



Master Thesis Accounting & Auditing

Earnings Management and tax incentives in European private firms and the differences with public companies

Abstract

This study examines the effect of decreases in corporate tax rates on the portrayed levels of earnings management of privately owned companies across the European union, and the difference with publicly listed companies. All data was gathered from the Bureau van Dijk database and the Tax foundation. The levels of earnings management were estimated using the Jones and Modified Jones model by estimating the level of discretionary accruals and were analysed by using a difference in difference research design. These models show that in the year in which a tax advantage can be obtained both private and public companies do manage earnings upwards. These levels of earnings management are not significantly different. Public companies however, do manage earnings downwards more than private firms in the year prior to the tax decrease, to reverse the increased accruals in the year of the tax decrease. Privately held companies do perform earnings management to obtain tax advantages. This level is similar to publicly listed companies, but public companies do perform the reversal of accruals more clearly.

Student: Jonathan Paul Rijdsdijk

Student number: 433106

Supervisor: Dr. J. Pierk

Second assessor: Dr. F.M. Elfers

“The content of this thesis is the sole responsibility of the author and does not reflect the view of either the supervisor, second assessor, Erasmus School of Economics or Erasmus University.”

Table of Contents

1.	Introduction	2
1.1	Relevance	4
1.2	Limitations.....	4
1.3	Further research	4
2.	Literature	5
2.1	Earnings management.....	5
2.2	Agency theory	5
2.3	Accrual and real earnings management	6
2.4	Earnings management and resource allocation.....	7
2.5	Incentives for earnings management	8
2.6	Capital market incentives	8
2.7	Contracting incentives	8
2.8	Regulation incentives	9
2.9	Summary.....	9
3.	Public and private firms	10
3.1	Tax incentives for earnings management	10
3.2	Book-tax conformity.....	11
3.3	Hypotheses	12
4.	Data	14
4.1	Sample selection	14
5.	Methodology	15
5.1	Earnings management.....	15
5.2	Jones model	15
5.3	Modified Jones model	16
5.4	Staggered Difference-in-Difference design	17
6.	Results	19
6.1	Summary statistics	19
6.2	Requirements regression.....	20
6.3	Hypotheses 1	21
6.4	Hypotheses 2	24
6.5	Robustness test	27
6.6	Results summary.....	28
7.	Conclusion.....	29
7.1	Limitations.....	30
7.2	Future research	31
8.	References	32
	Appendix A.....	34

1. Introduction

This thesis examines the existence and severity of earnings management by privately-owned companies to minimize tax expenses. Previous research has shown on numerous occasions that publicly traded firms do manage earnings to obtain a certain reporting objective (Burgstahler and Eames, 2003; Burgstahler and Dichev, 1997). Prior research has also looked at the tax incentives for public companies to perform earnings management and found convincing evidence that public firms do manage earnings to obtain tax advantages (Guenther, 1994; Maydew, 1997).

There is, however, very little evidence on the actions of privately held companies on the subject of earnings management and tax incentives. There is discussion in this already very small pool of research of whether capital market incentives provide more incentives or more earnings informativeness and therefore a lower level of earnings management, Burgstahler et al. (2006) find that private firms do manage earnings more, whereas Coppens and Peek in 2005 find that private firms do not engage in earnings management where public companies do engage. Burgstahler et al. (2006) find in their research that high book-tax alignment countries see lower levels of earnings management with higher levels for private companies, as the capital market does not punish them for lower-quality earnings. Coppens and Peek (2005) find in their research that the differences in earnings distributions in high alignment countries are not significantly different for public and private companies. This prior research gives mixed results.

To achieve a better understanding of the topic of earnings management and the possible existence of tax incentives for private firms, the following sub-questions will be answered in the literature review:

- *What is earnings management?*
- *What are the dangers of earnings management?*
- *What are the possible motives for earnings management?*
- *What can explain the difference in levels of earnings management between private and public firms?*

This thesis uses a decrease in the corporate tax rate to analyze the differences in reactions of public and private firms to obtainable tax advantages. The reason being that management seeks to maximize firm value, and should therefore minimize tax expenses. This thesis assumes that all firms try to maximize firm value and that therefore all firms do have an incentive to minimize tax expenses. In this thesis, this motivation will be further researched for private European companies. The research question is:

Do European private firms manage earnings because of tax incentives?

This research question will be answered using two hypotheses:

H1: European private firms do not use earnings management to obtain tax advantages.

H2: European private firms do react similarly to tax incentives for earnings management as public firms.

In this research, the staggering decreases of corporate tax rates in the periods between 2013 and 2020 in European countries are used to analyze the effect of tax incentives on the display of earnings management in a company and the differences between the group of the public companies and the private companies. This thesis uses financial data of the biggest European private and public companies from 2010-2020 to estimate the earnings management levels using the Jones model and the Modified Jones model.

The results of these analyses show a significant increase in discretionary accruals in the years where a tax advantage can be obtained. Meaning that private firms do manage earnings to minimize their tax expenses. There is however no significant evidence that private firms do plan ahead to reverse the increased discretionary accruals in the years prior to and after the obtainable tax advantage. This is the case in the group of public companies, where a significantly downwards managing of earnings is seen in the year prior and after the obtainable tax advantage. Further analysis finds that in the year of the tax decrease, the levels of earnings management do not differ significantly between the group of the publicly traded firms and the privately held companies. In the other years, publicly listed companies are seen to use more discretionary accruals than private companies.

These results can be interpreted as follows: privately held companies try to maximize firm value by increasing income in the year with a lower tax rate, but they are less incentivized to reverse the effect of the increased accruals in one year in the years prior and after. Public companies do perform the same levels of earnings management when a tax advantage can be obtained, but as they are due to the increased monitoring that comes with the involvement in the stock market, they are incentivized to reverse the increased accruals in the years with the tax advantages to the years prior and after. Prior research already suggested that the monitoring of the equity market meant less freedom to manage earnings. This research does agree that the monitoring of the stock market affects the display of earnings management, but just on the reversal action. Both public and private companies do manage earnings on the same level to obtain tax advantages, public companies just reverse the effect more clearly.

A different explanation for this effect can be found in the differences in reporting standards. In Europe, listed companies need to report under International Financial Reporting Standards (hereafter IFRS) and most private companies do report under local GAAP. For this difference was not controlled. However, as seen in the research, the levels of earnings management do differ in some periods and in other periods there is no significant difference. This might mean that this difference in reporting language is not

significant. This was also found in prior research, Jeanjean and Stolowy (2008) find in their research that shifting from local GAAP to IFRS did not mean a difference in earnings management pervasiveness. This was found by analyzing the distribution of earnings and the tendency to avoid small losses. However, this still needs further research.

1.1 Relevance

Previous research on the tax incentive for earnings management has focussed on the publicly traded companies and previous research on the differences between public and private firms was inconclusive on the levels of earnings management and the incentives which were in play. The answer to this research question is relevant, because of the unknown incentives for private firms to perform earnings management, and the possible differences in tax incentives and ability to portray earnings management for public and private firms could be subject to different characteristics. This research will investigate the existence of tax incentives for earnings management, the differences in reactions to these incentives of both publicly listed and privately held firms. There is a gap in the literature on this subject that this research will fill.

The economical relevance of this research is two-fold. First from the auditing perspective. This thesis might help auditors understand the reasons for earnings management for both public and private firms and how corporate tax rates changes could influence the portrayed levels of earnings management. Second on the investors' and analysts' perspectives. In the case of a tax rate decrease, for the valuation of the firm's investors and analysts might need to make some adjustments to the earnings number, as there might be inflated or deflated earnings numbers in the years surrounding the tax rate decrease. This thesis might help them understand the differences and the changes that have to be made in order to obtain a correct valuation.

1.2 Limitations

This research suffers from a limitation. This is the accuracy of the discretionary accrual models in predicting the true amount of discretionary accruals to obtain a level of earnings management. These models do not always perform as well as is said. Jackson (2018) finds that these models often take parts of non-discretionary accruals and put them under discretionary accruals. This limitation is known and the risk is at an acceptable level. This is due to the large sample size, exogenous effect of the tax rate change, the clear mechanism in how the independent variable influences the dependent variable, and the difference in difference research design.

1.3 Further research

This limitation in combination with the reporting standard difference could be a lead for further research. Are the differences between public and private companies due to differences in reporting standards or not? Further research could also use different models to find earnings management as the distribution of earnings and accounting analysis to mitigate the limitations of discretionary accrual models.

