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**Earnings Management and Ownership Structures: How ownership  
affects earnings quality? Euro area Case**

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We hereby declare that the work submitted is ours and that where we have made use of another's work, we have attributed the source(s) according to the Regulations set in the Student's Handbook.

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## **ABSTRACT**

This dissertation was written as part of the MSc in International Accounting, Auditing & Financial Management at the International Hellenic University.

Our study investigates the relation between ownership structures and earnings management using data from companies of the countries of the euro zone. Existing literature has documented that different kinds of ownership structures impact differently earnings management. Our dissertation includes founding family ownership, institutional ownership and managerial (insider) ownership as the ownership structures under investigation against earnings management. Following, we use for our study the modified – Jones model with Cash Flow from Operations, a model developed by Lacker & Richardson (2004). In order to detect real activities manipulation we employ measures as developed by Dechow et al. (1998), Roychowdhury (2006) and Kim et al. (2012). Our findings were consistent as the above mentioned theory commanded.

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During our time as postgraduate students at International Hellenic University, we managed to evolve into career oriented individuals with a viable interpersonal skill set emphasizing frequently, but not exclusively, on the importance of organizing a well-structured research governed by rationality. This particular programme has offered to us the opportunity to experience the challenge of IHU's renowned educational standards, it has provided us with a solid overall foundation in international accounting, auditing and financial management and, ultimately, we are proud to be members of the proud alumni of IHU.

**Keywords:** Earnings Management; Ownership Structures; Discretionary Accruals; Real Activities Manipulation; Founding Family ownership.

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## TABLE OF CONTENTS

<b>ABSTRACT</b> .....	<b>3</b>
<b>TABLE OF CONTENTS</b> .....	<b>5</b>
<b>1. INTRODUCTION</b> .....	<b>7</b>
<b>2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT</b> .....	<b>12</b>
2.1 CHARACTERIZING FAMILY FIRMS .....	12
2.2 CHALLENGES FACED BY FAMILY FIRMS .....	15
2.3 PREPARING BUSINESS TRANSFERS EARLY .....	16
2.4 FAMILY GOVERNANCE .....	17
2.5 RELATED LITERATURE ON OWNERSHIP AND EARNINGS MANAGEMENT .....	18
2.5.1 EARNINGS MANAGEMENT .....	18
2.5.2 OWNERSHIP STRUCTURES .....	20
2.5.3 MANAGERIAL OWNERSHIP AND EARNINGS MANAGEMENT .....	21
2.5.4 FOUNDING FAMILY OWNERSHIP AND EARNINGS MANAGEMENT .....	22
2.5.5 INSTITUTIONAL OWNERSHIP AND EARNINGS MANAGEMENT .....	22
2.6 ON THE ASSOCIATION BETWEEN ACCRUAL ACCOUNTING AND CASH FLOWS .....	23
<b>3. RESEARCH DESIGN</b> .....	<b>26</b>
3.1 MEASURES OF EARNINGS QUALITY .....	26
3.1.1 ABNORMAL ACCRUAL ANALYSIS .....	26
3.1.2 REAL ACTIVITIES MANIPULATION .....	27
3.2 EXPERIMENTAL VARIABLES .....	28
3.3 CONTROL VARIABLES .....	28

3.4	MODELS.....	30
3.4.1	ABNORMAL ACCRUAL ANALYSIS .....	30
3.4.2	REAL ACTIVITIES MANIPULATION .....	31
3.4.2.1	ABNORMAL LEVELS OF CFO (AB_CFO) .....	31
3.4.2.2	ABNORMAL PRODUCTION COSTS (AB_PROD).....	32
3.4.2.3	ABNORMAL DISCRETIONARY EXPENSES (AB_DIS).....	33
3.4.2.4	COMBINED MEASURE OF REAL ACTIVITIES MANIPULATION (COMB_RAM).....	34
3.5	EMPIRICAL MODELS .....	34
<b>4.</b>	<b>SAMPLE DESCRIPTION .....</b>	<b>37</b>
4.1	DATA AND SAMPLE SELECTION .....	37
<b>5.</b>	<b>EMPIRICAL RESULTS AND DISCUSSION.....</b>	<b>40</b>
5.1	DESCRIPTIVE STATISTICS AND CORRELATIONS.....	40
5.2	REGRESSION ANALYSIS .....	50
<b>6.</b>	<b>CONCLUTION AND RECOMMENDATIONS.....</b>	<b>53</b>
	<b>BIBLIOGRAPHY.....</b>	<b>55</b>

## 1. INTRODUCTION

Accounting earnings is one of the most important indicators of firm's financial performance. Consequently, there is a large volume of published studies regarding the earnings management phenomenon. Researchers try to identify relations and reasons for such behaviors. While some investigate the reasoning behind earnings management, others go even further and examine how ownership, corporate governance and independence affect earnings management. Earnings management occurs when insiders take certain decisions regarding financial reporting so as to manipulate figures and present a pleasant scene to outsiders. Ownership has a key role and a direct relation with earnings quality.

Up to now, it is stated, by plenty of studies, that ownership structure could limit earnings manipulation by the managers (Bushman and Smith 2001) but also it could provide incentives to manage earnings in general (Warfield, Wild and Wild 1995).

This study investigates the relations between different ownership structures and earnings management across Euro Zone countries. In our study we include the following types of ownership: founding family ownership, institutional ownership, managerial ownership so as to identify associations and interactions among different cases.

We study earnings management using the approaches of 1) abnormal accruals and 2) real activities manipulation.

Real activities manipulation, which has received little attention to date, is described as management actions that deviate from normal business practices, undertaken with the scope of meeting certain earnings targets depending on each case (Roychowdhury 2006). Managers have incentives to manipulate real activities throughout the year to meet certain earnings thresholds. Real activities manipulation affects cash flows and in some cases, accruals too. We focus on real activities manipulation and for this reason we take into consideration the models developed by Roychowdhury (2006).

Roychowdhury (2006) first implemented the model that calculates the levels of cash flow from operations (CFO), a model developed by Dechow, Kothari and Watts (1998). We also examine the production costs and the discretionary expenses, “variables that should capture the effect of real operations better than accruals” according to Roychowdhury (2006).

Unlike real activities manipulation, which include management choices depicted on everyday activities, accrual-based earnings management has to do with alteration of accounting practices resulting in biased reported financial statements. For example, changing the depreciation method for fixed assets and the estimate for provision for doubtful accounts can bias reported earnings in a particular direction without changing the underlying transactions (Zang 2012).

A great deal of studies on earnings management (Jones 1991, Wang 2005, Kothari et al. 2005) use discretionary accruals as surrogate for earnings quality. In this vein, we use in our study discretionary accruals as a proxy for earnings management.

Family ownership is a very important type of ownership that is common across European Union countries. Family businesses make up more than 60 % of all European companies, encompassing a vast range of firms of different sizes and from different sectors. Furthermore, “founding family ownership represent a unique class of shareholders that hold a poorly diversified portfolio, are long-term investors (multiple generations), and often control senior management positions” (Anderson and Reeb 2003a, p. 1304).

As stated by Wang (2006): “The relationship between family ownership and earnings management is an empirical issue”. Wang in his research provides us with two contradicting theories on the association between founding family ownership and earnings quality: the entrenchment effect on one hand and the alignment effect on the other hand.

On one hand we identify cases where family members manipulate earnings, taking advantage of the concentration of power, at the cost of users of financial statements. These actions describe the entrenchment effect.



Founding family ownership is described as the case where family members own a substantial percentage of common shares of an entity or cases where founding family members serve as high level managers or directors in the board of the firms. The founding family ownership affects both demand and supply for quality financial statements. In certain cases, family members who serve as managers or directors affect the supply of quality earnings by intentionally reporting higher or lower accounting earnings depending on the stage at which their firms are. Family members have an incentive by doing manipulations either for tax purposes or personal interest or even both. In these cases we observe an ineffective monitoring of the actions of management by the board. Generally, concentration of ownership provides space for managers/owners to expropriate value. According to Fan and Wong (2002, p. 403), concentration of ownership limit the information flow to outside users of financial statements. Thus, the information asymmetry lowers the transparency of accounting earnings.

From the other perspective, the outsiders who face the above described situation where reported earnings cannot be trusted and used efficiently, demand higher earnings quality from family firms or they impose stricter contracting terms. Thus, family firms have greater incentives to provide quality financial statements in exchange for better contracting terms, such as lower cost of capital (Wang 2006).

On the other hand, there is the alignment effect where we observe actions by managers (family members) that decrease the information asymmetry between managers and outsiders and align both sides' interests. Family owned firms are firms created and managed through time by family members who own shares that pass from one generation to the next that share a family-company reputation. These firms share common values and beliefs that pass from generation to generation and accompany firms' route. Consequently, managers that are family members have stronger incentives than non-family managers to report earnings of higher quality so as to achieve better contracting terms with third parties that might help maintaining efficient operations and long-term firm performance. Conversely, in many cases when managers are non-family members have incentives to manipulate earnings so as to maximize their own personal ambitions and interests.

Consistent with the alignment effect, family owned firms have more incentives to provide quality financial information than non-family firms. As stated by Wang (2006), while family members report high quality earnings the demand for quality earnings will decrease due to the fact that outsiders, such as banks or non-family shareholders, might rely less on quality statements to monitor managers taking into account the alignment of their interests with insiders. In this case, family firms have less incentive to report high-quality earnings.

According to Dechow et al. (1996) there are certain corporate governance factors, including earnings management, which have an impact on corporate accounting behavior. Balsam et al. (2002) argue that institutional investors are more likely to detect systematic variations in observed firms' performance than non-institutional investors, in the sense that they are sophisticated investors that have economies of scale in information gathering. Dechow et al. (1996) state that large blockholders could improve a company's financial statement credibility since they provide a detailed examination over the firm's earnings management activity. Furthermore, Warfield et al. (1995) find that managers who own a significant portion of equity stakes of a company have less incentive to manage reported earnings. All the above mentioned studies indicate that a company's ownership structure has imminent association on earnings management.

