Gender diversity and firm performance: Evidence from Greece.

Gkournelou Eirini

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

of Master of Science in Applied Economics & Data Analysis

University of Patras, Department of Economics

Author Gkournelou Eirini

Three-member Dissertation Committee

Research Supervisor: Dimitrios Tzelepis   Associate Professor

Dissertation Committee Member: Konstantinos Kounetas   Assistant Professor

Dissertation Committee Member: Nikolaos Giannakopoulos   Associate Professor

The present dissertation entitled

«Gender diversity and firm performance: Evidence from Greece.»

was submitted by **Gkournelou Eirini, Sid 1016915**, in partial fulfillment of the requirements for the degree of Master of Science in *«Applied Economics & Data Analysis»* at the University of Patras and was approved by the Dissertation Committee Members.

I would like to dedicate my dissertation to my Mom and Dad because they have encouraged my academic interests from day one, even when my curiosity led to incidents that were kind of hard to explain. I am grateful to my parents, who have provided me through moral and emotional support in my life.

Acknowledgments

Summary

In this dissertation, we examine whether gender diversity affects company's performance. In the process of this study, factors that can affect performance and also be associated with the manager's gender are taken into account. The principal objective in this work is to produce an estimation of a model for the influence that gender diversity on top management job positions has, on financial performance. Furthermore, in order to measure the profitability of the companies, which we have in our sample, we will use financial indicators. Thus, Return On Equity and Return on Assets are the two main financial indicators. In our work in order to test the hypothesis relative to the impact that manager's or CEO's gender has on firm's performance, we will produce a regression analysis.

Moving on, cross-sectional data of a sample of Greek companies is used. Based on the economic theory we present descriptive statistical analysis assumptions for the regression models produced.

Keywords: Gender diversity, ROE , ROA , Firm's performance

Περίληψη

Στόχος της παρούσας διπλωματικής εργασίας είναι η μελέτη του κατά πόσο το φύλο ενός μάνατζερ μπορεί να επηρεάσει την αποδοτικότητα μιας επιχείρησης. Παράγοντες που μπορούν να επηρεάσουν την απόδοση αλλά και ταυτόχρονα να συσχετίζονται με το φύλο των μανατζερ λαμβάνονται υπόψιν στην παρούσα διπλωματική εργασία.

Στόχος της μελέτης αυτής είναι η εκτίμηση ενος μοντέλου το οποίο θα υποδεικνύει την επιροή που έχει το φύλο των διευθυντικών στελεχών στην επίδοση της επιχείρησης και μάλιστα στην οικονομική της αποδοτικότητα. Επιπλέον, για να μετρήσουμε την αποδοτικότητα των εταιρειών που έχουμε στο δείγμα μας, θα χρησιμοποιήσουμε οικονομικούς δείκτες(αριθμοδείκτες). Έτσι, για να κάνουμε την εκτίμησή μας, σχετικά με την επιροή που έχει το φύλο των διευθυντικών στελεχών στην επίδοση της εταιρείας, η απόδοση των ιδίων κεφαλαίων και η απόδοση των περιουσιακών στοιχείων είναι οι χρηματοοικονομικοί δείκτες που θα χρησιμοποιήσουμε.

Εν συνεχεία, στην διάθεσή μας έχουμε διαστρωματικά δεδομένα, απο δείγμα Ελληνικών επιχειρήσεων. Βασισμένοι σε πρόσφατες αντίστοιχες ερευνητικές εργασίες θα παρουσιάσουμε τα ερευνητικά μας ερωτήματα, για την εκτίμησή μας.

Λέξεις κλειδιά: Διάκριση Φύλου, Απόδοση Ιδίων Κεφαλαίων, Απόδοση Περιουσιακών Στοιχείων, Απόδοση Εταιρείας

Contents

List of Tables

Chapter 1

Introduction

Allowing for the rapid growth of today's world and the fast pace of our life, nowadays a lot of issues have arisen concerning people's well being, economical environment, the strusture of the modern societies, social inequalities in labor market and many others. Amongst these issues is the problem of gender diversity on top management positions into the labor market, which admittedly concerns females all over the world no matter what their age or social background is.

Moving on, due to an every changing economical environment,countries and the whole world passes through different periods according to the economical cycle. Nonetheless, in each period the problem of split labor market based on gender discrimination remains. Nowadays, where every modern society is in a crisis period where individuals deal with a high level of unemployment we finally observe that this problem concerns more and more all females who want to work as ceo or manager in a company.

Thus, gender diversity on top management positions is an issue which frequently generates a great deal of heated debate with supporters maintaining that it is vital in order to "protect" firm's performance, whilst opponents claim that it is an unjustifiable restriction. Thus, some people support the view that females can be career women too, as Shrader (1997) found a positive relation between a higher proportion of women on the board of directors and firm performance. Smith et

al.(2006) found a positive relationship too, although the data was insignificant. Most of the important researches about this were performed several years ago and it would be relevant to investigate it again. A problem in past researches, for instance in the research from Shrader (1997), was that he could not get an appropriate sample because there were just not enough females on top management positions. Nowadays, this has changed and can be investigated again.

Furthermore,it must be said that sense of responsibility is one of the most important qualities which can be instilled in every person in order to work on top management positions. Not to mention that it should not be forgotten that there are other equally important qualities such as personal point of view, educational characteristics even demographic characteristics for this issue. Thus, i would like to mention that the high level of males who work as a manager or ceo in Greek companies, maybe relies on a real difference on productive characteristics that males have against females or differently it has to deal with social criteria and especially the personal view of the entrepreneurs based on their preferences. Often the distinction is introduced because of the entrepreneur's preference who consider males to be more productive. Thus, how the board members choose and recruit employees on top management positions? By what criteria? Is there a real effect of gender on firm's performance? These are some of the questions that have encouraged us to explore this issue in Greek labor market.

The purpose of this study is to investigate the impact of the proportion of women in executive management on firm performance. Gender diversity in top management can be both positive and negative, which makes it interesting to learn what view is supported by data. From a practical point of view, the number of female executive directors has increased in recent years, even the development is slow and females are still underrepresented in many business fields. While female executive directors enhance firm's performance, more women are needed in top management. In our study, according to the sample examined, we found that the percentage of the Ceo or managers who are males, is up to 82.73%, while only the 17.23% is

females. In the process of our work we will produce an estimation using OLS regression model, in order to examine not only this effect, but also a lot of other demografic characteristics, on firm's performance. Based on the central idea of our work, we conclude that females have o positive effect on firm's performance. In other words, although it is less likely to find a female working as Ceo or manager in a Greek company, we conclude that when in top management positions work females the performance is in a higher level. According to the Greek companies examined we should take under consideration that the reasons that females are not in top management positions, have possibly to do with social criteria and of course with the personal view of the entrepreneurs. Unfortunately, it seems also from our research that in Greece there is a devaluation of women as high-standing individuals in a company. Thus, we could also mention that somehow the "glass celling theory" exists in our country. According to this theory women could not work in top management positions. They have limits in the hierarchy and can reach a certain working level in a firm. Besides, there is a certain degree of fear over women's careers, as there is a perception that when women will make a family, it is more possible to put their work in second place even their productive characteristics are in the same level that men have while they are working in the same projects. According to Klaile (2013) women are not sending as many signals about their skills and their will to be promoted compared to men. Therefore, females seem to have lower career ambitions, even if they believe they have the required skills for leadership roles. Signalling of the right abilities is often needed, if a person desires a top management position. When having children females stay away from the labor market for a long period, which limits their signalling frequency. During that time females cannot use their full potential, while men will have an advantage in their career ambitions. Returning to the labour market after childbirth can also mean difficulties in signalling due to loss in human capital or less time that is allocated to work compared to the time before having children. It would be also useful to be considered that there is a limited amount of years

to a human's working life. (Klaile 2013). A common understanding is that the long traditions of a workforce dominated by men is hindering women's promotion on top management positions. However, there is a change happening now where more females have a higher education. Thus, it would be a good chance for Greek society to be examined an issue like this.

Chapter 2

Literature Review

2.1 Split labor market and the Gender Gap

As we will demonstrate, discriminatory treatment within the labor market is a major cause of this inequality. Economic research on the presence of discrimination in employment has focused more on black-white and male-female earnings and occupational disparities. The position typically taken by economists is that some part of the racial or gender gap in earnings or occupations is due to average group differences in productivity linked characteristics (a human capital gap) and some part is due to average group differences in treatment (a discrimination gap). To begin with, split labor market is a situation in which one group of laborers, usually defined by race, sex, or ethnicity, is routinely paid less than other groups. The term of split labor market concerns not only the income or the wage from being an employee, but also the fact that according to its gender,for instance, someone remains unemployed. In order to talk about the existence of a split labor market, there must be two groups of workers who enjoy different salaries for the same job or would differ if they did the same work(Bonarich, 1972:549). All other things being equal, capital will gravitate to the cheaper priced group because of its malleability and high profit potential.(Bonarich, 1972:25)

For instance and according to the split labor market, Donohue and Heckman (1991) provide evidence that racial discrimination declined during the interval

1965-1975. Gottschalk (1997) has produced statistical estimates that indicate that discrimination against black males dropped most sharply between 1965 and 1975, and that discrimination against females declined during the interval 1973-1994.