2. Literature

In this part of the thesis the available literature and theoretical background on earnings management will be discussed. First will be described how researchers define earnings management. Next, this literature review will look at the origin and consequences of earnings management. Lastly, the last paragraphs will discuss the standard incentives for earnings management.

2.1 Earnings management

Earnings management has been studied before. Many studies have different definitions for this term, but in this research, the definition of Healy and Wahlen (1999) will be used and it goes as follows:

“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 numbers” (Healy and Wahlen, 1999, p. 368).

Healy and Wahlen write in their research that this definition in itself is a reason for discussion. The use of judgment of management can apply to the choice of accounting methods for certain transactions and the postponement of certain costs or benefits. All these possibilities affect the earnings number of a firm. The second comment that can be made is the negative tone of the definition, the words “Mislead” and “Influence” hint that there can only be such thing as “Bad” earnings management. This however, is not the case. Management can also use their judgment in financial reporting to make the financial statements more information-rich for the users of these financial statements (Healy and Wahlen, 1999).

In their research, they describe “Bad” earnings management as the possible costs of earnings management, in the form of a potential misallocation of assets that has earnings management as its main driver. The “Good” side of earnings management is linked to the benefits side, as this comes with the possible improvement of managers’ communication of private information about the company. As said in the prior paragraph, Healy and Wahlen (1999) focus mainly on the cost side of earnings management, as they exclude the decisions of management to use accounting judgment to improve the flow of information to the stakeholders.

2.2 Agency theory

Jiraporn et al. (2008) describe in their paper that the understanding of both “Good” and “Bad” earnings management can be obtained by looking at the agency theory perspective. The agency theory describes the relationship between a principal and an agent and how to optimize the contract set between the two parties. In the case of earnings management, the shareholders of the company function as the principal and the management of the company can be seen as the agent. Eisenhardt (1989) describes in her paper that this relation and this contract can be partly based on the information systems that the firm has in place. This can be the case when the principals use outcome-based contracts to incentivize the agent to

co-align its preferences and behavior to the will of the principals. The agents' behaviour is seen in the agency theory as self-centered and aimed at its own interest. This is not a problem when all actions of the agent are directly visible, but when the agent has a certain discretion over his work, there is an information asymmetry. This information asymmetry can be partly mitigated by installing the correct contract. Monitoring the information systems put in place and rewarding the agent for the wanted behavior are ways for the principal to stay in control.

If management can move in the direction of their own preferences and still satisfy the needs of the principal (shareholders) by performing earnings management, this can be seen as opportunistic earnings management. This is more likely to occur when the agency costs to monitor the agent are higher, as the agent is less likely to be punished for the earnings management (Eisenhardt, 1989). This is considered to be "Bad" earnings management, whereas management can also use their discretion to display information that was previously hidden from the stakeholders of the financial statements from the company. Jiraporn et al. (2008) find in their research that managers often use their discretion to show the true value of earnings to the public, even when agency costs are high. So not all earnings management is opportunistic, but it is often also beneficial to the stakeholders (principals).

2.3 Accrual and real earnings management

Graham et al. (2006) issued a survey on how financial executives report earnings and how they make choices in accounting and business. The financial executives reported back in the survey that the earnings number was the most important number reported to the outsiders of the firm. Earnings can be managed in two different ways. These two ways can be shown according to the following equation:

$$\text{Earnings} = \text{Total Accruals} + \text{Net Cash flow}$$

As seen in the equation two parts make up the earnings number, namely the accruals and the cash flow. The management of a firm can manage both these factors to influence earnings.

The first way is by manipulating the total accruals of the firm as seen in the equation and therefore increasing or decreasing income, without actually touching cash flow. This exists because of the way modern-day accounting systems work, as accountants add value to cash accounting by adding accruals as a better measure for performance. Revenues and expenses are recorded when they occur, and not when the cash is received or paid. Using this type of accounting, the cash flows do not match with the earnings numbers, as there is a timing problem in payments. By using accruals, this timing problem is mitigated and solved, because the accruals give information on the expected cash flows. This first method of earnings management is called accrual earnings management. Management can do this for example by delaying write-offs, shifting, and changing provisions (Graham et al., 2006).

The second-way earnings can be managed is called real earnings management. This is according to the research of Graham et al. (2006) the way earnings are managed the most. 80% of executives respond in

the survey that they would rather decrease discretionary spending, even when they know that decreasing this type of spending can decrease total value. This is just to achieve certain predefined earnings goals set by financial analysts or bonus contracts. Roychowdhury (2006) finds in his research that managers manipulate real economic activities to influence their earnings number to meet their reporting goals. He finds evidence in his research that managers give pricing discounts to increase sales and overproduce to decrease costs of goods sold.

Shareholders indicate that they would prefer that management of a company would manage earnings by altering accounting measures or accounting assumptions, because these choices do not actually affect the company's prospects and future earnings. Researchers do usually examine earnings management based on the use of accruals (Healy and Wahlen, 1999) and in this thesis, these accruals will also be used as a proxy for earnings management.

2.4 Earnings management and resource allocation

In their literature review, Healy and Wahlen (1999) describe the problem that arises from the existence of earnings management. As said in the definition explanation that their literature is aimed at the "Bad" side of Earnings Management, as they called the cost aspect of earnings management: the potential misallocation of resources. They describe that investors and analysts view earnings information as more informative than cash flow information, and mention the research of Dechow in 1994, where she uses both earnings information and the cash flow information as measures of firm performance. She finds in her research that earnings numbers are a much better predictor of firm performance than cash flow information in the short run. Over the long run, the information content of cash flow grows and becomes more important for firm performance.

Healy and Wahlen (1999) describe a trend in research that financial investors and analysts do identify earnings management and discount the firm performance accordingly. Wahlen (1994) describes in his research that investors use unexpected changes in bad performing loans and loan write-offs in seeing firms discreetly managing the loan loss provisions on their balance sheet. This suggests that investors do see when managers use their discretion to manipulate earnings.

But this is not the only trend that Healy and Wahlen (1999) identify. The new trend suggests that investors do not always discover the discretion exercised by management, as firms use income-increasing accruals in the year prior to an initial public offering to inflate the expectations of possible investors to increase the offer price. These firms who use the income-increasing accruals receive negative stock price reactions from the investors when they reverse the initially too high level of earnings (Teoh et al., 1998). This indicates that investors do not always see through the earnings management and possibly misallocate their resources.

2.5 Incentives for earnings management

Healy and Wahlen (1999) review literature in their paper and come up with three different motives for earnings management, namely: capital market incentives, contracting incentives, and regulation incentives. Capital market incentives occur when managers use earnings management to influence the capital market on stock prices in instances of IPO's, equity offers, and meeting or beating financial analysts' forecasts. The second incentive is contracting based. This form of motivation comes in different types of contracts. The two biggest are the debt contracting motivation and the management compensation contract motivation. The third and last motivation is the regulation incentive. This motivation can be split into two parts: the industry regulations and the anti-trust regulations.

2.6 Capital market incentives

The capital market incentive is based on the notion that managers can use their discretion in financial reporting in managing earnings to influence the short-term stock price (Healy and Wahlen, 1999). This is in line with prior research as Ball and Brown (1968) stated in their research that accounting numbers are useful and reflected in the stock prices of companies. They tested the abnormal share returns in relation to the announcement of earnings and the unexpected part of earnings. They find in their research that firms with unexpected earnings increases (decreases) have positive (negative) abnormal returns.

Healy and Wahlen (1999) state in their paper that prior research indicates that there are situations in the capital market when management has incentives to use income-increasing or income-decreasing accruals to manage the outcome of the situation. This line of research looks at the incentives for capital market transactions. Perry and Williams (1994) describe in their research that unexpected accruals, which in this case is a proxy for earnings management, are negative in the situation of a management buyout. Other studies showed the relationship between income increasing accruals and an upcoming period with an equity offer and initial public offerings and income decreasing accruals after this period (Teoh et al., 1998). The other line of research looks at the expectations of the capital market. Burgstahler and Eames (2003) find in their research that managers manage earnings to meet analysts' forecasts of the EPS for the company. The analysts covering these firms are not always able to uncover the firms that engage in earnings management they find. Burgstahler and Dichev (1997) find in their research that firms also manage earnings to avoid losses and earnings decreases. They use the difference in actual earnings numbers and the normalized level of earnings.

2.7 Contracting incentives

The second line of incentives for earning management mentioned by Healy and Wahlen (1999) is the line of contracting incentives. They state that accounting data is used to monitor and regulate the contracts of a company between the firm and the stakeholders of the contracts. There are two types of contracts in which they find the motivations for earnings management: management compensation contracts and debt contracts.

