



The effect of Public Equity Capital Market Pressure on Accrual-Based and Real Earnings Management

MSc Thesis Accounting, Auditing and control

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Abstract

This thesis examines whether public equity capital market pressure acts as an incentive for firms to engage in accrual based and real earnings management. The distinction between private and public firms are used as a proxy to document the effect of the public equity capital market pressure on earnings management. The sample consists of private and public firms in the European Union for a 5-year period (2014-2018). This study finds that public firms tend to engage more in accrual-based earnings management. Private firms tend to engage more in real earnings management.

Keywords: Earnings management, accrual-based earnings management, real earnings management, public equity capital market pressure, European union, public firms, private firms.

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Introduction

Earnings management has been a popular topic in the last decade due to corporate financial scandals such as Enron, WorldCom and many more where management engaged in fraudulent financial reporting. Due to these scandals many believe that earnings management is a fraudulent behaviour however this is not always the case. Earnings management can be classified into the following three categories: fraudulent accounting, accruals management and real earnings management. The corporate financial scandals fall under the fraudulent accounting category, this is where management manipulates financial statements by breaking accounting standards to create a more desirable picture of their financial health to mislead stakeholders. Manipulation of the financial statements that lead accounting standards to be broken is illegal. Fraudulent accounting will not be covered in this thesis since it does not contribute to the research question of the thesis. On the contrary accrual-based earnings management and real earnings management will be covered in the thesis.

Accrual based earnings management uses accounting methods or estimates within the general accepted accounting principles (GAAP) to manage earnings. Real earnings management involves the alteration of real business transactions. There is a lot of literature on accrual-based earnings management however, literature on real earnings management is limited.

The objective of this thesis is to examine the effect of the public equity capital market pressure on earnings management. The distinction between private and public firms are used as a proxy to document the effect of the public equity capital market pressure on earnings management. Both firms are subject to different capital market forces, allowing for the test of whether public equity capital market pressure has an effect on earnings management. This thesis attempts to answer the following research question:

Does Public Equity Capital Market pressure have an effect on the engagement of firms in earnings management?

The study by Burgstahler, Hail, and Leuz (2006) examines the relation between earnings management and capital market pressure. Their results present that private firms tend to engage more in earnings management in comparison to public firms thus showing that the difference in capital market pressure influences the degree to which firms engage in earnings

management. Market pressure can arise in different forms for example Burgstahler et al (2006) argue that market pressure acts as an incentive for firms to provide high quality information to the market. Hope et al (2013) find that the quality of information is reduced when firms manage earnings. The market pressure can also impose pressure on firms to report high performance for example by meeting market expectations. The study by Burgstahler and Eames (1998) demonstrate that public firms avoid reporting earnings below analysts' forecasted earnings. DeAngelo et al (1996) supports this claim. Firms that do not meet the expectations of the market suffer a reduction in their share price. Prior literature mainly focussed on accrual-based earnings management; this thesis will include real earnings management. Since mixed results are found by prior literature, no predictions are made as to which firm would engage more in earnings management. This also means that the form of market pressure and in what direction it affects earnings management is not clear.

European firms are chosen for the sample as there is more availability of information for private and public firms. Besides, private firms within the European union face the same accounting standards (Burgstahler et al, 2006). Furthermore, accounting standards have been formally harmonized across EU countries for many years (Van Hulle, 2004). It can be said that this provides both private and public firms with the same opportunities to manage their earnings.

The modified Jones model (1995) is used to detect any accrual-based earnings management. The model uses discretionary accruals as the proxy for accrual-based earnings management. The Roychowdhury (2006) model is used to detect real earnings management activities by firms. The model uses three proxies for real earnings management: cashflow from operations, production costs, and discretionary expenses. However, this thesis will only consider the proxies, cashflow from operations and production costs. The reason is that Amadeus does not contain sufficient information to estimate the discretionary expenses for firms. An OLS regression is run for both models to answer the research question.

This thesis finds that public firms engage more in accrual-based earnings management in comparison to private firms. It can be illustrated that the public equity capital market pressure acts as an incentive for firms to engage in accrual-based earnings management to meet expectations set by the market. The public equity capital market pressure, however, acts as an incentive for firms not to engage in real earnings management. This is concluded as the

analysis shows private firms engage more in real earnings management in result to public firms. Coppens and Peek (2005) argue that tax incentives act as a major driver of reporting behaviour in private firms. Private firms may engage in real earnings management in order to manage their earnings down to avoid high tax payments. Real earnings management is favoured by private firms as it is harder to detect in comparison to accrual-based earnings management. According to Ball and Shivakumar (2005) the cost to manage earnings down to avoid high tax payments is less for private firms in contrast to public firms. Furthermore, private firms rely highly on debt, the use of financial statements to communicate performance to creditors is vital. To avoid creditor intervention, the management of earnings is desirable by private firms (Al-Amri et al., 2017; Burgstahler et al., 2006)

This thesis aims to contribute to literature by examining the effect of public equity capital market pressure on accrual-based and real earnings management within a European setting. Real earnings management in private firms is an understudied field in literature, this paper aims to fill this gap in literature. This study helps contribute to academia's discussion on whether capital market pressure motivates firms to engage in earnings management. The findings are of interest to capital market regulators. Capital markets should not incentivise firms to manage their earnings solely to meet market expectations. Capital market regulators should establish adequate policies to protect investors and incentivise firms to report high quality information to the market.

1. Theoretical Background

1.1 Equity Capital Market

Firms have several different ways to raise capital, the most popular two are debt and equity. Equity finance is where investors are given a share of the company and earn returns as the company grows. The Public Equity Capital Market (hereafter ECM) is where financial institutions and companies meet to trade financial instruments and raise capital for companies. ECM consists of two types of equity markets: the primary and secondary market. The difference is that in the secondary equity market the buying and selling of existing shares occurs. Whereas the primary market deals specifically with new stocks that are sold to the public for the first time, for example an initial public offering (IPO). The secondary market is applicable only to public firms whereas the primary market is applicable to both public and private firms who are planning to transition to a public company. The primary market is therefore vital for a private firm during the IPO process and for public companies issuing new equity. Therefore, ECM is vital to companies as it allows them to raise finance in order to grow their business and for investors to grow their money.

The equity capital market is to great importance to public companies since its one of the main methods of public companies to raise capital. In contrast to private firms ECM tends to be less important to private firms since private firms typically raise their capital through private investors and channels. Hence to examine the effect of ECM on earnings management the thesis focusses purposely on private and public firms from the European Union (EU). The differences between public and private firms allows the test of whether equity capital market pressure has an effect on earnings management. In result the following research question below is formulated for the thesis:

Research question: *Does Public Equity Capital Market pressure have an effect on the engagement of firms in earnings management?*

The research question does intentionally not include private and public firms as the main goal of the thesis is to investigate the ECM pressure on earnings management. Public and private firms are solely used to document the impact of ECM pressure on earnings management and not merely whether public or private firms engage more in earnings management.

With ECM pressure I refer to the pressure firms are faced by the capital market for example by analysts setting targets for firms to meet or beat. This creates firms to feel pressured that they should beat or at least meet earnings expectations set for them for otherwise their share prices will decline. The study by Jensen (2004) supports that when a firm beats the analysts' target it will result in an increase in the stock price of the firm. When the firm has not met the analyst target the stock price drops. The expectations of shareholders or potential investors can make a firm feel pressured to achieve the expectation in order to obtain the capital needed for them to grow as a business. The pressure could potentially lead to earnings management or motivate firms to operate more efficiently and increase net income to meet earnings targets.

1.2 Equity Capital Market Pressure within Public and Private Firms

Equity capital market pressure within public and private firms could possibly differ due to the factors discussed below.

Difference in raising capital

Public and private firms face different demands for accounting information as a result of the difference in their financing structure. The financing of public firms involving the public equity markets results in the demand for useful information that could be used to evaluate and monitor the firms present and future performance. Investors in public and private equity markets rely on financial statements and reported earnings released by businesses to base their economic decisions on. According to Burgstahler et al (2006) the ECM acts as an incentive for public firms to make earnings more informative or screen out firms with less informative earnings in the going public process. Burgstahler et al (2006) states in their research paper that reporting quality is likely associated with how well investors can evaluate the economic performance of a firm using the financial statements or earnings reported and associates public firms with higher reporting quality. Public firms are reliant on the ECM to raise capital and have strong incentives to provide quality information to avoid outside investors to be hesitant to provide firms with capital.

