INTERNATIONAL HELLENIC UNIVERSITY

School of Economics and Business Administration

MSc in Banking and Finance 2010

"Corporate Governance, Firm Performance and the Determinants of Capital Structure. Evidence from Greece"

Efthymiadis Athanasios (I.D. 1103100006)

Tsiafakis Athanasios (I.D. 1103100005)

A dissertation submitted in partial fulfillment of the requirements for the degree of

MSc in Banking and Finance

October 2010

Abstract

This study examines the relationship between corporate governance and firm performance and the relationship between corporate governance and capital structure. The capital structure determinants are also examined. The empirical investigation of this thesis is focused on 215 companies listed on the Athens Stock Exchange (ASE) period from 2005 to 2009. This sample of firms excludes financial firms, insurance companies, investment companies, leasing and utilities firms. To examine the above relationships, we employ the panel data methodology running a set of multivariate regressions. Overall, the results support the importance of board governance variables to influence firm value and capital structure of the Greek listed firms. Moreover, we find evidence that the capital structure determinants exert influence on the leverage of the Greek listed firms.

Acknowledgments

Contents

List of Tables

CHAPTER 1

1.1 Introduction

Our economic life has been inflicted by the "economic imperialism", where economic factors and the money flow influence almost all aspects of our society, including enterprises. This new corporate era makes the viability of companies more difficult and enhances the danger of bankruptcy. It is evident that effective and organised regulatory policies should take place. There is an ongoing debate what is the company's response to new threats. Some academics and practitioners alike consider corporate governance as the appropriate recipe to new corporate challenges.

Corporate governance is a system of structuring, operating and controlling a company with a view to achieve long term strategic goals to satisfy shareholders, creditors, employees, customers and suppliers, and comply with the legal and regulatory requirements, apart from meeting environmental and local community needs. The economic performance and development of a company is strongly affected by its corporate governance. The positive effect of good corporate governance is a tool for socio-economic development. On the other hand, bad corporate governance can lead to poor operational performance or even worse to corporate bankruptcy. Consequently, many researchers have been trying to solve the problem of conflict of interests between equity owners and managers.

Many researchers came up with different definitions upon the term of corporate governance. For instance, Shleifer and Vishny (1997) argued that corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment. Also, Monks and Minow (1995) stated that corporate governance is the relationship among various participants such as chief executive officer, management, shareholders and employees in determining the direction and performance of corporations. Furthermore, Magdi and Nadareh (2002) argued that corporate governance is ensuring that the businesses operate properly and investors receive a fair return. Another definition about corporate governance is that of Mathiesen and Henrik (2002) who argued that corporate governance is an economic field that investigates how to secure and/or motivate efficient management of corporations by the use of incentive mechanisms, such as contracts, organizational designs and legislation.

Since 2001 there has been a renewed interest in the corporate governance practices due to collapses of high profile companies such as Enron Corporation, Arthur Andersen and WorldCom. Under the pressure of companies collapse, governments have designed policies of resolving problems related with the protection of the interests of shareholders and creditors. For instance, in 2002, the US federal government passed the Sarbanes-Oxley Act, intending to restore public confidence in corporate governance.

In the light of the dramatic decrease of the market capitalization of the Athens Stock Market in mid-1999, the instances of stock price manipulation and other fraudulent practices, the Greek government attempted to re-establish investors' confidence. The response of the Hellenic Capital Markets Commission was prompt. It set up a Committee on Corporate Governance, which initiated discussions among market participants, auditors, legal practitioners and investors. These discussions eventually led to the publication of a voluntary Code of Conduct, entitled Principles of Corporate Governance (Committee on Corporate Governance, 1999). This code includes some of the recommendations of the OECD Principles of Corporate Governance (OECD, 1999). OECD Principles was made in order to achieve the highest sustainable economic growth and employment and a rising standard of living in member countries, to contribute to economic expansion and finally to contribute to the expansion of world trade. Three years later, the Ministry of Finance and Economy issued the law (3016/2002), which for the first time obliges the Greek listed companies to adopt a set of governance rules. This law (known as the corporate governance law) effectively mandates compliance with a subset of principles contained in the code. The law contains detailed instructions about the form of a firm's corporate governance and specifically, the amount of independent serving on the board, the firms internal organization, the audit committees and the participation of shareholders in the decision making process. More specifically, the law designates that the number of non executive directors should not be less than the 1/3 of the total number of directors who are in the board. According to the law, non executive and independent directors are defined as the board members who do not posses any stockholding and are not in the payroll of the firm. It should be mentioned that the corporate governance law do not provide any limitation for the positions of the CEO and the chairman of the board. Therefore, the same person can be CEO and chairman of the board or otherwise.

Besides firm performance, corporate governance policies can affect the capital structure of a company. The above statement is also confirmed by Friend and Lang (1988) as well as Berger et al. (1997). According to Glen and Pinto (1994) a very important decision that firms face is the decision of how to handle their capital structure. The capital structure or financial structure of a firm is a specific mixture of debt and equity, which the firm uses to finance its operations. Decisions related to capital structure are crucial for any business organization. Good corporate governance practices may have significant influence on the strategic decisions of a company, for example external financing, that are taken at board level. Therefore, corporate governance variables such as board size, board composition, and CEO duality may have direct impact on capital structure decisions. As already mentioned, the relationship between corporate governance and capital structure is really significant although it has not been fully explored. Friend and Lang (1988); Berger et al. (1997); Wen et al. (2002); Abor (2007); Hasan and Butt (2009) and more recently Saad (2010) are among the authors who examined the influence of corporate governance practices on capital structure decisions of firms for both developed and emerging markets.

Another issue that can affect the financial leverage of a firm is various capital structure determinants. First, Modigliani and Miller (1958) argued that the total value of the business is not affected by the decision of managers to alter the capital structure of the company. In conclusion, it does not matter which dividend policy the firm follows, but it depends on what is commonly known as the investment policy of the company. Brealey and Myers (2000) denoted capital structure as the firm's mix of different securities, while Emery and Finnerty (1997) supported that capital structure is how a firm finances itself.

It is known that decisions concerning capital structures are very important for the future of each company. Many managers are continuously trying to find how to take wise decisions about capital structure because the decisions are crucial for the welfare of the firm. The managers of the corporations aim to find the perfect combination of debt and equity which maximizes the wealth of the firm and minimizes the cost of capital. Financial distress and/or bankruptcy may be caused by a false financing decision.

The capital structure determinants of the Greek listed firms have not been extensively examined in the past i.e. Voulgarakis et al. (2002) Daskalakis and Psillaki,

(2008). Daskalakis and Psillaki (2008) in their research found similarities in the factors that affect capital structure of SMEs of Greek and French firms. Capital structure is one of the most researched topics in the field of corporate finance and led to the form of different theories like pecking order theory, trade-off theory and agency cost theory. However, the appropriate and acceptable level of financial leverage is still debatable by the top management of a firm and it is still under investigation.

The objective of this dissertation is three-fold. First, it aims to examine the relationship between various corporate governance mechanisms and other control variables with firm performance. Profitability ratios, board governance variables and a variety of other variables are used to examine the influence of corporate governance on the performance of Greek listed firms.

The second objective of this thesis is to investigate whether corporate governance affects the capital structure of a company using data from the Greek capital market. Profitability ratio, board governance variables and firm size variable are used to examine the influence of corporate governance on the financial leverage of Greek listed firms.

The last objective of this study is to analyze the capital structure determinants of the Greek listed firms. Particularly, it is examined whether there is any correlation between profitability, size, tangibility and growth with leverage. It should be referred that the examined period spans from 2005 to 2009.

To the best of our knowledge, there is no similar study that examines all the above relationships employing data from the Athens Stock Exchange. The motivation for examining all the above relationships is the scarcity of relevant research in the Greek financial literature. Moreover, during the examined period the Greek capital market had undergone a significant downturn. This is another reason to consider and critically examine the impact of corporate governance mechanisms on capital structure. It is believed that the empirical results will be useful to scholars, businessmen, stock exchange authorities, managers and practitioners alike.

The rest of this dissertation is divided in four parts: The second section presents the literature review. Previous researches on this topic are assessed. The third section, the methods employed in this thesis are presented. In the fourth section the empirical results are presented. Finally, the fifth section contains the concluding remarks.

CHAPTER 2

2.1 Literature Review

The literature review of the current study is divided in three parts. In the first part, scholar's opinions are examined concerning the way that the corporate governance affects firm performance. The second part, investigates how the corporate governance affects the firm capital structure. Finally, the third part explores the capital structure determinants worldwide.

In the first part, we present the literature concerning the relationship between corporate performance and various corporate governance characteristics, such as board size, board composition, CEO duality, audit company, firm size and leverage. The pertinent literature showed mixed results. During the last decade many studies tried to find if there is a relationship between corporate governance and firm performance of listed firms. The literature revealed that corporate governance indeed affects the firm performance. In fact, researchers tried to find the appropriate variables that influence firm performance. They examined series of independent variables that possibly affect the performance of a firm.

The first independent variable that was examined is the number of directors participating in the board of the firm. Lipton and Lorsch (1992) and Jensen (1993) showed that as the number of board members increases so losses in productivity and efficiency arise due to coordination and process problems. This results in ineffective monitoring and control of management by the boards of directors. Empirical evidence has shown that the size of the board has a considerable influence on firms' performance. Monks and Minow (1995) proved that the board size affects the extent of monitoring, controlling and decision making in a company. Furthermore, Yermack (1996) using data from US listed firms showed that there is a significant negative relationship between the number of the directors in the board and market performance as measured by the Tobin's Q ratio. On the contrary, Holthausen and Larcker (1993) failed to find an association between firm performance and the size of the board.

It should be referred that the majority of the studies which test the relationship between firm performance and corporate governance characteristics have been conducted in developing countries like Malaysia and Nigeria. In specific, Hossain et al. (2001) showed a negative and significant relationship between board size and market

performance as measured by the Tobin's Q ratio. Similarly, Roszaini and Mohammad (2006) investigated the relationship between the corporate governance structure and performance of 347 companies listed on the Kuala Lumpur Stock Exchange in Malaysia from 1996 to 2000. They found that board size is negatively correlated with firm's market performance. In contrast, they showed that board size is positively related with the accounting performance as measured by the return on assets (ROA). Furthermore, Kajola (2008) who made a survey for all the Nigerian listed firms found that the number of directors in the board is positively correlated with firm performance as measured by the return on equity (ROE).

Another aspect of the corporate governance mechanism that has been tested by many studies is the proportion of outside directors and how they are interrelated with firm performance. Rosenstein and Wyatt (1990), Brickley et al. (1994) as well as John and Senbet (1998) showed that the proportion of outside directors was found to have a significant positive relationship to firm performance. Moreover, Weisback (1988) showed that firms having board of directors dominated by outsiders perform more effectively than others. In contrast, Weir and Laing (2001) found a negative relationship between the number of outside directors and firm performance. Agrawal and Knoeber (1996) reached to similar conclusion.

On the other hand, Fosberg (1989) and also Hermalin and Weisbach (1991) found no relationship between the proportion of outside directors and various performance measures. Similar results have been reported by Yermack (1996) and by Bhagat and Black (1998). Moreover, Roszaini and Mohammad (2006) showed that boards of the Malaysian listed firms that are dominated by outside directors do not seem to affect firm performance regardless of the measures used. Kajola (2008), using data from Nigeria proved that the return on equity is positively correlated with the firm's board composition. Furthermore, Ehikioya (2009) showed that there is no link between board composition and firm performance in a sample of Nigeria listed firms.