Guidry et al. (1999) describe in their paper that managers do engage in earnings management when they can influence their outcome under the compensation contracts. In their research, they describe two instances in which management has incentives to defer income to a later period. The first instance is when management understands that the earnings target for the bonus contracts is not going to be met and therefore management will defer income to a later period to increase possibilities of meeting the earnings target in the later period and therefore receiving a bonus. The second instance is when management has already received the maximum bonus in this period. Because the earnings number is already sufficient for this period, income can be deferred to the next period. This is in line with the compensation contracting motivation of Healy and Wahlen (1999), where managers use earnings management to increase their earnings-based bonus system.

Dichev and Skinner find in their research (2002) that firms are likely to engage in earnings management to keep the financial ratio's just above the covenant thresholds to avoid default. This relation becomes less significant when the lender has been in default before. This is in line with the debt contract motivation of Healy and Wahlen in their research (1999).

2.8 Regulation incentives

The last line of incentives to engage in earnings management is the line of regulation incentives. . Their research strongly suggests that firms manage earnings to mitigate industry regulations and that firms that are at risk of public scrutiny or an anti-trust investigation have incentives to manage earnings to appear less profitable.

In their research Healy and Wahlen (1999) mainly use banking regulations as an example for the industry regulations. Collins et al. (1995) find in their research that banks that are close to the minimum capital requirements set by the regulators overstate provisions, understate write-offs and record abnormal gains to mitigate these requirements concerns. Cahan (1992) researches whether firms that are under the microscope because of the anti-trust laws for forming monopolies have incentives to lower earnings. He finds in his research that firms that are investigated because of monopoly-related violations have incentives to manage earnings downwards by lowering their discretionary accruals. Jones (1991) finds in his research that firms manage earnings downwards to seek import relief support from the government.

2.9 Summary

This literature review establishes the definition of earnings management as the bad and costly side of earnings management. This is due to the incentives that companies have to inflate or deflate earnings to achieve a certain pre-set reporting goal and the possibility that financial analysts and investors do not always see through the discretion of management to adjust the earnings to the actual levels. This can be harmful, due to the possible misallocation of resources of investors.

3. Public and private firms

The existence of earnings management in public and private firms has been widely acknowledged in previous research (Burgstahler et al. 2006; Coppens & Peek, 2005). There are however two streams in prior research: Burgstahler et al. (2006) find evidence that European private firms are more likely to perform earnings management than public firms, whereas Coppens and Peek (2005) argue that private firms are not subject to equity market incentives and have lower agency costs because of closer monitoring by private stockholders and have therefore lower incentives for earnings management, as they only are subject to two of three earnings management motives as stated in the literature review of Healy and Wahlen in 1999. Burgstahler et al. (2006) argue that the reason behind the increased levels of earnings management which they find in private firms might just be the lack of capital market incentives, as the capital market demands more informative earnings and might punish and reward firms in how they handle their earnings.

Private firms have lower incentives to keep a separate tax and financial report, as their resources are often more scarce and closer shareholders lead to less agency problems (Coppens & Peek, 2005; Ball & Shivakumar, 2005). Therefore one of the primary goals of private firms with their financial reporting is tax determination as often in public firms the tax reporting and the financial reporting differ. And as the private firms do not have a capital market incentive as described by Healy and Wahlen (1999) and should therefore, based on the three streams of incentives of Healy and Wahlen, be less incentivized to perform the same levels of earnings management as public firms, as also discussed by Coppens and Peek in 2005.

This, however, does not prove to be the case in prior literature. As Burgstahler et al. find in their research (2006), private firms do manage their earnings more than public firms in the period from 1997 till 2003. After this period, the International Financial Reporting Standards (hereafter IFRS) got into working, whereby the listed firms from the European Union had to report under IFRS.

3.1 Tax incentives for earnings management

Guenther researches US manufacturing, wholesale, retail and service companies in the 1986 Tax Reform Act from the United States (1994). This Tax Reform act reduces the maximum corporate tax rate from 46% to 34%. Guenther argues that if management seeks to maximize firm value, it is in their best interest to minimize tax expenses. Guenther performed this research in the search of incentives and situations in which firms and management have incentives to perform earnings management. Earlier research has found multiple incentives, as Healy and Wahlen describe (1999), but Guenther finds in his research that US firms do manage earnings when there is a large tax benefit. The firms display significantly more income decreasing accruals in the year prior to the drop in corporate tax rate to decrease income in the year with the highest tax rate.

Guenther explains in his research that taxable income is not directly observable by researchers, as it is not the same as the earnings number from the financial statements. He, however, still uses this number,

as it is very close to the true taxable income. Maydew (1997) also uses this data and the same event, namely the Tax Reform Act. He argues that firms with net operating losses carrybacks have had incentives to move income from and to the periods with differences in corporate tax rates. He finds in his research that firms with net operating losses from the period prior to the tax decrease, increase their losses more in this period by deferring income to the period after the tax decrease. By doing this they can report more profit in the years with a lower tax percentage and a higher tax refund from the period with a higher corporate tax rates, so ultimately, decreasing their tax expenses. Maydew estimated that the firms in her selection shifted 27.2 billion dollars of income to increase the carry backs from the net operating losses and this resulted in a decrease of tax expenses of 2.3 billion dollars.

3.2 Book-tax conformity

The relation between the financial earnings number and the actual taxable income is called the book-tax conformity. A high level of book-tax conformity exists when the financial earnings number is close and used to calculate the taxable income (Tang, 2015). In his research he argues that a low level of book-tax conformity would lead to increased levels of earnings management, because management could increase financial income to show growth and prosperity to the stakeholders of the financial statements and report low-income numbers to the tax authorities, to keep tax expenses low. As the conformity increases, this level of earnings management for public companies drops, as the consideration of lower tax expense will lead to a lower reported earnings number, which is seen as negative by the shareholders of the company and its financial statements. Therefore, a higher book-tax conformity level increases the cost of opportunism.

Tang (2015) finds evidence in his research that countries with higher conformity levels display lower levels of earnings management. He selected the publicly traded companies from 32 countries with enough and complete observations. Coppens and Peek (2005) argue in their paper that private companies do not have the capital market incentives as described by Healy and Wahlen in their research (1999) and should therefore have lower incentive levels to display similar levels of earnings management as publicly traded firms. In the research of Tang (2015), it also becomes apparent that public firms do have to make a trade-off in countries with high book-tax conformity as to whether they want to minimize tax expenses or want to increase the earnings number by using earnings management. Private companies do not have these opportunity costs, as they have fewer agency problems and do not have the capital market incentives to increase earnings (Burgstahler et al., 2006; Coppens & Peek, 2005), but display earnings management, which are according to Burgstahler et al. (2006) higher than the levels of publicly traded companies.

Tang (2015) creates an index from 0 to 1 in which countries get scaled to the level of book-tax conformity in their tax laws. He has rated twelve European countries and finds that most of these countries have fairly high book-tax conformity. This means, according to his research, that the incentives to aggressively report both financial and tax earnings are smaller, and should therefore happen less.

This in combination with the research of Burgstahler et al. (2006), where it is found that in countries with high alignment between financial reporting and tax reporting, public companies do display lower levels of earnings management. This research was based on the same idea as Tang found in 2015. As the level of book-tax conformity increases, the incentives to manage earnings for tax reasons decrease, as maintaining persistent earnings is seen as positive by stakeholders. But this effect would be more common for publicly traded companies, as they still fall under the supervision of the equity market. This would mean that shifting earnings to the year with the lowest tax rate would be seen as non-stable earnings and therefore not as positive by the stock market. For private companies, this incentive is smaller, as they are not subject to the equity market, and can therefore portray higher levels of earnings management when tax advantages can be obtained.

However, Coppens and Peek in 2005 perform similar research, but find different results. They find that the earnings distribution in high conformity countries does not differ significantly between public and private companies.

3.3 Hypotheses

Guenther found in his research (1994) that firms with profit-maximizing beliefs have incentives to manage earnings in years where corporate tax rates drop. Countries in the European Union have made some changes in the past years in their corporate tax rates. Bergstahler et al. (2006) find in their research that private firms manage earnings more than listed firms do, but this is not consistent with the three incentives for earnings management given by Healy and Wahlen in 1999. Coppens and Peek (2005) argue that private firms are not incentivized by the capital market incentives, that listed firms do have. First, this research wants to find whether European private firms manage earnings because of corporate tax changes and tax incentives as proposed by Guenther in 1994 and Maydew in 1997 for public firms.

The first null - hypothesis is aimed at finding evidence that European private firms manage earnings to shift income from the year with the higher tax rate to the year with the lowest amount of corporate tax (Guenther, 1994; Maydew; 1997).