Significant progress has been made in terms of gender diversity in management, as females are increasingly appear to be in the management ranks(Elsass and Graves, 1997). However, gender diversity in administration does not provide sufficient attention to the research literature. Researchers in strategic management have studied diversity, mainly in terms of tenure, education, and functional background. The area of work force diversity, however, includes a wider one demographic perspective (Cox, 1994).

2.1.1 Glass Celling Theory

Gradually, the number of females promoted to management positions has been growing. However, women still face many difficulties in their career advancement. For instance, females promoted to executive management teams are often responsible for support functions, such as human resources, marketing as well as communication tasks, compared to men taking care of business operations (Smith et al. 2013). Barriers in women's career advancement, the so called "glass ceiling", have become a widely discussed topic.

Based on split labor market by sex significant differences are obvious. It would be useful to refer a theory existed about working women as managers or CEOS. The glass ceiling is described as a 'well enshrined phenomenon supported by conclusive evidence,' according to Simpson and Altman (2003). According to Meyerson and Fletcher (2000), despite the increased numbers of females both participating in the workforce and achieving management positions, the 'glass ceiling' still exists. However, Sturges (1999) observes that males and females may differ in how they measure career success. Males appear to focus on external criteria, such as status and material success, while females focus on internal criteria, such as personal

recognition, accomplishment, and achieving balance in their lives. According to Linehan (2002), female managers in every country remain a tiny fraction of those in senior positions. Women managers report that a lack of career development opportunities has created problems in their careers (Rosen, Miguel and Peirce 1989). They also perceive that they have less opportunities than males for promotion to senior management (Parker and Fagenson 1994). Linehan, Scullion and Walsh(2001) indicate that female international managers have to overcome many additional apparent and concealed barriers before being developed for international assignment. The findings of a study by David (2001) show that there is evidence of a glass ceiling for women. David (2001) examined gender and race inequalities of white male earnings. The study's findings show us the evidence of a glass ceiling for women, but racial inequalities among men do not follow a similar pattern. Mavin (2000) also indicates that the glass ceiling issue has considerable impact on women's careers internationally. Furthermore, Chenevert and Tremblay (2002) also stated that even if female managers have a high level of education and the desire to progress in their careers, it remains the case that few achieve the same status or salary as their male counterparts, and that one of the reasons for this is the so-called *'glass ceiling'*. Finally, Meyerson and Fletcher (2000) indicate that despite the increased number of women both participating in the workforce and reaching management positions, the evidence demonstrates that, for the majority, advancement to the very highest levels is rare and that the 'glass ceiling' still exists.

2.1.2 Biological, Socialization and Structural/Cultural Models

Moving on, we would like to mention that three approaches may explain the glass ceiling phenomenon or gender-related inequality in organizations: biological models, socialization models, and structural or cultural models(Cleveland et al., 2000; Bartol, 2003; Weyer, 2007). According to biological models, there are biological

differences between males and females, such as genetic, hormonal, and physical characteristics, and the reasons for these differences are the result of genetic patterns evolved from adaptations to differing reproductive circumstances of early men and women. These adaptations have emerged slowly over thousands of generations, and these differences are stable and necessary for survival (Cleveland et al., 2000; Lueptow et al., 2001). Socialization models focus on observed differences between males and females. The models assume that males and females behave differently due to various social and intellectual development processes of the individuals related with life stages, such as schooling and work life. In this approach, observed differences are not stable, however on the other hand, are subject to change (Cleveland et al., 2000; Bartol, 2003). According to structural-cultural models, social structures, systems, and arrangements lead and define gender differences due to discrepancies in status and power (Bartol, 2003).

In these models, differences exist to keep the powerful in control and the powerless without power, and these are changeable (Cleveland et al., 2000). Socialization and structural or cultural models have received more attention in the literature than biological models (Bartol et al.,2003) and have been called the most accepted explanation for gender differences (Lueptow et al., 2001).

2.1.3   Effects of Gender Gap

Moving on, the existance of split labor market based on age, ethnic background and gender it is obvious in labor market.(Jackson and Alvarez 1992)

This gap between males and females in the labor market is obvious according not only to the relative economics but also to social theories. The existed discrimination would be related to the inability of working females or even to the preference of employers. Thus, a lot of studies have made in order to check the gender diversity in firm's performance.

Shrader (1997) found a positive relation between a higher percentage of women on the board of directors and company performance. Smith et al.(2006) found

a positive relationship too, but the data was insignificant. Although the number of females working as managers has increased the prominence of males there is still (Omar and Davidson 2001). There is limited access for females and minority groups for developed careers even in developed countries (Ibarra 1993). Furthermore, every country make proposals for reforming governance that show the importance of gender diversity of CEO (Adams and Ferreira 2009). To continue with, pioneering surveys on large samples of listed US companies show that the differences in performance of these companies are not significant and do not stem from the gender of the manager.(Shrader et al 1997;Adler 2001; Carter et al 2003; Kochan et al 2003; Catalyst 2004; Bell 2005)

Smith et al. (2006) studied management diversity in the 2500 largest Danish firms during 1993-2001 and found that the proportion of female top managers (CEOs, vice-CEOs and board members) has a positive impact on firm performance (ROA among other indicators).If the potential candidates for the executive director positions are only males, we could easily be understood that the selection of executive directors' qualifications will be restricted. As a result of this, it will be lower average qualification than if the directors were appointed according to qualification, regardless of gender. Equal distribution of talent between genders means that the small number of women promoted on top management positions have higher qualifications on average compared to the larger number of males promoted to similar positions. Therefore, these few females affect firm's performance positively.(Smith et al 2006)

There is a lot of discussion about gender diversity and companies are wondering if they should attract more females to get better performance. The highest representation of females in the management of each company could enhance the company's reputation and thus enhance its performance(Bear et al 2010). That is why we have to focuse on the advantages and disadvantages of females on the board of directors. According to Burgess and Tharenou (2002), females on the board of directors increases the diversity of opinions in the boardroom and females

bring strategic input to the board. They also have an impact on the decision making process (Rosener, 1990). With women on the board of directors the behaviour of the board room is better. The attendance of females effect the behaviour of men and make them more polite (Adams and Ferreira, 2009). Females also are less likely to have attendance problems than males and are more likely to join monitoring committees (Adams and Ferreira, 2009). There are also reasons why companies should attract men instead of women. A reason could be that directors are needed with a lot of experience. Only a few women have this experience and therefore men will be appointed mostly.

Executive management is responsible for a bank's most important strategic and organizational decisions and thus, a bank's performance is to a large extent dependent on its top management team (Hambrick and Mason 1984; Carpenter et al. 2004). Dezsö and Ross (2012) argue the informational and social diversity that results from increased female representation in top management improves managerial performance, which translates into better firm performance.

So many studies have been conducted on whether the gender of the managers affects the performance of the company. However, not all studies predict a positive association between the proportion of women in management and firm performance. Thus,they claim that the increase in gender diversity reduces the efficiency of the decision-making process and complicates the communication between executives.(Smith et al 2006) As far as this situation concerns, is particularly severe for every company which operates in a highly competitive environment where time to market is key.

2.1.4   Gender and Industry

First of all,the industry sector chosen for starting up a business it could be also related to financial performance and business growth (Brophy, 1989). Although males are often located in manufacturing sectors, self-employed females have a tendency to be located in what Kalleberg and Leicht (1991) refer to as the 'female

ghetto'. This 'ghetto' is located in retail sales and personal and educational service industries. In this part of our work it is mentioned that an employee's gender is also related to the industry sector. Due to the fact that large capital investments are seldom required in some industries, they are also recognised for being relatively easy to enter (Kalleberg and Leicht, 1991). In part because services and trades are highly labour intensive, and because there is substantial competition among sellers in their products markets (Humphreys and McClung, 1981), firms in the service and trade industries generally have lower growth rates and less success than firms in other industries. Thus, if firms led by women in the present study sample are found to be concentrated in industries recognised for meagre returns and low growth rates, one could expect this to influence financial performance and business growth.

2.1.5   Gender and legal organisation

While no specific reference has been found in the relevant literature to gender-based influences upon the choice between incorporated and unincorporated legal structures for companies, there are indications that growth is more likely to be evident in businesses legally organised as companies (Freedman and Godwin, 1994; Hakim, 1989; Gray, 1992; Hughes and Storey, 1994; Yellow Pages Australia, 1995).It was noted earlier that males and females may differ in their business growth aspirations, and thus it is plausible that they could differ in their preferred legal form. Recognition of this becomes particularly important when examining possible gender-based differences in financial performance of companies because of the customary procedural difference between incorporated and unincorporated businesses. Each firm with different legal status, seems to have a different behaviour in its organisation culture, different characteristics or even different way of firm's operating function. These differences are obvious because each company with different legal status operates by low, with a specific way.

2.2 Financial analysis tools

2.2.1 Defining Financial Analysis and Financial Analysis Tools

Financial analysis is the process of evaluating businesses, projects, budgets and other finance-related entities to determine their performance and suitability. Typically, financial analysis is used to analyze whether an entity is stable, solvent, liquid or profitable enough to warrant a monetary investment. When looking at a specific company, a financial analyst conducts analysis by focusing on the income statement, balance sheet and cash flow statement.

The term "financial analysis" means the process of obtaining financial information from the financial data of the enterprise. It means comparing the values of the various balance sheet items either in their totality or in the other balance sheets of the same or a similar enterprise in order to study its financial situation.

