in line with our expectation, since larger firms tent to have fewer growth opportunities and therefore their price to book value is less than their smaller peers. When looking at the results in relation to long-term debt, the results indicate a positive impact between leverage and performance for our upper quintile sub sample. Once more, assets turnover proved to positively influence performance for both subsamples, while we find different impact relating to firm age and asset tangibility. For the upper quintile this link is positive, whereas for the lowest quintile this link is negative, albeit only at the 10% confidence level, thereby suggesting a threshold may exist where the impact of firm size changes from negative to positive for long-term debt. As indicated by the findings of Bevan and Danbolt (2002), this might as well be the case and further research is advised in this area. Next, we find that total debt and firm size negatively affect performance for both subsamples, while asset turnover positively affects higher levels of Tobin's Q for all firms. Our results indicate that leverage negatively affect firm performance, regardless of the quintile in which they belong.

5. Conclusion, Recommendations & Limitations

5.1 Conclusion & Recommendations

Capital structure has been a much-debated topic in the finance field since the Modigliani & Miller proposition in 1958. Capital structure theories, such as the pecking order and the trade off theory, emerged into the finance field and many have tried to analyze the implications of these theories for firms in the market. Some examples of advocates of the pecking order theory are Myers & Majluf, Muritala and Fama and French, as they indicate that higher leverage negatively affect performance, whereas Kraus and Litzenberger, Ebaid and Miller suggest the opposite.

Unfortunately, the literature on capital structure findings relating to the S&P 500 has been minimum, thereby raising the issue which capital structure theory is more suitable for the S&P 500. This study tried to contribute to the existing literature by analyzing this capital market over the period 2003-2011.

We first start by analyzing several factors determining firms' capital structure, such as performance, total assets, asset tangibility, sales growth, capital intensity and tax rates. We find strong evidence for the majority of these factors to affect capital structure. Throughout our analyses, we proxy leverage ratio as short-term debt, long-term debt and total debt, whereas all as ratios of total assets. Moreover, firm performance is measured by Return on Assets, Return on Equity and on Tobin's Q. By following this approach we are better able to compare our results with previous findings and we analyze different aspects of leverage and on performance.

After assessing the determinants of leverage ratios, we test the impact of leverage on performance. Once more, we use different proxy for leverage and performance interchangeably. Our results relating to leverage on Return on Assets suggest a strong and consistent negative link. This evidence provides sufficient support for the pecking order theory, while the results of leverage on Return on Equity provided no conclusive results. We, once again, find support for the pecking order theory when assessing the impact of leverage on Tobin's Q. In addition, we also calculate the marginal effect and the economic impact of 1 standard deviation change of leverage ratios on performance; although no benchmark is available, our results still provide some insight into this issue. Finally, we create several subsamples and compare the impact of leverage on performance between the upper and the bottom quintile of our dataset. The major difference is the magnitude of the impact rather than the impact

itself. Throughout our tests, most of our control variables is significant and shows the expected sign.

Although we tried to test the abovementioned links thoroughly, we have identified some limitations of our study. These can serve as a basis for future research, where these links can be further analyzed for the constituents of the S&P 500. Given the complex links between leverage and performance, we urge the reader not to consider our results as conclusive, but rather as a stepping-stone for future research.

5.2 Limitations

First, when analyzing the determinants of capital structure, we find no evidence suggesting that tax rates affect capital structure. Plausible reason could be our definition of tax rates, as we have used the total tax rates throughout our models whereas other studies, such as those of Miller (1977) and Masnoon et al (2012) measure tax rates differently. By using personal tax rate, effective tax rate or a country's highest marginal corporate tax rate, respectively, further research could also document this important link between tax rates and capital structure.

Secondly, there is no existing benchmark for the marginal impact of leverage on performance or for our economic impact results. Since literature on capital structure and firm performance on the S&P 500 has been extremely limited, we have not been able to compare our results with previous findings. Moreover, our marginal impact results do not represent specific industries of specific firms throughout our analysis; as we have opted to generally quantify the impact of leverage on firm performance. Therefore, our results relating to the economic impact of leverage on performance should be interpreted with the outmost care.

Finally, we also address our methodology concerning the impact of capital structure on the upper and lowest quintiles. This provides a solid basis to distinguish the difference in impact for our subsamples, but future research could extent our analysis by creating a base group of high leverage firms and comparing these with a control group within the same industry. By matching these two groups with another, by means of, for example, matching their book to market values, a more solid interpretation can be provided in relation to the difference in impact of leverage on high and low leverage firms. Albeit we have identified some shortcomings of our models, we feel confident we have addressed the key issues relating to the link between capital structure and firm performance for the S&P 500 firms and we encourage further research to build on our results.

6. References

1. Abor, J. (2007). Debt policy and performance of SMEs: evidence from Ghanaian and South Africa firms. *Journal of Risk Finance , 8*, 364-79.
2. Abor, J. (2005). The Effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. *Journal of Risk Finance , 6*, 37-48.
3. Adekunle, O., & Sunday, K. (2010). Capital Structure and Firm Performance: Evidence from Nigeria. *European Journal of Economics* .
4. Afza, T., & Hussan, A. (2011). Determinants of Capital Structure across Selected Manufacturing Sectors of Pakistan. *International Journal of Humanities and Social Science , 1* (12).
5. Agrawal, A., & Knoeber, C. (1996). Firm performance and mechanism to control agency problems between managers and shareholders. *Journal of Financial and Quantitative Analysis , 31*, 377-399.
6. Ahmed, N. (2010). Determinants of Capital Structure: A case of life insurance sector of Pakistan. *European Journal of Economics, Finance and Administrative Sciences , 24*.
7. Akintoye, I. (2008). Effect of capital structure on firms' performance: the Nigerian experience. *European Journal of Economics, Finance and Administrative Sciences* , 233-43.
8. Altman, E. (2002). Bankruptcy, Credit Risk, and High Yield Junk Bonds.
9. Anotoniou, A., Guney, Y., & Paudyal, k. (2002). Determinants of Corporate Capital Struture: Evidence from European Countries.
10. Arbabiyan, Ali-Akbar, Safari, & Mehdi. (2009). The effects of capital structure and profitability in the listed firms in Tehran Stock Exchange. *Journal of Management Perspective , 33*, 159-175.
11. Barton, S. L., & Gordon, P. J. (1988). Corporate Strategy and Capital Structure. *Strategic Management Journal , 9* (6), 623-632.
12. Baxter, N. (1967). Leverage, Risk of Ruin and the Cost of Capital. *The Journal of Finance , 22* (3), 395-403.
13. Bevan, A., & Dandbolt, J. (2002). Capital Structure and its determinants in the UK: A decompositional analysis. *Applied Financial Economics , 12*, 159-170.
14. Booth, L., Aivazian, V., Demirguc-Kunt, A., & Maksimovic, V. (2001). Capital Strucutres in developing countries. *Journal of Finance , 1*, 87-130.
15. Buferna, F., Bangasa, K., & Hodgkinson, L. (2005). *Determinants of capital structure: evidence from Libya*. Management School, University of Liverpool.
16. Capon, N., Farley, J., & Hoenig, S. (1990). Determinants of financial performance: a meta-analysis. *Management Science , 36* (10), 1143-1159.
17. Chakraborty, I. (2010). Capital structure in an emerging stock market: The case of India. *Research in International Business and Finance , 24*, 295-314.
18. Chen, J. (2004). Determinants of capital structure of Chinese-listed companies. *Journal of Business Research , 57*, 1241-51.
19. Chiang, Y., Chang, P., & Hui, C. (2002). Capital Structure and profitability of the property and construction sectors in Hong Kong. *Journal of Property Investment & Finance , 20*, 434-453.