The financing of private firms consists of private equity which consists of capital that is not listed on the public equity market. It usually involves funds and investors that directly invest in private firms who are deemed high net worth individuals. The general public cannot invest

in the private equity market as they can do in the public equity market. Consequently, private firms feel less reliable to provide quality information to the general public for them to assess their performance. Private firms are more concerned about their investors and in providing them with quality information through private channels. These include statements of the firm, earnings report and questions outside of regular reporting. As investors in private firms invest directly and large amounts, they require transparent communication and more information than only regular reporting. For example, information about the portfolio companies in which a firm invests (Edelman, 2017).

Forecasts set by the analyst

The different level of capital market pressure between public and private firms can also be the result of the forecasts set by analysts. Public firms are faced with the pressure of meeting or beating the forecasts set by the analysts. Private firms do not have an analyst that sets them earnings targets. Earnings targets for private firms are set by the management of the firm hence they face no pressure from beating or meeting targets set by analysts like public firms do. The consequence of private firms not meeting the earnings targets is not as negative as that of public firms that results in stock price decrease and headlines (Bierman, 2003).

Ownership structure

The difference in capital market pressure between private and public firms can also be attributed to the ownership structure. Private firms have usually a more concentrated ownership structure which makes it easier to communicate efficiently with shareholders and obtain funding via private channels such as the private equity market. For this reason, Private firms have fewer incentives to provide financial statements to outsiders to help them assess the economic performance of private firms.

Private firms are usually owned by their founders, management or by private investors. In contrast, public firms have sold all or a portion of the company to many shareholders who are entitled to part of the company's assets and profits. Private firms also referred to as privately held companies may issue stock and have shareholders. However, their shares are not traded on a public exchange or issued through IPO. Usually, public companies start of as private but become public when raising capital on a public equity market. Fama and Jensen (1983) indicate that private firms have less agency problems in comparison to public firms since the shares of these firms are often in the hands of management or shareholders who have a

special relationship with management. Private equity shareholders are more involved in the management and strategy of the firm and work together with management to achieve their aligned interest.

Agency problems

The agency problem arises where principles (shareholders) and agent's (managers) self-interest and attitude to risk are not aligned and the owners of the firm cannot observe the decision of management. The agency theory suggests for a firm to be a well-functioning firm the agency cost should be kept at a minimum. The agency costs occur due to information asymmetry which leads to lower share prices than when there is no information asymmetry. Agency problems exist when information asymmetry exists between the agent and the principal which may lead to a moral hazard. Adverse selection is another type of information asymmetry which arises when shareholders are not perfectly informed about their options hence are unable to make informed economic decisions. Agency problems are less in private firms compared to in public firms. The reason for this is that private equity shareholders own usually a big portion of the firm and thus allow them to be more involved in the management of the firm. The involvement of the shareholders in the management reduces information asymmetry as they have access to the same amount of information as the managements of the firm. Public firms' shares are owned by the general population who own a small portion in the firm and information is provided by the management to them. Shareholders in public firms base their economic decisions mainly on the information provided by the management of the firm as they are not involved in the management as shareholders in private firms are.

Hope et al (2013) claims that these differences between ownership characteristics create a natural information asymmetry leading to adverse selection where management has more information than outsiders. This in consequence leads to external stakeholders demanding information. In order to resolve the information asymmetry, public firms use financial statements to communicate financial information with shareholders and the public to reduce information asymmetry to an extent. An external party, the auditor verifies if the information provided by the firm is trustable and can be relied upon to make economic decisions.

1.3 Importance of earnings

Earnings and financial statements are used by investors to build expectations about the current and future performance of the firm. Investors base their economic decisions on expectations formed by analysing the earnings of a firm and the financial statements. For example, investors use earnings to revise their probabilities of whether the investment will result in a profit or loss which leads to the buy and sell decision. Hence, earnings are vital to firms as it portrays the performance of a firm and is useful information to investors. Earnings is the sum of accruals and net cashflows. Net cashflows are the difference between incoming and outgoing cash of the company.

Accruals are revenues and expenses incurred for which cash has not yet been received. It is believed that cash flows suffer from timing and matching problems and the use of accruals mitigates timing and matching problems. Dechow (1994) proposes that accruals play a vital role in the improvement of earnings ability to measure firm performance. Dechow et al (2004) propose that high-quality earnings will do three things; (1) reflect current operating performance, (2) it will be a good indicator of future performance, (3) it will accurately show the value of the firm. If this information is not informative to assess the performance of the firm, then investors will be unwilling to fund capital in the primary market.

The paper by Ball and Brown (1968) was one of the first papers that examined the impact of accounting information on capital markets. The understanding of the role of accounting in market response was based largely on assumptions and theory rather than empirical facts. The historical view considered earnings to be useless.

Ball and Brown (1968) concluded that earnings have an impact on investment decisions which are reflected in security prices when new information becomes available to the market. The main finding of the paper was that firms with unexpected increase in accounting earnings have positive abnormal returns and negative accounting earnings lead to negative abnormal returns.

Earnings can have an impact on stock price and hence earnings are open to potential manipulation. Earnings can be manipulated using different accounting methods as the next section on accruals and real earnings management shows.

1.4 Accrual based and Real earnings management

There are two types of earnings management, accrual based and real earnings management. Healy and Wahlen (1999) definition of accrual-based earnings management is widely used. Their definition of earnings management states the following: *“Earnings management occurs when managers use judgement 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 numbers.”* Accruals are simply the difference between net income and cash flows of a firm. Accruals are used for any revenue earned or expense incurred for which cash has not yet been received. Accrual based management therefore involves more the choice of accounting methods or estimates within the general accepted accounting principles (GAAP) to manage earnings. Whereas the proper use of accruals should be to represent the true performance of a firm, they are also used to manage earnings. An example of accrual-based earnings management is underestimating the provision for a bad debt resulting in a lower bad debt expense.

In contrast, real earnings management involves the alteration of real business transactions. Roychowdhury (2006) defines real earnings management *as management actions that deviate from normal business practices, undertaken with the primary objective to mislead certain stakeholders into believing that earnings benchmarks have been met in the normal course of operations.* Previous literature by Roychowdhury (2006), Pincus and Rajgopal (2002) have shown that these deviations could be categorised into three different methods, deviations from operating, investing, and financing activities.

The main difference between accruals-based earnings management and real earnings management is the fact that real earnings management has a direct effect on cash flows. This is not the case for accrual-based earnings management. There are therefore two ways to manage earnings, accrual based and real earnings management. However, existing literature has focussed mainly on accrual-based earnings management so this thesis will cover real earnings management among public and private firms too.

1.5 Accrual-based earnings management in public and private firms

TABLE 1

Papers on earnings management in public and private firms

Paper by;	Public firms engage more than private firms in earnings management/ ECM pressure leads to earnings management	Private firms engage more than public firms in earnings management/ Absence of ECM leads to earnings management
Burgstahler and Eames (1998)	✓	
Arnedo et al (2007)		✓
DeAngelo et al (1996)	✓	
Kasznik (1999)	✓	
Beatty et al (2002)	✓	
Beatty & Harris (1999)	✓	
Hope et al (2003)		✓
Burgstahler et al (2006)		✓
Irani and Oesch (2013)		✓

Prior literature on earnings management has predominantly focussed on accrual-based earnings management and whether it exist in public firms in the U.S. (Healy and Wahlen, 1999; Beatty et al, 2002; Hope et al, 2013). Literature on earnings management within private firms in comparison to public firms is limited, despite the economic significance of private firms (Burgstahler et al, 2006; Coppens and Peek, 2005). According to Coppens and Peek (2005) and Beatty et al. (2002) this could be due to the lack of publicly available data of private firms in the US. There is broader data availability in the EU in comparison to the US (Ball and Shivakumar, 200; Burgstahler et al, 2006).

Healy and Wahlen (1999) reviewed in their literature academic evidence on accrual-based earnings management and its implications for accounting standards and regulators. They came to the conclusion that there are three different incentives for earnings management: (1) *capital market motivations*, managers engage in earnings management to meet market expectations or before an initial public offering. (2) *contracting motivations*, compensation

contracts and debt contracts create motives for managers to engage in earnings management. Managers engage in earnings management to comply with terms in debt contracts for example when firms are close to violations of debt covenants, they tend to engage in earnings management. (3) *regulatory motivations*, an example is when firms engage in earnings management to gain import relief (Jones, 1991).

