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Managerial Ownership and Earnings management in times of financial Crisis: Evidence from the USA

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Abstract

A vast amount of prior literature concerning earnings management is focusing on the potential constraining effects that managerial ownership has on the latter. However, the findings appear to be conflicting and contradictory and further study is needed to shed further light on this association. This study is attempting to investigate the relationship between earnings management and managerial ownership within the U.S. setting and more specifically to examine whether this relationship is influenced by the financial crisis that hit the U.S. on 2006. The research is employing the Modified Jones model on 235 U.S. firms listed in the S&P 500 index and tries to examine this relationship both in the whole research period (2004-2009) as well as to compare the findings 3 years before (2004-2006) and 3 years after (2007-2009) the economic recession in order to investigate whether the potential association between them is affected by it. The empirical results provide evidence that during the whole research period there is no significant relationship between managerial ownership and earnings management. However, the findings suggest that the latter relationship is indeed influenced by the effects of the financial crisis. More specifically, evidence is presented that the level of managerial ownership decreased, thus signaling a change in the use of earnings management.

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Contents

Chapter 1

1.1 Introducing the Subject

At the end of the 1990s and by the beginning of the 21st century the world has experienced a series of corporate accounting scandals such as Enron, Xerox, WorldCom, Tyco, all emanating from earnings management (Goncharov, 2005). Therefore, earnings management has been a hot topic that has drawn considerable attention and concern from practitioners, regulators, financial press and academics. Many different studies regarding earnings management has been published and many subtopics have been explored. The speech of Author Levitt, the chairman of U.S Securities and Exchange Commissions (SEC) is an example of the emphasis that is attributed to earnings management. In his speech Levitt discussed about earnings management practices such as the premature revenue recognition, the "cookie-jar" reserves and raised his concerns about their negative impact on the credibility and reliability of financial reporting in the U.S. capital market.

Corporations often distinguish finance from management and this separation induces agency problems. Jensen and Meckling (1976) define an agency relationship as a contract under which one or more persons (the principals) engage another person (the agent) to perform some service on their behalf, which involves delegating some authority to the agent. However, managers' and shareholders' goals are not always necessary aligned. One of the main causes of the agency problem is the short-term targeted profit from the management versus the long-term profit which is required by shareholders. Consequently, this separated ownership leads to various conflicts and controversies between shareholders, stakeholders and eventually opportunistic managerial behavior.

Stakeholders most of the time base their corporate decisions on the financial statements and the information disclosed in them. Management decisions as well as business activities are significantly influenced by the quality of the financial reported earnings. Such an example of decision making is the assessment of a firm's financial performance by investors in order to identify potential, future investment opportunities in the evaluated firm. As a result, it is of crucial importance that the

information disclosed in the financial statements is representative and reflect the true firm's financial performance and position. However, the informative value of the financial statements is highly dependent on whether managers have incentives and motives to manipulate earnings for their own benefit and purposes. To this extent Rosenfield (2000) and Dechow and Skinner (2000) argue that quality of financial reporting can be distorted when managers have incentives to manipulate earnings.

Healey and Wahlen (1999, p.368) define the practice that the *"management uses judgment in financial reporting and structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depends on reported accounting numbers"* as earnings management. There is no consensus in regards with the definition of earnings management (Beneish, 2001, p.4). Schipper (1989, p.92) defines earnings management as a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain. A crucial aspect of the earnings management definition is the purpose and intension of management to mislead, manipulate and influence outcomes for their own private gain in the expense of shareholders.

Despite the fact that earnings management has been the center of investigation and research for the past years, there is still work to be done to shed further light to the question of how to improve the credibility and reliability of financial reporting. One segment of this literature focuses on earnings management and its association with corporate governance and more specifically, managerial ownership. Hence, the constraining effect of corporate governance on the earnings management has been a topic that draws a vast amount of academic research.

Shleifer and Vishny (1997, p.737) state that corporate governance *"deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment"*. The basic purpose of corporate governance mechanisms is to restrict the potential agency costs that occur within the corporations. Agency costs could occur from insignificant level of goal incongruence and misunderstanding

between the management and shareholders. This is a result of the basic assumption that every individual acts for his own interest and benefit.

However, the agency theory poses that monitoring mechanisms can contribute to the alignment of the goals in between management, shareholders and stakeholders and smooth potential opportunistic behavior (Jensen and Meckling, 1976). Accounting earnings are characterized by higher degree of reliability and quality when managers' behavior is reduced by using monitoring systems (Wild, 1996). Corporate governance as a monitoring system aims not only to improve corporate performance, but also to mitigate agency problems by aligning managements' interests with those of the shareholders' (Demsetz and Lehn, 1985). Gul and Tsui (2001) research support the effective role of corporate governance as a monitoring system and Xie (2001) shows in his research that indeed corporate governance reduces management ability to use their discretion to manipulate earnings.

To conclude, Watts and Zimmerman (1986) support the notion that corporate governance assist investors by aligning the objectives of management with the objectives of shareholders, thereby enhancing the reliability of financial information and the integrity of the financial reporting process.

1.2 Problem Definition

The purpose of this study is to identify the effect that corporate governance has on earnings management. There have been identified several categories of corporate governance that have an effect on earnings management such us the board of director composition, the audit committee effectiveness and ownership structures. More specifically, this paper will focus its attention on a segment of the ownership structure, managerial ownership and attempt to directly identify its effects on the magnitude of earnings management in the U.S setting.

Despite the fact that the use of earnings management and its relationship with managerial ownership has drawn a significant attention from the academic community, in the previous scientific economic literature it appears that no consensus exists regarding the relationship and the effects of managerial ownership on the use of earnings management. Indicatively, Warfield et al. (1995) hypothesized

based on the theory of Jensen and Meckling (1976) that low managerial ownership provides deeper incentives for managers' to manipulate earnings for their own benefit. According to the findings of the same study, negative association exists between the absolute value of the discretionary accruals (i.e. Proxy for earnings management) and insider ownership in the U.S. In contrast to the findings of Warfield et al. (1995) Francis et al. (1999), finds that there is no significant systematic relationship between managerial ownership and accounting accruals in the U.S. As it can be derived the results from prior studies provide conflicting and contradictory results and thus more research is needed to be done to shed further light on this association.

Furthermore, in 2006, the bubble on the subprime house market in the U.S. collapsed resulting in a global financial crisis, with amongst others major stock declines and bankruptcies. Economies are still struggling to recover from this financial crisis, during the course of which much uncertainty for the firms' performance and information asymmetry exists between the shareholders, stakeholders and management. Despite the fact that many research have been conducted to identify the relationship between earnings management and managerial ownership at different settings no study attempted to identify the effects that the crisis that unfurled in 2006 in the U.S. had on this relationship. The choice of the U.S. is primarily driven from the fact that it was the center of the financial crisis due to the house market bubble. The post-crisis period, which is characterized by uncertainty and information asymmetry (Beltran, 2010; Mitton, 2002) might provide management with incentives to engage in earnings manipulation at a higher degree than before the crisis, or by making them more risk averse to potentially decrease their motivation to manipulate earnings, therefore altering the relationship between the absolute value of discretionary accruals and the level of managerial ownership. Moreover, the S&P 500 listed companies have been selected for this research because according to Karamanou et al., (2005) these are the largest companies and thus are characterized by great separation between ownership and control. Furthermore, the Sarbanes Oxley Act (SOX) that took place in the U.S in 2002 introduced new regulations to the U.S. setting that could affect the relationship

between earnings management and managerial ownership. As documented by Cohen et al., (2008) following the SOX the level of the accruals based earnings management decreased therefore making it interesting to investigate whether this decline continues and in times of financial crisis. Finally, another reason for choosing the U.S. setting is the results of Watts and Zimmerman (1986) that indicated that managers in the U.S. use discretionary accruals to increase the informativeness of financial reports.

To sum up, the ambit of this paper will be to identify the association of managerial ownership structure and earnings management in the U.S. setting and examine if this relationship holds in times of financial crisis. Despite the fact that there is much research conducted to identify the relationship of managerial ownership structure and earnings management, still there is room for research due to conflicting results of the prior research. The final research question that this thesis will attempt to answer will be:

Did the U.S. financial crisis have an effect on the relationship between managerial ownership and earnings management?

Sub-questions to be answered within the thesis:
1. What is the theoretical background behind financial accounting?
2. What is earnings management?
3. What are the methods of managing earnings?
4. What are the incentives that drive management to engage in earnings manipulation?
5. With which models can earnings management be measured?
6. What is the association between earnings management and managerial ownership in the prior literature?
7. What are the hypotheses that this thesis will attempt to answer?
8. What is the research design of this thesis?
9. What are the findings of this research?

1.3 Relevance to the problem and Contribution
The topic is very interesting and up to date, because a lot of time and effort is given by the corporations in finding ways to mitigate the smoothing and manipulation of

earnings. Investors and other interested parties such as shareholders and business oriented individuals will find the research finding useful for investment decisions.

Moreover, the results will provide useful insights to regulators and decision makers in the USA, who might be concerned about the manipulation of earnings and are trying to identify methods to improve the quality of financial statements. Furthermore, by further understanding the association between managerial ownership and earnings management and to extent this knowledge in times of financial distress will provide a useful insight to policy and decision makers and enable them to modify and adjust corporate governance principals, monitoring and decision policies depending on the general economic environment in which they operate.

As mentioned before, despite the fact that earnings management and its relationship with managerial ownership has drawn a significant attention from the academic community, in the previous literature it appears that there is no consensus regarding the relationship and the effects of managerial ownership on earnings management . Due to the fact that the results from prior studies provide conflicting and contradictory results more research is needed to be done to shed further light on this association.

Moreover, the focus on the U.S. setting with its specific circumstances and the new approach of comparing the relationship before and during a financial crisis will provide a further extension on the series of research on corporate ownership structure and will contribute to the existing literature of corporate governance by investigating further the influence of managerial ownership on earnings management in times of recession and financial crisis. However, due to the fact that the research is conducted to a specific country and under certain circumstances the provided results cannot be generalized.

1.4 Methodology

For the purpose of this research the positive accounting theory and the agency theory will be employed. Both the positive accounting theory as well as the agency theory will be further explained in chapter 2 of this thesis. The first part of this thesis will provide an extended review of the literature regarding earnings management.

To this extent, the definition, the forms, the incentives behind earnings management as well the ways to detect earnings management will be commented further in chapter 3. Moreover, an extended review of the literature that empirically tested the relationship between earnings management and managerial ownership as well as the findings of these researches will be illustrated.

The second part of this thesis will provide a quantitative analysis as well as the empirical findings of this research. The sample will be consisted from companies listed in the S&P 500 index over the years 1996-2009 and the annual data needed will be obtained from the WRDS Compustat database. Furthermore, data to construct the managerial ownership variable and the control variables will be obtained from the WRDS CRSP and WRDS Execucomp database. The model to identify the proxy of earnings management (i.e. discretionary accruals) will be the Modified Jones model as introduced by Dechow et al. (1995). The last step of the second part of this thesis will be to run the two panel data OLS regressions using the statistical software Eviews to identify the potential relationship that exists between earnings management (absolute value of discretionary accruals) and the independent variables (managerial ownership, size, leverage, firms' performance) and test the theses hypotheses.

1.5 Limitations

This research is a subject to several limitations. First of all the time horizon that is examined in this paper is outdated. The findings might have altered significantly during the period 2009-2013. Secondly, the selected model of this research, the Modified Jones model has been a subject of heavy criticism and the extent to which it captures the full magnitude of the discretionary accruals is still questioned by many authors. Third, earnings management is a complicated concept that is affected by numerous factors that are not incorporated in the regressions that were employed to test the hypothesis. Finally, the research has been conducted under the U.S. setting and under specific circumstances, therefore making the findings hard to generalize.

1.6 Structure of the thesis

The remainder of this research is organized as follows:

Chapter 2 will discuss the theoretical background and the indicative accounting research approaches that will be employed in this research. The main focus will be given in the positive accounting theory and the agency theory.

Chapter 3 will provide a description of the earnings management literature. More specifically, the definition, the types, the incentives, the forms, the earnings management research designs, the discrimination of the accruals and the various models developed in the literature to detect earnings management will be presented. Finally, the model that this research will use will be commented.

Chapter 4 will provide a thorough literature review on the association between earnings management and managerial ownership by illustrating findings of prior literature.

Chapter 5 will describe the two main hypotheses that this thesis will examine based on the existing literature.

Chapter 6 will provide a thorough description of the research methodology that will be followed. Moreover, the sample selection methodology, the periods, the accruals estimation model and the two final regressions that will test the hypotheses will be commented.

Chapter 7 will provide the empirical research as well as the empirical findings in regards with the hypotheses of this research.

Chapter 8 will provide the conclusion of this paper including analysis for both for the two main research hypotheses as well as the main research question. Finally, the limitations of this research and the recommendations for future research will be provided.

Chapter 2

Theoretical Background accounting theories

In this chapter the several approaches to conduct accounting research will be discussed. After mentioning and commenting them the focus will be given on the positive accounting theory which is the most applicable one for doing this research. Furthermore, the agency theory will be discussed, because it gives the primary explanation for the demand of corporate governance mechanisms such as the managerial ownership on constraining opportunistic management behavior.

2.1 Indicative Research Approaches

Before starting a research it is of crucial importance to choose which approach is going to be employed. In order to do research there exist three different research approaches. Deegan and Unerman (2006) provide a set of approaches to do accounting research namely: the inductive accounting theory, known as the market based research, the normative accounting theory and the positive accounting theory (PAT). There is no general consistency regarding the superiority of one research theory over the other and how these should be developed (Deegan et al 2006).

Deegan et al., (2006, p.377) state that the market based research *"explores the role in accounting and other financial information in equity markets"*. Baruch Lev and James Ohlson (1982, p 249-322) define the market based accounting research as the *"search into the relationship between publicly disclosed information by the major group of users as such as consequences are reflected in characteristics of common stocks traded in major exchanges"*. Thus, the main purpose of the market based accounting theory is to give an answer to the question of how does the market react on specific accounting settings and information releases. To this extent, the market based research drawn observations serve as a tool to develop a theory of what the market reaction would be under certain circumstances.

The normative accounting theory on the other hand does not include any empirical research and concerns opinions and the reasoning behind of what is and what ought to be. Deegan et al (2006, p.10) state that *"Theories that prescribe particular actions are called normative theories as they are based on the norms (or values or beliefs) held by the researchers proposing the theories".* To this extent the normative

accounting theory can be used only as a prescription as the lack of empirical observations limits its ability to reflect real practices. The final research approach is the positive accounting theory, which defines, describes and explains accounting phenomena. A more thorough description of the positive accounting theory will be given in section 2.3.

2.2 Agency theory

The advent of the modern corporation created a separation between ownership and control of wealth (Berle & Means, 1932). *"Corporations grow beyond the means of a single owner, who is incapable of meeting the increased economic obligations of the firm. As a result, the modern corporation typically has multiple owners, each intending on maximizing his or her investment in the enterprise"*, (Davis, Schoorman and Donaldson, 1997, p.22). Modern organizations are characterized by a wide dispersion of ownership taking the form of shareholders, who most of the time are not involved in the management of their companies. The relationship between stockholders and the manager of a firm has been described as the "pure agency relationship", because it is associated with the separation of ownership and control (Jensen & Meckling, 1976). Jensen and Meckling (1976, p.5) develop and define the agency theory as:

"A contract under which one or more persons (the principal(s)) engage another person (the agent) to perform one service on their behalf which involves delegating some decision making authority to the agent".

Direct results of the delegation of the decision making to the agent are the agency costs. In this thesis the agents are the managers and the principals are the various stakeholders. An important assumption of this thesis is that the engagement of management in earnings management is indeed for opportunistic reasons and thus resulting in conflict with the stakeholders. As mentioned before, the agency theory assumes that the agent will act following its own incentives and motives to promote his best interest, therefore the principals will put mechanisms in place, which align their interests (Deegan et al, 2006). Such examples of control mechanisms employed by the principals to reduce the agency costs and ensure that managers will act on

their own interest are compensation schemes, securities laws, and information intermediaries, direct monitoring (Healy and Palepu, 2001). In this case the focus will be given on direct monitoring (corporate governance) and more specifically to the constraining effects of the managerial ownership on earnings management.

Management may have the incentives to manipulate and distort reported earnings in order to meet earnings targets and beat analysts' and market expectations. Such incentives may arise when the management compensation and bonuses are tied to the firms reported earnings and its financial performance. In such occasions, managers could use their accounting discretion to manage presented accruals directly affecting the informative value and the reliability of the financial statements leading to information asymmetry. As a result, managerial opportunistic behavior, taking the form of inaccurate financial reporting information introduces earnings management as a type of agency cost (Davidson et al, 2005). Leuz et al. (2003) argues that the firms' earnings will be ultimately affected by such behavior. Therefore, the management cannot be always trusted and monitoring mechanisms have to be employed by the shareholders to mitigate earnings management phenomena and to ensure that the management will act on their best interest.

Corporate governance can play the role of such monitoring mechanism. Davis et al. (1997, p.23) supports the notion that governance mechanisms *"are designed to ensure agent principal interest alignment, protect shareholder interests and thus minimize agency costs"*. Moreover, McKnight and Weir (2009) present evidence that corporate governance mechanisms indeed reduce agency costs.

Thus, to *"minimize loss of value that results from the separation of ownership and control"* (Denis and McConell, 2003, p.1) firms use governance mechanisms to monitor and to control managers (Chakraborty and Sheikh, 2008).

2.3 Positive Accounting Theory

To conclude with the illustration of the accounting theories as started in section 2.1, the Positive Accounting Theory (PAT) will be commented. The main purpose of the positive theories is to describe, explain and predict the accounting phenomena. It is based on knowledge that can only be obtained from empirical evidence and it can be

representative of real practices. Watts and Zimmerman (1990) argue that the Positive Accounting Theory can help corporations with the selection of the accounting method that they will use and which not. However, this theory does not show which accounting method is more suitable for each company. Deegan et al (2006) state that the Positive Accounting Theory focuses on the relationships between individuals that are involved within a corporation and how accounting can play an alleviating role in the functioning of these relationships. The assumption behind this theory is that people are motivated to act by their own self-interest to promote their own welfare and that effort by companies is necessary to align the interests of agents and principals. This relationship is the agency theory. The concept of the agency theory will be thoroughly discussed below.