H1: European private firms do not use earnings management to obtain tax advantages.

If it becomes clear from the first hypotheses that private firms do manage earnings from one year to another to minimize tax expenses, the research will compare the level of earnings management attributable to the tax incentives of both public and private firms, to evaluate the level of earnings managed by private firms. As Guenther (1994) finds in his research that publicly traded companies do manage earnings to minimize tax expenses and Tang (2015) finds that listed companies have a trade-off in increasing the earnings number and minimizing tax expense when book-tax conformity is high. As the countries in Europe that Tang researched all have fairly high book-tax conformity levels, listed companies should be less incentivized to perform earnings management to minimize tax expenses than private companies, as they do not suffer from the capital market limitations and agency problems that

listed firms do. Therefore private firms may manage earnings more to obtain tax benefits. This would also explain the problem of the Bergstahler et al. research (2006) and the lack of incentives by private companies to manage earnings but just the lack of following of financial investors, as in their research they find higher earnings management levels in relation to listed firms, but a lower level of incentives according to Healy and Wahlen (1999) and Coppens and Peek (2005). This leads to the second null - hypothesis:

H2: European private firms do react similar to tax incentives for earnings management as public firms.

4. Data

This thesis uses the Amadeus by Bureau van Dijk database to acquire financial data for large and very large public and private companies in Europe. This database contains financial and business information on the largest private and public companies across Europe. Amadeus provides standardised annual accounts, financial ratios, sectoral activities and information and ownership data. This data is used to estimate the amount of discretionary accruals to use in the estimation of the level of earnings management portrait by the private and public companies. The total level of accruals will be calculated using the Net Operating Profit and the Operating Cash Flow in the following matter:

$$\text{Total Accruals} = \text{Net Earnings} - \text{Operating Cash Flow}$$

The corporate tax rates are obtained from the Tax Foundation. This foundation is based in Washington D.C. It is a think-tank that collects data and publishes research to optimize taxation at global and federal levels to grow the economy and opportunities. This foundation has collected all tax rates over the world for the period 1980 till 2020. This database was obtained and merged with the Amadeus database to see the tax rates per company per year.

4.1 Sample selection

The original dataset contained nearly 3 million observations of all the large and very large companies over the period from 2010-2020 according to the bureau van Dijk Amadeus database. As the data was not complete yet and did not contain all variables needed to perform the analysis, some variables had to be generated from other variables. These include the change in revenue with last year, the change in receivables with last year and the total level of accruals. To fabricate these variables complete observations were needed with the variables present and a prior year from the same company to compare revenue, receivables and assets to to obtain the requested variables.

First, the total accruals were calculated. When this number could not be computed because of missing variables, the observation was deleted. The rest of the variables were next calculated, also using the observations from the prior years. When the variables could not be calculated because of missing variables or other reasons, the observation was deleted. The final dataset was merged with the dataset with the corporate tax rates to obtain the corporate tax rates per company per country per year.

Table 1: Sample selection

All data available	4.703.510
- Able to calculated TACC	2.967.071
- Able to calculate rest of variables	1,746,129
Thereof observations that experienced tax rate change	218.714

5. Methodology

This research will use a staggered diff-in-diff design to check for tax incentives in private and public companies. The endogenous effect will be similar to the effect that Guenther (1994) and Maydew (1997) used for their research. Over the years in Europe there has been a drop in corporate tax rates, as there has been in previous research. But by using the European Union and its differences in tax rates, there is a clear control and a clear treatment group with an endogenous effect that would inflict tax incentives on the company in these specific countries, where these incentives are not present for the companies in countries where the tax rate did not change. The treatment group will be defined as follows: the set of private companies from a country that did change their corporate tax rate in this year.

5.1 Earnings management

Earnings management is not a disclosure in a financial statement. It therefore has to be estimated. There are three ways of detecting earnings management: Accounting analysis, distribution of earnings and the use of accruals models. For the overall measure of earnings management this research will use the Jones model and the Modified Jones model to estimate the amount of discretionary accruals. Dechow et al. (1995) find in their research that the Modified Jones model has the most power in detecting accrual based earnings management. Therefore in this thesis the original Jones model and the Modified Jones model will be used to estimate the level of discretionary accruals as a proxy for earnings management.

5.2 Jones model

In her research Jones (1991) researches whether the announced import relief for firms in financial competitive problems would incentivize them to downwards manage their earnings. In her research she uses a new and improved proxy for earnings management: discretionary accruals. She focusses on the following formula:

$$\text{Total accruals} = \text{Nondiscretionary accruals} + \text{Discretionary accruals}$$

Prior research focussed on the same relation, but it assumed that the level of nondiscretionary accruals was constant over time, and that therefore all changes in total accruals were due to the increase or decrease of discretionary accruals. Jones uses an expectation model to control for economic changes in the circumstances of the firm. This gives the following model:

$$\frac{NDA_t}{A_{t-1}} = \alpha_1 \left(\frac{1}{A_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_t}{A_{t-1}} \right) + \alpha_3 \left(\frac{PPE_t}{A_{t-1}} \right)$$

Whereby:

A_{t-1} = Total assets at t-1

ΔREV_t = Revenues in year t less revenues in year t-1 scaled by total assets at t-1

PPE_t = Gross property plant and equipment in year t scaled by total assets at t-1

a_1, a_2, a_3 = Firm-specific parameters estimates

ε_t = Error term

In her research Jones estimates a_1, a_2, a_3 using a OLS regression. Using this model, there will be an estimation period to estimate the parameters, to be able to predict the normal level of accruals given the economic situation a company is in. In this thesis the estimation period that is chosen is of length of 2 years. Using these parameters the following model is used to estimate the normal level of Nondiscretionary accruals given the economic circumstances of the firm:

$$\frac{NDA_t}{A_{t-1}} = \alpha_1 \left(\frac{1}{A_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_t}{A_{t-1}} \right) + \alpha_3 \left(\frac{PPE_t}{A_{t-1}} \right)$$

In this model the normal level of nondiscretionary accruals (NDA) is calculated by using the parameters that are estimated per company category (which is indicated in the dataset by the variable “PGID”), which can be subtracted from the total accruals level which was calculated previously, resulting in the discretionary accrual level (DACC) which is also scaled to the total assets of a firm. This model is used and also at the basis of the next model that is used in this thesis.

5.3 Modified Jones model

Dechow et al. (1995) evaluates the different accrual based models which should measure the level of earnings management displayed by a firm. They find that the original Jones model does not control for financial performance of a company. As seen in the function, the revenue of a firm is used to calculate the normal level of nondiscretionary accruals. But Dechow et al. (1995) argue that firms and its management can increase revenue in their accounting discretion in the last moment of the fiscal year, by accruing revenue when the cash for these transaction has not yet been received by increasing the level of receivables, even when it is highly doubtful that these payments ever will be made and therefore that the transaction truly existed.

This Modified Jones model is designed to eliminate the error in the original Jones model when the revenues are managed and therefore that the Modified Jones model shows the most power in detecting discretionary accruals and therefore earnings management. They eliminate this error by adding the net receivables in the year of the discretionary accrual calculation to the revenue term, to eliminate the risk of missing the discretionary accruals in the revenue and receivables. They use the following normal Jones equation to estimate the coefficients:

$$\frac{TACC_t}{A_{t-1}} = \alpha_1 \left(\frac{1}{A_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_t}{A_{t-1}} \right) + \alpha_3 \left(\frac{PPE_t}{A_{t-1}} \right) + \varepsilon_t$$

Whereby:

$TACC_t$ = Total accruals scaled by lagged total assets at t-1

After the estimation of the coefficients the Modified Jones model makes an adjustment for the difference in the event period and the prior period of the net receivables. This model makes the assumption that all differences in the level of credit sales are due to earnings management. This is intuitively logical, as credit sales are a lot easier to manage earnings on, than cash sales, which are already paid and therefore are not to be managed. If this model would work optimally, this model should no longer be biased to zero earnings management, when the revenue of a firm gets managed.

$$\frac{NDA_t}{A_{t-1}} = \alpha_1 \left(\frac{1}{A_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_t - \Delta REC_t}{A_{t-1}} \right) + \alpha_3 \left(\frac{PPE_t}{A_{t-1}} \right)$$

Whereby:

ΔREC_t = Net receivables in year t less net receivables in year t-1 scaled by total assets at t-1

In this model the normal level of nondiscretionary accruals (NDA) is calculated by using the parameters that are estimated per company category (which is indicated in the dataset by the variable “PGID”), which can be subtracted from the total accruals level which was calculated previously, resulting in the discretionary accrual level (DACC) which is also scaled to the total assets of a firm. Dechow et al. (1995) argue and admit that all accrual models lead to miss specified tests and that they are not perfect. But this test has the most power in predicting earnings management according to their research and will therefore will be used.