Burgstahler and Eames (1998) demonstrate that managers of publicly listed firms avoid reporting earnings below analysts' forecasted earnings. Earnings that are reported by a firm that differs from analysts' expectations can have a significant impact on stock price which potentially leads to the management of earnings by public firms. DeAngelo et al (1996) supports this claim. They concluded that public firms are pressured by capital market expectations to show earnings growth; not meeting these expectations results in a reduction in share price. The study by Burgstahler and Dichev (1997) also shows that firms manage earnings to avoid earnings decreases. The paper by Kasznik (1999) provides evidence that managers use accruals to manage reported earnings upward if earnings would fall below managements earnings forecasts thus again supporting the claims above.

One of the first studies that compared earnings management in private and public firms are the papers by Beatty et al (2002) and Beatty and Harris (1999). The study examined earnings management within publicly and privately held banks since data for private firms in any other industries were rarely available in the US. Results showed that public banks are more prone than private banks to manage earnings to avoid small losses in earnings to achieve benchmarks, such as increases in earnings. Public banks tend to use discretion in their loan loss provisions and in their recognition of security gains and losses to avoid reporting small declines in earnings (Beatty and Harris, 1999). Following these papers more literature on earnings management in private and public firms were published (Burgstahler et al, 2006; Hope et al, 2013; Vander Bauwhede et al, 2003).

Hope et al (2013) find that public firms have higher accrual quality and are more conservative in contrast to private firms which contradicts previous research in the U.S that private firms have higher accrual quality. However, accrual quality is reduced for public firms when engaged in earnings management.

Vander Bauwhede et al (2003) find evidence that both public and private Belgian firms engage in income smoothing and manage earnings to meet the benchmark target of prior year

earnings. Coppens and Peek (2005) find that private firms in the EU avoid reporting small losses. They conclude that some types of earnings management are specific to public firms due to ECM pressures since no evidence is found whether private firms avoid earnings decreases. Arnedo et al (2007) suggests ECM pressure leads to lower earnings management by public firms in Spain and private firms tend to engage more in earnings management. Burgstahler et al (2006) implies private firms engage in earnings management to minimise taxes. Ball and Shivakumar (2004) propose that one of the objectives of private firms preparing financial statements is tax determination. For this reason, private firms may have tax incentives to engage into earnings management. The results by Vander Bauwhede et al (2002) indicate that tax paying firms reduce earnings more than firms that do not pay taxes, again supporting the claim that private firms manage earnings downward for tax purposes. They also find that privately held Belgian firms that rely on bank debt tend to engage in less income decreasing as they have more incentives to report good financial performance than firms who are less dependent on external financing.

The study by Irani and Oesch (2013) find that a reduction in coverage by analysts on a firms financial reporting quality leads to an increase in the use of abnormal accruals by a firm. This could also mean that ECM pressure restrains public firms into engaging in earnings management. In contrast, Feng Chen (2008) suggests that reduced ECM pressure leads to less short-term earnings management. This study was focussed on earnings management behaviour among dual class firms and single class firms.

As seen in TABLE 1 the literature mentioned in this part provides inconclusive results. The existing literatures on earnings management in public and private firms has not been successful in clearly showing whether public or private firms engage more in earnings management. It means that the effect of ECM pressure is not clear on earnings management. There is room for further research to examine the effect of ECM pressures on earnings management.

1.6 Real earnings management in public and private firms

Prior literature on the effects of ECM pressure has mainly focussed on accrual-based earnings management. Real earnings management has not been widely studied as accrual-based earnings management (Cohen and Zarowin, 2010). There is limited existing literature on real earnings management, and most are focussed on public firms rather than private firms (Gunny, 2005; Roychowdhury, 2006). Therefore, this thesis will cover real earnings management in both public and private firms to examine the effect of ECM pressure on real earnings management. Roychowdhury (2006) proposes three ways how firms try to avoid reporting losses; (1) cashflows from operations, (2) production costs, (3) discretionary expenses. These are explained in section 3.2.

Graham et al (2005) conducted a survey on 400 executives and the results showed strong evidence of real earnings management. The results specified that managers prefer real earnings management over accrual-based earnings management. The possible reason for this is that real earnings management is more difficult to detect in comparison to accrual-based earnings management (Cohen and Zarowin, 2008). According to Graham et al (2005) the results of the survey provide evidence that is strongly consistent with the importance of meeting or beating analysts' forecasts. A significant amount of 86.3% participants of the survey believe that meeting analysts forecasts builds credibility with the capital market. Further, more than 80% believe that meeting or beating the benchmarks helps to maintain or increase the firm's stock price. Therefore, to avoid a decline in stock price managers are willing to make sacrifices in economic value to meet the targets set. Baber et al (1991) supports this. Their results show firms reducing R&D expenditures to meet earnings benchmarks. In support, Lee et al (2007) proposes that stock price reduces when a firm earnings' expectations are not met.

The study by Kim and Sohn (2013) suggests that investors and analysts rely on current period earnings when they establish expectations on future earnings. For this reason, managers engage in earnings management at the expense of future period earnings. The literature indicates that the use of real earnings management by firms has potentially negative consequences on the long-term firm value. This is supported by Li (2010) who found that the stock price of a firm reduces when investors find out that management have engaged in real earnings management. Consistent with Li (2010), Francis et al (2016) propose that the excessive use of deviation in real operations causes a higher future crash risk in stock prices.

Literature on real earnings management in private firms are limited despite the significance importance private firms hold in the economy. The following studies have studied the association between real earnings management and private firms (See; Achleitner et al, 2014; Razzaque and Mather, 2016; Tian et al; 2018; Prencipe et al; 2018).

2. Hypothesis development

2.1 Hypothesis 1

From analysing the literature in part 1.5 it can be concluded that the effect of ECM pressure is not very clear till this day. This means that the effect of ECM pressure on earnings management is not fully known. The results of existing literature are mixed, and evidence shows both private and public firms engage in accrual-based earnings management. For example, Teoh et al (1998) and Beatty et al (2002) suggest that ECM pressure has a negative effect on firms. Therefore, public firms tend to engage more in earnings management. On the other hand, Burgstahler et al (2006) shows that ECM pressure improves reporting quality and eliminates engagement in earnings management. This is supported by Irani and Oesch (2013). Their results also concluded that ECM restrain public firms in engaging in earnings management. They suggest firms that are the least likely to access equity markets are more likely to engage in earnings management. Contrariwise Vander Bauwhede et al (2002) find that privately held Belgian firms that rely on bank debt tend to engage in less income decreasing. However, tax paying firms in relation to firms that do not pay taxes engage in earnings management to reduce earnings for tax purposes. Private firms thus may have tax incentives to engage in earnings management (Ball and Shivakumar, 2003; Burgstahler et al, 2006; Vander Bauwhede et al, 2002). Public and private Belgian firms both have incentives to avoid earnings declines as it portrays a negative signal to shareholders about the firm's performance.

Therefore, results of existing literature are mixed and inconclusive, and either confined to a particular country (Vander Bauwhede et al, 2003; Ball and Shivakumar, 2005) or a single regulated industry (Beatty and Harris, 1999; Beatty et al, 2002). Hence, I hypothesise that both public and private European firms engage in accrual-based earnings management from analysing the literatures. However, both firms engage in different amounts of accrual-based earnings management due to different reasons (Coppens & Peek, 2005; Vander Bauwhede et al, 2003).

Hypothesis 1: Public and private European firms engage in different amount of accrual-based earnings management.

2.2 Hypothesis 2

The second hypothesis concerns the association between ECM pressure and real earnings management. Is there an actual relation between ECM pressure and real earnings management? If there is a relationship is this positive or negative? As mentioned before there is extensive literature on accruals-based earnings management between public and private firms. Whereas with real earnings management there is limited literature on real earnings management within public firms (Gunny, 2005; Roychowdhury, 2006). However, there is no literature on comparisons of real earnings management within public and private firms. It is important therefore to establish whether private firms engage in real earnings management or not. In order to examine the ECM pressure on real earnings management.

Hypothesis 2: Public and private European firms engage in different amount of real earnings management.