2.4 Criticism of the Positive Accounting Theory

Positive Accounting Theory has been subject to various criticisms since its emergence. Deegan et al., (2006, p. 247) state that also prescribing, not just explaining and predicting is also needed for the theory. Furthermore, Deegan et al., (2006 p.250) argue that the positive accounting theory is scientifically flawed. Another criticism of the positive accounting theory is the fact that it has not been developed since 1970's and this restricts the potential attainments of this theory.

Despite the criticism, the Positive Accounting Theory is widely used by many researchers. In the case of this thesis the most suitable accounting theory approach for doing this research is the Positive Accounting Theory. To elaborate on that, the fact that there are existing models that could measure earnings management combined with the assumptions about the constraining effect of the level of managerial ownership on the latter, could identify the association between the variables reflecting the managerial ownership on the level of earnings management. Moreover, the Positive Accounting theory is the most suitable in this research, since earnings management is about describing explaining and predicting the accounting behavior of managers as mentioned before.

2.6 Literature Overview & Summary of Chapter 2

Hereunder, the literature tables that summarize the theories that were discussed in this chapter are presented:

Study	Object of the Study	Sample	Methodology	Findings
Watts and Zimmerman (1990)	The study reviews and criticizes the positive accounting literature.	N/A	Literature Review.	The authors suggest ways to improve positive research in accounting choice. The most important of these improvements is tighter links between the theory and the empirical tests.
Davis, Schoorman and Donaldson (1997)	Extensive description of the agency theory and the stewardship theory.	N/A	The authors are proposing a model based upon the subordinate's psychological attributes and the organization's situational characteristics.	This research provides a description for the stewardship theory by defining several of the psychological and sociological characteristics that are antecedents to principal-steward relationships. The findings also add to previous stewardship research by examining a model based on manager-principal choice rather than determinism.
Jensen & Meckling (1976)	The purpose of this study is to provide a definition and an investigation of the nature for the agency costs as well as to define a theory of the ownership structure of the firm.	N/A	This paper integrates elements from the theory of agency, the theory of property rights and the theory of finance to develop a theory of the ownership structure of the firm.	The authors define the concept of agency costs, show its relationship to the 'separation and control' issue, investigate the nature of the agency costs generated by the existence of debt and outside equity, demonstrate who bears these costs and why, and investigate the Pareto optimality of their existence.
Healy and Palepu (2001)	The authors provide a framework for analyzing managers' reporting and disclosure decisions in a capital markets setting, and identify key	N/A	They review current empirical research on disclosure regulation, information intermediaries, and the determinants and economic consequences of	The authors conclude that current research has generated a number of useful insights, they identify many fundamental questions that remain unanswered, and changes in the economic environment that raise new questions for research.

	research questions.		corporate disclosure.	
Leuz, Nanda and Wysocki (2003)	Earnings management and investor protection: an international comparison.	Financial accounting data from 1990 to 1999 for over 8000 companies from 31 different countries.	The authors created four proxies that capture the extent to which managers employ their accounting discretion to manipulate the economic performance of their company (earnings smoothing and accruals manipulations). This research creates a cluster analysis with group countries with similar legal and institutional characteristics.	Insider economies with concentrated ownership, weak investor protection and less developed stock markets have higher levels of earnings management than outsider economies with discharge ownership, strong investor protection and large stock markets.
Denis and McConell, (2003)	The authors survey two generations of research on corporate governance systems around the world concentrating on countries other than the U.S. The first generation of international corporate governance research is patterned after the U.S. research that precedes it and the second considers the possible impact of differing legal	N/A	Literature review.	The first generation of international corporate governance research examines individual countries in depth and establishes that there are important differences in governance systems across economies. Even across these very developed economies, significant differences in ownership and board structure were observed. A country's legal system has a fundamental effect on the structure of markets in that country, on the governance structures that are affected by companies in that country, and on the effectiveness of those governance systems.

	systems on the structure and effectiveness of corporate governance and compares systems across countries.			
Baruch Lev, James Ohlson (1982)	Theory based research and evaluation of market-based empirical research in accounting.	N/A	Literature Review.	The authors corroborate and revise existing findings. According to them, it appears essential that theories of financial information rather than just information be constructed. Only theory can aid us in the development of new questions and a more useful interpretation of findings.
Davidson, Goodwin-Stewart, Kent (2005)	The authors attempt to investigate the role of a firm's internal governance structure in constraining earnings management.	Sample of 434 listed Australian firms in 2000.	OLS Regression.	A majority of non-executive directors on the board and on the audit committee are significantly associated with a lower likelihood of earnings management. However, voluntary establishment of an internal audit function and the choice of auditor are not significantly related to a reduction in the level of discretionary accruals.

2.7 Summary

In this chapter the different approaches to do an accounting research were discussed namely: the market-based, the normative and the positive accounting theory. The market based research focuses on converting observations into a theory. Normative theory serves as a prescription of what should be done under certain circumstances. Positive accounting theory is designed to explain and predict which firms should use a specific accounting method. Moreover, Positive Accounting Theory (PAT) describes, defines the accounting reality and predicts the accounting behavior of the management. Despite the criticism that the Positive Accounting theory has received,

due to the nature of this research, the selection of the positive accounting theory seems to be more applicable compared to the others.

Furthermore in chapter 2 the agency theory is commented. The agency theory posits that the agents (management) act by their own interest and use their accounting discretion to promote their own welfare instead of the welfare of the stakeholders and shareholders. Thus, monitoring mechanisms have to be employed so as to reduce the agency costs and align the objectives of both management and various shareholders and stakeholders. This thesis will focus on the constraining effect that managerial ownership has on the agency costs that occur under certain circumstances. The next chapter will provide a thorough overview of the literature concerning earnings management. The definition, the forms, the incentives that drive management to engage in earnings manipulation, the research designs as well as the models that are developed in the literature to detect earnings management will be illustrated.

Chapter 3

Literature Review Earnings Management

3.1 Introduction

This chapter will provide a thorough analysis of the literature concerning earnings management. More specifically, the definition, the incentives that drive managers to engage in opportunistic behavior and the forms that these actions take will be commented. Furthermore, a summary of the earnings management research designs and the existing models to detect earnings management that have been developed in the literature will be provided. Finally, the model that this research will employ to detect earnings management will be presented.

3.2 Definition & Types of Earnings Management

Despite the fact that earnings management has been a subject that attracted a vast amount of academic research, there is no consistency on the literature regarding an accepted definition of earnings management (Beneish, 2001).

Schipper (1989 p.92) defines earnings management as a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain. Scott (2009, p. 403) states: *"Earnings management is the choice by a manager of accounting policies, or actions affecting earnings, so as to achieve some specific reported earnings objective"*. Fields et al. (2001, p.260) that states *"that earnings management occurs when managers exercise their discretion over the accounting numbers with or without restrictions. Such discretion can be either firm value maximizing or opportunistic"*.

Ronen and Yaari (2008 p.25) classify earnings management definitions into three different categories depending on their nature and effects they have on financial reporting. First, the beneficial (white) "*Earnings management is taking advantage of the flexibility in the choice of accounting treatment to signal the manager's private information of future cash flows*.". Then the pernicious (black) "*Earnings management is the practice of using tricks to misrepresent or reduce transparency of the financial reports.*" and finally the gray "*Earnings management is choosing an*

accounting treatment that is either opportunistic (maximizing the utility of management only) or economically efficient."

Healy and Wahlen (1999 p.6) state a comprehensive definition, which best describes earnings management as mentioned in the beginning of this paper:

"Earnings management occurs when managers use judgment in financial reporting and its structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers"

This thesis following most earnings management studies will use the definition provided by Healy and Wahlen, which assumes that earnings management emanates from opportunistic managerial behavior. The definition provided by Healy and Wahlen seems to exclude the possibility that earnings management could be beneficial for shareholders. Therefore, this paper will be based on the assumption that earnings management is a bad thing which implies management opportunism.

3.3 Earnings Management Incentives

Healy and Wahlen (1999, p.9) state that despite the popular perception that earnings management exists, it has been remarkably difficult for researchers to document it with convincing evidence. They suggest that researchers should at first place focus on identifying the circumstances in which managers' motivations to use judgment in the reporting process is expected to be strong, and then examine whether the patterns of unexpected accruals are in line with these motivations (Healy and Wahlen, 1999, p.9). At the same paper Healy and Wahlen (1999) distinguish between three main types of incentives that drive earnings management namely: capital market expectation and valuation, contracts written in terms of accounting numbers and anti-trust or other government regulation.

Capital Market expectation and Valuation

Capital market expectation and valuation emanates from the influence that earnings could have on the stock price. To this extent, the relationship between reported earnings and stock prices can trigger incentives for earnings management. Prior literature focusing on earnings management for capital market reasons have focused on whether earnings are managed to meet the expectations of financial analysts,

investors or management. Burgstahler and Eames (1978) find that firms manage earnings to meet analysts' forecasts. Consistent with these authors Bartov et al., (2004) argues that meeting or beating the analysts' expectations is linked with higher returns, despite the fact that this could be achieved through earnings manipulation. Kasznik (1999) provides evidence that firms use abnormal accruals to manage earnings upward if they are in danger of failing to meet management earnings forecasts. Therefore, meeting analysts' expectations is considered of vital importance in order to attract potential investors and may provide incentives for companies to manipulate earnings.

Contacting Motivations

As mentioned before meeting analysts' expectations are affecting stock prices, thus this association could trigger opportunistic behavior by managers in order to ensure that these expectations will be met. However, this opportunistic behavior might be even more likely if management compensation is tied to the firms' financial performance. Consequently, in order to reduce the agency costs and to align the incentives of management and external shareholders, explicit and implicit management compensation contracts are used (Healy and Wahlen, 1999 p.18). In this respect, accounting data is used to help monitor and regulate the contractual relations between many of the firms' stakeholders (Healy and Wahlen, 1999). Watts and Zimmerman (1989) state that the management in firms who base their compensation contracts on earnings have greater incentives to report earnings results that maximize the value of their bonus awards. Defond and Jiambalvo (1994) find evidence that firms that are close to debt covenant violations engage in earnings management. Healy (1985) argues that managers have increased economic incentives to engage in earnings manipulation in order to maximize their cash compensation. At the same paper the author suggests that there is an association between accruals and managers income-reporting incentives under a management bonus compensation plan.

Regulatory Motivations

Besides earnings management that intent to influence shareholders' opinions and decisions, managers could engage in earnings management so as to circumvent

industry regulations or to avoid eventual intervention and investigation by anti-trust regulators (Healy and Wahlen, 1999). In this respect, regulations could provide firms with an extra incentive to manipulate earnings. As an example, prior literature indicates that financial institutions such as banks which are very close to minimum capital requirements are likely to engage in earnings management (Liu et al, 1997).

3.4 Forms of earnings Management

Prior literature on earnings management provides an extensive list on different methods used to manipulate earnings. Ronen and Yaari (2008 p.31) give some examples of earnings management forms such as "*A choice from a menu of treatments that are accepted under GAAP, a decision on the timing of the adoption of a new standard, structuring transactions to achieve desired accounting outcomes, timing the recognition of revenues and expenses through, managing the transparency of the presentation, managing the informativeness of earnings through various means*".

However, as stated by Roychowdhury (2006) prior literature distinguishes between earnings management emanating from real activities manipulation (real earnings management) and earnings management through accruals manipulation (accruals-based earnings management). Moreover, Roychowdhury (2006) states that real earnings do have a significant effect on cash flows, while accruals based earnings management do not have any direct cash flow consequences. Roychowdhury (2006, p.337) defines real earnings management as "*departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations*" and gives relative examples such as under provisioning for bad debt expenses a, delaying asset write-offs, price discounts and reduction of discretionary expenditures. Consistent with Roychowdhurrys' (2006) definition Graham et al (2005) finds that managers are willing to manipulate real activities to meet their earnings targets, even though the manipulation potentially reduces firm value. Additionally, Roychowdhury (2006) presents evidence that managers manipulate real activities to avoid reporting annual losses. However, the nature of this method of engagement in earnings management makes it "*less likely to be scrutinized and*

detected by auditors and regulators compared to accruals based management"
(Cohen, Zarowin, 2010, p.13).

As stated before most of the prior literature employs accrual-based measures as a proxy earnings management. "*Managers can opportunistically manage earnings by changing the accrual process because various estimations and judgments go into the process of preparing financial statements*" Enomoto et al. (2012, p.3). This thesis will focus on earnings management that emanate through accruals manipulation and to models that distinguish the discretionary component of the total accruals, which is the proxy for earnings management in this research.

3.5 Earnings management research designs

McNihols (2000, p. 314) distinguishes three different research designs commonly used in the earnings management literature: those based on aggregate accruals, those based on specific accruals and those based on the distribution of earnings after management.

To start with, the aggregate accruals approach proposed by Jones (1991) is considered to be the most commonly used in the earnings management literature (McNihols, 2000, p.314). The aggregate accruals approach defines earnings management by decomposing accruals into discretionary and non-discretionary accruals. Following the prior literature on earnings management the discretionary accruals will be used as a proxy for earnings management. Within the aggregate accruals approach both total and specific accruals can be studied. The discrimination between total and specific accruals can be summarized as follows. Total accruals take into consideration all the accruals that a company produces to calculate nondiscretionary accruals, while the specific accruals takes into account only specifically defined accruals. Both aggregate accruals approaches can be employed to compare different companies operating in different industries and with different sizes.

The specific accruals approach as stated by McNihols (2000, p.316) also models the behavior of each specific accrual to identify its discretionary and nondiscretionary components to detect earnings management. However, the specific accruals approach focuses on specific industry settings (banking, property and casualty

insurance) in which a single accrual is sizable and requires substantial judgment (McNihols, 2000, p.315). McNihols (2000, p.315) states this approach' important advantage is that an "*understanding of the nondiscretionary component is more readily developed, as the researcher can rely on generally accepted accounting principles to understand what fundamentals should be rejected in the account in the absence of earnings management*". Another advantage as mentioned by McNihols (2000, p.333) is that the relation between the single accrual and the explanatory factors can be directly estimated.

The third and last approach is the methodology for identifying earnings management as developed by Burgstahler and Dichev (1997) and Degeorge et al. (1999), which studies the distribution of earnings after the management of earnings is done by employing histograms and Z-scores. The latter authors in their studies attempted to detect earnings management activities to meet targets, by making strong predictions about the behavior of earnings in narrow interval around a target earnings number. Their model suggests that earnings management occurs when plotted earnings of firms included in the sample, differ significantly from an expected normal distribution. McNihols (2000, p.315) states that "*A prime advantage of the distribution approach is that it allows the researcher to make a strong prediction about the frequency of earnings realizations which is unlikely to be due to the nondiscretionary component of earnings.*"

All of the approaches discussed before have their disadvantages and limitations. Lippens (2010) argues that research conducted with aggregate and specific accruals models are missing a large segment of earnings management, since accruals management is not the only path that the management follows when manipulating earnings. Moreover, Kothari, Leone and Wasley (2005) state that when the performances from different industries are compared the probability of twisted results increases. The main disadvantage of the specific accruals approach is the fact that it focuses on a specific industry setting and therefore the generalization of the results is not possible. McNihols (2000, p.333) states that specific accruals models require more institutional knowledge and data compared to aggregate accruals approaches. The main disadvantage of the distribution of earnings approach to study

earnings management as stated by McNihols (2000, p.336) is that "*It seems implausible that the behavior of the nondiscretionary component of earnings could explain such large differences in the narrow intervals around their hypothesized earnings targets. Stated differently, measurement error in their proxy for discretionary behavior seems unlikely to be correlated with their partitioning variable.*" Additionally, the fact by itself that this approach is the least commonly used in the prior literature raises questions regarding its effectiveness and strength to detect earnings management.

Taking into consideration the before advantages and disadvantages of each accrual approach, the aggregate accrual approach seems to be more applicable for this thesis. To elaborate on that, the fact that the sample of this thesis will be constituted by companies operating in different industry settings excludes the specific accrual approach, which focuses in only one industry. The distribution of earnings approach will not be employed due to the fact that it is the least used in the previous literature. Furthermore, the models and insights it uses are relatively new and therefore its reliability and effectiveness is still not yet verified. To sum up, the aggregate accruals approach and more specifically the Modified Jones model (Dechow et al., 1995) will be employed by this thesis. The extended description of the model will be provided below.

3.6 Classification of Accruals

The starting point of an earnings management analysis is the calculation of total accruals. After calculating total accruals a particular model is then assumed for generating the nondiscretionary component of total accruals, enabling total accruals to be decomposed into a discretionary and a non-discretionary component (Dechow et al., 1995). Bergstresser et al., (2006, p.512) define accruals as components of earnings that are not depicted in current cash flows and a significant deal of managerial discretion goes into their construction. Discretionary accruals are defined as the difference between actual and expected accruals. Nondiscretionary accruals represent an expected accrual, a specified expense that has been recorded to the accounting system but has not yet been recognized. As a result nondiscretionary accruals represent a low degree of management discretion and allow less

subjectivity to management when presenting financial results. On the other hand, prior literature indicates that due to the fact that discretionary accruals could be a subject of management discretion; serve as an indication of earnings manipulation. Therefore, following the previous studies this thesis will use discretionary accruals as a proxy for earnings management. Dechow et al. (1995, p.194) argues that there are several models that are used to estimate the discretionary component of accruals and they *"range from simple models in which discretionary accruals are measured as total accruals, to more sophisticated models that attempt to separate total accruals into discretionary and nondiscretionary components".* These models will be discussed more thoroughly below.

3.7 Measuring Discretionary Accruals

In the following paragraph seven different models to calculate earnings management as developed in the literature will be commented.

The Healy model

Healy (1985) was the first to introduce a model that measures the use of discretionary accruals. Concerning the use of earnings management Healy (1985) tests by the comparison of the mean total accruals (scaled by lagged total assets) with the earnings management partitioning variable (Dechow et al. 1995, Healy, 1985). Dechow et al. (1995, p.197) argues that this study differentiate from most other earnings management studies due to the fact that it predicts that systematic earnings management occurs in every period. The earnings management partitioning variable under this approach divides the sample into three groups of companies (Dechow et al., 1995). The first group contains companies which are predicted to manage their earnings upwards and the two other groups contain companies that are predicted to manage their earnings downwards (Healy, 1985, Dechow et al., 1995). Following the division into groups, Healy (1985) compares the mean total accruals of the group of companies that predicted to manage their earnings upwards to each of the two groups of companies that predicted to manage their earnings downwards (Dechow et al.,1995, Healy, 1985). Then, the group which is predicted to show upward managed earnings is treated as the estimation period and the other two groups are treated as the event period. Healy (1985) argues that the amount of

non-discretionary accruals is basically the mean of total accruals over an estimation period prior to the event period (Dechow et al. 1995).