Our research contributes to the literature on earnings management by indicating evidence on real activities manipulation made by managers of firms across European Union countries. To our knowledge, there is no study available that examines this phenomenon using data for entities from several EU states. More specifically, our final sample consisted of 641 listed companies with headquarters in 11 different countries in European Union region and we examined their accounts over a 5-year period, from 2012 through 2016. We find evidence that family ownership is positively associated with earnings manipulation and that institutional ownership is associated with lower earnings management. Therefore, our study fully supports the related literature.

The results of our research have important implications to the investing community. If ownership structure affects managers' decisions (earnings management), our evidence

can be useful to investors in defining accurate versus inaccurate financial information. Furthermore, the findings will be of great value for regulators and standard-setters so as to better understand the interactions between alternative ownership structures and earnings management through real activities manipulation. Finally, all users of financial statements may find this study useful since it analyses a subject of financial reporting and as a result it will be useful in making economic decisions.

Next chapter includes the literature review and the hypothesis development. In the third section we describe our research design. Moreover, the sample selection is described in the fourth chapter. Findings of our study are displayed in the fifth chapter. Last but not least, the sixth section of this study includes our recommendations and the conclusion.

## 2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

This section is devoted on the literature that was the stepping stone of our research. For starters, we present an analysis of family firms. What are the challenges family firms face nowadays? How family firms are governed? Next, we go on with the related literature on earnings quality and alternative ownership structures and we examine the link between them. How ownership is associated with earnings management?

Taking table 1 as our point of departure, we now go on and form our hypotheses on the association between earnings quality and ownership structures.

Table 1: Expected Signs

Names	Indicators	Expected relation to earnings management
Ins	Percentage of total common equity owned by managers	-
Fam	Percentage of total common equity by founding family members	+
Instit	Percentage of total common equity owned by institutional investors	-
lnSIZE	Natural logarithm of market value of equity	+
Big4	dummy variable	?
LnAge	Natural logarithm of firm age in years	?
ROA	Net income to total assets	?
Lev	Ratio of long-term debt to assets	+
EqOffer	dummy variable	?
Loss	dummy variable	+
Growth	Growth rate in sales	+
Intercept	Intercept	?

### 2.1 Characterizing Family Firms

Family owned firms have a crucial role not only because they make an essential contribution to the economy, but also due to the long-term stability they bring in the economy, the specific commitment they show to local communities, the responsibility they feel as owners and the values they stand for. Taking into consideration all the

above mentioned precious factors, we conclude that their role is very important for the backdrop of the current financially distressed period. (European Commission)

As stated before, founding family firms make up for more than 60% of all European companies, representing approximately 50% of all jobs across EU. It should also be mentioned that most family businesses are SMEs (especially micro and small companies).

There is a huge debated on the definition of what should be the key to point a family business. Related literature shows that there is not a single definition of family business. After analyzing family, business and ownership, European Commission came up with the following definition for family firms:

“A firm, of any size, is a family business, if:

- 1) The majority of decision-making rights is in the possession of the natural person(s) who established the firm, or in the possession of the natural person(s) who has/have acquired the share capital of the firm, or in the possession of their spouses, parents, child or children’s direct heirs.
- 2) The majority of decision-making rights are indirect or direct.
- 3) At least one representative of the family or kin is formally involved in the governance of the firm.
- 4) Listed companies meet the definition of family enterprise if the person who established or acquired the firm (share capital) or their families or descendants possess 25 per cent of the decision-making rights mandated by their share capital.”

Ownership is fundamental to the business cycle of the firm. Either we are analyzing a family or a non – family owned company, it is important to understand the association between ownership and governance. Bearing in mind the above we can make a clear distinction between family and non – family businesses.

The greatest differentiation between family and non – family controlled enterprises lies in the ability of the management of family business to direct their operations through founding values. Successful family firms are those you share their goals and

visions through the family members to the staff performing everyday activities. Ronald S. Burt (1999) showed that the stronger a firm's culture, the higher the return of its investments.

Astrachan, Klein and Smyrniotis have pointed out, "a definition of family is often missing" and "this notable absence poses problems, particularly in an international context where families and cultures differ not only across geographical boundaries, but also over time." (Astrachan; Klein; Smyrniotis; 2006)

The difference between the evolution of any firm and a family firm lies in the quality of the procedures screening the strategic initiatives. Family businesses, because of their seniority, compromise with the legacy of their past culture and know – how coming from material and immaterial investments. Consequently, one may think that the apathy of these firms will lead them to make choices in the continuity of attitudes securing permanence and, consequently, not to select rash initiatives.

A family business apparently bears natural variables enabling it to resist crises. As they are boosted by values established in their family environment, their main objective is permanence through times. The pursuit of financial independence makes it less vulnerable to a reduction of liquid assets on financial markets. Furthermore family firms have a longer time decision horizon which does not systematically boost a rapid return on investment, while preserving short-time realness of adaptation to its environment.

The institutional framework and policy initiatives regarding family businesses differ from country to country. Measures favoring family businesses are (or have been) implemented by different actors and tackle a range of problems such as taxation, company law, planning the business transfer, research and dissemination of information, promotion of entrepreneurship and family governance. Exchanging the "good practices" identified has great potential for the development of the sector across Europe. European Commission should take an active role in this direction, raise awareness of the importance of the sector, and advice national governments to implement such practices so as to create a favorable environment for family enterprises especially on areas of taxation and company law. Furthermore, European

Commission should also promote the establishment of a contact point in a national or European ground for family firms in order to connect them and help them exchange crucial information for their existence in time.

## ***2.2 Challenges faced by Family Firms***

There are a lot of challenges that family firms deal nowadays. Many of them also concern other small or medium sized companies in general. However, some are common to any type of business, some affect family firms more specifically, and others are exclusive to them. Generally speaking, challenges can either stem from the environment in which companies operate; or are related to the family firm's internal matters while there are also other issues regarding education and research impact on both the environment and internal matters.

According to European Commission, we present a list of the challenges faced by family controlled firms across European Union:

1. Challenges that arise from the environment in which companies operate:
  - ✓ Unawareness of policy makers of the specificities of family businesses, and their economic and social contribution;
  - ✓ Financial issues (e.g. gift and inheritance tax, access to finance without losing control of the firm, favorable tax treatment of reinvested profits).
2. Challenges that develop as a consequence of the family firm's internal matters:
  - ✓ Unawareness by family firms of the importance of planning business transfers early;
  - ✓ Balance between the family, ownership and business aspects within the enterprise;
  - ✓ Difficulties in attracting and retaining a skilled workforce.
3. Challenges related to educational and research aspects, which have an impact on both the business environment and on family firms' internal matters:

- ✓ Lack of entrepreneurship education and family – business – specific management training and research into family – business – specific topics.

### ***2.3 Preparing business transfers early***

Succession is seen by many researchers as the most important issue that family businesses have to cope with. It is also widely agreed that intergenerational transfer is not a single event, but a process that needs to be planned in advance in order to succeed (Mazzola et al. 2006).

The diversity of family businesses also affects intergenerational transfers. The issue differs according to size of the company, the size of the family and/or age of the company. The problem is not the same for a large company managed by a five – member family and a small company with only one owner.

Transfer of ownership in family controlled firms is a controversial issue. Ownership has a special meaning in family firms. It involves a strong “personal” feature. Family owners don’t think they own simply capital. They feel that they have concerns and responsibilities to the society. In this direction, owning a stake in a family business is not seen as a liquid asset but as a property which is built and developed by the family over generations. When a business is transferred within the family (from one generation to another), the financial capital is transferred with a “social and cultural capital” that usually leads to an enhanced personal commitment to the company and to the community.

The whole process of transferring the business is even more important for family companies because, alongside the transfer of ownership, the knowledge accumulated from generation to generation is at stake. Both the person leaving the business and the entrepreneur taking over should be involved. In family firms, emotional aspects attached to the transfer need to be carefully managed since the leaver may continue to influence the business even after the transfer has taken place.

The main issue to tackle to successfully complete the transfer is to raise awareness of the importance of early preparation, and to make available tools for the transfer (e.g. specialized training for the parties involved). This type of initiative is best undertaken



at local level, or by private-sector organizations. Some countries already implement innovative and effective measures.

#### **2.4 Family Governance**

Entrepreneurship is hugely relevant to family businesses. Most start – ups begin as a family business and are faced with the question as to whether they want to continue the business beyond the founders. Therefore, promoting entrepreneurship is directly linked to promoting family businesses.

As most start – ups begin as a family business, education should also include specific family business issues such as ownership, succession and family governance to better prepare future entrepreneurs to successfully run their businesses. Entrepreneurship education should aim to foster new family entrepreneurs, but also to promote entrepreneurial behavior and innovation in existing family firms.

One of the main features of the family business is the part that represents the “family’s capital”. Family firms in most cases act like a non – diversified shareholder that take on risk – averse investments so as not to endanger this “family’s capital”. This becomes an asset in times of crisis.

A family business shows that fundamental characteristic which in the interaction between the life of the business and the lives of one or more families, the family depends on firm and firm on family. Consequently, it is governed by a compromise of the values, standards and objectives of two systems, the former that works with an emotional logic (family) and the latter with a rational logic (firm).

Although, family firms have no specific structure, they share certain features directly derived from their culture and history. The active role of the board of directors is one of the most important factors of existence in family business. However, most family controlled firms underestimate the board’s crucial role, by appointing only family members in the board and just ratify decisions which have already been made.

Divergences between family members may cause conflicts, and may even endanger the existence of the company. This is a common phenomenon. However, coexistence

of family members in family companies usually contributes to the success through stable situations. Companies with no different opinions and conflicts sometimes miss their ability to innovate, adapt and change.

## **2.5 Related Literature on Ownership and Earnings Management**

Since agency theory is applied, ownership and management, as Jensen and Meckling suggests (1976), are two different concepts. According to the classic approach, these two parties are the driving forces behind corporate function and well-being. An important monitoring mechanism (Dechow et al., 1996), corporate ownership structure, frequently is being manipulated in order to benefit the conductor (Healy 1985; Cheng and Warfield 2005; Guidry et al. 1999).

### **2.5.1 Earnings Management**

Consistent with the literature, we examine earnings quality using discretionary accruals. However, managers may use both accrual - based accounting estimates and real activity methods to manipulate reported earnings (Healy and Wahlen, 1999, Fudenberg and Tirole, 1995, Dechow and Skinner 2000, Zang 2006).