3. Research Model

3.1 Modified Jones Model (1995)- Accrual-based earnings management

To test the influence of the public equity capital market pressure on accrual-based earnings management, first the amount of accrual-based earnings management has to be determined within public and private firms. Accruals consist of two elements, non-discretionary part and the discretionary part. Discretionary accruals are used in the thesis as a proxy for earnings management. The non-discretionary part of accruals is any obligatory revenue or expense that is recorded in the books which has not resulted yet in a cash outflow or inflow. For example, a company receives a mobile phone bill for a previous period, this would be recorded as an expense accrual. When service or goods are provided but no payment has been received yet, this will be recorded as a revenue accrual. The discretionary accruals are the non-obligatory revenue and expenses of a firm that have not resulted yet in a cash outflow or inflow. The discretionary accruals are the accounting decisions the manager can influence.

The original Jones model proposed the idea of discretionary accruals as a measure for earnings management. According to Jones (1991), Healy (1985) and Dechow (1994) discretionary accruals provide the flexibility to managers to engage in earnings management as discretionary accruals can be influenced by management. The fact that discretionary and non-discretionary accruals are not distinguished within the financial statements calls for these accruals to be estimated. Jones (1991) model can be divided into three stages. The first stage involves the calculation of total accruals to estimate the non-discretionary accruals which in result helps with the estimation of the discretionary accruals. The discretionary accruals are used as a proxy for earnings management. The discretionary accruals are the accruals that the management has control over and therefore most easily subject to manipulation. Following the Jones model (1991) first the total accruals have to be estimated in order to calculate the discretionary accruals. The total accruals are to be measured as follows:

$$(1) TA_{it} / A_{it-1} = a_1 (1/A_{t-1}) + a_2(\Delta REV_{it}/A_{it-1}) + a_3 (PPE_{it} / A_{it-1}) + \epsilon_{it}$$

Where TA_{it} is the total accruals of firm i at time t scaled by lagged total assets, ΔREV_{it} is the revenues in year t less revenues in year $t-1$ for firm i , PPE_{it} is the gross property, plant, and equipment in year t for firm i , A_{it-1} is the total assets in year $t-1$ for firm i , ϵ_{it} is the error

term in year t for firm i , a_1 , a_2 , a_3 are the firm specific parameters. The estimate of industry specific parameters will be used to calculate the non-discretionary accruals in equation 3.

The total accruals are measured as follows:

$$(2) TA_{it} = \Delta CA_t - \Delta Cash - \Delta CL_t + DCL_t - DEP_t$$

Where TA_{it} is total accruals in year t , ΔCA_t is change in current assets in year t , $\Delta Cash$ is change in cash and cash equivalents in year t , ΔCL_t is the change in current liabilities in year t , DCL_t is change in debt current liabilities in year t , and finally DEP_t is depreciation.

She then calculates the non-discretionary accruals by regressing total accruals (TA) against the growth in total revenues (DREV) and the gross level of property, plants and equipment (GPPE). She argues that these accruals are not determined by DREV or PPE and are open to managements influence. The Jones model assumes that non-discretionary accruals are not constant over time. The model takes the change in revenues into consideration and adds the total amount of property, plant, and equipment. Equation 3, the non-discretionary accrual will then be subtracted from the total accruals in equation 4 to estimate the discretionary accruals. The alphas in equation 3 are the estimated regression coefficients of equation 1.

$$(3) NDA_{it} = \alpha_1 + \alpha_2 \Delta REV_{it} + \alpha_3 PPE_{it}$$

The Jones model defines discretionary accruals as the residual as follows:

$$(4) DA_t = TA_t - NDA_t$$

The drawback with the original Jones model is that ΔREV is used in the equation to estimate non-discretionary accruals. The problem here is that when revenues are manipulated during the test period it is included in the estimate of non-discretionary accruals hence earnings management will not be detected. In order to deal with this problem, the Modified Jones Model by Dechow et al (1995) will be used to detect earnings management within public and private firms. The model was developed as a modification of the original Jones model (1991). There are literatures on the shortcomings of accrual models in detecting earnings management. However, Dechow et al (1995) argues that the modified Jones model provides the most powerful test of earnings management in comparison to the other accrual models. Despite the shortcomings of the modified Jones model, it still proposes powerful solutions of detecting earnings management. Chen (2010) argues that despite the literatures on the shortcomings of the modified Jones model there is still no better alternatives to replace it. The

modified Jones model is less likely to have type two error, not identifying earnings management when it is present.

The modified Jones model (1995) is similar to the original Jones model except that ΔREC is subtracted from ΔREV to consider only cash sales. Therefore, assuming that all changes in credit sales in the event period result from earnings management. The discretionary accruals are calculated by measuring the non-discretionary accruals as a portion of the total accruals. The total accruals are measured as follows by the modified Jones model (1995):

$$(5) \frac{TA_{it}}{A_{it-1}} = a_0 + a_1 \left(\frac{1}{A_{t-1}} \right) + a_2 \frac{(\Delta REV_t - \Delta REC_t)}{A_{it-1}} a_3 \left(\frac{PPE_t}{A_{it-1}} \right) + \epsilon_t$$

Where TA_t is total accruals in year t, ΔREV_t is the change in revenue in t with to t-1, PPE_t is the gross property, plant, and equipment in period t, ΔREC_t is the change in net receivables in t with respect to t-1, and ϵ_t is the error term, a_1 , a_2 , a_3 are the firm specific parameters. The estimate of industry specific parameters will be used to calculate the non-discretionary accruals in equation 6.

The non-discretionary accruals are calculated as follows:

$$(6) NDA_t = a_0 + a_1 \left(\frac{1}{A_{t-1}} \right) + a_2 \frac{(\Delta REV_t - \Delta REC_t)}{A_{it-1}} a_3 \left(\frac{PPE_t}{A_{it-1}} \right)$$

Where NDA_t is non-discretionary accruals, ΔREV_t is revenues in year t less revenues in year t-1, ΔREC_t is net receivables in year t less net receivables in year t-1, PPE_t is gross property plant and equipment in year t, A_{t-1} is total assets in year t-1. The alphas in equation 6 are the estimated regression coefficients of equation 5. All variables are scaled by lagged total assets to reduce heteroskedasticity (Ben-Amar, 2008). Following prior studies, the absolute value of discretionary accruals of the modified Jones model is used as the measure for accrual-based earnings management (Bowen et al., 2008; Dechow et al, 1995; Van Tendeloo and Vanstraelen, 2005). The higher the absolute value for discretionary accruals the greater the exercise of accrual-based earnings management (Bowen et al, 2008).

Once the non-discretionary accruals are known the discretionary accruals can be calculated by subtracting non-discretionary accruals from the total accruals.

$$(7) DA_t = TA_t - NDA_t$$

Where DA_t is discretionary accruals in year t scaled by total assets at t-1, TA_t is the total accruals in year t scaled by total assets at t-1, and NDA_t is the non-discretionary accruals in year t scaled at total assets at t-1. The discretionary accrual is then used as the proxy for earnings management within public and private firms. The absolute value of discretionary accruals is used to run the OLS-regression below to test hypothesis 1.

$$(8) EM = \beta_0 + \beta_1 PRIVATE_{i,t} + \beta_2 ROA_{i,t} + \beta_3 LEV_{i,t} + \beta_4 SIZE_{i,t}$$

The independent variable PRIVATE is a dummy variable which has a value of one if the firm is a private firm and zero if a public firm. The coefficient of interest is β_1 . The regression includes three control variables which are explained in section 5.1.

The financial data of public and private European firms ranging from 2014 to 2018 will be obtained from the Amadeus database.

3.2 Roychowdhury (2006)- Real earnings management

The model by Roychowdhury (2006) will be used to test the influence of the public equity capital market pressure on real earnings management. The model uses three real earnings management proxies, the abnormal level of cashflows from operations (CFO), abnormal production costs and abnormal discretionary expenses. The database Amadeus doesn't contain sufficient information to estimate discretionary expenses. For this reason, only the two proxies from the Roychowdhury model are estimated. The abnormal level of cashflow from operations (CFO) and abnormal production costs will be used as the real earnings management proxy (REM) in the thesis.

Firms can manage their earnings by manipulating their sales, increasing sales in the current year to accelerate earnings. One method to do so is to move sales from the next fiscal year to the current fiscal year by increasing price discount, decreasing selling prices and by offering price discounts or more lenient credit terms to customers. This results in the temporarily increase in sales (Roychowdhury, 2006). Overproduction is another manipulation method proposed by Roychowdhury (2006). Managers of manufacturing firms can produce more goods than necessary to meet expected demand. When more goods are produced the fixed overhead production costs can be spread over a larger number of goods, in result reducing the fixed cost per good. This implies lower cost of goods sold and an increase in operating margins. Firms can reduce their reported expenses and increase earnings by reducing discretionary expenses. These expenses include R&D, advertising, and maintenance. The study by Baber et al (1991) supports this, their results show firms reducing R&D expenditures to meet earnings benchmarks.