The formula that Healy (1985) introduced is as follows:

$$NDA (\tau) = \Sigma t\ TA (t) / T$$

Where:

NDA = estimated nondiscretionary accruals

TA = total accruals

t = 1,2 ... T is a year subscript for the years included in the estimation period

τ = a year subscript indicating a year in the event period

The DeAngelo Model

DeAngelo (1986) introduces another model to estimate nondiscretionary accruals, which can be viewed as a special case of the Healy model (Dechow et al. 1995). DeAngelo (1986) tests for earnings management by *"computing first differences in total accruals, and by assuming that the first differences have an expected value of zero under the null hypothesis of no earnings management"* (Dechow et al, 1995, p.198). This model uses the last period's total accruals scaled by lagged total assets, as a measure of non-discretionary accruals (Dechow et al. 1995).

The DeAngelo model is as follows:

$$NDA (\tau) = TA (\tau\text{-}1)$$

Both the Healy (1985) and DeAngelo (1986) models are applied by using total accruals from the estimation period to proxy for expected nondiscretionary accruals (Dechow et al.,1995). Furthermore, they make the assumption that nondiscretionary accruals are constant over time and that the discretionary accruals have a mean of zero in the estimation period (Dechow et al., 1995). If these assumptions hold then both models will estimate nondiscretionary accruals without error. However, if nondiscretionary accruals change from period to period then both models tend to estimate nondiscretionary accruals with error (Dechow et al., 1995). Thus, taking into account that the nature of the accrual accounting process dictates that the level of nondiscretionary accruals should change in response to changes in economic

circumstances (Kaplan, 1985), the models are unlikely to provide an estimation of the nondiscretionary accruals without errors (Dechow et.al, 1995).

The Jones Model

Jones (1991) introduces a model at her paper, which relaxes the assumption of Healy (1991) and DeAngelo (1986) that nondiscretionary accruals are constant and focuses on some specific accruals to estimate nondiscretionary accruals instead of the total accruals. In this model Jones (1991) does not assume that nondiscretionary accruals are consistent over time but makes the assumption that these accruals are affected by the changes in the firm's economic conditions and circumstances and aims to control the effects caused from the changes of the company's economic performance on non-discretionary accruals (Jones, 1991, Dechow et al., 1995). The Jones model is estimated as follows:

(1)   NDA (i,t) = a1 [1/A (i,t-1)] + a2 [ΔREV (i,t) / A (i,t-1)] + a3 [PPE (i,t)/A (i,t-1)]

Where:

NDA = nondiscretionary accruals

A = total assets at t-1

ΔREV = change in revenue between t and t-1 scaled by total assets at t-1

PPE = gross property, plant and equipment in year t scaled by total assets at t-1

a1, a2, a3 = regression coefficients

i = firm index

t = year index

The firm specific parameters are estimated with the following model in the estimation period:

(2)   TA (i,t) / A (i, τ-1) = α1 [1/A (i, t-1)] + α2 [ΔREV (i,t) / A (i, t-1)] + α3 [PPE (i,t)/A (i,t-1)] + ε$_t$

Where:

TA = total accruals for firm i in year t

ΔREV = change in revenue between t and t-1 scaled by total assets at t-1

PPE = gross property, plant and equipment for firm i in year t scaled by lagged total assets at t-1

α1, α2, α3= the OLS estimates of a1, a2, a3

A = total assets at t-1

ε = error term

t = year index

i = firm index

Dechow et al,. (1995) argues that the Jones model is able to explain approximately one quarter or the total accruals variations. The Jones model is subjected to one important limitation, which is also recognized by Jones (1991) in her paper. This model "orthogonalizes total accruals with respect to revenues and will therefore extract this discretionary component of accruals, causing the estimate of earnings management to be biased towards zero" (Dechow et al., 1995, p.199). In other words, it assumes that revenues are not discretionary. Dechow et al.,(1995) introduces a model which relaxes this assumption and will be discussed below.

The Dechow model

Dechow et al., (1995) introduces a modified version of the Jones model that *"is designed to eliminate the conjectured tendency of the Jones Model to measure discretionary accruals with error when discretion is exercised over revenues"* (Dechow et al., 1995 p.199). More specifically, Dechow et al. (1995) makes a comparison between the several existed models for detecting earnings management and comes up with the conclusion that adding the change in receivables to the Jones model leads to a stronger model. According to Dechow et al. (1995, p.199) the original Jones model implicitly assumes that discretion is not exercised over revenue in either the estimation period or the event period, while the modified version of the Jones model implicitly assumes that all changes in credit sales in the event period result from earnings management (Dechow et al., 1995).

Therefore, Dechow et al. (1995) suggest that the change in receivables should be deducted from the total change in revenues when measuring the nondiscretionary accruals applying the Jones model. Consequently, this adjustment aims to remove the potential effects of the management's discretion over credit sales from

nondiscretionary accruals, and accordingly to improve the model's power to detect revenue-based earnings manipulation.

Dechow et al. (1995) estimate nondiscretionary accruals as follows:

NDA (i,t) = a1 [1/A (i,t-1)] + a2 [ΔREV (i,t) - ΔREC / A (i,t-1)] + a3 [PPE (i,t)/A (i,t-1)]

Where:

ΔREC = change in net receivables in year t less net receivables in year t-1 scaled by total assets t-1

The estimation of the parameters a1, a2 and a3 and the nondiscretionary accruals during the estimation period in the formula before are those obtained from the original Jones model where no systematic earnings management is hypothesized. The only addition is the extra variable, the change in net receivables.

The Industry model

The Industry model introduced by Dechow and Sloan (1991) also attempts to relax the assumption that nondiscretionary accruals are constant over time. However, instead of attempting to directly model the determinants of nondiscretionary accruals, the industry model makes the assumption that variation in the determinants of nondiscretionary accruals are common across firms in the same industry (Dechow et al. (1995, p.199).

The industry model estimates nondiscretionary accruals as follows:

NDA $_t$ = γ_1 + γ_2 median$_1$ (Ta$_t$)

Where:

median$_1$ (Ta$_t$) = the median value of total accruals scaled by lagged assets for all non-sample firms in the same 2-digit SIC code.

γ_1, γ_2 = the firm specific parameters estimated using OLS in the observations in the estimations period

The industry model mitigates the measurement error in discretionary accruals mainly due to two reasons. First it only removes variation in nondiscretionary accruals that is common across firms in the same industry and second it removes

variation in discretionary accruals that is correlated across firms in the same industry that could create estimation problems (Dechow et al., 1995 p.200).

Kothari Model

Kothari et al. (2005) suggest that the estimation of the discretionary accruals by the Jones and the modified Jones model may result in a significant measurement error if these models do not control for the past performance of this company. Therefore, in order to allow the comparison between performance-matched discretionary accruals and traditional measured discretionary accruals they include the lag of return on assets (ROA). By doing so they suggest that the discretionary accruals are matched to the performance of a company. The Kothari model estimates the nondiscretionary accruals as follows Kothari, Leone and Wasley, 2005 p.174):

NDA (i,t) = a1 [1/A (i,t-1)] + a2 ∆REV (i,t) + a3 PPE (i,t) + a4 ROA (i,t)

Where:

ROA = Return on assets on year t

YE model

Ye (2007) suggests that the time series Jones approach ignores the time variation in accrual intensities and at the same time the cross-sectional Jones approach ignores the substantial differences among firms within the same industry. Ye (2007) attempts to mitigate the before mentioned Jones model weaknesses by incorporating four new variables to the proposed model namely: the beginning balance of noncash working capital (NCWC), and its historical average; the interaction between NCWC and revenue growth and the interaction between lagged depreciation rate and PP&E. By doing so, Ye (2007, p.2) suggests the notion that this approach *"allows the model better to capture systematic differences in accruals across both different firms and different time periods".* The proposed model as stated by Ye (2007) shows substantially better ability to capture the dynamics of accruals than the Jones and the modified Jones model. Furthermore, by including these variables in the model, the ability to take into account the reversion of abnormal working capital is enhanced and the incorporation of cross-sectional

differences and time-varying effects in historical financial measures such as working capital intensity and useful life of assets is allowed.

The Ye model estimates the total accruals as follows:

$TA_{i,t} = \beta_0 + \beta_1/A_{i,t-1} + \beta_2\Delta REV_{i,t} + \beta_3\ PPE_{i,t} + \beta_4 ROA_{i,t-1} + \beta_5 NCWC_{i,t-1} + \beta_6 ncwci + \beta_7 NCWC_{i,t-1}*\Delta REV_{i,t} + \beta_8 dep_{i,t-1} + \beta_9 dep_{i,t-1}*\ PPE_{i,t}$

Where:

NCVC: the beginning balance of noncash working capital

DREV: scaled lagged total assets

ncwc: the normal noncash working capital intensity

The model estimation also requires a measure of the normal non-cash working capital, which is estimated by the three-year historical average:

$ncwci = \frac{1}{3}\sum_{k=1}^{3}\ NCWC_{i,t-1-k}$

3.8 The Choice of the Research Model

Dechow et al. (1995) after comparing all the existing models finds that the modified Jones model is the more powerful model provided in the earnings management literature to measure the discretionary accruals. Similarly, evidence provided by Guay, Kothari and Watts (1996, p.104) support the notion that only the Jones and the modified Jones model find discretionary accruals that are consistent with both performance-improving and opportunistic smoothing of earnings. Additionally, Stolowy et al.,(2004) states that the Modified-Jones-model has the most explanatory power compared to the other proposed models.

Moreover, Guay, Kothari and Watts (1996) find evidence that the Healy, DeAngelo and industry models are not effective in isolating discretionary accruals that are associated with opportunism, firm performance and noise. To corroborate that they suggest that *"caution should be exercised in interpreting the research on managements' use of accruals motivated by opportunism and/or performance measure improvement"* (Guay, Kothari and Watts, 1996 p.104).

The original Jones model "implicitly assumes that discretion is not exercised over revenue in either the estimation or the event period" (Dechow et al., 1995 p.199). In other words, when the earnings are managed by means of discretionary revenues,

the Jones model takes away a part of the managed earnings from the discretionary variable. As a result, the estimates of earnings management are biased towards zero (Dechow et al., 1995). Jones is aware of this limitation (Jones, 1991 p.200, footnote 31). However, in the modified Jones model, as proposed by Dechow et al. (1995) the revenues are adjusted for the receivables. Consequently, the assumption that discretion is not exercised over revenues is eased.

Time-series vs. cross-sectional Modified Jones model

In order to measure the use of earnings management two different approaches can be used as proposed by the literature, the times-series or the cross-sectional approach. The difference between the times-series and the cross-sectional approach is that the first one is employed when the researcher is focusing on comparing earnings management in different time horizons so as to identify any changes in their use within this period. On the other hand, the cross-sectional approach compares a firm with the industry in which it operates and attempts to identify any differences in the use of earnings management between the firm and the industry.

The Jones (1991) and Dechow et al.(1995) models were initially introduced as time series models. However, DeFond and Jiambalvo (1994) develop a cross-sectional Jones model different than the traditional times-series model. To this extent, following studies estimated the parameters using cross-sectional discretionary accruals (Klein, 2002b; Xie et al., 2003). Furthermore, Defond and Jiambalvo (1994) compared both the Jones time-series and the modified cross sectional-model while investigating earnings management close to debt covenant violations. Their findings show that both models indicate similar results since the magnitude of coefficients obtained from the cross-sectional models is contiguous to those obtained from the time-series models. Bartov et al.(2001) finds that the cross-sectional model is more effective in detecting earnings management compared to the time-series model but states that the outcome of the models is the same and independent from the use of times-series or cross-sectional approach. Peasnell et al., (2000b) argues that the estimation of the coefficients by using cross sectional discretionary accruals help to avoid the survivorship bias problems that exists in the time-series approach. However, McNihols (2000, p.324) states that the *"researchers estimating*

nondiscretionary accruals by industry, as the cross sectional Jones model is often applied, may well overstate the magnitude of nondiscretionary accruals and understate the magnitude of discretionary accruals, because industry-level controls include the average level of discretion exercised by the industry". Since this research focus not just to identify the relationship between discretionary accruals and managerial ownership but to further investigate whether the financial crisis of 2006 in the U.S. affected this relationship and the level of discretionary accruals over time the time-series approach will be employed.

Taking the before into consideration, this thesis will employ the modified Jones model as introduced by Dechow et al., (1995) to measure earnings management consistent with the findings of Dechow et al. (1995), Guay, Kothari and Watts (1996) and Stolowy et al.,(2004) which suggest that the modified Jones model provides the most powerful tests of earnings management.

3.9 Summary

There is no general consensus in regards with the definition of earnings management in the academic literature. The most comprehensive definition was the one given by Healy and Wahlen (1999), which assumes that earnings management emanates from opportunistic managerial behavior. The incentives that drive management towards earnings manipulation can be divided into three main categories namely: the capital market expectations and valuations, the contracting motivations and regulatory motivations. Earnings management can take various forms. Some of these forms discussed in this thesis are the timing recognition of revenues and expenses, managing the transparency of the presentation or managing the informativeness of earnings through various means (Ronen and Yaari, 2008). Furthermore, there exist three different research designs commonly used in the earnings management literature: those based on aggregate accruals, those based on specific accruals and those based on the distribution of earnings after management. This thesis will employ the aggregate accruals approach. Moreover, prior literature distinguishes earnings management in two categories. The earnings management emanating from real activities manipulation (real earnings management) and earnings management through accruals manipulations (accruals based earnings management). This

research will follow the vast majority of the prior literature concerning earnings management and will employ the accrual-based approach to measure earnings management. The first step of this approach will be the calculation of the total accruals. Following this step, the models developed in the literature decompose the total accruals in the discretionary component and the non-discretionary component. There have been developed several models in the literature to accomplish this task. The most common models are those discussed in this thesis namely: The Healy model (1985), the DeAngelo model (1986), the industry model (1991), the Jones model (1991), the Modified Jones model as introduced by Dechow et al., (1995), the Kothari model (2005) and finally the Ye model (2007). On the basis that the Modified Jones model is the one used more extensively in the literature and is considered to provide the most powerful tests of earnings management (Dechow et al., 1995; Guay, Kothari and Watts, 1996; Stolowy et al., 2004), it will be selected as the model of this thesis. Following Chapter 3, Chapter 4 will provide an extended literature review of the relationship between earnings management and managerial ownership.

Chapter 4

Literature review Ownership Structures

4.1 Introduction

The effect of the ownership structure on earnings management has stimulated research attention. To corroborate that, Wang (2006) states that ownership structure has important effects on reported earnings. Prior literature suggests that various ownership structures necessitate different incentives to control and monitor a firm's management (Shleifer and Vishny, 1986).

Furthermore, it is argued that the development of a balanced ownership structure could have an effective constraining effect against earnings management engagement. There have been two approaches regarding an effective structure of ownership. To this extent, an effective ownership structure is consisted firstly by a firm's insiders and managers as well as secondly by external entities and outsiders both owning a considerable amount of shares within the firm. Therefore, they have more power and incentive to implement monitoring mechanisms to control the management activities and thus reduce the earnings management engagement.

The traditional agency theory poses that there is a positive relationship between the ownership structure and firm performance. Ownership structure as proposed by the agency theory is one of the most important corporate governance mechanisms to solve agency problems and suggests that concentrated ownership will result in more effective monitoring (Jensen & Meckling, 1976). This thesis will focus on a segment of internal ownership structure, managerial ownership and the relationship of the latter with the earnings management.

4.2 Managerial ownership and Earnings management

There is no general consensus in prior research in regards of the effects of managerial ownership on earnings management. Moreover, findings from prior studies suggest that there can be no relation, a positive relation, a negative relation, and a U-shaped relation between managerial ownership and earnings management.

The majority of the prior empirical studies concerning earnings management and insiders' ownership identified a positive association between them. To elaborate on

that, where there is no clear distinction between owners and managers, the latter don't pay considerable attention to the short-term financial reports, because the financial markets don't pressure them enough to signal the firm value to the markets (Jensen, 1986). In this case, high managerial ownership and lack of discipline from the financial market creates incentives for managers to pursue an opportunistic behavior and attempt to maximize their gains in the expense of shareholders (Sanchez-Ballesta and Garsa-Meca, 2007). According to the same study, the authors suggest that the constraining effects of the ownership structure are higher when the shares owned by the insiders are lower. On the other hand, when the insiders own a high percentage of shares, the relation between insider ownership and earnings management reverses, an argument consistent with the entrenchment theory, which stated that high levels of insider ownership may prevent insiders to make value-maximizing decision and thus to an increase in earnings management (Cornet, Marcus and Tehranian, 2009). To this extent, a study conducted by Morck et al. (1988) showed that greater ownership will result in greater entrenchment and thus to stronger incentives to pursue an opportunistic behavior.

In line with the results of Morck et al. (1988) are the findings of recent study from Nedal Al-Fayoumi et al. (2010) and Isenmila et al. (2012) which also identified a positive, significant relationship between insider ownership and earnings management. Bergstresser and Philippon (2006) presented evidence that when a CEO's compensation is tied to the value of stock and options, the likelihood of profit manipulation occurrence increases.

Koh (2003) using Australian data regarding the association between aggressive earnings management and managerial ownership practice and identified a positive relationship between them. Furthermore, in line with Koh (2003) are the results of Hsu and Koh (2005). In this paper, the authors extended further their research by examining the potential effect of both short-term and long-term managerial ownership on the magnitudes of earnings management in Australia. Their results showed managerial ownership is statistically significant for all linear designations but insignificant for the non-linear models. Nevertheless, at the same study, managerial

ownership is positively related with income-decreasing discretionary accruals and negatively related with income-increasing accruals.

Isenmila and Elijah (2012) using a sample of Nigerian banks examined the relationship between ownership structure and earnings management in Nigeria. The findings of the study indicated the existence of a positive relationship between insiders' ownership and earnings management statistically significant at 5% level.

Despite the fact that the before studies support the notion that high managerial ownership levels are associated with lower levels of monitoring and therefore a positive relationship between earnings management and managerial ownership is documented, there are several studies that question and argue against this relationship.