Several studies have examined whether the separation of the Chief Executive Officer and the chairman of the board affects firm performance. Many of them argue that if the same person occupies both of the positions, agency problems will arise frequently. There is abundant literature testing whether CEO duality affects firm performance. Some researchers argue that there is a positive relationship between CEO duality and firm performance, while others suggest that there is a negative relationship

between the two variables. Finally, some others believe that there is no relationship between the two variables. Undoubtedly the above relationship merits investigation.

Fama and Jensen (1983) were the first who suggested the separation of CEO and chairperson's position supporting the idea that corporations perform better that way. Yermack (1996) showed that a firm performs better when the CEO and the chairman of the board positions are occupied by different persons. Furthermore, Fosberg and Nelson (1999) claimed that firms which employ two different persons for the position of the chairman and the CEO experience a significant improvement in their performance. Dehaene et al. (2001) found evidence that there is a positive relationship between duality and firm performance. Roszaini and Mohammad (2006) showed that CEO duality is negatively related to accounting performance. This means that the accounting performance of the Malaysian listed firms is influenced negatively when there is one person for the CEO and chairman position. Kajola, (2008) showed that firms' separation of CEO and chairman of the board is significant and positively correlated with return on equity.

However, Brickley et al. (1997) claimed that there is no systematic link between duality status and organizational performance or market value. Similarly, Vafeas and Theodorou (1998) and also Weir and Laing (1999) came to the same conclusion.

A control variable that is tested whether affects firm performance is leverage. Leverage is the amount of debt used to finance a firm's assets and is considered to be one of the most important determinants of capital structure. Most of the Greek listed companies are family owned with less exposition to debt. Therefore, it is very interesting to examine the relationship between leverage and firm performance. Ahuja and Majumdar (1998) made a survey on Indian firms and showed that there is a positive relationship between debt level and firm performance. Ahmadu et al. (2005) and also Ehikioya (2009) showed that leverage has significantly positive influence on firm performance for the Nigerian listed firms. Sulong and Nor (2010) found that the leverage of Malaysian listed firms is significantly and positively related to firm value.

Another control variable that is tested is firm size. Hannan and Freeman (1989) reported that smaller firms are more creative, more innovative and ready to change in order to enhance their corporate value. In contrast, Ghosh (1998) showed that large firms are better performers because they are able to diversify their risk. Roszaini and Mohammad (2006) showed that firm size have a statistically significant positive

relationship with accounting performance. Moreover, Ahmadu et al. (2005) conducted a research for all the Nigeria listed companies and found that there is a negative and statistically significant relationship between firm size and two performance measures such as return on assets and Tobin's Q ratio. On the other hand, Ehikioya (2009) for the same country showed that the size of the firm has a positive impact on firm performance.

Another variable that has been tested in research papers is the proportion of the capital expenditure. Capital expenditure is the amount invested in fixed assets and it is used as a proxy for growth. Lang et al. (1989) and Smith and Watts (1992) found that there is a significant relationship between the amount of capital expenditure and corporate performance. Roszaini and Mohammad (2006) showed a significant positive relationship between market performance and capital expenditure.

Finally, the reputation of audit companies plays significant role in the auditing process and in the reliability of earnings releases. Auditors report whether the accounts are true and fair, whether the company faces the danger of bankruptcy, whether the firm is managed competently, whether the firm is run in accordance with the law, free of fraud, and whether the firm adopts a responsible attitude to environmental and societal issues. It is common practice to classify the audit companies into two categories. The first category comprises the big audit firms, while the second category encompasses the medium and small audit firms. Shafer et al. (2001), using data from Hong Kong, employed a dummy variable so as to separate the size and the reputation of the audit companies. They defined big four auditors the companies that audit most of the large companies and non big four companies that audit medium and small firms.

The second objective of the current thesis is to test of how corporate governance affects the capital structure of a company. Many studies have examined the relation between various corporate governance mechanisms and firm leverage. First of all, it is examined the relationship between board size and leverage. Pfeffer and Salancick (1978) and Lipton and Lorsch (1992) showed that there is a significant relationship between capital structure and board size. Moreover, Berger et al. (1997) demonstrated that corporations which have many members on their board, on general, have low gearing levels. Similarly, Abor (2007) found that there is a significantly negative relationship between board size and capital structure.

In addition, this paper examines how the capital structure of companies is affected by the proportion of outside directors. Pfeffer (1973) and Pfeffer and Salancick (1978), found evidence that high proportion of outside directors is associated with high leverage levels. Moreover, Jensen (1986) and Berger et al. (1997) argue that firms with higher leverage rather have relatively more outside directors, while firms with low percentage of outside directors experience lower leverage. On the contrary, Wen et al. (2002) found a significantly negative relationship between the number of outside directors on the board and leverage.

Another corporate governance characteristic affecting capital structure is the relationship between CEO duality and capital structure, Fama and Jensen (1983) found that CEO duality influences the financing decision of the firm, but the relationship is not statistically significant. According to Fosberg (2004), firms with a two-tier leadership structure should be more likely to employ the optimal amount of debt in their capital structures than firms in which there is duality. Moreover, Abor (2007) in his study found that there is a significantly positive relationship between CEO duality and leverage implying that larger boards adopt low debt policy.

The size of the firm is considered to influence not only the performance of a corporation, but also the capital structure. First, Marsh (1982) as well as Friend and Lang (1988) supported that there is a positive relationship between firm size and leverage levels. On the other hand, Rajan and Zingales (1995) found that large firms are generally well-established and have good performance. In fact, they reduce their reliance on debt and, therefore, a negative relationship exists between size and leverage of the firm which shows that large firms can arrange debt financing due to long term relationship and better collateral offering. Similarly, Abor (2007) found that there is a negative relationship between profitability and leverage. The results suggest that higher profits increase the level of internal financing. Therefore, firms that generate more internal funds generally tend to avoid debt.

Another variable that is alleged to affect capital structure is the age of a company from its establishment. Chittenden et al. (1996), Jordan et al. (1998), Michaelas et al. (1999) and Hall et al. (2004) also tested the effect of company age to capital structure. In conclusion, the above scholars found negative correlation between the independent variable age of firm and leverage.

The third objective of this thesis is devoted to the capital structure determinants. The first study that examined the capital structure determinants was that of Modigliani and Miller (1958). In their seminal work they found that the value of a firm is unaffected by how the firm is financed. The theory of Miller and Modigliani made certain assumptions that do not hold in the real economy such as, perfect capital market, no taxes, no transaction, bankruptcy and asymmetric information costs. Their theory is known as the irrelevance theory.

Due to the fact that the assumptions made by Modigliani and Miller (1958) do not hold in a real economy the authors restated their conclusions in their study which named "a correction" (1963) by taking into account the corporate taxes. In this study they argued that the firm's value becomes an increasing function of debt when the corporate tax is taken into account. The work of Modigliani and Miller triggered a large number of researches who then tried to explain how each company determines the amount of borrowing, how the new investments should financed and also which is the optimal level of borrowing that maximizes the value of the firm.

The capital structure irrelevance theory produced the trade-off theory. Extensive research has been made for the trade-off models which have dominated the capital structure literature. Baxter (1967) argued that a firm should not use more debt than the point where the cost of debt becomes larger than the tax advantage. He also mentioned that when firms increase their debt they also increase their chance of bankruptcy due to the demand of larger risk premium from the investors. Moreover, Miller (1977) demonstrated that even in the presence of taxes the irrelevance theory may hold under certain conditions. DeAngelo and Masulis (1980) made an attempt to extent and generalize Miller's (1977) differential personal tax model by taking into account the existence of non-debt shields such as depreciation deductions and investment tax credits. They found that each firm has its own optimal capital structure where maximizes its value. According to their study, to optimize their capital structure firms have to take into account the tax benefits and agency and bankruptcy costs as well and try to hold these three in equilibrium.

On the other hand, the phenomenon of "zero" debt firms lead to an alternative theory called "pecking order theory". The pecking order theory introduced by Myers and Majluf (1984) is based on the idea of asymmetric information between managers and shareholders. The theory assumes that there is no optimal level of borrowing where

the value of the company is maximized. Managers as insiders know more about the value and the risk of the firm than shareholders who are outsiders. In order to avoid the underinvestment problem, managers try to finance the new projects with internal funds and riskless debt. More specifically, internal financing such as the use of retained earnings is preferred by the managers. If the above is not considered adequate a new dept is issued. The issue of new shares is considered a last resort by the managers.

Agency cost is an important parameter which should be taken into account when determining the capital structure of a firm. Jensen and Meckling (1976) and Jensen (1986) argued that apart from the bankruptcy costs there are also the agency costs which are created between managers, shareholders and debt holders. According to their study, the agency costs are also determinants of the capital structure of a firm. Managers take the authority from shareholders to manage the firm and act in the interest of firm's wealth and shareholders benefits. But usually conflicts of interest arise between shareholders and managers who may take decisions serving their own interests but jeopardize the firm. Therefore, Jensen (1986) research paper suggests that agency costs could be reduced by increasing the ownership of managers. So the interests of managers and shareholders could be aligned and/or by increasing the use of debt in the firm the equity base is reduced and thus the percentage of equity owned by the managers is increased.

With regard to international evidence, many empirical studies have been conducted examining the capital structure determinants, but most of them referred to developed countries. Titman and Wessels (1988) carried out an empirical study in the capital structure determinants of US firms and reported that debt levels are negatively related to the "uniqueness" of a firm's line of business. Rajan and Zingales (1995) used data from the G7 countries and tried to analyze the financing decisions of public firms. They showed that factors that were correlated with firms' leverage in US there were also correlated in G7 countries. Antoniou et al. (2002) analyzed data from top three European countries, United Kingdom, France and Germany. The results of their research suggested that the capital structure decisions of firms in all three countries are not only affected by firm-specific reasons, but also by market factors in each country. Furthermore, Bevan and Danbolt (2004) analyzed the determinants of capital structure of UK firms. The results showed that larger companies have higher levels of debt than

smaller firms. Furthermore, they showed that profitability is negatively correlated with the level of gearing.

It is evident from the above that the majority of studies concern developed countries. There are few studies that provide evidence from developing countries. Booth et al. (2001) analyzed data from ten developing countries and they found that capital structure choices are affected by the same variables as in developed countries. Jean Chen (2004) tried to explore the capital structure determinants of the Chinese public-listed companies for the period 1995-2000. The results from the research indicated that certain firm-specific factors explaining capital structure in developed countries are also relevant for explaining the capital structure of Chinese listed companies. Attaulah and Safiullah (2007) examined the capital structure determinants of Karachi Stock Exchange listed firms excluding the non-financial firms for a period of 8 years. They proved that the trade off theory is held in the case of tangibility. In contrast, the earning volatility and depreciation variables failed to confirm the trade-off theory.

Regarding the Greek capital market, there are few studies that explore the capital structure determinants. Voulgarakis et al. (2002) collected data from 75 large manufacturing Greek firms and showed that, profitability of sales, productivity of total assets, firm size and assets growth are the main capital structure determinants. All gearing ratios displayed significant scale effects. They also argued that the negative association of net profit margins and total debt induce higher use of debt in the large scale enterprise (LSEs) of the Greek manufacturing sector. Finally, they found a positive association between gross profit margins and long term debt.

Another study concerning the Greek capital market is that of Daskalakis and Psillaki (2008). In specific, they tried to investigate the capital structure determinants of small and medium size enterprises using a sample of French and Greek firms. Moreover, they examined whether the capital structure determinants of small or medium sized enterprises (SMEs) are the same in the two countries and whether the determinants that affect the capital structure of firms in both countries are country-specific or firm-specific. They used the panel data method for a sample of firms for a period of four years starting from 1998. They showed that small and medium size firms in both countries have similarities in their capital structure. For instance, asset structure and profitability have a negative relationship with leverage in both countries. They argued that this situation may occur due to the similarities of the civil law in the two

countries. On the other hand, they argued that any differences that occur in the capital structure determinants are not due to country factors but are firm specific.