To calculate the abnormal level for cashflow from operations and production costs the formula below will be used. To calculate the abnormal value, first the normal values have to be determined.

$$\text{Abnormal value} = \text{Actual value} - \text{normal value}$$

Cashflow from operations (CFO)

The normal level CFO is the linear function of the sales and change in sales during the year. The normal level of CFO is calculated using the estimated coefficient from the corresponding industry year model and the firm-year's sales and lagged assets (Roychowdhury, 2006). The following model will be used:

$$(9) \frac{CFO_{it}}{Assets_{it-1}} = \beta 1 \frac{1}{Assets_{it-1}} + \beta 2 \frac{Sales_{it}}{Assets_{it-1}} + \beta 3 \frac{\Delta Sales_{it}}{Assets_{it-1}} + \varepsilon_{it}$$

Where CFO_{it} is the net cash flow from operating activities minus extraordinary items and discontinued operations, $Assets_{it-1}$ is the total assets of organization i in year t, $Sales_{it}$ is the total sales of organization i in year t, $\Delta Sales_{it}$ is the mutation in sales of organization i in period t, and ε_{it} is the residual term. These variables are used to estimate the normal CFO. The abnormal CFO is equal to the residual (ε_{it}). The abnormal cashflow from operations is the *actual cashflow from operations* (CFO_{ti}) – *the normal cashflow from operations* ($NCFO_{ti}$) which is calculated using the estimated coefficient in equation 9:

$$(10) \quad ABN_CFO_{ti} = CFO_{ti} - NCFO_{ti}$$

Production costs

To calculate production costs the following financial items are used; cost of goods sold and change in inventory during the year.

$$(11) \quad PROD_{it} = \text{Cost of goods sold} + \Delta \text{Inventory in period } t$$

The normal level of production costs is equal to the sum of the normal level of cost of goods sold and inventory change. The normal production costs are estimated using the same variables as in equation 9 but with an additional variable, the lagged change in sales since the previous period. The variable cost of goods sold is not provided for most firms by Amadeus. Therefore, cost of goods sold are calculated for each firm by taking the total revenue and subtracting the operating income. The same method is followed by the study of Burgstahler et al (2006). The normal level of production costs is calculated using the estimated coefficient in equation 12:

$$(12) \quad \frac{PROD_{it}}{Assets_{it-1}} = \beta 1 \frac{1}{Assets_{it-1}} + \beta 2 \frac{Sales_{it}}{Assets_{it-1}} + \beta 3 \frac{\Delta Sales_{it}}{Assets_{it-1}} + \beta 4 \frac{\Delta Sales_{it-1}}{Assets_{it-1}} + \varepsilon_{it}$$

Where $PROD_{it}$ is the production costs of organization i in period t, $Assets_{it-1}$ is the total assets of organization i in prior year, $Sales_{it}$ is the total sales of organization i in year t, $\Delta Sales_{it}$ is the mutation in sales of organization i in period t, $\Delta Sales_{it-1}$ is the mutation in sales prior year of organization i in period t, and ε_{it} is the residual. Similar to equation 9, the abnormal production costs are equal to the residual (ε_{it}). The abnormal level of production cost is the *actual production costs* ($PROD_{ti}$) – *normal level of production costs* ($NPROD_{ti}$) as follows:

$$(13) \quad ABN_PROD_{ti} = PROD_{ti} - NPROD_{ti}$$

Following Cohen et al. (2008) a single variable REM the proxy for real earnings management is computed which is the sum of the two variables estimated. The proxy used by Cohen et al. (2008) includes discretionary expenses. However as explained before, the discretionary expenses cannot be estimated due to data availability. ABN_CFO and ABN_PROD is summed up to create the proxy for real earnings management (REM).

$$(14) \quad REM = ABN_CFO_{ti} + ABN_PROD_{ti}$$

The regression below is run on the proxy for real earnings management (REM) to test hypothesis 2. The absolute value of REM is used as the thesis is merely interested in the extend, earnings management took place. The coefficient of interest is $\beta_1 PRIVATE_{i,t}$ which is the same for both regressions. The regression includes control variables, the variables are explained in section 5.1.

$$(15) \quad REM = \beta_0 + \beta_1 PRIVATE_{i,t} + \beta_2 ROA_{i,t} + \beta_3 LEV_{i,t} + \beta_4 SIZE_{i,t}$$

The financial data of public and private European firms ranging from 2014 to 2018 will be obtained from the Amadeus database.

4. Data

In this thesis, the data used comprises of European public and private firms within the European Union. The reason being since there is a lot of information accessible for European private and public firms. Besides, public and private firms within Europe face similar accounting standards. Burgstahler et al (2006) states that the European setting provides a unique opportunity because EU accounting regulation is based on a firm's legal form rather than listing status. Therefore, private firms face largely the same accounting standards as public firms. The time range selected is a six-year period from 2014 to 2018. The database Amadeus supplied by Bureau van Dijk, is used to collect the data required to calculate both accrual and real earnings management. The database offers financial statements on both European public and private firms.

The initial sample obtained from Amadeus contains 581,188 observations. All countries that are not part of the 28 member states of the European Union are dropped from the initial sample. This results in a sample of 506,972 observations. Following from this sample, banks and insurance companies and other financial holdings with sic codes 600-699 and >899 are excluded. The reason for these types of companies being removed is that their accounting greatly differs from other firms and could potentially affect the results. The study by Burgstahler et al (2006) and by Becker et al (1998) also exclude financial institutions with sic codes between 600-699. They argue that computing the discretionary accruals for these firms is problematic.

Size restrictions are applied for firms to exclude small privately held firms to which the EU directives may not fully apply. Privately held firms are required to meet at least two of the following three criteria in every year: (1) total assets greater than € 2.5 million, (2) sales greater than € 5 million, and (3) number of employees greater than 50. Firm observations with a legal status of "in liquidation", "dissolved", "insolvency proceeding", "unknown" and "bankruptcy" are dropped from the initial sample. Following the Roychowdhury model (2006) at least 15 observations are required for each firm year observation.

Panel A includes the sample selection process that was followed to reach the final sample for the testing of hypothesis 1. The initial sample included 28 countries however The Republic of Cyprus, Estonia, and Lithuania are dropped from the initial sample as the firms for these two

countries do not disclose the required data on depreciation. Leaving the final sample for testing hypothesis 1 with 25 countries and 112,732 observations. Panel A shows the economic significance of private firms, the majority of firms are private (91.83%) and public firms account only 8.17% of the total number of firm observations. Lastly, Panel A displays the firm year observations for each of the countries and the percentage out of the full sample

Panel B shows the sample selection for the testing of hypothesis 2. The Republic of Cyprus is dropped from the initial sample as data on cashflows are not available. The United Kingdom and Ireland are dropped from the initial sample as the required data on sales for private firms are not disclosed. The following 25 countries shown in Panel B are kept in the final sample resulting in 82,191 firm-year observations for the testing of hypothesis 2.

PANEL A: Sample selection for Hypothesis 1

Amadeus sample selection	
Number of firm year observations found in Amadeus for 2014-2018	581,188
28 EU countries	506,972
<i>Less:</i> Remove financial firms (sic 600-699)	174,267
<i>Less:</i> Remove public administrative institutions (>899)	13,382
<i>Less:</i> Remove duplicates	24,905
<i>Less:</i> Remove observations >15	268
<i>Less:</i> Remove missing values for $\mathbf{TA}_{it}/\mathbf{A}_{it-1}$	92,247
<i>Less:</i> Remove missing values for $\mathbf{1}/\mathbf{A}_{it-1}$	0
<i>Less:</i> Remove missing values for $(\mathbf{\Delta REV}_t - \mathbf{\Delta REC}_t)/\mathbf{A}_{it-1}$	11,726
<i>Less:</i> Remove missing values for $\mathbf{PPE}_t/\mathbf{A}_{it-1}$	41
<i>Less:</i> Remove firm observations if total assets are below 2.5 million	223
<i>Less:</i> Remove firm observations if sales are below 5 million	25,857
<i>Less:</i> Remove firm observations if employees below 50	37,634
<i>Less:</i> Remove firm observations with a legal status of “In liquidation”, “Dissolved” “insolvency proceeding”, “unknown” and “bankruptcy”	13,690
Total number of firm year observations in the final sample	112,732