To begin with, it would be useful to mention that there are different types of financial analysis tools available in the financial field. They are also designed for carrying out specific functions. Among these different types of financial analysis tools, the Balanced Sheet is one tool which can be of good assistance to gauge the financial position of a company. It is mentioned that it can be easily performed using Ratios analysis. This analysis tool is helpful in subjective as well as objective measurement of special processes. Furthermore, this tool is also helpful in evaluation of a company's overall return, the operating income, and the capital financing processes.

Moving on, in labor market investments play an extremely important role. Thus,financial analysis tools are one of the most efficient ways that can be used for ensuring good profit from your investments. These tools are also highly helpful in evaluating the market and investing in a way so as to maximize the profit from the investments made. We conclude that they are a good source of information. Last but not

least, is the fact that these financial analysis tools are useful for deciphering both internal and external information related to a specific business organization.

The purpose of the financial analysis is to identify the strengths and weaknesses of businesses and to determine whether they are financially profitable. The purpose could be to set the conclusion on economic situation and business development.

The analysis investigates:

- The profitability of the firm, for instance its ability to generate profits given its capital

- The liquidity of the firm, that is its ability to meet its short-term liabilities and

- Its solvency N is in line with its long-term liabilities, which stem mainly from borrowing.

In addition, the methodological approach to the analysis of financial ratios (numerical behavior: chronologically, in relation to a branch, in relation to competitors) can assess the effectiveness of management and the use of inputs. The analysis of financial indicators is described as a tool supporting the decision-making process.

2.2.2   Key Performance Indicators

In the process of they theories mentioned, it would be very useful to mention that "Key Performance Indicators" are performance measurement tools for specific individuals and activities within a company or organization, or even the organization as a whole, to achieve quantitative, strategic and operational goals that have been

set. They are primarily used by middle and senior executives to assess the degree of success of individual departments. This assessment also achieves a faster, deeper and fuller understanding of core business functions, as well as widening control by executives.

One of the problems that makes analyst's job difficult, is the fact that in several Key Performance Indicators is the tendency to include complex and broad information to require significant training time for their evaluation. These indicators should under no circumstances replace the information and critical evaluation provided by the financial statements. In addition, they should be concise and comprehensive and not sacrifice the commitment to the true benefits of their assessment at the altar of over-information, which would result in the consumption of precious time. Thus, in our work we would use only two indicators according to the theme examined. Finally, in this study we have to deal with indicators which will measure firm's performance.

2.2.3 Measuring Firm's Performance

In the process of the study presented,it is mentioned that, in economics there are different tools to measure firm's performance. Return on equity is a financial indicator that shows how efficiently a company uses its funds to generate additional earnings (earnings), and is expressed in percentage points. It is a common size of mesauring firm's performance. It is used as an indication of the effectiveness of a company. Thus, it can explain how much profit the firm can generate using the available funds invested by its shareholders (equity) and its reserves. Of course, investors usually are attracted from companies with high ROE. Not only the indicator Return on Equity is a mesaurement of firm's performance, but also the indicator Return on Assets. Both of them are used in literature in order to help researchers to have their findings relative to the financial assessment of a company's performance.(Krishna G. Palepu, Paul M. Healy, Erik Peek - Business Analysis and Valuation IFRS Edition)

2.2.4 Return on Equity

We would like in this point of our study to present the ratio definition of ROE.

$$ROE = \frac{NetProfit}{Shareholder's Equity} \tag{2.1}$$

This indicator shows us the profitability of own funds, that is, a good amount of managers manage the equity of an enterprise to create profits. Also, we would like to mention that in the long term the average European term for ROE is 10-12% for large commercial enterprises. Return on equity is therefore a financial indicator that shows how efficiently a company uses its funds to create add-ons revenue (gains or losses), expressed in percentage points. It is used as an indication of the effectiveness of a company, that is, how much profit every company could produce using the available resources invested by its shareholder's (share capital) and its reserves.(Krishna G. Palepu, Paul M. Healy, Erik Peek - Business Analysis and Valuation IFRS Edition)

2.2.5 Return on Assets

In this study return on assets (ROA) is used as a measurement for firm performance. The higher the ROA is, the more the company is earning on less investment. In other words, ROA illustrates how efficiently management is using the company's assets, regardless of size. Return on Assets (ROA) is also an indication of how profitable it is a company but in relation to its total assets. In previous literature, ROA has frequently been used as a measurement for firm performance when studying the impact of gender diversity (e.g. Kotiranta et al. 2007; Smith et al. 2006).The ratio measurement of this idicator is the following one:

$$ROA = \frac{NetProfit}{Sales} x \frac{Sales}{TotalAssets} \qquad (2.2)$$

ROA gives an idea for how effective it is to manage the use of its assets for generating profits. It is calculated by dividing the annual profits of a company with all of its assets and appears as quota. Sometimes this is referred to as "return on investment". (Krishna G. Palepu, Paul M. Healy, Erik Peek - Business Analysis and Valuation IFRS Edition)

Chapter 3

Data and Discriptive Statistics

3.1 Data

We produce a statustical analysis by using data from a data base named imentor. Firtsly, the data set which is used in our study, coming from a bata base named imentor. Imentor is the only business information service in Greece contracted with Reuters - the world's largest news platform - to inform all millions of terminal users with the financial profile of Greek businesses, which guarantees the credibility of its data. The most effective credit rating service for every customers' creditworthiness is ensured with the cooperation of Infobank Hellastat with Moody's, the world's leading risk assessment company.

Our data set consists of 101.097 companies in the time period 2002-2015.

Furthermore, we would like to mention that this data set includes Greek companies from every different industry sector. It also provides not only financial information about the firms examined, but also information about firm's employees and especially for firm's Ceos or managers. Thus, in our data set it is included information about the companies examined such as the industry sector, firm's sales, firm's liabilities, firm's profit after taxes, firm's gross profit margin, firm's equity, firm's legal status, personal information about the board members for instance manager's name or CEO's name, the total number of firm's employees, the region and the town in which the firm is located etc.

In adition,we produce excel files exported from our data set using the statistical program stata. In the process of our study, we worked on excel files in order to transform all the variables needed and especially the basic variable which indicates Ceo's or Manager's gender. Finally, we worked again on stata in order to produce the final data base with the initial variables ready for being used in our estimation. Furtheromore, we have to describe the variables that we will use in our estimation. Firstly, the dependent variable that we will use in the first model estimated named ROE. It has to do, as in the theory is described, with financial data of the company.It is calculated through the statistical program called stata, based on the ratio definition which is refered to Chapter 2.2.4. Using this variable we would like to test firm's performance relative to other variables which are the independent variables.

Although, firm's performance will be measured through ROE indicator,in the second model examined, we will produce the same estimation by using as dependent variable the ROA indicator. According to the theory in Chapter 2, not only ROE indicator measures firm's performance, but also the indicator ROA. Thus, its ratio definition refered to Chapter 2.2.5.

Thus, both indicators are alternative measures of firm's performance, as it is described at the theoritical framework of our study.

Another variable which we will use in the process of our work, is the *gender* one. As the name of the variable indicates, it discribes whether the CEO or the manager of a firm is male or female. It takes the value 1 if the CEO or manager is male and the value 2 in case of being female.

Moving on, we have the variable $firmsize$. This variable dipicts the size of the firm according to the number of employees working in each firm. The size can be measured by the number of employees, as it is an international definition acceptable to the European Union.

In our estimation another dependent variable is the $typeoffirm$ which indicates the legal status of each firm in our sample examined. There are different type of

firms and this will play significant role in our study. We expect companies with a legal form of SA to have hierarchical structures, which is expected to be absent from public services. That is why this variable will be included in our estimation. We also have a variable in our data set, which include almost all the codes of each industry sector that the firm works in. In labor market every firm according to its operation function it is included in an industry sector in which there is a list of other firms with similar obsect. For being our work more easy to be described we have grouped the industries codes and thus we have the independent variable *IndustrialSector* that gives us the information we need from broader categories of industries.

Moving on, with other independent variables, we would like to mention that we will use the *GreekRegions* variable in our estimation. This variable depicts the Greek region in which each firm of the sample examined, is located in. These regions, coming from Greece country, they were included in thirteen categories.Thus, the firms joined the thirteen categories that make up the regions of Greece.

The variable *Numberofexecutives* finally dipicts the total number of employees in each company who work as a manager or CEO.

Table 3.1. *Variable Definition*

Variables	Definitions
Return on Equity (ROE)	Net profit (before taxes)/Shareholder's Equity
Return on Assets (ROA)	[(Net profit (before taxes)/Sales) x (Sales/Total Assets)]
Gender	It discribes whether the CEO or the manager of a firm is male or female. It takes the value 1 in case of being male and the value 2 in case of being female.
Female	It discribes whether the CEO or the manager of a firm is female. It takes the value 1 in case that the manager or ceo is female, otherwise it takes the value zero.
Number of executives	It dipicts the total number of employees in each company who work as a manager or CEO.
Firm's Size	It dipicts the size of the firm according to the number of employees working in each firm.
Type of firm	The variable indicates the legal status of each firm in our sample examined.
Industrial Sector	Every firm according to its operation function it is included in an industry sector in which there is a list of other firms with similar obsect.Thus,it dipicts the sector in which each firm operates.
Greek Regions	This variable depicts the Greek region in which each firm of the sample examined, is located in.
Year	This varible indicates the years examined. The time period examined,is from 2002 to 2015.

Source : Imentor DataBase

3.2   Descriptive statistics

In the process of our work it would be extremely useful to present and describe the most initial variables which are used in this study. In this way, it is easy to understand the purpose of our study even though the estimation produced in the next chapter.