20. Deesomsak, R., Paudyal, K., & Pescetto, G. (2004). The determinants of capital structure: evidence from the Asia Pacific Region. *Journal of Multinational Financial Management , 14*, 387-405.
21. Deloof, & Verscheuren. (1998). De Determinanten van Kapitaalstrutuur van Belgische Ondernemingen. *Tijdschrift voor Economie en Management* .
22. Demsetz, H., & Villalonga, B. (2001). Ownership structure and corporate performance. *Journal of Corporate Finance , 7*, 209-233.
23. Dessi, R., & Robertson, D. (2003). Debt, Incentives and Performance: Evidence from UK Panel Data. *Economic Journal* .
24. Drobetz, W., & Fix, R. (2003). What are the determinants of Capital Structure? Some Evidence for Switzerland. *Working paper , 4* (3).
25. Ebaid, I. (2009). The impact of capital-structure choice on firm performance: empirical evidence from Egypt. *The Journal of Risk Finance , 10*, 477-487.
26. Fama , E., & French, K. (2005). The Anatomy of Value and Growth Stock Returns.
27. Fama, E., & Fench, K. (2002). Testing trade-off theory and pecking order predictions about dividends and debt. *Review of FInancial Studies* .
28. Frank, M. Z., & Goyal, V. K. (2003). Testing the Pecking order Theory of Capital Stucture. *Journal of Financial Economics , 67*, 217-248.
29. Friend, I., & Lang, L. (1988). An Empircal Test of the Impact of Managerial Self-Interest on Corporate Capital Structure. *Journal of Finance , 43*, 271-281.
30. Hamada, R. S. (1969). Portfolio Analysis, Market Equilibrium and Corporation Finance. *Journal of Finance , 24* (1).
31. Hamaifer. (1994). Determinants of Capital Structure: Evidence from Libya.
32. Hatfield, G. B., Cheng, L., & Davidson, W. (1994). The Determination of Optimal Capital Structure: The Effect of Firm and Industry Debt ratios on Market value. *Journal of Financial And Strategic Decisions , 7* (3).
33. Jensen, M., & Meckling, W. (1976). Theory of the firm: managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics , 3*, 305-60.
34. Jermais, J. (2008). The relative influence of competitive intensity and business strategy on the relationship between financial leverage and performance. *British Accounting Review , 40*, 71-86.
35. Kapopoulos, P., & Lazaretou, S. (2007). Corporate ownership structure and firm performance: evidence from Greek firms. *Corporate Governance: An international Review , 15* (144-158).
36. Karadeniz, E., Kandir, S., Balcilar, M., & Onal, Y. (2009). Determinants of capital structure: Evidence from Turkish lodging companies. *International Journal of Contemporary Hospitatlity Management , 21*, 594-609.
37. Kester, W. (1986). Capital ownership structure: a comparison of United States and Japanese manufacturing corporations. *Financial Management , 15*, 5-16.
38. Kraus, A., & Litzenberger, R. (1973). A State-Preference Model of Optimal Financial Leverage. *Journal of Finance* , 911-922.
39. Kyereboah-Coleman, A. (2007). The impact of capital structure on performance of microfinance institutions. *JOurnal of Risk Finance , 8*, 56-71.
40. Lemmon, M., Roberts, M., & Zender, J. (2008). Back to the Beginning: Persistence and the Cross-Section of Corporate Capital Structure. *Journal of Finance* .

41. Lintner, J. (1956). Distribution of Incomes of Corporations Among Dividends, Retained Earnings, and Taxes. *The American Economic Review* .
42. Mackie-Mason, J. (1990). Do taxes affect corporate financing decisions? *Journal of Finance* , 1471-1494.
43. Majumbar, S., & Chibber, P. (1997). Capital Structure and Performance: Evidence from a Transition economy on an Aspect of Corporate Governance. *Public Choice , 98*, 287-305.
44. Manawaduge, A., Zoysa De, A., Chowdhury, K., & Chandarakumara, A. (2011). Capital Strucutre and Firm Performance in Emerging Economies: An Empirical analysis of Sri Lankan Firms. *Corporate Ownership & Control* .
45. Masnoon, M., & Anwar, F. (2012). Capital Stucture Determinants of KSE Listed Pharmaceutical Companies.
46. Miller, M. (1977). Debt and Taxes. *Journal of Finance , 32*, 261-275.
47. Miller, M., & Modigliani, F. (1963). Taxes and the Cost of Capital: A Correction. *American Economic Review , 53*, 433-443.
48. Minton, B., & Wruck, K. (2001). Financial Conservatism: Evidence on Capital Structure from low leverage firms.
49. Modigliani, F., & Miller, M. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review , 48*, 261-97.
50. Morck, R., Shleifer, A., & Vishny, R. (1988). Management ownership and market valuation: an empircal analysis. *Journal of Financial Economics , 20*, 293-315.
51. Muritala, T. (2012). An Empirical Analysis of Capital Structure on Firms' Performance in Nigeria. *International Journal of Advances in Management and Economics* , 115-124.
52. Myers, S. (1984). The capital structure puzzle. *Journal of Finance , 39*, 575-92.
53. Myers, S., & Majluf, N. (1984). Corporate Financing and Investment Decisions when firms have information that investors do not have. *Journal of Financial Economics , 13*, 31-49.
54. Onaolapo, A. (2010). Capital Structure and corporate performance: Evidence from Jordan. *Australian Accounting, Business & Finance Journal , 1* (4), 40-61.
55. Penrose, E. (1959). The Theory of the Growth of the Firm.
56. Prahalathan, B. (2010). The Determinants of Capital Structure: An empirical Analysis of Listed Manufacturing Companies in Colombo Stock Exchange Market in SriLanka.
57. Rajan, R., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *Journal of Finance , 50*, 1421-60.
58. Roden, D., & Lewellen, W. (1995). Corporate capital structure decisions: evidence from leveraged buyouts. *Financial Management , 24*, 76-87.
59. Saeedi, A., & Mahmoodi, I. (2011). Capital Structure and Firm Performance: Evidence from Iranian Companies. *International Research Journal of Finance and Economics* .
60. Salteh, H., Ghanavati, V., & Khosroshahi, M. (2009). Capital Structure and Firm Performance: Evidence from Tehran Stock Exchange.
61. Sayilgan, G. (2006). The Firm-Specific Determinants of Corporate Capital Structure: Evidence from Turkish Panel Data. *Investment Management and Financial Innovations , 3* (3).

62. Sheikh, N., & Wang, Z. (2011). Determinants of Capital Structure: An empircal study of firms in manufacturing industry in Pakistan. *Managerial Finance , 37* (2), 117-133.
63. Shyam-Sunder, L., & Myers, S. (1999). Testing static tradeoff against pecking order models of capital structure. *Journal of Financial Economics , 51*, 219-244.
64. Soumadi, M., & Hayajneh, O. (2012). Capital structure and corporate performance: Empirical study on the public Jordanian shareholdings firms listed in the Amman Stock Market. *European Scientific Journal* .
65. Stiglitz, J. (1974). On Irrelevance of Corporate Financial Policy. *American Economic Review , 64* (6), 851-66.
66. Stinchcombe, A. (1965). *Social structure and organizations, in March*. Chicago: Handbook of Organizations.
67. Tang, C., & Jang, S. (2007). Revisit the determinants of capital structure: a comparison between lodging firms and software firms. *International Journal of Hospitatlity Management , 175-87*.
68. Tanveer, Z., Umar, M., & Sajid, M. (2012). Impact of Capital Structure on Firms's Financial Performance: Evidence from Pakistan. *Research Journal of Finance and Accounting , 3* (9).
69. Thomson, S., Pedersen, T., & Kvist, H. (2006). Block hodler ownership: effects on firm value in market and contorl based governance systems. *Journal of Corporate Finance , 12*, 246-269.
70. Titman, S., & Wessels, R. (1988). The Determinants of Capital Structure Choice.
71. Umar, M., Tanveer, Z., Aslam, S., & Sajid, M. (2012). Impact of Capital Structure on Firms' Financial Performance: Evidence from Pakistan. *Research Journal of Finance and Accounting* .
72. Wald, J. (1999). How firm characteristics affect capitl structure: an international comparison. *Journal of Financial Research , 22*, 161-87.
73. Wippern, R. (1996). Financial Structure and The Value of the Firm. *The Journal of Finance , 21* (4), 615-633.
74. Wiwatttanakantang, Y. (1999). An empircal study on the determinants of capital structure of Thai Firms. *Pacific-Basin Finance Journal , 7*, 371-403.
75. Zeitun , R., & Tian, G. (2007b). Does ownership structure affect a firm's performance and default risk in Jordan? *Corporate Governance , 7*, 66-82.
76. Zeitun, R., & Tian, G. (2007a). Capital Structure and corporate performance: evidence from Jordan. *The Australian Accounting Business & Finance Journal , 1*, 40-61.