CHAPTER 3

3.1 Data and methodology

The objective of this thesis is three-fold. First, this study explores the impact of various corporate governance mechanisms on firm performance. In the second part of this project, the relationship between the capital structure and corporate governance is examined. The last part refers to the capital structure determinants.

3.2 Sample

The empirical investigation of this thesis is focused on firms listed on the Athens Stock Exchange. The sample is consisted of 215 non-financial firms. Financial firms such as banks, insurance companies, investment companies, leasing and utilities firms were excluded from the sample because of the differences in the regulatory requirements, financial reporting standards and compliance compared to non-financial firms. Companies with missing data were excluded from the sample. The examination period spans from 2005 to 2009.

The data used for this research were extracted from the audited financial reports of 215 companies listed on Athens Stock Exchange and resulted in 1,075 observations. For the collection of the data the website of Athens Stock Exchange and the Thomson One database were utilized.

3.3 Variable Selection
- *Tobin's Q*

This study utilizes the Tobin's Q ratio (TQ) devised by James Tobin in 1969 as performance ratio. Q ratio is computed by dividing the market value of a company by the replacement value of the firm's assets. A common problem between scholars is that the replacement cost information is not easy to identify. Alternative calculation of Tobin's Q ratio is given by dividing year-end market capitalization by the book value of total assets. Nor et al. (1999) used this modification to compute the Tobin's Q ratio. Moreover, Hermalin and Weisbach (1991) chose Tobin's q ratio as the preferred measure of firm performance. It should be referred that Weir et al. (2002) showed that the higher the value of Tobin's Q ratio, the more effective the governance mechanisms,

and the better the market's perception of the company's performance. In this project Tobin's Q ratio is used as dependent variable so as to measure the performance of the firm.

- *Return on Equity – Return on Assets*

Return on equity (ROE) and return on assets (ROA) are employed as profitability ratios to measure firm performance. The computation of ROE and ROA ratios is made by taking net profit as a percentage of equity value and net profit as a percentage of the total assets, respectively. Daily and Dalton (1998) and Rhoades et al. (2000) also used in their research the return on assets ratio as a firm performance ratio.

On the other hand, Kajola (2008) used the return on equity to proxy firm performance. Furthermore, he found that board size, board composition and CEO duality are positively correlated with performance. For the second and the third part of this study ROA is also used as measure of profitability and is computed with the same formula. Titman and Wessels, (1988); Fama and French, (2002) proposed ROA ratio as a capital structure determinant. Moreover, Hasan and Butt (2009) showed that profitability of firm (ROA) have a negative relationship with leverage levels because of the existence of pecking order theory.

- *Price-to-earnings ratio*

Another ratio that assesses firm performance is the price-to-earnings ratio (PE) which is considered a valuation ratio. Ahmadu et al. (2005) and also Ehikioya (2009) used the PE ratio to measure the performance of corporations. The formula adopted by the above researchers is the ratio of price per share to earnings per share which is the formula used in this effort. Nevertheless, the natural logarithm of the ratio is computed so as to normalize the distribution of the variable.

- *Price-to-book value*

Another dependent variable is the price-to-book value ratio (P/BV) which is also a measure of performance. Leal and Carvalhal-da-Silva (2005) employed P/BV to study firm performance in the Brazilian capital market. Following Garay and Gonzalez (2008) as well as in this project, P/BV is computed as the market capitalization over the book value of equity. Again natural logarithm is taken to normalize the distribution of the

variable. The positive effect of price-to-book value provides a relatively stable, intuitive measure of value which can be compared to the market price.

- *Leverage*

Two variables are used to measure leverage. The first measure, leverage (LEVER) is calculated by dividing total debt by the book value of total equity. The scope of this project is to discover if there is any relationship between LEVER and PE ratio and between LEVER and price-to-book value ratio. The second measure of leverage that is used in this study is the debt ratio (DR) which is defined as the total liabilities divided by total assets (Rajan and Zingales, 1995). Note that total liabilities include accounts payable and leases. It should be mentioned that debt ratio is used as a dependent variable for both the second and the third part of this study.

- *Board Size*

A variable that is used in this thesis' regression models is board size (BD) which indicates the total number of board members. Most of the scholars that have examined the relationship between corporate governance and firm performance and the relationship between corporate governance and capital structure have used board size as independent variable. In specific, Hossain et al. (2001), Roszaini and Mohhamad (2006) as well as Ehikioya (2009) used board size as independent variable so as to find if there is any relationship between firm performance and corporate governance mechanisms. Moreover, Abor (2007) in his study for the Malaysian listed firms used board size to find if there is any relationship between the board size and capital structure. In this project board size is computed as the natural logarithm of the total number of directors on the board.

- *Board Composition*

This study employs board composition (OUT_DIR) as the proportion of outside directors to the total number of directors on the board. As outside directors are perceived those who are not an active or retired employee of the firm, those who do not have close business ties (e.g. consultant, supplier, etc) with the firm and those who do not have shareholdings in the firm. Hermalin and Weisbach (1991) and Bhagat and Black (2002) used board composition variable so as to examine whether there is a

relationship with firm performance. Additionally, Wen et al. (2002) and Abor (2007) used board composition variable to examine whether there is a relationship between corporate governance mechanisms and capital structure.

- *CEO Duality*

CEO duality (CEO_DUAL) is measured as a dummy variable. The variable takes zero in case of CEO duality and one otherwise. Roszaini and Mohammad (2006) and also Kajola (2008) have also used CEO duality to examine the correlation between corporate governance and firm performance. On the other hand, Abor (2007) used this variable to examine relation of corporate governance and capital structure for the Ghanaian listed firms.

- *Audit Company*

The variable audit company (AUD) is employed to test whether affects firm performance. The independent variable audit company takes one for the non-big five audit companies and zero otherwise. As big five audit companies have been employed the four biggest audit firms all over the world such as PricewaterhouseCoopers, KPMG, Ernst & Young and Deloitte. It is also employed one of the greater audit companies in Greece which is SOL. According to Percy (1997) auditors are expected to be free of commercial influence, objective and competent. Additionally, she argues that dynamic auditing will maintain societal confidence and good cooperation between management and auditors. The public seems to believe auditors have a responsibility for the integrity of the businesses and therefore, it is expected big-five audit firms to add firm value.

- *Tangibility*

A firm with a large amount of tangible assets (TANG) has the ability to provide them as collateral to the lenders and achieve lower interest rates. Scott (1977) argued that firms prefer to issue as much secured debt as possible because of the lower agency costs. Consequently, it is expected that firms with large tangible assets may have positive relationship with debt. On the other hand, companies with stable earnings are able to generate funds internally and avoid the use of external financing. Thus, a negative relationship between tangibility and leverage may occur due to internal use of funds. Rajan and Zingales, (1995), Titman and Wessels (1988), Frank and Goyal (2003)

measured tangibility as the ratio of the tangible assets divided by the total assets of the firm, as it is measured in this project.

- *Growth*

Moreover, this project aims to investigate whether growth (GR) affects firm's capital structure. On the one hand, it has been objected that growth may cause variations to the firm value. These variations can cause an increase in the risk. Thus, companies with growth trends may face difficulties in the external financing (Daskalakis and Psillaki, 2008). Similarly, Myers (1977) argued that firms with growth prospective tend to have lower leverage. On the other hand, firms with growth opportunities usually require additional capital (Michaelas et al., 1999). Therefore, the results may show either positive or negative relationship. Growth is measured as the annual percentage change in sales. Moreover, another proxy for growth that is also used is the capital expenditure (CAPEX). CAPEX is defined as the natural logarithm of capital expenditures over total assets. Roszaini and Mohammad (2006) used CAPEX in order to examine the relationship between corporate governance and capital structure.

- *Size*

Other explanatory variables used in this thesis are sales revenue (SA) and total assets (FS). Both are used as proxies for size. More specifically, the first variable (SA) is calculated as the natural logarithm of sales at the end of the financial year. Particularly, a correlation between Tobin's Q ratio and sales revenue is investigated. Natural logarithm of sales is used to proxy size (e.g. Titman and Wessels, 1988; Rajan and Zingales, 1995). Alternatively, firm size can be measured as the natural logarithm of total assets (FS). Firms size is expected to be positively related with leverage because large firms usually enjoy lower transaction costs related with debt. Moreover, transaction costs can be diversified and this allows firms to enjoy lower interest rates in external funds because of lower risk and bankruptcy costs (Daskalakis and Psillaki, 2008).

- *Age of firm*

Another control variable that is tested whether affects the capital structure of the Greek listed firms is the age of the firm at time *t* from its day of incorporation. The variable is denoted as AGF and it has been used in order to examine if there is any relationship between age of firms and leverage (Chittenden et al., 1996; Michaelas et al., 1999, Hall et al., 2004)

- *Non-Debt Tax Shields*

DeAngelo and Masulis (1980) extend Miller's (1977) study over non-debt tax shields (NDTS). They found that apart from interest expenses, depreciation and investment tax credits can provide non-debt tax shields. They also argued that a firm with larger non-debt tax shields is expected to use a smaller amount of debt. Wald (1999) in his empirical work used the ratio of depreciation to total assets and found negative correlation between leverage and non-debt tax shields. For the calculation of non-debt tax shield is used annual depreciation charges divided by total assets.

3.4 Model specification

This study employs the panel data methodology. A panel data combines features of both time series and cross-section data. The panel regression equation differs from a regular time-series or cross section regression. Panel data gives "more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency." Moreover, panel data can better detect and measure effects that simply cannot be observed in pure cross-section or pure time series data. It motivates the study of more complicated behavioral models. In short, panel data can enrich empirical analysis in ways that may not be possible in cross-section or time series data analysis (Baltagi, 2005).

The model used is considered to be a balanced panel data model because each cross-sectional unit has the same number of time series observations. Finally, because of having a balanced panel model the possibility of having endogeneity is decreasing rapidly.

The general form of the panel data model can be specified as:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 X_{it} + ... + \beta_n X_{it} + \varepsilon_{it} \quad i = 1,........, N \quad t = 1,........, T$$

Where i denotes the firm (cross section dimension) and t denotes time (time series dimension). Therefore, Y_{it} is the dependent variable of pooling N cross sectional observations and T time series observations, and X_{it} are the independent variables pooling N cross sectional observations and T time series observations. β is the change coefficient for X_{it}. β_0 is the constant term or intercept. Finally, most of the panel data applications utilize a one-way error component model for the disturbances, with $\varepsilon_{it} = \mu_i + v_{it}$ where μ_i denotes the unobservable individual-specific effect and v_{it} denotes the remainder disturbance.

The method of analysis that is employed in this project is the multivariate regression and the method of estimation is Ordinary Least Squares (OLS). According to Brooks (2008) OLS estimator is considered the most appropriate (i.e. it has the lowest variance among the class of linear unbiased estimators). So it is optimal in the sense that no other linear, unbiased estimator might have a smaller sampling variance. It would be evitable to find an estimator with a lower sampling variance than the OLS estimator, but it would either be non-linear or biased or both. Moreover, it should be pointed out that OLS estimators are not as sensitive to specification errors compared to other approaches.

