Aalto University
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Earnings management as a scope of art - Empirical analysis of accrual-based and real earnings management in Finnish listed companies during 2001-2010

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Miia Tirkkonen
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Abstract of master's thesis

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Abstract

This study examines whether mandatory IFRS adoption in 2005 has affected earnings management practices in Finnish publicly quoted companies. Earnings management is analyzed by covering both accrual-based and real earnings management. The study also explores whether there are annual changes in the level of earnings management which do not relate to IFRS adoption.

The study is quantitative in nature and applies OLS regression to explore changes in the level of earnings management. Real earnings management is studied by examining sales manipulation and overproduction. The sample consists of companies publicly quoted in Helsinki Stock Exchange in 2001–2010.

The results suggest that accrual-based earnings management and overproduction have increased after IFRS adoption. Additionally, study results offer some support for increased level of sales manipulation after IFRS. In relation to the yearly analysis, the results indicate that there are annual changes in the levels of all three earnings management types during the sample period which are not explained by IFRS adoption.

Keywords earnings management, real earnings management, sales manipulation, overproduction, accruals, the Jones model, International Financial Reporting Standards (IFRSs)

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Tiivistelmä

Tutkimuksen tavoitteena on analysoida vuonna 2005 käyttöönotettujen kansainvälisten tilinpäätösstandardien (IFRS) vaikutusta suomalaisten pörssiyhtiöiden tuloksenohjaukseen. Tutkimus tarkastelee sekä jaksotuseriin että liiketoimien manipulointiin perustuvaa tuloksenohjausta. Lisäksi tutkimus pyrkii selvittämään, onko tuloksenohjauksessa vuosittaisia eroja, jotka eivät selity kansainvälisten tilinpäätösstandardien käyttöönotolla.

Tutkimus hyödyntää kvantitatiivisia metodeja ja analysoi tuloksenohjausta OLS regressiomallin avulla. Liiketoimien manipulointia analysoidaan myynnin manipuloinnin ja liikatuotannon kautta. Aineisto sisältää Suomessa vuosina 2001–2010 listattujen yrityksien tilinpäätöstietoja.

Tulokset viittaavat siihen, että jaksotuseriin sekä liikatuotantoon perustuva tuloksenohjaus on lisääntynyt IFRS-standardien käyttöönoton jälkeen. Lisäksi tulokset tarjoavat jonkin verran viitteitä siitä, että myynnin manipulointi on lisääntynyt kansainvälisten tilinpäätösstandardien käyttöönoton jälkeen. Vuosittaisen analyysin tulokset viittaavat siihen, että tuloksenohjauksessa on vuosittaisia eroja, jotka eivät selity lainsäädäntömuutoksella.

Avainsanat tuloksenohjaus, liiketoimien manipulointi, myynnin manipulointi, liikatuotanto, jaksotuserät, Jonesin malli, kansainväliset tilinpäätösstandardit (IFRS)

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1. INTRODUCTION

1.1. BACKGROUND OF THE STUDY

Net income is not something one can determine in an unambiguous way. As accounting legislation does not completely constrain managers' choices of accounting policies and procedures, management has flexibility in determining financial reporting figures. Actual earnings management behavior, on the other hand, has been documented to arise from contractual, stock market or management's personal incentives (Scott 2009; Graham et al. 2005).

Earnings management has been a topic of research already for several decades (e.g. Healy 1985; Jones 1991). Academic research has traditionally concentrated on analyzing *accruals manipulation*, i.e. earnings management implemented by altering the level of discretionary accruals. However, there are recent research findings indicating that *real earnings management*, i.e. earnings management implemented by manipulating real operations, is becoming more dominating in today's business environment (e.g. Li et al. 2011; Graham et al. 2005; Roychowdhury 2006). As evaluating reasons behind recent earnings management behavior, it has been suggested that preferring real earnings management might be a consequence of the stigma attached to accounting fraud in the post-Enron world, where also legislation is made stricter (Graham et al. 2005). At the same time, it has been suggested that real earnings management can be more costly for a company in the long run than accruals manipulation (Roychowdhury 2006).

The level of real earnings management is argued to be higher in countries with stronger legal system (Li et al. 2011). Closely relating to this, prior research evidence indicates that companies have switched from accrual-based to real earnings management after the passage of Sarbanes Oxley-Act (SOX) in the US (Cohen et al. 2009). Also the effect of International Financial Reporting Standards (IFRSs) on earnings management has been studied, but research findings are controversial. While some studies suggest IFRS to have a positive influence on accounting quality and earnings management (e.g. Barth et al. 2009; Chen et al.

2010), some other publications indicate increase in earnings management after IFRS (Jeanjean and Stolowy 2008). Earlier research studying the effects of IFRS adoption has focused on accounting quality and thus concentrates on accrual-based earnings management.

All listed companies in European Union (EU) member countries have been required to apply IFRS since 2005. Respectively, all Finnish publicly quoted companies were required to adopt IFRS in 2005. This creates an opportunity and motivations to study the effect of IFRS adoption on earnings management in Finland. Controversial research findings of the effect of IFRS adoption on accrual-based earnings management make it interesting to study the phenomenon from accruals manipulation viewpoint. Further, research evidence suggesting a shift from accrual-based to real earnings management in context of legislation change in the US encourages widening research scope to cover both two earnings management types.

1.2. OBJECTIVES AND CONTRIBUTION

In this study I will concentrate on analyzing earnings management, including accruals manipulation and real earnings management, in Finnish publicly quoted companies. Real earnings management is examined by concentrating on sales manipulation and overproduction. *The main objective* of this study is to examine whether mandatory IFRS adoption has affected earnings management practices in Finnish publicly quoted companies.

There is research evidence suggesting that companies' earnings management incentives vary in different financial situations (Agarwal et al. 2007). Financial situation in Finland changes during the research period, as economic downturn takes place at the end of the sample period. This creates motivations to analyze yearly earnings management development in the sample companies. Respectively, *the secondary objective* of this study is to examine whether there are annual changes in the level of earnings management which do not relate to IFRS adoption.

The empirical part of the study will be implemented as a quantitative analysis applying OLS regression model to explore changes in the levels of earnings management. Accruals manipulation will be analyzed by using the Jones (1991) model. Real earnings management

will be examined by following Roychowdhury (2006) and thus the analysis is implemented by using the model developed by Dechow et al. (1998). Real earnings management analysis is implemented by studying sales manipulation and overproduction.

The sample consists of Finnish publicly quoted companies in Helsinki Stock Exchange for years 2001-2010. Companies representing banks, investment or insurance firms (primary SIC-codes 60-67) are excluded from the sample. The final sample includes 952 firm-year observations for accrual-based earnings management analysis, 1005 for sales manipulation and 931 for overproduction. The sample is divided into subsamples in two different ways according to the two research objectives. In relation to the main objective studying the effect of IFRS adoption on earnings management, the sample is divided into two subsamples based on accounting regulation, i.e. Finnish Accounting Standards (FAS) and IFRS subsamples. In relation to the second objective examining annual changes in earnings management practices, the sample is divided into ten yearly subsamples. Regression is run separately for different subsamples in order to evaluate differences in the levels of earnings management.

Study results suggest an increase in accrual-based earnings management and overproduction after IFRS adoption. In addition, the results offer some support for an increase in sales manipulation after IFRS. Study results are in line with international research suggesting increasing popularity of real earnings management (e.g. Li et al. 2011; Graham et al. 2005; Roychowdhury 2006). However, as the levels of both accrual-based and real earnings management are suggested to have increased after IFRS adoption, the results are not in line with Cohen et al. (2009), who suggest a shift from accrual-based to real earnings management after the passage of SOX in the US. In relation to the secondary objective, study results indicate that there are annual changes in the levels of all three earnings management types during the sample period which do not relate to IFRS adoption. This can be seen to be in line with prior research suggesting managements' earnings management incentives to vary in different financial situations (Agarwal et al. 2007).

This study contributes to prior research by providing information about the effect of IFRS adoption on accrual-based and real earnings management in Finland. Further, it supports the

view that earnings management behavior and motivations might vary in different years and in different financial situations.

1.3. STRUCTURE

This study consists of six chapters. After introduction, the second chapter will start by familiarizing the reader with the topic of earnings management. More specifically, the chapter concentrates on six different themes that are important from the viewpoint of the research topic: earnings management definitions, connection to accounting theory, earnings management incentives, different types of earnings management, research methods and earnings management in Finland. After this, the third chapter will continue by concentrating on IFRS adoption. The chapter discusses main approaches under IFRS framework and presents prior research findings of the effect of IFRS adoption on earnings management. The fourth chapter will begin the empirical part of the study by discussing hypothesis development, research methods and data. This is followed by presenting and analyzing study results in the fifth chapter. Finally, conclusions will summarize main results of the study by binding them to earlier academic research and make suggestions for future research.

2. EARNINGS MANAGEMENT

The second chapter aims to familiarize the reader with the topic of earnings management. The chapter concentrates on six different themes that are important from the viewpoint of earnings management: earnings management definitions (2.1), connection to accounting theory (2.2), earnings management incentives (2.3), earnings management types (2.4), different research methods (2.5) and earnings management in Finland (2.6).

2.1. DEFINITIONS

2.1.1. Earnings management

Many alternative definitions of earnings management have been suggested in the academic literature. According to Healy and Wahlen (1999, p. 368):

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

In the above definition, Healy and Wahlen (1999) highlight managers' personal judgment and their objective to mislead stakeholders about a company's performance. Further, the researchers refer to the aim to influence contractual outcomes that rely on accounting numbers, of which debt covenants are a good example. In addition, the definition refers to two means in managing earnings: using judgment in financial reporting and structuring transactions. Therefore, the definition covers both accruals manipulation and real earnings management.

Accrual-based earnings management refers to managing earnings figures by altering the level of discretionary accruals. Accruals are the difference between reported earnings and cash flow from operations and discretionary accruals are the accruals chosen by the management.

Further, discretionary accruals are chosen from an opportunity set of generally accepted procedures that are allowed by accounting legislation. (Healy 1985)

2.1.2. Real Earnings management

Real earnings management involves managements' attempts to alter reported earnings by adjusting the timing and/or scale of underlying business activities (Xu et al. 2007). As business activities are affected, real activities manipulation alters earnings through the cash flow component. As a consequence, real earnings management has an effect on a company's cash flow statement figures. According to Roychowdhury (2006, p. 337):

> *"Real activities manipulation is a departure from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing that certain financial reporting goals have been met in the normal course of operations."*

The definition is similar to the earnings management definition from Healy and Wahlen (1999), presented in chapter 2.1.1 As Roychowdhury (2006) refers to actions which are motivated by managers' desire, Healy and Wahlen (1999) highlight managers' personal judgment in accounting decisions. Further, both definitions include the aim to mislead stakeholders. What is specific to real earnings management definition is the objective to mislead stakeholders into believing that certain goals have been met in the normal course of operations, i.e. to believe that no unusual and irrational operational decisions are made.

2.2. CONNECTION TO THEORY

A typical feature of a modern corporation is *the separation of ownership and control* (Jensen & Meckling 1976). This includes that the owner (the principal) engages the manager (the agent) to perform services on behalf of her and delegates decision making authority to the agent. This is called *the agency theory*. The agency theory helps to analyze the relationship between the principal and the agent. It analyses contracts designed to motivate a rational agent to act on behalf of a principal when her interests could otherwise conflict with those of the

principal (Scott 2009). The separation of ownership and control has been seen as the original reason behind corporate governance problems (Bergstresser & Philippon 2006). Taking the same viewpoint, it can also be seen as enabling earnings management. As ownership is separated from control (management), it is possible for managers to manage earnings against owners' interest (Scott 2009).

From a theoretical viewpoint it can be noted that the existence of earnings management and the assumption of perfect markets conflict. If the information markets were perfect, there would be no possibilities to benefit from earnings management activities and a rational manager would not engage in managing earnings (Fields et al. 2001). Implicitly, it is assumed that management has an information advantage over a company's stakeholders.

Earnings management may also be evaluated from the viewpoint of *the signaling theory*. Signaling refers to a situation where one party conveys information to another party. Scott et al. (2009) define signal as an action taken by a high-type manager that would not be rational if that manager was low type. Scott et al. (2009) suggest that earnings management may be used for signaling. More specifically, the authors argue that earnings management to reveal persistent earnings power can be interpreted as a signal since earnings reversal can make it very costly for a low-type manager to report higher earnings that can be maintained.

2.3. EARNINGS MANAGEMENT INCENTIVES

Earnings management reasons are often divided to contractual and stock market incentives. However, some recent studies (Graham et al. 2005; Roychowdhury 2006) suggest that also managers' personal incentives may affect the decision-making process. In this study, contractual and stock market related incentives are first discussed based on an assumption that management acts to maximize the wealth of a company. After this, earnings management is discussed by analyzing managers' personal incentives. From this point of view, it is also taken into account that a manager may not choose the actions optimal for the company, but to seek to maximize her own welfare.

2.3.1. Contractual incentives

Earnings management can be used to protect a company from undesirable consequences deriving from its contractual obligations (Scott 2009). Earnings management literature usually discusses option contracts in the context of contractual incentives. In this study, management compensation topic will be discussed from the perspective of management's personal incentives.

Managers may choose to manage earnings because of debt contracts. Lenders often use debt covenants, meaning that they use accounting information to control firm's activities (Beneish 2001). Covenant restrictions may for example require that company's financial ratios (e.g. debt to equity ratio, ROA) remain at an acceptable level. If covenants are violated, the cost of debt capital can increase. Because of this, debt covenants may provide management with incentives to manage earnings to avoid covenant violation. Managers might also go further and try not to be close to violation because this might limit their operational flexibility (Scott 2009). For example, a company might want to avoid a situation where it has to reject a profitable project when the implementation could lead to a temporary covenant violation.

There is evidence about the effect of debt contracts on companies' accounting decisions. Firms approaching covenant violations are found to make more income increasing discretionary accounting changes than the comparison firms and to early adopt income increasing accounting changes (Sweeney 1994). Further, the companies which have reported a debt covenant violation are found to have abnormal accruals both at year prior to violation and at the violation year (DeFond & Jiambalvo 1994).

Earnings management may also derive from *implicit contracts* (Scott 2009). Implicit contracts arise from the continuing relationship between a company and its stakeholders (e.g. employees, customers, suppliers, lenders) when the parties form their expectations based on past business practices. For example, if a company has good reputation of paying its invoices and borrowings in time, it may achieve better terms for transactions than companies not meeting their commitments so promptly. Consequently, both of the parties may implicitly assume that these are the new terms of the contract even though they are not explicitly agreed

on. (Scott 2009) Bowen et al. (1995) conclude the same idea by stating that a company's reputation for fulfilling its implicit claims affects trade terms it is able to negotiate with its stakeholders. Further, the researchers suggest that stakeholders use reported accounting figures to analyze the ability of a company to meet its commitments, which provides management with an incentive to manage earnings upwards.