The purpose of our study is to produce an estimation in order to examine the impact of the gender of a firm's Ceo or manager, on firm's performance. Thus, we have to begin our study by examining the sample focused on manager's or ceo's gender. We have a data set with a lot of observations and that it why we have to test it for finding missing values even though observations that we cannot identify their gender. In the transformation of the data set we found that there are observations which includes names that they are unisex.

Table 3.2. *CEO male and female*

	Females ceos		
Males ceos	**Being Males**	**Being Females**	**Total**
Being Females	4.536	59.822	64.358
Being Males	343.588	0	343.588
Total	348.122	59.822	407.946

Source : Imentor DataBase

In the Table 3.2 we observe that in our sample we have 343.588 Ceo who are males and 59.822 Ceo who are females. However, we also observe that there are 4.536 individuals where we cannot identify their gender. Thus, we would not work with this 'missing values'. These observations represent the 0.1% of the sample examined and it would not be a problem not to include it in the study.

In the process of our work we have to do the same for all the managers included in our final data set.

Table 3.3. *Manager male and female*

Male managers	Female managers		Total
	Being male	Being female	
Being female	10.304	78.820	89.124
Being male	321.090	0	321.090
Total	331.394	78.820	410.214

Source : Imentor DataBase

In the Table 3.3 we observe that in our sample we have 321.090 Managers who are males and 78.820 Managers who are females. However, we also observe that there are 10.304 individuals where we cannot identify their gender. Thus, we would not work with this observations. These represent the 2.5% of the sample examined and it would not be a problem not to include it in the study.

Finally, after having the above process and according to the number of Ceo and Managers who are included in the whole data set we would like to mention that we are excluding a very small percentage of our observations as this will not affect our findings. Thus, our sample dropped by 1.8 percent which is not a barrier to the outcome of the study and thus the total number of observations is 802.158.

Table 3.4. *Gender*

Gender	Freq.	Percent	Cum
Males	663.656	82.73	82.73
Females	138.502	17.27	100.00
Total	802.158	100.00	

Source : Imentor DataBase.

Thus, after having the above process we would like to present the initial sample of our work. We can observe in the Table 3.4 that from the observations that we had, we managed to give valid names for Ceo and Managers only in 802.158 of observations. It is also a huge representative sample.

Table 3.5. *Initial Sample*

	Gender		
Having Ceo or Manager	**Males**	**Females**	**Total**
1	82.73%	17.27%	100.00%
Total	82.73%	17.27%	100.0%

Source : Imentor DataBase

In the Table 3.5 we have finally the percentage of the males and females Ceo or Managers in our sample examined. We observe that the proportion of women who work as high-ranking individuals in the sample companies is overwhelmingly low in relation to men. Only the 17.27% of the observations refered to women Ceo or Managers in Greek companies when the 82.73% represents the males Ceo or Managers in the same field. The results are expected as this difference is reported in our theory and in all the other studies that have been made before.

Moving on, we have create new variables from the sample reduction that preceded it and thus we will use the variable named *Havingceoormanager* which indicates if the company have Ceo or manager(valid names in our data set) and the variable *gender* which dipicts the gender of the Ceo or manager. Both of them are binary variables.

In the process of our work, we would like to test the percentage of women against men who work in each industry sector. We expect to see significant differences in industrial sectors that are predominantly male-dominated. We will selectively mention industrial sectors that show great differences because in our sample we have almost all the industrial sectors and it is not possible to present all of them in detail.

Table 3.6. *Gender and Industrial Sectors*

Industrial Sector	Gender	
	Males	Females
Growing of vines, and raisins(013.3)	100%	0%
Fish farming (050.2)	89.62%	10.38%
Manufacture of surgical equipment and orthopedic instruments(331)	0%	100%
Repair of,all kinds of footwear and other leather goods(528.1)	0%	100%
Capital market management (671.1)	66.67%	33.33%
Kindergartens (801.1)	40.63%	59.38%
Defense (752.2)	100%	0%
Pursuit of a medical profession (851.2)	80.46%	19.54%
Photographic activities (748.1)	87.10%	12.90%
Finding and supplying staff(745)	82.86%	17.14%
Recreational activities (927)	100%	0%
News agency activities (924)	75%	25%

Source : Imentor DataBase

In the Table 3.6, we deside to present some of our important results from our sample examined. As far as the Table 3.6 concerns, we can observe the percentage of women and men working in each different industrial sector.

In the first sector we can observe the fact that businesses are completely structured and even use 100 per cent men for managers or Ceo. It is an industrial sector concerned with the cultivation of vines. The kind of sector can explain the absence of women in this labor market. It is a male-dominated space like other industrial sectors that we will see later and hardly a woman would be dealing with. In addition, by nature, the woman is weaker physically to be absorbed into farming. Finally, since our country is trading wine, it is logical to have proper

structures in these businesses. Moving on, the second sector has similar behavior to the vine growing industry and thus explains the great differences in women's employment with men. It is a sector about fish farming and only the 10.38% of the managers or ceo are women in this industrial sector.

Then we have the footwear industry and the medical-surgical industry where we can see an overwhelming percentage of 100 percent women.

In capital market management we can observe men with a percentage of 66.67% working as Ceo or managers. However, in kindegartens we can observe that as Ceo or managers, more women are working. Respectively, is an industrial sector that is mostly 'owned' by women and that is why their percentage is up to 59.38%.

Finally, also in the sector of finding and supplying staff the percentage of Ceo or managers working in, is represented by 82.86% of men when only the 17.14% is represented by women.

At the end of the table 3.6 we observe that the 100% of the ceo and managers is men in recreational activities and in moreover in sector news agency activities most of the ceo and managers are also men.

At this point we would like to emphasize that great differences between the industrial sectors that we have explained so far could of course be interpreted by the different *production function* that each company in an industry sector follows.

However, we made some categories which dipicts in a more general way the industrial sectors. These categories are included in the variable named *IndusrtialSector*. Thus in the Table below we can observe aggregate results for the industrial sectors included in our research.

Table 3.7. *Gender diversity in the aggregate Industrial Sectors*

Industrial Sector	Gender		Total
	Males	Females	
Agriculture, forestry and fishing	87.73%	12.27%	100.00%
Mining and quarrying	87.23%	12.77%	100.00%
Manufacturing	84.77%	15.23%	100.00%
Electricity, gas and water supply	90.51%	9.49%	100.00%
Construction	89.08%	10.92%	100.00%
Wholesale and retail trade etc.	80.96%	19.04%	100.00%
Hotels and restaurants	79.82%	20.18%	100.00%
Transport, storage and communication	83.73%	16.27%	100.00%
Financial intermediation	81.82%	18.18%	100.00%
Real estate, renting and business activities	83.04%	16.96%	100.00%
Public administration and defence, compulsory social security	73.08%	26.92%	100.00%
Education	69.98%	30.02%	100.00%
Health and social work	79.50%	20.50%	100.00%
Other community, social and personal service activities	81.26%	18.74%	100.00%
Total	**82.73%**	**17.27%**	**100.00%**

Source : Imentor DataBase

In the Table 3.7 we can observe that the highest percent of males working as managers or CEO is in the *Electricity, gas and water supply* industrial sector. Although females have a low percentage in every industrial sector against males,we would like to point that in this sector females have the lowest participation. In

general, for females working as managers or ceo we can observe that the highest percentage is presented in *Education*.

Moving on, in our work it would be useful to divide businesses by their size and after that to distribute male and female managers or Ceo to them. The classification of companies with regard to their size was based on the definition given by the European Commission. As stated in our theory above, the classification has to do with the number of employees that each enterprise has. Thus, we have to deal with these 5 categories :

- *Micro enterprises:* They are with less than 10 persons employed.

- *Small enterprises:* They are with 10-49 persons employed.

- *Medium-sized enterprises:* They are with 50-249 persons employed.

- *Large enterprises:* They are with 250 or more persons employed.

- *Missing values:* Here are firms of our sample without values mentioned in the variable $firmsize$ which dipicts the number of employees in each company.

Table 3.8. *Firm's size measured by employees VS Gender of Ceo/Managers*

	Gender		
Firm's size	**Males**	**Females**	**Total**
Micro enterprises	82.06%	17.94%	100.00%
Small enterprises	86.35%	13.65%	100.00%
Medium-sized enterprises	88.61%	11.39%	100.00%
Large enterprises	93.42%	6.58%	100.00%
Missing values	81.33%	18.67%	100.00%
Total	82.73%	17.27%	100.00%

Source : Imentor DataBase

Note: The size of the firms examined is defined by the European Commission.

As far as the Table 3.8 concerns, we observe in general a low percentage of women Ceo or Managers in each category. Thus, the greatest percentage of working men as Ceo or Managers is represented in Large Enterprises by 93.42% whereas the percentage of women working as Ceo or managers is up to 6.58%. Here we can observe a huge gap between men and women working in such posts. The gender discrimination between men and women, which is mentioned in theory, is also evident in Greek society with significant differences.

Another point we would like to check is the legal status of firms and how men and women are distributed in these categories. We expect companies such as anonymous companies or limited liability companies to have managers or Ceo whereas in public services not to exist. Thus, we create categories which include the firms of our sample according to their legal status.