At this point, it is considered integral to refer to the different panel estimator approaches. There are broadly two classes of panel estimator approaches that can be employed in financial research, fixed effects models and random effects models. Moreover, there are two subtypes of fixed effects models, the entity fixed effects model and the time fixed effects model. Specifically, the entity fixed effects model allow the intercept of the model to vary between the cross section units, but not over time. For the time fixed effect model the dummy variables capture the time variation. An alternative to the fixed effects model is the random model, which is also known as the error components model. Random effects approach proposes different intercept terms for each entity and these intercepts are constant over time, with the relationships between the independent and dependent variables assumed to be the same both cross-sectionally

and temporally (Brooks, 2008). All regression models are tested for fixed and random effects by using the Hausman and Likelihood tests, respectively.

Next, five regression models are illustrated.

Model 1

$$TQ_{it} = \beta_0 + \beta_1 BD_{it} + \beta_2 OUT\_DIR_{it} + \beta_3 CEO\_DUAL_{it} + \beta_4 CAPEX_{it} + \beta_5 SA_{it} + \beta_6 AUD_{it} + \varepsilon_{it}$$

Model 2

$$PE_{it} = \beta_0 + \beta_1 BD_{it} + \beta_2 OUT\_DIR_{it} + \beta_3 CEO\_DUAL_{it} + \beta_4 FS_{it} + \beta_5 AUD_{it} + \beta_6 LEVER_{it} + \varepsilon_{it}$$

Model 3

$$PBV_{it} = \beta_0 + \beta_1 BD_{it} + \beta_2 OUT\_DIR_{it} + \beta_3 CEO\_DUAL_{it} + \beta_4 FS_{it} + \beta_5 LEVER_{it} + \beta_6 AUD_{it} + \varepsilon_{it}$$

where,

TQ_{it} = Tobin's Q ratio of firm i at time t

ROE_{it} = Return on Equity of firm i at time t

PE_{it} = Price to Earnings ratio of firm i at time t

PBV_{it} = Price-to-book Value Ratio of firm i at time t

β_0 = The intercept of the equation

β = The change co-efficient for X_{it} variables

i = The number of the firm i.e. $i = 1,.......,N$

t = The time period i.e. $t = 1,.......,T$

BD_{it} = Board Size of firm i at time t

OUT_DIR_{it} = Board Composition of firm i at time t

CEO_DUAL_{it} = CEO Duality of firm i at time t

$CAPEX_{it}$ = Capital Expenditures of firm i at time t

SA_{it} = Net sales of firm i at time t

AUD_{it} = Audit Company of firm i at time t

FS_{it} = Firm Size of firm i at time t

$LEVER_{it}$ = Leverage of firm i at time t

ε_{it} = Error term

The above models are used to examine the relationship between firm performance and corporate governance of the Greek listed firms. The dependent variables used in these four models are proxies for firm performance and are Tobin's Q, price to earnings ratio (PE) and price-to-book value (P/BV). The independent variables include measures of board composition and structure and other control variables. Specifically, for the board composition variable are used the variables of board size and outside directors, for corporate governance mechanisms are used CEO duality and audit company and finally other control variables include leverage, firm size and capital expenditure.

Model 4

$$DR_{it} = \beta_0 + \beta_1 BD_{it} + \beta_2 OUT\_DIR_{it} + \beta_3 CEO\_DUAL_{it} + \beta_4 FS_{it} + \beta_5 ROA_{it} + \beta_6 AGF_{it} + \varepsilon_{it}$$

where,

DR_{it} = Debt ratio of firm i at time t

β_0 = The intercept of the equation

β = The change co-efficient for X_{it} variables

i = The number of the firm i.e. $i = 1,......., N$

t = The time period i.e. $t = 1,......., T$

BD_{it} = Board Size of firm i at time t

OUT_DIR_{it} = Board Composition of firm i at time t

CEO_DUAL_{it} = CEO Duality of firm i at time t

FS_{it} = Firm Size of firm i at time t

ROA_{it} = Return on Assets of firm i at time t

AGF_{it} = Age of Firm of firm i at time t

ε_{it} = Error term

The second objective of this thesis is to examine the relationship between capital structure and corporate governance mechanisms of the Greek listed firms. As control variables are used board composition, outside directors, CEO duality, firm size, return on assets and the age of the firm. The debt ratio is used as a dependent variable.

Model 5

$$DR_{it} = \beta_0 + \beta_1 TANG_{it} + \beta_2 ROA_{it} + \beta_3 GR_{it} + \beta_4 FS_{it} + \varepsilon_{it}$$

where,

DR_{it} = Debt ratio of firm i at time t

β_0 = The intercept of the equation

β = The change co-efficient for X_{it} variables

i = The number of the firm i.e. $i = 1,......., N$

t =The time period i.e. $t = 1,......., T$

$TANG_{it}$ = Tangibility of firm i at time t

ROA_{it} = Return on Assets of firm i at time t

GR_{it} = Growth of firm i at time t

FS_{it} = Firm Size of firm i at time t

ε_{it} = Error term

Finally, model five is used in order to find out which are the capital structure determinants of the Greek listed firms. The debt ratio is used as a dependent variable and tangibility, ROA, firm size and growth as control variables.

CHAPTER 4

4.1 Empirical Results

4.1.1 Descriptive statistics

Table A presents descriptive statistics for the corporate governance, firm performance and capital structure variables of the Greek listed firms, respectively. The upper part of the table gives the mean and median of the variables for the period from 2005 to 2009. The lower part gives the standard deviation for all the variables and for the same time period. The behavior of return on assets (ROA) and return on equity (ROE) is almost the same. The mean of ROE declined from 7.2% to -26.1% during the period 2005-2009. This dramatic decline of the profitability value of Greek listed firms can be attributed to the consequences of the global financial crisis burst in 2008. Moreover, it should be mentioned that Greek firms have also undergone major financial problems since 2007. Tobin's Q ratio (TQ), which is also a performance ratio, experienced an increase in its value from 2005 to 2007. The ratio showed a notable decline taking a value of 0.379 in 2008 and then remained stable the next year.

Descriptive statistics also reveal that the average number of board members of the Greek listed companies is between seven and eight people. This result is consistent with the suggestion of Lipton and Lorcsh (1992) who argued that the preferred board size is 8 or 9 with 10 being the limit in order for a board to be effective. Looking at the board composition, on average, the proportion of outside directors to the total amount of directors remains close to 54.24% for the period of five years. It should be noted that both board structure (BD) and outside directors (OUT_DIR) remain stable during the period 2005 – 2009. CEO duality (CEO_DUAL) is defined as the dummy variable that takes zero when CEO of the company is also chairman of the board and one otherwise. The mean of CEO duality is 58.51%. This entails that 125 out of 215 Greek firms occupy different persons for the CEO and chairman positions. Concerning audit companies (AUD) it is evident that there is a small increase in the number of companies that appoint audit companies which belong to the big five group in 2006. The variable (AUD) remains stable during the period from 2006 to 2009.

Furthermore, Table A shows the descriptive statistics for firm size (FS) and net sales (SA), which are both proxies for size. It is observed that there is an upward trend for the mean of firm size (FS) from 2005 to 2008. In contrast in 2009 firm size (FS) and

net sales (SA) decreased to 5.38% and 18.5%, respectively. This decline may be due to the financial crisis of 2008. Debt ratio which is defined as total debt to total assets shows a stability during the examined period. The mean of debt ratio varies between 56% and 62%. The percentage of tangible assets, which are usually used as collateral for borrowing new debt, remains constant around 52%. The descriptive statistics for net sales and firm size indicate that the size of the Greek listed firms remains stable for the period under examination. On the other hand, growth shows significant variability from 2005 to 2007. In 2005 the mean growth was 1.98% and increased up to 20% in 2007. However, in 2008 the mean growth rate decreased to 11.58% and the next year to -13.44%. This considerable decline is an evidence of the impact that the global financial crisis of 2008 had on the Greek economy. Finally, the mean growth was equal to 6.63% for the whole period that is examined.

Table B presents the correlation matrix for the dependent and independent variables. Diagonal elements (correlations of variables with themselves) are always equal to one. As it can be seen from correlation matrix the highest correlation is between return on equity (ROE) and leverage (LEVER) (0.966). This may occur because the two variables have the same denominator which is the total shareholder equity. Furthermore, it is observed a high correlation between firm size (FS) and net sales (SA) (0.857). It can be argued that due to the fact that both variables are proxies for size are highly correlated. To avoid the problem of multicollinearity, the highly correlated variables are not included simultaneously in the regression analysis. Except for the above correlated variables, all the rest pair wise combinations are less than 0.40.

4.1.2 Regression analysis

Table 1: Regression Outputs

Variable	Model 1 (TQ)	Model 2 (PE)	Model 3 (PBV)	Model 4 (DR)	Model 5 (DR)
Intercept	0.2573 (0.0998)	-0.3446 (-0.6079)	0.3827*** (2.4506)	0.6368*** (9.9028)	0.6087*** (21.4195)
Board Size (BD)	2.7638* (1.9445)	0.0557 (0.1753)	0.1959** (2.2362)	-0.0634** (-2.1687)	
Outside Directors (OUT_DIR)	1.9471 (1.0337)	0.9106** (2.2250)	0.1295 (1.1338)	0.0660* (1.7417)	
CEO Duality (CEO_DUAL)	-1.4336* (-1.9282)	-0.3068* (-1.8632)	-0.0730 (-1.6075)	-0.039*** (-2.5865)	
Audit Company (AUD)	-0.9649 (-1.3530)	0.0726 (0.4616)	-0.0256 (-0.5892)		
Net Sales (SA)	-1.0286*** (-4.4597)				
Return on Assets (ROA)				-1.2154*** (-20.3843)	-1.2101*** (-20.8507)
Firm Size (FS)		0.2243*** (3.5975)	-0.0301* (-1.8049)	0.0321*** (5.6136)	0.0237*** (4.7943)
Tangibility (TANG)					-0.2279*** (-7.2788)
Age of Firm (AGF)				-0.0227* (-1.7386)	
Leverage (LEVER)		-0.0054 (-1.2195)	0.0112*** (8.7857)		
Capital Expenditures (CAPEX)	-0.0723 (-0.1551)				
Growth (GR)					-0.0057 (-0.3533)
F-statistic	3.0226	4.6783	9.5717	44.4561	61.4504
R-squared (%)	0.0276	0.0276	0.0825	29.47	31.65
Adjusted R-squared (%)	0.0184	0.2172	0.0739	28.80	31.13

Note: *, ** , *** denote statistical significance at the 10%, 5% and 1% level, respectively.
t-statistics are shown in the form ( ).

Table 1 displays the regression results of model one. Board size (BD), CEO duality (CEO_DUAL) and net sales (SA) have significant impact on Tobin's Q. In specific, board size has a positive and statistically significant relationship with Tobin's Q ratio. This means that as the number of directors increase the performance of the firm improves. In contrast, the variable CEO duality has a statistically negative correlation with firm performance. This means that firms which have separate persons occupying the posts of chief executive and chairman of the board can have a negative influence on the performance of the firm.

Additionally, the proxy of firm size (SA) is statistically significant at the 1% level. It should be mentioned that net sales has a negative relationship with firm performance. This implies that as the size of the firm increase firm performance worsens. This result supports the so-called "size effect hypothesis". On the other hand, the variables of outside directors (OUT_DIR), capital expenditure (CAPEX) and audit company (AUD) are statistically insignificant and there is no correlation with Tobin's Q ratio (TQ).

Furthermore, table 1 show the regression results of model two. First, the 2.1% of the variability of P/E ratio (PE) is explained by the regression model. Moreover board composition (OUT_DIR), CEO duality (CEO_DUALITY) and firm size (FS) are statistically significant at 5%, 10% and 1% level of significance, respectively.