According to Healy and Wahlen (1999), "Earnings management occurs when managers use judgment in financial reporting and in 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 practices." *Sales manipulation, Reduction of discretionary expenditures and Overproduction* are some real activity manipulation methods available to managers (Healy and Wahlen 1999, Fudenberg and Tirole 1995, Dechow and Skinner 2000, Roychowdhury 2006).

Graham et al. (2005) in their research report that they found evidence that managers use real activity manipulations extensively, more specifically they reported that 80% of the survey participants admitted that they would decrease discretionary spending on R&D, advertising, and maintenance to meet an earnings target. Additionally, above 55.3% stated that they would delay starting a new project to meet an earnings target.

According to Zang (2012) companies choose between the two techniques of earnings management based on relative costs. More specifically, the method that bears the lowest cost is the one used by managers.

According to Roychowdhury (2006) “real activities manipulation is defined 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”. These actions do not necessarily lead to value creation.

Managers often use the aforementioned real activity manipulation techniques due to their belief that through meeting certain earning targets they will succeed private benefits. They could also be engaged when companies face a financial distress so as to avoid debt covenant violation or governmental fines.

Accrual-based earnings management is achieved by changing the accounting methods or estimates used when presenting a given transaction in the financial statements. For example, changing the depreciation method for fixed assets and the estimate for provision for doubtful accounts can bias reported earnings in a particular direction without changing the underlying transactions.

According to the related literature (Roychowdhury 2006), real activity manipulation means greater long – term costs on the company. However, managers tend to use real activities management due to the lower private costs they bear in contrast with the accrual manipulation (Roychowdhury 2006). Among other reasons, accrual manipulation is more likely to draw auditors’ and tax authorities’ attention than decisions about production and pricing. Another reason why real activities management is extensively used by executives might be due to the fact that accrual management if used alone bears the risk of falling below the earnings threshold by the end of the year when decisions on real activities are no longer available (Roychowdhury 2006).

### **2.5.2 Ownership Structures**

Researchers have stated that insider ownership is highly correlated with higher levels of earnings management when it comes to their personal interest (Ali et al. 2008; Ebrahim 2007; Klein 2002; Warfield et al. 1995; Banderlipe 2009). Specifically, managers manipulate earnings in order to succeed maximization of their personal fortune (Healy 1985; Cheng and Warfield 2005; Guidry et al. 1999).

Studies revealed that controlling families present opportunistic behavior for their personal ambitions that may lead to inferior quality of reporting (Gul et al. 2003; Chung et al. 2004). Moreover, as Claessens and Fan (2002) indicates that family owners cooperate more efficiently with minority shareholders and creditors producing high quality financial reporting (Anderson et al., 2003).

Institutional ownership has a very important part in monitoring management (Almazan et al., 2005). There is a positive connection between institutional ownership and monitoring management by decreasing agency costs and lessens the ability of managers for manipulation (Chung et al., 2002). Bushee (1998) argues that by based on the fact that managers are mainly focused on short-term financial results. Therefore it is not possible for institutional owners to monitor management. To all of the above Charitou et al. (2007) and Agnes Cheng and Reitenga (2009) found that institutional owners might be not able to vote against managers when they have to supervise them, because this may lead to manipulation in a roundabout way.

The work of Aharony, Lee and Wond (2000) provides information of privately owned companies, compared to public owned; manipulate earnings management to a diminished level. Justifying the popular belief that public owned companies exercise more earnings management even in cases of different capital markets or aberrant situations (Ding et al., 2007; Aharony et al., 2000).

Worth noticing that all of the above should be taken into account having in mind that the essence of corporate governance, at its core, is to preserve accountability (Bushman, RM and Smith, AJ, 2003).

Analyzing the above mentioned information and regarding the ownership structure as an important monitoring technique we believe 3 types of ownership structure should be examined:

- i. Managerial
- ii. Founding Family
- iii. Institutional

### **2.5.3 Managerial Ownership and Earnings Management**

Based on Agency theory, it is known that managers' interests are in accordance with shareholders' (Jensen and Meckling, 1976). Findings revealed that managerial opportunistic behavior declines while managerial ownership is rising. That affects firm's performance in a positive way for the reason that earnings management decreases.

As Indicated by Warfield et al. (1995), Klein (2002) and Ebrahim (2007) insider or managerial ownership is correlated with lower level of earnings management. Therefore, that kind of ownership structure may be also perceived as a preventing mechanism to reduce opportunistic behaviors by insiders and consequently earnings management manipulation.

Fama and Jensen (1983) suggests that insider ownership, by holding high percentages of shareholding, could lead to a path that managers are pursuing to fulfill only personal interests due to lack of fear of penalties.

It is acknowledged that insiders' gaining ability is linked with earnings management (Yang, Lai and Tan, 2008). When stock prices are manipulated to stay high, their share value follows at the same direction. Regularly the vehicle of succeeding that is by using discretionary accruals to improve stock value through earnings.

Frequently, shareholders' interests and managerial ones coincide. Morck et al. (1988) proves the above mentioned by showing the affiliation between the levels of insiders' ownership and the connection of interests between them. In other words, based on the shareholders' necessity for high quality and effective monitoring mechanisms we conclude to our first hypothesis that:

**H<sub>1</sub>:** Managerial ownership is associated with lower earnings management.

#### **2.5.4 *Founding Family Ownership and earnings management***

Across euro zone, family controlled companies constitute a great percentage. Family members having strong presence in firms' boards of directors or hold other key positions are the cause of the second type of agency problem (Claessens and Fan, 2002). All these abate sufficient monitoring and increase the possibility of earnings management.

Fama and Jensen (1983) perhaps imply that controlling families are using entrenchment effect to expropriate minority shareholders for pushing their own personal interest agenda.

Based on the asymmetry of information, caused by the above – mentioned effect, controlling families gather all the characteristics for conducting earnings management, such as motive and opportunity. Chung et al. (2004) provides the information that family controlled firms led by family ambitions, which are diminishing financial reporting quality.

Evidence by Bertrand et al. (2002) indicates that controlling family members are expropriating even more earnings management for their own personal or family gain.

As it is expected, when firms are entirely controlled by families the possibility of earnings management is significantly higher (Fan and Wong, 2002).

Inevitably we are obliged to assume that:

**H<sub>2</sub>:** Family ownership is associated with higher earnings management.

#### **2.5.5 *Institutional Ownership and earnings management***

Institutional ownership, as a monitoring mechanism, could be an important tool in control of earnings management. As agency theory and specifically the efficient monitoring hypothesis suggests, monitoring management, except from a crucial business process, is inextricably linked to the type of ownership in general. That is the case with institutional ownership (Almazan et al., 2005).

Considering the findings of Chung et al. (2002), institutional ownership is correlated favorably with the results of monitoring management, especially when it comes to the ability of managers to manipulate earnings management (Chung et al., 2002).

This kind of relationship is proposed by many researchers in the past. Koh (2003), Bushee (1998) and Ebrahim (2007) are some of them.

Thus, we conclude to our hypothesis:

**H<sub>3</sub>:** Institutional ownership is associated with lower earnings management.

## **2.6 On the association between Accrual Accounting and Cash Flows**

In our research we use the modified – Jones model with Cash Flow from Operations, as developed by Lacker and Richardson (2004). The modified Jones model involves regressing total accruals on the difference between the change in revenues and the change in receivables as well as the level of gross property plant and equipment. Additionally, Lacker and Richardson added the CFO in the Jones model so as to reduce the measurement error.

According to related literature (Dechow, Kothari, and Watts 1998), one of the central roles of accrual accounting is to smooth out temporary fluctuations in cash flows, as accrual accounting systems recognize economic events in firms' financial statements independently of the timing of cash flows associated with these events. Dechow (1994) observed and reported a negative relation between accrual accounting and cash flows. Although, recent study by Bushman, Lerman and Zhang (2016) pointed out that the correlation between accruals and cash flows has dramatically dropped over the past half century and has largely disappeared in more recent years. More specifically, in their research they used two models to examine the relation between accruals and cash flows, the first model is the one developed by Dechow (1994) that is used to regress total accruals on contemporaneous operating cash flows for each year from 1964 through 2014. They examined the changes on the goodness of fit measure and in coefficient on cash flows. They reported that the adjusted R<sup>2</sup> dropped from 90% that was in 1960s to lower than 20% in more recent years. A drop of more than 70%. Furthermore, they found that the overall correlation between accruals and cash flows

has significantly diminished over the past 50 years. Moreover, the second model that Bushman, Lerman and Zhang (2016) used is the Dechow and Dichev (2002) model for regressing total accruals on past, current, and future operating cash flows. Similarly, they conclude that the  $R^2$  of the model has dramatically declined from 70% in the 1960s to below 10% in recent years. The coefficient on contemporaneous cash flows has increased from about  $-0.8$  to  $-0.4$  over the same time period. However, they find that the coefficients on past and future cash flows show only a small positive change over time.

Bushman's et al. (2016) findings on the overall correlation between accruals and cash flows have broad implications for the academic and research community. Given that the generally accepted accounting rules remained unchanged till today, there might be other economic and reporting alterations and developments that lead to this extreme decline. "The growing prominence of firms with high intangible intensity could lead to an increase in transactions that do not generate accruals due to immediate expensing of cash outflows" according to Bushman et al. (2016) might be one of them. Another instance could be the extensive use of fair value accounting that may have influenced the relation between cash flow and accruals. Additionally, the frequency of reporting non – operating items and net losses may also attenuate the pronounced correlation. "Overall, even though the conceptual timing role of accrual accounting has not been changed, a significant increase in the magnitude of other elements of accruals may lead to a decline in the extent of the observed negative correlation between accruals and operating cash flows" (Bushman, Lerman and Zhang 2016).

The findings of Bushman et al. (2016) suggest that the popular accrual models used extensively in literature lack explanatory power nowadays and thus the results of discretionary accruals estimated might be reexamined for consistency. In case cash flows explain little of the variation in total accruals, then the residual value from the model, discretionary accruals, is basically accruals and the variance of the discretionary accruals is typically the variance of accruals, something that has no usefulness in our effort to assess accounting quality (Bushman, Lerman and Zhang 2016).