To this extent, Warfield et al. (1995) hypothesized based on the theory of Jensen and Meckling (1976) that low managerial ownership provides deeper incentives for managers' to manipulate earnings for their own benefit. According to the findings of the same study, there is negative association between the absolute value of discretionary accruals (i.e. proxy for earnings management) and insider ownership in the U.S., consistent with the constraining effects of insider ownership on the opportunistic behavior, which drives earnings management. In line with the findings of Warfield (1995) are the findings of Klein (2002) and Shwu-Jen You et al. (2003) which suggest that insiders' ownership is negatively associated with discretionary accruals. Dempsey et al. (1993) suggests that large insider's ownership reduces earnings management. Sandra Alves (2012) using a sample of 34 non-financial listed Portuguese firms found a negative relationship between discretionary accruals and managerial ownership.

In contrast to the findings of Warfield et al. (1995) Francis et al. (1999), finds that there is no significant systematic relationship between managerial ownership and accounting accruals in the U.S. Similarly, a research conducted in Denmark by Gabrielsen et al. (2002) finds that there is a positive but not significant relationship between managerial ownership and accounting accruals. Other authors that didn't reach to any significant association between insider ownership and earnings management are Bowen, Rajgopal, and Venkatachalam, (2008) and Peasnell et al.,

(2005). Finally, Chung et al (2002) examined the constraining effect of the board of directors and the audit committee on earnings management will be more explicit when the level of managerial share ownership is low. However, the results of their research were not sufficient to present a direct relationship between managerial ownership and earnings management. According to the same research the authors found that boards continue to have a constraining effect on earnings management, even when shareholders' and managers' interests are aligned.

Yeo et al. (2002), finds a U-shaped relation between director ownership and income-increasing discretionary accruals. More specifically, by examining Singapore-listed companies he found that earnings management decreases with managerial ownership at low levels but increases with higher levels of managerial ownership where the entrenchment effect sets in. Finally, Chi-Yih Yang et al (2008) initially found a positive and significant relationship between total insider ownership and discretionary accruals, but after decomposing the total insider ownership to make a more in-depth analysis found that discretionary accruals are positively associated with outside ownership and blockholders' ownership but U-shaped related with executive ownership. Nobuyuki Teshima and Akinobu Shuto (2008) found that the relationship between managerial ownership and the absolute value of discretionary accruals is significantly negative within low and high levels and significantly positive for intermediate levels of managerial ownership.

Following prior studied that investigated the relationship between managerial and earnings management (e.g. Sandra Alves, 2012; Nedal Al Fayoumi et al., 2010, Warfield et al., 1995) managerial ownership will be measured as the proportion of shares owned by executives divided by the total number of shares outstanding.

4.3 Literature Overview & Summary of Chapter 4

Hereunder, the literature tables that summarize the findings concerning the relationship between earnings management and managerial ownership as discussed in chapter 4 are presented:

Study	Dependent Variable(s)	Independent Variable(s)	Sample	Periods	Methodology	Findings
Warfield, Wild, Wild, (1995)	Discretionary accruals	Managerial ownership	Over 1600 corporations are tested.	Three-year period tested 1988-1990.	OLS regressions	Results show that managerial ownership is negatively associated with the absolute value of discretionary accruals
Francis, Maydew, Sparks, (1999)	Accounting accruals	Management ownership	Large Sample of NASDAQ firms.	1975-1994.	Pooled data Logistic regressions	The authors conclude that there is no systematic relationship between management ownership and accounting accruals.
Gabrielsen, Gramlich and Plenborg (2002)	Discretionary accruals	Managerial ownership	Danish listed companies.	1990-1996.	OLS regression	The authors show a positive but insignificant relationship between managerial ownership and discretionary accruals.
Klein April (2002)	Discretionary accruals	Board characteristics (Control variable-CEO ownership)	Sample consists of 692 publicly traded U.S. firm-years.	1992-1993.	OLS regression	The author finds a negative significant relationship between the absolute level of discretionary accruals and the level of managerial ownership.
Sandra Alves (2012)	Discretionary accruals	Managerial ownership	34 non-financial Portuguese stock listed companies	2002-2007.	OLS regression	Managerial ownership significantly negatively associated with EM.
Nedal Al-Fayoumi et al.,(2010)	Discretionary accruals	Insiders' Ownership	39 Jordanian industrial firms.	2001-2005.	OLS regression	Insiders' ownership is significant and positively associated with EM.

Teshima and Shuto (2008)	Discretionary accruals	Managerial Ownership	18.163 firm-year observations from Japanese listed firms.	1991-2000.	OLS regression	Significant non-monotonic relationship between EM and managerial ownership.
Yeo et al.(2002)	Discretionary accruals	Management Ownership	490 firm-year observation from Singapore Stock exchange listed firms	1990-1992.	Pooled OLS regressions	Non-linear relationship between managerial ownership and the informativeness of earnings.
Isenmila and Elijah(2012)	Discretionary accruals	Insiders' Ownership	10 commercial Nigerian banks of 2012	2006-2010	OLS regression	Positive and significant relationship between insiders' ownership and EM.
Sanchez-Ballesta and Garcia-Meca(2007)	Discretionary accruals	Insiders' ownership	64 and 203 firm-year observation from Spanish non-financial companies listed on the Madrid Stock Exchange.	1999-2002.	Panel Data OLS regressions	Non-linear relationship between insiders' ownership and discretionary accruals.
You, Tsai, Lin -(2003)	Discretionary accruals	Insiders' ownership	Companies listed in the Taiwan Stock Exchange Index.	1991-2000	OLS regression	The authors find managerial ownership and audit quality are both inversely associated with abnormal accruals
Chi-Yih Yang et al. (2008)	Discretionary accruals	Insiders' ownership	1306 Taiwanese listed firms	1997-2004	OLS regression	Discretionary accruals first increase and then decrease with executive ownership and they are positively affected by director and blockholders' ownership.
Bergstresser , Philippon	Discretionary accruals	CEO's stock and options	U.S data from the	1994-2000	OLS regression	The findings provided evidence

(2005)		holdings	Compustat and Compustat Executive Compensation datasets.			indicating that when a CEO's compensation is tied to the value of stock and options, the likelihood of profit manipulation occurrence increases.
Chung, Firth, Kim (2002)	Discretionary accruals	Managerial share ownership	All companies included in the 1998 Compustat PC-Plus Active and Research files	1988-1996	OLS regression	The authors find that the presence of large institutional shareholdings inhibits managers from increasing or decreasing reported earnings.
Koh(2003)	Discretionary accruals	Insiders' ownership	Australian Non-financial companies and 107 firm year observations.	1993-1997.	OLS regression	The author identifies positive relationship between EM and managerial ownership.

4.4 Summary

In this chapter an extended literature review of the relationship between earnings management and managerial ownership is provided. In short, empirical findings from prior literature appear to be contradictory and conflicting. To elaborate further on that, findings from prior studies suggest that there can be no relation, a positive relation, a negative relation, and a U-shaped relation between managerial ownership and earnings management. Following the previous literature, managerial ownership is calculated as the proportion of shares owned by executives divided by the total number of shares outstanding. In chapter 5 the hypotheses that this thesis will test based on the finding that were discussed in this chapter will be developed.

Chapter 5

Research Hypotheses

5.1 Introduction

In this chapter the hypotheses that this research will examine will be developed based on the existing literature.

5.2 Hypotheses Development:

There is no general consensus in prior research in regards of the effects of managerial ownership on earnings management. As discussed before the agency theory (Jensen and Meckling, 1976) posits that higher managerial shareholdings provide lower incentives for managers to engage in opportunistic behavior against the shareholders. At the same time according to the same theory, shareholders perceive that the managements' interests are in line with their interests when the latter acquire shares within the firm. To corroborate that, Warfield et al., (1995) hypothesized based on the theory of Jensen and Meckling (1976) that low managerial ownership provides deeper incentives for managers' to manipulate earnings for their own benefit. According to the findings of the same study, there is negative association between the absolute value of discretionary accruals (i.e. proxy for earnings management) and insider ownership in the U.S., consistent with the constraining effects of insider ownership on the opportunistic behavior, which drives earnings management. In line with the findings of Warfield (1995) are the findings of Klein (2002) and Shwu-Jen You et al. (2003) which suggest that insider ownership is negatively associated with discretionary accruals. Sandra Alves (2012) and Banderlipe (2009) suggest that large insider's ownership reduces earnings management and as management ownership increases the management becomes less incentivized to engage in earnings manipulation.

In contrast to the findings of Warfield et al. (1995) Francis et al. (1999), finds that there is no significant systematic relationship between managerial ownership and accounting accruals in the U.S. Similarly, a research conducted in Denmark by Gabrielsen et al. (2002) finds that there is a positive but not significant relationship between managerial ownership and accounting accruals. Other authors that didn't

reach to any significant association between insiders' ownership and earnings management are Peasnell et al., (2005) and Chung et al., (2002).

On the other hand, when the managers own a high percentage of shares, the relation between insider ownership and earnings management reverses, an argument consistent with the entrenchment theory, which stated that high levels of insider ownership may prevent insiders to make value-maximizing decisions and thus to an increase in earnings management (Cornet, Marcus and Tehranian, 2008). To this extent, a study conducted by Morck et al. (1988) showed that greater managerial ownership will result in greater entrenchment and thus to stronger incentives to pursue an opportunistic behavior. In line with the results of Morck et al. (1988) are the findings of recent study from Nedal Al-Fayoumi et al. (2010) and Mitani (2010) which also identified a positive, significant relationship between insiders' ownership and earnings management. Therefore, due to the conflicting mentioned findings it is difficult to give a certain direction to the first hypothesis, but the expectation is that there will be an association between managerial ownership and earnings management.

Hypothesis (H1):

The percentage of managerial ownership in the firm is related to the use of earnings management.

In 2006, the bubble on the subprime house market in the U.S. collapsed resulting in a global financial crisis, with amongst others major stock declines and bankruptcies. Economies are still struggling to recover from this financial crisis, during the course of which much uncertainty for the firms' performance and information asymmetry exists between the shareholders, stakeholders and management. Despite the fact that many research have been conducted to identify the relationship between earnings management and managerial ownership at different settings no study attempted to identify the effects that the crisis that unfurled in 2006 in the U.S. had upon this relationship. The post-crisis period, which is characterized by uncertainty and information asymmetry (Mitton, 2002; Mishkin, 1991), might provide management with incentives to engage in earnings manipulation at a higher rate

than before the crisis, therefore altering the relationship between the absolute value of discretionary levels and managerial ownership. Furthermore, during the financial crisis managers might own fewer shares within their companies making them less risk averse and more willing to engage in earnings management. As a result, the second hypothesis that will be examined by this thesis will be:

Hypothesis (H2):

Decreased managerial ownership has a positive effect on the use of earnings management in the post-crisis period in comparison to the pre-crisis period.

5.3 Literature Overview & Summary of Chapter 5

Hereunder, the tables of literature concerning the relationship of earnings management and managerial ownership based on the nature of their findings are presented:

5.3.1 Negative Relationship between Earnings management and Managerial Ownership		
Warfield, Wild, Wild, (1995)	Sample	Over 1600 firms tested between the years 1988-1990.
	Methodology	OLS regression.
	Findings	Results show that managerial ownership is negatively associated with the absolute value of discretionary accruals.
Klein April (2002)	Sample	692 publicly traded U.S. firms between the years 1992-1993.
	Methodology	OLS regression.
	Findings	The author finds a negative significant relationship between the absolute level of discretionary accruals and the level of managerial ownership.
Sandra Alves (2012)	Sample	34 non-financial Portuguese stock listed companies between the years 2002-2007.
	Methodology	OLS regression
	Findings	Managerial ownership significantly negatively associated with earnings management.
You, Tsai, Lin -(2003)	Sample	Companies listed in the Taiwan Stock Exchange Index between the years 1991-2000.
	Methodology	OLS regression.
	Findings	The authors find managerial ownership and audit quality are both inversely associated with abnormal accruals.

5.3.2 Positive Relationship between Earnings management and Managerial Ownership		
Nedal Al-Fayoumi et al.,(2010)	Sample	39 Jordanian industrial firms between the years 2002-2007.
	Methodology	OLS regression.
	Findings	Insiders' ownership is significant and positively associated with earnings management.
Isenmila and Elijah(2012)	Sample	10 commercial Nigerian banks between the years 2006-2010.
	Methodology	OLS regression.
	Findings	Positive and significant relationship between insiders' ownership and earnings management.
Bergstresser, Philippon (2005)	Sample	U.S. data between the period 1994-2000
	Methodology	OLS regression
	Findings	The findings provided evidence indicating that when a CEO's compensation is tied to the value of stock and options, the likelihood of profit manipulation occurrence increases.
Mitani (2010)	Sample	799 large Japanese manufacturing firms between the years 1999-2004.
	Methodology	OLS regression.
	Findings	Firms with higher managerial ownership are associated with more earnings management.
5.3.3 No significant Relationship between Earnings management and Managerial Ownership		
Francis, Maydew, Sparks, (1999)	Sample	Large sample of NASDAQ firms between the years 1975-1994.
	Methodology	Pooled data logistic regression.
	Findings	The authors conclude that there is no systematic relationship between management ownership and accounting accruals.
Gabrielsen, Gramlich and Plenborg (2002)	Sample	Danish listed companies between the years 1990-1996.
	Methodology	OLS regression.
	Findings	The authors show a positive but insignificant relationship between managerial ownership and discretionary accruals.
Chung, Firth, Kim (2002)	Sample	Companies included in the 1998 Compustat PC-Plus active and research files between the period 1988-1996
	Methodology	OLS regression

	Findings	The results of their research were not sufficient to present a direct relationship between managerial ownership and EM.
Peasnell, Pose, Young (2005)	Sample	UK listed firms between the periods 1993-1996.
	Methodology	OLS regression
	Findings	The authors do not document a direct relationship between EM and managerial ownership.

5.4 Summary

In this chapter the two hypotheses that will be tested in this research were developed. To this extent, the expectation according to prior literature is that there will be an association between the level of the absolute discretionary accruals (i.e. proxy for earnings management) and the level of managerial ownership. Furthermore, this research will attempt to investigate the potential effect that the crisis that unfurled in 2006 in the U.S. had on this association. Following chapter 5 were the research hypotheses based on the literature were developed, chapter 6 will present the sample methodology and the research design that this thesis will follow in order to test these hypotheses.

Chapter 6

Research methodology

6.1 Introduction

In this chapter the sample methodology and the periods that this thesis will investigate will be presented. Furthermore, the research design as well as the final regressions that will be employed to test the research hypotheses and the control variables incorporated in them will be commented.

6.2 Sample

For the purpose of this study data from the WRDS database will be used. More specifically, the annual report data required to estimate the discretionary accruals as a proxy for earnings management will be obtained from the Compustat North America Annual Database. Likewise, data to compute the control variables such as size, leverage and performance will be also obtained from the Compustat North America Database. Finally, in order to compute the managerial ownership variable data from both the Compustat Execucomp database and the CRSP database will be used.

The sample will contain U.S. companies listed on the S&P 500 index and the research period will be from 2004 until 2009. The reason behind the selection of the S&P 500 index is that the listed companies are the largest companies worldwide and have a great separation between ownership and control (Karamanou et al. 2005), which might provide incentives to managers to engage in earnings manipulation. However, also data for the sample firms from 1996 until 2003 will be included since this 8-year period will be the historic period where the coefficients for the Modified Jones model will be estimated. Therefore, companies with incomplete data both in the historic as well as the research period will be not incorporated in the final sample. All the listed companies are obliged to publish their annual reports. As a result, the data needed to run the regressions will be obtained from the annual reports of the sample companies. These data are all available for the research period from the Compustat North America database.

From the sample financial institutions, utility and mining companies will be excluded. According to Becker et al. (1998) and Tendeloo and VanStraelen (2005) financial institutions such as banks and insurance companies do not have the opportunity to make their own choices when they report their financial statements because they have to apply with more complex regulations and accounting principles compared to other institutions, thus they cannot influence the magnitude of discretionary accruals. Moreover, prior studies have shown that the special accounting practices those financial companies follow implies that the discretionary accruals model does not apply to them (Peasnell et al. 2000b). Consistent with Becker et al, (1998) mining and utility companies will be also excluded from the sample because the specific industry regulations they follow can influence the level of discretionary accruals. As a result, all the companies with SIC codes of the 6th sector (finance, insurance and real estate) and the 4th sector (utility companies, 40-49 two digit SIC code) are eliminated from the sample.

After excluding all the companies that do not fulfill the before requirements we end up with a final sample consisted with 235 companies from the S&P500 index in total, which implies 1410 firm-year observations for the 6 year tested period.

6.3 Periods

As mentioned before the ambit of this paper is not only to investigate the relationship that potentially exists between the absolute level of discretionary accruals and the level of managerial ownership in the U.S. rather than to identify the effects that the crisis that unfurled in 2006 had on this association.

There is no general consensus regarding the actual start of the crisis in the U.S. This research will divide the sample into two subsamples namely the pre-crisis period starting from the 1st of January 2004 until the 31st of December 2006 and the crisis period starting from the 1st of January 2007 until the 31st of December 2009. Both data sets will be consisted by the exact same number of companies and years so as to provide fully comparable results. Companies with incomplete data for both the periods will be also excluded from the sample. The choice of these periods is based on Shivakumar (2010) who identified July 2007 until December 2009 as the crisis period in the U.S.

6.4 Research Design and research Model:

As discussed in the literature review of the earnings management measurements the vast majority of the previous literature is using discretionary accruals as a proxy of earnings management. As mentioned before discretionary accruals are the difference between the actual accruals and the expected accruals. This thesis will employ the Modified Jones model as introduced by Dechow et al., (1995) and Bartov et al., (2001) to identify and calculate discretionary accruals. Indicatively, I will comment the required steps that I have to follow accomplish this task:

The first step of this analysis will be the calculation of the total accruals.

(1) TA (i,t) = [ΔCA (i,t) -ΔCL (i,t) - ΔCASH (i,t) + ΔSTD (i,t) - Dep (i,t)] / A (i,t-1)

Where:

ΔC=change in current assets.

ΔCL=change in current liabilities.

ΔCASH=change in cash and cash equivalents.

ΔSTD=change in debt included in current liabilities.

Dep=depreciation and amortization.

A = total assets.

t= year index, range from 1996 until 2009.

i= firm index, range from 1 until 235.

The variables that constitute this formula are obtained from the Compustat North America database. Here it is of crucial importance to mention that for the calculation of total accruals not only the research period, which ranging from 2004 until 2009 but also the historic 8-year period from 1996 until 2003 is used. The historic period will be explained extensively in the step two of the research methodology. Finally, the firm index is ranging from 1 until 235 because this is the number of the US companies that are examined in my research.