- *Category 1 :* Individual companies

- *Category 2 :* SA

- *Category 3 :* Limited liability company

- *Category 4 :* Joint venture

- *Category 5 :* Other private

- *Category 6 :* Public Services

Table 3.9. *Gender relative to the type of firms*

	Gender		
Type of firm	**Males**	**Females**	**Total**
1	75.68%	24.32%	100%
2	85.16%	14.84%	100%
3	79.90%	20.10%	100%
4	81.07%	18.93%	100%
5	91.30%	8.70%	100%
6	81.82%	18.18%	100%
Total	82.86%	17.14%	100%

Source : Imentor DataBase

We actually observe that the majority of SA companies have managers or ceo, whereas in public services there are not managers or Ceo. However the highest percentage of firms that have ceo or managers is in category 3 in which Limited liability companies are included. The results are the ones we expected, as the more structured a business hierarchy, the more likely you are to find managers or ceo. We observe that in the category of individual companies a small percentage of enterprises have managers or ceo and of this 75.68% are male. In the category with Limited liability companies which has the highest percentage of managers or ceo, we observe that the most of them are male whereas only a percentage of 20.10% are women managers or ceo.

In the process of our work we would like to check how the managers or ceo are distributed by region of Greece. We firstly categorise the firms of our sample based on the region of their activity.

Table 3.10. *Ceo's/Manager's Gender by Regions*

	Gender		
Greek Regions	**Males**	**Females**	**Total**
Anatoliki Makedonia	82.59%	17.41%	100.00%
Kentriki Makedonia	82.29%	17.71%	100.00%
Dytiki Makedonia	84.36%	15.64%	100.00%
Thessalia	83.38%	16.62%	100.00%
Ipeiros	83.48%	16.52%	100.00%
Ionia Nisia	83.23%	16.77%	100.00%
Dytiki Ellada	83.88%	16.12%	100.00%
Sterea Ellada	83.63%	16.37%	100.00%
Peloponissos	81.95%	18.05%	100.00%
Attiki	82.87%	17.13%	100.00%
Voreio Aigaio	80.50%	19.50%	100.00%
Notio Aigaio	80.99%	19.01%	100.00%
Kriti	81.94%	18.06%	100.00%
Total	82.73%	17.27%	100.00%

Source : Imentor DataBase

And in Table 3.10 the great leadership of men against female managers or Ceo is obvious. Although in the region of Voreio Aigaio there are more males as managers or ceo, we can observe the highest percentage of women working as managers or ceo. Finally in the region of Dytiki Makedonia we can observe the highest percentage of male working as manager or ceo whereas in the same Greek region the percentage of women is up to 15.64%.

Chapter 4

Methodology

After the theoritical framework which is based on gender discrimination on top management positions, we will produce two regression models for the same purpose. In order to examine the effect of gender on top management positions we will produce estimations based on the sample examined and through the OLS process.

Moving on, it would be useful to mention that all the independent variables apart from the *numberexe* and the *gender* variable , are certain in the estimation according to a base group. They are categorized and we pull one of their categories in order to be used as base group for them. The purpose of doing this process is the fact that it would be useful and more explanative to dipict the results relative to this refrences groups. Thus, we would like to present you the base groups and in addition to inform you that these groups have been randomly selected.

The ordinary least square method(OLS) is used to estimate a linear slope between the dependent and independent variables. The regression equation is:

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + ... + \alpha_n X_n + \epsilon \tag{4.1}$$

The independent variables in the regression equation above are the X_1, X_2, X_3, X_4 and the dependent variable is Y. The parameter α_0 stands for the intercept, which is the value of the dependent variable when all the independent variables are zero.

Epsilon (ϵ), respresents the error term in the model, or in other words those effects that are not explained by any of the independent variables. It is also a normally distributed term , $N(0, \sigma^2)$. The parameters $\alpha_1 - \alpha_n$ indicate a predicted value for the each independent variable has on y. The parameters also referred to as regression coefficients measure the impact when all other parameters are unchanged (ceteris paribus). As in our work we include variables which are vectors the α of these variables are exlpained as possibilities.

4.1 Gender's relationship with Return on Equity

In the process of our work, we would like to produce the main estimation for the influence of the gender of a manager or CEO on firm's performance. Thus, the first step of the regression analysis is to test a model which its mathematical type(4.2) is presented above.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + u_i \qquad (4.2)$$

Where the dependent variable Y is ROE indicator which measures firm's performance based on the theoritical framework.

The main focus of the study is the variable for female CEOS or managers measured by the independent variable of Female(X_1) which takes the value 1 in case of being a female manager or CEO differently it takes the value 0. The independent variable X_2 dipicts the number of executives who work in each firm. Furthermore, the variables X_3, X_4, X_5, X_6, X_7 are vectors whch are referred to base groups. X_3 variable dipicts the firm's size relative to the number of employees, we use as refrence group its first category for micro enterprises. Larger firms can take advantage of economies of scale effects or market dominance positions (Smirlock et al. 1984). Therefore, the size of a firm is estimated to positively correlate with firm performance. For example, Dwyer et al.(2003) found a positive correlation between firm size and firm performance (measured in employee productivity and

return on equity).

According to variable that indicates the type of a firm relative to its legal status (X_4), we use as refrence group the category six which is *Public services*. Moving on, we use the independent variable (X_5) that is related to industrial Sectors and for this variable the refrence group is the sector of *Public administration and defence,compulsory social security*. For the variable of Greek regions (X_6), our results will be in relation to the Attiki region. Finally, the X_7 variable indicates the years form 2002 to 2015 where as base group we use the year 2002. The u_i is the error term in the model produced.

In the model examined the variables which are categorized explain a possibility(positive or negative) relative to their base group,on firm's performance(Y) and their β express the value of this possibility.

4.2 Gender's relationship with Return on Assets

The difference between ROA and ROE depends on the debt ratio. In the case that two firms have the same ROA that exceeds the loan interest rate, the more indebted firm will have a higher ROE. Better performance produced by higher leverage is not of interest when evaluating management performance. Therefore, ROA is better suited for this analysis.(Eeva Penttilä 2016). Thus, the last estimation model has the mathematical type presented in 4.3 equation above.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + u_i \qquad (4.3)$$

Where the dependent variable is referred to ROA indicator in order to measure firm's performance.

According to the independent variable we would like to mention that they are the same with the first model.

Thus, X_1 is a dummy variable which dipicts the females CEOS or managers(value 1 for being female manager or CEO otherwise take value 0), X_2 is a variable

which indicates the number of executives, X_3 a vector for firm's size relative to the number of executives where as base group is seted the micro enterprises, X_4 is also a vector where it dipicts the type of a firm according to its legal status and as base group is used the *Public services*. Moving on, the X_5 vector dipicts the industrial sectors examined and as base group we use the sector of *Public administration and defence,compulsory social security*. It is important to pay attention to differences between industries, since this can have an effect on return on assets. For example Smith et al. (2006) have controlled for the effects of different industries on firm performance in their study about female top managers.

According to the vector X_6 we would like to mention that Greek regions are dipicted. In this variable as a base group we seted the Greek region of *Attiki*. Lastly, we include in our estimation the vector X_7 which indicates the years and the year 2002 is seted as base group. The u_i is the error term in the model produced.

As it is described before, in the model examined the variables which are vectors explain a possibility(positive or negative) relative to their base group, on firm's performance($Y = ROA$) and their β express the value of this possibility.

4.3 Hypothesis

The hypothesis of the empirical study is based on previous research presented earlier in this work. Assuming equal distribution of management talent between genders, implies that the smaller number of females promoted on top management positions on average have higher qualifications than the larger number of males promoted to the same positions (Smith et al. 2006). Therefore, females promoted on top management can have positive effects on firm performance. Other reasons for why gender diversity matters in top management is that a more diverse management can consider more alternatives when making decisions as well as have a broader range of experiences and understanding for different market segments (e.g. Singh & Vinnicombe 2004). The hypothesis, which is stated to address the

research question, is formulated to estimate the validity of the arguments presented about the effects on gender diversity with empirical data. The hypothesis are drawn as an alternative hypothesis and a null hypothesis. The hypothesises are formulated as follows:

H_1 : Females on top management positions in Greek listed firms correlate
positively with firm performance.

H_0 : Females on top management positions in Greek listed firms do not correlate
with firm performance.

The alternative hypothesis (H_1) states that females in executive management have a positive impact on firm's performance when controlling for firm's specific characteristics, whereas the null hypothesis (H_0) implies that firm performance is indifferent to the level of females in the executive management team when controlling for firm specific characteristics.

The firm's specific characteristics are described in detail in the models above as they represent the independent variables of each regression model produced. Females in executive management are measured by the number of women who work as managers or ceos and firm's performance is measured by return on equity and after that is measured by return on assets.

When the null hypothesis can be rejected, it states that females have a positive effect on firm performance. However, failure to reject the null hypothesis implies that there is no correlation between gender diversity on top management and firm's performance in the dataset examined. Further, failure to reject the null hypothesis can also imply that the correlation between females on top management positions and firm's performance is better explained by a non-linear correlation. This could also be discussed in a future work.

Chapter 5

Empirical Results

Using all the results comming from the summary statistics, we will constuct our two models in order to produce our estimation according to the variables described in Chapters 3 and 4. By doing this estimation we would finally want to present you whether the gender diversity in management position have an impact on firm's performance. In same way we would like to present whether the existed theoritical differences in labor market among males and females, have a real impact on firm's performance or this difference relied on other reasons already discussed.