Status of firm-year observations

	Observations	Percent
Private	103,521	91.83
Public	9,211	8.17
Total	112,732	100.00

Number of firm-year observations for 25 EU member states

Country	Number of firm year observations	Percentage of total
Austria	3,936	3.49
Belgium	5,639	5.00
Bulgaria	1,265	1.12
Croatia	1,004	0.89
Czech Republic	2,890	2.56
Denmark	1,530	1.36
Finland	2,010	1.78
France	16,038	14.23
Germany	17,195	15.25
Greece	1,626	1.44
Hungary	1,477	1.31
Ireland	890	0.79
Italy	16,221	14.38
Latvia	52	0.05
Luxembourg	956	0.85
Malta	38	0.03
Netherlands	534	0.47
Poland	1,056	0.94
Portugal	1,243	1.10
Romania	2,766	2.45
Slovakia	786	0.70
Slovenia	453	0.40
Spain	10,639	9.44
Sweden	3,157	2.80
United Kingdom	19,341	17.16
Total	112,732	100.00

PANEL B: Sample selection for Hypothesis 2

Amadeus sample selection	
Number of firm year observations found in Amadeus for 2014-2018	581,188
28 EU countries	506,972
<i>Less:</i> Remove financial firms (sic 600-699)	111,742
<i>Less:</i> Remove public administrative institutions (>899)	11,317
<i>Less:</i> Remove duplicates	24,905
<i>Less:</i> Remove observations >15	243
<i>Less:</i> Remove missing values for $\frac{CFO_{it}}{Assets_{it-1}}$	79,916
<i>Less:</i> Remove missing values for $\frac{1}{Assets_{it-1}}$	0
<i>Less:</i> Remove missing values for $\frac{Sales_{it}}{Assets_{it-1}}$	35,277
<i>Less:</i> Remove missing values for $\frac{\Delta Sales_{it}}{Assets_{it-1}}$	875
<i>Less:</i> Remove missing values for $\frac{\Delta Sales_{it-1}}{Assets_{it-1}}$	18,512
<i>Less:</i> Remove firm observations if total assets are below 2.5 million	493
<i>Less:</i> Remove firm observations if sales are below 5 million	56,422
<i>Less:</i> Remove firm observations if employees below 50	71,389
<i>Less:</i> Remove firm observations with a legal status of “In liquidation”, “Dissolved” “insolvency proceeding”, “unknown” and “bankruptcy”	13,690
Total number of firm year observations in the final sample	82,191

Status of firm-year observations

	Observations	Percent
Private	76,716	93.34
Public	5,475	6.66
Total	82,191	100.00

Number of firm-year observations for 25 EU member states

Country	Number of firm year observations	Percentage of total
Austria	3,405	4.14
Belgium	4,245	5.16
Bulgaria	999	1.22
Croatia	800	0.97
Czech Republic	2,374	2.89
Denmark	1,009	1.23
Estonia	191	0.23
Finland	1,867	2.27
France	12,647	15.39
Germany	15,546	18.91
Greece	1,248	1.52
Hungary	1,537	1.87
Italy	12,058	14.67
Latvia	310	0.38
Lithuania	499	0.61
Luxembourg	377	0.46
Malta	237	0.29
Netherlands	5,457	6.64
Poland	182	0.22
Portugal	1,888	1.06
Romania	2,225	2.71
Slovakia	868	1.06
Slovenia	428	0.52
Spain	8,917	10.85
Sweden	2,877	3.50
Total	82,191	100.00

5. Empirical results and analysis

5.1 Control variables

Control variables are included in the estimation to control for other parameters which might affect earnings management. Prior literature has implied that there is an association with the level of earnings management and the following variables: size, performance and leverage. The literature by Kothari et al (2005) showed that discretionary accruals are associated with performance thus there is need to control for firm performance. Hence ROA is included to control for firm performance. The control variables SIZE, LEVERAGE, ROA are included in the regression. SIZE is the book value of total assets. LEVERAGE is measured as the long-term debt scaled by the total assets. ROA is the return on assets which is the measure of the net income scaled by total assets. The study by Burgstahler et al (2006) which also studied earnings management within public and private firms used the same control variables.

5.2 Analysis of the discretionary accruals

The table below shows the estimation results of the Modified Jones Model. According to the estimation results, all the three terms are significant at the 1% significance level. The adj. R square is the explanatory power of the model, it measures the variation in the dependent variable that can be explained by its relationship with the independent variables. The adj. R square is 0.0290 which indicates that 2.9% of the total accruals are possibly explained by the three terms in table 2. The Prob (F-statistic) of the model is 0.0000 which means that the model is significant. From the results, it can be determined that the model is sufficient to estimate the discretionary accruals for private and public firms. The coefficient of $\mathbf{1}/\mathbf{A}_{i,t-1}$ is 5.2500, the coefficient is positive which indicates that the coefficient has a positive effect on the dependent variable. The term $(\Delta REV_t - \Delta REC_t)/\mathbf{A}_{i,t-1}$ has a negative effect on the total accruals. $\mathbf{PPE}_{i,t}/\mathbf{A}_{i,t-1}$ has also a negative effect on the dependent variable, total accruals. The p-value for all the terms is 0.000 which is below the significance level of 5% and thus all three terms can be included in the model to estimate the discretionary accruals.

Table 2: Estimation results of the Modified Jones model

Independent variables	Coefficients	t	P-value
1/ $A_{i,t-1}$	5.2500***	50.02	0.000
$(\Delta REV_t - \Delta REC_t)$ / $A_{i,t-1}$	-.1286***	-30.51	0.000
PPE_{i,t}/ $A_{i,t-1}$	-1.4800***	-30.68	0.000
Constant	-.3369***	-11.43	0.000
N	112,732		
R square	0.0291		
Adj R square	0.0290		
F-statistic	1124.65		
p(F)	0.0000		

The dependent variable is total accruals scaled by lagged total assets, defined as TA_{it}/ A_{it-1} .
 ***/**/* represents the significance level at 1/5/10% significance level. N shows the firm
 year observations

5.3 Real earnings management

As mentioned in chapter 3, the 2 proxies; abnormal CFO and abnormal production costs will only be estimated from the model as Amadeus does not provide enough information to estimate discretionary expenses. With the Roychowdhury model (2006) first the normal values of CFO and production costs are required to be estimated. In order to estimate the abnormal values for CFO and production costs.

The coefficients presented in table 3.1 are used to determine the normal CFO. It can be inferred from the table that all the coefficients are significant at the 5% significance level. The adjusted R-square for this regression model is 0.6123 which means that 61.2% of the variation in the CFO is explained by the regression model. The Prob (F-statistic) of the model is 0.0000 which means that the model is significant. The coefficient $1/A_{t-1}$ and $\Delta Sales_{t-1}/A_{t-1}$ are negative but significantly related to the dependent variable. The coefficients of $Sales/A_{t-1}$ is positive and significantly related to the dependent variable.

To reach to the abnormal CFO, the normal CFO is deducted from the actual CFO. Equation (9) from section 3.2 is estimated in Stata using the coefficients from table 3.1, as seen below.

$$Normal\ CFO = -0.0116 - (711359.7) \frac{1}{Assets_{it-1}} + 0.0459 \frac{Sales_{it}}{Assets_{it-1}} + (0.0012) \frac{\Delta Sales_{it}}{Assets_{it-1}} + \varepsilon_{it}$$

The abnormal CFO is then calculated as the residual between the normal CFO and the actual CFO. The absolute value of the abnormal CFO is used in the proxy for real earnings management, to test whether private or public firms engage more in real earnings management.

Table 3.2 presents the coefficients for the production costs proxy. It can be inferred that all the coefficients are significant at the 5% level except for $1/A_{t-1}$ which is significant at the 10% level. The independent variables are jointly significantly related to the dependent variable, production costs over lagged total assets. The coefficients are negatively related except for $1/A_{t-1}$ and $\Delta Sales_{t-1}/A_{t-1}$. The adjusted R-square for this regression model is 0.0215 which means that 2.15% of the variation in the dependent variable can be explained by the regression model. Once the production costs are estimated the abnormal production costs can be estimated. The abnormal productions costs are again the residual of the normal and actual production costs.