7. Appendix

Table 9.1: Companies in the Sample.

Company Name	Ticker	GVKEY	Company Name	Ticker	GVKEY
AGILENT TECHNOLOGIES INC	A	126554	BLACKROCK INC	BLK	124434
ALCOA INC	AA	1356	BALL CORP	BLL	1988
APPLE INC	AAPL	1690	BMC SOFTWARE INC	BMC	14650
AMERISOURCEBERGEN CORP	ABC	31673	BEMIS CO INC	BMS	2154
ABBOTT LABORATORIES	ABT	1078	BRISTOL-MYERS SQUIBB CO	BMY	2403
ACE LTD	ACE	28034	BROADCOM CORP	BRCM	66708
ACCENTURE PLC	ACN	143357	BOSTON SCIENTIFIC CORP	BSX	25279
ACTAVIS INC	ACT	27845	PEABODY ENERGY CORP	BTU	142460
ADOBE SYSTEMS INC	ADBE	12540	BORGWARNER INC	BWA	28742
ANALOG DEVICES	ADI	1632	BOSTON PROPERTIES INC	BXP	64925
ARCHER-DANIELS-MIDLAND CO	ADM	1722	CITIGROUP INC	C	3243
AUTOMATIC DATA PROCESSING	ADP	1891	CA INC	CA	3310
AUTODESK INC	ADSK	1878	CONAGRA FOODS INC	CAG	3362
AMEREN CORP	AEE	10860	CARDINAL HEALTH INC	CAH	2751
AMERICAN ELECTRIC POWER CO	AEP	1440	CAMERON INTERNATIONAL CORP	CAM	60894
AES CORP	AES	24216	CATERPILLAR INC	CAT	2817
AETNA INC	AET	1177	CHUBB CORP	CB	3024
AFLAC INC	AFL	1449	CBRE GROUP INC	CBG	260774
ALLERGAN INC	AGN	15708	CBS CORP	CBS	13714
AMERICAN INTERNATIONAL GROUP	AIG	1487	COCA-COLA ENTERPRISES INC	CCE	12756
APARTMENT INVST & MGMT CO	AIV	30490	CROWN CASTLE INTL CORP	CCI	113490
ASSURANT INC	AIZ	157057	CARNIVAL CORP/PLC (USA)	CCL	13498
AKAMAI TECHNOLOGIES INC	AKAM	125595	CELGENE CORP	CELG	13599
ALLSTATE CORP	ALL	28349	CERNER CORP	CERN	12850
ALTERA CORP	ALTR	14324	CF INDUSTRIES HOLDINGS INC	CF	163946
ALEXION PHARMACEUTICALS INC	ALXN	62263	CHESAPEAKE ENERGY CORP	CHK	27786
APPLIED MATERIALS INC	AMAT	1704	C H ROBINSON WORLDWIDE INC	CHRW	65609
ADVANCED MICRO DEVICES	AMD	1161	CIGNA CORP	CI	2547
AMGEN INC	AMGN	1602	CINCINNATI FINANCIAL CORP	CINF	14824
AMERIPRISE FINANCIAL INC	AMP	164708	COLGATE-PALMOLIVE CO	CL	3170
AMERICAN TOWER CORP	AMT	105365	CLIFFS NATURAL RESOURCES INC	CLF	3107
AMAZON.COM INC	AMZN	64768	CLOROX CO/DE	CLX	3121
AUTONATION INC	AN	9063	COMERICA INC	CMA	3231
ABERCROMBIE & FITCH -CL A	ANF	63643	COMCAST CORP	CMCSA	3226
AON PLC	AON	3221	CME GROUP INC	CME	149070
APACHE CORP	APA	1678	CHIPOTLE MEXICAN GRILL INC	CMG	165914
ANADARKO PETROLEUM CORP	APC	11923	CUMMINS INC	CMI	3650
AIR PRODUCTS & CHEMICALS INC	APD	1209	CMS ENERGY CORP	CMS	3439
AMPHENOL CORP	APH	14282	CENTERPOINT ENERGY INC	CNP	5742
APOLLO GROUP INC -CL A	APOL	31122	CONSOL ENERGY INC	CNX	120093
AIRGAS INC	ARG	12950	CAPITAL ONE FINANCIAL CORP	COF	30990
ALLEGHENY TECHNOLOGIES INC	ATI	10405	CABOT OIL & GAS CORP	COG	20548
AVALONBAY COMMUNITIES INC	AVB	29875	COACH INC	COH	140541
AVON PRODUCTS	AVP	1920	ROCKWELL COLLINS INC	COL	144066
AVERY DENNISON CORP	AVY	1913	CONOCOPHILLIPS	COP	8549
AMERICAN EXPRESS CO	AXP	1447	COSTCO WHOLESALE CORP	COST	29028
AUTOZONE INC	AZO	23809	CAMPBELL SOUP CO	CPB	2663
BOEING CO	BA	2285	SALESFORCE.COM INC	CRM	157855
BANK OF AMERICA CORP	BAC	7647	COMPUTER SCIENCES CORP	CSC	3336
BAXTER INTERNATIONAL INC	BAX	2086	CISCO SYSTEMS INC	CSCO	20779
BED BATH & BEYOND INC	BBBY	25338	CSX CORP	CSX	2574
BB&T CORP	BBT	11856	CINTAS CORP	CTAS	3062
BEST BUY CO INC	BBY	2184	CENTURYLINK INC	CTL	2884
BARD (C.R.) INC	BCR	2044	COGNIZANT TECH SOLUTIONS	CTSH	111864
BECTON DICKINSON & CO	BDX	2111	CITRIX SYSTEMS INC	CTXS	61676
BEAM INC	BEAM	1408	CABLEVISION SYS CORP -CL A	CVC	12485
FRANKLIN RESOURCES INC	BEN	4885	COVENTRY HEALTH CARE INC	CVH	23877
BAKER HUGHES INC	BHI	1976	CVS CAREMARK CORP	CVS	7241
BIOGEN IDEC INC	BIIB	24468	CHEVRON CORP	CVX	2991
BANK OF NEW YORK MELLON CORP	BK	2019	DOMINION RESOURCES INC	D	4029

Table 9.2: Continuation Companies in the Sample.