2.3.2. Stock market related incentives

Stock market based incentives often relate to communicating insider information to the markets, issuing shares, meeting earnings benchmarks or smoothing earnings. The view of earnings management as a mean of stakeholder communication bases on the information context of financial reports. In addition to concluding details about an entity's past performance, accounting reports also reflect management's estimates and forecasts about the future (Palepu et al. 2007), like estimations for bad debt and warranty provisions and forecasts of asset values. On the other hand, balance sheet value of an item reflects management's expectations that future cash flows produced by the asset exceed the cost. From this perspective management can be seen as using accounting discretion to inform the markets about the true state of a company.

In the context of the theoretical discussion in chapter 2.2, it was suggested that there has to be an information asymmetry between a company and its stakeholders. When earnings management is analyzed from the perspective of communicating information to the markets, it is seen as a mean to reduce the information asymmetry between the parties. Instead of trying to benefit the company by misleading company outsiders, the management aims to benefit all the parties. Scott (2009) sees this as the good side of earnings management. (Scott 2009)

Initial public offerings (IPOs) may provide managers with incentives to manage earnings. In an IPO situation company's shares do not have an established market price and investors have to decide how to value the shares (Scott 2009). Companies may manage earnings in order to affect the valuation. Teoh et al. (1998a) study accruals manipulation in IPO situations. The researchers provide evidence suggesting that issuers with unusually high accruals in the IPO year experience poor stock market performance in the following three years. In fact, issuers in

the most "aggressive" earnings managers' quartile are found to have twenty percent lower stock market returns than the issuers in the most "conservative" quartile. Similar evidence has been documented when examining the equity issues of companies already being listed. Teoh et al. (1998b) find that issuers adjusting their discretionary accruals to report a higher net income just before the offering have lower stock returns and net income after the issue. Thus, both of the studies document a negative correlation between accruals manipulation and stock market returns after the issue.

Meeting or exceeding earnings benchmarks can also provide companies with incentives to manage earnings. Graham et al. (2005) interview more than 400 executives in the US to determine the factors that drive reported earnings and disclosure decisions. Meeting or exceeding earnings benchmarks are seen as very important factors. Last year quarterly earnings and analyst consensus estimates are seen as two most important earnings benchmarks. Graham et al. (2005) interpret market reactions to small EPS misses as evidence of a market opinion that companies should be able to hit the targets. Further, the researchers suggest that not being able to find one or two cents to hit the target might even be interpreted as evidence of hidden problems at the firm. Iatridis and Kadorinis (2009) provide similar evidence from the UK. The researchers argue that if a company is to retain its status and prosperity, it is an absolute necessity to meet or exceed analysts' earnings forecast. Findings from these two studies reflect the strong pressure that the markets create for companies to meet benchmarks. If benchmarks are not reached in the course of normal business operations, there is a huge pressure to act accordingly at least by the means of earnings management.

Managers interviewed by Graham et al. (2005) also express a strong desire to report smooth earnings streams. In fact, the researchers are discovered to be willing to sacrifice long-term company value in exchange to smooth earnings. The desire is explained by arguing that smooth earnings result in lower cost of equity and debt capital as lower risk premiums are demanded for smooth earnings. Further, smooth earnings are believed to make it easier for analysts and investors to predict future earnings. At the same time, unpredictable earnings are thought to lead to a lower share price. The findings from Graham et al. (2005) indicate managers' desire to report smooth earnings streams. Further, the findings indicate managers'

belief of smooth earnings leading to a lower cost of equity capital. Contrary to this, McInnis (2010) suggest that there is no relation between smooth earnings and average stock market returns. In other words, the researcher suggests that smooth earnings streams do not lead to a lower cost of equity. Therefore, earnings smoothing might be exercised partly because of wrong beliefs, not because of achieving some concrete benefits for the company.

2.3.3. Management's personal incentives

Managers may seek to manage earnings for bonus purposes in order to increase their own compensation. This is a traditional view in the area of earnings management literature and supporting evidence has been gained already during 1980's (e.g. Healy 1985). A recent study from Bergstresser and Philippon (2006) suggests that bonus schedule arrangements still have an effect on earnings management practices. The researchers find that the use of discretionary accruals to manipulate reported earnings is more pronounced at firms where CEO's total compensation is closely tied to the value of stock and option holdings. Bergstresser and Philippon (2006) also make an interesting notice: the use of accruals has increased significantly over the past 20 years, during which also an enormous increase in stock and option based executive compensation programs has taken place. However, there surely are several matters which may have affected the magnitude of accruals, compensation related earnings management activities just being one potential explanation.

Managers' personal motivations seem to have a connection to their desire of meeting earnings benchmarks. The survey from Graham et al. (2005) indicates that career concerns have a major effect on managers' earnings management decisions. The managers are documented to share a view about labor market assessing their skill level based on short-run stock prices. Further, managers are suggested to have concerns about losing their jobs in the case of a stock price decline. Career concerns are even suggested to have a bigger effect on earnings management incentives than short-term compensation objectives. Additionally, stock market based desire to hit a target seems to be linked to personal incentives related career concerns. Stock market reactions and expectations provide managers with strong incentives to manage earnings. However, the managers seem to react to these pressures mainly because of endangering their future career if not doing so. (Graham et al. 2005)

There is evidence suggesting that managers might make different accounting choices at the different stages of their career. Dechow and Sloan (1991) argue that CEOs spend less on R&D expenditures during their final years in the office. Further, Pourciau (1993) provides evidence of *big bath accounting* in the context of executive changes. This refers to recording large write-offs and special items in the year the management changes and thus increasing earnings for following reporting periods. Results from these two studies can be evaluated from the viewpoint of managers' personal incentives. Cutting R&D costs during the last years at the office increases earnings at that specific moment, but potentially harms long-term company value. On the other hand, the new management might be able to blame the decisions made by the old management for the big charges made. Earnings for the subsequent periods, which may be managed upwards through accruals reversal, can be then interpreted as ability of the new management to produce profits. These practices might be exploited to improve the image of the new management at least in some situations.

2.4. EARNINGS MANAGEMENT TYPES

Earnings management research has traditionally focused on analyzing accruals manipulation, but recent research findings indicate that real earnings management might have become more dominating in today's business environment (e.g. Li et al. 2011; Graham et al. 2005; Roychowdhury 2006).

2.4.1. Accrual-based earnings management

Manipulation practices

Accrual-based earnings management is executed by altering the level of discretionary accruals. Accruals are the difference between reported earnings and cash flow from operations. Discretionary accruals are adjustments to cash flow which are selected by the management. Further, discretionary accruals may be chosen from an opportunity set of generally accepted accounting procedures allowed by legislation. Respectively, managers have discretion in determining the magnitude of several different accruals. For example, managers estimate the level of credit losses, warranty costs and inventory values. Further, decisions have to be made about timing and size of non-recurring and extraordinary items. (Healey 1985)

Consequences

Accruals modify timing of reported earnings and allow management to transfer earnings between periods (Healey 1985). Closely relating to this, *accruals reversal* is an important thing to remember while analyzing accrual-based earnings management (Scott 2009). Because of the reversal, future earnings are pushed downwards by the same amount that they have been raised during a specific reporting period. Respectively, Sloan (1996) has shown that earnings persistence is dependent on the relative magnitudes of the cash flow and accrual components of earnings. If accrual component of current earnings is relatively big, future earnings will be smaller as a result of accrual reversal. Respectively, when cash flow component of current earnings is relatively big, future earnings will be bigger compared to the situation with large current period accruals.

2.4.2. Real earnings management

Background

Graham et al. (2005) find evidence suggesting that executives in the US are reluctant to employ within-legislation accounting discretion. Instead, managers admit taking real actions such as delaying maintenance or advertising expenditure and giving up positive NPV projects to manage earnings. Roychowdhury (2006) points out that some real activities manipulation methods, like price discounts and reduction in discretionary expenditures, can be optimal actions in certain economic circumstances. However, such activities may be considered as earnings management if a manager engages in them more extensively than would be optimal (Roychowdhury 2006).

Roychowdhury (2006) argues that real earnings management potentially causes a greater long-term cost for a company than accruals manipulation. At the same time, the researcher suggests that managers might expect to bear a greater private cost in the short term when they engage in accrual-based earnings management. This argument can be used to explain proposed tendency of managers to prefer real earnings management. Managers might be choosing real earnings management based on their personal incentives, even though the company bears greater cost. (Roychowdhury 2006)

Manipulation practices

Firms are found to manage earnings through manipulating operating, investing and financing activities (Xu et al. 2007). Respectively, real earnings management can affect company's operating, investing and financing cash flows on its cash flow statement. One method to affect operating cash flow is to alter the level of discretionary expenditures. In the context of managers' personal incentives discussion in chapter 2.3.3, it was shown that managers might make different R&D expenditure choices at different stages of their career. In addition to R&D expenditures, management may alter for example discretionary selling and administrative expenses to manage earnings (Gunny 2005).

Other possibility to affect the level of operating cash flow is to manipulate sales and production functions. Jackson and Wilcox (2000) provide evidence suggesting that managers may use sales price reductions in the fourth quarter to meet financial reporting targets. Such action may increase sales and earnings for the period, but has a negative effect on gross profit percentage as a result of lower sales price. Roychowdhury (2006) shows that companies may engage in overproduction to achieve lower cost of goods sold figures. When production levels are higher, fixed overhead costs will be divided to a larger amount of units and total cost per unit declines. As cost of goods sold will be lower, operating cash flow and operating profit increase.

Companies have been found to affect earnings also through investing decisions. For example, Bartov (1993) suggests that managers have a tendency to choose the timing of long-term asset sales in order to smooth earnings and to mitigate accounting based restrictions in debt covenants. Further, it is found that firms may use disposal of fixed assets and marketable securities to minimize the gap between management's forecasts and reported earnings (Herrmann et al. 2003). When unmanaged earnings are below the forecast, a firm may increase earnings by selling fixed assets. Respectively, if unmanaged earnings are above the forecast, a company may choose to decrease earnings through asset purchases.

Also financing activities related decisions have been found to be used to affect earnings figures. Barton (2001) suggests that some companies use derivatives to smooth earnings. The

researcher finds evidence indicating that firms holding derivative portfolios have a lower absolute level of discretionary accruals. At the same time, Barton (2001) suggests that derivatives are a partial substitute for discretionary accruals when a company aims to smooth earnings. Hribar et al. (2006), on the other hand, argue that companies may use stock repurchases to increase earnings per share (EPS) figure when the unmanaged earnings are below analyst earnings forecast. After stock repurchase there are less shares in the market and EPS figure increases.

In addition to manipulating cash flow figures inside one specific cash flow type, a company may use *structuring transactions* (Xu et al. 2007). This involves showing activities in wrong places on a company's cash flow statement. For example, investing activities may be shown as a part of cash flow from operations. Consequently, cash flow statement may give a totally wrong picture about the true state of a company.

Consequences

Real earnings management includes deviating from an optimal operational plan to affect earnings figures (Ewert & Wagenhofer 2005). Not planning actions optimally may have a detrimental effect for a firm as management chooses not to act in order to maximize long-term company value. The survey from Graham et al. (2005) indicates that a major portion of all company executives might be ready to take real actions to manage earnings. About a half of the interviewed managers are found to be ready to reject a positive NPV project to meet an earnings target. Further, almost eighty percent of the surveyed managers implied to be ready to give up economic value in exchange to smooth earnings. Additionally, executives are found to face a trade-off between the short term need to "deliver earnings" and the long-term objective of making value-maximizing investment decisions. (Graham et al. 2005)

Gunny (2005) examines the impact of real earnings management on a company's future operating performance. The results indicate that real earnings management activities influence a firm's subsequent operating performance significantly. Both future earnings and cash flows are shown to decline as a result of real activities manipulation. Findings from Gunny (2005) and Graham et al. (2005) indicate that real earnings management actions may have severe effects on a company's performance.

2.5. DIFFERENT RESEARCH METHODS

2.5.1. Models detecting accrual-based earnings management

Several different models aim to detect accrual-based earnings management by analyzing total accruals. These models are normally used to generate non-discretionary accrual component of total accruals, thus dividing total accruals to non-discretionary and discretionary components. Generated discretionary accrual estimations are then used to evaluate whether earnings are managed. Research models normally require at least one parameter to be determined during an estimation period under which no systematic earnings management is assumed to exist. Methods evaluating aggregate accruals are mathematical methods which examine magnitude of total accruals. (Dechow et al. 1995)

Dechow et al. (1995) test efficiency of five different models in detecting earnings management: the Healy (1985) model, the DeAngelo (1986) model, the Jones (1991) model, modified version of the Jones model (Dechow et al. 1995) and the industry model (Dechow and Sloan 1991). The modified version of the Jones model is shown to have most power in detecting earnings management practices. (Dechow et al. 1995)

The Healy (1985) model divides the sample into three groups: one group's earnings are assumed to be managed upwards and two groups' earnings downwards. Estimation for non-discretionary accruals is achieved by comparing mean total accruals of the three groups with each other. The DeAngelo (1986) model is based on an assumption that no systematic earnings management exists during the first year. First year total accruals are used as an estimation of non-discretionary accruals. Taking different perspective to the topic, the industry model from Dechow and Sloan (1991) assumes that variation of determinants of non-discretionary accruals is similar for companies in the same industry. This assumption is then applied to detect earnings management activities.

The Jones model (1991) has been a dominating model in the academic literature. The Jones (1991) model is a regression model treating non-discretionary accruals as a constant. The model is adjusted with changes in total assets and total revenues, which is done to control the

effect of changes in the economic circumstances. Dechow et al. (1995) modify the Jones (1991) model by adjusting revenues with receivables for the period. This is argued to exclude the effect of management's discretion in revenue recognition. As mentioned already earlier in this same subchapter, the modified Jones model is found to have most power in detecting earnings management. (Jones 1991; Dechow and Sloan 1991; Dechow et al. 1995)

Earnings management has also been studied by examining specific accruals. These studies typically focus on a specific industry and benefit from institutional knowledge when examining the potential accruals behavior (McNichols 2000). For example, Scholes et al. (1990) concentrate on banking industry and study the connection between companies' tax planning and investing decisions. The researchers examine companies' holdings and interest expenses in the context of tax rule changes concerning deductibility of interest expenditures. Scholes et al. (1990) document changes in holdings of municipal bonds after tax legislation changes.