Table 3.1 coefficients CFO proxy

Independent variables	Coefficients	t	P-value
1/ A t-1	-711359.7***	-24.10	0.000
Sales /At-1	.0459***	202.41	0.000
Delta Sales t/At-1	-.0012***	-4.52	0.000
Constant	.0116***	12.55	0.000
N	82,191		
R-square	0.6125		
Adj. R square	0.6123		
F-statistic	43298.35		
p(F)	0.0000		

The dependent variable is cash flow from operations scaled by total assets. ***/**/* represents the significance level at 1/5/10% significance level. N shows the firm year observations.

Table 3.2 coefficients Production costs proxy

Independent variables	coefficients	t	P-value
1/ A t-1	115019.4*	2.05	0.040
Sales t-1/At-1	-.0087***	-11.05	0.000
Delta Sales t/At-1	-.0023**	-2.62	0.009
Delta Sales t-1/At-1	.0093***	9.72	0.000
Constant	-.0470***	-24.32	0.000
N	82,191		
R-square	0.0216		
Adj. R square	0.0215		
F-statistic	454.47		
P(F)	0.0000		

The dependent variable is production costs scaled by lagged total assets. ***/**/* represents the significance level at 1/5/10% significance level. N shows the firm year observations.

Table 4: Descriptive statistics.

Panel A, B, and C show the descriptive statistics for hypothesis 1. Panel D, E and F show the descriptive statistics for hypothesis 2. EM is 22.49% for private firms and 49.43% for public firms inferring that public firms engage more in accrual-based earnings management. In compare, REM is higher for private than public firms. Panel C and F show that the differences in means and medians of the sample significantly differ from zero.

ACCRUAL BASED EARNINGS MANAGEMENT

Panel A: Descriptive statistics private firms

Variable	N	Mean	Std. Dev.	Min.	Q1	Median	Q3	Max.
EM	103,521	.2249	.6405	.0012	.0332	.0778	.1697	5.4071
ROA	103,521	.0451	.0836	-.2516	.0073	.0353	.0761	.3664
SIZE	103,521	19.0794	1.4977	16.1742	18.0511	18.8286	19.8551	24.0784
LEV	103,521	.1067	.1732	0	0	.01479	.1459	.8025

Panel B: Descriptive statistics public firms

Variable	N	Mean	Std. Dev.	Min.	Q1	Median	Q3	Max.
EM	9,211	.4943	4.0439	.0001	.0363	0.0834	.1802	9.3724
ROA	9,211	.0172	.1214	-.5933	.0014	.0309	.0701	.3098
SIZE	9,211	19.2146	2.0059	15.5612	17.6928	18.9399	20.5138	24.8034
LEV	9,211	.1424	.3113	0	.0040	.0857	.2137	.6328

Panel C: P-values of the difference of the mean and median between private and public firms

	EM	ROA	SIZE	LEV
Mean	0.0000***	0.0000***	0.0000***	0.0000***
Median	0.0000***	0.0000***	0.0000***	0.0000***

This table provides the descriptive statistics of private and public firms. EM is the absolute value of discretionary accruals; ROA presents the return on assets which is the measure of the net income scaled by total assets. LEV is the leverage, measured as the long-term debt scaled by the total assets. SIZE is measured as the book value of total assets. The t-test is used to test the difference in means and medians. All variables are winsorized at a 1% and 99% level. ***/**/* represents the significance level at 1/5/10% significance level.

REAL EARNINGS MANAGEMENT

Panel D: Descriptive statistics private firms

Variable	N	Mean	Std. Dev.	Min.	Q1	Median	Q3	Max.
REM	76,716	.1586	.1525	.0166	.0764	.1147	.1735	.9792
ROA	76,716	.0479	.0818	-.2398	.0083	.0366	.0783	.3599
SIZE	76,716	19.1217	1.5665	16.1176	18.0522	18.8231	19.8925	24.4999
LEV	76,716	.1061	.1664	0	0	.0191	.1515	.7654

Panel E: Descriptive statistics public firms

Variable	N	Mean	Std. Dev.	Min.	Q1	Median	Q3	Max.
REM	5,475	.1442	.1429	.0165	.0679	.1053	.1597	.9792
ROA	5,475	.0281	.0901	-.2398	.0008	.0278	.0662	.3599
SIZE	5,475	19.3818	2.0884	16.1176	17.7580	19.0633	20.7067	24.4999
LEV	5,475	.1409	.1557	0	.0085	.0916	.2216	.7654

Panel F: P-values of the difference of the mean and median between private and public firms

	REM	ROA	SIZE	LEV
Mean	0.0000***	0.0000***	0.0000***	0.0000***
Median	0.0000***	0.0000***	0.0000***	0.0000***

This table shows the descriptive statistics of private and public firms. REM = Real earnings management proxy, the absolute value of $|ABN_CFO + ABN_PROD|$. ABN_CFO = abnormal cashflow from operations. ABN_PROD = abnormal production costs. ROA presents the return on assets which is the measure of the net income scaled by total assets. LEV is the leverage, measured as the long-term debt scaled by the total assets. SIZE is measured as the book value of total assets. The t-test is used to test the difference in means and medians. All variables are winsorized at a 1% and 99% level. ***/**/* represents the significance level at 1/5/10% significance level.

5.4 Correlation matrix

The correlation coefficients of the regressions are presented in this section. Table 5 presents the results for the Pearson correlation and the Spearman correlation matrix for both accrual-based earnings management and real earnings management. The correlation coefficient provides an indication of the direction of the relationship between the variables before the actual regression analysis is conducted. The difference between the Pearson and Spearman correlation matrix is that the Pearson correlation evaluates the linear relationship between two continuous variables. Whereas the spearman correlation is often used to evaluate the relationships involving ordinal variables.

The Spearman correlations are presented above the diagonal line and the Pearson correlations below the diagonal line. Both the Spearman (-0.0142) and Pearson (-0.0102) correlation indicate a negative relation between the coefficient of EM and PRIVATE at the 1% significance level. With the Spearman correlation indicating a stronger correlation between the two variables. It can be interpreted from the strong correlation that public firms engage more in accrual-based earnings management. Furthermore, all the control variables are significantly related with the EM index (Spearman). With the Pearson correlation matrix, all the control variables are also significantly related with EM.

Both the correlation matrix shows that ABN_CFO and ABN_PROD is correlated positively with the REM index. The positive correlation between ABN_CFO, ABN_PROD and REM means that whenever the ABN_CFO and ABN_PROD increases, real earnings management also increases. The Spearman and Pearson correlation matrix indicates a positive relation between PRIVATE and REM. Both correlations are significant at the 5% level. With the Spearman correlation indicating a stronger correlation (0.0368) implying that private firms engage more in real earnings management. The control variables are significantly related with the REM index (Spearman and Pearson).

Table 5:**PANEL A: Accrual based earnings management**

	EM	PRIVATE	SIZE	ROA	LEV
EM		-0.0142***	-0.0415***	-0.0266***	0.0849***
PRIVATE	-0.0102***		-0.061**	0.0410***	-0.1043***
SIZE	-0.0649***	-0.0240***		-0.0520***	0.0366***
ROA	-0.0134***	0.0690***	-0.0109***		-0.1635***
LEV	0.0494***	-0.0462***	0.0787***	-0.1548***	

The table provides the Spearman (above) and Pearson (below) correlations for accrual-based earnings management. PRIVATE is a dummy variable which has a value of one if the firm is private and zero if public firm. EM is the absolute value of discretionary accruals. ROA presents the return on assets which is the measure of the net income scaled by total assets. LEV is the leverage, measured as the long-term debt scaled by the total assets. SIZE is measured as the book value of total assets. ***/**/* represents the significance level at 1/5/10% significance level.

PANEL B: Real earnings management

	REM	PRIVATE	ABN_CFO	ABN_PROD	SIZE	ROA	LEV
REM		0.0368***	0.7308***	0.6436***	-0.1087***	0.0690***	-0.1656***
PRIVATE	0.0236***		0.0189***	0.0439***	-0.0216***	0.0495***	-0.0998***
ABN_CFO	0.6838***	0.0050		0.0728***	-0.1110***	0.0861***	-0.1346***
ABN_PROD	0.7672***	0.0317***	0.0835***		-0.0548***	-0.0080**	0.0940***
SIZE	-0.0583**	-0.0403***	-0.0758***	-0.0260***		-0.0347***	0.0192***
ROA	0.0802***	0.0590***	0.1288***	0.0031***	-0.0024		-0.1416***
LEV	-0.1086***	-0.0527***	-0.1063***	-0.0603***	0.0613***	-0.1418***	

The table provides the Spearman (above) and Pearson (below) correlations for real earnings management. PRIVATE is a dummy variable which has a value of one if the firm is private and zero if public firm. REM is the absolute sum of ABN_CFO and ABN_PROD. ROA presents the return on assets which is the measure of the net income scaled by total assets. LEV is the leverage, measured as the long-term debt scaled by the total assets. SIZE is measured as the book value of total assets. ***/**/* represents the significance level at 1/5/10% significance level.