Company Name	Ticker	GVKEY	Company Name	Ticker	GVKEY
DU PONT (E I) DE NEMOURS	DD	4087	FMC CORP	FMC	4510
DEERE & CO	DE	3835	FOSSIL INC	FOSL	28118
DELL INC	DELL	14489	FOREST LABORATORIES -CL A	FRX	4843
DEAN FOODS CO	DF	62655	FIRST SOLAR INC	FSLR	175404
DISCOVER FINANCIAL SVCS INC	DFS	177376	FMC TECHNOLOGIES INC	FTI	142811
DOLLAR GENERAL CORP	DG	4016	FRONTIER COMMUNICATIONS CORP	FTR	135484
QUEST DIAGNOSTICS INC	DGX	64166	AGL RESOURCES INC	GAS	1837
D R HORTON INC	DHI	25340	GANNETT CO	GCI	4988
DANAHER CORP	DHR	3735	GENERAL DYNAMICS CORP	GD	5046
DISNEY (WALT) CO	DIS	3980	GENERAL ELECTRIC CO	GE	5047
DISCOVERY COMMUNICATIONS INC	DISCA	164296	GILEAD SCIENCES INC	GILD	24856
DELPHI AUTOMOTIVE PLC	DLPH	118122	GENERAL MILLS INC	GIS	5071
DOLLAR TREE INC	DLTR	31587	CORNING INC	GLW	3532
DUN & BRADSTREET CORP	DNB	4094	GAMESTOP CORP	GME	145049
DENBURY RESOURCES INC	DNR	20653	GENWORTH FINANCIAL INC	GNW	158354
DIAMOND OFFSHRE DRILLING INC	DO	61409	GOOGLE INC	GOOG	160329
DOVER CORP	DOV	4058	GENUINE PARTS CO	GPC	5125
DOW CHEMICAL	DOW	4060	GAP INC	GPS	4990
DARDEN RESTAURANTS INC	DRI	31846	GARMIN LTD	GRMN	141459
DTE ENERGY CO	DTE	3897	GOLDMAN SACHS GROUP INC	GS	114628
DIRECTV	DTV	12206	GOODYEAR TIRE & RUBBER CO	GT	5234
DUKE ENERGY CORP	DUK	4093	GRAINGER (W W) INC	GWW	5256
DAVITA HEALTHCARE PARTNERS	DVA	61483	HALLIBURTON CO	HAL	5439
DEVON ENERGY CORP	DVN	14934	HARMAN INTERNATIONAL INDS	HAR	12788
ELECTRONIC ARTS INC	EA	16721	HASBRO INC	HAS	5518
EBAY INC	EBAY	114524	HUNTINGTON BANCSHARES	HBAN	5786
ECOLAB INC	ECL	4213	HUDSON CITY BANCORP INC	HCBK	122015
CONSOLIDATED EDISON INC	ED	3413	HEALTH CARE REIT INC	HCN	5543
EQUIFAX INC	EFX	4423	HCP INC	HCP	13125
EDISON INTERNATIONAL	EIX	9846	HOME DEPOT INC	HD	5680
LAUDER (ESTEE) COS INC -CL A	EL	61567	HESS CORP	HES	1380
EMC CORP/MA	EMC	12053	HARTFORD FINANCIAL SERVICES	HIG	61739
EASTMAN CHEMICAL CO	EMN	29392	HEINZ (H J) CO	HNZ	5568
EMERSON ELECTRIC CO	EMR	4321	HARLEY-DAVIDSON INC	HOG	12389
EOG RESOURCES INC	EOG	16478	HONEYWELL INTERNATIONAL INC	HON	1300
EQUITY RESIDENTIAL	EQR	28733	STARWOOD HOTELS&RESORTS WRLD	HOT	5723
EQT CORP	EQT	4430	HELMERICH & PAYNE	HP	5581
EXPRESS SCRIPTS HOLDING CO	ESRX	25356	HEWLETT-PACKARD CO	HPQ	5606
ENSCO PLC	ESV	2270	BLOCK H & R INC	HRB	2269
E TRADE FINANCIAL CORP	ETFC	63501	HORMEL FOODS CORP	HRL	5709
EATON CORP PLC	ETN	4199	HARRIS CORP	HRS	5492
ENTERGY CORP	ETR	7366	HOSPIRA INC	HSP	160255
EDWARDS LIFESCIENCES CORP	EW	133366	HOST HOTELS & RESORTS INC	HST	7063
EXELON CORP	EXC	8539	HERSHEY CO	HSY	5597
EXPEDITORS INTL WASH INC	EXPD	4494	HUMANA INC	HUM	27914
EXPEDIA INC	EXPE	126296	INTL BUSINESS MACHINES CORP	IBM	6066
FORD MOTOR CO	F	4839	INTERCONTINENTALEXCHANGE INC	ICE	163610
FASTENAL CO	FAST	14225	INTL FLAVORS & FRAGRANCES	IFF	6078
FREEPORT-MCMORAN COP&GOLD	FCX	14590	INTL GAME TECHNOLOGY	IGT	6097
FAMILY DOLLAR STORES	FDO	4560	INTEL CORP	INTC	6008
FEDEX CORP	FDX	4598	INTUIT INC	INTU	27928
FIRSTENERGY CORP	FE	8099	INTL PAPER CO	IP	6104
F5 NETWORKS INC	FFIV	121077	INTERPUBLIC GROUP OF COS	IPG	6136
FIRST HORIZON NATIONAL CORP	FHN	4737	INGERSOLL-RAND PLC	IR	5959
FIDELITY NATIONAL INFO SVCS	FIS	165993	IRON MOUNTAIN INC	IRM	62374
FISERV INC	FISV	12635	INTUITIVE SURGICAL INC	ISRG	136725
FIFTH THIRD BANCORP	FITB	4640	ILLINOIS TOOL WORKS	ITW	5878
FLIR SYSTEMS INC	FLIR	28477	INVESCO LTD	IVZ	29804
FLUOR CORP	FLR	4818	JABIL CIRCUIT INC	JBL	28195
FLOWSERVE CORP	FLS	4108	JOHNSON CONTROLS INC	JCI	6268

Table 9.3: Continuation Companies in the Sample.

Company Name	Ticker	GVKEY	Company Name	Ticker	GVKEY
PENNEY (J C) CO	JCP	8446	MICROSOFT CORP	MSFT	12141
JDS UNIPHASE CORP	JDSU	29241	MOTOROLA SOLUTIONS INC	MSI	7585
JACOBS ENGINEERING GROUP INC	JEC	6216	M & T BANK CORP	MTB	4699
JOHNSON & JOHNSON	JNJ	6266	MICRON TECHNOLOGY INC	MU	7343
JUNIPER NETWORKS INC	JNPR	121718	MURPHY OIL CORP	MUR	7620
JOY GLOBAL INC	JOY	13003	MEADWESTVACO CORP	MWV	11446
JPMORGAN CHASE & CO	JPM	2968	MYLAN INC	MYL	7637
NORDSTROM INC	JWN	7922	NOBLE ENERGY INC	NBL	7912
KELLOGG CO	K	6375	NABORS INDUSTRIES LTD	NBR	1661
KEYCORP	KEY	9783	NASDAQ OMX GROUP INC	NDAQ	149337
KIMCO REALTY CORP	KIM	24731	NOBLE CORP	NE	11925
KLA-TENCOR CORP	KLAC	6304	NEXTERA ENERGY INC	NEE	4517
KIMBERLY-CLARK CORP	KMB	6435	NEWMONT MINING CORP	NEM	7881
KINDER MORGAN INC	KMI	6310	NETFLIX INC	NFLX	147579
CARMAX INC	KMX	64410	NEWFIELD EXPLORATION CO	NFX	29173
COCA-COLA CO	KO	3144	NISOURCE INC	NI	7974
KROGER CO	KR	6502	NIKE INC	NKE	7906
KOHL'S CORP	KSS	25283	NORTHROP GRUMMAN CORP	NOC	7985
LOEWS CORP	L	6781	NATIONAL OILWELL VARCO INC	NOV	63892
LEGGETT & PLATT INC	LEG	6649	NRG ENERGY INC	NRG	135990
LENNAR CORP	LEN	6669	NORFOLK SOUTHERN CORP	NSC	7923
LABORATORY CP OF AMER HLDGS	LH	14960	NETAPP INC	NTAP	61591
LIFE TECHNOLOGIES CORP	LIFE	118577	NORTHERN TRUST CORP	NTRS	7982
L-3 COMMUNICATIONS HLDGS INC	LLL	110685	NORTHEAST UTILITIES	NU	7970
LINEAR TECHNOLOGY CORP	LLTC	12216	NUCOR CORP	NUE	8030
LILLY (ELI) & CO	LLY	6730	NVIDIA CORP	NVDA	117768
LEGG MASON INC	LM	6653	NEWELL RUBBERMAID INC	NWL	7875
LOCKHEED MARTIN CORP	LMT	6774	NEWS CORP	NWSA	12886
LINCOLN NATIONAL CORP	LNC	6742	NYSE EURONEXT	NYX	166451
LORILLARD INC	LO	147175	OWENS-ILLINOIS INC	OI	8215
LOWE'S COMPANIES INC	LOW	6829	ONEOK INC	OKE	8151
LAM RESEARCH CORP	LRCX	6565	OMNICOM GROUP	OMC	4066
LSI CORP	LSI	6529	ORACLE CORP	ORCL	12142
L BRANDS INC	LTD	6733	O'REILLY AUTOMOTIVE INC	ORLY	28180
LEUCADIA NATIONAL CORP	LUK	6682	OCCIDENTAL PETROLEUM CORP	OXY	8068
SOUTHWEST AIRLINES	LUV	9882	PAYCHEX INC	PAYX	8402
MACY'S INC	M	4611	PEOPLE'S UNITED FINL INC	PBCT	16245
MASTERCARD INC	MA	160225	PITNEY BOWES INC	PBI	8606
MARRIOTT INTL INC	MAR	28930	PACCAR INC	PCAR	8253
MASCO CORP	MAS	7085	PG&E CORP	PCG	8264
MATTEL INC	MAT	7116	PLUM CREEK TIMBER CO INC	PCL	15709
MCDONALD'S CORP	MCD	7154	PRICELINE.COM INC	PCLN	119314
MICROCHIP TECHNOLOGY INC	MCHP	27965	PRECISION CASTPARTS CORP	PCP	8717
MCKESSON CORP	MCK	7171	METROPCS COMMUNICATIONS INC	PCS	160256
MOODY'S CORP	MCO	139665	PATTERSON COMPANIES INC	PDCO	25880
MONDELEZ INTERNATIONAL INC	MDLZ	142953	PUBLIC SERVICE ENTRP GRP INC	PEG	8810
MEDTRONIC INC	MDT	7228	PEPSICO INC	PEP	8479
METLIFE INC	MET	133768	PETSMART INC	PETM	28648
MCGRAW-HILL COMPANIES	MHP	7163	PFIZER INC	PFE	8530
MCCORMICK & CO INC	MKC	7146	PRINCIPAL FINANCIAL GRP INC	PFG	145701
MARSH & MCLENNAN COS	MMC	7065	PROCTER & GAMBLE CO	PG	8762
3M CO	MMM	7435	PROGRESSIVE CORP-OHIO	PGR	13341
MONSTER BEVERAGE CORP	MNST	24316	PARKER-HANNIFIN CORP	PH	8358
ALTRIA GROUP INC	MO	8543	PULTEGROUP INC	PHM	8823
MOLEX INC	MOLX	7506	PERKINELMER INC	PKI	4145
MONSANTO CO	MON	140760	PROLOGIS INC	PLD	29984
MOSAIC CO	MOS	162129	PALL CORP	PLL	8304
MERCK & CO	MRK	7257	PNC FINANCIAL SVCS GROUP INC	PNC	8245
MARATHON OIL CORP	MRO	7017	PENTAIR LTD	PNR	8463
MORGAN STANLEY	MS	12124	PINNACLE WEST CAPITAL CORP	PNW	1075