5.4 Staggered Difference-in-Difference design

The empirical strategy in this thesis will use the staggered decrease of corporate tax rates across different countries in different years to identify the effect of tax incentives on the levels of portrait earnings management via discretionary accruals. This research will use a difference-in-difference design to compare countries which have tax rate decreases in a given year to countries that do not have tax rate decreases in that year. This research design should establish causality, as the companies that are subject to the tax incentives, in the form of tax rate decreases, are compared to companies in the same years and same situations without the tax incentives.

For the first hypotheses the variables of interest will be the time variables surrounding the drop in tax rate with 2 years prior and 2 years after the tax rate decrease. For example, the Belgian tax rate dropped in 2018 from 33,99 percent to 29.58 percent. It is expected that companies do know about the upcoming tax rate change, at least one year prior to the actual change. The main dummy (YEAR_0) will receive a value of one in the year 2018, as this is the year with the tax incentives and a zero otherwise. These five dummy variables together will form the overview of earnings management over the period of the corporate tax change.

YEAR_MINUS_2 = Dummy receives value of 1 if the tax rates changes in year T +2

YEAR_MINUS_1 = Dummy receives value of 1 if the tax rates changes in year T +1

YEAR_0 = Dummy receives value of 1 if the tax rates changes in year T
 YEAR_PLUS_1 = Dummy receives value of 1 if the tax rates changes in year T -1
 YEAR_PLUS_2 = Dummy receives value of 1 if the tax rates changes in year T -2

The highest interest lies in the variables YEAR_MINUS_1 and YEAR_0. This is as the expectation is that in the year prior to the corporate tax rate decrease firms will apply income deflating accruals (negative discretionary accruals). Companies do this as they can than shift the income that did not occur in year t-1 to the year t=0, as t=0 has a lower tax rate and therefore less tax expenses. Therefore the expectation for year t=0 are income inflating accruals (positive discretionary accruals).

The LAG and LEAD variables describe the same dummy as the YEAR-0 dummy, but in the two years prior and two years after the tax rate decrease. This results in the following equation:

$$DACC_{i,t} = \beta_i \sum_{t-2}^{t+2} YEAR_{c,t} + \delta_c + \gamma_t + \varepsilon_{i,t}$$

In this model there are two types of fixed effects included to account for differences between countries (δ_c) and time trends (γ_t) to isolate the effect of the tax incentives on the estimated amount of DACC (discretionary accruals). This equation will be tested on the database with solely private companies from the European Union to accept or reject the hypotheses one whether private firms do manage earnings for tax incentives.

For the second hypotheses the main variables of interest will not just be the time variables surrounding the drop in tax rate with 2 years prior and 2 years after the tax rate decrease, but also the QUOTED variable. This is as the objective of the second hypotheses is to look at differences between private and public firms in their levels of discretionary accruals. This equation will therefore be run on the full database with both private and public firms. Therefore the main variable of interest will be the interaction term β_3 between the time variables and the dummy which indicates whether a firm is listed on the stockmarket. The second equation looks as follows:

$$DACC_{i,t} = \beta_i * \sum_{t-2}^{t+2} YEAR_{c,t} + \beta_2 * QUOTED + \beta_3 \sum_{t-2}^{t+2} YEAR_{c,t} * QUOTED + \delta_c + \gamma_t + \varepsilon_{i,t}$$

The expectation of the direction for this variable of interest is negative. In the literature review and the hypotheses the expectation of the level of earnings management for tax motives was lower for public companies, as they do not have as much incentives to downwards manage earnings in the year prior to the corporate tax rate decrease. In this model there are two types of fixed effects included to account for differences between countries (δ_c) and time trends (γ_t) to isolate the effect of the tax incentives on the estimated amount of DACC (discretionary accruals).

6. Results

In this result section of this thesis the results of the analysis of the two hypotheses will be analyzed and discussed. In the literature review are two hypotheses stated. Both these hypotheses will be analyzed and discussed separately. First, the summary statistics of the data will be discussed and analyzed. Next, the requirements for the regression will be discussed and analyzed on the data to see whether the assumptions for OLS regressions hold. Thirdly, the use of discretionary accruals by private companies for the minimization of tax expenses will be analyzed. Lastly, the differences between private and public firms in the use of discretionary accruals and the tax incentives will be analyzed and discussed to obtain an understanding of the differences.

6.1 Summary statistics

Table 2 shows the summary statistics of the data and the sample selection. All scaled variables are winsorized at the top and bottom 1 percent. This is done to handle the outliers. The logarithm of the average firm size is 2.854 (LOG OF TOTAL ASSETS) with an average revenue scaled by the assets of T-1 of 2.001 (REVENUE / TOTAL ASSETS T-1) and an average net income scaled by the total assets on T-1 of 0.054 (NET INCOME / TOTAL ASSETS T-1). The average accrual level scaled to the total assets is minus 0.039 (TOTAL ACCRUALS / TOTAL ASSETS T-1). From all observations 15.2% experienced a decrease in corporate tax rate of at least 1% (YEAR WITH TAX DECREASE). In the sample are 28 European countries from which the biggest companies are in the sample. 2.8% percent of the observations come from listed companies (QUOTED), this is not a large portion, but because of the large sample this is not a problem. The scaled discretionary accruals as calculated by the modified Jones model are also added.

Table 2: Summary statistics.

Summary statistics							
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
LOG OF TOTAL ASSETS	1,385,078	2.854	0.101	1.925	2.784	2.913	3.360
RECEIVABLES / TOTAL ASSETS T-1	1,385,078	0.275	0.276	0.000	0.058	0.403	1.424
REVENUE / TOTAL ASSETS T-1	1,385,078	2.001	1.969	0.022	0.761	2.579	11.963
NET INCOME / TOTAL ASSETS T-1	1,385,078	0.054	0.105	-0.260	0.005	0.085	0.531
CASH FLOW / TOTAL ASSETS T-1	1,385,078	0.089	0.108	-0.177	0.026	0.127	0.562
YEARS WITH TAX DECREASE	1,385,078	0.152	0.359	0	0	0	1
TOTAL ACCRUALS / TOTAL ASSETS T-1	1,385,078	-0.039	0.041	-0.237	-0.051	-0.011	0.117
QUOTED	1,385,078	0.028	0.164	0	0	0	1
DISCRETIONARY ACCRUALS / TOTAL ASSETS T-1	1,385,078	0.002	0.037	-0.166	-0.009	0.022	0.070

6.2 Requirements regression

An ordinary least squares regression (OLS) needs to fulfil four different requirements to be a valid regression. The four requirements are: linearity, homoscedasticity, independence and normality. This section of the results is aimed at finding whether these requirements are met. First, the normality of the discretionary accruals is being checked by plotting the discretionary accruals in a histogram and checking whether the observations are normally distributed. As seen in the histogram, the distribution of the discretionary accruals gives no reason to assume otherwise than the assumption that the discretionary accruals are distributed normally.

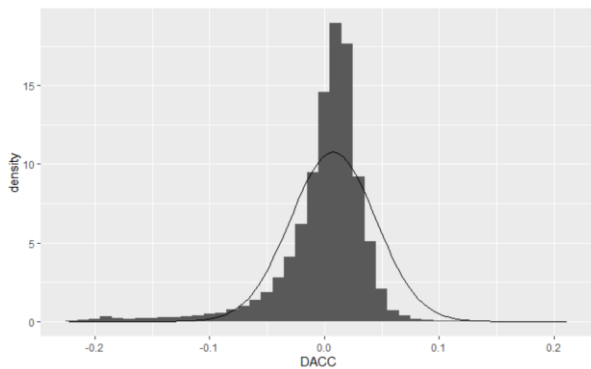


Figure 1: distribution of discretionary accruals

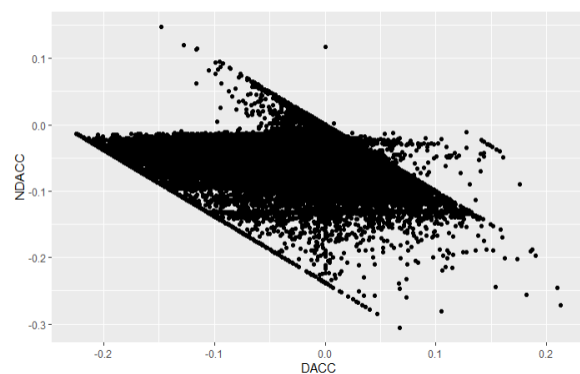


Figure 2: plot of variance of discretionary accruals

As seen in the second plot, the scatter of the observations is certainly not random. This means that there is possibly a heteroscedasticity problem. The shape of the observations has the looks of the horn shape that indicates heteroscedasticity. The heteroscedasticity of the predicted and the residual variable can be proven by using the Breusch-Pagan test. This test has as a null hypotheses that the residuals of the error term of the linear regressions are explained by exploratory variables. The predicted variable in this plot is the level of non-discretionary accruals, as these get predicted by the Jones and modified Jones model.