Following the calculation of the total accruals the second step of the research methodology will be commented, which is the estimation of the firm-specific regression parameters $\alpha 1$, $\alpha 2$, $\alpha 3$ by employing a time-series model for each firm using 8 firm-year observations on the below formula.

(2) TA (i,t) = $\alpha 1$ [1/A (i, t-1)] + $\alpha 2$ [ΔREV (i,t) / A (i, t-1)] + $\alpha 3$ [PPE (i,t)/A (i,t-1)] + ε_t

Where:

TA = total accruals for firm i in year t scaled by lagged total assets

ΔREV = change in revenue

PPE = gross property, plant and equipment for firm i in year t

A = total assets

ε = error term

t = year index, range from 1996 until 2003

i = firm index, range from 1 until 235

For the estimation of the firm-specific parameters the variables ΔREV, PPE and A will be obtained similarly as before from the Compustat North America database. The firm index is ranging from 1 until 235 representing all the examined firms in the sample. To calculate the coefficients $\alpha 1$, $\alpha 2$, $\alpha 3$ the historical data ranging from 1996 until 2003 for all the variables in the formula will be used. The explanation behind the use of data emanating from the historic period instead of those in the research period is attributed to the original method that Jones (1991) employed. As mentioned before the modified Jones model introduced by Dechow et al. (1995) estimates the coefficients in a similar way as the originally introduced Jones (1991) model. More specifically, Jones (1991) in her research used all the historic data prior to year t-1 to estimate the before coefficients (Jones, 1991). Therefore, the historic period will be consisted from data ranging from 1996 until 2003 including all the companies that exist in the research period because it is important to have the same number of companies in both the historic and the research period. The estimations of these coefficients will be accomplished by applying a panel data OLS regression using the statistical software Eviews. After estimating the regression coefficients the third step of the research methodology follows, which will be discussed extensively below.

The third step signals the different between the original Jones model and the modified Jones model. The nondiscretionary accruals according to the adjustment of Dechow et al. (1995) will be estimated as follows:

(3) NDA (i,t) = a1 [1/A (i,t-1)] + a2 [(ΔREV (i,t) - ΔREC(i,t)) / A (i,t-1)] + a3 [PPE (i,t)/A (i,t-1)]

Where:

NDA = nondiscretionary accruals.

A = total assets.

ΔREV = change in revenue between τ and τ-1.

ΔREC = change in net receivables.

PPE = gross property, plant and equipment.

a1, a2, a3 = regression coefficients from formula (2).

i = firm index, range from 1 until 235.

t = year index, range 2004 until 2009.

After estimating the coefficients by applying the formula (2) in the historic period the only unknown term in formula (3) is the non-discretionary accruals. Following the calculation of the non-discretionary accruals, the fourth step of the research design will be performed. The fourth step is to subtract formula (3) from formula (1) in order to find the discretionary accruals which are the proxy for earnings management as following.

(4) DACC (i,t)= | [TA - NDA (i,t)] |

Where:

| [TA - NDA (i,t)] |= The absolute value of the discretionary accruals scaled by the lagged total assets in the year t-1.

After calculating the absolute value of the discretionary accruals which will be the proxy for the level of earnings management the final regression is performed to test the two hypotheses.

6.5 Control variables and Final Regressions

Finally, the fifth and final step in the research methodology is to run the regression between the dependent variable (earnings management) and the independent variables (managerial ownership) to identify the association that potentially exists between them. In order to control for other parameters that might affect the relationship between managerial ownership and earnings management a group of control variables as suggested by previous literature (Dechow, 1995; Sloan and

Sweeney, 1995; Klein, 2002) will be introduced to the estimation. To this extent we will include: size (*Size*), performance (*Per*), leverage *(Lev)*.

The first control variable that will be incorporated in the final regressions will be the firm size. Watts and Zimmerman (1978) argue that larger firms have greater incentives to manage earnings due to the higher political cost they face. Moreover, Pincus and Rajgopal (2002) suggest that larger firm's management is more pressured to present preferable earnings. Consistent with this view are the findings of Hsu and Koh (2005) that state that firms are more likely to manage earnings so as to reduce their political visibility. On the other hand, the findings of Rusmin (2010) and Becker et al., (1998) suggest that larger firms have fewer incentives to engage in earnings manipulation because their financial statements are scrutinized from specialized third parties. Opposing views have been reported regarding the nature of the relationship between the firm size and the level of discretionary accruals. To elaborate further on this, prior studies (Peasnell et al., 2000, Banderlipe, 2009) support the notion that larger firms are related to lower level of discretionary accruals, while other studies (Chung et al., 2002, Yang et al. (2008) argue that larger firms are associated with higher level of discretionary accruals. Consistent with prior literature on earnings management (Jaggi et al., 2009 and Dimitropoulos and Asteriou, 2010)) the size (SIZE) will be measured as the natural logarithm of the total assets.

Consistent with numerous prior studies regarding earnings management (Becker et al., 1998, Dimtropoulos and Asteriou, 2010) leverage will be incorporated to the final regressions as a second control variable. According to Jiang et al., (2008) leverage may have differing effects on earnings management. To this extent, Defond and Jiambalvo (1994) and Jiang et al., (2008) support the notion that management of high leveraged firms have greater incentives to engage in income increasing discretionary accruals to avoid debt covenant violation. On the other hand, authors like Becker et al., (1998), Peasnell et al., (2000) and Yang et al., (2008) present a negative relationship between the absolute value of discretionary accruals and leverage. Following, previous literature (Al-Fayoumi et al. 2010,) leverage (LEV) will be measured as the ratio of total liabilities to total assets.

The final control variable that will be commented and used in the regressions will be the firm's performance. Consistent with Kothari et al (2005) and Kasznik (1999) the firm's performance will be measured as the ROA (net income divided by total assets) and will signal of how profitable is a firm and at the same time the extent of which a firm has the ability to utilize its assets in order to generate earnings.

As a result first the panel data OLS estimation will be as follows:

(5) $\quad | \ [DA \ (i, t)] \ | = \beta_1 + \beta_2 \ (MOWN) + \beta_3 \ (SIZE) +_{+}\beta_4 \ (LEV) + \beta_5 \ (PER) + \varepsilon_{it}$

Where:

DACC (i,t)=   the absolute value of the discretionary accruals scaled by the lagged total assets in the year t-1.

MOWN=   the percentage of total shares (options excluded) held by executives within a firm divided by the total number of shares outstanding.

SIZE=   the natural logarithm of total assets at year-end.

LEV=   the leverage measured the ratio of total liabilities divided by the total assets.

PER=   the performance calculated as the net income divided by the total assets at the beginning of the testing period (ROA).

b1, b2, b3 b4, b5= regression coefficients

e=   error term

t=   year index, range from 2004 until 2009

i=   firm index, range from 1 to 235

Following prior literature concerning earnings management the absolute value of discretionary accruals will be taken, since they can take the form of both negative and positive values. After running the before panel data regression (5) on Eviews the coefficients b2, b3, b4 and b5 will be determined. These coefficients will show the influence that the independent variables have on the dependent variable and will identify the association in between them. More specifically, b2 is the coefficient that determines the effect that managerial ownership has on the level of earnings management. Moreover, b3, b4 and b5 will show us the influence of size, leverage and performance respectively on the level of earnings management. The signs and

the significance of those coefficients are of great importance and will show whether to accept or reject the hypothesis. To elaborate further on this, the sign of the coefficients will show whether there is a positive or a negative relationship between the dependent and independent variables. The significance of the coefficients will corroborate the negative or positive association that the variables might have with the level of discretionary accruals.

The final step of the research design will be to employ formula (6) in order to compare the pre-crisis period (2004-2006) and the post-crisis period (2007-2009). By applying the final regression potential differences in the relationship between the level of the discretionary accruals and managerial ownership after a period of financial recession could be observed. To accomplish that an interaction variable will be incorporated in the original equation (5) taking the values 0 for the pre-crisis period and the value 1 for the crisis-period.

The final panel data time-series OLS regression will be as follows:

(6) $| [DA (i, t)] | = \beta_1 + dummy + \beta_2 (MOWN) + b_3 (MOWN*dummy) + \beta_4 (SIZE) + b_5 (SIZE*dummy) + \beta_6 (LEV) + b_7 (LEV*dummy) + \beta_8 (PER) + b_9 (PER*dummy) + \varepsilon_{it}$

Where:

DACC (i,t)   the absolute value of the discretionary accruals scaled by the lagged total assets in the year t-1.

MOWN=   the percentage of total shares (options excluded) held by executives within a firm divided by the total number of shares outstanding.

SIZE=   the natural logarithm of total assets at year-end.

LEV=   the leverage measured the ratio of total liabilities divided by the total assets.

PER=   the performance calculated as the net income divided by the total assets at the beginning of the testing period (ROA).

b1, b2, b3 b4, b5, b6, b7, b8, b9= regression coefficients

dummy =   indicator variable taking the value 0 for the years 2004-2006 and 1 for the years 2007-2009

e=   error term

t=				year index, range from 2004 until 2009

i=				firm index, range from 1 to 235

In this regression the main focus will be given on the regression coefficients b3, b5, b7 and b9 which are the indicators of the interaction that might exist before and after the financial crisis of the year 2006. Dummy variables are useful tools in a time-series analysis where not all the variables are quantitative. The dummy variable will split the sample into two groups. The first group will include all firm-specific observations of sample companies in the years prior to the crisis (2004-2006) and the second group will include the same firm-specific observations for the years after the crisis (2007-2009). The incorporation of the dummy variable in the regression is aiming the direct comparison of the variables before and after the crisis. After running the regression the estimated coefficients of the dummy variable will illustrate what is the difference between the group one (reference group) and group two (focus group). By observing the significance and the sign of the before coefficients we will be in a position to identify the nature and the (direct) effect of the crisis to the regression variables and the level of the discretionary accruals.

6.6 Summary

The sample includes firms listed in the S&P 500 index between the years 1996 until 2009 and the data needed for the variable calculation are obtained by the WRDS Compustat database. Following prior literature concerning earnings management, from the sample all the financial institutions as well as the utility and mining companies are excluded. Also companies with missing data among both the historic (1996-2003) and the research period (2004-2009) are deleted. The final sample is consisted from 235 companies, implying 1410 firm-year observations for the tested period.

To conclude, the research methodology and the model for the calculation of the discretionary accruals (Modified Jones model) as well as the final models and the control variables included, that will test the two hypotheses are commented. The next chapter will provide the empirical results and the test of the two main hypotheses that this research is attempting to examine.

Chapter 7

Empirical Research

7.1 Introduction

In this section, following the research design the results of the discretionary accruals based on the Modified Jones Model will be discussed. Furthermore, the empirical analysis and findings from the regressions (5) and (6) will be presented. Finally, based on those findings the hypothesis (1) and (2) will be tested.

7.2 Accruals Analysis

As discussed in chapter 6 all the required data to conduct the empirical research on earnings management are obtained from the WRDS Compustat Database. The years included in the analysis are ranging from 1996 until 2003, consisting the historic period and from 2004 until 2009 which is the research period. From the data constituting the historic period the coefficients to compute the absolute value of the discretionary accruals (i.e proxy for earnings management) will be obtained. After obtaining the coefficients we can calculate the discretionary component of the total accruals, which will be the proxy for the earnings management.

The first step of the empirical analysis is the calculation of the total accruals as described in chapter 6 by employing the formula (1) in both the historic as well as the research period.

(1) $\quad$ TA (i,t) = [$\triangle$CA (i,t) -$\triangle$CL (i,t) - $\triangle$CASH (i,t) + $\triangle$STD (i,t) - Dep (i,t)]

$\quad$ t=year index, range from 1996 until 2009

After the calculation of the total accruals in both the historic and the research period of the empirical analysis the next step of the empirical research is the calculation of the regression coefficients following the methodology that Jones (1991) originally introduced. More specifically, using the formula (2) a panel data multiple OLS regression will be performed with the statistical software Eviews.

(2) TA (i,t)/A (i,t-1) = α1 [1/A (i, t-1)] + α2 [$\triangle$REV (i,t) / A (i, t-1)] + α3 [PPE (i,t)/A (i,t-1)] + εt

$\quad$ Where:

$\quad$ TA = total accruals for firm i in year t scaled by lagged total assets

ΔREV = change in revenue

PPE = gross property, plant and equipment for firm i in year t

A = total assets

ε = error term

t = year index, range from 1996 until 2003

i = firm index, range from 1 until 235

Following the prior literature on earnings management all the variables have been scaled by lagged total assets to reduce heteroskedasticity.

Before running the panel data regression some assumptions have to be tested. One of these assumptions is whether the data used are normally distributed. In order to test for normality the Jarque-Bera test will be performed in the statistical software Eviews on the residuals.

Figure 1: Jarque-Bera test

Series: Standardized Residuals	
Sample 1997 2003	
Observations 1637	
Mean	-1.09e-18
Median	0.001657
Maximum	4.458867
Minimum	-1.158978
Std. Dev.	0.165271
Skewness	11.47363
Kurtosis	332.7192
Jarque-Bera	7451171.
Probability	0.000000
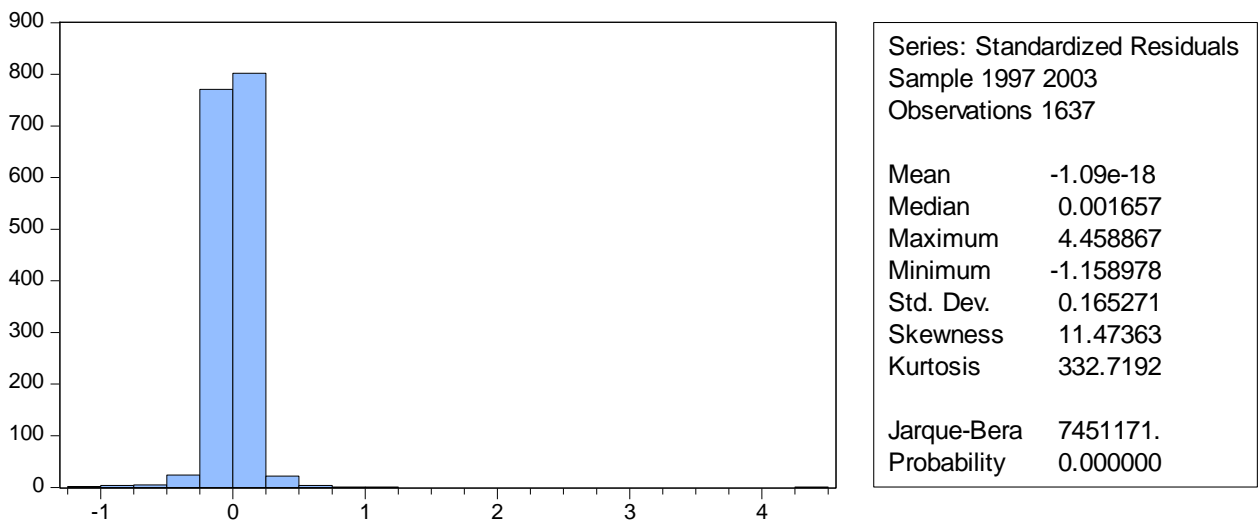
Based on the results of the Jarque-Bera test the null hypothesis that the "the distribution is normal" is rejected since the p-value=0. As a consequence the normal Gaussian curve, which signals the shape of a normal distribution, will have fatter tails than that of the normal distribution. This departure from the normality is due to the skewness and excess kurtosis of the residuals often occurred for financial series. Despite the fact that the Jarque-Bera test rejects the hypothesis of normality of the residuals of the model, inference can be contacted based on the t-ratio statistics based on the standard normal distribution. According to the asymptotic theory, for a

large number of cross-section units (as in this case N=235), these statistics follow the normal distribution by the central limit theorem and the law of large numbers (Greene, 2003). Another assumption that has to be met according to de Vocht (2009) is that all the variables of the regression need to be numeric. This assumption is met since all the variables in the regression are numeric. One other assumption is the absence of multicolinearity. More specifically, this means that the independent variables do not measure the same values. This assumption is also met since all the independent variables are consisted with specific different financial components of the annual reports of the companies and no one of these variables includes the same financial components as another variable. After corroborating these assumptions the multiple panel data OLS regression will be performed. The first table of the regression results is table 1 which shows the summary of the model:

Table 1: Model Summary

R-squared	0.441438
Adjusted R-squared	0.347281
S.E. of regression	0.178659
Sum squared resid	44.68664
Log likelihood	624.5719
F-statistic	4.688291
Prob(F-statistic)	0.000000

The most important information that is depicted in the first table is the multiple R^2. The R^2 represents the explanatory power of the model and more specifically it measures the variation in the dependent variable that can be explained by its relationship with the independent variables. In the before model the R2 is 0.441438 which means that almost 44,2 percent of the total accruals is explained by the combined effect of the three independent variables. The number of R^2 is relatively good and it means that the explanatory power of the model is sufficient. Finally, here it is worth mentioning that the overall model as a whole is highly significant since the Prob (F-statistic) is 0.0000. This means, that all the independent variables taken as a whole predict the dependent variable.

Table 2: Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.034711	0.020146	-1.722977	0.0851
1/A (i, t-1)	-1.748653	0.094779	-18.44971	0.0000
ΔREV (i,t) / A (i, t-1)	0.334435	0.016431	20.35417	0.0000
PPE (i,t)/A (i,t-1)	-0.071321	0.036195	-1.970437	0.0490

After examining the R^2 of the model and showed that the model as a whole is significant the second table (Table 2) where the results of the OLS regression are represented for all three independent variables will be commented. The before table, show the values for the a1, a2, a3 coefficients, as well as their direction and their level of significance. To start with, the signs of the coefficients reveal the nature of the effect that the independent variables have on the dependent variable. Thus, 1/A (i, t-1), PPE (i,t)/A (i,t-1) have a negative influence on TA (i,t) / A (i,t-1), while ΔREV (i,t) / A (i, t-1) has a positive influence respectively. The values of the coefficients are a1=-1,748653, a2=0.334435 and a3=-0.071321. The interpretation of these values is as following: If the independent variable 1/A (i, t-1) increases with 1 then the dependent variable TA (i,t) / A (i,t-1) will decrease by 1.748653. The same reasoning applies for also the variables ΔREV (i,t) / A (i, t-1) and PPE (i,t)/A (i,t-1).