Table 9.4: Continuation Companies in the Sample.

Company Name	Ticker	GVKEY	Company Name	Ticker	GVKEY
PEPCO HOLDINGS INC	POM	8694	TENET HEALTHCARE CORP	THC	7750
PPG INDUSTRIES INC	PPG	8247	TIFFANY & CO	TIF	13646
PPL CORP	PPL	8455	TJX COMPANIES INC	TJX	11672
PERRIGO CO	PRGO	24782	TORCHMARK CORP	TMK	10614
PRUDENTIAL FINANCIAL INC	PRU	143356	THERMO FISHER SCIENTIFIC INC	TMO	10530
PUBLIC STORAGE	PSA	10096	PRICE (T. ROWE) GROUP	TROW	12138
PVH CORP	PVH	8551	TRAVELERS COS INC	TRV	62689
QUANTA SERVICES INC	PWR	66446	TYSON FOODS INC -CL A	TSN	10793
PRAXAIR INC	PX	25124	TESORO CORP	TSO	10466
PIONEER NATURAL RESOURCES CO	PXD	14359	TOTAL SYSTEM SERVICES INC	TSS	10631
QUALCOMM INC	QCOM	24800	TIME WARNER INC	TWX	25056
QEP RESOURCES INC	QEP	154357	TEXAS INSTRUMENTS INC	TXN	10499
RYDER SYSTEM INC	R	9299	TEXTRON INC	TXT	10519
REYNOLDS AMERICAN INC	RAI	120877	TYCO INTERNATIONAL LTD	TYC	10787
ROWAN COMPANIES PLC	RDC	9258	UNITEDHEALTH GROUP INC	UNH	10903
REGIONS FINANCIAL CORP	RF	4674	UNUM GROUP	UNM	12726
ROBERT HALF INTL INC	RHI	2312	UNION PACIFIC CORP	UNP	10867
RED HAT INC	RHT	122841	UNITED PARCEL SERVICE INC	UPS	10920
RALPH LAUREN CORP	RL	64891	URBAN OUTFITTERS INC	URBN	29150
ROCKWELL AUTOMATION	ROK	9203	U S BANCORP	USB	4723
ROPER INDUSTRIES INC/DE	ROP	24925	UNITED TECHNOLOGIES CORP	UTX	10983
ROSS STORES INC	ROST	9248	VARIAN MEDICAL SYSTEMS INC	VAR	11115
RANGE RESOURCES CORP	RRC	6788	VF CORP	VFC	11060
REPUBLIC SERVICES INC	RSG	112168	VIACOM INC	VIAB	165675
RAYTHEON CO	RTN	8972	VALERO ENERGY CORP	VLO	15247
SPRINT NEXTEL CORP	S	10984	VULCAN MATERIALS CO	VMC	11228
STARBUCKS CORP	SBUX	25434	VORNADO REALTY TRUST	VNO	11220
SCANA CORP	SCG	9445	VERISIGN INC	VRSN	66368
SCHWAB (CHARLES) CORP	SCHW	13988	VENTAS INC	VTR	110179
SEALED AIR CORP	SEE	9555	VERIZON COMMUNICATIONS INC	VZ	2136
SHERWIN-WILLIAMS CO	SHW	9667	WALGREEN CO	WAG	11264
SIGMA-ALDRICH CORP	SIAL	9699	WATERS CORP	WAT	61574
SMUCKER (JM) CO	SJM	9777	WESTERN DIGITAL CORP	WDC	11399
SCHLUMBERGER LTD	SLB	9465	WISCONSIN ENERGY CORP	WEC	11550
SLM CORP	SLM	10121	WELLS FARGO & CO	WFC	8007
SNAP-ON INC	SNA	9778	WHOLE FOODS MARKET INC	WFM	24893
SANDISK CORP	SNDK	61513	WHIRLPOOL CORP	WHR	11465
SOUTHERN CO	SO	9850	WINDSTREAM CORP	WIN	174490
SIMON PROPERTY GROUP INC	SPG	29389	WELLPOINT INC	WLP	145046
STAPLES INC	SPLS	15521	WASTE MANAGEMENT INC	WM	14477
STERICYCLE INC	SRCL	63527	WILLIAMS COS INC	WMB	11506
SEMPRA ENERGY	SRE	8272	WAL-MART STORES INC	WMT	11259
SUNTRUST BANKS INC	STI	10187	WASHINGTON POST -CL B	WPO	11300
ST JUDE MEDICAL INC	STJ	9372	WESTERN UNION CO	WU	175263
STATE STREET CORP	STT	10035	WEYERHAEUSER CO	WY	11456
SEAGATE TECHNOLOGY PLC	STX	150937	WYNDHAM WORLDWIDE CORP	WYN	174729
CONSTELLATION BRANDS	STZ	2710	WYNN RESORTS LTD	WYNN	149318
STANLEY BLACK & DECKER INC	SWK	10016	UNITED STATES STEEL CORP	X	23978
SOUTHWESTERN ENERGY CO	SWN	9904	XCEL ENERGY INC	XEL	7977
SAFEWAY INC	SWY	9359	XL GROUP PLC	XL	24318
STRYKER CORP	SYK	10115	XILINX INC	XLNX	22325
SYMANTEC CORP	SYMC	15855	EXXON MOBIL CORP	XOM	4503
SYSCO CORP	SYY	10247	DENTSPLY INTERNATL INC	XRAY	13700
AT&T INC	T	9899	XEROX CORP	XRX	11636
MOLSON COORS BREWING CO	TAP	3505	YAHOO INC	YHOO	62634
TERADATA CORP	TDC	178310	YUM BRANDS INC	YUM	65417
TECO ENERGY INC	TE	10277	ZIONS BANCORPORATION	ZION	11687
INTEGRYS ENERGY GROUP INC	TEG	11555	ZIMMER HOLDINGS INC	ZMH	144559
TERADYNE INC	TER	10453			
TARGET CORP	TGT	3813			