This test was performed on the first regression. The residual is the level of discretionary accruals. The test returned a p-value of 2.2×10^{-16} . This rejects the null hypotheses and therefore proves that the first model has a heteroscedasticity problem. This gets solved by using the Weighted Least Squares regression instead of the Ordinary Least Squares regression. This regression tries to minimize the sum of weighted squared residuals to return residuals with a constant variance. The weights are calculated by first running a standard Ordinary Least Squares regression, by running this regression the residuals of this regression are obtained. In this case the residuals are the discretionary accruals, as the non-discretionary accruals are the fitted variable. The weights are obtained by running a second regression, this time regressing the non-discretionary accruals on the discretionary accruals and using the reciprocal of the variance from the standard deviation of the discretionary accrual as the weights of the

observations. This is done as in the following formula and is called the inverse variance method (Lee et al., 2016):

$$Weights = \frac{1}{(Variance\ of\ discretionary\ accrual)^2}$$

As the variance becomes smaller (lower variance) the weight of the observations becomes bigger. This is intuitive, as observations with lower variance of the discretionary accrual, contain more information and should therefore be weighted heavier in the regression.

As the data looks similar for all models, the weighted linear regression is used to overcome the heteroscedasticity in all models. The Durbin-Watson test was used to test for the independence of the residuals. This returned a value of 1.2975 which was highly significant. As the value is not over 3 and not under 1, there is no problem with auto correlation and therefore the independence of the residuals is confirmed.

This plot of the residuals however, does seem to support the assumption that the data has a linearity to the data, as one can pull a straight line through the data. The linearity assumption does hold. As the assumption on homoscedasticity does not hold and is the only one that does not hold, this thesis will perform a weighted linear regression to mitigate this problem.

6.3 Hypotheses 1

The first null hypotheses states that the European private firms do not use earnings management to minimize tax expenses and is stated as follows:

H1: European private firms do not use earnings management to obtain tax advantages.

As can be seen in the first column of table 3 the dummy variable for the tax incentives in the year of the corporate tax change is positive and significant on a one percent level. The Beta for the variable of interest has a value of 0.003 in this regression. Meaning that when a company is in a country with a tax rate change in that year, they use discretionary earnings 0.003 scaled to the total assets of a firm more to manage earnings upwards. The year prior to the tax rate change is significant on the one percent level as well. This direction is negative, as can be expected as firm manage earnings downwards. The year prior to the tax rate change, firms downwards manage earnings by decreasing the discretionary accruals in average by 0.001 scaled by the total assets of a firm.

The second column in table 3 contains the same regression, with added fixed effects. Fixed effects remove the omitted variable bias in measuring groups over a period of time. The fixed effects per year and per country were added to remove this bias. The results of the regression were similar to the first regression, as the variable of interest (dummy for the year of the tax rate change) has a positive direction and is significant on the one percent level. This means that private firms have significantly more discretionary accruals in a year with a corporate tax rate decrease. The year prior to the tax rate change

was significant in the models as well, here the reversal effect can be clearly seen. As the direction of the variable is negative.

The third and fourth column of table 3 contain the elements of the regression of the Modified Jones Model instead of the Jones model. In the third column the same regression as in column one was performed. The dummy variable of the year of the corporate tax change is significant in the third regression as well, just like the two years prior to the corporate tax rate change. The pattern that can be seen in the year prior to the tax rate change is the downward managing of earnings, to be able to push earnings forward to the year with the lowest tax rate. This is done to minimize tax expenses. The year prior to the tax rate change the firms on average manage earnings downward by decreasing discretionary accruals by 0.001 scaled to the total assets of a firm and in the year of the tax rate change, firms manage earnings upwards by increasing discretionary accruals by 0.003 scaled to the total assets of a firm. In the fourth column the fixed effects over time and different countries are added to the regression. The variable of interest is still significant and positive. Firms are seen to manage earnings upwards by increasing discretionary accruals by 0.004 scaled to the total assets of a firm.

The year of the corporate tax rate change, an significant upward trend in discretionary earnings is seen and the year prior to the change, in all regressions a drop in discretionary accruals is seen to downwards manage earnings to push earnings to the next year when the next year promises a tax advantage. Therefore, the first hypotheses is rejected. Private companies do manage earnings to obtain tax incentives.

Table 3: regressions on private companies.

Regressions private companies				
<i>Dependent variable:</i>				
DACC				
	Jones Model		Modified Jones Model	
	(1)	(2)	(3)	(4)
lag_2_year_dummy	0.004*** (0.0001)	0.003*** (0.0001)	0.003*** (0.0001)	0.003*** (0.0001)
lag_1_year_dummy	-0.0003*** (0.0001)	-0.0003** (0.0001)	-0.001*** (0.0001)	-0.0003** (0.0001)
year_0_dummy	0.003*** (0.0001)	0.003*** (0.0001)	0.003*** (0.0001)	0.003*** (0.0001)
lead_1_year_dummy	0.0002** (0.0001)	-0.0002 (0.0001)	0.0001 (0.0001)	-0.0002 (0.0001)
lead_2_year_dummy	0.003*** (0.0001)	0.002*** (0.0001)	0.003*** (0.0001)	0.002*** (0.0001)
Constant	0.0002*** (0.0000)	0.04*** (0.003)	0.001*** (0.0000)	-0.004*** (0.0003)
FIXED Country effects		X		X
FIXED YEAR EFFECTS		X		X
Observations	1,346,513	1,346,513	1,346,512	1,346,512
R ²	0.003	0.01	0.002	0.01
Adjusted R ²	0.003	0.01	0.002	0.01
Residual Std. Error	1.66 (df = 1346507)	1.66 (df = 1346471)	1.14 (df = 1346506)	1.66 (df = 1346471)
F Statistic	688.37*** (df = 5; 1346507)	490.24*** (df = 41; 1346471)	613.32*** (df = 5; 1346506)	499.29*** (df = 40; 1346471)

Note:

*p<0.1 **p<0.05 ***p<0.01

6.4 Hypotheses 2

The second null hypotheses states that the difference in use of earnings management to minimize tax expenses between private companies and public companies is non-existent. The second null-hypotheses was therefore stated as follows:

H2: European private firms do react similar to tax incentives for earnings management as public firms.

As can be seen from the five rows of table 6 with the regressions that with the public companies added to the data set, the same conclusion can be found on this sample with both the private and public companies. Namely that the companies in this sample do increase their discretionary accruals in the years in which a corporate tax rate decrease was found. In the regressions without the fixed effects there are signs that companies in expectation of a tax rate decrease in the next year do decrease their discretionary accruals to push income forward to the next year with the lower tax rate to minimize tax expenses. However, in the regressions with fixed effects these results are not significant.

The first variable that is interesting, is the variable QUOTED. This variable is significant on a one percent level and has a positive direction of 0.003 for all regressions. This means that the level of discretionary accruals is higher overall for publicly traded companies than for private companies.

The main variable of interest for the second hypotheses is the estimate for the interaction terms for the five years surrounding a tax rate decrease and the dummy to whether a firm is listed on a stock exchange, with prime interest in the YEAR_0_DUMMY*QUOTED variable. This interaction term receives the value of 1 when the company does experience a corporate tax rate drop and is listed on a stock exchange. This company then falls in the treatment group. This interaction term is significant on the one percent level and has a negative direction. This means that when a company falls in the treatment group, the level of discretionary accruals is lower than the control group ranging from -0.002 to -0.003, meaning in this instance, the private companies. The year prior to the tax rate change public companies also use a lower level of discretionary accruals according to both the Jones model and the Modified Jones model with and without fixed effects.