The most important feature of this table is the last column which shows the p-values of these coefficients. The p-value shows the level of significance within a statistical test and it represents the probability of the occurrence of a given event. To elaborate on that, the lower the p-value in a statistical test the stronger the probability that there is an actual connection between the dependent and the independent variable that is not a result of coincidence. To identify whether the coefficients are statistically significant the p-values have to be compared with the overall level of significance that the test has been conducted. Following prior literature on earnings management (e.g. Warfield et al., 1995, Sandra Alves, 2012)

the selected level of significance that all the regressions will be made will be 5%. To sum up, all three coefficients show p-values lower than the significance level of 5% so it can be concluded that all three of them are statistically significant and will be all included in the model.

Following the estimation of the coefficients by applying formula (2) the next step of the empirical analysis follows, which is the calculation of the nondiscretionary accruals by applying the formula (3) in the research period with the coefficients obtained from the formula (2) as below:

(3) NDA (i,t) = a1 [1/A (i,t-1)] + a2 [($\triangle$REV (i,t) - $\triangle$REC(i,t)) / A (i,t-1)] + a3 [PPE (i,t)/A (i,t-1)]

> Where:
>
> > a1, a2, a3 = regression coefficients from formula (2).
> >
> > t = year index, range 2004 until 2009.

After calculating the nondiscretionary accruals for each company and each year the only variable remaining unknown is the discretionary part of the total accruals. To estimate the absolute value of the discretionary accruals (i.e proxy for earnings management) the following model will be used:

(4) DACC (i,t)= | [TA - NDA (i,t)] |

> Where:
>
> > | [TA - NDA (i,t)] |= The absolute value of the discretionary accruals scaled by the lagged total assets in the year t-1.

Graph Representation of Absolute Discretionary Accruals

Figure: 2

In figure 2 the average absolute value of the discretionary accruals estimated by the Modified Jones model is illustrated. The graph depicts that the average value of the discretionary accruals showed a sharp increase between the years 2004 and 2005, followed by a decrease until 2006. One possible explanation behind the sharp increase in the absolute value of the discretionary accruals in the years 2004-2005 is the adaptation of the companies to the new financial practices and regulations that were introduced by the Sarbanes-Oxley act (2002) combined with the fact that the U.S. economy was not yet been hit by the crisis of 2006. The decline in the trend of the absolute value of discretionary accruals between 2005-2006 can be attributed to the economic consequences of environmental disasters that hit the U.S. as well as to the notion that Bartov and Cohen (2009) and Cohen et al., (2008) support, who state that companies never stop employing accruals to manipulate their financial statements but they attempt to replace the easy to detect discretionary accruals with real activities accruals which are harder to detect. After 2006 there is a smooth increase in the trend of the absolute value of discretionary accruals despite the strike of the crisis in the late 2006. This can be explained by the fact that the U.S.

companies were trying to adapt their performance to the new financial environment, which is also argued by Dechow et al., (2003) who support the notion that even in economic downturns the companies manage their earnings upwards to meet market expectations. Finally, from 2008 until 2009 there is a sharp decline in the trend of the absolute value of the discretionary accruals which can be attributed to the fact that the impact of the crisis was even more severe in the late 2008 than before, but on the other hand it can signal the adaptation of the companies to the effects of the crisis and as mentioned before the shift from discretionary accruals to real activities accruals which are harder to detect (Bartov and Cohen 2009, Cohen et al., 2008). Overall, it can be derived from the graph that the absolute level of discretionary accruals before the crisis and after the crisis has not changed significantly illustrating a slight decrease in the years 2007-2009 compared to the years 2004-2006.

7.3 Multivariable Regression Results

Now that the dependent variable of the model is estimated the last step of the empirical analysis follows, which is the estimation of the two final regressions. In order to test the first hypothesis "The percentage of managerial ownership in the firm is related to earnings management" the following panel data OLS multivariable regression is estimated as discussed in chapter 6:

(1) $| [DA (i, t)] | = \beta_1 + \beta_2 (MOWN) + \beta_3 (SIZE) + \beta_4 (LEV) + \beta_5 (PER) + \varepsilon_{it}$

Table 3: Regression 1 Model

R-squared	0.361991
Adjusted R-squared	0.232309
S.E. of regression	0.062621
Sum squared resid	4.572304
Log likelihood	2028.209
F-statistic	2.791389
Prob(F-statistic)	0.000000

The table 3 will be the first output of Eviews that will be commented. One of the most important pieces of information that can be derived from table 3 is the R^2. As

mentioned before, the R^2 signals the explanatory power of the model, since it shows the proportion of the dependent variable (discretionary accruals) that is explained by the variation in the independent variables (managerial ownership, size, leverage, and firm's performance). The model presents an R^2 of 36.2%, meaning that the independent variables explain 36.2% of the discretionary accruals. However, since model (1) represents a multivariable regression the Adjusted R^2 is of greater importance and it will be used instead of the R^2. To elaborate on this, when different variables to a model are added there is a chance that the R2 will be raised, presenting biased signals for the power of the model. However, Adjusted R2 compensates for the added variables in the model and will only increase if the latter variables have a significant power within the model. The Adjusted R2 in the model (1) is 0.233, which means that 23,3% of the dependent variable (absolute value of the discretionary accruals) is explained by the variation in the independent variables. To conclude with the analysis of table 3 it is important to say that the model as a whole is significant, since the Prob (F-statistic) is 0.00 which is lower than the overall significance level of 5%.

Now that the overall explanatory power of the model (1) has been commented the table 4 will be commented. Table 4 presents the results of the multivariable panel data OLS regression for the independent variables of the model.

Table 4: Regression 1 Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.062780	0.067477	-0.930398	0.3524
MANOWN	-1.326695	0.730736	-1.815559	0.0697
SIZE	0.009612	0.007437	1.292480	0.1964
LEV	0.069202	0.021546	3.211819	0.0014
PER	0.022781	0.027815	0.819016	0.4129

The first variable that will be commented is the MANOWN variable representing the proportion of shares (options excluded) that the executives hold within the

companies. Based on the p-value of the coefficient in the regression, it can be derived that the variable MANOWN has a negative but insignificant relationship (p-value=0.0697>0.05) with the level of the absolute value of discretionary accruals. However, here it is important to mention that the coefficient is significant at a significance level of 10% since the p-value=0.0697<0.1. This finding is in line with a segment of the prior literature concerning earnings management who found a negative significant relationship between the managerial ownership and the level of the absolute discretionary accruals, indicating that the higher the proportion of shares owned by executives the lower the magnitude of the discretionary accruals (Banderlipe, 2009, Klein, 2002, Warfield et al., 1995).

Furthermore, the results of the (1) regression will continue with the analysis of the SIZE variable which represents the natural logarithm of the total assets of the firm. The findings of the regression indicate that there is a positive but insignificant relationship both at 5% and 10% significance level (p-value=0.1964>0.05/0.1) between the size and the level of the absolute discretionary accruals. The positive relationship found is in line with prior literature that found that the larger firms are associated with a higher level of absolute discretionary accruals (Chung et al., 2002, Yang et al., 2008).

Moving on to the third variable of the regression which is the variable LEV representing the ratio of total debt divided by the total equity within a firm. The findings of the regression illustrate a positive and significant relationship (p-value=0.0014<0.05) between the variable LEV and the level of the absolute discretionary accruals. This finding is consistent with the findings of Ali et al., (2008), Defond & Jiambalvo (1994) and Jiang et al., (2008) indicating that the higher the leverage of a firm the higher the incentives the management have to engage in income increasing accruals so as to avoid debt covenant violations.

Finally, the analysis of the regression (1) will end with the variable PER, which represents the ratio of the total income divided by the total assets (ROA) for each firm. The results of the regression show a positive but insignificant relationship (p-value=0.4129>0.05/.01) both in 5% and 10% significance level between the firm performance and the level of the absolute discretionary accruals. This result is in line

with the findings of Sandra Alves (2012) who found a negative, however insignificant relationship between the absolute value of the discretionary accruals and the firm's performance.

Regarding the first hypothesis of this thesis "The percentage of managerial ownership in the firm is related to earnings management" the findings of the panel data multivariable OLS regression (1) indicate that has to be rejected since the coefficient of the variable MANOWN was found to be insignificant at a 5% level. Hence, at 5% significance level the proportion of the shares owned by executives in a firm does not play a significant constraining role in the magnitude of the absolute discretionary accruals.

The second hypothesis "Decreased managerial ownership has a positive effect on the use of earnings management in the post-crisis period in comparison to the pre-crisis period" will be tested by employing the second panel data time-series regression (2) model as discussed in chapter 6 as follows:

(2) | [DA (i, t)] | = β1 +dummy +β2 (MOWN) +b3 (MOWN*dummy) +β4 (SIZE) +b5 (SIZE*dummy) +β6 (LEV) + b7 (LEV*dummy) +β8 (PER) +b9 (PER*dummy) +εit

By employing the second model the effects of the crisis on the relationship between managerial ownership and the level of the absolute discretionary accruals can be identified. To accomplish this task as discussed before an interaction variable will be introduced to the model (dummy) taking the value 0 for the years prior to the crisis (2004-2006) and 1 for the years after the crisis (2007-2009). Thus, the interaction variable will split the sample into two subsamples representing the two periods of pre and post crisis. The focus on the findings of the regression (2) will be on the coefficients of the interaction variables, which represent the average difference in the dependent variable among the two different time horizons. First, the results showing the explanatory power of the model will be presented at the table 5:

Table 5: Regression 2 Model

R-squared	0.367300
Adjusted R-squared	0.235419
S.E. of regression	0.062494
Sum squared resid	4.534255
Log likelihood	2034.075
F-statistic	2.785092
Prob(F-statistic)	0.000000

As discussed before the first and one of the most important information that can be obtained from table 5 is the Adjusted R^2. The Adjusted R^2 of the second model is 0.235, which means that 23.5% of the dependent variable can be explained by the variation in the independent variables. Again the weight will be given in the Adjusted R^2 instead of the R^2 because as mentioned before when more independent variables are added to the model the R^2 can be increased despite the fact that these variables might not affect significantly the model. The second information that is important to mention here is the value of the Prob (F-statistic) which is 0.00 and indicates that the overall model is highly significant and has a significant explanatory power. After describing the model as a whole, the findings of the second (2) multivariable panel data time-series OLS regression are illustrated in Table 6.

Table 6: Regression 2 Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.130819	0.081280	-1.609491	0.1078
DUMMY	-0.006621	0.028332	-0.233676	0.8153
MANOWN	-0.875445	0.785030	-1.115174	0.2650
MANOWN*DUMMY	-2.055896	1.024939	-2.005872	0.0451
SIZE	0.018480	0.008991	2.055394	0.0401
SIZE*DUMMY	-0.002032	0.003051	-0.666056	0.5055
LEV	0.060650	0.025639	2.365496	0.0182
LEV*DUMMY	0.030700	0.019517	1.573018	0.1160
PER	-0.026033	0.049600	-0.524854	0.5998
PER*DUMMY	0.054136	0.050004	1.082622	0.2792

To start with the analysis the MANOWN*DUMMY interaction variable will be commented which shows the effects of the crisis on the level of the managerial ownership between and after the crisis. The variable is marginally significant at 5% level (p-value=0.0451<0.05) indicating that that the level of managerial ownership in times of financial crisis went down by 2.055 percent. The association between the absolute value of the discretionary accruals and the managerial ownership variable is still negative, thus the relationship has changed before and after the effects of the crisis.

Moreover, the findings of the regression (2) provide no evidence that the effects of the crisis on the size, the leverage and the firm's performance are significant, since the coefficients of the variables SIZE*DUMMY, LEV*DUMMY, PER*DUMMY show p-values higher than the significance level of 5% that the regression has been made.

Therefore, it can be concluded that the effect of the crisis that unfurled on 2006 had a significant negative impact on the level of managerial ownership. Due to the fact that managerial ownership during the financial crisis dropped significantly a potential rise in the level of the absolute value of discretionary accruals can be expected, which means that second hypothesis can be accepted "Decreased managerial ownership has a positive effect on the use of earnings management in the post-crisis period in comparison to the pre-crisis period".

The final step of the analysis of the empirical results will be the presentation of the correlation matrix as presented in the table 7:

Table 7: Correlation Matrix

	ABSDA	MANOWN	SIZE	PER	LEV
ABSDA	1.000000	0.017135	-0.064416	0.016321	-0.124155
MANOWN	0.017135	1.000000	-0.143280	0.039776	-0.094181
SIZE	-0.064416	-0.143280	1.000000	0.029759	0.156588
PER	0.016321	0.039776	0.029759	1.000000	-0.234183
LEV	-0.124155	-0.094181	0.156588	-0.234183	1.000000

It can be derived from the before table (7) that the levels of correlation among the

regression variables are low, indicating that this low interaction between them makes them appropriate variables for the detection of the use of earnings management. Furthermore, it also indicates the absence of multicolinearity, a condition that exists when independent variables are correlated with each other, which result in large sampling errors. Finally it may be concluded that none of the independent variables are linearly related to the dependent variable and hence do not skew the model.

7.4 Summary of the regressions results

The results of the first regression (1) show that there is a negative but insignificant relationship (p-value=0.0697>0.05) between the level of the absolute value of discretionary accruals and the variable MANOWN. However, it is worth mentioning that the coefficient is significant at a significance level of 10% since the p-value=0.0697<0.1. Furthermore, the findings of the regression (1) indicate that there is a positive but insignificant relationship both at 5% and 10% significance level (p-value=0.1964>0.05/0.1) between the size and the level of the absolute discretionary accruals. Moreover, the results of the regression (1) illustrate a positive and significant relationship (p-value=0.0014<0.05) between the variable LEV and the level of the absolute discretionary accruals. Finally the findings of the regression (1) show a positive but insignificant relationship (p-value=0.4129>0.05/.01) both in 5% and 10% significance level between the firm performance and the level of the absolute discretionary accruals.

The findings of the second regression (2) present evidence that the MANOWN*DUMMY interaction variable is marginally significant at 5% level (p-value=0.0451<0.05) indicating that that the level of managerial ownership in times of financial crisis went down by 2.055 percent. Moreover, the findings of the regression (2) provide no evidence that the effects of the crisis on the size, the leverage and the firm's performance are significant, since the coefficients of the variables SIZE*DUMMY, LEV*DUMMY, PER*DUMMY show p-values higher than the significance level of 5% that the regression has been made.

7.5 Summary

In this section both the analysis and the results of the discretionary component of the total accruals based on the Modified time-series Jones model and the multivariable panel data OLS regressions were presented.

In short, it can be concluded that the findings of the first regression show a negative but insignificant relationship at 5% confidence level between the level of the absolute value of discretionary accruals and managerial ownership between the years 2004-2009. However, at 10% significance level this relationship turns significant and is consistent with the findings of Warfield et al., (1995) and Klein, (2002) who found a negative association between managers' ownership and earnings management. Furthermore the findings of the regression (2) show that the crisis that unfurled in 2006 had a negative significant effect on managerial ownership, which dropped by 2.055 percent, implying that absolute level of discretionary accruals is expected to be higher in times of financial crisis.

Chapter 8

8.1 Conclusion

The purpose of this thesis is to investigate the association between earnings management and managerial ownership and to shed further light on the constraining effects that the latter has on the level of earnings management. Despite the fact that this relationship has been a subject that has drawn a significant attention from the academic community, in the previous literature it appears that there is no general consensus regarding the relationship and the influence that the level of managerial ownership has on earnings management. Therefore, this thesis is attempting to identify this relationship in the specific U.S. setting and at the same time to extent this knowledge in times of financial crisis. In order to answer the main research question a series of hypothesis that needed to be tested is formulated. The first hypothesis that was investigated by this research is the following:

Hypothesis (H1): The percentage of managerial ownership in the firm is related to earnings management.

The empirical results from the first main regression show a negative but insignificant relationship between the absolute level of discretionary accruals and the level of managerial ownership. This result implies that the constraining effect that managerial ownership has on the absolute level of discretionary accruals do not hold during the period 2004-2009, which was the time horizon of the first model. However, it is worth mentioning that the findings are significant at a 10% significance level and consistent with the findings of Warfield et al., (1995) and Klein, (2002) who found a negative and significant relationship between the managerial ownership and the absolute level of discretionary accruals in the U.S., therefore implying that the higher the managerial ownership the lower the probability that the management will engage in earnings manipulation.

Despite the fact that, the findings are significant at a 10% level of significance I have to reject my first hypothesis because the association found between managerial ownership and earnings management at a 5% significance level is not significant implying that there is no systematic relationship between these two variables. These

results are in line with Francis et al. (1999), who showed that there is no significant systematic relationship between managerial ownership and accounting accruals in the U.S. Also the findings are consistent with the findings of Gabrielsen et al., (2002) who found a positive but insignificant relationship between the absolute value of discretionary accruals and the level of managerial ownership in the Danish setting.

Although a vast amount of research has been conducted to identify the relationship between earnings management and managerial ownership in different settings, no study attempted to shed light to the influence that a potential downturn in the economy might have on this relationship. Therefore this study attempted to identify the effects of the financial crisis that unfurled in 2006 in the U.S. had on the relationship between the absolute level of discretionary accruals and the level of managerial ownership. The choice of the U.S. is primarily driven by the affect that this country was the center of the financial crisis due to the subprime mortgage bubble. The post-crisis period, which is characterized by uncertainty and information asymmetry (Beltran, 2010; Mitton, 2002; Mishkin, 1991), might provide management with incentives to engage in earnings manipulation at a higher degree than before the crisis. Moreover, the proportion of shares held by management within their firms might change in times of financial recession, therefore altering the extent to which managers engage in earnings manipulation and ultimately shift the relationship between the absolute value of discretionary levels and managerial ownership. As a result, the second hypothesis that this study examined is:

Hypothesis (H2): Decreased managerial ownership has a positive effect on the use of earnings management in the post-crisis period in comparison to the pre-crisis period.

In order to test this hypothesis an interaction variable was introduced to the main model that split the sample in to two main periods namely, the pre-crisis period (2004-2006) and the post-crisis period (2007-2009). By introducing this dummy variable to the model I was in the position to identify potential differences that exist in the relationship between the level of the absolute discretionary accruals and the level of managerial ownership before and after the financial crisis.

The findings of the second main model provide evidence that the interaction variable MANOWN*DUMMY is significant at a 5% significance level indicating that the level of managerial ownership was affected by the crisis and dropped by 2.055 percent. This implies that the association between the absolute value of discretionary accruals and the level of managerial ownership has been affected by the financial downturn. More specifically, the hypothesized decreased managerial ownership in times of financial crisis indeed affects the use of earnings management. Therefore, since the findings are significant at a 5% significance level the second hypothesis will be accepted, because there is an actual significant change in the examined relationship and a higher degree of earnings management is expected.