Table 10: Descriptive statistics for the period 2003-2008

Descriptive statistics for the period 2003-2008								
	Mean	Sd	p25	Median	p75	Min	Max	N
Return on Assets	0.064	0.081	0.026	0.059	0.101	-0.853	0.503	2853
Return on Equity	0.198	3.704	0.093	0.152	0.224	-113.457	141.742	2853
Tobin's Q	2.084	1.501	1.181	1.642	2.493	0.117	15.647	2853
Short term debt/Total Assets	0.400	0.207	0.262	0.370	0.487	0	2.381	2853
Long term debt/Total Assets	0.190	0.163	0.066	0.163	0.279	0	1.404	2853
Total debt/Total Assets	0.591	0.225	0.449	0.590	0.738	0	2.386	2853
Asset Tangibility	0.821	0.191	0.701	0.898	0.980	0.093	1.000	2853
Asset Turnover	0.873	0.734	0.372	0.702	1.121	0	5.745	2853
Firm Size	3.790	0.599	3.401	3.793	4.160	-0.710	5.628	2853
Firm Age	22.373	17.596	10	17	32	1	94	1674
Asset growth	3.115	55.581	-0.029	0.069	0.211	-0.998	2228.191	2849
Number of firms								

Table 12 reports the desctiptive statistics of our sample for the period 2003-2008. Return on equity is estimated as Net Income (Loss) over total equity, Return on Assets is calculated as net income divided by total assetsand Tobin's Q is estimated as the ratio of the market value of the firms to total assets. Asset tangibility denotes gross fixed assets as a proportion of the total assets and asset turnover is estimated as sales revenue over total assets. Firm size is calculated as the log of total assets, while firm age is estimated by substracting the first ipo date from the period 2003-2008 and afterwards adding 1 to avoid zeros. Asset growth denotes the annual percentage change of the firm's assets.

Table 11: Correlation matrix for the period 2003-2008

Correlation matrix for period 2003-2008											
	ROA	ROE	Tobin's Q	STD/TA	LTD/TA	TD/TA	Asset Tangibility	Asset Turnover	Firm Size	Firm Age	Asset Growth
ROA	1.000										
ROE	-0.050	1.000									
	(0.008)***										
Tobin's Q	0.456	0.005	1.000								
	(0.000)***	(0.810)									
STD/TA	-0.154	0.013	-0.222	1.000							
	(0.000)***	(0.487)	(0.000)***								
LTD/TA	-0.246	0.007	-0.196	-0.279	1.000						
	(0.000)***	(0.691)	(0.000)***	(0.000)***							
TD/TA	-0.320	0.017	-0.346	0.719	0.467	1.000					
	(0.000)***	(0.353)	(0.000)***	(0.000)***	(0.000)***						
Asset Tangibility	0.047	0.013	0.048	0.251	-0.089	0.167	1.000				
	(0.012)**	(0.487)	(0.011)**	(0.000)***	(0.000)***	(0.000)***					
Asset Turnover	0.268	0.020	0.224	-0.031	-0.173	-0.154	0.026	1.000			
	(0.000)***	(0.292)	(0.000)***	(0.102)	(0.000)***	(0.000)***	(0.161)				
Firm Size	-0.007	0.026	-0.244	0.368	-0.086	0.277	-0.005	0.250	1.000		
	(0.710)	(0.164)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.809)	(0.000)***			
Firm Age	0.041	0.027	-0.116	0.076	0.005	0.071	0.003	0.052	0.339	1.000	
	(0.093)*	(0.266)	(0.000)***	(0.002)***	(0.832)	(0.004)***	(0.893)	(0.034)**	(0.000)***		
Asset Growth	-0.026	-0.002	-0.029	0.070	-0.019	0.051	0.029	-0.036	0.059	-0.006	1.000
	(0.171)	(0.930)	(0.124)	(0.002)***	(0.305)	(0.007)***	(0.121)	(0.053)*	(0.002)***	(0.820)	

Table 13 shows the results of the correlation test. Significance level of 1%, 5% and 10% are denoted by ***, ** and *, respcetively.

Table 12: Relationship between Return on Equity and Leverage 2003-2011

Return on Equity 2003-2011									
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Constant	-1.5641	-63.7842	-63.7861	-1.3135	-65.8713	-65.8725	-1.4178	-47.9422	-47.9446
	(0.234)	*(0.781)*	*(0.781)*	*(0.321)*	*(0.774)*	*(0.774)*	*(0.291)*	*(0.835)*	*(0.835)*
Leverage	0.3919	1.0334	1.0332	-0.3879	0.5852	0.5851	-0.0674	0.8533	0.8532
	(0.595)	*(0.393)*	*(0.394)*	*(0.538)*	*(0.519)*	*(0.519)*	*(0.896)*	*(0.272)*	*(0.272)*
Asset turnover	0.4080	0.5954	0.5954	0.4188	0.6582	0.6583	0.4336	0.6271	0.6271
	(0.206)	*(0.217)*	*(0.217)*	*(0.191)*	*(0.170)*	*(0.171)*	*(0.175)*	*(0.191)*	*(0.191)*
Asset tangibility	1.3606	2.6147	2.6147	1.3804	2.8507	2.8507	1.4221	2.6806	2.6805
	*(0.082)**	*(0.036)***	*(0.036)***	*(0.076)**	*(0.019)***	*(0.019)***	*(0.067)**	*(0.029)***	*(0.029)***
Firm size		0.2828	0.2828		0.3682	0.3682		0.3647	0.3447
		(0.560)	*(0.560)*		*(0.452)*	*(0.453)*		*(0.452)*	*(0.453)*
Firm age		0.6669	0.6670		0.6881	0.6881		0.4832	0.4832
		(0.781)	*(0.795)*		*(0.789)*	*(0.789)*		*(0.852)*	*(0.852)*
Asset growth			0.0000			0.0000			0.0000
			(0.991)			*(0.986)*			*(0.993)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	4287	2540	2540	4287	2540	2540	4287	2540	2540
R-squared	0.103	0.117	0.117	0.103	0.117	0.117	0.103	0.118	0.118
Adj. R-squared	-0.012	-0.002	-0.002	-0.012	-0.002	-0.003	-0.012	-0.002	-0.002

*This table illustrates the results of the impact of Leverage on Performance and controlled for year and firm fixed effects. With performance measure Return on Equity as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Table 13: Relationship between Return on Assets and Leverage 2003-2008

Return on Assets 2003-2008									
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Constant	-0.0064	-0.6644	-0.6643	0.0155	-0.7094	-0.7092	0.0530	-0.5286	-0.5285
	(0.839)	*(0.004)****	*(0.004)****	*(0.618)*	*(0.002)****	*(0.002)****	*(0.091)**	*(0.020)***	*(0.020)***
Leverage	-0.0950	-0.1338	-0.1338	-0.1209	-0.1006	-0.1006	-0.1288	-0.1237	-0.1237
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Asset turnover	0.0736	0.0700	0.0700	0.0661	0.0659	0.0659	0.0713	0.0688	0.0689
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Asset tangibility	0.0321	0.0271	0.0271	0.0067	-0.0047	-0.0047	0.0240	0.0185	0.0185
	(0.108)	*(0.325)*	*(0.325)*	*(0.732)*	*(0.860)*	*(0.862)*	*(0.218)*	*(0.490)*	*(0.488)*
Firm size		0.0625	0.0625		0.0570	0.0569		0.0563	0.0562
		*(0.000)****	*(0.000)****		*(0.000)****	*(0.000)****		*(0.000)****	*(0.000)****
Firm age		-0.1330	-0.1330		-0.1315	-0.1315		-0.1055	-0.1054
		*(0.014)***	*(0.014)***		*(0.015)***	*(0.015)***		*(0.050)***	*(0.050)***
Asset growth			0.0000			0.0000			0.0000
			(0.822)			*(0.808)*			*(0.809)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	2853	1674	1674	2853	1674	1674	2853	1674	1674
R-squared	0.569	0.592	0.592	0.577	0.595	0.595	0.584	0.603	0.603
Adj. R-squared	0.481	0.504	0.504	0.491	0.507	0.507	0.499	0.517	0.517