To truly understand the differences between the years surrounding the tax rate decrease and the differences between public and private companies, this thesis analyses the differences in the means of discretionary accruals per group of public or private companies. The differences in means of discretionary accruals between private and public in the five years surrounding the tax rate decrease were analyzed with a two sample t-test for the Jones and Modified Jones model. The results of this test are found in table 4 and 5. These tests show that the differences in the two years prior and one year after to the tax rate change show significant differences. Two years prior to the change the public companies show significantly higher amounts of discretionary accruals, and in the years t-1 and t+2 public companies reverse the increased amounts of discretionary accruals portrayed in t and t+1. These years

however do not show a significant difference in the levels of discretionary accruals. Therefore this analysis cannot reject the second hypotheses. There is however a more clear reversal effect in the discretionary accruals of the public companies

Table 4: Differences in mean discretionary accrual levels between public and private firms based on the Jones model.

JONES MODEL	PRIVATE	PUBLIC	P-VALUE
Year t-2	0.005071634	0.007913920	0.000986***
Year t-1	0.002189010	-0.004688551	2.2e-16***
Year t	0.004711692	0.003619673	0.1521
Year t+1	0.004754644	0.003899015	0.3053
Year t+2	0.002213788	-0.005644771	2.2e-16***

Note: *p<0.1 **p<0.05 ***p<0.01

Table 5: Differences in mean discretionary accrual levels between public and private firms based on the Modified Jones model.

MODIFIED JONES MODEL	PRIVATE	PUBLIC	P-VALUE
Year t-2	0.005636959	0.010409880	3.163e-06***
Year t-1	0.002401361	-0.003588446	2.176e-09***
Year t	0.005383409	0.004190911	0.1755
Year t+1	0.005154724	0.004808369	0.7181
Year t+2	0.002178693	-0.005393449	5.537e-15***

Note: *p<0.1 **p<0.05 ***p<0.01

However, prior research found that private firms engaged more in earnings management than public companies do, as Burgstahler et al. (2006) find in their research. In this analysis the direct opposite gets found, as the QUOTED variable is significant and positive for all models and regressions. This would mean that publicly traded firms do manage earnings upwards more by using discretionary earnings to manage earnings upwards in normal situations and use discretionary earnings on the same level when there are tax incentives at play, but do more to reverse these accruals.

This might mean that publicly traded companies are closer monitored, not only by auditors, but also by investors and financial analysts. This means that they have more direct incentives to reverse the increased discretionary accrual levels in the years of tax incentives to different years.

Table 6: Regression on the differences between public and private companies

Regressions publicly listed companies vs privately held companies

	<i>Dependent variable:</i>			
	DACC			
	Jones Model		Modified Jones Model	
	(1)	(2)	(3)	(4)
lag_2_year_dummy	0.004*** (0.0001)	0.003*** (0.0001)	0.004*** (0.0001)	0.003*** (0.0001)
lag_1_year_dummy	-0.0003*** (0.0001)	-0.0003** (0.0001)	-0.0003*** (0.0001)	-0.0003** (0.0001)
year_0_dummy	0.003*** (0.0001)	0.003*** (0.0001)	0.003*** (0.0001)	0.003*** (0.0001)
lead_1_year_dummy	0.0003** (0.0001)	-0.0001 (0.0001)	0.0003** (0.0001)	-0.0001 (0.0001)
lead_2_year_dummy	0.003*** (0.0001)	0.003*** (0.0001)	0.003*** (0.0001)	0.003*** (0.0001)
QUOTED	0.003*** (0.0002)	0.003*** (0.0002)	0.003*** (0.0002)	0.003*** (0.0002)
lag_2_year_dumm*:QUOTED	0.002*** (0.001)	0.002** (0.001)	0.002*** (0.001)	0.002** (0.001)
lag_1_year_dummy*QUOTED	-0.01*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)
year_0_dummy*QUOTED	-0.003*** (0.001)	-0.002** (0.001)	-0.003*** (0.001)	-0.002** (0.001)
lead_1_year_dummy*QUOTED	-0.01*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)
lead_2_year_dummy*QUOTED	-0.002*** (0.001)	0.0000 (0.001)	-0.002*** (0.001)	0.0000 (0.001)

Constant	0.0002*** (0.0000)	0.04*** (0.01)	0.0002*** (0.0000)	-0.004*** (0.0003)
FIXED COUNTRY EFFECTS		X		X
FIXED YEAR EFFECTS		X		X
Observations	1,385,223	1,385,223	1,385,222	1,385,222
R ²	0.003	0.01	0.003	0.01
Adjusted R ²	0.003	0.01	0.003	0.01
Residual Std. Error	1.67 (df = 1385211)	1.68 (df = 1385175)	1.67 (df = 1385210)	1.68 (df = 1385175)
F Statistic	338.94*** (df = 11; 1385211)	421.20*** (df = 47; 1385175)	338.95*** (df = 11; 1385210)	429.24*** (df = 46; 1385175)

Note:

*p<0.1 **p<0.05 ***p<0.01

6.5 Robustness test

As a robustness test the same regressions were performed on the same data, but this time with an ordinary least squares regression. This was done to provide more evidence on the significance of the weighted least squares models. The results from these regressions were similar to the weighted least squares regressions. The variables of interest were directional similar and the significance levels were similar as well.

The first hypotheses on the use of earnings management for tax incentives by private firms delivered similar results. The variable of interest (the dummy of the year of the tax decrease) was positive and significant, meaning that private firms use more discretionary earnings in the year in which a tax advantage is to be made. As found in the WLS regressions, the year prior to the tax advantage is seen to have a negative direction, but only significant when the fixed are not added.

The ordinary least squares regression on the second hypotheses also found similar results as the WLS. Also in the presence of public companies, private companies manage earnings to obtain tax advantages and public firms display similar levels of discretionary accruals. In this regression it is also found that the reversal effect of public companies is significantly stronger than private firms, as the years surrounding the tax advantage are in the expected (negative) direction and stronger for the public companies.

6.6 Results summary

In the result section of this thesis, a weighted linear regression was used to estimate the effect of a corporate tax rate change on the use of discretionary accruals as a proxy for earnings management and the difference in usage of discretionary earnings for tax incentives between publicly traded companies and privately held companies. The five years surrounding the tax rate changes were analyzed to establish a pattern in the direction of the discretionary accruals to check for the reversal of directional earnings management to manage earnings downwards in the year leading up to the tax rate change and to manage earnings upwards in the year of the change to minimize tax expenses. In the first set of regressions for the first hypotheses was found that private companies do manage earnings upwards in the situation of a drop in tax rate and some evidence was found that the year prior to the change, was used to reverse the level of discretionary accruals.

The second hypothesis stated that there was no significant difference in the use of earnings management between public and private companies in the situation of a tax incentive to portray earnings management. This hypothesis was accepted. Public companies overall use discretionary earnings as much as private companies in situations where there are tax incentives to be obtained, but use discretionary earnings more to reverse the increased level of other years to equalize the accrual level. In the situation of no tax incentives, it becomes clear from the regressions, that public firms, overall use higher levels of discretionary accruals compared to privately held companies.

The potential explanation for the differences that are found are possibly the ones posed by Coppens and Peek in 2005. Private companies do have fewer incentives to perform earnings management, as they are not subject to the equity market incentives as posed by Healy and Wahlen in 1999. The reversal of accruals as seen performed by public companies can be explained by looking at the Burgstahler et al. paper (2006), as this paper argues that the monitoring by financial analysts and investors gives public companies less freedom to manage their earnings. This might mean that public companies carefully have to reverse their increased discretionary earnings levels in the years of a tax incentive. This would explain the significantly higher levels of discretionary accruals in the control group (privately held companies) in the year prior to the tax rate change and two years after the tax rate change.

7. Conclusion

The goal of this research was to discover whether privately held companies used earnings management to obtain tax incentives in the years of a corporate tax rate change. And if this were the case, how would this level of earnings management compare to the level of publicly traded companies. Therefore this research has set the research question as follows:

Do European privately held companies manage earnings because of tax incentives?

The definition of earnings management was set to be the use of judgment in reporting to obtain a certain reporting objective to alter financial statements or mislead stakeholders. This is possible as the managers of a firm have more information than the stakeholders, as is a classic example of the Agency theory and the information asymmetry between management and stakeholders. This information asymmetry can be used to obtain financial benefits for the company and its management. The three initial incentives to perform a certain level of earnings management were: equity market incentives, contracting incentives and regulatory incentives. Research has shown that publicly traded companies do perform lower levels of earnings management than privately held companies, but that privately held companies have one less incentive to perform earnings management, as these firms are not active on the equity market.

This difference could possibly be explained by a fourth incentive: taxes. As nearly all firms are profit-maximizing firms, they do want to minimize tax expenses. This research question was therefore answered in these two hypotheses:

H1: European private firms do not use earnings management to obtain tax advantages.