2.5.2. Methods detecting real earnings management

Academic research has aimed to detect real earnings management both via quantitative and qualitative research methods. Roychowdhury (2006) studies real earnings management by the means of quantitative analysis. More specifically, the researcher uses regression model to detect real earnings management conducted by sales manipulation, overproduction or altering the level of discretionary expenditures. Roychowdhury (2006) applies research models implemented by Dechow et al. (1998) to generate estimations for normal CFO (sales manipulation), production costs (overproduction) and discretionary expenditures (discretionary expenditures manipulation). Amount of earnings management is measured as difference between actual financial statement values and estimations generated by the regression analysis. (Roychowdhury 2006)

Graham et al. (2005) study real earnings management in a qualitative study using survey and interviews as research methods. The study bases on five page long survey format which is directed to American CFOs. In addition, the researchers conduct 20 one-to-one interviews with companies' senior executives. Interviews are linked to survey answers and provide

insight and depth for understanding the survey responses. Graham et al. (2005) argue that survey method enables adopting integrated perspective and evaluating trade-offs between different earnings management incentives. Further, the researchers suggest that the method allows taking wider perspective to earnings management without having to concentrate on one specific incentive per time. (Graham et al. 2005)

Also Kepsu (2012) studies real earnings management by using qualitative research methods. The researcher applies case-study method and examines case company interviews conducted during a two year research period. In-depth case company interviews during a respectively long research period allow the researcher to analyze earnings management behavior both during the period when potential earnings management occurs and also after earnings are managed. Respectively, Kepsu (2012) suggests that the study is able to increase general understanding of earnings management by offering insights of earnings management behavior in the process of preparing corporate financial reports and the context in which earnings management takes place. (Kepsu 2012)

2.5.3. Other research methods

Unusual earnings distributions have been interpreted as evidence of earnings management practices. Burgstahler and Dichev (1997) document frequencies of small earnings decreases and small losses to be unusually low. Further, the researchers discover that frequencies of small earnings increases and small profits are unusually high. The unusual distribution around zero earnings can be explained by companies managing earnings upwards to avoid reporting small losses. Respectively, similar abnormalities in the distribution of earnings decreases and increases can be explained by managers' tendency to report a small earnings increase instead of a small decrease. Burgstahler and Dichev (1997) use *the prospect theory* (Kahneman & Tversky 1979) to explain their results. The theory suggests that largest gains from utility occur when moving from relative or absolute loss to gain. Therefore, earnings management practices benefit a company most when it is just able to move from loss to gain, or from relative loss to relative gain. Relative loss refers to reporting a lower earnings figure than during an earlier comparison period.

Academics have also evaluated the ability of stock markets to value different earnings components. Sloan (1996) suggests that investors are unable to fully understand different information contexts of cash flow and accruals components. With this, Sloan (1996) refers to differential earnings persistence of the earnings components. Also Xie (2001) has studied the same topic. The researcher finds evidence suggesting that stock markets overprice the portion of abnormal accruals which arises from managerial discretion. Dechow and Skinner (2000) interpret the findings from Sloan (1996) and Xie (2001) as evidence of markets being fooled by simple earnings management practices. Findings from these three studies indicate that companies use accrual-based earnings management to mislead investors and, in fact, are successful in doing so.

Myers et al. (2007) provide a different perspective to earnings management research. The researchers aim to gain evidence of earnings management by analyzing *the momentum effect*, which refers to the tendency of poorly performing stocks and well-performing stocks in one period to continue abnormal performance in following periods (Bodie et al. 2005). Myers et al. (2007) find 746 US firms that have reported increasing earnings strings of at least twenty quarters since 1962. The researchers argue that this is more than could be expected based on financial theories. The firms are perceived to enjoy abnormal returns of more than twenty percent annually during the first five years of these strings. Additionally, abnormal returns are observed to disappear after increasing earnings strings end. Myers et al. (2007) argue that abnormal returns motivate companies to maintain and extend increasing earnings strings by the means of earnings management.

Kinnunen and Koskela (2003) document companies' tendency to exercise *cosmetic earnings management*. Cosmetic earnings management involves small upward rounding of reported net income, which generates more than expected zeros and less than expected nines as second digit of earnings numbers. The rounding yields an earnings number that seems to be abnormally larger than it would be otherwise. Findings from Kinnunen and Koskela (2003) reflect companies' ambition to make their earnings figures look better.

2.6. PRIOR EARNINGS MANAGEMENT RESEARCH IN FINLAND

Finnish earnings management research has concentrated on examining earnings management before the mandatory IFRS adoption in 2005 and IFRS period has gained less attention. Further, research is mainly focused on accrual-based earnings management.

Kasanen et al. (1996) study earnings management in Finland during 1970-1989. Typical characters of this time period were debt dominated capital markets and concentrated ownership with restrictions on international ownership. The researchers provide evidence suggesting that earnings management in Finland during this period driven by an implicit contract between public companies and large institutional equity holders, who expect to receive a smooth dividend stream from their investment. Further, the results suggest use of earnings management to achieve earnings level that enables both dividend payout and tax minimization.

Kallunki and Martikainen (1999a) examine earnings management in Finland during the same institutional environment as Kasanen et al. (1996), but by concentrating on years 1983-1989. The results suggest financially troubled companies to use accounting discretion to manage reported earnings upwards before a financial failure. Closely related to this, Sundgren (2007) studies earnings management in leveraged and non-leveraged Finnish companies during 1997-2001. Study results suggest that leveraged companies are more likely to manage their earnings upwards than non-leveraged firms.

Research findings concerning earnings management differences between Finnish public and private companies are controversial. Sundgren (2007) finds no significant difference in the tendency to manage earnings between public and private companies during 1997-2001. Results from Spohr (2004), on the other hand, suggest more income smoothing in private than public Finnish companies.

Kallunki and Martikainen (2003) investigate whether the level of current earnings management can be used to predict future profitability of Finnish listed companies (research period 1988-1996). The results indicate a negative relationship between future profitability of a company and earnings management measure lagged by one year. Kallunki and Martikainen

(1999b) study also how Finnish public companies adjust their earnings management behavior based on industry-wide targets during 1988-1996. The results indicate that management of a firm takes into account the extent of earnings management of other firms operating in the same industry when managing reported earnings.

As discussed earlier in subchapter 2.3.2, share issue situations may provide managers with incentives to use accounting discretion. Results from Spohr (2004) suggest entrepreneur companies to be more probable earnings managers in context of IPOs than institutionally owned companies (research period 1994-2000). Spohr (2004) has implemented his study by analyzing a sample of 56 companies that went public on the Helsinki Stock Exchange during 1994-2000. Kinnunen et al. (2000), on the other hand, document earnings management in context of Finnish public company seasoned share issues during 1970-1989.

Recent case study from Kepsu (2012) examines earnings management by analyzing case company interviews that are conducted during two year research period after IFRS adoption. The case company is a Finnish publicly quoted company listed on the OMX Nordic Exchange Helsinki. In-depth case company interviews indicate wide range earnings management incentives and behavior relating both to accrual-based and real earnings management. Kepsu (2012) observes potential earnings management in relation to accounting choices discretion (guarantee work provision and R&D expense activation), provision for employee bonuses, acquisition cost allocation and goodwill impairment testing. In addition, the researcher documents tendency of the case company CFO to use flexibility offered by IFRS and incentives to use managerial discretion to achieve earnings targets. Further, Kepsu (2012) observes motivations to use discretion carefully so that investors will not perceive it.

Saastamoinen and Pajunen (2012) study the role of managerial discretion in goodwill write-off decisions in Finnish publicly quoted companies during 2005-2009. The researchers find evidence suggesting that goodwill impairment charges occur when earnings would have been negative already before the impairment, which is interpreted to indicate earnings bath type behavior. Further, the results from Saastamoinen and Pajunen (2012) suggest that a new CEO is more likely to impair goodwill than an old CEO. This is in line with international research evidence (Porciau 1993) on big bath accounting in context of executive changes.

3. IFRS ADOPTION

All listed companies in European Union member countries have been required to apply IFRS since 2005. Also a large group of other countries like Canada, China, India, nearly all South American countries and several African countries either require or permit IFRS. In addition, the U.S. Securities and Exchange Commission (SEC) has signaled to make preparations for incorporating IFRS into US financial reporting system. (Deloitte and Touch 2012) The main objective of this study is to explore the effect of IFRS adoption on earnings management in Finnish publicly quoted companies. Consequently, it is beneficial to be aware of main approaches under IFRS and previous research findings to be able to evaluate the study results. The third chapter aims to familiarize the reader with the topic of IFRS. This is done in two subchapters. Main approaches under IFRS are first discussed in subchapter 3.1. Then, the reader is provided with a discussion of prior research findings of the effect of IFRS adoption on earnings management in subchapter 3.2.

3.1. MAIN APPROACHES UNDER IFRS

A central feature of IFRS is that standards are principles-based instead of rules-based. Principles-based systems use generic accounting standards and do not provide direct answers to all possible controversial issues in the form of detailed rules and guidance. Instead, principles-based systems refer to fundamental principles to be used as a basis of accounting decisions. However, as standards are based on generic principles rather than clear rules, companies are required to interpret the standards to determine the right accounting choice in every specific situation. Therefore, companies are left with flexibility in respect to making right accounting decisions in different situations. (Carmona & Trombetta 2008)

In addition to the rules-based nature of the standards, fair value approach can be seen to be a central feature of IFRS framework. Fair value accounting refers to recognizing assets at balance sheet at their current and real value rather than at historical value. Therefore, balance sheet value of an asset may vary in different years according to fair value changes. Fair value accounting is relatively widely embodied to IFRS standards and fair value approach is a central feature of IFRS framework. (Ball, 2006) Local accounting legislation applied by

Finnish listed companies before 2005 has been based on theory emphasizing profit and loss statement (e.g. Pajunen and Saastamoinen 2010). IFRS, on the other hand, can be seen to be quite balance sheet centralized, as fair value principle is widely embodied to the standards. Therefore, IFRS has introduced a relatively big change to accounting practices among Finnish publicly quoted companies.

Use of fair value principle can be reasoned by relevancy of fair value information in decision making for instance from investors' viewpoint. However, the shift towards fair value application has also been criticized (e.g. Troberg, 2007, p: 46; Ball, 2006). Determining fair value for an asset is straightforward if a trustworthy market prize is available. However, this is not the case when relevant markets are illiquid or when public markets are not available at all. As Ball (2006) discusses, fair value accounting becomes 'mark to model' accounting when liquid market prices are not available, which refers to reporting estimates of market prices, not actual market prices. In such situation, there is a risk of using imperfect pricing models and imperfect estimates of model parameters. Fair value determination may also be affected by managers' subjective views and opinions. Related to this, Naktabtee and Patpanichchot (2011) suggest that fair value accounting may in some situations actually make investors worse off (as compared to historical cost accounting values) due to inherent estimation errors and managerial manipulation.

IFRS allows and requires fair value accounting in context of several balance sheet items, including both tangible and intangible assets. For example, property plant and equipment has to be valued at acquisition cost or at fair value (IAS 16). Fair value may be determined based on management's subjective value in use (net present value) estimations if marked-based evidence or other reliable external valuation is not available. In case of revaluation, the change amount shall be credited directly to equity under revaluation surplus without booking the amount through income statement. Therefore, the revaluation discretion under IAS 16 cannot be used to affect earnings figures. IAS 36 allows impairment of assets and impairment reversal to recoverable amount in case of many asset types, for example goodwill (with reversal restrictions) and property plant and equipment. Recoverable amount should be determined based on higher of fair value less costs to sell or value in use. Further, impairment loss is

recognized as expense and impairment reversal as income in income statement (with the exception of revalued assets, where value changes are recognized directly in equity). As a result, impairment and impairment reversal clauses under IAS 38 may offer possibilities to manage earnings. Intangible assets with a market price (IAS 38), financial instruments (IAS 39), investment property (IAS 40) and biological assets (IAS 41) can be mentioned as examples of other asset types that fair value approach is applied to at least in certain situations.

In relation to goodwill accounting treatment, IFRS has introduced a major change as compared to prior Finnish legislation. The local Finnish GAAP requires goodwill to be amortized (in most cases) in five years (Accounting Act 1336/1997). Contrary to this, IFRS does not allow goodwill amortization but requires conducting annual impairment tests at cash-generating unit level (IAS 36). Respective impairment charges shall be booked if goodwill recoverable amount of a cash generating unit has declined below the carrying amount, i.e. amount recognized at balance sheet. As discussed above, the recoverable amount may be determined based on value in use (net present value) estimations, which leaves some discretion for the management. Therefore, managers may have discretion in determining necessity and size of the write-offs.

Pajunen and Saastamoinen (2012) analyze Finnish auditors' perceptions of goodwill accounting and earnings management under IFRS. Auditors are found to divide to two groups based on their opinions. The first group believes that management of listed Finnish companies behaves opportunistically in deciding the need of goodwill write-offs. The second group, on the other hand, has a more favorable attitude towards IFRS goodwill procedures and does not perceive listed companies' management to behave opportunistically. As mentioned in the previous chapter (2.6), Saastamoinen and Pajunen (2012) find evidence indicating earnings bath type behavior in the form of tendency of Finnish listed companies to make goodwill impairment charges when earnings would have been negative already before the impairment. The results from both two studies imply that companies have some discretion in goodwill related accounting decisions and that the flexibility might be used opportunistically.

As discussed in the chapter 2.6 concentrating on Finnish research, Kepsu (2012) studies earnings management with case study method in a Finnish publicly quoted company. The study reveals tendency of the case company CFO to use managerial discretion and flexibility offered by IFRS. Kepsu (2012, p: 56-57) describes CFO's behavior as follows:

> "*In the initial interview, the CFO stated that the flexibilities that the IFRS offer are and should be used. He found them natural and practical thing and admitted that he quite actively used to use managerial discretion as laid down according to the IFRS, in order to meet some thresholds*."

The quotation highlights how using discretion offered by IFRS may be seen as a natural and acceptable behavior, not only as something unethical, as the tone relating to concepts "earnings management" or "earnings manipulation" might often be perceived. At the same time, the quotation indicates that using discretion offered by IFRS might be a part of normal decision making process at least in the surveyed case company.

3.2. PRIOR RESEARCH FINDINGS

Prior research in the area of the effect of IFRS adoption on earnings management has focused on accounting quality and thus concentrates on accrual-based earnings management. Earlier research provides controversial results. While some studies suggest IFRS to have a positive influence on accounting quality and earnings management (e.g. Barth et al., 2008; Chen et al., 2010), some other publications indicate increase in earnings management after IFRS (e.g. Jeanjean and Stolowy 2008).

There are studies examining the effect of IFRS adoption on earnings management among EU member countries with a multi-country sample. Callao and Jarne (2010) document increase in discretionary accruals after IFRS adoption and suggest intensified earnings management since the adoption. Chen et al. (2010), on the other hand, find evidence of smaller magnitude of absolute discretionary accruals, higher accruals quality and less earnings management toward a target after the adoption. Therefore, the two studies provide opposite evidence of the issue. As results from Callao and Jarne (2010) suggest an increase in accrual-based earnings

management after IFRS, findings from Chen et al. (2010) suggest the opposite by indicating decline in accrual-based earnings management after the adoption.