5.1 Gender's effect on Return on Equity

To begin with the first model examined in our study, we produce an estimation in which we take under consideration the methodology describe in Chapter 4. In order to examine the effect of gender on firm's performance, we have to produce an OLS regression model as it is described in the model one, in Chapter 4.

Table 5.1. *Results of OLS Regression model relative to firm's perfmormance,measured by ROE indicator*

Return on Equity	Coef.	P >|t|
Female	.0043 (.0035)	0.216
Number of executives	.0087 (.0015)	0.000
Firm's size		
Small enterprises	.0445 (.0038)	0.000
Medium-sized enterprises	.0295 (.0056)	0.000
Large enterprises	.0323 (.0104)	0.002
Missing values	-.0578 (.0035)	0.000
Type of a firm according to its legal status		
Individual companies	.0758 (.2018)	0.707
SA	.1690 (.1585)	0.286
Limited liability company	.5123 (.1585)	0.001
Joint venture	.4423 (.1610)	0.006
Other private	.4914 (.1826)	0.007

Return on Equity	Coef.	P >|t|
Industrial Sectors		
Agriculture, forestry and fishing	.0662 (.0666)	0.320
Mining and quarrying	.1279 (.0680)	0.060
Manufacturing	.0886 (.0657)	0.177
Electricity,gas and water supply	.0121 (.0663)	0.855
Construction	.1393 (.0657)	0.034
Wholesale and retail trade etc.	.1800 (.0656)	0.006
Hotels and restaurants	.0931 (.0657)	0.157
Transport, storage and communication	.2074 (.0658)	0.002
Financial intermediation	.1131 (.0662)	0.087
Real estate, renting and business activities	.2049 (.0657)	0.002
Education	.2106 (.0669)	0.002
Health and social work	.3444 (.0663)	0.000
Other community, social and personal service activities	.1848 (.0661)	0.005

Return on Equity	Coef.	P >|t|
Greek Regions		
Anatoliki Makedonia, Thraki	-.1088 (.0078)	0.000
Kentriki Makedonia	-.0615 (.0039)	0.000
Dytiki Makedonia	-.0684 (.0129)	0.000
Thessalia	-.1016 (.0069)	0.000
Ipeiros	-.0742 (.0104)	0.000
Ionia Nisia	-.1019 (.0101)	0.000
Dytiki Ellada	-.0744 (.0075)	0.000
Sterea Ellada	-.0746 (.0078)	0.000
Peloponnisos	-.0695 (.0082)	0.000
Voreio Aigaio	-.1171 (.0126)	0.000
Notio Aigaio	-.0787 (.0070)	0.000
Kriti	-.0782 (.0062)	0.000

Return on Equity	Coef.	P >|t|
Year		
2003	-.0006 (.0072)	0.924
2004	-.0173 (.0071)	0.015
2005	-.0365 (.0070)	0.000
2006	-.0163 (.0069)	0.019
2007	.0041 (.0069)	0.547
2008	-.0333 (.0068)	0.000
2009	-.0683 (.0069)	0.000
2010	-.1191 (.0067)	0.000
2011	-.1730 (.0067)	0.000
2012	-.1912 (.0069)	0.000
2013	-.1525 (.0070)	0.000

Return on Equity	Coef.	P >|t|
Year		
2014	-.1320 (.0072)	0.000
2015	-.1232 (.0255)	0.000
constant	-.1133 (.1717)	0.509
Number of observations = 280598		
R-squared = 0.0508		

Source : Imentor DataBase

Note : Results of OLS regression model relative to firm's performance during 14 years(2002-2015). The number of observations is up to 280598. The dependent variable ROE measures firm's performance. Standard errors are presented in the parenthesis.

In the process of our study, we would like to present, the results of the OLS regression model relative to firm's performance which is measured by using the indicator Return On Equity.

Firstly, we would like to present the effect of a female manager or Ceo on firms' performance. Thus, we can observe that, the variable which dipicts the gender of a manager or Ceo, Female, is statistical insignificant according to ROE indicator. Moving on, we would like to mention that when in general the number of executives will be increased by 1 unit then firms' performance will be increased by 0.87%, as we can observe that the variable which indicates the number of executives is statistically significant in a significance level of 1%.

Furthermore, it is important to include a control variable for firm size, since this is assumed to have an impact on firm performance. We would like to mention that all the categories of the variable which dipicts the size of a firm are statistically significant in a significance level of 1%. We also notice the possitive relationship

between the categories and the reference group we have set. Thus, we observe that we are more likely to observe an increase on firms' performance in small,medium and large enterprises than in micro-enterprises. For instance, the possibility of having an increase in small enterprises is 4.45% more likely than in micro enterprises.

Moving on, to the variable relative to the type of a firm according to its legal status we would like to mention that not all the categories described in this variable are statistically significant. Individual Companies and SA companies are not statistically significant. Limited liability companies, Joint venture companies and other private companies are statistically significant in a significance level of 1%. The results in this part of our work, have all of them a possitive relationship with the dependent variable. We firstly observe that almost all type of firms are more likely to have an increase on firm's performance than in the refrence group. Thus, for instance is more likely by 51.23% to observe an increase on the performance of Limited liabilities companies than in public services.

In the process of the estimation, we would like to test the impact of the industrial sectors accordingly to the refrence group seted,on the dependent variable of ROE. We can observe that all the industrial sectors are statistically significant at a different significance level. *Agriculture,forestry and fishing*, *Manufacturing,Hotels and restaurants* and *Electricity,gas and water supply* are industrial sectors which are not statistically significant. Firstly, to the sector of *Mining and quarrying* we can observe that it is statistically significant in a significance level of 10% and the sector have a positive effect on ROE. Thus, means that it is more likely by the percentage of 12.79%, to observe an increase on firms' performance than in the sector of *Public administration and defence, compalsory social security.*

Moving on, the industrial sector of *Construction* we would like to mention that it is statistically significant in a significance level of 5% and at the same time it has a positive impact on ROE. This means that it is more likely by 13.93% to have an increase on firm's performance than in firms which are included in the sector

of *Public administration and defence, compalsory social security.*

According to the sector of *Wholesale and retail trade* we can observe that it is statistically significant in a significance level of 1% and have a possitive impact on ROE. Thus, we would like to point that it is more likely by the percentage of 18%, to observe an increase on firms' performance than in firm's which are operate in the sector of *Public administration and defence, compalsory social security.*

Same results we can observe in the sector of *Transport, storage and communication* where it is statistically significant in a significance level of 1% and thus it is more likely to observe an increase by the percentage of 20.74% than in firms of the sector of *Public administration and defence, compalsory social security.*

In the *Real estate, renting and business activities* sector ,which is statistiacally significant at a significance level of 1%, is also more likely by the percentage of 20.49% to have an increase on performance of a firm than on performance of the firms in the sector of *Public administration and defence, compalsory social security.*

In the sector of *Education* the significance level is up to 1% in which this category is statistically significant and thus is more likely to observe an increase on firms' performance than in the refrence group seted. Same results we have for the other two sectors, *Health and social work* and *Other community, social and personal service activities* where they are statistically significant in a significance level 1% . Finally, their increase on firm's performance is up to 34.44% and 18.48% respectively.

At least, we would like to point that is interesting to study the influence of each industrial sector relative to the performance of the firm included. Although, we can observe that in some sectors there is an influence and we can identify the positive effect, we should explain that these differences between the sectors examined, relied on the fact that each sector follows a different production function.

Last but not least, we should take under consideration the Greek regions in which firms operate as we can observe that they are all of them statistically significant

in a significance level of 1%. As we can also observe in the Table 5.2, all Greek regions have a negative relationship with the refrence group.

Moving on, it is less likely to have an increase on firms' performance in *Anatoliki Makedonia,Thraki* than in *Attiki*(the refrence group) by the percentage of 10.88%. It is also less likely to have this increase in firms which operates in the region of *Voreio Aigaio* than in *Attiki* by the percentage almost of 11.71%. Thus, firms which operate in every Greek region, it is less likely to have better levels of perfomrance than in *Attiki.* Thus, we could point that firms which operate in *Attiki* present higher levels of performance than it is presented in other Greek regions.

In the last part of this estimation produced we observe the impact of each year, relative to the year of 2002, on firms' performance. The years 2003 and 2007 are statistically insignifican thus it is not useful in our work. Although all other years are statistically significant in a significance level of 1% we observe the years 2004 and 2006 are statistically significant in a significance level of 5%. According to the years which are statistically significant in our study we observe that all of them have a negative relationship with the year 2002 apart from 2007 which has a positive one. Thus, we can identify the downward trend in performance over the years after 2002. For instance, we can mention that in 2005 it was less likely to find an increase on firms' performance than it was in 2002. This possibility is up to 3.65% less. Although there is a downtrend in the years examided we can also observe an uptrend durning 2007.Thus, it ws more likely to find a firm with a better performance during 2007 than in the 2002.

However, the generaly downward trend in the performance of Greek companies can of course be explained by the economic crisis that has prevailed over these years in the country. It was a black mark in economic history of the Greece since the country sank into a deep recession whose recovery was uncertain. Obviously, during these 14 years the firms examined could not present encouraging results relative to their performance.

Finally, the total number of observations in this OLS regression model is up to

280.598. We can obcerve a huge difference in the number of observations between the first estimation examined. This can be explained by the fact that we had a lot of missing values in the process of calculating the variables ROE. Lastly, the R-squared mentioned in the Table 4.2 means that the regression model used, explains the 5.08% of the total volatility of the sample examined. No correlation between female executive managers and ROE can be seen in the simple regression results presented in Table 5.1. The R^2 and the F-statistics is insignificant.(Eeva Penttilä 2016). Thus, the simple regression results dipicts that many other factors that simply women in executive management impact a firm's return on equity. Therefore, we produce another estimation where firm's performance is measured by Return on assets(model 2) as our bibliography requires.