Taking into consideration all the aforementioned, we use the modified – Jones model although we are noncommittal for the findings since according to Bushman, Lerman and Zhang (2016) there is a huge decline in magnitude on the relation between accruals (dependent variable) and cash flows (independent variable), meaning that the modified – Jones model, used in our study to estimate discretionary accruals that area proxy for earnings management, may not explain and predict outcomes.

### **3. RESEARCH DESIGN**

#### ***3.1 Measures of Earnings Quality***

Following the accounting literature, we estimate earnings management using two proxies: 1) Discretionary Accruals and 2) Real Activities Manipulation.

##### ***3.1.1 Abnormal Accrual Analysis***

The accrual component of earnings contains accounting estimates based on forecasts and is therefore easier to manipulate than cash flow (Lacker and Richardson 2004). Hence, accruals seem to be a very useful measure for detecting opportunistic behaviors within a firm.

Lacker & Richardson (2004) modified Jones (1991) model in an attempt to identify the unexpected component of total accruals. Attempts to decompose total accruals into expected and unexpected components can always be criticized for misclassifying expected accruals as unexpected due to the fact that the model of expected accruals is incomplete. (Lacker & Richardson 2004)

So as to overcome the above described issue Lacker & Richardson (2004) used a more advanced model. Their model is similar to the one employed by Dechow, Richardson and Tuna (2003). Dechow's et al. (2003) model suggests that this model has greater explanatory power than the modified Jones (1991) model. However, the attempt to decompose total accruals has still limitations.

Lacker's and Richardson's (2004) model assumes that change in revenues less the change in accounts receivables is free from managerial discretion (credit sales are assumed to be abnormal) and that capital intensity drives normal accruals (Lacker & Richardson 2004). Their model also incorporates the current operating cash flows (CFO) as a measure of current operating performance so as to reduce the measurement error.

### **3.1.2 Real Activities Manipulation**

According to Roychowdhury (2006) “real activities manipulation is defined 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”. These actions do not necessarily lead to value creation.

Manipulation of operational activities may lead to paths of uncertainty due to the fact that certain actions taken in the current period affect cash flows in the future periods. For instance, extreme price discounts during one period so as to increase sales volume, may lead to lower cash inflow over the life of the sales. Another example is the case of overproduction when firms produce abundant amounts of goods and this can have an adverse effect on inventory holding costs for the company.

Personal ambitions and benefits are the driving force for managers to take part in such activities, while others engage in manipulation activities because they are acting as agents in value-transfers amongst stakeholders (Roychowdhury 2006). “An example of the latter would be earnings management to avoid debt covenant violation or to avoid governmental intervention” (Roychowdhury 2006).

For the purpose of our research we use the model of Roychowdhury (2006) as originally developed by Dechow et al. (1998) that calculates the normal levels of CFO, discretionary expenses and production costs for every firm-year. Deviations from the normal levels are signed as abnormal CFO, abnormal production costs, and abnormal discretionary expenses. Additionally, we calculate COMB\_RAM as  $AB\_CFO - AB\_PROD + AB\_DIS$  based on Kim’s et al. (2012) study in an attempt to examine how overall operational manipulations affect earnings management. The combined real activities manipulation proxy decreases as firms engage in more operational manipulations. Consequently, we focus on the following manipulation methods:

1. *Sales manipulation.*
2. *Reduction of discretionary expenditures.*
3. *Overproduction.*
4. *Combined real activities manipulation.*

### **3.2 Experimental Variables**

Following Wang's (2006) approach we measure founding family ownership based on the percentage of common stock owned by family members (Fam). The greater the percentage owned by family members (Fam) the greater the family interest in the firm.

So as to measure managerial ownership and its association with abnormal activities inside firms, we use another variable (Ins) that is calculated by summing the percentage owned by insiders, including executives and directors.

Furthermore, in order to calculate institutional ownership we form a variable (Instit) that includes the percentage owned by institutional investors, which are large investors other than individuals. The percentages owned by institutional investors are simply the sum of the percentage of the following organization:

- ✓ Insurance companies (life and non-life)
- ✓ Mutual and Pension Funds
- ✓ Financial Institutions
- ✓ Banks
- ✓ Investment companies
- ✓ Nominees
- ✓ Trustees
- ✓ Hedge Funds
- ✓ Foundations and Research Institutes
- ✓ Venture Capitals

### **3.3 Control Variables**

As mentioned earlier in our study, managers may likely use both methods of manipulation (real activities and accrual – based) to manage their reported earnings. Alternatively, according to Zang (2012) companies choose between the two aforementioned techniques based on relative costs. More specifically, the method that bears the lowest cost is the one used by managers. In order to control for the substitute nature of the earnings manipulation techniques, as in Cohen et al. (2008), we include COMB\_RAM, a real activities manipulation proxy, as a control variable in the discretionary accruals equation (8) and JDA, a proxy for accrual – based earnings

management, as a control variable in the real activities manipulation regression (equation 9).

We introduce several other control variables so as to isolate other contradicting incentives that could influence the accounting choices of managers. Thus, we include the size of the firm (natural logarithm of Market Value of Equity) and the firm's growth opportunity (growth rate in sales), variables that can potentially explain variations in earnings management (Roychowdhury2006). Specifically, prior studies (Roychowdhury2006) have estimated that rapidly growing companies are expected to maintain a greater level of earnings management. In order to control for the leverage and equity – offering related incentives for earnings manipulation, we include leverage and an indicator for the incidence of an equity offering during the following fiscal year (Kim et al. 2012). Leverage ratio, calculated as long-term debt to lagged total assets, is included in our regression as a proxy for a company's proximity to the violation of the contractual debt restraints since managers are more likely to manipulate accounting earnings when they are closer to default such debt restraints. In the regressions we also use the dummy variable Loss, that takes the value of 1 if net income is negative and zero otherwise, so as to examine the assumption that firms facing financial difficulties are extensively engaged in financial statements manipulation.

Moreover, to the extent earnings management might differ for firms audited by large audit firms we include an indicator variable, Big4 that takes the value of 1 for companies using a Big4 auditing firm and zero otherwise. It is stated that Big4 auditors are more likely to detect material misstatements in firm's financial statements. We also include ROA in our regressions, to isolate the effect of ownership structures on earnings management after controlling for the potential effect of financial performance.

Lastly, we include firm age (natural logarithm of firm age in years) as Wang (2006) as a control variable in our model due to the fact that older firms are less likely to be founding family owned (Anderson and Reeb 2003a).

### 3.4 Models

#### 3.4.1 Abnormal Accrual Analysis

There are plenty of studies that use either the Jones (1991) model or a modified – Jones model developed by Dechow, Sloan and Sweeney (1995). For our study we will use the modified – Jones model with Cash Flow from Operations, a model developed by Lacker & Richardson (2004). The modified Jones model involves regressing total accruals on the difference between the change in revenues and the change in receivables (the difference between the change in revenues and the change in receivables is used in order to adjust the change in revenues for the change in receivables) as well as the level of gross property plant and equipment. Additionally, Lacker and Richardson added the CFO in the Jones model so as to reduce the measurement error. All model variables, including the intercept, are divided by lagged total assets so as to avoid heteroskedasticity problems. For each year we estimate the model for every industry classified by its 4-digit NACE code. Thus, our approach partially controls for industry-wide changes in economic conditions that affect total accruals while allowing the coefficients to vary across time (Kasznik, 1999; DeFond and Jiambalvo 1994).

$$\frac{TACC_{it}}{TA_{it-1}} = a_0 + a_1 \left( \frac{1}{TA_{it-1}} \right) + a_2 \left( \frac{D\_REV_{it} - D\_REC_{it}}{TA_{it}} \right) + a_3 \left( \frac{PPE_{it}}{TA_{it}} \right) + a_4 \frac{CFO_{it}}{TA_{it}} + \varepsilon_{it} \quad (1)$$

Where,

TACC<sub>it</sub>= total accruals, measured as net income before extraordinary items minus operating cash flows.

TA<sub>it-1</sub> = lagged total assets.

D\_REV<sub>it</sub>= change in revenues from year t-1 to year t.

D\_REC<sub>it</sub>= change in accounts receivable from year t-1 to year t.

$PPE_{it}$  = property, plant and equipment.

$CFO_{it}$  = cash flow from operations.

$i,t$  = firm and time subscripts.

$\varepsilon_{it}$  = residual term

The residual value ( $\varepsilon_{it}$ ) from this model is the Discretionary Accruals value,  $JDA_{it}$ , the estimate of unexpected or abnormal accruals from our extended Jones model. The higher the level of discretionary accruals, the greater the level of earnings management.

### **3.4.2 Real Activities Manipulation**

To detect real activities manipulation we employ the following four measures as developed by Dechow et al. (1998), Roychowdhury (2006) and Kim et al. (2012). As in Roychowdhury's research (2006) we consider the abnormal levels of cash flow from operations (CFO), discretionary expenses and production costs to study the level of real activities manipulations. We also take into account the combined real activities manipulation proxy as in Kim et al. (2012) to examine the overall operational manipulations.

#### **3.4.2.1 Abnormal levels of CFO (AB\_CFO)**

Roychowdhury (2006) calculated normal levels of cash flow from operations using the following model:

$$\frac{CFO_{it}}{TA_{it-1}} = a_0 + a_1 \left( \frac{1}{TA_{it-1}} \right) + \beta_{21} \left( \frac{S_{it}}{TA_{it-1}} \right) + \beta_2 \left( \frac{\Delta S_{it}}{TA_{it-1}} \right) + \varepsilon_{it} \quad (2)$$

Where,

$CFO_{it}$  = operating cash flows in year t.

$TA_{it-1}$  = lagged total assets.

$S_{it}$  = net sales in year t.

$\Delta S_{it}$  = difference between net sales and lagged net sales ( $S_{it} - S_{it-1}$ ).

For each year-firm, abnormal operating cash flows (AB\_CFO) are simply the residual ( $\varepsilon_{it}$ ) from above described the equation (2).

### **3.4.2.2 Abnormal Production Costs (AB\_PROD)**

Production costs are defined as the sum of cost of goods sold (COGS) and change in inventory during the year.