Several studies employ single country setting by evaluating the effect of IFRS adoption on earnings management behavior among companies in a specific country. Barth et al. (2008) find evidence suggesting that German companies applying international accounting standards have generally less earnings management, more timely loss recognition and higher accounting item value relevance as comparing to firms applying domestic standards. Therefore, results suggest less earnings management under IFRS than local accounting standards. Contrary to Barth et al. (2008), Jeanjean and Stolowy (2008) suggest that earnings management has not declined in Australia or the UK after IFRS adoption. Further, results from Jeanjean and Stolowy (2008) indicate an increase in the level of earnings management in France. Results from Pagletti (2009), on the other hand, are in line with Jeanjean and Stolowy (2008). Pagletti (2009) examines the effect of IFRS adoption on accrual-based earnings smoothing in Italian companies. The researcher documents increase in earnings management and decline in loss recognition timeliness.

The effect of IFRS adoption on earnings management and accounting quality has been studied also in Asian context. Wang and Campbell (2012) find some evidence suggesting a decline in accrual-based earnings smoothing after IFRS adoption in Chinese listed companies. Contrary to this, Rudra (2012) finds that Indian firms adopting international standards are more likely to smooth earnings as comparing to non-adopting companies.

As can be perceived based on the above discussion, prior research evidence provides substantially large variety of controversial results of the effects of IFRS on accounting quality and earnings management. The controversial results could be explained by the argument from Damant (2006), who suggests that the relative effect of IFRS adoption varies in relation to circumstances in the adopting country prior to change. At the same time, the researcher suggests that improvements resulting from the adoption might be small in such countries where accounting has been capital market oriented already before the adoption. Respectively, Damant (2006) suggests that the impact of IFRS might be huge in countries with very little

accounting expertise before the adoption. Soderstrom and Sun (2007), on the other hand, argue that cross-country differences in accounting quality are likely to remain also after IFRS adoption. The researchers reason this by arguing that accounting quality is a function of the firm's overall institutional environment, including the legal and political system in a specific country.

There is no prior research studying simultaneously the effect of IFRS adoption on accrual-based and real earnings management. However, Cohen et al. (2009) have explored the effect of Sarbanes Oxley Act (SOX) on earnings management in the US from this viewpoint. The researchers document that accrual-based earnings management increased steadily from 1987 until the passage of the SOX in 2002, which was followed by a significant decline after the passage of the SOX. Further, the researchers find that the level of real earnings management declined prior to SOX and increased significantly after the passage of SOX. Cohen et al. (2009) interpret these findings to indicate that companies switched from accrual-based to real earnings management methods after the change in legislation. The results from Cohen et al. (2009) can be evaluated in the light of findings from Li et al. (2011), who find evidence indicating that the level of real earnings management is higher in countries with stronger legal system. Based on this argument, it could be questioned whether an increase in the strength of country-level legal protection in context of the passage of SOX might have directed companies to prefer real activities manipulation against accrual-based earnings management

4. HYPOTHESIS DEVELOPMENT, RESEARCH METHODS AND DATA

The fourth chapter starts the empirical part of the study by concentrating on hypothesis development, research methods and data. Hypothesis development subchapter (4.1) first discusses the logic behind different earnings management hypotheses and introduces two research hypotheses of the study. This is followed by presenting research methods (4.2). Finally, the chapter is completed by discussing data used in the empirical analysis (4.3).

4.1. HYPOTHESIS DEVELOPMENT

4.1.1. Logic behind research hypotheses

As discussed in the introduction, earnings management will be studied by concentrating on accrual-based earnings management, sales manipulation and overproduction. *Accrual-based earnings management* refers to managing earnings figures by altering the level of discretionary accruals. Further, accrual-based earnings management leads to abnormally high or low accruals. Therefore, the difference between reported earnings and cash flow from operations is expected to be abnormally small or big. (Healy 1985)

Sales manipulation can be seen as managers' attempts to temporarily increase sales during a fiscal year by offering customers price discounts or more lenient credit terms. Companies using limited time *price discounts* at the end of a year are able to generate additional sales from the next period to the current year. When prices are changed back to the normal level, it is likely that increased sales volumes will disappear. Marginal profits will decline as a result of price discounts. However, if margins are positive, total earnings for the period will increase by price discount campaigns. As margins decline as a result of price discounts, production costs relative to sales level can be expected to be abnormally high for companies using this kind of manipulation. Further, declined marginal profits are also expected to lead to abnormally low CFO in relation to sales. Sales volumes can be boosted temporarily also by offering *more lenient credit terms*. When this is done at the end of reporting period, cash inflows from current period sales will be received during the following reporting period. This kind of sales manipulation can be expected to lead to lower current-period CFO. Also the relation between CFO and sales can be expected to be abnormally low. (Roychowdhury, 2006)

Manufacturing firms can use *overproduction* to increase earnings for a given period. As production levels increase, fixed overhead costs will be divided to larger number of units and fixed cost per one unit will decline. If marginal unit cost will not increase at the same time, total cost per unit will decline. This will cause also reported cost of goods sold (COGS) to decline and increase operating margins and reported earnings for the period. However, additional production and holding costs from the overproduced items will affect cash flows of the period. Thus, CFO will be lower than what is expected given the sales level. Further, the incremental marginal costs incurred in producing the additional inventories will result in as higher annual production costs relative to sales. Production costs will be defined as the sum of COGS and change in inventory in order to take the additional inventories into account. (Roychowdhury, 2006)

I will investigate patterns in total accruals, cash flow from operations (CFO) and production costs to detect changes in the level of earnings management. Respectively, I will focus on three manipulation methods and their effects on the abnormal levels of the three variables:

1. Accrual manipulation, which refers to altering the level of discretionary accruals
2. Sales manipulation, that is, accelerating the timing of sales and/or generating additional unsustainable sales through increased price discounts or more lenient credit terms
3. Overproduction, which refers to increasing production to report lower COGS

4.1.2. The effect of IFRS adoption on earnings management practices

The first objective of this study is to examine whether mandatory IFRS adoption has affected earnings management practices among Finnish publicly quoted companies. The first hypothesis is tripartite and is defined as follows:

H1a: There is a difference in the level of accrual-based earnings management between FAS and IFRS.

H1b: There is a difference in the level of sales manipulation between FAS and IFRS.

H1c: There is a difference in the level of overproduction between FAS and IFRS.

4.1.3. Annual changes in earnings management

The second objective of this study is to examine whether there are annual changes in the level of earnings management in Finnish publicly quoted companies that do not relate to IFRS adoption. The second hypothesis is tripartite and is defined as follows:

H2a: There are changes in the level of accrual-based earnings management in different years which are not explained by IFRS adoption.

H2b: There are changes in the level of sales manipulation in different years which are not explained by IFRS adoption.

H2c: There are changes in the level of overproduction in different years which are not explained by IFRS adoption.

4.2. METHODOLOGY

4.2.1. Estimation models

Accrual-based earnings management

The Jones (1991) model will be used as the main research model applied to detect accrual-based earnings management. The model is a regression model basing on an assumption that nondiscretionary accruals are constant. It attempts to control the effect of changes in a firm's economic circumstances on nondiscretionary accruals. The Jones model for total accruals in an event year is:

$$TA_t / A_{t-1} = \alpha_1(1/A_{t-1}) + \alpha_2(\Delta S_t / A_{t-1}) + \alpha_3(PPE_t / A_{t-1}), \quad (1)$$

where

TA_t = total accruals in year t

A_{t-1} = total assets at t–1

ΔS_t = sales change in year t (S_t-S_{t1})

PPE_t = property plant and equipment in year t

Main empirical analysis is implemented by running regression separately for different subsamples and by evaluating differences in the ability of the applied research model to

explain variation in dependent variable values. An increase (decline) in the ability of the research model to explain variation in dependent variable is interpreted to reflect a decline (increase) in the level of earnings management. Regression residual is considered as estimation of earnings management and empirical analysis will base on evaluating adjusted R^2 values for different subsamples.

Robustness of annual accrual manipulation analysis is tested by applying the DeAngelo (1986) model. The model analyzes accrual-based earnings management by evaluating differences in yearly total accruals and assumes that first differences have an expected value of zero under the null hypothesis of no earnings management. The estimation period for nondiscretionary accruals is limited to previous year's figures and total accruals for last period are used as a measure of nondiscretionary accruals. The DeAngelo (1986) model for nondiscretionary accruals is:

$$NDA_t = TA_{t-1}, \tag{2}$$

where

NDA_t = normal discretionary accruals at t

TA_t = total accruals at t–1.

The DeAngelo (1986) model measures nondiscretionary accruals without error if nondiscretionary accruals are constant over time and discretionary accruals have a mean of zero during the estimation period. However, if nondiscretionary accruals are not constant and change from period to period, the model is not effective in measuring nondiscretionary accruals.

Robustness of yearly accruals manipulation analysis will also be tested also by evaluating annual changes in average variable values.

Sales manipulation

Sales manipulation will be evaluated by following Roychowdhury (2006) and thus by applying the model developed by Dechow et al. (1998). The model expresses normal cash

flow from operations as a linear function of sales in the current period. Regression will be run for the following model:

$$CFO_t / A_{t-1} = \alpha_1(1/A_{t-1}) + \alpha_2(S_t / A_{t-1}) + \alpha_3(\Delta S_t / A_{t-1}), \quad (3)$$

where

CFO_t = cash flow from operations in year t

A_{t-1} = total assets at t–1

S_t = sales in year t

ΔS_t = sales change in year t (S_t–S_{t-1}).

As in case of accrual-based earnings management, main empirical analysis will be implemented by evaluating the ability of the applied regression model to explain variation in dependent variable values. Further, regression residual is considered as estimation of earnings management and empirical analysis of the study will base on evaluating adjusted R^2 values for different subsamples.

Robustness of annual sales manipulation analysis will be tested by analyzing differences in yearly CFO-to-sales and production cost-to-sales ratios. As sales manipulation occurs, sales levels are increased temporarily by offering price discounts and/or more lenient credit terms. Both procedures may be used to generate sales from next period to the current one. As long as sales margins are positive, current period earnings will increase as a result of these actions. In case of *price discount campaigns*, marginal profits can be expected to decline. This causes production costs to be abnormally high in relation to sales level and CFO to be abnormally low in relation to sales. As sales is increased temporarily via *more lenient credit terms*, sales manipulation is expected to lead to lower current period CFO in relation to sales, as inflows may be delayed to the following reporting period. (Roychowdhury 2006) Based on above viewpoints, it is suggested that annual changes in the level of sales manipulation can be evaluated by analyzing yearly differences in CFO-to-sales and production cost-to-sales figures.

Overproduction

As sales manipulation, also overproduction will be evaluated by following Roychowdhury (2006) and by applying the model developed by Dechow et al. (1998). As discussed earlier, production costs will be determined as follows:

$$PROD_t = COGS_t + \Delta INV_t \ , \tag{4}$$

where

$PROD_t$ = production costs in year t

$COGS_t$ = cost of goods sold in year t

ΔINV_t = change in inventory in year t (INV_t–INV_{t-1}).

Further, the model for normal COGS will be determined as:

$$COGS_t / A_{t-1} = \alpha_1(1/A_{t-1}) + \alpha_2(S_t / A_{t-1}), \tag{5}$$

where

$COGS_t$ = cost of goods sold in year t

A_{t-1} = total assets at t–1

S_t = sales in year t.

And the model for normal inventory growth will be determined as:

$$\Delta INV_t / A_{t-1} = \alpha_1(1/A_{t-1}) + \alpha_2(\Delta S_t / A_{t.1}) + \alpha_3(\Delta S_{t-1} / A_{t-1}), \tag{6}$$

where,

ΔINV_t = change in inventory in year t (INV_t–INV_{t-1})

A_{t-1} = total assets at t–1

ΔS_t = sales change in year t (S_t–S_{t-1})

ΔS_{t-1} = sales change in year t-1 (S_{t-1}–S_{t-2}).

As production cost is determined as a sum of COGS and change in inventory, normal production costs can be estimated by using above equations (5) and (6) to run regression as follows:

$$PROD_t / A_{t-1} = \alpha_t (1/A_{t-1}) + \alpha_2 (S_t / A_{t-1}) + \alpha_3 (\Delta S_t / A_{t-1}) + \alpha_4 (\Delta S_{t-1} / A_{t-1}), \quad (7)$$

where

$PROD_t$ = production costs in year t

A_{t-1} = total assets at t–1

S_t = sales in year t

ΔS_t = sales change in year t (S_t–S_{t-1})

ΔS_{t-1} = sales change in year t-1 (S_{t-1}–S_{t-2}).

The above equation for normal production costs will be used in the empirical analysis in order to analyze changes in the level of overproduction. As in context of accrual-based earnings management and sales manipulation, main analysis will be implemented by evaluating the ability of the applied regression model to explain variation in dependent variable values. Further, regression residual is considered as estimation of earnings management and empirical analysis will base on evaluating adjusted R^2 values for different subsamples.

Robustness of annual overproduction analysis will be tested by analyzing differences in annual CFO-to-sales and production cost-to-sales ratios. When production level is increased fixed overhead costs will be divided to larger number of units and fixed cost per one unit will decline. This will cause reported cost of goods sold (COGS) to decline, which increases reported earnings for the period. However, additional production and holding costs from the overproduced items will affect cash flows of the period. CFO will be lower than what could be expected given the sales level. Further, incremental marginal costs incurred in producing the additional inventories will result in as higher annual production costs than could be expected given the sales level. Production costs will be defined as the sum of COGS and change in inventory in order to take the additional inventories into account. (Roychowdhury 2006) Based on above viewpoints, it is suggested that annual changes in the level of overproduction can be evaluated by analyzing yearly differences in CFO-to-sales and production cost-to-sales figures.

4.2.2. Adjusted R^2 statistic

The main empirical analysis is conducted by applying OLS Linear Regression. Further, the main analysis is executed by evaluating differences in the magnitudes of adjusted R^2 values. Adjusted R^2 is a goodness of fit statistic of regression model and measures the ability of explanatory variables to explain variations in dependent variable values (Brooks, 2008, p. 107). An increase in the explaining ability of the model results as an increase in adjusted R^2. When financial statement figures are manipulated, one can expect adjusted R^2 to be lower than what it would be in case of unmanaged accounting information. Therefore, changes in the level of adjusted R^2 values may be used to evaluate differences in earnings management. The main empirical analysis will be implemented by comparing adjusted R^2 values for different subsamples in order to observe differences in the levels of earnings management between the subsamples. An increase (decline) in adjusted R^2 value will be interpreted to reflect a decline (increase) in the level of earnings management.