Specifically, board composition has a positive relationship with firm performance (PE). This means that the greater the proportion of outside directors the better the firm performance. In contrast, CEO duality has a negative relationship with firm performance. Consequently, the performance of the Greek listed firms weakens when the CEO and chairman of the firm are occupied by different persons. This result is in contrast with that found by Roszaini and Mohammad (2006) as well as Sulong and Nor (2010) who did not find that separating the roles of the CEO and chairman positions play any significant role in the performance of Malaysian listed firms. Another variable that positively influences firm performance is firm size (FS). This implies that the bigger the firm the better its performance. Thus, for every unit increase in firm size, PE ratio goes up by 0.22 units. On the other hand, board size, audit company and leverage do not exert any significant effect on firm performance.

Table 1 shows the regression outputs of model three. In this model it is assessed the impact of various control variables to the price-to-book value ratio (PBV) which is an alternative firm performance measure. The results show that 7.3%, of the variability of price-to-book value ratio (PBV) is explained by the regression. It can be indicated that board size (BS) is positive and statistically significant at 5% level. Moreover, firm size is also statistically significant at 10% level.

On the other hand, board composition, audit company and CEO duality are statistically insignificant. It should be mentioned that although the independent variable CEO duality does not influence significantly the performance of the firm it has negative sign. Additionally, Abdullah (2004) did not find any significant relationship between CEO duality and performance in Malaysian listed companies. The above result confirms the statement of Myring (2006) who argued that Greece presents many significant differences from other developed markets since it is classified within the emerging Asian and Near East accounting regime (such as India, Indonesia, Korea, Malaysia and Turkey).

On the second part of this project it is examined the relationship between various corporate governance mechanisms and capital structure. Model four represents the regression model that is used to examine the above relationship. The results from the regression model four (Table 1) indicate that debt ratio is negatively affected by board size (BS) at 5% level of significance. Berger et al. (1997) and Abor (2007) found similar results (i.e. larger boards prefer low debt levels).

Moreover, board composition (OUT_DIR) is positive and statistically significant at 10% level. These findings suggest that firms which employ more non-executive directors on the boards tend to pursue high debt policy. This result is in line with Abor (2007) who found the similar results for the Ghanaian firms. In contrast, Hermalin and Weisbach (1991) and Bhagat and Black (2002) showed that there is no correlation between board composition and performance

Also, there is a statistically significant and positive relationship between CEO duality and leverage (DR). This suggests that Greek listed firms which separate the roles of CEO and chairman tend to employ lower proportion of debt. Firm size (FS) has a statistically significant and positive relationship with capital structure (DR). This suggests that the larger the firm, the more debt it employs in its capital structure.

Another variable that negatively influences debt ratio is ROA. Its coefficient shows that for every unit that ROA rises, debt ratio decreases by 1.21 units. This implies that as the profitability of the Greek listed firms increase, the debt that firms issue decreases. Consequently, Greek firms prefer to use internal funding (retained earnings) for their new investments. The above result is in line with the pecking order theory.

The last variable that can affect the leverage of a company is the number of years that a firm operates (AGF). The results show (Table 1) that the age of the firm has a negative relationship with leverage. It could be implied that long-operating firms have already found a stable source of income that can produce funds internally. However, this result regarding the impact of the age of the firms is in contrast with Roszaini and Mohammad (2006) and also Sulong and Nor (2010) research papers, who found that the age of the listed Malaysia firms have positive effect on firm value. Their result can be interpreted that older firms tend to have more reputation and therefore better access to the capital market.

On the last regression model five is examined the capital structure determinants of the Greek listed firms. First, tangibility (TANG) is statistically significant at 1% level and affects negatively the leverage of the firms. This result was consistent with that of Daskalakis and Psillaki (2008). It should be mentioned that companies with large tangible assets usually show positive relationship with debt ratio. On the other hand, the negative relationship between tangibility and debt indicates that Greek listed firms have the ability to generate the essential funds internally for financing their future investments. This result is consistent with the pecking order theory which claims that firms prefer internal financing rather than external.

Firm size (FS) is found to positively affect the capital structure of the firm. Specifically, when firm size increases by one unit debt ratio increases by 0.023 units. This result implies that when Greek firms increase their size they also increase their debt exposure. As a firm increases its size it may enjoy lower interest rates than smaller firms. Additionally, return on assets (ROA) displays a negative relationship with debt ratio (DR) as in model four. This means that when Greek firms increase their profitability they decrease their leverage levels. The results are consistent with Rajan and Zingales (1995) study. Furthermore, the above results are consistent with the pecking order theory. On the other hand, growth (GR) has no relationship with the

capital structure. This implies that the growth of the Greek listed firms does not affect their capital structure and this result is in line with Daskalakis and Psillaki (2008) results.

4.2 Sensitivity tests

As a robustness test we used various performance ratios (dependent variables) in order to examine whether there are related with corporate governance practices. The results were almost identical. Furthermore, for testing the relationship between corporate governance mechanisms and capital structure, apart from debt ratio and leverage it is also employed gearing ratio as dependent variable. The results did not alter significantly. Finally to detect the capital structure determinants of the Greek listed firms, a regression model by using leverage instead of debt ratio as dependent variable was used. Again the results were similar. It should be referred that for the last model the independent variable non-debt tax shields was tested so as to examine if there is any impact on the capital structure. The results did not indicate any significant relationship.

CHAPTER 5

5.1 Conclusions and Recommendations

There is no doubt that several studies have been conducted so far examining the relation between firm performance and corporate governance and the relation between capital structure and corporate governance mechanisms. In addition, there is abundant literature on the capital structure determinants. However, the results of previous studies are mixed. This study tries to examine all the above relations using data from Greece. Since 2001 there has been a growing interest in the corporate governance practices in the light of US corporate collapses. In the wake of companies collapse, governments have designed policies of resolving problems related with the protection of interests of shareholders and creditors. In response to high demand for protective measures, the Hellenic Capital Market Committee introduced the law 3016/2002 as the first corporate governance code that all Greek listed firms should adopt since 2002

A critical aspect of the current study is how corporate governance affects the capital structure of a company. Decisions related to capital structure are crucial for any business organization. Good corporate governance practices may have significant influence on the strategic decisions of a company such as the optimal allocation of debt.

Capital structure determinants were also investigated. Since the seminal work of Miller and Modigliani (1958) who put forward the irrelevance theory of capital structure a number of studies attempted to find the best combination of debt and equity that maximizes firm value. The study employed a sample of 215 Greek firms listed on the Athens Stock Exchange (ASE) from 2005 to 2009 using the panel data methodology.

To examine the relationship between corporate governance and firm performance there were used three different performance ratios, that is, the Tobin's Q ratio, the price-to-earnings ratio and the price-to-book value ratio. To measure the effect of corporate governance a number of variables were used such board size, board composition, CEO duality, firm size, leverage, audit company and capital expenditures.

Furthermore, to examine the relationship between corporate governance and capital structure the debt ratio was employed as a dependent variable, while board size, board composition, CEO duality, firm size, profitability and age of the firm were the corporate governance variables. Finally, tangibility, profitability, firm size and growth were used as capital structure determinants.

Concerning the first relation the results showed that firm performance was affected by the number of the directors in the board, CEO duality and firm size. In contrast, the proportion of outside directors to the total number of directors did not affect performance ratio (Tobin's Q ratio). Furthermore, the study revealed that PE ratio is correlated with board composition and firm size in the positive way. Additionally, CEO duality has a negative influence on firm performance. The above result indicated that Greek firms should employ the same person for the positions of CEO and chairman of the board so as to ensure optimal performance. Finally, the last performance ratio used is the price-to-book value ratio. The regression result suggested that firms with many directors in the board have a higher performance. Moreover, firm size and leverage affect the performance of Greek listed firms. Firm size affects negatively the performance in contrast to the leverage which affects it positively. Finally, audit company variable is not found to be correlated with firm performance although it was examined in three different regression models. Therefore, Greek firms are not affected by the audit company they employ.

This study also examines the relationship between corporate governance and capital structure decisions of listed firms in the ASE. The corporate governance variables analyzed were board size, board composition, CEO duality, profitability, firm size and age of the firm. The empirical results showed statistically significant and positive associations between capital structure and board composition and firm size. On the other hand, there is a negatively statistically significant relationship between capital structure and board size, CEO duality, profitability and age of the firm.

The last model of this study examines the capital structure determinants of the Greek listed firms. Tangibility, profitability, firm size and sales growth are the determinants of the capital structure that were examined. The results showed that tangibility affects negatively the debt level of the firms. The negative relationship of tangibility with leverage implies that Greek listed firms have the ability to generate their funds internally. This result is in line with the pecking order theory. Similarly, the results showed a negative relationship between firm profitability and debt ratio. This indicates that an increase in profitability causes a decrease in leverage of the Greek listed firms. On the other hand, firm size is positively correlated with the capital structure of the firm. This means that Greek listed firms tend to borrow more funds as total assets increase. The last variable tested is growth. The results show an insignificant

negative relationship between growth and leverage. Consequently, growth is not a capital structure determinant for the Greek listed firms

Future research should be directed to different models and estimators that can test the relationship between corporate governance and firm performance or capital structure. Moreover, future studies could investigate other aspects of corporate governance variables, such as executive compensation, audit fees, nominating committees, etc. It is hoped that this paper will provoke further research in these fields because as it was already mentioned above, this thesis tries to analyze the theme as good as it gets using the present bibliography.

References

- Abdullah, N. (2004) Board composition, CEO duality and performance among Malaysian listed companies. *Corporate Governance*, 4(4) pp.47-61.

- Abor, J. (2007) Corporate governance and financing decisions of Ghanaian listed firms. *Corporate Governance*, 7(1), pp.83-92.

- Agrarwal, A. and Knoeber, C. (1996) Firm performance and mechanism to control agency problems between managers and shareholders. *Journal of Financial and Quantitative Analysis*, 31(3), pp.377-97.

- Ahmadu, S., Aminu, M. and Tukur, G. (2005) Corporate governance mechanisms and firm financial performance in Nigeria. *The African Economic Research Consortium,* 149, pp.1-36.

- Ahuja, G. and Majumdar, S. (1998) An assessment of the performance of Indian state-owned enterprises. *Journal of Productivity Analysis*, 9(2), pp.113-32.

- Antoniou, A., Guney, Y., and Paudyal, K. (2002) Determinants of corporate capital structure: Evidence from european countries. *Working paper*, University of Durham

- Attaullah S. and Safiullah, K., (2007) Determinants of capital structure: Evidence from Pakistani panel data. *International Review of Business Research,* 3(4), pp.265-82

- Baltagi, B. (2005) *Econometric Analysis of Panel Data,* 2nd Edition Chichester: John Wiley & Sons.

- Baron, P. (2008) *Business and the organization,* Chester: Pearson.

- Baxter, N. (1967) Leverage, risk of ruin and the cost of capital. *Journal of Finance,* 22, pp.395-403.

- Berger, G., Ofek, E. and Yermack, L. (1997) Managerial entrenchment and capital structure decisions. *Journal of Finance*, 52(4), pp.1411-38.

- Bevan, A. and Danbolt, J. (2004) Testing for inconsistencies in the estimation of UK capital structure determinants. *Applied Financial Economics,* 14(1), pp.55-66.

- Bhagat, S. and Jefferis, R. (2002) *The Econometrics of Corporate Governance Studies,* Massachusetts: Institute of Technology

- Bhagat, S. and Black, B. (1998) Independent directors. *Journal of Corporaton Law,* 2, pp.283-287

- Bhagat, S. and Black, B. (2002) The non-correlation between board independence and long term firm performance. *Journal of Corporation Law*, 27, pp.231- 274.