In order to estimate the normal production costs there is the need to calculate the normal cost of goods sold and afterwards the normal inventory growth.

Expenses are expressed as a linear function of contemporaneous sales. The model for normal cost of goods sold (COGS) according to Roychowdhury (2006):

$$\frac{COGS_{it}}{TA_{it-1}} = a_0 + a_1 \left( \frac{1}{TA_{it-1}} \right) + \beta \left( \frac{S_{it}}{TA_{it-1}} \right) + \varepsilon_{it} \quad (3)$$

Where,

$COGS_t$  = cost of goods sold in year t.

$TA_{t-1}$ ;  $S_t$  = as defined previously.

To estimate the normal inventory growth ( $\Delta INV$ ) we use the following model:

$$\frac{\Delta INV_{it}}{TA_{it-1}} = a_0 + a_1 \left( \frac{1}{TA_{it-1}} \right) + \beta_1 \left( \frac{\Delta S_{it}}{TA_{it-1}} \right) + \beta_2 \left( \frac{\Delta S_{it-1}}{TA_{it-1}} \right) + \varepsilon_{it} \quad (4)$$



Where,

$\Delta INV_t$  = change in inventory in year t.

$\Delta S_{t-1}$  = lagged change in net sales.

$TA_{t-1}$ ;  $\Delta S_t$  = as defined previously.

Consistent with Cohen et al. (2008), Roychowdhury (2006), Kim et al. (2012) and Zang (2012), production costs are defined as  $PROD_{it} = COGS_{it} + \Delta INV_{it}$ . Consequently by using functions (3) and (4), Roychowdhury (2006) estimate normal production costs from the following industry-year regression:

$$\frac{PROD_{it}}{TA_{it-1}} = a_0 + a_1 \left( \frac{1}{TA_{it-1}} \right) + \beta_1 \left( \frac{S_{it}}{TA_{it-1}} \right) + \beta_2 \left( \frac{\Delta S_{it}}{TA_{it-1}} \right) + \beta_3 \left( \frac{\Delta S_{it-1}}{TA_{it-1}} \right) + \varepsilon_{it} \quad (5)$$

The residual term ( $\varepsilon_{it}$ ) from the model above (5), constitutes the abnormal production cost (AB\_PROD).

### **3.4.2.3 Abnormal Discretionary Expenses (AB\_DIS)**

The abnormal discretionary expenses (AB\_DIS) are the third measure of real activities manipulation. Consistent with Roychowdhury (2006) discretionary expenses should be also expressed as a linear function of contemporaneous sales, similar to COGS. Modeling discretionary expenses as a function of current sales creates a problem, if firms manage sales upwards to increase reported earnings in a certain year, resulting in significantly lower residuals from running a regression using current sales volume (Cohen 2008). To address this issue, discretionary expenses are calculated as a function of lagged sales. The regression model used to estimate the normal discretionary expenses then would be:

$$\frac{DISEXP_{it}}{TA_{it-1}} = a_0 + a_1 \left( \frac{1}{TA_{it-1}} \right) + \beta \left( \frac{S_{it-1}}{TA_{it-1}} \right) + \varepsilon_{it} \quad (6)$$

Where,

$DISEXP_t$  = discretionary expenses in year t, are calculated as the sum of Advertising, Research & Development, and Selling General and Administrative Expenses.

$TA_{t-1}$ ;  $S_{t-1}$  = as defined previously.

For each year-firm, we measure abnormal discretionary expenditure (AB\_DIS) by estimating the residual ( $\varepsilon_{it}$ ) from model (6).

#### **3.4.2.4 Combined Measure of Real Activities Manipulation (COMB\_RAM)**

Finally, we calculate a combined measure of real activities manipulation COMB\_RAM that is estimated as  $AB\_CFO - AB\_PROD + AB\_DIS$  based on Kim's et al. (2012) study in an attempt to examine how overall operational manipulations affect earnings management.

$$COMB\_RAM = AB\_CFO - AB\_PROD + AB\_DIS \quad (7)$$

### **3.5 Empirical models**

There are many factors affecting earnings managements. To capture the association between earnings management and ownership structure which is the center of our attention, we estimate the following models.

Our first model examines the relation between discretionary accruals and ownership structures. Additionally, we will use several control variables such as Firm Size, Firm Age, Return on Assets (ROA), Leverage so as to evaluate their relation with earnings management.

$$\begin{aligned}
JDA_{it} = & \beta_0 + \beta_1(Ins_{it}) + \beta_2(Fam_{it}) + \beta_3(Instit_{it}) + \beta_4(COMB\_RAM_{it}) + \\
& \beta_5(Big4_{it}) + \beta_6(Size_{it}) + \beta_7(Age_{it}) + \beta_8(ROA_{it}) + \beta_9(Lev_{it}) + \beta_{10}(EqOffer_{it}) + \\
& \beta_{11}(Loss_{it}) + \beta_{12}(Growth_{it}) + \varepsilon_{it}
\end{aligned} \tag{8}$$

Where,

$JDA_{it}$  = value of discretionary accruals.

$Ins_{it}$  = percentage of total common equity owned by managers.

$Fam_{it}$  = percentage of total common equity owned by founding family members.

$Instit_{it}$  = percentage of total common equity owned by institutional investors.

$COMB\_RAM_{it}$  =  $AB\_CFO$ ,  $AB\_PROD$ ,  $AB\_EXP$  or  $RAM\_PROXY$ :

$AB\_CFO$  = the level of abnormal cash flows from operations.

$AB\_PROD$  = the level of abnormal production costs, where production costs are defined as the sum of cost of goods sold and the change in inventories.

$AB\_DIS$  = the level of abnormal discretionary expenses, where discretionary expenses are the sum of R&D expenses, advertising expenses and SG&A expenses.

$COMB\_RAM$  =  $AB\_CFO - AB\_PROD + AB\_EXP$

$Big4_{it}$  = dummy variable: 1 if the auditor is one of the big 4 auditing companies and 0 otherwise.

$Size_{it}$  = natural logarithm of market value of equity.

$Age_{it}$  = natural logarithm of firm age in years.

$ROA_{it}$  = net income to total assets.

$Lev_{it}$  = ratio of long-term debt to lagged total assets.

$EqOffer_{it}$  = an indicator variable that takes a value of 1 if the firm has equity offerings in the following year or zero otherwise.

$Loss_{it}$  = dummy variable: 1 if net income is negative and 0 otherwise.

$Growth_{it}$  = growth rate in sales.

$\varepsilon_{it}$  = residual term.

$\beta_0$  = constant term.

$\beta_1$  to  $\beta_{12}$  = coefficients.

Now, to explore how earnings quality is related to real activities manipulation we rely on the model developed by Kim et al. (2012):

$$\begin{aligned} COMB\_RAM_{it} = & \beta_0 + \beta_1(Ins_{it}) + \beta_2(Fam_{it}) + \beta_3(Instit_{it}) + \beta_4(JDA_{it}) + \\ & \beta_5(BigA_{it}) + \beta_6(Size_{it}) + \beta_7(Age_{it}) + \beta_8(ROA_{it}) + \beta_9(Lev_{it}) + \beta_{10}(EqOffer_{it}) + \\ & \beta_{11}(Loss_{it}) + \beta_{12}(Growth_{it}) + \varepsilon_{it} \end{aligned} \quad (9)$$

Where,

All variables are defined as previously.

## 4. SAMPLE DESCRIPTION

In the beginning of this section, we explain in detail our data selection criteria.

### *4.1 Data and Sample selection*

We collect our sample using Amadeus database for the five – year period 2012 – 2016. We restrict our sample to all non – financial Euro zone active firms with available data and require at least 2 observations in each 4 – digit NACE grouping per year. Moreover, we require that each firm – year observation has all available data to estimate the discretionary accruals (JDA, model 1) and real activity earnings management proxies (models 2 to 7) that we used in our research. By following the aforementioned research strategy, we may introduce bias in our sample since we include only larger and more successful firms. Consequently, we expect that the variation in our earnings quality proxies will decline leading our research to more conservative paths.

For starters, we focus our attention in Europe and more specifically we choose to examine countries within the Euro area. The euro area is a monetary union of 19 of the 28 European Union (EU) member states which has adopted euro as their common currency and sole legal tender (<https://en.wikipedia.org/wiki/Eurozone>). After applying multiple criteria, we finally include 641 listed companies in our testing sample from 11 Euro area countries: Belgium, Estonia, Finland, France, Germany, Greece, Latvia, Lithuania, Luxemburg, Malta and Netherland. The rationale behind our choice to focus on Euro area countries was mainly due to the special and unique characteristics of euro zone economies. It is very interesting to examine the Euro area case due to the fact that countries within euro zone act together but in different pace and intensity. Additionally, euro zone is a special case regarding our study on the association between earnings management and founding family ownership, because Euro area countries “host” mainly family owned companies. According to contemporary evidence from European Commission, family business sector accounts for more than 60% of all European companies, representing between 40% - 50% of all jobs ([https://ec.europa.eu/growth/smes/promoting-entrepreneurship/we-work-for/family-business\\_pl](https://ec.europa.eu/growth/smes/promoting-entrepreneurship/we-work-for/family-business_pl)). In our study we only discriminate for financial firms due to the

fact that this kind of firms are subjected to different disclosure requirements and thus calculation of earnings management may be problematic according to extend literature.

The initial criterion for our selection using Amadeus database was the status of a company. We include only active companies. A total number of 20,124,001 companies were selected, a number which was further reduced to 8,412,030 companies by selecting all firms across Euro area. Our next criterion was to restrict only for listed companies. Implementing the above mentioned criterion lead us to a sample of 3,325 enterprises. Once we included all the aforementioned crucial steps so as to maintain a base for active listed companies with headquarters across euro zone, we went on further to ask for the criterion of active accounts for the last 10 years to be assured for the final availability of needed data. Thus, our sample included 2,291 companies.

After exporting the excel file from Amadeus database, we went on further to examine companies with unavailable important data. First of all, we used the “countblank” excel command to exclude firms that were missing data for any of the five year period in all of the figures and ratios needed. By doing so we excluded a large number of companies mainly due to the lack of available data for 2016, although our final export was taken during November 2017. Thus, 1,631 companies were excluded, so we remain with 653 companies translated into 3,265 observations. Further during our calculation on Stata, we dropped another 702 observations due to missing Accrual figures and finally we ended up having 2,563 observations of 641 corporations.