4.2.3. Research variables

Total accruals will be determined as the difference between net income available to common stockholders and cash flow from operations (CFO). Further, CFO represents cash flow from operations as reported in the statement of cash flows. Production costs will be defined as the sum of COGS and change in inventory. As explained by Roychowdhury (2006), this kind of definition will generate theoretical "production" costs also for non-manufacturing firms. At the same time, Roychowdhury (2006) argues that total production costs might be better in reflecting the effects of real activities than bare COGS. The researcher argues that for example accrual manipulation striving towards lower reported COGS through the inventory account will not be reflected in reported COGS figure, but might be taken into account when inventory change is evaluated as a part of production costs. This might be the case for example when write-off of obsolete inventory is delayed.

4.3. DATA

The empirical part of the study is based on data collected from Thomson One Banker Worldscope database. Sample consists of firms quoted in the Helsinki Stock Exchange between 2001 and 2010. The sample is restricted to nonfinancial firms. Therefore, companies representing banks, financial institutions and insurance companies (two-digit SIC codes 60-67) are excluded from the sample. It is required that each firm-year observation has the data necessary to calculate the earnings management proxies, which are employed in a particular analysis. Thus, all relevant variable values are required for a company to be included in the sample. Available variable values for different companies vary depending on the year. As the three estimation models use different variables in the analysis, a company may be included to the sample when analyzing one manipulation method but excluded when analyzing another. For example, a company might be included in sales manipulation analysis but excluded in case of production manipulation evaluation. The final sample includes 952 firm-year observations for accrual-based earnings management analysis, 1005 for sales manipulation and 931 for overproduction.

The main objective of this study is to study whether mandatory IFRS adoption in 2005 has affected earnings management practices among Finnish publicly quoted companies. In Finland companies were able to early adopt IFRS voluntarily already before the mandatory adoption in 2005. Some companies adopted IFRS voluntarily already in 2003 or 2004. Therefore, the effect of the adoption cannot be evaluated directly by comparing yearly results for periods from 2001 to 2004 and from 2005 to 2010. To be able to examine the effect of IFRS adoption on earnings management, observations are divided to two subsamples according to accounting regulation. Like financial statement data, also information of used accounting standards for each company and each year is retrieved from Thompson One Banker Worldscope database. Table 1 presents number of firm-year observations for FAS and IFRS subsamples.

TABLE 1: NUMBER OF FIRM-YEAR OBSERVATIONS FOR FAS AND IFRS SUBSAMPLES

This table presents the amount of firm year observations for FAS and IFRS subsamples separately for different earnings management types.

	Accruals Manipulation	*Sales Manipulation*	*Overproduction*
Nr. of firm-year observations			
FAS	348	372	339
IFRS	604	633	592
Total	952	1005	931

The second objective of this study is to study yearly differences in the level of earnings management that do not relate to IFRS adoption. Availability of relevant data varies also during different years. Table 2 presents number of firm-year observations for different years.

TABLE 2: NUMBER OF FIRM-YEAR OBSERVATIONS FOR YEARLY SUBSAMPLES

This table presents amount of firm-year observations for yearly sub-samples separately for different earnings management types.

	2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Nr. of firm-year observations										
Accruals Manipulation	75	90	92	95	94	98	100	102	102	104
Sales Manipulation	93	94	97	100	102	103	103	105	105	106
Overproduction	73	89	91	93	95	96	95	100	100	100

5. RESULTS

The fifth chapter continues empirical part of the study by presenting and analyzing research results. The chapter starts by presenting descriptive statistics (5.1). This is followed by discussing regression analysis results in two separate subchapters, which are grouped according to the two objectives of the study. Results relating to the effect of IFRS adoption on earnings management are first analyzed in subchapter 5.2. After this, results from annual earnings management analysis are presented in subchapter 5.3. In the end, the reader is provided with a discussion of robustness test results (5.4).

5.1. DESCRIPTIVE STATISTICS

Descriptive statistics are presented according to the twofold structure of the study. First, non-grouped statistics are presented in order to illustrate the whole data (5.1.1). After this, subsample descriptive statistics are presented separately for accounting regulation (5.1.2) and annual subsamples (5.1.3) to enable evaluating possible differences between the subsamples. All descriptive statistics are based on whole sample information and outliers are not excluded from the analysis.

5.1.1. Non-grouped descriptive statistics

Table 3 presents non-grouped full sample descriptive statistics.

TABLE 3: FULL SAMPLE DESCRIPTIVE STATISTICS

This table presents descriptive statistics (m. €) for the whole sample without excluding potential outliers. Variable values are scaled by previous period total assets. Regression is run for scaled variable values, which makes it important to present descriptive statistics for scaled values.

	N	*25th Percentile*	*Mean*	*Median*	*75th Percentile*	*Standard deviation*
CFO	1008	35.8 e^{-3}	78.1 e^{-3}	90.7 e^{-3}	147.8 e^{-3}	174.4 e^{-3}
COGS	983	594.6 e^{-3}	958.8 e^{-3}	869.4 e^{-3}	1,270,6 e^{-3}	557.7 e^{-3}
Net Income	989	3.4 e^{-3}	28.7 e^{-3}	49.2 e^{-3}	98.7 e^{-3}	187.5 e^{-3}
Inventory	973	28.8 e^{-3}	154.9 e^{-3}	130.1 e^{-3}	228.2 e^{-3}	149.8 e^{-3}
Production Cost	946	582.2 e^{-3}	979.8 e^{-3}	886.0 e^{-3}	1,303.9 e^{-3}	581.9 e^{-3}
Property, Plant and Equipment	972	251.2 e^{-3}	623.1 e^{-3}	466.3 e^{-3}	953.9 e^{-3}	486.0 e^{-3}
Receivables	1008	130.2 e^{-3}	235.5 e^{-3}	204.7 e^{-3}	297,6 e^{-3}	158.6 e^{-3}
Sales	1009	910.2 e^{-3}	1,309.4 e^{-3}	1,234.3 e^{-3}	1,708.1 e^{-3}	601.2 e^{-3}
Total Accruals	988	-92.2 e^{-3}	-50.9 e^{-3}	-48.3 e^{-3}	-333.0 e^{-3}	124.8 e^{-3}
Total Assets	1009	936.3 e^{-3}	1,090.4 e^{-3}	1,020.1 e^{-3}	1,129.9 e^{-3}	457.4 e^{-3}

5.1.2. FAS and IFRS descriptive statistics

Table 4 presents descriptive statistics separately for FAS and IFRS subsamples. After this, Figure 1 presents a comparison of average variable values between FAS and IFRS subsamples.

TABLE 4: FAS AND IFRS SUBSAMPLE DESCRIPTIVE STATISTICS

Panel A: FAS Subsample Descriptive Statistics

This table presents descriptive statistics (m. €) for FAS subsample. Variable values are scaled by previous period total assets. Regression is run for scaled variable values, which makes it important to present descriptive statistics for scaled values.

	N	*25th Percentile*	*Mean*	*Median*	*75th Percentile*	*Standard deviation*
FAS subsample statistics						
CFO	372	38.9 e^{-3}	75.9 e^{-3}	94.8 e^{-3}	147.3 e^{-3}	174.3 e^{-3}
COGS	355	579.3 e^{-3}	962.2 e^{-3}	853.8 e^{-3}	1,267.5 e^{-3}	583.9 e^{-3}
Net Income	365	3.4 e^{-3}	19.4 e^{-3}	44.2 e^{-3}	87.1 e^{-3}	202.8 e^{-3}
Inventory	360	28.9 e^{-3}	150.0 e^{-3}	116.1 e^{-3}	225.8 e^{-3}	142.2 e^{-3}
Production Cost	345	581.2 e^{-3}	978.9 e^{-3}	871.5 e^{-3}	1,299.5 e^{-3}	602.9 e^{-3}
Property, Plant and Equipment	355	280.2 e^{-3}	626.8 e^{-3}	483.2 e^{-3}	967.5 e^{-3}	473.0 e^{-3}
Receivables	372	126.1 e^{-3}	229.4 e^{-3}	119.1 e^{-3}	227.6 e^{-3}	167.6 e^{-3}
Sales	372	887.7 e^{-3}	1,294.6 e^{-3}	1,244.1 e^{-3}	1,692.6 e^{-3}	604.3 e^{-3}
Total Accruals	365	-108.1 e^{-3}	-57.5 e^{-3}	-60.0 e^{-3}	-22.9 e^{-3}	-151.3 e^{-3}
Total Assets	372	908.4 e^{-3}	1,042.0 e^{-3}	984.5 e^{-3}	1,086.4 e^{-3}	431.8 e^{-3}

Panel B: IFRS Subsample Descriptive Statistics

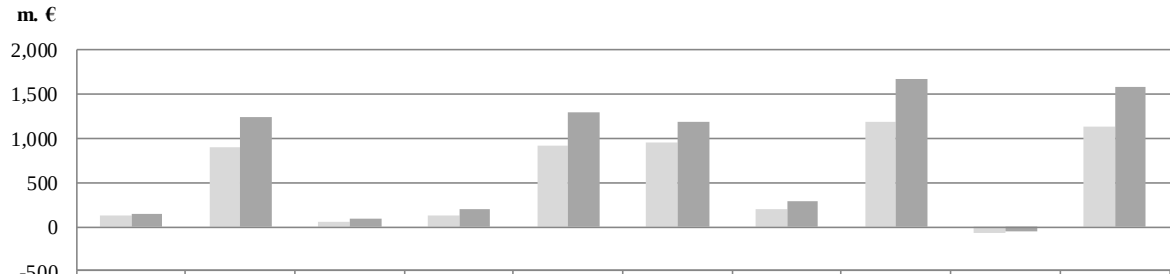
This table presents descriptive statistics (m. €) for IFRS subsample. Variable values are scaled by previous period total assets. Regression is run for scaled variable values, which makes it important to present descriptive statistics for scaled values.

	N	*25th Percentile*	*Mean*	*Median*	*75th Percentile*	*Standard deviation*
IFRS subsample statistics						
CFO	633	33.6 e^{-3}	79.2 e^{-3}	89.0 e^{-3}	148.0 e^{-3}	174.8 e^{-3}
COGS	627	597.2 e^{-3}	956.5 e^{-3}	887.7 e^{-3}	1,274.5 e^{-3}	543.1 e^{-3}
Net Income	620	15.5 e^{-3}	66.6 e^{-3}	80.6 e^{-3}	144.3 e^{-3}	179.1 e^{-3}
Inventory	609	29.0 e^{-3}	157.9 e^{-3}	134.5 e^{-3}	233.6 e^{-3}	154.2 e^{-3}
Production Cost	600	581.9 e^{-3}	980.2 e^{-3}	890.2 e^{-3}	1,305.6 e^{-3}	570.5 e^{-3}
Property, Plant and Equipment	617	243.5 e^{-3}	621.0 e^{-3}	462.0 e^{-3}	952.7 e^{-3}	493.7 e^{-3}
Receivables	632	132.4 e^{-3}	238.6 e^{-3}	208.9 e^{-3}	310.4 e^{-3}	153.3 e^{-3}
Sales	633	923.2 e^{-3}	1,317.3 e^{-3}	1,237.7 e^{-3}	1,727.0 e^{-3}	600.9 e^{-3}
Total Accruals	620	-82.9 e^{-3}	-46.8 e^{-3}	-41.7 e^{-3}	-0.1 e^{-3}	-106.4 e^{-3}
Total Assets	633	1,119.2 e^{-3}	1,041.5 e^{-3}	471.0 e^{-3}	959.1 e^{-3}	1,158.3 e^{-3}

FIGURE 1: AVERAGE VARIABLE VALUES FOR FAS AND IFRS SUBSAMPLES

Panel A: Non-Scaled Average Value Comparison between FAS and IFRS Subsamples

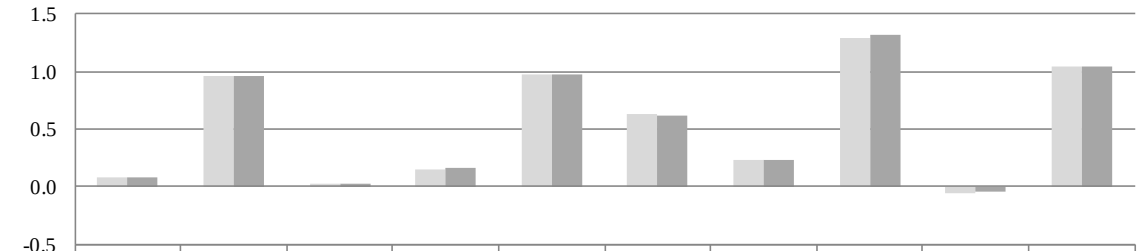
This figure presents average values (m. €) for all variables separately for FAS and IFRS subsamples. Averages are calculated based on non-scaled variable values. Because of this, the comparison reflects differences in the absolute variable magnitudes between the two subsamples.



	CFO	COGS	Net Income	INV	Prod. Cost	PPE	REC	Sales	Total Accruals	Total Assets
FAS	132	904.7	58.2	121.9	911.6	949.7	197.9	1189	-69.8	1135.3
IFRS	151.1	1235.8	95.4	199.4	1301.1	1179.8	282.7	1668.7	-58.3	1589.9

Panel B: Scaled Average Value Comparison between FAS and IFRS Subsamples

This figure presents average values for all variables separately for FAS and IFRS subsamples. Averages are calculated based on variable values that are scaled by previous year total assets. Thus, the comparison reflects differences in relative variable sizes between the two subsamples. Regression is run for scaled variable values, which makes it important to present descriptive statistics for scaled values.



	CFO	COGS	Net Income	INV	Prod. Cost	PPE	REC	Sales	Total Accruals	Total Assets
FAS	0.08	0.96	0.02	0.15	0.98	0.63	0.23	1.29	-0.06	1.04
IFRS	0.08	0.96	0.03	0.16	0.98	0.62	0.24	1.32	-0.05	1.04

As can be seen from Panel A of Figure 1, absolute average values are larger for IFRS than for FAS subsample in case of all other variables except total accruals. However, as can be observed based on comparison in Panel B of Figure 1, averages of scaled variable values are roughly the same for both two subsamples. It seems that change in accounting regulation has not had a major effect on the relation between research variables and previous year total

assets. The relative size of the variables seems to be quite constant. Average total accruals are negative for both two subsamples. Magnitude of absolute average total accruals is about ten million euro bigger for FAS than for IFRS subsample. Therefore, IFRS adoption could be suggested to have restricted the level of total accruals.

5.1.3. Annual descriptive statistics

This subsection presents descriptive statistics for the ten yearly subsamples. In addition, the reader is provided with an analysis of average value development for selected research variables. Table 5 presents yearly average values for the study variables. Figure 2 presents yearly development of average total assets and sales for the sample period.

TABLE 5: AVERAGE YEARLY VARIABLE VALUES

Panel A: Non-Scaled Average Values for Yearly Subsamples

This table presents yearly averages (m. €) that have been calculated based on absolute non-scaled variable values. The table enables evaluating annual differences in absolute variable average values.