- Booth, L., Aivazian, A. Demirguc-Kunt, A. and Maksmivoc, V. (2001) Capital structures in developing countries. *Journal of Finance,* 56, pp.87-130.

- Brealey, R. and Myers, S. (2000) *Principles of Corporate Finance*, 6th Edition, New York: McGraw Hill.

- Brickley, J., Coles, J. and Jarrell, G. (1997) Corporate leadership structure: On the separation of the positions of CEO and chairman of the board. *Journal of Corporate Finance*, 3, pp.189–220.

- Brickley, J., Coles, J., and Terry, R. (1994) Outside directors and the adoption of poison pills. *Journal of Financial Economics,* 35, pp.371–390.

- Brooks, C. (2008) *Introductory econometrics for finance,* 2nd Edition, New York: Cambridge University press

- Bryman, A. and Melissa, H. (2004) *Handbook of data analysis*, London: SAGE publication Ltd.

- Chen, J. (2004) Determinants of capital structure of Chinese-listed companies. *Journal of Business Research,* 57, pp. 1341-1351

- Chittenden, F., Hall, G., Hutchinson, P. (1996) Small firm growth, access to capital markets and financial structure: review of issues and an empirical investigation. *Small Business Economics*, 8, pp.59-67

- Cotei, C. and Farhat, J. (2009) The trade-off theory and the pecking order theory: Are they mutually exclusive?. *North American Journal of Finance and Banking Research,* 3(3), pp.1-16.

- Daily, M. and Dalton, D. (1998) Does board composition affect corporate performance? No!. *Directorship*, 24, pp. 7–9.

- Daskalakis, N. and Psillaki, M. (2008) Do country or firm factors explain capital structure?. Evidence from SMEs in France and Greece. *Applied Financial Economics*, 18, pp.87-97

- DeAngelo, H. and Masulis, R. (1980) Optimal capital structure under corporate and personal taxation. *Journal of Financial Economics,* 8, pp.3-29.

- Dehaene, A., De Vuyst, V. and Ooghe, H. (2001) Corporate performance and board structure in Belgian companies. *Long Range Planning*, 34(3), pp.383-398.

- Demirguc-Kunt, A. and Levine, R. (1995) Stock market development and financial intermediaries: Stylized facts. *World Bank Economic Review*, 10, pp.291–321.

- Ehikioya, B. (2009) Corporate governance structure and firm performance in developing economies: Evidence from Nigeria. *Corporate Governance,* 9(3)*,* pp.231-243.

- Emery, D. and Finnerty, J. (1997) *Coprorate financial management.* NJ: Prentice Hall

- Fama, E. and French, F. (2002) Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies,* 15(1), pp.1-33.

- Fama, E. and Jensen, M. (1983) Separation of ownership and control. *Journal of Law and Economics*, 26(2), pp.301-25.

- Florou, A. and Galarniotis, A. (2007) Benchmarking Greek corporate governance against different standards. *Corporate Governance: An International Review*, 15(5). pp.979-998.

- Fosberg, H. (1989) Outside directors and managerial monitoring. *Akron Business and Economic Review*, 20, pp.24-32.

- Fosberg, H. (2004) Agency problems and debt financing: leadership structure effects. *Corporate Governance: International Journal of Business in Society,* 4(1), pp.31-8.

- Fosberg, H. and Nelson, R. (1999) Leadership structure and firm performance. *International Review of Financial Analysis*, 8(1), pp.83-96.

- Frank, M. and Goyal, V. (2003) Testing the pecking order theory of capital structure. *Journal of Financial Economics*, 67(2), pp.217-32.

- Friend, I. and Hasbrouck, J. (1988) Determinants of capital structure. *Research in Finance*, 7(1), pp.1-19.

- Friend, I. and Lang, J. (1988) An empirical test of the impact of managerial self-interest on corporate capital structure. *Journal of Finance*, 43(2), pp.271-81.

- Garay, U. and Gonzalez, M. (2008) Corporate governance and firm value: The case of Venezuela. *An International Review,* 16(3), pp.194-209.

- Ghosh, A. (1998) Does accounting base performance really improve following corporate acquisitions. *Working Paper*, Zickling School of Business, New York

- Glen, J. and Pinto, B. (1994) Debt or equity? How firms in developing countries choose. International Financial Corporation*, Discussion Paper*, 22, Washington, DC.

- Gujarati, D. (1992*) Essentials of Econometrics*, Singapore: McGraw-Hill.

- Gujarati, D. (2004) *Basic econometrics,* 4th Edition, The McGraw−Hill Companies.

- Hall, C., Hutchinson, J. and Michaelas, N. (2004) Determinants of the capital structures of european SMEs. *Journal of Business Finance and Accounting*, 31(6), pp.711-28.

- Hannan, T. and Freeman, J. (1989) *Organizational Ecology*, Cambridge, Massachusetts: Harvard University Press.

- Hasan, A. and Butt, S. (2009) Impact of ownership structure and corporate governance on capital structure of Pakistani listed. *International Journal of Business and Management,* 4(2), pp.50-57.

- Hermalin, E. and Weisbach, S. (1991) The effects of board composition and direct incentives on firm performance. *Financial Management*, 20, pp.101- 112.

- Holthausen, R. and Larcker, D. (1993) Board of directors, ownership structure and CEO compensation, *Working paper,* University of Pennsylvania.

- Hossain, M. Prevost, A. and Rao, R. (2001) Corporate governance in New Zealand: The effect of the 1993 Companies Act on the relation between board composition and firm performance. *Pacific-Basin Finance Journal*, 9, pp.119– 145

- Hsiao, C. (2003) *Analysis of Panel Data,* 2nd Edition Cambridge: Cambridge University Press

- Jensen, M. (1986) Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review*, 76(2), pp.323-9.

- Jensen, M. (1993) The modern industrial revolution, exit, and the failure of internal control systems. *Journal of Finance*, 48, pp.831−80.

- Jensen, M. and Meckling, W. (1976) Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics,* 3, pp.305-60.

- John, K. and Senbet, L. (1998) Corporate governance and board effectiveness, *Journal of Banking and Finance*, 22, pp.371- 403.

- Jordan, J., Lowe, J. and Taylor, P. (1998) Strategy and financial policy in U.K. small firms. *Journal of Business Finance and Accounting*, 25(1), pp.1–27.

- Kaen, K. (2003) *A blueprint for corporate governance,* New York: Amacon American management association.

- Kajola, S. (2008) Corporate governance and firm performance: The case of Nigerian listed firms. *European Journal of Economics, Finance and Administrative Sciences*, 14, pp.16-28.

- Kose, J. and Lemma, W. (1997) Corporate governance and board effectiveness. *Working Paper*, New York University

- Lang, L., Stultz, R. and Walkling, R. (1989) Managerial performance, Tobin's Q and the gains from successful tender offers. *Journal of Financial Economics*, 24, pp.137–54.

- Law, P. (2008) An empirical comparison of non-Big 4 and Big 4 auditors' perceptions of auditor independence managerial. *Auditing Journal*, 23(9), pp.917-934.

- Leal, P., and Carvalhal-da-Silva, A. (2005) Corporate governance and value in Brazil (and in Chile). *Working Paper*, 514, Inter-American Development Bank.

- Lipton, M. and Lorsch, J. (1992) A modest proposal for improved corporate governance. *Business Lawyer*, 48, 59-77.

- Magdi R. and Nadareh, R. (2002) Corporate governance: A framework for implementation. *Britain World Group Journal*, 20, pp.123-132.

- Marsh, P. (1982) The choice between equity and debt: An empirical study. *Journal of Finance*, 37(1), pp.121-44.

- Mathiesen, A. and Henrik, C. (2002) Managerial ownership and financial performance. Ph.D thesis, Copenhagen Business School, Department of International Economics and Management.

- Mehran, H. (1995) Executive compensation structure, ownership, and firm performance. *Journal of Financial Economics*, 38, pp.163–84.

- Metrick, A. and Ishii, L. (2002) Firm level corporate governance. Unpublished paper presented at the Global Corporate Governance Forum Research Network Meeting

- Michaelas, N., Chittenden, F. and Poutziouris, P. (1999) Financial policy and capital structure choice in U.K. SMEs: Empirical evidence from company panel data. *Small Business Economics*, 12, pp.113–130.

- Miller, M. (1977) Debt and taxes. *Journal of Finance,* 32(2), pp.261-75.

- Mir, S. and Nishat, M. (2004) Corporate governance structure and firm performance in Pakistan – an empirical study. *Working Paper*, Lahore University of Management Sciences.

- Modigliani, F. and Miller, M. (1958) The cost of capital, corporation finance the theory of Investment. *American Economic Review*, 48, pp. 261- 97.

- Modigliani, F. and Miller, M. (1963) Corporate income taxes and the cost of capital: A correction. *American Economic Review,* 53, pp.433-443.

- Monks R. and Minow, N. (1995) *Corporate Governance*. Cambridge: Blackwell Publishers

- Myers, C. (1977) Determinants of corporate borrowing. *Journal of Financial Economics*, 5(5), pp.147–75.

- Myers, C. and Majluf, S. (1984) Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13, pp.187-221.

- Myring, M. (2006) The relationship between returns and unexpected earnings: A global analysis by accounting regimes. *Journal of International Accounting, Auditing & Taxation*, 15(1), pp.92-108.

- Neal, A. (2010) *Conscientious Equity: An American entrepreneur's solutions to the world's greatest problems*, NY: Palgrave Macmillan.

- Nor, M., Said, R. and Redzuan, H. (1999) Structure of ownership and corporate financial performance: A Malaysian case. *Malaysian Management Review,* pp.44–48.

- Organisation for Economic Co-operation and Development (1999) OECD Principles of corporate governance. *Conference Proceedings,* (Paris, France)

- Percy, P. (1997) Auditing and corporate governance a look forward into the 21st century. *International Journal of Auditing,* 1(1), pp.3-12.

- Pfeffer, J. (1973) Size, composition and function of corporate boards of directors: the organisation-environment linkage. *Administrative Science Quarterly*, 18, pp.349-64.

- Pfeffer, J. and Salancick, R. (1978) *The external control of organizations: A resource-dependence perspective*. New York: Harper & Row.

- Rajan, R. and Zingales, L. (1995) What do we know about capital structure: Some evidence from international data. *Journal of Finance,* 50, pp.1421-60.

- Rhoades, L., Rechner, L. and Sudramurthy, C. (2000) Board composition and financial performance: A meta-analysis of influence of outside directors. *Journal of Managerial Issues*, 12, pp.76–91.

- Rosenstein, S. and Wyatt, J. (1990) Outside directors: board independence and shareholder wealth. *Journal of Financial Economics*, 26, pp.175-191.

- Roszaini, H. and Mohammad, H. (2006) Corporate governance structure and performance of Malaysian listed companies. *Journal of Business Finance & Accounting,* 1-29.

- Saad, N. (2010) Corporate governance and the effects to capital structure in Malaysia. *International journal of economics and finance*, 2(1), pp.105-114

- Sanda, U., Mikailu, A. and Garba, T. (2005) Corporate governance mechanisms and firm financial performance in Nigeria. *AERC Research Working Paper,* 149, Nairobi.

- Scott, J. (1977) Bankruptcy, secured debt, and optimal capital structure. *Journal of Finance,* 32(1), pp.1-19

- Shafer, W., Morris, R. and Ketchand, A. (2001) Effects of personal values on auditors' ethical decisions. *Accounting, Auditing & Accountability Journal*, 14 (3), pp.254-77.