In this point it should be mentioned that during the selection process, taking into account the difficulties concerning ownership information collection, we had to apply advanced techniques to assign each percentage of ownership to the right type of shareholder. Amadeus database provided us with ownership information (percentage and salutation of owner) of all 641 corporations although we had to figure out a way to assign and sum each percentage to an ownership type. In order to do so, we figured out a technique that is displayed in the table 2 and table 3 to assign each shareholder type (9015 code) provided by Amadeus database to the common ownership types mentioned in literature that is: Insider ownership, Family ownership, Institutional

Ownership, Government ownership, Private ownership and Public ownership. Then we used the “sumifs” excel command to sum and assign simultaneously each percentage to the right ownership type. Through this whole demanding and time consuming process, we excluded all companies with missing ownership information at all.

Five year information was requested from the database for Net Income, Cash flow to operating revenue as percentage (Cash flow as a whole was not available on the platform), Total Assets, Operating Revenue, Current Assets, Other Current Assets, Cash & Cash Equivalents and Stock to calculate Receivables (because Receivables was not available on the Amadeus platform), Fixed assets, Sales, COGS, Other Operating Expenses, R & D and Depreciation & Amortization to estimate Net Sales (not available), Auditors full name so as to calculate the dummy variable of Big4, ROA ratio, Long Term Debt to calculate Leverage (long term debt to total assets). Most of the figures used for our demanding research, due to the fact that multiple functions were used needing a great amount of data, were calculated as much of data were not available on Amadeus platform.

Table 2: Shareholder types Amadeus Database

<b>Shareholder - Type (AMADEUS)</b>	
<b>Name</b>	<b>Code</b>
Corporate	3
Publicauthority, state, government	6
Bank	3
Mutual and pension fund, nominee, trust, trustee	3
Insurance company	3
Public	6
Financialcompany	3
Selfownership	2
One or more named individuals or families	2
Privateequityfirm	3
Employees, managers, directors	1
Foundation, researchInstitute	3

Venture capital	3
Other unnamed shareholders, aggregated	5
Hedge fund	3
Unnamed private shareholders, aggregated	5

Table 3: Types of ownership according Literature

Types of ownership (Literature)	
Type	Code
Ins	1
Fam	2
Inst	3
Gov	4
Private	5
Public	6

## 5. EMPIRICAL RESULTS AND DISCUSSION

This chapter will provide descriptive statistics on the dependent variables and the explanatory ones. Moreover, it will be informative about correlations among variables used. Then, we conclude with the regression analysis including our research's finding.

### ***5.1 Descriptive Statistics and Correlations***

The descriptive statistics of the dependent and explanatory variables of our study are shown in table 4. All continuous variables are winsorized in the 1st and 99th percentile to mitigate any effects from outliers.



Table 4: Descriptive Statistics

Variable	Min	25th	Mean	Median	75th	Max	StDev
AB_DIS	-107.972	-0.019	0.727	0.235	0.852	75.256	10.905
AB_COGS	-201.058	-0.082	0.941	0.302	1.306	167.618	23.011
AB_INV	-4.106	-0.024	-0.022	0	0.026	2.519	0.434
AB_PROD	-85.617	-0.076	0.792	0.185	1.044	89.478	12.748
AB_CFO	-6.691	-0.015	0.151	0.036	0.163	7.461	1.066
JDA	-2.836	-0.024	0.011	0	0.046	2.439	0.388
Ins	0	0	1.311	0	0.31	48.27	4.895
Fam	0	0.14	18.59	5	29.65	100	25.286
Instit	0	17.33	44.638	46.04	70.14	100	30.063
COMB_RAM	-109.643	-0.583	-0.071	0	0.645	92.994	14.592
lnSIZE	7.302	10.913	12.496	13.221	13.614	17.702	2.078
Big4	0	0	0.616	1	1	1	0.486
LnAge	2.303	3.178	3.76	3.738	4.554	4.963	0.715
ROA	-0.868	-0.056	-0.032	-0.004	0.035	0.204	0.134
Lev	0	0.041	0.162	0.125	0.234	0.814	0.157
EqOffer	0	0	0.294	0	1	1	0.456
Loss	0	0	0.284	0	1	1	0.451
Growth	-0.646	-0.048	0.03	0.022	0.097	1.172	0.2

*Note:* All numbers are rounded up to third decimal place.

Table 4 reports a mean value of 0.73 of our variable AB\_DIS (absolute value of discretionary expenses), a mean value of 0.94 AB\_COGS (abnormal cost of goods sold), a mean value of -0.02 AB\_INV, a mean of 0.79 AB\_PROD and a mean of 0.15 AB\_CFO. According to the above findings and taking into account the standard deviation of all the aforementioned, we observe that AB\_COGS has the highest mean value and the highest standard deviation value which means that it is a measure that is used extensively by managers of the selected firms. Based on managerial judgments and estimates, cost of goods sold seems to be the easiest portion to manipulate, because of the nature of these accounts. Furthermore, the mean value of AB\_PROD which is the combined measure of abnormal COGS (AB\_COGS) and the abnormal inventory (AB\_INV) takes the second highest mean value and the second highest standard deviation meaning that both the inventory and the cost of goods sold manipulations

take place in the tested sample. Of all the above, the abnormal inventory (AB\_INV) seems to be the less used by managers.

Examining the median value of all the pronounced, which is better suited for skewed distributions to derive at central tendency since it is much more robust and sensible, we conclude that abnormal cost of goods sold are more frequently used (with a median value of 0.30) and abnormal inventory more rarely used by managers (with a median value of zero).

Worth noticing, that mean value of JDA (value of discretionary accruals) is very close to zero (0.011). According to the related literature, Jones model residual is zero by construction (residual of a regression), whereas the mean modified Jones model residual is not constrained to be zero by construction (Cohen et al. 2008).

The above mentioned findings are not mirrored to our COMB\_RAM with the same notion. The result of mean COMB\_RAM is -0.07 and the median is 0. It is observed that there is an increase from mean to median, the opposite from our other dependent variable (AB\_DIS), but both mean and median are close to zero. One thing worth mentioned is that it is inaccurate to deduct that managers do not manipulate the reported earnings since, according to data, all firms manage earnings either upwardly or downwardly and as a consequence the mean tends to zero.

The empirical analysis on Table 4 also provides information on ownership structure. The mean value of Ins is 1.3 which indicates that 1.3% of the companies of firms selected are expected to be under managerial ownership. Observations also reveal the mean value of Fam is 18.6 which indicates that a significant amount of companies examined in the Euro zone, the 18.6% to be exact are consider to be family firms.

Worth noticing, a corporate governance significance. There is a difference between Ins and Fam, that indicates that managers on Euro zone companies are not also owners or members of families in control. Family controlled firms, based on the findings, preferred to appoint an external member of the family as a manager, than keeping management for themselves.

Furthermore, the mean of the Instit variable is 44.64. From all companies selected almost a 45% is owned by other institutions. That also explains the result of Big4 control variable.

Big4 mean is 0.62, meaning that 62% of firms selected are using one of the big 4 audit firms (Deloitte, Pricewaterhousecoopers, Ernst & Young and KPMG). The median value of Big4 is absolute 1, indicating that all firms selected close to the central tendency observations, are audited by one of big 4 audit firms. Take into consideration also the percentage of 45% companies owned by institutions it seems that the vast majority of the companies selected choose a major audit firm.

Moreover, natural logarithms of firms' size (LnSize) and firms' age (LnAge) is used as independent variables in order to keep the order of the values intact and hence results obtained with a transformed variable interpretable. The desired effects of this transformation could be a scaling of the regressions coefficients or improving their quality amongst others. It goes without saying that in case that the variable is highly skewed to the right, which may produce problems in the regressions analysis. We expect a positive relation between the size of the firms and the earnings manipulation, on the notion that bigger firms' managers have more incentives to manipulate earnings.

Going further with the ROA variable, we face a mean of -0.03. Having negative ROA is an indicator that the vast majority in our companies sample are investing high amounts of capital into production while receiving little income. If a negative ROA is accompanied by high levels of debt, the effect of ROA is bigger. This control variable is also an indicator that many of the companies selected are following a risky strategy.

The mean of the variable Lev (ratio of long-term debt to assets) for our sample is 0.16 (contradicting results taking into account the above mentioned ROA figure). Based on that low level degree of risk we assume that sample companies are able to repay debts and therefore the need for numbers manipulation in order for the lenders not to be sceptical should be decreasing. We expect that the higher the leverage the higher the possibility and the more the incentives to manipulate earnings.

Another control variable we took into consideration is the EqOffer (equity offering). The mean value of 0.29 illustrates the fact that almost 30% of the companies of our sample are offering new issued stocks. If we examine that, in comparison with the fact that almost the same percentage of companies are appearing to have losses. We can assume that, inside our sample, companies facing losses are issuing new stocks in order to offset financial distress. Losses are expected to “promote” earnings management since firms facing financial difficulties have adequate incentives to manipulate reported accounts.

Following we are going to examine the correlations among the variables of our investigation. The Pearson Pair wise correlation coefficients for all of the major variables used in our investigation are shown in Table 5.