To conclude with I will give an answer in regards to my main research question:

Did the U.S. financial crisis have an effect on the relationship between managerial ownership and earnings management?

I find evidence that the level of managerial ownership in the U.S. decreases in times of financial crisis. These results indicate that the relationship between the level of the absolute discretionary accruals and the level of managerial ownership alters during the economic recession in the U.S. Management own less shares within their firms in times of economic downturns and this might affect the extent to which they engage in earnings manipulation. One potential interpretation might be that due to the fact that in times of financial recession managers own lower percentage of shares within their companies they become less risk averse and more willing to engage in earnings management. Yet, we have to bear in mind that the change in the earnings management engagement might emanate from the fact that corporations might have adapted to the new regulations that were introduced by the Sarbanes Oxley Act (2002), therefore engaging in earnings management at higher degree. However, in the future less accrual-based earnings management can be expected. To elaborate on that, Cohen et al., (2008) states that firms tend to switch from accrual-based earnings management to managing earnings using real activities methods, because these techniques despite the fact that are more costly are harder to detect. Nevertheless, the negative association between the absolute level of discretionary accruals and managerial ownership holds in both the pre-crisis and post-crisis period

indicating that managerial ownership has a constraining, however insignificant effect on the level of earnings management in the U.S.

8.2 Limitations

As every research also this one has been a subject of several limitations which will be commented below. At first, the time horizon that the research is conducted is outdated; therefore an updated version of this research might provide a valuable insight and identify differences. The relationship between earnings management and managerial ownership might have changed in the meta-crisis period from 2009-2013 and a research that will attempt to shed light on this relationship during this time horizon will provide further valuable insights in this relationship.

The second limitation is related with the selected model of this research, which is the time-series modified Jones model as originally introduced by Dechow et al., (1995). As discussed before both the time-series and the cross-sectional variant of the Modified Jones model have been subject of heavy criticism in the prior literature and the extent to which they capture the full magnitude of the discretionary accruals has been questioned. Therefore, the same research conducted with another model that captures a greater amount of the level of discretionary accruals might yield more reliable results.

The third limitation is associated with the regression models presented in this paper. To elaborate on that, earnings management emanates from a variety of factors and is affected by numerous variables that are not included in this research. As a result, the explanatory power of the model can be restricted because of the absence of other variables that might interact with earnings management but are not included in these models.

Finally, the fact that this research has been conducted in the U.S. setting and under specific circumstances make it hard to generalize the results to other countries as well. However, despite the before limitations the findings of this research might contribute to the further understanding of managerial ownership and earnings management by examining this relationship in times of financial crisis.

8.3 Recommendations for Future Research

This thesis is attempting to identify the relationship between the level of the absolute value of discretionary accruals and managerial ownership and to extent this knowledge in times of financial crisis. However, the time horizon and the specific setting that this research was conducted, as well as the methodology followed leave margins for future research to shed further light on this relationship and add value to the findings of this research.

More specifically, the time horizon that this study was made is outdated, therefore a research incorporating the years 2010-2013 will provide updated results that might represent the current environment with the U.S. better than the findings of this research.

Another suggestion for future research is related to the methodology that was used in terms of both the aggregate accruals approach as well as the model used to test the two hypotheses. To elaborate on that, as mentioned before both the time-series and the cross-sectional Modified Jones model have been subjects of heavy criticism by numerous studies concerning earnings management. Therefore, the magnitude of the absolute value of discretionary accruals captured by the model employed might defer if another model is employed for the same purpose. A future study using another model for the distinction of the discretionary component of accruals from the total accruals will provide a further insight to the magnitude of the absolute value of the discretionary accruals that was captured in this research. Moreover, as discussed in the limitations, earnings management is a complicated task that is hard to detect and interacts with numerous factors that were not incorporated as control variables in the two main regressions. As a result, a more in depth analysis by incorporating more control variables representing different factors that affect earnings management might yield different results.

Another suggestion for future research is to investigate under the same circumstances the relationship that potentially exists between earnings management and other ownership structures like institutional ownership and blockholders' ownership and to extent this knowledge in times of financial crisis. Finally, since this research has been conducted in a specific setting and under certain circumstances

the findings cannot be generalized, therefore the same study in a different setting like Europe, under the European crisis might provide results that will be interesting to compare.

8.4 Summary of Results in Comparison with Prior Literature

The results of the first regression showed that there is a negative but insignificant relationship between the level of the absolute discretionary accruals and the proportion of shares held by the management within their firms. These results are consistent with the results of Francis et al., (1999), Gabrielsen (2002) and Peasnell et al., (2005) who found no association between accounting accruals and management ownership. However, despite the fact that the findings of the regression (1) are insignificant at 5% confidence level, they turn significant at a 10% confidence level. In that case the results are in line with the results of Warfield et al., (1995), Klein (2002) and Sandra Alves (2012) who identify a negative significant relationship between these two variables. These results indicate that managerial ownership indeed has a constraining effect on the degree that management engage in earnings manipulation.

However, the results are inconsistent and contradictory with a number of previous studies concerning earnings management. More specifically, studies like those of Nedal Al- Fayoumi et al., (2010), Isenmila et al (2012), Bergstresser and Philippon (2005), Koh (2003) and Mitani (2010) provide evidence indicating a positive and significant relationship between earnings management and insiders' ownership. The differences in the results could emanate from a variety of reasons. One potential explanation is the different setting as well as the period that these studies have been conducted. More specifically, Nedal Al-Fayoumi et al.,(2010) examined this relationship on a sample of Jordanian firms between the period 2000-2007, Isenmila et al.,(2012) used Nigerian banks during the period 2006-2010, Bergstresser and Philippon (2005) used U.S. data but from the period 1994-2000, Koh (2003) used Australian firms during the years 1993-1997 and Mitani (2010) used Japanese firms during the period 1999-2004. Other reasons contributing to the differences in the results might be associated with the methodology that was employed to test this relationship. Each one of these authors used different regression variables as well as

different variations of the Jones (1991) and the Dechow Modified Jones model (1995) to proxy for earnings management, which might yield differences in the results. Furthermore, as mentioned before earnings management is a very complicated task, which is affected by numerous factors that cannot be incorporated and taken into account in every research. These factors could be affected by the financial environment as well as the regulations that every setting and time horizon is characterized with. Indicative examples are the Sarbanes Oxley Act (2002), which according to Cohen et al.,(2008) led to a lower degree of accrual-based earnings management or the financial crisis in the U.S. (2006), during the course of which much uncertainty and information asymmetry exists, which can lead to major differences in the macroeconomic conditions and ultimately lead in differences in the results.

8.5 Thesis Results In Regards with Prior Literature

STUDY	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLES(S)	SAMPLE	PERIODS	FINDINGS	THESIS RESULTS
Warfield, Wild, Wild, (1995)	Discretionary accruals	Managerial ownership	Over 1600 firms are tested.	Three-year period 1988-1990.	Results show that managerial ownership is negatively associated with the absolute value of discretionary accruals	The thesis findings are **inconsistent** with the findings of this paper at 5% significance level. However, it is important to mention that at 10% significance level the results are **in line** with the findings of Warfield et al.(1995)
Francis, Maydew, Sparks, (1999)	Accounting accruals	Management ownership	Large Sample of NASDAQ firms.	1975-1994.	The authors conclude that there is no systematic relationship between management ownership and accounting	The findings of this paper are **consistent** with the findings of this thesis that there is no significant relationship between the accounting accruals and the management ownership.

					accruals.	
Gabrielsen, Gramlich and Plenborg (2002)	Discretionary accruals	Managerial ownership	Danish listed companies.	1990-1996.	The authors show a positive but insignificant relationship between managerial ownership and discretionary accruals.	The results of this paper show a positive but insignificant relationship in the examined relationship which are contradictory (due to the direction of the sign) however **consistent** with the findings of this thesis who also show an insignificant relationship between EM and managerial ownership at 5% significance level.
Klein April (2002)	Discretionary accruals	Board characteristic(Control variable-CEO ownership)	Sample consists of 692 publicly traded U.S. firm-years.	1992-1993	The author finds a negative significant relationship between the absolute level of discretionary accruals and the level of managerial ownership.	The findings of this thesis are in line (regarding the direction of the sign) with the findings of this paper. Also this paper **consistent** with Klein (2002) also finds a negative but significant at 10% confidence level relationship between abnormal accruals and CEO ownership.
Sandra Alves (2012)	Discretionary accruals	Managerial ownership	34 non-financial Portuguese stock listed companies.	2002-2007	Managerial ownership significantly negatively associated with EM.	The findings are in line with the direction of the sign (negative). However, the findings of Sandra Alves (2012) are significant at 5% level **inconsistent** with the findings of this thesis.
Nedal Al-Fayoumi et	Discretionary	Insider	39 Jordanian	2001-2005	Insiders' ownership	The findings of this paper are

al.,(2010)	accruals	ownership	industrial firms.		is significant and positively associated with EM.	**conflicting** with the findings of this thesis. They find a significant and positive relationship while I find a negative and insignificant relationship.
Teshima and Shuto (2008)	Discretionary accruals	Managerial ownership	18.163 firm-year observations from Japanese listed firms.	1991-2000	Significant no monotonic relationship between EM and managerial ownership.	The results of this paper are **contradictory** since the authors show a significant and nonmonotonic relationship between EM and managerial ownership, while I find an insignificant and negative relationship.
Yeo et al.(2002)	Discretionary accruals	Management ownership	490 firm-year observation from Singapore Stock exchange listed firms	1990-1992	Non-linear relationship between managerial ownership and the informativeness of earnings.	The findings of this paper show a non-linear relationship between EM and managerial ownership. EM. EM decreases with managerial ownership at low levels but increases at higher levels of managerial ownership. However, the findings of this thesis show an insignificant negative relationship between EM and managerial ownership **inconsistent** with the before findings.
Isenmila and Elijah(2012)	Discretionary accruals	Insiders ownership	10 Nigerian commercial banks of 2012.	2006-2010	Positive and significant relationship between	The results are **contradictory** with the results of this thesis. The authors find a significant

					insiders' ownership and EM.	positive relationship, while this thesis identifies an insignificant negative relationship between EM and insiders' ownership.
Sanchez-Ballesta and Garcia-Meca(2007)	Discretionary accruals	Insiders' ownership	64 and 203 firm-year observation from Spanish non-financial companies listed on the Madrid Stock Exchange.	1999-2002	Non-linear relationship between insiders' ownership and discretionary accruals.	The findings of this paper are **contradictory** since they show a non-linear relationship between insiders; ownership and EM. This thesis provides evidence indicating a negative and insignificant relationship between EM and managerial ownership.
Koh(2003)	Discretionary accruals	Insiders' ownership	Australian Non-financial companies and 107 firm year observations.	1993-1997	The author identifies positive relationship between EM and managerial ownership.	The findings of Koh (2003) are **conflicting** with the findings of this thesis, since he identifies a positive relationship between EM and managerial ownership, while this thesis shows a negative insignificant relationship between EM and managerial ownership.

References

Ali, SM, Salleh, NM & Hassan, MS 2008, 'Ownership structure and earnings management in Malaysian listed companies: the size effect', Asian Journal of Business and Accounting, vol.1, no.2, pp89-116.

Alves, Sandra. "Ownership Structure and Earnings Management: Evidence from Portugal." Australasian Accounting Business and Finance Journal 6.1 (2012): 57-74.

Banderlipe, MR., 2009, 'The impact of selected corporate governance variables in mitigating earnings management in the Philippines', DLSU Business & Economics Review, vol.19, no.1, pp17-27.

Bartov, E.L.I., Cohen, D.A., (2008), "The „Numbers game" In the pre- and postSarbanes-Oxley eras", Journal of Accounting, Auditing and Finance, (24, 4) pp. 505-34

Bartov, E., Gul, F.A., and Tsui, J.S.L. (2001). Discretionary Accruals Models and Audit Qualifications. Journal of Accounting and Economics, Vol. 30, No. 3: pp. 421-452.

Bartov, Eli, and Partha Mohanram. "Private information, earnings manipulations, and executive stock-option exercises." The Accounting Review 79.4 (2004): 889-920.

Becker, C. L., DeFond, M. L., Jiambalvo, J., Subramanyam, K. R., (1998), The effect of audit quality on earnings management, Contemporary Accounting Research, (15,1) pp. 1–24

Beltran, Daniel, and Charles Thomas. "Could asymmetric information alone have caused the collapse of private-label securitization?" FRB International Finance Discussion Paper 1010 (2010).

Beneish, Messod D. "Earnings management: A perspective." Managerial Finance 27.12 (2001): 3-17.

Bergstresser D., Philippon T., (2006). CEO Incentives and Earnings Management. Journal of Financial Economics, Vol. 80: pp. 511–529Berle & Means, 1932

Berle, Adolph Augustus, and Gardiner Gardiner Coit Means. The modern corporation and private property. Transaction Books, 1932.

Bowen, Robert M., Shivaram Rajgopal, and Mohan Venkatachalam. "Accounting Discretion, Corporate Governance, and Firm Performance*." Contemporary Accounting Research 25.2 (2008): 351-405.

Burgstahler, D. and Eames, M. (1978), "Management of earnings and analysts forecasts". Working paper, University of Washington.

Burgstahler, David, and Ilia Dichev. "Earnings management to avoid earnings decreases and losses." Journal of accounting and economics 24.1 (1997): 99-126.

Chakraborty, Atreya, and Shahbaz Sheikh. "Corporate governance mechanisms and performance related CEO turnover." International Finance Review 9 (2008): 143-161.

Chung, R, Firth M & Kim, J-B 2002, 'Institutional monitoring and opportunistic earnings management', Journal of Corporate Finance, vol.8, pp29-48.

Cohen, D. A., Dey, A., Lys, T. Z., (2008), Real and accrual based earnings management in the pre- and post-Sarbanes-Oxley periods, The Accounting Review, (83, 3) pp.757-787.

Cohen, Daniel A., & Paul Zarowin. "Accrual-based and real earnings management activities around seasoned equity offerings." *Journal of Accounting and Economics* 50.1 (2010): 2-19.

Cornett, M.M., McNutt J.J. & Tehranian H. (2009): "Corporate Governance and Earnings Management at Large U.S. Banks Holding Companies" Journal of Corporate Finance, vol. 15 pp. 412-430

Davidson, Ryan, Jenny Goodwin-Stewart, and Pamela Kent. "Internal governance structures and earnings management." Accounting & Finance 45.2 (2005): 241-267.

Davis, J.H., Schoorman, F.D., and Donaldson, L. (1997). Toward a Stewardship Theory of Management. Academy of Management Review, Vol. 22, No. 1: pp. 20–47

DeAngelo, Harry, Linda DeAngelo, and Douglas J. Skinner. "Accounting choice in troubled companies." Journal of accounting and economics 17.1 (1994): 113-143.

DeAngelo, L. (1986), "Accounting numbers as market valuation substitutes: a study of management buy-outs of public stockholders", *The Accounting Review*, vol. 61, 400-420.

Dechow, Patricia M., Richard G. Sloan, and Amy P. Sweeney. "Detecting earnings management. "Accounting Review (1995): 193-225.

Dechow, P. M., Sloan, R. G., (1991), Executive Incentives and the Horizon Problem: An Empirical Investigation, Journal of Accounting and Economics, (14, 1) pp. 51-89.

Dechow, P., and Skinner, D. (2000). Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators. Accounting Horizons, Vol. 14, No. 2: pp. 235.

Dechow, P., Richardson, S., and Tuna, I. (2003). Why are Earnings Kinky? An Examination of the Earnings Management Explanation. Review of Accounting Studies Vol. 8, No. 2-3: pp. 355-384.

DeFond, M.L., and Jiambalvo, J. (1994). Debt Covenant Violation and Manipulation of Accruals: Accounting Choice in Troubled Companies. Journal of Accounting and Economics, Vol. 17, No. 1/2: pp. 145-176.

Degeorge, Francois, Jayendu Patel, and Richard Zeckhauser. "Earnings Management to Exceed Thresholds*." The Journal of Business 72.1 (1999): 1-33.

Dempsey, S., Hunt, H., Schroeder, P. (1993). Earnings Management and Corporate Ownership Structure: An Examination of Extraordinary Item Reporting. Journal of Business Finance and Accounting, Vol. 20: pp. 479-500.

Demsetz, Harold, and Kenneth Lehn. "The structure of corporate ownership: Causes and consequences." The Journal of Political Economy 93.6 (1985): 1155-1177

Denis, Diane K., and John J. McConnell. "International corporate governance." *Journal of Financial and Quantitative Analysis* 38.1 (2003): 1-36.

Dimitropoulos, P.E., Asteriou, D. (2010). The Effect of Board Composition on the Informativeness and Quality of Annual Earnings: Empirical Evidence from Greece. Research in International Business and Finance, Vol. 24: pp. 190–205.

Enomoto, Masahiro, Fumihiko Kimura, and Tomoyasu Yamaguchi. "Accrual-Based and Real Earnings Management: An International Comparison for Investor Protection." *Discussion Paper Series* 2012 (2012).

Fields, T., Lys, T., and Vincent, L. (2001). Empirical Research on Accounting Choice. Journal of Accounting and Economics, Vol. 31, No. 1/3: pp. 255-307.

Francis, Jere R., Edward L. Maydew, and H. Charles Sparks. "The role of Big 6 auditors in the credible reporting of accruals." Auditing: A Journal of Practice & Theory 18.2 (1999): 17-34.

Gabrielsen, Gorm, Jeffrey D. Gramlich, and Thomas Plenborg. "Managerial ownership, information content of earnings, and discretionary accruals in a non–US setting." *Journal of Business Finance & Accounting* 29.7-8 (2002): 967-988.

Goncharov, I. (2005). Earnings Management and its Determinants: Closing Gaps in Empirical Accounting Research (Frankfurt am Main: Peter Lang).

Graham, John R., Campbell R. Harvey, and Shiva Rajgopal, "The economic implications of corporate financial reporting." Journal of accounting and economics 40.1 (2005): 3-73.

Guay, W.R., Kothari, S.P. and Watts, R.L. (1996), "A Market Based Evaluation of Discretionary Accruals Models", *Journal of Accounting Research,* vol. 34, 83-105.