- Shleifer, A. and Vishny, R. (1986) Large shareholders and corporate control. *Journal of Political Economy*, 94, pp.461–88.

- Shleifer, A. and Vishny, R. (1997) A survey of corporate governance. *Journal of Finance*, 52(2), pp.737-83.

- Smith, C. and Watts, R. (1992) The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics*, 32, pp.263–92.

- Sulong, Z., Nor, F. (2010) Corporate governance mechanisms and firm valuation in Malaysian listed firms: A panel data analysis. *Journal of Modern Accounting and Auditing*, 6 (1), pp.1-18

- Titman, S. and Wessels, R. (1988) The determinants of capital structure choice. *Journal of Finance,* 43, pp.1-21

- Vafeas, N. and Theodorou, E. (1998) The relationship between board structure and firm performance in the UK. *British Accounting Review*, 30, pp.383–407.

- Volgevang, B. (2005) *Econometrics theory and applications with Eviews.* Harlow: Pearson Education Limited.

- Voulgarakis F., Asteriou, D. and Agiomirgianakis, G. (2002) Capital structure, asset utilization, profitability and growth in Greek manufacturing sector. *Applied Economics,* 34, pp.1379-88

- Wald, J. (1999) How firm characteristics affect capital structure: an international comparison. *Journal of Financial Research*, 22(2), pp.161-88

- Weir, C. and Laing, D (1999) The Governance-performance relationship: The effects of Cadbury compliance on UK quoted companies. *Working Paper*, Presentation at the European Accounting Conference, Bordeaux, France.

- Weir, C. and Laing, D. (2001) Governance structures, director independence and corporate performance in the UK. *European Business Review,* 13, pp.86-94.

- Weir, C., Laing, D. and McKnight P. J. (2002) Internal and external governance mechanisms: Their impact on the performance of large UK public companies. *Journal of Business Finance and Accounting*, 29, pp.579–611.

- Weisbach, S. (1988) Outside directors and CEO turnover. *Journal of Financial Economics*, 20, pp.431–60.

- Wen, Y., Rwegasira, K. and Bilderbeek, J. (2002) Corporate governance and capital structure decisions of Chinese listed firms. *Corporate Governance: An International Review*, 10(2), pp.75-83.

- Xanthakis, M. , Tsipouri, L. and Spanos, L. (2003) *Corporate Governance: Concept and evaluation methods,* University of Athens Center of Financial Research and Education, Papazisis Publishing House.

- Yermack, D. (1996) Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40, pp.185–211.

Websites

- The Investopedia website, (2010) *Definition of Price to Earnings ratio* [online] Available at: http://www.investopedia.com/terms/c/capitalstructure.asp [Accessed 13 August 2010]
- The Investopedia website, (2010) *Definition of Price to Earnings ratio* [online] Available at: http://www.investopedia.com/terms/p/price-earningsratio.asp [Accessed 12 August 2010]
- The Wikipedia website, (2010) *Definition of Q ratio* [online] Available at: http://www.investopedia.com/terms/q/qratio.asp [Accessed 11 August 2010]
- The Wikipedia website, (2010) *Description of the Athens Stock Exchange* [online] Available at: http://en.wikipedia.org/wiki/Athens_Stock_Exchange [Accessed 10 August 2010]

Appendix

Table A: Descriptive Statistics

	2005					2006				
	Mean	*Median*	*Max*	*Min*	*Std. Dev.*	*Mean*	*Median*	*Max*	*Min*	*Std. Dev.*
AGF	3.242	3.332	4.836	1.38	0.607	3.288	3.367	4.844	1.609	0.580
AUD	0.388	0.000	1.000	0.000	0.488	0.444	0.000	1.000	0.000	0.498
CAPEX	0.163	0.028	24.28	0.000	1.659	0.061	0.030	2.340	0.000	0.179
CEO_DUAL	0.593	1.000	1.000	0.000	0.492	0.598	1.000	1.000	0.000	0.491
DR	0.562	0.578	2.295	0.046	0.225	0.561	0.586	1.084	0.009	0.193
FS	4.623	4.505	9.287	1.659	1.378	4.703	4.572	9.427	1.559	1.378
GR	0.020	0.038	1.399	-0.563	0.226	0.130	0.120	1.192	-0.981	0.261
LEVER	1.249	1.423	25.020	-121.88	8.878	2.201	1.461	55.73	-26.20	5.538
PBV	0.578	0.392	2.956	-2.768	0.669	0.653	0.521	3.550	-2.168	0.670
PE	1.595	2.488	4.501	-4.398	2.330	1.412	2.541	4.595	-4.59	2.606
BD	1.978	1.946	2.708	1.099	0.294	1.995	1.946	2.708	1.386	0.288
SA	4.137	3.997	8.803	-0.895	1.566	4.215	4.120	9.002	-2.158	1.665
NDTS	0.031	0.025	0.263	0.000	0.031	0.030	0.025	0.304	0.000	0.033
OUT_DIR	0.536	0.500	2.143	0.222	0.196	0.542	0.500	2.143	0.222	0.197
ROA	0.020	0.018	0.477	-0.49	0.072	0.025	0.021	0.699	-0.536	0.089
ROE	0.072	0.044	7.438	-2.03	0.579	0.022	0.058	2.115	-3.646	0.469
TANG	0.535	0.556	0.985	0.018	0.211	0.523	0.546	0.996	0.020	0.217
TQ	0.657	0.444	9.666	0.055	0.845	0.778	0.570	9.750	0.049	0.874

Table A: Descriptive Statistics (Cont.)

	2007					2008				
	Mean	*Median*	*Max*	*Min*	*Std. Dev.*	*Mean*	*Median*	*Max*	*Min*	*Std. Dev.*
AGF	3.331	3.401	4.852	1.792	0.556	3.371	3.434	4.860	1.946	0.534
AUD	0.425	0.000	1.000	0.000	0.496	0.439	0.000	1.000	0.000	0.497
CAPEX	0.053	0.030	0.813	0.000	0.089	0.056	0.031	0.860	0.000	0.092
CEO_DUAL	0.579	1.000	1.000	0.000	0.495	0.598	1.000	1.000	0.000	0.491
DR	0.583	0.592	1.466	0.017	0.198	0.607	0.599	1.978	0.024	0.230
FS	4.813	4.743	9.345	1.746	1.395	4.870	4.751	9.318	1.767	1.404
GR	0.201	0.119	9.682	-1.000	0.712	0.116	0.050	4.148	-0.989	0.439
LEVER	1.937	1.512	59.44	-29.09	4.922	1.974	1.548	12.449	-11.46	2.376
PBV	0.675	0.489	3.640	-2.208	0.663	0.730	0.670	2.783	-1.248	0.601
PE	1.477	2.583	4.576	-4.587	2.518	0.831	1.672	4.532	-4.541	2.189
BD	2.002	1.946	2.833	1.386	0.294	1.993	1.946	2.708	1.609	0.293
SA	4.339	4.323	9.052	-3.243	1.657	4.384	4.302	9.223	-1.654	1.675
NDTS	0.032	0.023	0.401	0.000	0.045	0.031	0.022	0.277	0.000	0.037
OUT_DIR	0.535	0.500	2.143	0.167	0.198	0.543	0.500	2.143	0.333	0.196
ROA	0.028	0.023	1.149	-0.489	0.111	-0.004	0.011	0.534	-1.740	0.159
ROE	0.084	0.066	5.218	-2.605	0.500	0.038	0.037	2.201	-2.815	0.396
TANG	0.509	0.534	0.996	0.001	0.219	0.507	0.523	0.950	0.000	0.227
TQ	0.832	0.579	7.573	0.096	0.903	0.381	0.221	4.782	0.026	0.490

Table A: Descriptive Statistics (Cont.)

	2009					*2005 – 2009*				
	Mean	*Median*	*Max*	*Min*	*Std. Dev.*	*Mean*	*Median*	*Max*	*Min*	*Std. Dev.*
AGF	3.410	3.466	4.868	2.079	0.515	3.328	3.367	4.868	1.386	0.560
AUD	0.453	0.000	1.000	0.000	0.499	0.428	0.000	1.000	0.000	0.495
CAPEX	0.042	0.018	0.693	0.000	0.081	0.075	0.028	24.28	0.000	0.748
CEO_DUAL	0.570	1.000	1.000	0.000	0.496	0.585	1.000	1.000	0.000	0.493
DR	0.627	0.595	5.815	0.007	0.444	0.588	0.591	5.815	0.007	0.275
FS	4.816	4.628	9.214	1.363	1.440	4.745	4.627	9.427	-2.10	1.440
GR	-0.13	-0.129	1.993	-0.998	0.270	0.066	0.046	9.682	-1.000	0.437
LEVER	4.704	1.520	517.96	-5.618	35.44	2.411	1.511	517.96	-121.9	16.679
PBV	0.659	0.623	4.597	-2.209	0.663	0.674	0.555	6.587	-2.768	0.720
PE	0.579	1.089	4.572	-4.416	2.419	1.176	2.284	4.595	-4.60	2.442
BD	2.003	1.946	2.708	1.609	0.276	1.994	1.946	2.833	1.099	0.288
SA	4.172	4.151	8.851	-2.792	1.802	4.242	4.184	9.223	-3.24	1.687
NDTS	0.031	0.024	0.303	0.000	0.032	0.031	0.024	0.401	0.000	0.036
OUT_DIR	0.556	0.551	2.143	0.333	0.186	0.542	0.500	2.143	0.167	0.194
ROA	-0.02	0.001	0.463	-1.95	0.156	0.010	0.013	1.149	-1.95	0.124
ROE	-0.26	0.007	0.960	-45.01	3.095	-0.00	0.041	7.438	-45.01	1.451
TANG	0.507	0.529	0.951	0.000	0.237	0.518	0.540	0.996	0.000	0.223
TQ	0.379	0.252	3.819	0.025	0.445	1.204	0.406	243.142	0.025	11.484