Table 5: Correlation Matrix

Variable	1	2	3	4	5	6	7	8	9
1. AB_DIS	1.00								
2. AB_COGS	<b>0.82***</b>	1.00							
3. AB_INV	-0.09***	-0.10***	1.00						
4. AB_PROD	0.38***	0.56***	-0.09***	1.00					
5. AB_CFO	0.51***	0.45***	-0.07***	0.54***	1.00				
6. JDA	-0.14***	-0.10***	0.16***	-0.10***	-0.13***	1.00			
7. Ins	-0.03	-0.03	-0.02	-0.02	0.01	0.00	1.00		
8. Fam	0.02	0.01	-0.03*	-0.01	0.01	-0.03	-0.07***	1.00	
9. Instit	0.03	0.03*	0.03	0.02	-0.02	0.01	-0.11***	<b>-0.66***</b>	1.00
10. COMB_RAM	0.40***	0.08***	0.06***	<b>-0.60***</b>	-0.06***	0.01	0.00	0.03*	0.00
11. lnSIZE	0.04*	0.06***	-0.02	0.06***	0.07***	0.02	0.03	-0.22***	0.03*
12. Big4	0.00	0.02	-0.01	0.03*	0.03*	-0.03*	0.03	-0.33***	0.13***
13. lnAge	0.01	0.03	-0.01	0.01	0.01	0.00	-0.13***	0.26***	-0.15***
14. ROA	0.00	0.01	-0.01	0.01	0.02	0.02	0.00	0.03	0.03*
15. Lev	0.02	0.03	-0.04*	0.00	-0.01	0.01	-0.05***	0.01	-0.01
16. EqOffer	-0.02	-0.03	0.00	0.03	0.00	-0.03*	0.08***	-0.19***	0.01
17. Loss	-0.02	-0.02	-0.02	-0.02	-0.04*	-0.02	-0.03*	0.16***	-0.11***
18. Growth	-0.01	-0.02	0.00	-0.02	-0.01	-0.01	0.00	0.00	-0.02

Note: Values with asterisks \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1 % levels, respectively (2-tailed). All numbers are rounded up to second decimal place.

Variable	10	11	12	13	14	15	16	17	18
1. AB_DIS									
2. AB_COGS									
3. AB_INV									
4. AB_PROD									
5. AB_CFO									
6. JDA									
7. Ins									
8. Fam									
9. Instit									
10. COMB_RAM	1.00								
11. lnSIZE	-0.03	1.00							
12. Big4	-0.03	0.32***	1.00						
13. lnAge	0.00	0.08***	-0.19***	1.00					
14. ROA	0.00	0.15***	0.00	0.10***	1.00				
15. Lev	0.01	0.10***	-0.03	0.12***	-0.08***	1.00			
16. EqOffer	-0.03*	0.14***	0.20***	-0.23***	-0.12***	0.05***	1.00		
17. Loss	0.00	-0.23***	-0.19***	0.11***	-0.51***	0.06***	0.03*	1.00	
18. Growth	0.02	-0.04*	0.04**	-0.06***	0.15***	0.00	0.08***	-0.18***	1.00

Note: Values with asterisks \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1 % levels, respectively (2-tailed). All numbers are rounded up to second decimal place.

The correlation coefficient between our main explanatory variables (Ins, Fam, Instit) is statistically significant at the 1% level. Specifically the correlation coefficient between the variables Fam and Ins is equal to -0.07. Variables Instit and Ins are also negative correlated with a coefficient of -0.11. That means that they have the same kind of relation as Fam and Ins. An increase (decrease) of one variable by one (1) unit has an effect of 0.11 accordingly.

Our main model's dependent variable, JDA has a statistical significance at the level of 1% with all the others dependent variables (AB\_DIS; AB\_COGS; AB\_INV; AB\_PROD and AB\_CFO). The only positive correlation is noted only between JDA and AB\_INV. The coefficient of 0.16 indicates a weak relationship between the two. Analysing that, it is expected that an increase (decrease) of 1 unit in one variable will affect the other by increasing (decreasing) 0.16 units. JDA correlation with the rest dependent variables it is noted to be a weak negative one.

Furthermore, the correlations between our dependent variables and explanatory ones are quite prepossessing. More Specifically Ins, Fam and Instit are not statistically significant with JDA (value of discretionary accruals) at any level. Nevertheless a positive correlation coefficient is dimmed observed between JDA, and variable Instit. The Fam variable as noted has the opposite effect, while Ins is zero.

On the other hand, COMB\_RAM, the one that measures Real Activity Manipulation is only statistical significant with the Fam control variable. Focusing on that, COMB\_RAM and Fam are correlated with a coefficient of 0.03. Analyzing the coefficient it is expected that an increase (decrease) of one variable by one (1) unit will cause an increase (decrease) by 0.03 units. This fact confirms our hypothesis No 2 (H<sub>2</sub>).

Subsequently, examining correlations between our variable AB\_DIS opposed to other independent variables we came to the following results.

Statistical significance at the level of 1% is observed between the absolute value of discretionary accruals (AB\_DIS) and cost of goods sold variable (AB\_COGS). The correlation coefficient between those two variables is very strong. A correlation coefficient of 0.82 means that AB\_DIS and AB\_COGS are positive related, so an

increase (decrease) in one (1) unit of one of these variables will cause an increase (decrease) to the other. The strong correlation coefficient between those two variables indicates also the kind of relation these two variables have, meaning that there is almost a certainty that if discretionary expenses are manipulated the same thing is happening for cost of goods sold.

Following, the findings concerning the correlation coefficient among AB\_DIS and AB\_INV (absolute value of change in inventory) shows a negative weak relationship (-0.09) statistically significant at 1%. The meaning of that is an increase (decrease) of one (1) unit to one of those variables will cause a decrease (increase) of 0.09 units to the other variable. The relation between the variable discretionary expenses and abnormal product cost variable (AB\_PROD) is statistically significant at 1% level and there is a positive moderate correlation of 0.38. Changes in one of variables by (1) unit degree causes a moderate change of 0.38 unit in the other variable.

The correlation coefficient between variables AB\_DIS and AB\_CFO is characterized by a positive almost strong statistically significant at 1% level relationship. Stating that a decrease of 1 unit in the absolute value of discretionary expenses will affect the abnormal cash flow to decrease by 0.51 units. This positive kind of correlation features even more the fact that manipulation findings in discretionary expenses will be followed by manipulation findings in the cash flow reports in a lower degree.

As Table 5 reports, correlation coefficients between variable AB\_DIS and the independent ones are no statistically significant. Only the natural logarithm of size (lnSIZE) has a weak positive correlation coefficient of 0.04 at 10% level of significance.

Thereupon and by examining our dependent variable for real activity manipulation in comparison with our other dependent variables we found the following results.

Our dissertation's proxy variable (COMB\_RAM) is weakly and positive correlated with AB\_COGS (cost of goods sold) by a coefficient of 0.08, at a level of significance of 1%. Same amount of correlation applies also with the variable AB\_INV (change in inventory) which is about 0.06.

The result of the correlation coefficient between COMB\_RAM and variable AB\_PROD (abnormal production costs) is -0.60. Analyses of the before mentioned number indicates that there is a strong relation between these two variables. Changes in one variable, drives the second variable to a change of 0.60 units (assuming that the first variable changes by one (1) unit). Changes of course are in the opposite direction, since the correlation coefficient is negative. That means that a positive change in the first variable (increase) will affect the second variable negatively (decrease). The above mentioned characteristics found at a level of significance at 1%.

Abnormal cash flows are negative correlated with COMB\_RAM at a level of significance of 1%. Correlation coefficient among these variables is -0.06. Although this is a weak correlation between COMB\_RAM and AB\_CFO a change in one variable affects slightly and negatively the other.

Correlation coefficient between our proxy variable (COMB\_RAM) and other independent variables (lnSIZE; Big4; lnAge; ROA; Lev; Loss and Growth) are statistically insignificant and do not affect the results of our research. Only EqOffer variable seems to have a statistical significance at 10% level, but the correlation is very weak (-0.03).

Presence of strong statistical significance at the level of 1% of the correlation coefficient among the variables; AB\_COGS; AB\_INV; AB\_PROD and AB\_CFO is very interesting.

There is a weak negative correlation coefficient of -0.10 between cost of goods sold (AB\_COGS) and change in inventory (AB\_INV) at the level of 1% significance. That suggests that 1 unit change in one of those variables will affect by 0.10 units the other, the opposite way. Further than that, the examination of the above correlation coefficient indicates the quality of the relationship between those two variables. For example, when inventory is increasing, therefore the change in inventory (AB\_INV) is increasing also. Cost of goods sold records a slight decrease, because goods are stored and do not taking part in the sales process.

Based on the results, variables AB\_COGS and AB\_PROD appeared to have a positive strong correlation coefficient of 0.56, at the level of 1%. That indicates that an increase



(decrease) by one (1) unit to one variable will cause an increase (decrease) to the other variable. This amount of correlation shows that when abnormal production costs are increasing, they have a same direction impact to cost of goods sold. On the other hand and at the same level of significance, AB\_PROD and AB\_INV have a negative weak correlation coefficient. Specifically, -0.09 means that there is a slight impact between those two variables, that shows only the notion of how one variable affects the other.

Subsequently, correlation coefficient between AB\_CFO (abnormal cash flow) and AB\_COGS present a moderate positive relationship of 0.45 at the level of 1% statistical significance. That implies that a possible change by one (1) unit in the AB\_CFO affects enough the other by 0.45 units in the same direction. As the previous variables do, when it comes to AB\_INV (change in inventory), AB\_CFO findings reveal almost the same negative weak correlation coefficient (-0.07) having the same kind of relationship as AB\_PROD and AB\_INV have.

A positive strong correlation coefficient of 0.54 at 1% level of significance is noticed between AB\_PROD and AB\_CFO. Any changes in the AB\_PROD have a positive and strong impact in AB\_CFO and vice versa. To illustrate the correlation between those two variables, a decrease of 1 unit in the abnormal cash flows will cause a decrease to abnormal production costs by 0.54.

The natural logarithm of size (lnSize) has statistical significance at the level of 1% with many of our independent variables. Examining the results size seems to affect slightly AB\_COGS, AB\_PROD and AB\_CFO. The correlation coefficient among those variables is not very strong by it sets the direction and the way that size affects the above mentioned variables.

Moreover, Big4 seems to be statistically significant at the level of 10%. Although the results are close to zero, and there is no stable link between of how the fact of being audited by a big 4 audit firm affects our explanatory variables. Generally, for the rest of our explanatory variables included in Table 5, correlation between them is statistically insignificant. Based on our findings correlations found also present to be very weak (close to zero).

In addition, the correlation between variables absolute value of discretionary expenses (AB\_DIS) and our combined measure of real activity manipulation (COMB\_RAM) is of great interest. Based on our findings correlation coefficient between those is 0.40, at the level of statistical significance of 1%.