5.2   Gender's effect on Return on Assets

In the process of our work OLS Regression model produces according to the description of the model 2 in Chapter 4, relative to firm's performance.

Table 5.2. *Results of OLS regression model relative to firm's performance, measured by ROA indicator*

Return on Assets	Coef.	P >|t|
Female	.0041 (.0008)	0.000
Number of executives	.0027 (.0003)	0.000
Firm's size		
Small enterprises	.0081 (.0008)	0.000
Medium-sized enterprises	.0036 (.0012)	0.005
Large enterprises	.0043 (.0023)	0.066
Missing values	-.0232 (.0008)	0.000
Type of a firm according to its legal status		
Individual companies	.0011 (.0473)	0.981
SA	.0023 (.0384)	0.952
Limited liability company	.0544 (.0384)	0.157
Joint venture	.0593 (.0389)	0.128
Other private	.0043 (.0430)	0.919

Return on Assets	Coef.	P >|t|
Industrial Sectors		
Agriculture, forestry	.0236	
and fishing	(.0154)	0.126
Mining and quarrying	.0650	0.000
	(.0158)	
Manufacturing	.0498	0.001
	(.0152)	
Electricity,gas	.0835	
and water supply	(.0155)	0.000
Construction	.0793	0.000
	(.0152)	
Wholesale and retail trade etc.	.0575	0.000
	(.0152)	
Hotels and restaurants	.0353	0.021
	(.0152)	
Transport, storage	.0532	
and communication	(.0152)	0.000
Financial intermediation	.0360	0.019
	(.0153)	
Real estate, renting	.0756	
and business activities	(.0152)	0.000
Education	.0735	0.000
	(.0154)	
Health and social work	.1152	0.000
	(.0153)	
Other community, social	.0124	
and personal service activities	(.0153)	0.417

Return on Assets	Coef.	P >|t|
Greek Regions		
Anatoliki Makedonia, Thraki	-.0116 (.0018)	0.000
Kentriki Makedonia	-.0016 (.0009)	0.062
Dytiki Makedonia	-.0015 (.0029)	0.606
Thessalia	-.0076 (.0016)	0.000
Ipeiros	-.0108 (.0024)	0.000
Ionia Nisia	.0006 (.0023)	0.773
Dytiki Ellada	-.0063 (.0017)	0.000
Sterea Ellada	-.0010 (.0018)	0.547
Peloponnisos	.0017 (.0019)	0.348
Voreio Aigaio	-.0063 (.0029)	0.032
Notio Aigaio	.0013 (.0016)	0.423
Kriti	-.0048 (.0014)	0.001

Return on Assets	Coef.	P >|t|
Year		
2003	.0004 (.0016)	0.808
2004	-.0020 (.0016)	0.212
2005	-.0111 (.0016)	0.000
2006	-.0052 (.0016)	0.001
2007	.0008 (.0016)	0.619
2008	-.0083 (.0016)	0.000
2009	-.0187 (.0016)	0.000
2010	-.0385 (.0015)	0.000
2011	-.0492 (.0015)	0.000
2012	-.0500 (.0016)	0.000
2013	-.0288 (.0016)	0.000

Return on Assets	Coef.	P >|t|
Year		

Return on Assets	Coef.	P >|t|
2014	-.0202 (.0016)	0.000
2015	-.0220 (.0059)	0.000
constant	-.0289 (.0414)	0.484
Number of observations = 249335		
R-squared = 0.0416		

Source : Imentor DataBase

Note : Results of OLS regression model relative to firm's performance during 14 years(2002-2015). The number of observations is up to 249335. The dependent variable Return on Assets indicator measures firm's performance. Standard errors are presented in the parenthesis.

In the process of our estimation, we would like to present the results of the OLS regression model relative to firm's performance which is measured using the indicator Return On Assets.

Moving on, we would like to present the effect of a female manager or Ceo on firms' performance. Thus, we can observe that, the variable which dipicts females working as managers or CEOs in the firms examined, is statistical significant in a significance level of 1%, and with a positive relationship with the ROA indicator. Thus, we can observe that females increase firm's performance by a percentage of 0.41%. Although this percentage is a low, the positive effect of females on top management positions remains.

When in general the number of executives will be increased by 1 unit then firm's performance will be increased by 0.0027, as we can observe that the variable which indicates the number of executives is statistically significant in a significance level

of 1%.

Moving on, we would like to mention that all categories of the variable which dipicts the size of a firm are statistically significant in a significance level of 1% apart from large enterprises which are statistically significant in a significance level of 10%. Furthermore, these categories have also a positive effect on firm's performance. Thus, we observe that it is more likely to observe an increase on firms' performance in small enterprises than in micro-enterprises and this possibility is up to 0.81%. It is also more likely to observe an increase in large enterprises and in medium-sized enterprises by 0.43% and 0.36% respectively, than in micro-enterprises.

Moving on, to the variable relative to the type of a firm according to its legal status we would like to mention that all the categories described in this variable are statistically insignificant.Thus in this model of estimation the type of firm is not a variable of interest for the purpose of our work.

In the process of the estimation, we would like to test the impact of the industrial sectors accordingly to the refrence group seted, on the dependent variable of ROA. We can observe that all the industrial sectors are statistically significant at a different significance level. *Agriculture,forestry and fishing* and *Other community, social and personal service activities* are industrial sectors which are statistically insignificant and we would not pay attention to these ones. To begin with *Mining and quarrying* industrial sector, we observe a positive effect on ROA and it is statistically significant in a significance level of 1%. Thus, it is more likely to find a firm with higher level of performance in this sector, than in a firm which operates in the sector of *Public administration and defence, compalsory social security.* According to the sectors of *Manufacturing, Electricity, gas and water supply, Construction, Wholesale and retail trade, Transport, storage and communication, Real estate, renting and business activities,Education* and *Health and social work* we can observe that they are statistically significant in a significance level of 1% and have a possitive impact on ROA. Thus,means that it is more likely to observe an

increase on performance in the firms which are in these industrial sectors than in the firms which are in the sector of *Public administration and defence, compalsory social security.*

Moving on, according to the sector of *Hotels and restaurants*, we should mention that it is statistically significan at a significance level of 5% and thus is more likely to observe firms with better performance than in the refrence group seted. Finally, this possibility is up to 3.53% .

At least, we would like to point that combining the sectors with the performance of a firm measured by ROA is more interesting according to the theoritical frameworks. Our findings show that all the sectors examined, present a trend of having a higher level of performance relative to the refrence group, although each of these sectors have a different production function.

Last but not least, we should take under consideration the Greek regions in which firms operate. As we can observe, they are not all of them statistically significant. We can exclude the Greek regions which are statistically insignificant and these are the regions of *Ionia Nisia, Sterea Ellada,Peloponnisos, Notio Aigaio* and *Dytiki Makedonia.*

Moving on, statistically significant in 1% significance level, are the regions of *Anatoliki Makedonia, Thraki, Thessalia, Ipeiros, Dytiki Ellada* and *Kriti*. Moreover, these regions have a negative relationship with firm's performance. Thus, it is less likely for firm's performance to be increased in firms which operate in these regions than in the region of *Attiki* by the percentages of 1.16%, 0.76% , 1.08%, 0.63% and 0.48% respectively.

Furthermore, *Voreio Aigaio* is a Greek regions that is statistically significant in a significance level of 5%, and with a negative relationship with the refrence group seted. Thus, firms which operate in this Greek region are less likely to increase their performance than firms which operate in the region of *Attiki* by the possibility of 0.63%.

Lastly, *Kentriki Makedonia* is a Greek region which is statistically significant in

a significance level of 10% with a negative relationship with the region of *Attiki*. Thus, the possibility of a firm which is located in this region is less likely to increase it's performance by the percentage of 0.16%, than a firm which is situated in *Attiki*.

In the last part of this estimation produced we observe the influence of each year on firms' performance, using the 2002 as a base year.

The years 2003, 2004 and 2007 are statistically insignifican. Thus, they are not useful in our work. Furthermore, all other years are statistically significant in a significance level of 1%. According to the years which are statistically significant in our study we observe that all of them have a negative relationship with the year 2002. Thus, we can also identify the downward trend in performance over the years after 2002. For instance, we can mention that in 2012 it was less likely to find an increase on firm's performance than it was in 2002. This possibility is up to 5% less. The downward trend in the performance of Greek companies can of course be explained by the economic crisis that has prevailed over these years in the country. As we observe the same downward trend in the model 2. It is obvious that in any way we measure the performance of a company, the years have to do mainly with the state of the country.

Finally, the total number of observations in this OLS regression model is up to 249335. We can obcerve a huge difference in the number of observations between the first estimation examined. This can be explained by the fact that we had a lot of missing values in the process of calculating the variable ROA. Lastly, the R-squared mentioned in tha Table 5.2 means that the regression model used, explains the 4.16% of the total volatility of the sample examined.