Table B: Correlation Matrix

Table 2: Correlation Matrix

	AGF	AUD	CAPEX	CEO_DUAL	DR	FS	GR	PBV	LEVER	PE	BD	SA	OUT_DIR	TQ	TANG	ROE	ROA
AGF	1.000	-0.068	-0.068	0.119	0.037	0.176	-0.008	-0.076	0.007	-0.143	0.078	0.054	0.032	-0.241	0.182	-0.035	-0.103
AUD	-0.068	1.000	-0.016	-0.042	0.115	-0.098	-0.028	-0.004	0.037	-0.009	-0.116	-0.075	-0.163	0.011	-0.146	-0.028	-0.054
CAPEX	-0.068	-0.016	1.000	0.018	0.004	0.090	0.002	-0.031	-0.007	0.062	0.019	0.111	0.015	-0.009	0.009	0.009	0.034
CEO_DUAL	0.119	-0.042	0.018	1.000	-0.070	0.183	-0.038	-0.019	-0.050	-0.033	0.318	0.136	0.031	0.046	0.063	0.046	0.010
DR	0.037	0.115	0.004	-0.070	1.000	0.006	0.009	-0.157	0.072	-0.110	-0.075	0.044	0.004	-0.129	-0.158	-0.036	-0.525
FS	0.176	-0.098	0.090	0.183	0.006	1.000	-0.013	0.085	-0.021	0.134	0.463	0.858	0.198	0.055	0.073	0.077	0.199
GR	-0.008	-0.028	0.002	-0.038	0.009	-0.013	1.000	-0.008	-0.001	0.018	-0.006	0.042	0.004	-0.012	0.057	0.003	0.008
PBV	-0.076	-0.004	-0.031	-0.019	-0.157	0.085	-0.008	1.000	0.297	0.028	0.060	0.125	0.057	0.383	-0.001	-0.255	0.193
LEVER	0.007	0.037	-0.007	-0.050	0.072	-0.021	-0.001	0.297	1.000	-0.034	0.018	-0.013	0.052	-0.028	-0.056	-0.967	-0.021
PE	-0.143	-0.009	0.062	-0.033	-0.110	0.134	0.018	0.028	-0.034	1.000	0.062	0.212	0.094	0.189	-0.089	0.088	0.324
BD	0.078	-0.116	0.019	0.318	-0.075	0.463	-0.006	0.060	0.018	0.062	1.000	0.423	0.252	0.103	0.038	0.002	0.108
SA	0.054	-0.075	0.111	0.136	0.044	0.858	0.042	0.125	-0.013	0.212	0.423	1.000	0.230	0.117	-0.020	0.078	0.271
OUT_DIR	0.032	-0.163	0.015	0.0309	0.004	0.198	0.004	0.057	0.052	0.094	0.252	0.230	1.000	0.115	-0.078	-0.048	0.088
TQ	-0.241	0.011	-0.009	0.046	-0.129	0.055	-0.012	0.383	-0.028	0.189	0.103	0.117	0.115	1.000	-0.169	0.074	0.320
TANG	0.182	-0.146	0.009	0.063	-0.158	0.073	0.057	-0.001	-0.056	-0.089	0.038	-0.020	-0.078	-0.169	1.000	0.025	-0.046
ROE	-0.035	-0.028	0.009	0.046	-0.036	0.077	0.003	-0.255	-0.967	0.088	0.002	0.078	-0.048	0.074	0.025	1.000	0.053
ROA	-0.103	-0.054	0.034	0.010	-0.525	0.199	0.008	0.193	-0.021	0.324	0.108	0.271	0.088	0.320	-0.046	0.053	1.000

Table C: Table of Companies (Sample)

1	AEGEK S.A	*46*	EL. D. MOUZAKIS S.A.
2	AKRITAS S.A.	*47*	ELASTRON S.A.
3	ALCO HELLAS SA	*48*	ELBISCO HOLDING S.A.
4	ALFA-BETA VASSILOPOULOS S.A.	*49*	ELECTRONIKI ATHINON S.A.
5	ALPHA GRISSIN S.A.	*50*	ELEFTHERI TILEORASI S.A.
6	ALSINCO S.A	*51*	ELFICO S.A.
7	ALTEC S.A. INFORM. & COMMUN. SYST.	*52*	ELGEKA S.A.
8	ALUMIL ALUMINIUM INDUSTRY S.A.	*53*	ELINOIL S.A
9	ANEK LINES S.A.	*54*	ELLAKTOR S.A.
10	AS COMPANY S.A.	*55*	ELMEC SPORT S.A.
11	ASTIR PALACE VOULIAGMENI S.A.	*56*	ELTON S.A.
12	ATERMON COMMUNICATION S.A	*57*	ELTRAK S.A.
13	ATHENS MEDICAL C.S.A.	*58*	ELVAL S.A.
14	ATHENS WATER SUPPLY & SEWAGE Co.	*59*	ELVE S.A
15	ATLANTIC SUPER MARKET S.A.	*60*	ELVIEMEK S.A.
16	ATTICA HOLDINGS S.A.	*61*	EMPORIKOS DESMOS S.A.
17	ATTICA PUBLICATIONS S.A.	*62*	EUROCONSULTANTS SA
18	ATTI-KAT S.A	*63*	EURODRIP S.A
19	AUTOHELLAS S.A.	*64*	EUROHOLDINGS S.A.
20	AXON S.A. HOLDING	*65*	EUROMEDICA S.A.
21	BABIS VOVOS S.A.	*66*	EVROFARMA SA
22	BIOKARPET S.A.	*67*	FASHION BOX HELLAS S.A.
23	BIOTER S.A	*68*	F.G. EUROPE S.A
24	BITROS HOLDING S.A.	*69*	KYRIAKIDIS S.A.
25	BYTE COMPUTER S.A.	*70*	FIERATEX S.A.
26	C. CARDASSILARIS & SONS - CARDICO S.A.	*71*	FINTEXPORT S.A.
27	CENTRIC MULTIMEDIA S.A.	*72*	FLEXOPACK S.A.
28	CHATZIKRANIOTIS & SONS MILLS S.A.	*73*	FLOUR MILLS S.A
29	COCA-COLA E.E.E. S.A.	*74*	FLOUR MILLS KEPENOS S.A.
30	CORINTH PIPEWORKS S.A.	*75*	FOLLI - FOLLIE S.A
31	CPI COMPUTER INTERNATIONAL	*76*	FORTHNET S.A.
32	CRETE PLASTICS S.A.	*77*	FOURLIS S.A
33	CROWN HELLAS CAN	*78*	FRIGOGLASS S.A.
34	CYCLON HELLAS S.A.	*79*	GALAXIDI FISH FARMING S.A.
35	DAIOS PLASTICS SA	*80*	GEKE S.A.
36	DIAGNOSTIC CENTER OF ATHENS HYGEIA	*81*	GEN. COMMERCIAL & IND.
37	DIAS AQUACULTURE S.A.	*82*	GR. SARANTIS S.A.
38	DIONIC AEBE	*83*	OPAP S.A.
39	DOMIKI KRITIS S.A.	*84*	HALKOR S.A (FORMER VECTOR)
40	DROMEAS S.A.	*85*	HATZIOANNOU SA
41	DRUCKFARBEN HELLAS SA	*86*	HELLENIC FABRICS S.A.
42	DUROS S.A.	*87*	HELLENIC CABLES S.A.
43	E. PAIRIS S.A	*88*	HELLENIC DUTY FREE SHOPS S.A.
44	EDRASIS - C. PSALLIDAS S.A.	*89*	HELLENIC EXCHANGES S.A.
45	EKTER S.A.	*90*	HELLENIC FISHFARMING S.A.

91	HELLENIC PETROLEUM S.A.	136	LIGHT METALS INDUSTRY
92	HELLENIC SUGAR INDUSTRY S.A.	137	LOGISMOS SYSTEMS S.A.
93	HELLENIC TELECOM. ORG.	138	LOULIS MILLS S.A.
94	HERACLES GENERAL CEMENT COMp. S.A.	139	MM. J. MAILLIS S.A.
95	HIPPOTOUR S.A.	140	MARAC ELECTRONICS
96	I. KLOUKINAS - I. LAPPAS S.A.CONSTR. S.A.	141	MARITIME COMPANY OF LESVOS
97	IASO S.A.	142	MATHIOS REFRACTORY S.A.
98	IDEAL GROUP S.A.	143	MEDICON HELLAS S.A
99	IKONA - IHOS S.A.	144	METKA S.A.
100	IKTINOS HELLAS S.A.	145	MEVACO S.A.
101	ILYDA SA	146	MICHANIKI S.A.
102	IMPERIO ARGO GROUP S.A.	147	MICROLAND COMPUTERS S.A.
103	Info-Quest S.A.	148	MINERVA KNITWEAR S.A.
104	INFORM P. LYKOS S.A.	149	MINOAN LINES SA
105	INFORMER S.A.	150	MLS MULTIMEDIA S.A.
106	INTERFISH SA	151	MOCHLOS S.A.
107	INTERTECH S.A. INTER. TECHNOLOGIES	152	MOTOR OIL SA
108	INTERWOOD-XYLEMPORIA A.T.E.N.E.	153	MOTORCYCLES MARINE ENG. S.A.
109	INTRAKAT S.A.	154	MYTILINEOS HOLDINGS S.A.
110	INTRACOM S.A. HOLDINGS	155	N. LEVENTERIS
111	INTRALOT S.A.	156	N. VARVERIS-MODA BAGNO S.A.
112	IONIAN HOTEL ENT.	157	NAFPAKTOS TEXTILE IND S.A.
113	JJ. & P. - AVAX S.A.	158	NEORION HOLDINGS S.A.
114	J.BOUTARIS & SON HOLDING S.A.	159	NEWSPHONE HELLAS S.A.
115	JUMBO S.A.	160	NEXANS HELLAS S.A.
116	KARAMOLENGOS BAKERY INDUSTRY S.A.	161	NIREUS S.A.
117	KARATZIS S.A.	162	NUTRIART S.A.
118	KARELIA TOBACCO COMPANY INC. S.A.	163	OLYMPIC CATERING S.A.
119	KATHIMERINI PUBLISHING SA	164	PPAPERPACK - TSOUKARIDIS S.A.
120	KEKROPS S.A.	165	PC SYSTEMS S.A.
121	KERAMIA-ALLATINI S.A.	166	PEGASUS PUBLISHING S.A.
122	KIRIACOULIS SHIPPING S.A.	167	PERSEUS S.A.
123	KLEEMANN HELLAS S.A.	168	PETROS PETROPOULOS S.A.
124	KORDELLOS CH. BROS S.A.	169	PETZETAKIS S.A.
125	KORRES NATURAL PRODUCTS	170	P.G. NIKAS S.A
126	KRE.KA S.A.	171	PIPE WORKS S.A.
127	KRETA FARM SA	172	PLAISIO COMPUTERS S.A.
128	kRI-KRI SA	173	PLIAS CONSUMER GOODS S.A.
129	KTIMA KOSTAS LAZARIDIS S.A.	174	PROFILE SYSTEMS & SOFTWARE
130	LAMBRAKIS PRESS	175	PROODEFTIKH TECHNICAL COMP
131	LAMDA DEVELOPMENT S.A.	176	QUALITY AND RELIABILITY S.A.
132	LAMPSA HOTEL CO	177	REVOIL S.A.
133	LANAKAM S.A.	178	RIDENCO S.A.
134	LAVIPHARM S.A.	179	RILKEN S.A.
135	LIBERIS PUBLICATIONS S.A.	180	S & B INDUSTRIAL MINERALS S.A.

181	SANYO HELLAS HOLDING S.A.	199	TITAN CEMENT COMPANY S.A.
182	SATO OFFICE AND HOUSEWARE SUPPLIES S.A.	200	UNIBIOS HOLDINGS S.A.
183	SELECTED TEXTILE IND. ASSOC. S.A.	201	VARANGIS AVEPE S.A.
184	SELONDA AQUACULTURE S.A.	202	VARDAS SA
185	SFAKIANAKIS S.A.	203	VARVARESSOS S.A.
186	SHELMAN WOOD PROD. MANUF. S.A.	204	VELL GROUP S.A.
187	SIDENOR S.A. (FORMER ERLIKON)	205	VIOHALKO S.A.
188	SPACE HELLAS SA	206	VIS CONTAINERS MANUF SA
189	SPIDER METAL N.PETSIOS & SONS S.A.	207	VIVARTIA S.A.
190	SPRIDER STORES S.A	208	VIVERE S.A.
191	STELIOS KANAKIS SA	209	VOGIATZOGLOU SYSTEMS S.A.
192	THE HOUSE OF AGRICULTURE SPIROY S.A.	210	"WOOL IND TRIA ALFA" S.A.
193	TECHNICAL OLYMPIC S.A.	211	X. BENRUBI S.A.
194	TECHNICAL PUBLICATIONS S.A.	212	X. K. TEGOPOULOS EDITIONS
195	TELETIPOS S.A.	213	XAIDEMENOS S.A.
196	TEXAPRET S.A.	214	YYALCO - CONSTANTINOU
197	THESSALONIKI PORT AUTHORITY S.A.	215	ZAMPA S.A.
198	THRACE PLASTICS CO.		