	2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Average value (m. €)										
CFO	163.3	159.1	151.5	134.0	126.5	135.7	173.9	117.1	143.4	135.2
COGS	1,118.8	1,038.3	998.0	1,043.8	1,047.9	1,171.1	1,266.0	1,280.9	1,047.8	1,124.2
Net Income	64.9	61.2	61.5	97.0	84.0	113.6	138.1	78.2	30.3	74.8
Inventory	144.4	139.0	135.1	143.0	157.3	176.2	203.2	214.6	179.7	198.8
Product. Cost	1,134.1	987.2	1,051.3	1,093.3	1,093.6	1,225.5	1,388.1	1,330.0	1,062.7	1,187.4
PPE	1,271.8	1,138.0	1,085.2	1,071.5	1,088.3	1,093.8	1,048.5	1,035.0	1,056.1	1,118.6
Receivables	233.8	240.6	226.7	219.2	230.9	257.8	307.5	282.9	239.3	259.4
Sales	1,292.2	1,395.4	1,360.6	1,395.0	1,392.9	1,574.9	1,719.1	1,749.8	1,409.7	1,527.2
Total Accruals	-91.1	-93.7	-87.4	-36.1	-43.0	-21.6	-36.6	-41.5	-114.8	-63.1
Total Assets	1,343.0	1,375.5	1,300.1	1,274.5	1,302.5	1,370.7	1,530.8	1,568.5	1,475.7	1,592.9

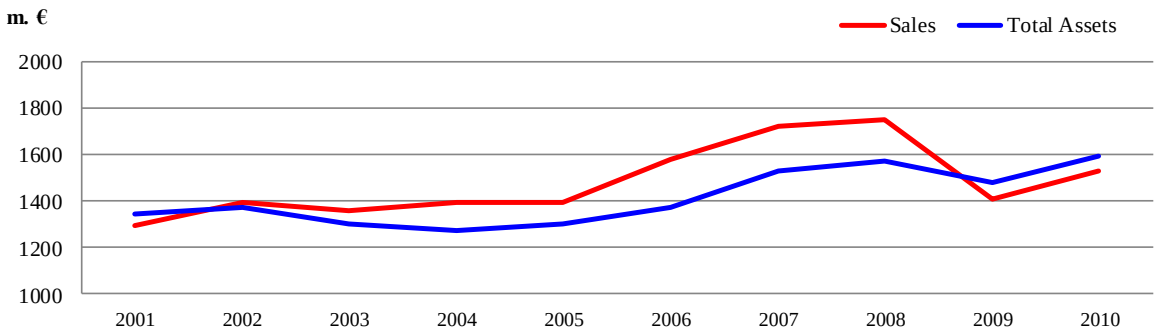
Panel B: Scaled Average Values for Yearly Subsamples

This table presents yearly averages (m. €) that have been calculated based on variable values that are scaled by previous year total assets. Regression is run for scaled variable values, which makes it important to present descriptive statistics for scaled values.

	2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Average value (m. €)										
CFO	69.1 e^{-3}	51.5 e^{-3}	87.0 e^{-3}	98.6 e^{-3}	95.0 e^{-3}	80.6 e^{-3}	92.1 e^{-3}	80.4 e^{-3}	73.0 e^{-3}	52.5 e^{-3}
COGS	846.1 e^{-3}	940.7 e^{-3}	953.8 e^{-3}	1,057.1 e^{-3}	1,121.6 e^{-3}	1,060.4 e^{-3}	1,042.2 e^{-3}	955.4 e^{-3}	763.0 e^{-3}	836.3 e^{-3}
Net Income	17.2 e^{-3}	-15.0 e^{-3}	7.2 e^{-3}	71.2 e^{-3}	63.8 e^{-3}	39.3 e^{-3}	62.0 e^{-3}	37.8 e^{-3}	-8.5 e^{-3}	8.1 e^{-3}
Inventory	145.0 e^{-3}	149.5 e^{-3}	146.0 e^{-3}	149.5 e^{-3}	159.9 e^{-3}	188.4 e^{-3}	166.7 e^{-3}	159.2 e^{-3}	129.3 e^{-3}	154.3 e^{-3}
Product. Cost	847.7 e^{-3}	964.1 e^{-3}	970.6 e^{-3}	1,077.2 e^{-3}	1,140.3 e^{-3}	1,120.7 e^{-3}	1,086.1 e^{-3}	978.1 e^{-3}	744.1 e^{-3}	855.2 e^{-3}
PPE	610.2 e^{-3}	629.3 e^{-3}	626.6 e^{-3}	640.6 e^{-3}	646.4 e^{-3}	682.2 e^{-3}	610.5 e^{-3}	576.8 e^{-3}	566.2 e^{-3}	644.6 e^{-3}
Receivables	222.9 e^{-3}	226.4 e^{-3}	230.8 e^{-3}	234.6 e^{-3}	263.4 e^{-3}	273.1 e^{-3}	263.6 e^{-3}	216.2 e^{-3}	183.3 e^{-3}	239.8 e^{-3}
Sales	1,197.1 e^{-3}	1,212.4 e^{-3}	1,295.0 e^{-3}	1,428.1 e^{-3}	1,483.1 e^{-3}	1,454.9 e^{-3}	1,406.2 e^{-3}	1,320.3 e^{-3}	1,052.1 e^{-3}	1,238.0 e^{-3}
Total Accruals	-53.3 e^{-3}	-68.9 e^{-3}	-79.6 e^{-3}	-28.7 e^{-3}	-33.7 e^{-3}	-42.3 e^{-3}	-29.3 e^{-3}	-44.8 e^{-3}	-83.5 e^{-3}	-46.6 e^{-3}
Total Assets	1,022.0 e^{-3}	1,049.3 e^{-3}	1,050.2 e^{-3}	1,041.1 e^{-3}	1,155.1 e^{-3}	1,278.8 e^{-3}	1,195.8 e^{-3}	1,041.2 e^{-3}	952.4 e^{-3}	1,108.1 e^{-3}

FIGURE 2: YEARLY DEVELOPMENT OF AVERAGE TOTAL ASSETS AND SALES

This table presents yearly development for average total assets and sales. Averages are calculated based on absolute non-scaled values, because the figure aims to reflect annual differences in variable averages during the sample period.

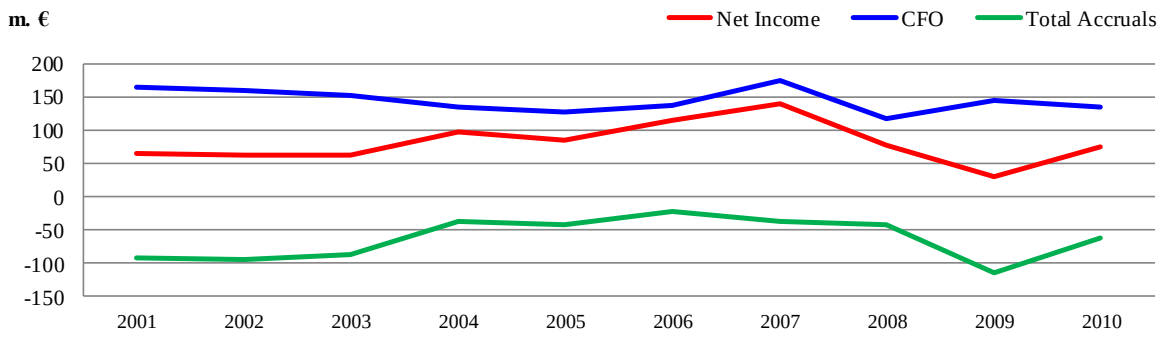


As can be seen from Figure 2, yearly development of average sales and total assets is quite similar during the sample period. The level of average values is quite constant from 2001 to 2005 and no major fluctuations occur. In 2005, the year of mandatory IFRS adoption, the steady development ends. After this, average values increase steadily from 2005 to 2008. The slope is followed by a decline in 2009, as the averages decline from previous year. Especially sales average drops heavily and comes down roughly about 300 m. €. Change in financial situation is reflected also in the development of Gross Domestic Product of Finland, which

turns to a decline after increasing for fifteen years since 1994 and comes down with 8.4 percent in 2009 (Statistics Finland 2012). In 2010 average sales and total assets turn to an incline after one year slump. As average total assets increase barely above the level of 2008, sales average remains at a clearly lower level when comparing to the peak year of 2008. The effect of financial downturn around 2009 is reflected also in the development of net income, CFO and total accrual averages. Figure 3 presents yearly development these three variables during the research period.

FIGURE 3: YEARLY DEVELOPMENT OF AVERAGE NET INCOME, CFO AND TOTAL ACCRUALS

This table presents yearly development of average net income, CFO and total accruals. Averages are calculated based on absolute non-scaled values, because the figure aims to reflect annual differences in variable averages during the sample period.



As can be seen based on Figure 3, development of net income and total accrual averages is quite similar during the research period. Without one exception year (2007) the two variables develop to the same direction, i.e. both either increase or decline as comparing to previous period. Average CFO develops quite similarly than net income and total accruals in the beginning of the research period, but differences can be observed during 2009 and 2010.

As can be observed based on Figure 3, the development of average variable values is quite steady from 2001 to 2005, i.e. until the year of mandatory IFRS adoption. This phase is followed by an upswing of couple of years, which in turn is followed by a steep decline around 2008 and 2009 as financial downturn takes place in Finland. Especially average net income and total accruals decline steeply. Development of the three variables during 2009

differs clearly from other years. As net income and total accrual averages decline heavily from previous year, average CFO turns for an increase after only one year decline (from 2007 to 2008). In 2010 average net income and total accruals turn for an increase. CFO, on the other hand, stays roughly about the same level than in 2010.

5.2. EFFECT OF IFRS ADOPTION ON EARNINGS MANAGEMENT

The main objective of this study is to examine whether IFRS adoption has affected earnings management practices in Finnish publicly quoted companies. This subchapter concentrates on presenting and analyzing the results related to this objective.

FAS and IFRS subsamples are pooled samples that contain observations for several years. Further, there are yearly differences in average dependent variables values, i.e. total accruals, cash flow from operations and production costs. Because of this, yearly variation is controlled by adding year dummy variables to the research model. Dummy variables of the selected subsample control years are left out of the model. First sample years are used as control years in case of both two subsamples. Therefore, control years are 2001 (for FAS subsample) and 2005 (for IFRS subsample).

As discussed in the context of research methods, the effect of IFRS adoption on earnings management is studied by evaluating differences in coefficient of determination (adjusted R^2) values between FAS and IFRS subsamples. Adjusted R^2 is a goodness of fit statistic of regression model and measures the ability of explanatory variables to explain variations in dependent variable (Brooks, 2008, p. 107). An increase in the explaining ability of the model results as an increase in adjusted R^2 value. When financial statement figures are manipulated, one can expect adjusted R^2 value to be lower than what it would be in case of unmanaged accounting information. Based on this, differences in the level of adjusted R^2 values between the two subsamples are evaluated to detect differences in earnings management practices among FAS and IFRS observations. Table 6 presents regression statistics for the two subsamples.

TABLE 6: REGRESSION STATISTICS FOR FAS AND IFRS SUBSAMPLES

This table presents regression statistics for FAS and IFRS subsamples. Outliers have been eliminated from the sample before running the regression. Outliers are eliminated manually based on analyzing Cook's Distance values. P-values statistically significant at five percent or better are presented **boldface**.

	Accruals Manipulation	*Sales Manipulation*	*Overproduction*
Adjusted R-square			
FAS	0.045	0.200	0.905
IFRS	0.036	0.116	0.847
F-value (prob.)			
FAS	3.738 **(0.001)**	16.412 **(0.000)**	460.541 **(0.000)**
IFRS	3.798 **(0.000)**	11.313 **(0.000)**	365.695 **(0.000)**
Cook's Distance, max			
FAS	0.777	0.677	0.769
IFRS	0.367	0.956	0.373
Nr. of observations			
FAS	348	372	338
IFRS	604	632	592
Resudual Mean Square			
FAS	0.021	0.024	0.030
IFRS	0.011	0.027	0.050
Independent samples t-test	1.874	1.114	1.680
Difference F-value (prob.)	**(0.000)**	(0.121)	**(0.000)**

In case of *accrual-based earnings management*, adjusted R^2 value is lower for IFRS (0.036) than for FAS (0.045) subsample. In percentages, coefficient of determination value is about 20 percent lower for IFRS than for FAS observations. The difference in adjusted R^2 values can be suggested to imply a higher level of accrual-based earnings management among FAS than IFRS observations.

The difference between FAS and IFRS samples can also be evaluated with independent samples t-test, which analyzes whether the difference between observed mean residual values (Residual Mean Square) of the two samples is statistically significant. The results from independent samples t-test are presented in Table 6. In case of accrual-based earnings management, the difference is statistically significant at five percent probability level (p-value

= 0.000). Research hypothesis H1a, suggesting that there is a difference in the level of accrual-based earnings management between FAS and IFRS, is accepted based on the statistically significant difference between the subsamples.

In case of *sales manipulation*, adjusted R^2 value is lower for IFRS (0.116) than for FAS (0.200) subsample. In percentages, the difference equals about 40 percent. The difference in coefficient of determination values can be interpreted to imply a higher level of sales manipulation among IFRS than FAS observations. Independent samples t-test result (p-value = 0.121) shows that the difference between FAS and IFRS subsamples is not statistically significant at five percent probability level. Consequently, research hypothesis H1b, suggesting that there is a difference in the level of sales manipulation between FAS and IFRS, is rejected. Therefore, the study results indicate that there is no difference in the level of sales manipulation between FAS and IFRS. However, it can be noted that the difference between the subsamples is not far from being statistically significant at a conventional level. There might have been such changes in the level of sales manipulation which was not captured by the research methods used in this study.

In case of *overproduction*, adjusted R^2 value is lower for IFRS (0.847) than for FAS (0.905) subsample. In percentages, the difference is about 6 percent. The result could be interpreted to imply a higher level of production manipulation among IFRS observations. Independent samples t-test result (p-value = 0.000) shows that the difference between FAS and IFRS subsamples is statistically significant at five percent probability level. As a results, research hypothesis H1c, suggesting that there is a difference in the level of overproduction between FAS and IFRS, is accepted.

In conclusion, study results suggest that accrual-based earnings management and overproduction are higher among FAS than IFRS observations. Therefore, the results imply that the level of accruals manipulation and overproduction has declined after IFRS adoption. Additionally, study results offer some support for increased level of sales manipulation after IFRS. However, the results relating to sales manipulation analysis are weak as the difference if not statistically significant at five percent probability level. Study results are in line with

international research suggesting increasing popularity of real earnings management (e.g. Li et al. 2011; Graham et al. 2005; Roychowdhury 2006). However, as both accrual-based and real earnings management are found to have increased after IFRS adoption, the results are not in line with Cohen et al. (2009), who suggest a shift from accrual-based to real earnings management after the passage of SOX in the US.