5.5 Regression

Table 6 shows the results of the regressions for accrual-based earnings management and real earnings management. The results from table 6 are analysed to answer hypothesis 1 and 2 below. The two hypotheses assist in answering my research question set in section 1 of the thesis. Private and public firms are used to document the effect of the public equity capital market pressure on earnings management.

Hypothesis 1: Public and private European firms engage in different amount of accrual-based earnings management.

Hypothesis 2: Public and private European firms engage in different amount of real earnings management.

Research question: *Does Public Equity Capital Market pressure have an effect on the engagement of firms in earnings management?*

The coefficient of the PRIVATE variable for EM is -.0219. The coefficient is significant at the 5% level. It can be inferred from the coefficient that public firms engage more in accrual-based earnings management. The R-square for the regression EM is 0.0073 meaning that 0.73% of the variation in the engagement of accrual-based earnings management is explained by the independent variable PRIVATE. Hypothesis 1 can be accepted, both firms engage in accrual-based earnings management but in different amount of accrual-based earnings management. Public firms, however, manipulate accruals more in relation to private firms. The control variables are significant at the 1% significance level, except for the control variable ROA. There is a positive relation between the control variables ROA, LEV and EM.

The results are consistent with prior research by Beatty et al (2002) and Beatty and Harris (1999) who found that public banks in the US engage more in earnings management. It can be said that firms are pressured by the equity capital market to engage in earnings management to meet its expectations. To support, Burgstahler and Eames (1998) demonstrated that managers of publicly listed firms avoid reporting earnings below analysts' forecasted earnings. Earnings that are reported by a firm that differs from analysts' expectations can have a significant impact on stock price. Jensen (2004) states firms engage in earnings management to meet earnings expectations to have their stock price increased by

the market. The pressure of meeting earnings expectations leads firms to the management of earnings. This is supported by DeAngelo et al (1996) who stated that managers overestimate future earnings when growth prospects fade. The results are not in line with the research by Burgstahler et al (2006). Burgstahler et al (2006) documents private firms exhibiting higher levels of earnings management. One of the explanations provided by Burgstahler et al (2006) is that the external financing in the public equity capital market demands from firm's information that is useful in evaluating the firm accurately. The engagement in earnings management by firms reduces the usefulness of this information.

Hypothesis 2 is tested by running a regression on the proxy REM for real earnings management. The results are presented in table 4. Hypothesis 2 can be accepted, both firms engage in real earnings management. The results show that private firms engage more in real earnings management. The R-square for the regression REM is 0.0194 meaning that 1.94% of the variation in the engagement of real earnings management is explained by the independent variable PRIVATE. The coefficient of PRIVATE is .0085, inferring that private firms engage more in real earnings management. The coefficient is significant at the 1% level. The control variables are all significant related with REM at the 1% significance level.

From analysing the results for hypothesis 1, it can be inferred that the public equity capital market pressure leads firms to engage in accrual-based earnings management. This is not the case with real earnings management. The possible explanation could be that real earnings management has a bad impact on the firms future cashflows. Roychowdhury (2006) states that it can reduce firm value as this form of earnings management increases profits in the current period but in the long term it will negatively impact the firms cash flows.

Firm value is vital to firms as it helps the market to assess the performance of public firms (Mahendra et al., 2012). Fama (1978) states that the value of the firm is related to the firm's stock price. The equity capital market expects high firm value, public firms are pressured to achieve/obtain their firm value by not engaging in real earnings management. If the market detects real earnings management it will respond negatively, by reducing the stock price of the firm. Public firms may for this reason not participate in real earnings management as its more costly (Enomoto et al, 2012).

The findings are not in line with the research by Jensen (2004) and Graham et al (2005) who concluded that firms are willing to offer the value of their firm just to meet earnings expectations of the capital market. Furthermore, the research by Gunny (2010) find better performance by firms who engage in real earnings management than firms who do not engage in real earnings management. However, the results of this thesis find that the public equity capital market prevents the use of real earnings management as it has negative outcomes for firms in the long run.

Table 6:

$$\text{OLS Regression: } EM/REM = \beta_0 + \beta_1 \text{PRIVATE}_{i,t} + \beta_2 \text{ROA}_{i,t} + \beta_3 \text{LEV}_{i,t} + \beta_4 \text{SIZE}_{i,t}$$

	EM	REM
	Coefficient (T-stat)	Coefficient (T-stat)
N	112,732	82,191
Constant	.8005***	.1808***
	(30.96)	(10.34)
PRIVATE	-.0219**	.0085***
	(-3.00)	(3.98)
ROA	0.0410	.1197***
	(-1.74)	(17.80)
LEV	.3837***	-.0889***
	(3.95)	(-27.05)
SIZE	-.0299***	-.0048***
	(-23.04)	(-14.34)
R²	0.0073	0.0194
Adj R²	0.0072	0.0193

This table provides the results of the OLS regression for accrual-based earnings management (EM) and real earnings management (REM). The sample for EM consists of 112,732 firm year observations relating to the period 2014-2018. The sample for REM consists of 82,191 firm year observations relating to the period 2014-2018. PRIVATE is a dummy variable which has a value of one if the firm is private and zero if public firm. REM is the absolute sum of ABN_CFO and ABN_PROD.

The control variables ROA, LEV, and SIZE are included in the regression. ROA presents the return on assets which is the measure of the net income scaled by total assets. LEV is the leverage, measured as the long-term debt scaled by the total assets. SIZE is the book value of total assets.

***/**/* represents the significance level at 1/5/10% significance level.

6. Conclusion

This thesis aims to examine the effect of public equity capital market pressure on earnings management. Public and private European firms are examined to establish the relation between public equity capital market pressure and earnings management. Accrual-based and real earnings management are both examined. Accrual-based earnings management is examined using the modified Jones model (1995). The Roychowdhury model (2006) is used to detect real earnings management.

The analysis illustrates that private firms engage more in real earnings management and public firms in accrual-based earnings management. It can be concluded that the public equity capital market pressure acts as an incentive for firms to engage in accrual-based earnings management. This seems not to be the case concerning real earnings management. The public equity capital market pressure does not incentivize firms to engage in real earnings management. Real earnings management has negative consequences on the long-term value of firms (Roychowdhury, 2006). Further research can analyse to what extent this actually hold. Are public firms willing to sacrifice their long-term value by engaging in real earnings management? The form of market pressure found in this thesis is to meet performance expectations set by the capital market. The capital market pressure causes firms to engage in opportunistic behaviour. The finding is not consistent with the study by Burgstahler et al (2006) who argues that market pressure acts as an incentive for firms to provide high quality information to the market.

This research contributes to previous literature by analysing the effect of capital market pressure on accrual based and real earnings management. A new insight provided is the analysis of real earnings management within European private firms which is an understudied area in literature. The research also contributes to the academic debate on whether capital market pressure motivates firms to engage in earnings management. The findings are of interest to capital market regulators. Capital markets should not incentivise firms to manage their earnings solely to meet market expectations. Regulators should establish adequate policies to protect investors and incentivise firms to report high quality information to the market. The findings are also to the importance of auditors and investors. Users of financial statements should take into consideration when making decisions that earnings information may not provide truthfully the performance of a firm.

This research has some limitations. Firstly, the distinction between public and private firms are used as a proxy for the public equity capital market pressure. This decision was made following the paper by Burgstahler et al (2006) who also used the distinction between public and private firms as proxy for capital market pressure. This can be seen as a weak proxy, as the public equity capital market pressure can be influenced by many more factors. For example, another proxy could be analyst forecasts. Further research could include more factors for the public equity capital market pressure to generate more valid results.

Secondly, this thesis focussed on European private and public firms. The results might not be valid to non-European firms. Further research could examine the effect that public equity capital market pressure has on earnings management in non-European firms. Is there a difference between the engagement in earnings management between European and non-European public and private firms? This would enhance the external validity and generalizability of the results. Thirdly, due to the financial data unavailability for European firms the third proxy for the Roychowdhury model was unable to be estimated. This could lead to the decline in the reliability of the results.

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Appendix: Libby Boxes