Gul., F., and Tsui, J. (2001). Free Cash Flow, Debt Monitoring and Audit Pricing: Further Evidence on the Role of Director Equity Ownership. Auditing: A Journal of Practice & Theory.

Healy, P.M. and Palepu, K.G. (2003),"The Fall of Enron", *Journal of Economic Perspectives,* vol. 17, nr. 2, 3-26.

Healy, Paul M. "The effect of bonus schemes on accounting decisions." Journal of accounting and economics 7.1 (1985): 85-107.

Healy, Paul M., and James M. Wahlen. "A review of the earnings management literature and its implications for standard setting." Accounting horizons 13.4 (1999): 365-383.

Healy, Paul M., and Krishna G. Palepu. "Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature." *Journal of accounting and economics* 31.1 (2001): 405-440.

Hsu, G.C.M., and Koh, P.S. (2005). Does the Presence of Institutional Investors Influence Accruals Management? Evidence from Australia, Corporate Governance: An International Review, Vol. 13, No. 6, pp. 809-823.

Isenmila, P. A., and Afensimi Elijah. "Earnings Management and Ownership Structure: Evidence from Nigeria." *Research Journal of Finance and Accounting*3.7 (2012): 24-36.

Jaggi, B., Leung, S., and Gul, F. (2009). Family Control, Board Independence and Earnings Management: Evidence Based on Hong Kong Firms. Journal of Accounting and Public Policy, Vol. 28: pp. 281–300.

Jensen, Michael C., and William H. Meckling. "Theory of the firm: Managerial behavior, agency costs and ownership structure." Journal of financial economics 3.4 (1976): 305-360.

Jensen, Michael. "Agency cost of free cash flow, corporate finance, and takeovers." Corporate Finance, and Takeovers. American Economic Review76.2 (1986).

Jiang, W, Lee, P & Anandarajan, A 2008, 'The association between corporate governance and earnings quality: Further evidence using the GOV-score', Advances in Accounting incorporating Advances in International Accounting, vol.24, pp191-201.

Jones, Jennifer J. "Earnings management during import relief investigations. "Journal of accounting research (1991): 193-228.

Karamanou, I. & Vafeas, N. (2005) The association between corporate boards, audit committees, and management earnings forecasts: An empirical analysis. Journal of accounting research 43 (3)

Kasznik, R. (1999). On the Association between Voluntary Disclosure and Earnings Management. Journal of Accounting Research, Vol. 37, No. 1: pp. 57-81

Klein, A. (2002b). Audit Committee, Board of Director Characteristics, and Earnings Management. Journal of Accounting and Economics, Vol. 33, No. 3: pp. 375-401

Koh, Ping-Sheng. "On the association between institutional ownership and aggressive corporate earnings management in Australia. " The British Accounting Review 35.2 (2003): 105-128.

Kothari, S.P., Leone, A.J. and Wasley, C.E. (2005), "Performance matched discretionary accruals measures", Journal of Accounting and Economics, vol. 39, 163-197.

Leuz, Christian, Dhananjay Nanda, and Peter D. Wysocki. "Earnings management and investor protection: an international comparison." Journal of financial economics 69.3 (2003): 505-527.

Lev, Baruch, and James A. Ohlson. "Market-based empirical research in accounting: A review, interpretation, and extension." *Journal of Accounting Research* 20 (1982): 249-322.

Lippens, M. (2010) "The mandatory introduction of IFRS as a single accounting standard in the European Union and the effect on earnings management", *InBook*, 81-103.

Liu, C., Ryan, S., Wahlen, J., 1997. Differential valuation implications of loan loss provisions across banks and fiscal agents. The Accounting Review 72 (1), 133}146

McKnight, P.J., and Weir, C. (2009). Agency Costs, Corporate Governance Mechanisms and Ownership Structure in Large UK Publicly Quoted Companies: A Panel Data Analysis. The Quarterly Review of Economics and Finance, Vol. 49: pp. 139–158.

McNichols, M.F. (2000), "Research design issues in earnings management studies", *Journal of Accounting and Public Policy,* vol 19, 313-345.

Mishkin, Frederic S. *Asymmetric information and financial crises: a historical perspective*. No. w3400. National Bureau of Economic Research, 1991.

Mitani, H 2010, 'Additional evidence on earnings management and corporate governance', FSA Research Review, vol.6, pp1-22.

Mitton, Todd. "A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis." Journal of financial economics 64.2 (2002): 215-241.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny. "Management ownership and market valuation: An empirical analysis." Journal of financial economics 20 (1988): 293-315.

Nedal Al-Fayoumi, Bana Abuzayed, David Alexander, "Ownership Structure and Earnings Management in Emerging Markets: The Case of Jordan", International Research Journal of Finance and Economics, Issue 38 (2010)

Peasnell, K.V., Pope, P.F., Young S. (2000b). Detecting Earnings Management Using Cross-Section Abnormal Accruals Models. Accounting and Business Research, Vol. 30: pp. 313-326.

Pincus, M., and Rajgopal, S. (2002). The Interaction between Accrual Management and Hedging: Evidence from Oil and Fas firms. The Accounting Review, Vol. 77, No. 1: pp. 127–60.

Rosenfield, P. (2000). What Drives Earnings Management? Journal of Accountancy, Vol. 190, No. 4: pp. 106-109.

Roychowdhury, S. (2006), "Earning management trough real activities manipulation", *Journal of Accounting and Economics,* vol. 6, 335-370.

Rusmin, Rusmin. "Auditor quality and earnings management: Singaporean evidence." *Managerial Auditing Journal* 25.7 (2010): 618-638.

Sánchez-Ballesta, Juan Pedro, and Emma García-Meca. "Ownership structure, discretionary accruals and the informativeness of earnings." Corporate Governance: An International Review 15.4 (2007): 677-691.

Schipper, K. (1989). Commentary on Earnings Management. Accounting Horizons, Vol.3: pp.91-102.

Shivakumar, L., Urcan, O., Vasvari, F.P. & Zhang, L. (2010)The debt market relevance of management earnings forecasts: Evidence from before and during the credit crisis.

Shleifer, Andrei and Robert W. Vishny. "Large shareholders and corporate control." The Journal of Political Economy (1986): 461-488.

Shleifer, Andrei, and Robert W. Vishny. "A survey of corporate governance."*The journal of finance* 52.2 (1997): 737-783.

Shuto, Akinobu. "Executive compensation and earnings management: Empirical evidence from Japan." Journal of International Accounting, Auditing and Taxation 16.1 (2007): 1-26.

Stolowy, Hervé, and Gaétan Breton. "Accounts manipulation: A literature review and proposed conceptual framework." *Review of Accounting and Finance* 3.1 (2004): 5-92.

Tendeloo, B. and Vanstraelen, A. (2005), "Earnings management under German GAAP versus IFRS", *European Accounting Review,* vol. 14, 155-180.

Teshima, N., and Shuto, A. (2008). Managerial Ownership and Earnings Management: Theory and Empirical Evidence from Japan. Journal of International Financial Management and Accounting, Vol. 19, No. 2: pp. 107-132.

Wang, D. (2006). Founding Family Ownership and Earnings Quality. Journal of Accounting Research, Vol. 44, No. 3: pp.619-56.

Warfield, Terry D., John J. Wild, and Kenneth L. Wild. "Managerial ownership, accounting choices, and informativeness of earnings." Journal of accounting and economics 20.1 (1995): 61-91.

Watts, Ross L., and Jerold L. Zimmerman. "Positive accounting theory: a ten year perspective." Accounting review (1990): 131-156.

Watts, Ross L., and Jerold L. Zimmerman. "Towards a positive theory of the determination of accounting standards." Accounting review (1978): 112-134.

Wild, J. (1996). The Audit Committee and Earnings Quality. Journal of Accounting, Auditing and Finance, Vol. 11: pp. 247-276.

Xie, B., Davidson, W., and DaDalt, P. (2003). Earnings Management and Corporate Governance: The Roles of the Board and the Audit Committee. Journal of Corporate Finance, Vol. 9, No. 3: pp. 295-317.Ye (2007)

Xie, Hong. "The mispricing of abnormal accruals." *The accounting review* 76.3 (2001): 357-373.

Yang, Chi-Yih, Hung-Neng Lai, and Boon Leing Tan. "Managerial ownership structure and earnings management." *Journal of Financial Reporting and Accounting* 6.1 (2008): 35-53.

Ye, Jianming. "Accounting accruals and tests of earnings management."Available at SSRN 1003101 (2007).

Yeo, Gillian HH, et al. "Corporate ownership structure and the informativeness of earnings." *Journal of Business Finance & Accounting* 29.7-8 (2002): 1023-1046.

You, Shwu-Jen, Yann-Ching Tsai, and Yi-Mien Lin. "Managerial ownership, audit quality, and earnings management." *Asia Pacific Management Review* 8.3 (2003): 409-438.

Books:

Deegan, C. and Unerman, J. (2006), *Financial Accounting Theory,* European Edition, Berkshire: McGraw-Hill Education.

Keller, Gerald. *Statistics for Management and Economics: Abbreviated Edition*. CengageBrain. com, 2008.

Ronen, J. and V. Yaari (2008). *Earnings management. Emerging insight in theory, practice, and research*, Springer Verlag.

Scott, W.R. (2009), Financial Accounting Theory, Pearson, Toronto.

Watts, R., and Zimmerman, J. (1986). Positive Accounting Theory. Englewood Cliffs, Prentice-Hall.

Vocht, A. de (2009). Basishandboek SPSS 17. SPSS Statistics, Utrecht: Bijleveld Press.

Greene, William H. "Econometric analysis, 5th." Ed.. Upper Saddle River, NJ(2003).

APPENDIX

Appendix 1: Overview of the literature between ownership structures and earnings management

STUDY	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	SAMPLE	METHODOLOGY	FINDINGS
Sandra Alves (2012)	Discretionary accruals measured by the modified Jones model (1995)	Managerial ownership, Ownership Concentration, Institutional Ownership	34 non-financial Portuguese stock listed companies per year, thus 204 observations in total from years 2002-2007	OLS regression	Managerial ownership and ownership concentration significantly negatively associated with to EM. No significant relationship between institutional ownership and EM.
Nedal Al-Fayoumi et al. (2010)	Discretionary accruals measured by the modified Jones model (1995)	Insider ownership, institutional ownership, External Blockholders	39 Jordanian industrial firms between 2001-2005	OLS regression	Insiders' ownership is significant and positively associated with EM. Insignificant relationship between institutional and blockholders' ownership with EM.
Teshima and Shuto (2008)	Discretionary accruals estimated by a cross-sectional Jones model	Managerial ownership	18.163 firm-year observations from Japanese listed firms 1991-2000	OLS regression	Significant nonmonotonic relationship between managerial ownership and EM.
Chi-Yih Yang et al. (2008)	Discretionary accruals measured by the modified Jones model (1995)	Managerial ownership divided into executives, outside directors and blockholders	1306 Taiwanese listed firms over the period 1997-2004	OLS regression	Discretionary accruals first increase and then decrease with executive ownership and they are positively affected by director and blockholders' ownership

Hsu and Koh (2005)	Discretionary accruals measured by the modified Jones model (1995)	Insiders ownership and Institutional ownership	Australian Non-financial firms between 1993-1997 and 201 firm-year observations	OLS multiple regressions	The association between institutional ownership and EM is not systematic across all firms and is context dependent, suggesting complex associations between institutional ownership and EM strategies exist
Liu and Lu (2007)	Discretionary accruals measured by the modified Jones model (1995)	Corporate governance index	A sample of 5.977 firm-year observations from China's listed companies	OLS regression	Firms with higher corporate governance levels have lower levels of earnings management. Good corporate governance mitigates agency conflicts between the largest shareholders and the minority shareholders
Siregar and Utama (2008)	Discretionary accruals measured by Jones (1991), Dechow et al. (1995); Kasznik (1999) and Dechow et al. (2002) models	Ownership structure, firm size, Board composition and audit committee	A sample of 144 firms 1995–1996, and 1999–2002	Multiple regressions	Earnings management in firms with high family ownership that do not belong to business groups is more competent than in firms with different Ownership structures. However, no evidence those larger firms, firms audited by the Big 4, firms with independent boards, and firms with audit committees engage in efficient earnings management
Yeo et al. (2002)	Discretionary accruals measured by the modified Jones model (1995)	Management ownership, external unrelated blockholders	490 firm-year observation from 1990-1992 from Singapore Stock Exchange listed firms	Pooled cross-sectional time series regression	Non-linear relationship between managerial ownership and the informativeness of earnings. Strong positive relationship external unrelated blockholdings and the informativeness of earnings.

Isenmila and Elijah (2012)	Discretionary accruals measured by the modified Jones model (1995)	Insiders ownership, Institutional ownership, External Block ownership	10 commercial banks of 2012 and secondary data retrieved from audited financial statements of the banks from 2006-2010	Multivariate regression technique based on ordinary least squares assumptions	Positive and significant relationship Insider and External Block ownership and EM. Negative insignificant relationship between Institutional ownership and EM
Roodposhti and Chasmi (2011)	Discretionary accruals measured by the modified Jones model (1995)	Ownership Concentration, Board independence, CEO dominance, Institutional shareholders	196 firms listed in the Tehran Stock Exchange between 2004 and 2008	Panel data method	Firms with higher ownership concentration and board independence manage earnings less, while firms with higher institutional holdings manage earnings more. There is positive significant association between the existence of CEO-Chairman duality and EM
Garcia Meca and Sanchez Ballesta (2009)	Discretionary accruals	Board of directors and ownership structure	35 prior studies on the effect on earnings management of firm's boards of directors and ownership structure	Several independent meta-analysis techniques	The findings show that the variation in the results of previous studies on CEO duality and audit committee independence are caused by sampling error. In addition, the measurement of dependent variable, discretionary accruals, and the corporate governance system moderate the association between earnings management and some corporate governance variables

Sanchez-Ballesta and Garcia-Meca (2007)	Discretionary accruals measured by the modified Jones model (1995)	Insider ownership, Ownership Concentration	64 and 203 firm-year observations from Spanish non-financial companies listed on the Madrid Stock Exchange from 1999 to 2002	Panel data regressions	Non-linear relationship between insider ownership and discretionary. When insiders own a large percentage of shares, however, they are entrenched and the relation between insider ownership, discretionary accruals and earnings informativeness reverses
Koh (2003)	Discretionary accruals measured by the Jones model (1991)	Insiders ownership and Institutional ownership	Australian Non-financial companies and 107 firm year observations between 1993-1997	OLS multiple regressions	Findings suggest that institutional investors can act as a complementary corporate governance mechanism in mitigating myopic aggressive earnings management by corporations when they have a sufficiently high ownership level
You, Tsai, Lin -(2003)	Discretionary accruals measured by the modified Jones model (1995)	Companies listed in the Taiwan Stock Exchange Index.	1991-2000	OLS regression	The authors find managerial ownership and audit quality are both inversely associated with abnormal accruals
Chi-Yih Yang et al. (2008)	Discretionary accruals measured by the modified Jones model (1995)	1306 Taiwanese listed firms	1997-2004	OLS regression	Discretionary accruals first increase and then decrease with executive ownership and they are positively affected by director and blockholders'

					ownership
Bergstresser, Philippon (2005)	Discretionary accruals measured by the modified Jones model (1995)	U.S data from the Compustat and Compustat Executive Compensation datasets.	1994-2000	OLS regression	The findings provided evidence indicating that when a CEO's compensation is tied to the value of stock and options, the likelihood of profit manipulation occurrence increases.
Chung, Firth, Kim (2002)	Discretionary accruals measured by the modified Jones model (1995)	All companies included in the 1998 Compustat PC-Plus Active and Research files	1988-1996	OLS regression	The authors find that the presence of large institutional shareholdings inhibit managers from increasing or decreasing reported profits towards the managers' desired level or range of profits. However, the results of their research were not sufficient to present a direct relationship between managerial ownership and earnings management.
Peasnell, Pose, Young (2005)	Discretionary accruals measured by the modified Jones model (1995)	UK listed firms. Final sample of 1271 firm-years observations.	1993-1996	OLS regression	The authors do not document a direct relationship between EM and managerial ownership. However, they suggest that boards continue to have a constraining influence on earnings management, even when shareholders and managers interests are better aligned.

Appendix 2: Overview of the general literature on Earnings Management

Study	Object	Sample	Methodology	Findings
Healy Paul M., Wahlen James M.(1998)	Summary of the empirical evidence on earnings management and its implications for standard setters.	N/A	Literature review	EM literature currently provides only modest insights for standard setters. The findings indicate that EM occurs for a variety of reasons like to influence stock market perceptions, to increase management's compensations to reduce the likelihood of violating lending agreements and to avoid regulatory intervention
McNichols Maureen F. (2000)	The object of the study is to discuss trade-offs associated with three designs commonly used in the earnings management literature.	N/A	Literature review on the three different research designs namely, the aggregate accruals, the specific accruals and the distribution based EM	The trade-offs an EM researcher faces depend on the question addressed, the objective of the research, how are they managed, and the incentives that shape the environment for discretionary behavior. There is no approach that is proved to be superior compared to the others.

Watts Ross and Zimmermann Jerold (1990)	The study reviews and criticizes the positive accounting literature.	N/A	Literature Review	The authors suggest ways to improve positive research in accounting choice. The most important of these improvements is tighter links between the theory and the empirical tests
Kothari, Guay and Watts (1996)	The object of this study is to specify a simple earnings model, present managerial discretion hypothesis from existing literature and assume efficient markets in order to evaluate five discretionary-accrual models.	Sample of 47.498 firm year observations.	Comparison of the existing models that decompose the discretionary component of the total accruals.	Only the Jones and the modified Jones models estimate discretionary accruals that have the attributes of accruals resulting from managerial opportunism. Caution should be exercised in interpreting the research on managements' use of accruals motivated by opportunism.
Jones Jennifer (1991)	Earnings management during import relief investigations by the United States International Trade Commission.	The sample of this study is restricted to import relief investigations that require the ITC to make an injury determination. The results are based on examining 23 firms from five industries.	Introduction of the Jones model for the measurements of earnings management.	The results of the empirical tests suggest that managers make income-decreasing accruals during import relief investigations.
Dechow, Sloan and Sweeny (1995)	Evaluation and comparison of the alternative accrual-based models for detecting earnings management.	Use of four distinct samples of firm-years as event-years.	Comparison of the different EM approaches under specific circumstances.	The results highlight the importance of controlling for financial performance when investigating EM stimuli that are correlated with financial performance. Also the modified version of the Jones (1991) model

				exhibits the most power in detecting EM.