*This table illustrates the results of the impact of Leverage on Performance and controlled for year and firm fixed effects. With performance measure Return on Assets as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Table 14: Relationship between Return on Equity and Leverage 2003-2008

Return on Equity 2003-2008									
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Constant	-2.8474	2.2048	2.2060	-2.6747	1.7972	1.7987	-2.6355	0.2297	0.2311
	(0.151)	*(0.896)*	*(0.896)*	*(0.179)*	*(0.915)*	*(0.915)*	*(0.194)*	*(0.989)*	*(0.989)*
Leverage	0.0058	0.8437	0.8438	-0.4385	1.2114	1.2113	-0.3199	1.2396	1.2396
	(0.996)	*(0.688)*	*(0.688)*	*(0.640)*	*(0.367)*	*(0.367)*	*(0.690)*	*(0.301)*	*(0.301)*
Asset turnover	1.0377	1.7017	1.7021	1.0254	1.7318	1.7321	1.0423	1.7008	1.7012
	*(0.069)**	*(0.058)**	*(0.059)**	*(0.071*)*	*(0.054)**	*(0.054)**	*(0.066)**	*(0.058)**	*(0.058)**
Asset tangibility	2.6152	4.6549	4.6557	2.5723	4.8866	4.8873	2.6289	4.6433	4.6441
	*(0.039)***	*(0.022)***	*(0.022)***	*(0.041)***	*(0.014)***	*(0.014)***	*(0.036)***	*(0.020)***	*(0.020)***
Firm size		-0.1835	-0.1840		-0.1198	-0.1202		-0.1229	-0.1233
		(0.816)	*(0.816)*		*(0.880)*	*(0.879)*		*(0.877)*	*(0.879)*
Firm age		1.8486	1.8488		1.7032	1.7034		1.4899	1.4901
		(0.644)	*(0.644)*		*(0.670)*	*(0.670)*		*(0.710)*	*(0.710)*
Asset growth			0.0002			0.0002			0.0002
			(0.869)			*(0.971)*			*(0.989)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	2853	1674	1674	2853	1674	1674	2853	1674	1674
R-squared	0.167	0.207	0.207	0.167	0.207	0.207	0.167	0.207	0.207
Adj. R-squared	-0.004	0.036	0.036	-0.004	0.037	0.036	-0.004	0.037	0.036

*This table illustrates the results of the impact of Leverage on Performance and controlled for year and firm fixed effects. With performance measure Return on Equity as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Table 15: Relationship between Tobin's Q and Leverage 2003-2008

Tobin's Q 2003-2008									
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Constant	-1.0746	0.4188	0.4198	-1.5020	-2.4816	-2.4804	-1.2935	-1.8767	-1.8755
	*(0.011)***	*(0.900)*	*(0.900)*	*(0.000)****	*(0.454)*	*(0.454)*	*(0.003)****	*(0.576)*	*(0.577)*
Leverage	-0.9130	-1.5385	-1.5384	0.4693	0.8320	0.8319	-0.0383	0.1609	0.1609
	*(0.001)****	*(0.000)****	*(0.000)****	*(0.019)***	*(0.002)****	*(0.002)****	*(0.823)*	*(0.498)*	*(0.499)*
Asset turnover	0.1614	0.6003	0.6006	0.1362	0.5678	0.5681	0.1233	0.5588	0.5592
	(0.183)	*(0.001)****	*(0.001)****	*(0.260)*	*(0.001)****	*(0.001)****	*(0.308)*	*(0.002)****	*(0.002)****
Asset tangibility	2.4189	2.5731	2.5737	2.3379	2.3140	2.3146	2.2926	2.2461	2.2468
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Firm size		0.1057	0.1053		0.1418	0.1414		0.1076	0.1072
		(0.497)	*(0.499)*		*(0.365)*	*(0.367)*		*(0.493)*	*(0.495)*
Firm age		0.2132	0.2134		-0.2397	-0.2395		-0.1081	-0.1078
		(0.900)	*(0.787)*		*(0.761)*	*(0.761)*		*(0.892)*	*(0.871)*
Asset growth			0.0002			0.0002			0.0002
			(0.874)			*(0.875)*			*(0.577)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	2853	1674	1674	2853	1674	1674	2853	1674	1674
R-squared	0.770	0.785	0.785	0.770	0.784	0.784	0.769	0.783	0.783
Adj. R-squared	0.723	0.739	0.739	0.723	0.738	0.738	0.722	0.736	0.736

*This table illustrates the results of the impact of Leverage on Performance and controlled for year and firm fixed effects. With performance measure Tobin's Q as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Table 16 : Marginal Effect & Economic impact of Leverage on ROA, ROE and Tobin's Q 2003-2008

Marginal effect & Economic Impact of Leverage on Return on Assets 2003-2008									
	Short-term Debt			Long-term Debt			Total Debt		
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Leverage Marginal Effect	-0.0196	-0.0277	-0.0277	-0.0197	-0.0164	-0.0164	-0.0289	-0.0278	-0.0278
Leverage Economic Impact	*-30.8%*	*-43.4%*	*-43.4%*	*-30.9%*	*-25.7%*	*-25.7%*	*-45.4%*	*-43.6%*	*-43.6%*

Marginal effect & Economic Impact of Leverage on Return on Equity 2003-2008									
	Short-term Debt			Long-term Debt			Total Debt		
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Leverage Marginal Effect	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leverage Economic Impact	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*

Marginal effect & Economic Impact of Leverage on Tobin's Q 2003-2008									
	Short-term Debt			Long-term Debt			Total Debt		
Determinants	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Leverage Marginal Effect	-0.1888	-0.3182	-0.3181	0.0763	0.1353	0.1353	N/A	N/A	N/A
Leverage Economic Impact	*-9.1%*	*-15.3%*	*-15.3%*	*3.7%*	*6.5%*	*6.5%*	*N/A*	*N/A*	*N/A*

This table reports how a 'reasonable' change in X affects thedependent variable (Y).We do this by multiplying one standard deviation by the coefficient of X and this yields the change in Y, which is called the marginal effect.
*This table reports the results of a 1 sd change of leverage on performance. These tests only include our main variable, leverage ratios. The economic impact has been estimated by (sd_n * B_n)/ mean($performance_n$), where we take the sd and mean for each leverage variable over the entire sample. Therefore, the results should be interpreted on an average basis. thus we divide the marginal effect with the mean of performance.*

Table 17: Difference in Performance between High and Low leverage firms using ROE as performance indicator