5.3. ANNUAL CHANGES IN EARNINGS MANAGEMENT

The second objective of this study is to examine whether there are annual changes in the level of earnings management which do not relate to IFRS adoption. This subsection concentrates on presenting and analyzing study results relating to this objective.

Yearly analysis is implemented based on the same principles as accounting regulation analysis, which was presented in the previous subchapter (5.3.1). Annual changes in the level of earnings management is studied by running regression for yearly subsamples and by evaluating differences in coefficient of determination (adjusted R^2) values. As in case of accounting regulation related analysis, it is assumed that earnings management will have a negative effect on adjusted R^2 value. Table 7 presents regression results for yearly subsamples. Further, Figure 4 presents yearly development of coefficient of determination values during the research period.

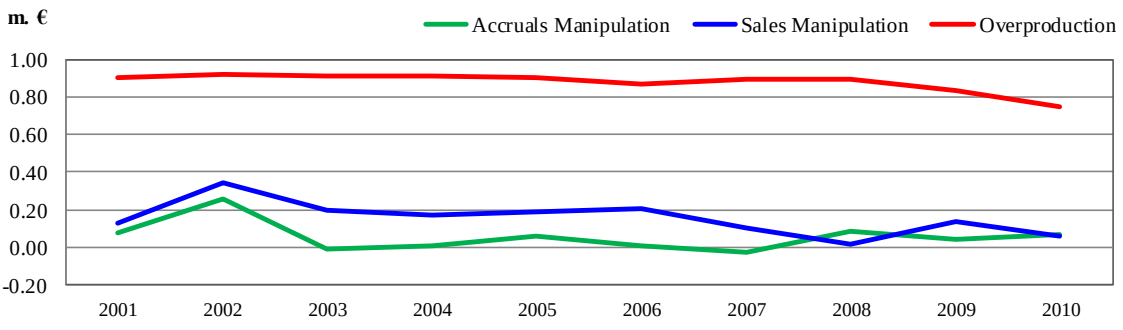
TABLE 7: REGRESSION STATISTICS FOR YEARLY SUBSAMPLES

This table presents regression statistics for yearly subsamples. Statistics are presented separately for three earnings management types. Outliers have been eliminated from the sample before running the regression. Outliers are eliminated manually by analyzing Cook's Distance values. P-values statistically significant at five percent or better are presented **boldface.**

	2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Adjusted R-square										
Accruals Manipulation	0.07	0.25	-0.01	0.01	0.06	0.01	-0.03	0.09	0.05	0.06
Sales Manipulation	0.13	0.35	0.20	0.17	0.19	0.21	0.10	0.02	0.14	0.06
Overproduction	0.91	0.92	0.91	0.91	0.90	0.87	0.89	0.89	0.83	0.75
F-value										
(prob.)										
Accruals Manipulation	2.88	10.82	0.79	1.30	2.96	1.18	0.08	4.22	2.61	3.37
	(0.042)	**(0.000)**	(0.504)	(0.289)	**(0.036)**	(0.322)	(0.969)	**(0.008)**	(0.056)	**(0.021)**
Sales Manipulation	5.41	17.25	8.72	7.61	8.82	9.73	4.92	1.67	6.55	3.31
	(.002)	**(.000)**	**(.000)**	**(.000)**	**(.000)**	**(.000)**	**(.003)**	(.177)	**(.000)**	**(.023)**
Overproduction	171.08	249.77	221.70	247.05	220.37	152.26	193.36	202.73	122.62	74.65
	(.000)	**(.000)**	**(.000)**	**(.000)**	**(.000)**	**(.000)**	**(.000)**	**(.000)**	**(.000)**	**(.000)**
Cook's Distance, max										
Accruals Manipulation	0.11	0.43	1.20	0.59	0.85	1.09	0.31	0.79	0.19	0.39
Sales Manipulation	0.48	2.24	1.53	0.65	0.74	3.68	0.52	0.39	2.38	0.46
Overproduction	0.90	1.02	0.24	0.42	0.54	1.56	0.19	0.34	0.49	0.26
Nr. of observations										
Accruals Manipulation	73	88	92	94	94	96	100	101	102	104
Sales Manipulation	91	93	95	100	102	102	102	105	105	104
Overproduction	72	88	88	93	94	94	95	100	100	100

FIGURE 4: YEARLY DEVELOPMENT OF ADJUSTED R^2 VALUES

This figure presents yearly development of adjusted R^2 values for accrual-based earnings management, sales manipulation and overproduction.



Small sample size has a negative effect on the ability of the research models to capture estimations for earnings management in case of yearly analysis. This can be seen from evaluating model p-values, which are above 0.05 in case of several sample years, indicating

that the model is not statistically significant at five percent. All years with a p-value above 0.05 are left out of analysis while comparing annual adjusted R^2 values. Therefore, years to be excluded in case of accrual-based earnings management are 2004 (.322), 2006 (.111), 2007 (.476) and 2010 (.286). In case of sales manipulation year 2008 is excluded from the analysis. In case of overproduction research model is significant at five percent during all sample years and there is no need to exclude any years from the analysis.

In case of *accrual-based earnings management*, adjusted R^2 value for year 2002 is abnormally high in relation to other sample years. This could be interpreted to imply an abnormally low level of earnings management during 2002 as comparing to other sample years. Results of independent samples t-test analyzing whether the differences between observed mean residual values of the samples are statistically significant are presented in Panel A of Appendix. The difference is statistically significant at five percent probability level in 30 cases of the 45 conducted p-tests. All sample years are included in the analysis in this context. Statistical significance of the yearly differences seems not to be in connection with IFRS adoption, as most of the differences between IFRS sample years (2005-2010) are statistically significant at five percent probability level. Research hypothesis H2a, suggesting that there are changes in the level of accrual-based earnings management in different years that are not explained by IFRS adoption, is accepted based on the high amount of differences that are statistically significant (67 %) and because statistical significance of yearly results is observed not to be linked to IFRS adoption. Therefore, study results indicate that there are such differences in the level of accrual-based earnings management in different years which do not relate to IFRS adoption.

In case of *sales manipulation*, adjusted R^2 value can be seen to be abnormally high during 2002 (0.35) and abnormally low during 2010 (0.06) as comparing to other sample years. This could be interpreted to imply an abnormally low level of sales manipulation during 2002 and abnormally high level during 2010. Results from independent sample p-test (Panel B of Appendix) show that difference between two yearly samples is statistically significant at five percent probability level in 25 cases of the 45 conducted tests. Year 2006 stands out in the analysis, as the differences to all other sample years are found to be statistically significant. Further, the fact that difference between 2006 and all other yearly samples (both FAS and

IFRS years) is statistically significant suggests that the yearly variation is not linked to IFRS adoption. Research hypothesis H2b, suggesting that there are changes in the level of sales manipulation in different years that are not explained by IFRS adoption, is accepted based on the high amount of differences that are statistically significant (56 %) and because statistical significance of yearly results is observed not to be linked to IFRS adoption. Therefore, study results indicate that there are differences in the level of sales manipulation in different years which do not relate to IFRS adoption.

In case of *overproduction*, coefficient of determination is abnormally low in 2010 (0.75) as comparing to other sample years. This could be suggested to imply an abnormally high level of overproduction during 2010. Results from independent sample p-test (Panel C of Appendix) show that difference between two yearly samples is statistically significant at five percent probability level in 21 cases of the 45 conducted tests. Year 2010 stands out in the analysis, as the differences to all other sample years are found to be statistically significant. This supports the finding of abnormally high level of overproduction during 2010. Further, it can be suggested that yearly variation in the level of overproduction is not connected to IFRS adoption, as year 2010 differences are statistically significant in comparison to all other sample years. Research hypothesis H2c, suggesting that there are changes in the level of overproduction in different years that are not explained by IFRS adoption, is accepted based on the high amount of differences that are statistically significant (47 %) and because statistical significance of yearly results is observed not to be linked to IFRS adoption. Therefore, study results indicate that there are differences in the level of overproduction in different years which do not relate to IFRS adoption.

In conclusion, study results suggest that there are annual changes in the levels of adjusted R^2 values in case of all three earnings manipulation types. Additionally, it is observed that the differences are not in connection with IFRS adoption. All three research hypotheses relating to the annual analysis are accepted and the results imply that there are changes in the levels of all three earnings management types in different years which do not relate to IFRS adoption. This is in line with prior research suggesting that earnings management incentives vary in different financial environments (Agarwal et al 2007).

5.4. ROBUSTNESS TESTS

This subchapter tests robustness of earnings management analysis of the study. Firstly, robustness of accrual manipulation is tested by applying the DeAngelo (1986) model. This is implemented according to the twofold structure of the study, i.e. by discussing accounting standards and annual comparison based analysis separately. Secondly, robustness of all three manipulation methods is evaluated by analyzing annual changes in the levels of average variable values and discussing potential differences in the light of earnings management incentives. The latter part of the subchapter therefore concentrates on testing robustness of annual analysis.

5.4.1. The DeAngelo model

As discussed earlier in of context research methods in chapter 5.2.3, the DeAngelo (1986) model measures nondiscretionary accruals based on previous year total accruals. Discretionary accruals, on the other hand, are determined as the difference between total accruals and nondiscretionary accruals. As a result, discretionary accruals and thus also earnings management are assumed to exist if current and last year total accruals differ from each other. Based on this, the model suggests an increase in the level of accrual-based earnings management, if current period total accruals are higher than previous period total accruals. Table 8 presents total and discretionary accrual statistics for FAS and IFRS subsamples.

TABLE 8: TOTAL AND DISCRETIONARY ACCRUAL STATISTICS ACCORDING TO THE DEANGELO MODEL, FAS AND IFRS SUBSAMPLES COMPARISON

This table presents FAS and IFRS subsample statistics (m. €) for total and discretionary accruals. Discretionary accruals have been determined according to the DeAngelo (1986) model.

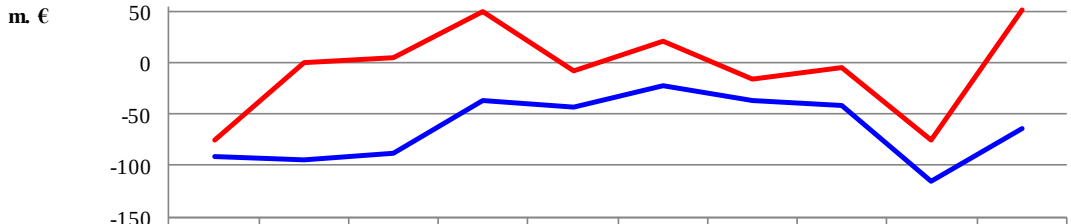
	N	*25th Percentile*	*Mean*	*Median*	*75th Percentile*	*Standard deviation*
FAS subsample						
Total Accruals	369	-29.15	-69.87	-6.34	-0.78	308.31
Discretionary Accruals	361	-7.77	-12.43	-0.64	4.02	288.51
IFRS subsample						
Total Accruals	627	-33.17	-58.28	-5.10	0.00	242.88
Discretionary Accruals	620	-7.08	0.41	0.11	10.15	226.60

As can be seen from Table 8, absolute discretionary accrual estimation is bigger for FAS (-12.43) than for IFRS (0.41) subsample. This could be interpreted to suggest a higher level of earnings management among FAS subsample. Average discretionary accrual estimation for IFRS subsample is close to zero, which suggests that there is no accrual-based earnings management among IFRS observations. The results could be interpreted to imply that that IFRS adoption has restricted the level of accrual-based earnings management. Also the level of average total accruals could be suggested to have declined after IFRS adoption, as magnitude of absolute total accruals average is higher for FAS (-69.87) than for IFRS (-58.28) subsample.

The DeAngelo (1986) model is also used to test robustness of annual earnings management analysis. Figure 5 presents estimates for average yearly total and discretionary accruals.

FIGURE 5: YEARLY DEVELOPMENT OF AVERAGE TOTAL AND DISCRETIONARY ACCRUALS

This table presents yearly development of average total and discretionary accruals (m. €) during the sample period. Discretionary accruals have been determined according to the DeAngelo (1986) model.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Accruals	-91.1	-93.7	-87.4	-36.1	-43	-21.6	-36.6	-41.5	-114.8	-63.1
Discretionary Accruals	-75.9	0.6	5	50.9	-7.3	21.4	-15.7	-4.8	-74.5	51.8

As can be seen from Figure 5, there are annual changes in the level of both total and discretionary accrual estimations. Discretionary accruals vary between -75.9 (2001) and 51.8 (2010). From the viewpoint of accrual manipulation and the DeAngelo (1986) model, this could be suggested to imply that the amount of earnings management has varied between 51.8 m. € upward management to 75.9 m. € downward management. As discussed in the research methods subsample (5.2.3), the DeAngelo (1986) model measures accrual manipulation without error when nondiscretionary accruals are constant and have a mean of zero during the

research period. In this study, the level of average total accruals varies in different years. This potentially limits the ability of the DeAngelo (1986) model to measure earnings management. For example, the results suggest that maximum amount of upward accrual manipulation occur in 2010 as the discretionary accrual estimation gains its highest value during that year. However, the high estimation is a result of total accrual value in 2009, when total accruals fall to the lowest level during the whole ten year sample period. At the same time, total accruals are still negative in 2010 and equal -63.1 m. €. The same principle can be suggested to apply also for year 2004. Discretionary accrual estimation of the DeAngelo (1986) model suggests upward accrual manipulation amounting 50.9 m. €, as total accruals increase clearly from previous year.

In conclusion, the analysis conducted by the DeAngelo (1986) model suggests that the level of accrual-based earnings management is higher among FAS than IFRS observations. The result is not in line with main analysis findings, as main analysis suggests an increase in accrual-based earnings management after IFRS. In relation to the annual analysis, results from DeAngelo (1986) model analysis suggest that there are annual changes in the level of accrual-based earnings management during the sample period. This is in line with main analysis results.