H2: European private firms do react similarly to tax incentives for earnings management as public firms.

This research used the Jones model and the modified Jones model to estimate the level of earnings management by estimating the level and direction of discretionary accruals which functioned as the proxy for the level and direction of earnings management. This dependent variable was regressed on the independent variables using a difference in difference design, the variables of interest being the years in which there was a tax incentive to manage earnings in a certain direction and a variable to whether a firm was listed on a stock exchange. These regressions and models were estimated over the period of 2010 till 2020 over the biggest companies in all European countries.

The regressions on the first hypotheses had significant explaining power to reject the first hypotheses. It was found that private firms do manage earnings upwards in the years in which a tax minimization could be obtained. Light evidence was found that private companies use accrual reversal in the year prior to the tax rate change to shift earnings to the year with the lowest tax rate to minimize tax expenses.

For the second hypothesis, the differences between private and listed companies were researched by using a difference in difference design by interacting the variables of the years surrounding the drop in tax rate and the dummy of whether a company was listed on a stock exchange. These differences were analyzed by using a two-sample t-test to analyze the differences in means between the listed and non-listed companies. The regression found a significantly higher amount of discretionary accruals for publicly traded companies, whereas prior research found a significantly lower level.

The analysis of the differences between the public and private companies showed that the differences in the years a tax advantage was to be obtained was not significant. Meaning that the level of earnings management in the year of the corporate tax rate drop and the year after this year were not statistically different between public and private companies. The year prior and two years after the tax rate change however were significantly different. For the publicly traded companies, a more clear a reversal effect for the level of discretionary accruals can be seen.

With the first hypothesis rejected and the second hypothesis accepted, the research question can be answered. The answer is yes. European privately held companies do manage earnings to obtain tax incentives, but not any more than publicly held companies. They do however not perform the same level of reversal of the earnings management as public companies do, to make up for the increased earnings numbers in the years of the tax incentives.

7.1 Limitations

There are two big limitations which makes the interpretation of these findings to be made with caution. The first puts the Jones model and the Modified Jones model up for discussion. Jackson (2018) argues in his research that often the use of discretionary accruals models do not live up to the reputation that they have, despite being so often used in literature. These models do often not provide a plausible correlation between discretionary accruals and earnings management and therefore perform quite poorly. This has to be taken in to account. However, these problems are slightly mitigated by the use of a clearly exogenous effect (corporate tax rate change), a solid research design (difference in difference), and a clear mechanism on how the independent variable influences the dependent variable (obtainable tax incentives). By also taking a large sample size and a big enough test sample these concerns will be counteracted.

The second limitation is the difference in reporting standards for the public and private companies. Publicly traded companies must report under IFRS and privately held companies report most often under local GAAP. For the difference between these two reporting standards was not controlled. Therefore most of the difference can also be due to the differences in reporting standards. However, the levels of public and private companies' perceived earnings management were fairly similar in some instances, giving the tax incentives more credits. Prior research supports this, as it was found by Jeanjean and

Stolowy (2008) that after the adoption of IFRS the pervasiveness of earnings management did not change significantly.

7.2 Future research

In prior research, an increased level of earnings management was perceived to be found in privately held companies. This research finds overall increased levels of earnings management for public companies. Future research might determine the true levels of earnings management and the differences between private and public companies. Future research might also determine the true reversal effect of public companies and the monitoring effect on this reversal.

8. References

- Ball, R., & Brown, P. (1968). An empirical evaluation of accounting income numbers. *Journal of accounting research*, 159-178.
- Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of accounting and economics*, 39(1), 83-128.
- Burgstahler, D. C., & Eames, M. J. (2003). Earnings management to avoid losses and earnings decreases: are analysts fooled?. *Contemporary Accounting Research*, 20(2), 253-294.
- Burgstahler, D. C., Hail, L., & Leuz, C. (2006). The importance of reporting incentives: Earnings management in European private and public firms. *The accounting review*, 81(5), 983-1016.
- Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of accounting and economics*, 24(1), 99-126.
- Cahan, S. F. (1992). The effect of antitrust investigations on discretionary accruals: A refined test of the political-cost hypothesis. *Accounting review*, 77-95.
- Collins, J. H., Shackelford, D. A., & Wahlen, J. M. (1995). Bank differences in the coordination of regulatory capital, earnings, and taxes. *Journal of accounting research*, 33(2), 263-291.
- Coppens, L., & Peek, E. (2005). An analysis of earnings management by European private firms. *Journal of international accounting, auditing and taxation*, 14(1), 1-17.
- Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of accounting and economics*, 18(1), 3-42.
- Dichev, I. D., & Skinner, D. J. (2002). Large-sample evidence on the debt covenant hypothesis. *Journal of accounting research*, 40(4), 1091-1123.
- Graham, J. R., Harvey, C. R., & Rajgopal, S. (2006). Value Destruction and Financial Reporting Decisions. *Financial Analysts Journal*, 62(6).
- Guenther, D. A. (1994). Earnings management in response to corporate tax rate changes: Evidence from the 1986 Tax Reform Act. *Accounting Review*, 230-243.
- Guidry, F., Leone, A. J., & Rock, S. (1999). Earnings-based bonus plans and earnings management by business-unit managers. *Journal of Accounting and Economics*, 26, 113-142.
- Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting horizons*, 13(4), 365-383.

- Jackson, A. B. (2018). Discretionary accruals: earnings management... or not?. *Abacus*, 54(2), 136-153.
- Jeanjean, T., & Stolowy, H. (2008). Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption. *Journal of accounting and public policy*, 27(6), 480-494.
- Jiraporn, P., Miller, G. A., Yoon, S. S., & Kim, Y. S. (2008). Is earnings management opportunistic or beneficial? An agency theory perspective. *International Review of Financial Analysis*, 17(3), 622-634.
- Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of accounting research*, 29(2), 193-228.
- Lee, C. H., Cook, S., Lee, J. S., & Han, B. (2016). Comparison of two meta-analysis methods: inverse-variance-weighted average and weighted sum of Z-scores. *Genomics & informatics*, 14(4), 173.
- Maydew, E. L. (1997). Tax-induced earnings management by firms with net operating losses. *Journal of accounting research*, 35(1), 83-96.
- Perry, S. E., & Williams, T. H. (1994). Earnings management preceding management buyout offers. *Journal of Accounting and Economics*, 18(2), 157-179.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of accounting and economics*, 42(3), 335-370.
- Tang, T. Y. (2015). Does book-tax conformity deter opportunistic book and tax reporting? An international analysis. *European Accounting Review*, 24(3), 441-469.
- Teoh, S. H., Welch, I., & Wong, T. J. (1998). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial economics*, 50(1), 63-99.
- Teoh, S. H., Welch, I., & Wong, T. J. (1998). Earnings management and the long-run market performance of initial public offerings. *The journal of finance*, 53(6), 1935-1974.

Appendix A

<i>COUNTRY</i>	<i>YEAR</i>	<i>TAX RATE</i>	<i>TAX RATE PRIOR YEAR</i>
<i>BELGIUM</i>	2018	29.58	33.99
<i>BELGIUM</i>	2020	25	29.58
<i>DENMARK</i>	2015	23.5	24.5
<i>DENMARK</i>	2016	22	23.5
<i>SPAIN</i>	2015	28	30
<i>SPAIN</i>	2016	25	28
<i>ESTONIA</i>	2015	20	21
<i>FINLAND</i>	2014	20	24.5
<i>FRANCE</i>	2016	34.43	38.00
<i>FRANCE</i>	2020	32.02	34.43
<i>GREECE</i>	2019	24	29
<i>CROATIA</i>	2017	18	20
<i>HUNGARY</i>	2017	9	19
<i>ITALY</i>	2017	27.81	31.29
<i>LUXEMBOURG</i>	2017	27.08	29.22
<i>LUXEMBOURG</i>	2018	26.01	27.08
<i>LUXEMBOURG</i>	2019	24.94	26.01
<i>MONACO</i>	2019	31	33.33
<i>MONACO</i>	2020	28	31
<i>NORWAY</i>	2014	27	28
<i>NORWAY</i>	2016	25	27
<i>NORWAY</i>	2017	24	25
<i>NORWAY</i>	2018	23	24
<i>NORWAY</i>	2019	22	23
<i>PORTUGAL</i>	2015	29.5	31.5
<i>SLOVAKIA</i>	2014	22	23
<i>SLOVAKIA</i>	2017	21	22
<i>SLOVENIA</i>	2013	17	18
<i>SWEDEN</i>	2013	22	26.3
<i>UKRAINE</i>	2013	19	21
<i>UKRAINE</i>	2014	18	19