## 5.2 Regression Analysis

Evidence presented by descriptive statistics and the correlation matrix concerning univariate relations between the variables is not enough. Therefore we employ Ordinary Least Squares (OLS) regression analysis for even more depth results.

Table 6: OLS Regression Output

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	AB_CFO	AB_COGS	AB_DIS	AB_INV	AB_PROD	JDA	COMB_RAM
Ins	-0.001 (-0.13)	-0.08 (-0.95)	-0.29 (-0.60)	-0.02 (-1.39)	-0.065 (-1.33)	0.001 (-0.69)	0.031 (0.52)
Fam	<b>0.003**</b> (2.57)	<b>0.071***</b> (2.98)	<b>0.037***</b> (3.67)	-0.000 (-0.82)	<b>0.045***</b> (4.00)	<b>-0.001*</b> (-1.69)	<b>0.028*</b> (1.79)
Instit	0.001 (0.96)	<b>0.069***</b> (3.61)	<b>0.032***</b> (3.65)	0.000 (0.35)	<b>0.034***</b> (3.83)	-0.000 (-0.88)	0.21 (1.63)
COMB_RAM	-0.005 (-0.93)	0.115 (0.74)	<b>0.297***</b> (4.35)	0.002 (0.93)	<b>-0.528***</b> (-8.52)	0.000 (0.16)	- -
lnSIZE	<b>0.048***</b> (3.37)	<b>0.789***</b> (2.58)	<b>0.341**</b> (2.55)	-0.006 (-1.12)	<b>0.347**</b> (2.41)	<b>0.008*</b> (1.67)	-0.024 (-0.13)
Big4	0.006 (0.11)	0.850 (0.67)	0.068 (0.12)	-0.020 (-0.84)	0.060 (0.11)	<b>-0.051**</b> (-2.48)	-0.044 (-0.61)
lnAge	0.009 (0.30)	0.541 (0.84)	-0.004 (-0.01)	0.006 (0.46)	-0.051 (-0.18)	-0.001 (-0.08)	-0.007 (-0.84)
ROA	0.091 (0.50)	-0.024 (-0.01)	-0.032 (-0.02)	<b>-0.123*</b> (-1.81)	-0.229 (-0.14)	0.078 (0.67)	0.352 (0.14)
Lev	-0.000 (-0.00)	<b>5.325*</b> (1.72)	1.850 (1.57)	<b>-0.148***</b> (-2.68)	1.025 (0.79)	0.048 (0.68)	2.051 (1.05)
EqOffer	-0.024 (-0.46)	-1.321 (-1.26)	-0.287 (-0.57)	0.008 (0.36)	0.387 (0.77)	<b>-0.036*</b> (-1.93)	-0.930 (-1.24)
Loss	-0.033 (-0.53)	-0.689 (-0.51)	-0.292 (-0.50)	-0.031 (-1.07)	-0.559 (-0.92)	-0.007 (-0.29)	-0.212 (0.26)
Growth	-0.075 (-0.82)	-1.808 (-1.00)	-0.771 (-1.03)	-0.012 (-0.24)	-0.820 (-1.06)	-0.022 (-0.58)	1.377 1.09
(intercept)	<b>-0.872***</b> (-3.72)	<b>-18.385***</b> (-3.43)	<b>-7.454***</b> (-3.17)	0.100 (1.18)	<b>-7.548***</b> (-3.10)	-0.057 (-0.74)	-0.714 (-0.26)
Industry Effects	Included	Included	Included	Included	Included	Included	Included
Year effects	Included	Included	Included	Included	Included	Included	Included
R <sup>2</sup>	0.045	0.031	0.186	0.030	0.375	0.018	0,012
Adj R <sup>2</sup>	0.020	0.005	0.164	0.004	0.358	-0.008	-0,005
Observations	2,563	2,563	2,563	2,563	2,563	2,563	2,563

*Note* : Standard errors are clustered at firm level with t-statistics presented in parentheses. Values with asterisks \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1 % levels, respectively (2-tailed). All numbers are rounded up to third decimal place.

The outcome of our regression analysis helps to close the gap on the association between earnings management and ownership structure that descriptive statistics and correlations left. Most of the coefficients are statistically significant at a 1% level, especially when it comes to variables of interest. As it is observed, there is an exception of a few insignificant variables, but it is noted that those variables are close to zero even at a level of 10% significance.

Analyzing our dissertation's main dependent variable, JDA's statistical significance is not at a level that could lead us to safe results. The coefficients are closed to zero. That indicates that there is no enough evidence in our sample to justify or to reject our hypotheses.

Based on the findings, our dependent variable AB\_DIS is positive and statistical significant at 1% level with variable Fam at 0.037 while the t-statistic is 3.67. The link between those variables fits our hypothesis No 2 (H<sub>2</sub>) that family ownership is associated with higher earnings management. That means that the concentration of ownership to family members increases earnings management at a significant level.

At the level of 1% significance, Institutional ownership is correlated with our AB\_DIS as of 0.032. Coefficient of this amount is close to zero, hence institutional ownership is not affecting earnings management at the scale that justifies positive connection of AB\_DIS and Instit. Therefore our hypothesis No 3 (H<sub>3</sub>), which supports that institutional ownership is associated with lower earnings management, is fully justified.

Goes without saying that coefficient -0.29, between AB\_DIS and Ins while the t-statistic is -0.60, is not statistically significant even at the level of 10%. Based on that and taking into consideration that according to the related literature we expected a negative relation between managerial ownership and earnings management, we cannot come to a safe conclusion for our Hypothesis No 1 (H<sub>1</sub>). The association between inside ownership and reported manipulation techniques may need extra analysis.

Subsequently, findings on the rest of the variables are very intriguing. Specifically, the coefficient of the natural logarithm of size (lnSize) and AB\_DIS is 0.341 at the significance level of 5%. That fact combined with the previously mentioned results

about our variables of interest could lead us to the idea that size impacts earnings management at a moderate level. The bigger the firm's size the more the material misstatements.

Two (2) of our hypotheses seem to govern Table 6. Indications of the table on that idea prove it. Coefficient of  $\ln\text{Size}$  (natural logarithm of firm's size) seems to impact all the other explanatory variables the same way. More specific, coefficient of  $\ln\text{Size}$  and  $\text{AB\_CFO}$  is 0.048 at level of significance 1%.

Very important is the coefficient of  $\ln\text{Size}$  and  $\text{AB\_COGS}$  (abnormal cost of goods sold). At the significance level of 1% and coefficient of 0.789 indicates that  $\ln\text{Size}$  influences  $\text{AB\_COGS}$  at a large scale. It is very interesting to notice that  $\ln\text{Size}$  affects most of our explanatory variables in the same way. Positive and at a level of significance of 1% - 5%.

Findings on Table 6 ratify findings on Table 5 concerning our control variable. Coefficient between  $\text{COMP\_RAM}$  and  $\text{AB\_DIS}$  at 0.297 at the statistical significance of 1% on our regression analysis is 0.30, while at the same level of significance the coefficient with the  $\text{AB\_PROD}$  is 0.528 proves the ratification.

Furthermore, low  $R^2$  it is not an indication that our model does not fit well the observations. It may also consist that our independent variables are influenced more from variables different from our explanatory ones. But based on our results, variables with higher  $R^2$  indicate that the model used for them is more accurate.

Summarizing the above-mentioned findings, two of this dissertation's hypotheses are confirmed by the findings and vice versa. One hypothesis needs more extensive research. All of our hypotheses are fitted in our descriptive statistics, correlation matrix and regression analysis findings.

## 6. CONCLUSION AND RECOMMENDATIONS

Berle and Means (1932) are among the first who examined the association between a firm's ownership structure and its performance where their argument was that, since interests of management and shareholders are not necessarily aligned, corporate resources are not used efficiently for value maximizing. In fact, they suggested a negative relationship between control and performance.

This dissertation examines the association between ownership structure and earnings management for companies in the Euro zone. All data collected by us using Amadeus database provided by the International Hellenic University. Years under scrutiny were 2012 through 2016. Using a final sample that it was consisted by 641 we met results in the same direction of other researchers' investigations.

Regarding the relationship between earnings management and ownership structures consisted by insiders (managers), we found that all proven literature included in our hypothesis No 1 development it is true. No finding was against our hypothesis No 1 ( $H_1$ ) and the literature.

The hypothesis of earnings management and family ownership are highly linked with each other (Hypothesis No 2) it is proven over the findings of discretionary accruals, research's correlation matrix and as it is expected in our regression analysis.

At the same direction, Hypothesis No 3 ( $H_3$ ) it is proven also. Findings in our research confirm that institutional ownership affects in a lower scale earnings management because of the better monitoring mechanisms, as many researchers report in the past (Almazan et al., 2005; Chung et al., 2002).

This thesis met some limitations which should be taken into consideration. First of all, Euro zone is consisted by very different countries. Companies operating all over Euro zone are not operating in the same environment. Northern Europe provides better economic environment for firms to operate. The economies are well structured, states are more organized and global phenomena have less negative impact. In contrast, Southern Europe is a completely different environment for firms to operate. Not

having the same kind of organization, and in general the same appropriate conditions, southern Europe's companies do not operate at the same level as the northern ones.

Secondly, it should be mentioned that most of the figures used for our demanding research, due to the fact that multiple functions were used needing a great amount of data, were calculated as much of data were not available on Amadeus platform. This fact entails a risk. So future researchers that might want to examine ownership structures and its relation with earnings management could use different models, different variables and might need to alter their selection process.

Moreover, during our research we faced several difficulties due to the unavailability of ownership information for Euro area companies. That was the case since our initial sample consisted of 2,291 companies operating in 11 of 19 Euro area countries and our testing sample after dropping firms with unavailable data included 641 listed companies. In this direction, future research might use different sampling methods to examine the pronounced relation.

Another limitation which it should be taken under consideration is the fact that Europe is still emerging of the 2008 global finance crisis that started in the United States of America with multiple domino effects. Companies are not able to perform at full capacity, so maybe the findings are mirroring also the correlation between ownership structures and earnings management but under distressed environment.

Euro zone is not yet equalized, for the results of the dissertation to be more consistent. Subsequently further research is needed which will be based on the results of this study in order to establish more comprehensive understanding and contribute more to the payout literature.

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