Difference in Performance between High and Low leverage firms using ROE as performance measure 2003-2011						
	Short-term		Long-term		Total Debt	
Determinants	**HIGH**	**LOW**	**HIGH**	**LOW**	**HIGH**	**LOW**
Constant	-3.7293	9.3543	-293.9503	-0.5760	-114.2209	-0.8741
	(0.143)	*(0.177)*	*(0.160)*	*(0.000)****	*(0.000)****	*(0.000)****
Leverage	-0.1627	1.5423	-0.3557	0.1379	9.2305	-0.0025
	(0.817)	*(0.000)****	*(0.907)*	*(0.163)*	*(0.111)*	*(0.961)*
Asset turnover	-0.0814	0.1557	4.1588	0.2308	2.4097	0.1150
	(0.783)	*(0.400)*	*(0.260)*	*(0.000)****	*(0.614)*	*(0.000)****
Asset tangibility	0.8273	-0.3521	20.9805	0.2067	68.5922	0.1656
	(0.317)	*(0.214)*	*(0.013)***	*(0.000)****	*(0.000)****	*(0.016)***
Firm size	0.7152	0.1211	0.0709	0.1259	11.0778	0.2046
	(0.137)	*(0.120)*	*(0.962)*	*(0.000)****	*(0.045)***	*(0.000)****
Firm age	0.0009	-0.4651	8.6065	-0.0046	-0.0817	0.0027
	(0.915)	*(0.156)*	*(0.181)*	*(0.000)****	*(0.413)*	*(0.289)*
Asset growth	0.0002	0.0011	0.0171	-0.0001	-0.0005	0.0011
	(0.852)	*(0.904)*	*(0.721)*	*(0.424)*	*(0.000)****	*(0.405)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	432	708	519	685	418	710
R-squared	0.134	0.167	0.543	0.725	0.190	0.513
Adj. R-squared	-0.011	0.041	0.138	0.682	0.051	0.440

*This table illustrates the results of the impact of High and Low Leverage on Performance and controlled for year and firm fixed effects. With performance measure Return on Equity as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Table 18: Difference in Performance between High and Low leverage firms using ROA as performance indicator 2003-2008

Difference in Performance between High and Low leverage firms using ROA as performance measure 2003-2008						
	Short Term Debt Averages		Long Term Debt Averages		Total Debt Averages	
Determinants	**HIGH**	**LOW**	**HIGH**	**LOW**	**HIGH**	**LOW**
Constant	-0.0111	2.4437	0.1342	-0.5289	0.7121	-0.2480
	(0.922)	*(0.127)*	*(0.158)*	*(0.000)****	*(0.000)****	*(0.112)*
Leverage	-0.1215	-0.3660	-0.0728	-0.0955	-0.1537	-0.1479
	*(0.000)****	*(0.000)****	*(0.018)***	*(0.286)*	*(0.000)****	*(0.000)****
Asset turnover	0.0435	0.1961	0.1044	0.0958	0.0366	0.1191
	*(0.002)****	*(0.000)****	*(0.026)***	*(0.000)****	*(0.187)*	*(0.000)****
Asset tangibility	0.0679	-0.0917	-0.4043	0.1653	-0.3971	0.1468
	*(0.063)**	*(0.203)*	*(0.000)****	*(0.000)****	*(0.000)****	*(0.003)****
Firm size	0.0124	0.0530	0.0481	0.0623	-0.0525	0.0612
	(0.575)	*(0.002)****	*(0.003)****	*(0.003)****	*(0.083)**	*(0.058)**
Firm age	-0.0002	-0.1207	-0.0031	0.0023	0.0000	0.0000
	(0.547)	*(0.111)*	*(0.091)**	*(0.000)****	*(0.954)*	*(0.986)*
Asset growth	0.0001	0.0026	0.0004	0.0001	0.0001	0.0031
	(0.358)	*(0.413)*	*(0.674)*	*(0.561)*	*(0.653)*	*(0.305)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	281	468	341	438	257	472
R-squared	0.867	0.578	0.533	0.782	0.854	0.610
Adj. R-squared	0.531	0.477	0.419	0.728	0.815	0.518

*This table illustrates the results of the impact of High and Low Leverage on Performance and controlled for year and firm fixed effects. With performance measure Return on Assets as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Table 19: Difference in Performance between High and Low leverage firms using ROE as performance indicator 2003-2008

Difference in Performance between High and Low leverage firms using ROE as performance measure 2003-2008						
	Short Term Debt Averages		Long Term Debt Averages		Total Debt Averages	
Determinants	**HIGH**	**LOW**	**HIGH**	**LOW**	**HIGH**	**LOW**
Constant	-4.4692	12.3582	-17.0306	-0.7671	-181.9519	-0.3773
	(0.214)	*(0.078)**	*(0.080)**	*(0.000)****	*(0.001)****	*(0.168)*
Leverage	0.2178	-1.0747	-2.8569	-0.0168	13.6693	-0.0894
	(0.803)	*(0.006)****	*(0.363)*	*(0.922)*	*(0.110)*	*(0.198)*
Asset turnover	-0.0999	0.1484	17.0936	0.2279	18.8981	0.2056
	(0.822)	*(0.385)*	*(0.000)****	*(0.000)****	*(0.030)***	*(0.000)****
Asset tangibility	1.3521	-0.8583	25.4539	0.2750	160.1902	0.1674
	(0.243)	*(0.007)****	*(0.005)****	*(0.000)****	*(0.000)****	*(0.050)***
Firm size	0.6933	0.2062	-2.0435	0.1095	4.7074	0.0965
	(0.323)	*(0.006)****	*(0.221)*	*(0.006)****	*(0.618)*	*(0.088)**
Firm age	0.0018	-0.5890	-0.0808	0.0019	-0.0570	-0.0013
	(0.858)	*(0.076)**	*(0.709)*	*(0.047)**	*(0.829)*	*(0.690)*
Asset growth	0.0014	-0.0055	0.0233	0.0001	0.0116	0.0071
	(0.715)	*(0.692)*	*(0.817)*	*(0.828)*	*(0.786)*	*(0.182)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	281	468	341	438	257	472
R-squared	0.113	0.321	0.274	0.750	0.408	0.547
Adj. R-squared	-0.119	0.159	0.095	0.688	0.250	0.441

*This table illustrates the results of the impact of High and Low Leverage on Performance and controlled for year and firm fixed effects. With performance measure Return on Equity as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*

Table 20: Difference in Performance between High and Low leverage firms using Tobin's Q as performance indicator 2003-2008

Difference in Performance between High and Low leverage firms using TOBIN'S Q as performance measure 2003-2008						
	Short Term Debt Averages		Long Term Debt Averages		Total Debt Averages	
Determinants	**HIGH**	**LOW**	**HIGH**	**LOW**	**HIGH**	**LOW**
Constant	4.1491	-20.3969	-0.8695	2.9689	11.4301	4.2429
	(0.211)	*(0.400)*	*(0.297)*	*(0.343)*	*(0.003)****	*(0.169)*
Leverage	-5.4371	1.4967	2.2274	-0.0743	-2.1619	-1.0591
	*(0.000)****	*(0.262)*	*(0.000)****	*(0.979)*	*(0.000)****	*(0.176)*
Asset turnover	0.2365	1.2418	1.5172	0.1495	1.9524	0.6431
	(0.564)	*(0.036)***	*(0.000)****	*(0.766)*	*(0.001)****	*(0.208)*
Asset tangibility	3.2912	3.9234	0.4625	2.5460	1.0673	2.4237
	*(0.002)****	*(0.000)****	*(0.554)*	*(0.014)***	*(0.518)*	*(0.012)***
Firm size	-0.3634	0.1969	0.1842	-1.4515	-2.2998	-0.7093
	(0.575)	*(0.444)*	*(0.199)*	*(0.024)***	*(0.000)****	*(0.266)*
Firm age	-0.0081	0.9332	-0.0115	0.0585	-0.0130	0.0125
	(0.393)	*(0.415)*	*(0.479)*	*(0.000)****	*(0.467)*	*(0.730)*
Asset growth	-0.0009	0.0464	0.0020	-0.0002	-0.0020	0.0341
	(0.795)	*(0.331)*	*(0.819)*	*(0.973)*	*(0.498)*	*(0.567)*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	281	468	341	438	257	472
R-squared	0.856	0.767	0.822	0.751	0.881	0.731
Adj. R-squared	0.819	0.711	0.778	0.690	0.849	0.667

*This table illustrates the results of the impact of High and Low Leverage on Performance and controlled for year and firm fixed effects. With performance measure Tobin's Q as dependent variable and Short-term debt to total assets, Long-term debt to total assets and Total Debt to total assets as porxies for Leverage. Significance levels of 1%, 5% and 10% are denoted by ***, ** and *, respectively.*