Chapter 6

Conclusions

Summing up, we should admit that we live in an era full of issues that have to be resolved in order for the females who work as CEOS or managers, to enjoy a decent job. Even if solutions to these issues are not always easy to be given it is up to each society to tackle them. Thus, only if steps and measures are taken, will the problem of gender discrimination on top management positions, be resolved. This study analyzes the relationship between female management share and financial performance. Although the proportion of females on top management positions is extremelly low, there is evidence to support that in Greece, females managers or CEOS influence in a positive way the firm's perfrmance relative to our estimation. Thus, according to the study produced we would like to present the view that females on these positions does necessarily lead to higher performance for a firm. By the proportion of 0.41%, firms with women managers or ceos, are better performers than the firms with men managers or ceos. First, we document that the positive relationship between female management share and financial performance was particularly strong during the global financial crisis from 2007 to 2009 which indicates that gender diversity seems particularly valuable during periods of economic downturn. Second, we show that the optimal range of female management share lies for our sample on 17.27% and that firms having a proportion of women on top management within that range possibly

deliver sustainable future financial outperformance (Swiss Society for Financial Market Research 2016). However, according to the descriptive statistics presented we observe that in Greece the porportion of women CEOS or managers is extremelly low relative to men who work on top management positions. We could not understand the reasons which this issue has arrisen. Broadly speaking, three sets of explanations have been offered to explain these observations. First, there may be unobserved differences in productivity or preferences that are correlated with gender. The second explanation relates discrimination to taste: animus by co-workers or customers may be such that the firm's marginal revenue product from promoting women is lower, or alternatively an employer may be willing to accept lower profits in order to avoid promoting women. And third, it may be that the ability of women is systematically mis-assessed. Disentangling these theories would require data on productivity, on the preferences of those who interact with workers, and on perceptions of productivity.

Interestingly there is now a large literature in corporate finance emphasizing the importance of CEO characteristics as determinants of firm decisions and hence outcomes. Bertrand and Schoar (2003) examine a range of characteristics, including the age of the CEO and where they obtained their MBA. Bertrand, Kramarz, Schoar and Thesmar (2004) examine their social and political connections, and Malmendier and Tate (2004) examine their optimism. Each finds large effects of CEO characteristics on firm performance. Other research at the intersection of gender and finance includes: Bertrand and Hallock's (2001) analysis of the relative pay of male and female CEO's which suggests that the wage disparity is largely explained by job and worker characteristics. Lee and James' (2003) event study evidence suggesting that markets react negatively to the appointment of female CEOS. Mohan and Chen's (2004) finding that IPO pricing is unrelated to CEO gender, and evidence from Welbourne (1999) and Catalyst (2004) suggesting relatively better financial performance among firms with many senior women.

This topic is extremelly relevant and it would be useful to be examined in a fu-

ture work. In the dataset examined, we reject the null hypothesis which implies that there is no a correlation between gender diversity on top management and firm's performance. Although our findings dipicts a positive correlation between females on top management positions and firm's performance, a future work may can examine the issue where the correlation between females on top management positions and firm's performance will be better explained by a non-linear correlation.

Furthermore, a future work will explain better the issue of gender discrimination by including in the estimation model more variables relative to laborers characteristics such as their education, their age, their family background, their nationality ect. Thus, we could analyse this topic in a more explanative way relative to managers or ceos characteristics which are extremelly enlightening.

Taking these points under consideration, we would like to mention that in general, the positon of working women has improved only slightly while rules and laws have changed. It is the deep-rooted opinion of people within society wich are taking a longer time to evolve. Needless to say until these attitudes have changed gender discrimination will remain a problem which all females need to face and fight against. Thus, to sum up, from this analysis we would like to point that differences in female- and male-headed companies cannot (yet) falsify the hypothesis that the ability of female CEOS or managers is underestimated.

References

Smith, N., Smith, V., & Verner, M. (2006). Do women in top management affect firm performance? A panel study of 2,500 Danish firms. International Journal of productivity and Performance management, 55(7), 569-593.

Smith, N., Smith, V., & Verner, M. (2013). Why are so few females promoted into CEO and vice president positions? Danish empirical evidence, 1997–2007. ILR Review, 66(2), 380-408.

Cain, G. G. (1976). The challenge of segmented labor market theories to orthodox theory: a survey. Journal of Economic Literature, 14(4), 1215-1257.

Dwyer, S., Richard, O. C., & Chadwick, K. (2003). Gender diversity in management and firm performance: The influence of growth orientation and organizational culture. Journal of Business Research, 56(12), 1009-1019.

Riding, A. L., & Swift, C. S. (1990). Women business owners and terms of credit: Some empirical findings of the Canadian experience. Journal of business venturing, 5(5), 327-340.

Johnsen, G. J., & McMahon, R. G. (2005). Owner-manager gender, financial performance and business growth amongst SMEs from Australia's business longitudinal survey. International Small Business Journal, 23(2), 115-142.

Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. International economic review, 693-709.

Darity Jr, W. A., & Mason, P. L. (2004). Evidence on discrimination in employment: Codes of color, codes of gender. In African American Urban Experience: Perspectives from the Colonial Period to the Present (pp. 156-186). Palgrave Macmillan US.

Cain, G. G. (1986). The economic analysis of labor market discrimination: A survey. Handbook of labor economics, 1, 693-785.

Wolfers, J. (2006). Diagnosing discrimination: Stock returns and CEO gender. Journal of the European Economic Association, 4 (2−3), 531-541.

Reinert, R. M., Weigert, F., & Winnefeld, C. H. (2016). Does female management influence firm performance? Evidence from Luxembourg banks. Financial Markets and Portfolio Management, 30(2), 113-136.

Bertrand, M., & Hallock, K. F. (2001). The gender gap in top corporate jobs. ILR Review, 55(1), 3-21.

Dimovski, V., & Man, M. M. K. (2010). Is there a'glass ceiling'for female managers in Singapore organizations?. Management (18544223), 5(4).

Penttilä, E. (2016). How do women in top management affect firms' performance?(Available on Internet) (Master's thesis, Svenska handelshögskolan).

Miller, C. F., Lurye, L. E., Zosuls, K. M., & Ruble, D. N. (2009). Accessibility of gender stereotype domains: Developmental and gender differences in children. Sex roles, 60(11-12), 870-881. ISO 690

Dezsö, C. L., & Ross, D. G. (2012). Does female representation in top management improve firm performance? A panel data investigation. Strategic Management Journal, 33(9), 1072-1089. ISO 690

Akpinar-Sposito, C. (2013, June). Women in Management Research: Theoretical Perspectives. In 4eme Franco-Tchèque Trends in International Business (p. 11).

Darmadi, S. (2013). Do women in top management affect firm performance? Evidence from Indonesia. Corporate Governance: The international journal of business in society, 13(3), 288-304.

Darmadi, S. (2013). Do women in top management affect firm performance?

Evidence from Indonesia. Corporate Governance: The international journal of business in society, 13(3), 288-304.

Phelps, E. S. (1972). The statistical theory of racism and sexism. The american economic review, 62(4), 659-661.

Shrader, C. B., Blackburn, V. B., & Iles, P. (1997). Women in management and firm financial performance: An exploratory study. Journal of managerial issues, 355-372.

Brush, C. G. (1992). Research on women business owners: Past trends, a new perspective and future directions. Entrepreneurship: Theory and Practice, 16(4), 5-31.

Bell, L. A. (2005). Women-led firms and the gender gap in top executive jobs.

Malach Pines, A., Lerner, M., & Schwartz, D. (2010). Gender differences in entrepreneurship: equality, diversity and inclusion in times of global crisis. Equality, Diversity and Inclusion: An International Journal, 29(2), 186-198.

Cliff, J. E. (1998). Does one size fit all? Exploring the relationship between attitudes towards growth, gender, and business size. Journal of business venturing, 13(6), 523-542.

Gupta, V. K., Turban, D. B., Wasti, S. A., & Sikdar, A. (2009). The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur. Entrepreneurship theory and practice, 33(2), 397-417.

Sexton, D. L., & Bowman-Upton, N. (1990). Female and male entrepreneurs: Psychological characteristics and their role in gender-related discrimination. Journal of business venturing, 5(1), 29-36.

Marlow, S., & Patton, D. (2005). All credit to men? Entrepreneurship, finance, and gender. Entrepreneurship theory and practice, 29(6), 717-735.

Eddleston, K. A., & Powell, G. N. (2008). The role of gender identity in explaining sex differences in business owners' career satisfier preferences. Journal of Business Venturing, 23(2), 244-256.

Nakagawa, Y., & Schreiber, G. M. (2014). Women as drivers of Japanese firms' success: the effect of women managers and gender diversity on firm performance. Journal of Diversity Management (Online), 9(1), 19.

Stefani, M. L., & Vacca, V. P. (2013). Credit access for female firms: Evidence from a survey on European SMEs.

England, P., Gornick, J., & Shafer, E. F. (2012). Women's employment, education, and the gender gap in 17 countries. Monthly Lab. Rev., 135, 3.

Costa, D. L. (2000). From mill town to board room: The rise of women's paid labor (No. w7608). National bureau of economic research.

Bonacich, E. (1972). A theory of ethnic antagonism: The split labor market. American sociological review, 547-559.

Ferber, M. A. (1982). Labor market participation of young married women: Causes and effects. Journal of Marriage and the Family, 457-468.

Fitzenberger, B., Schnabel, R., & Wunderlich, G. (2004). The gender gap in labor market participation and employment: A cohort analysis for West Germany. Journal of population economics, 17(1), 83-116.

Krishna G. Palepu, Paul M. Healy, Erik Peek - Business Analysis and Valuation IFRS Edition