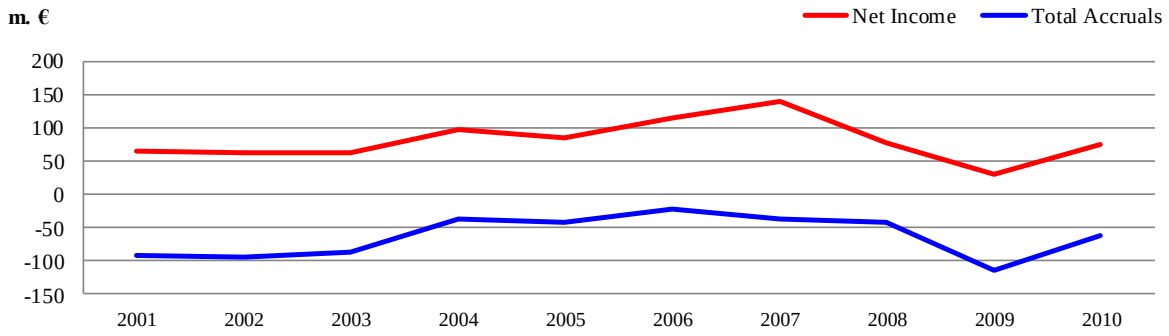
5.4.2. Annual changes in variable values

Robustness of annual earnings management analysis is tested by evaluating yearly changes in the levels of average variable values during the sample period. As discussed in context of yearly descriptive statistics in chapter 5.1.3, changes in average variable values are notable especially in the end of the sample period. Years 2008 and 2009 can be seen to be interesting due to several reasons. Firstly, as discussed in context of descriptive statistics, major financial statement figure averages like sales, net income and total assets turn to a decline around 2008-2009 after increasing for several years. Secondly, total accruals fall to the lowest level in the whole ten year period during 2009. Thirdly, Gross Domestic Product of Finland turns to a decline after increasing for fifteen years since 1994 and comes down with 8.4 percent in 2009 (Statistics Finland 2012).

The existence of a relatively big amount of negative average accruals in 2009 during the downturn makes the year interesting from the viewpoint of accruals manipulation analysis. Figure 6 presents yearly development of absolute average total accruals and net income during the research period.

FIGURE 6: YEARLY DEVELOPMENT OF AVERAGE NET INCOME AND TOTAL ACCRUALS

This figure presents yearly development of absolute average net income and total accruals during the sample period.



Different earnings management incentives and situations were discussed in the second chapter. The reader was provided with a review of research evidence concerning *big bath accounting* in context of executive changes (2.3.3). This includes recording large write-offs and special items in the year the management changes and increasing earnings for following reporting periods at the same time. It might have been possible that similar motivations could have been present also in 2009. Average net income declined already during the previous year from 2007 to 2008. In addition, sales figures came down in 2009. Further, it is reasonable to suggest that the markets might have been anticipating the decline in the level of national Gross Domestic Product. As a result, one could suggest the markets to expect also a decline in companies' earnings figures. In such situation, companies might have felt tempted to book negative accruals to report a bit lower net income at the same time. Theoretically, if net income values would be to decline anyway and this would also be anticipated by the markets, a bit lower level of earnings compared to the "true state" might not have made a big difference from the market reaction viewpoint. This would have enabled companies to transfer profits from

current to following periods. In case of big bath accounting in the context of executive changes, new management might be able to blame the decisions made by the old executives for the big charges made. Here, on the other hand, the lower earnings level could be explained with the challenging financial situation. Possible big bath accounting behavior during 2009 could be suggested to be in line with the findings from Saastamoinen and Pajunen (2012), who document earnings bath type behavior in form of tendency of Finnish listed companies to report goodwill impairment when earnings would have been negative already before the impairment.

Years 2008 to 2009 are interesting also from the viewpoint of real earnings management analysis. Figure 7 presents the yearly development of average sales during the sample period. Furthermore, Figure 8 presents annual development of average CFO.

FIGURE 7: YEARLY DEVELOPMENT OF AVERAGE SALES

This table presents yearly development of average sales (m. €) during the sample period.

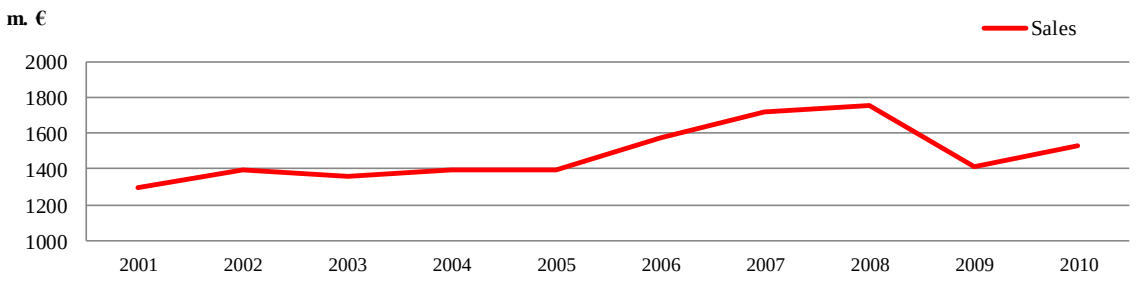
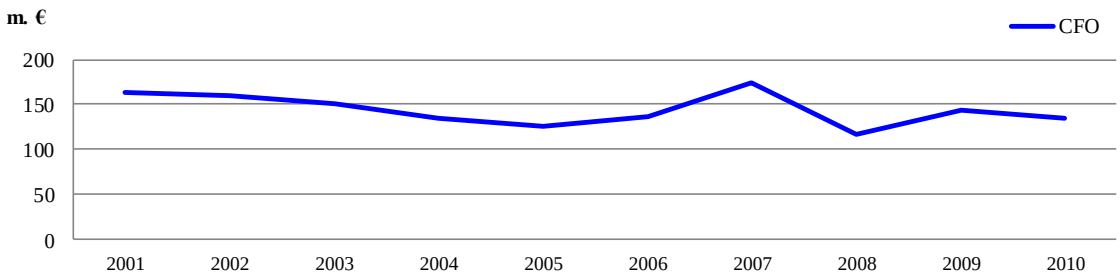


FIGURE 8: YEARLY DEVELOPMENT OF AVERAGE CFO

This table presents yearly development of average CFO (m. €) during the sample period.



As can be seen from the above figures, average CFO turns to a considerable decline in 2008. Sales average, on the other hand, increases from the previous year. This is followed by a substantial decline in average sales from 2008 to 2009 and an increase in the level of CFO at the same time. As discussed earlier (4.1.1), sales manipulation and overproduction will both result as abnormally low current period CFO in relation to sales. Further, sales manipulation and overproduction will both also cause current period production costs to be abnormally high in relation to sales. Table 9 presents a yearly comparison of CFO-to-sales and production cost-to-sales ratios.

TABLE 9: YEARLY DEVELOPMENT OF CFO-TO-SALES (%) AND PRODUCTION-TO-SALES (%) RATIOS

This table presents yearly development of CFO-to-sales and production-to-sales percentages during the sample period.

	2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
CFO/Sales	12.6 %	11.4 %	11.1 %	9.6 %	9.1 %	8.6 %	10.1 %	6.7 %	10.2 %	8.9 %
Prod.cost/Sales	87.8 %	70.8 %	77.3 %	78.4 %	78.5 %	77.8 %	80.7 %	76.0 %	75.4 %	77.7 %

As can be seen from the figure, CFO-to-sales ratio in 2008 equals 6.7 percent and is at a clearly lower level when comparing to other years during the ten year sample period. This could be interpreted to imply a higher level of (positive) real earnings management as comparing to other years. However, it is not possible to know based on above information whether the low level of CFO in relation to sales might be a result of sales manipulation, overproduction or a combination of them both. In 2001 average productions costs equal 87.8 percent of total sales. This is substantially more when comparing to other years, as the ratio is less than or just around 80 percent during all other sample years. From the earnings management viewpoint this could be interpreted to imply a higher level of (positive) real earnings management in 2001 when comparing to other sample years.

To conclude, robustness analysis suggests (negative) accrual-based earnings management in 2009. Further, the analysis suggests (positive) real earnings management during 2001 and 2008. At the same time, robustness analysis supports main analysis findings in relation to presence of annual variation in the level of earnings management during the sample period.

6. CONCLUSIONS

Earnings management has been a topic of research already for several decades (e.g. Healy 1985; Jones 1991). Academic research has traditionally concentrated on analyzing accruals manipulation, i.e. earnings management implemented by altering the level of discretionary accruals. However, there are research findings indicating that real earnings management, i.e. earnings management implemented by manipulating real operations, is becoming more dominating in today's business environment (e.g. Li et. al 2011; Graham et al 2005; Roychowdhury 2006).

There is research evidence suggesting that the level of real earnings management is higher in countries with stronger legal system (Li et al. 2011). Closely relating to this, prior research evidence indicates that companies have switched from accrual-based to real earnings management after the passage of Sarbanes Oxley-Act (SOX) in the US (Cohen et al. (2009). Also the effect of IFRS adoption on earnings management has been studied, but research findings are controversial. While some studies suggest IFRS to have a positive influence on accounting quality and earnings management (e.g. Barth et al. 2009; Chen et al. 2010), some other publications indicate increase in earnings management after IFRS (Jeanjean and Stolowy 2008). Earlier research studying the effects of IFRS adoption has focused on accounting quality and thus concentrates on accrual-based earnings management.

All listed companies in European Union member countries have been required to apply IFRS since 2005. Respectively, all Finnish publicly quoted companies were required to adopt IFRS in 2005. This creates an opportunity and motivations to study the effect of IFRS adoption on earnings management in Finland. Respectively, *the main objective* of the study is to explore whether mandatory IFRS adoption has affected earnings management practices among Finnish publicly quoted companies. Earnings management is studied by focusing to both accrual-based and real earnings management.

There is research evidence suggesting that companies' earnings management incentives vary in different financial situations (Agarwal et al. 2007). Financial situation in Finland changes during the research period, as economic downturn takes place at the end of the sample period.

This creates motivations to conduct yearly analysis of earnings management in Finland. Respectively, *the secondary objective* of this study is to explore whether there are annual changes in the level of earnings management which do not relate to IFRS adoption.

The empirical part of the study is implemented as quantitative analysis applying OLS regression model to explore changes in the level of earnings management, including both accrual-based and real earnings management. Accruals manipulation is analyzed by using the Jones (1991) model. Real earnings management is analyzed by following Roychowdhury (2006) and thus the analysis is implemented by using the model developed by Dechow et al. (1998). Real earnings management analysis is conducted by studying sales manipulation and overproduction. The main empirical analysis is implemented by running regression separately for the subsamples and by evaluating differences in the ability of the applied research models to explain variation in the dependent variable values. An increase (decline) in the ability of the research model to explain variation in dependent variable value is interpreted to reflect a decline (increase) level of earnings management.

The sample consists of Finnish publicly quoted companies in Helsinki Stock Exchange for years 2001-2010. Companies representing banks, investment or insurance firms (primary SIC-codes 60-67) are excluded from the sample. The final sample includes 968 firm-year observations for accrual-based earnings management analysis, 1005 for sales manipulation and 931 for overproduction. The sample is divided into subsamples in two different ways according to the two research objectives. In relation to the main objective studying the effect of IFRS adoption on earnings management the sample is divided into two subsamples based on accounting regulation, i.e. FAS and IFRS subsamples. Further, in relation to the secondary objective examining annual changes in earnings management the sample is divided into ten yearly subsamples. Regression is run separately for different subsamples to evaluate differences in the levels of earnings management.

In relation to *the main objective,* the results suggest that levels of accrual-based earnings management and overproduction are higher among IFRS than FAS observations. The results relating to accrual-based earnings management and overproduction are statistically significant

at five percent probability level. As a result, research hypotheses relating to these two earnings management types are accepted. Therefore, study results suggest an increase in accrual-based earnings management and overproduction as a result of IFRS adoption. Empirical analysis also offers some support for an increase in sales manipulation after IFRS adoption. However, the result is not statistically significant at five percent probability level and the research hypothesis relating to sales manipulation is rejected. Therefore, the results suggest that there is no difference in the level of sales manipulation between FAS and IFRS. Study results are in line with international research suggesting increasing popularity of real earnings management (e.g. Li et al. 2011; Graham et al. 2005; Roychowdhury 2006). However, as the levels of both accrual-based and real earnings management are suggested to have increased after IFRS adoption, the results are not in line with Cohen et al. (2009), who suggest a shift from accrual-based to real earnings management after the passage of SOX in the US. Robustness of accrual-based earnings management analysis is tested by applying the DeAngelo (1986) model. Robustness analysis results suggest a decline in the level of accrual-based earnings management after IFRS adoption and the results are thus not in line with main analysis findings.

In relation to *the secondary objective,* study results indicate annual changes in the levels of all three earnings management types during the sample period. All three research hypotheses are accepted based on the high amount of differences that are statistically significant and because statistical significance of annual results is observed not to be linked to IFRS adoption. Thus, the results suggest that there are changes in the level of accrual-based earnings management, sales manipulation and overproduction in different years which are not explained by IFRS adoption. Robustness is tested by the DeAngelo (1986) model (accrual-based earnings management) and by evaluating annual changes in average variable values. Robustness analysis results support main analysis findings. Suggested presence of annual variation in the level of earnings management is in line with Agarwal et al. (2007), who find evidence indicating that managements' earnings management incentives vary in different financial situations.

This study contributes to prior research by providing information about the effect of IFRS adoption on accrual-based and real earnings management in Finland. Further, it supports the view that earnings management behavior and motives might vary in different years and in different financial situations.

Weaknesses of this study are mainly related to small sample size, which creates challenges for the reliability of the study results especially in case of annual earnings management analysis. However, it would only be possible to increase sample size by extending research period, as the amount of listed companies in Finland is fixed. Increasing the research period, on the other hand, would only be possible in case of IFRS adoption related analysis –not in context of the annual evaluation, where small sample size constitutes a larger problem.

Prior research on the effect of IFRS adoption on accounting quality and earnings management offers controversial results. While some studies suggest IFRS to have a positive influence on accounting quality and earnings management (e.g. Barth et al. 2009; Chen et al. 2010), some other publications indicate increase in earnings management after IFRS (e.g. Jeanjean and Stolowy 2008). As prior research has concentrated on accounting quality, the focus has been on accrual-based earnings management. This study draws attention to real earnings management by examining accrual-based and real earnings management separately. This enables observing possible shifts between the two earnings management types. Still, it is good to recognize that higher accounting quality and lower level of accrual-based earnings management do not as such mean a decline in overall earnings management. If accrual-based earnings management is replaced by real activities manipulation, it is possible for overall earnings management to increase at the same time with reducing accounting related (i.e. accrual-based) manipulation. Based on these viewpoints, I encourage widening perspective to cover also real earnings management related behavior in context of future earnings management research.

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APPENDIX: INDEPENDENT SAMPLES T-TEST, YEARLY ANALYSIS

This appendix presents yearly results from independent samples t-test, which analyzes whether the difference between observed mean residual values of the samples is statistically significant. P-values statistically significant at five percent or better are presented **boldface.** Results for accrual-based earnings management, sales manipulation and overproduction are presented separately in different panels.

Panel A: Annual accrual-based earnings management differences

		2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
	Mn sq. Dg fr.	0.006 69	0.004 84	0.011 88	0.009 90	0.006 90	0.033 92	0.011 96	0.007 97	0.004 98	0.005 100
2001	*0.006* *69*		1.379 **(0.080)**	1.836 (0.004)	1.588 (0.020)	1.113 (0.314)	5.703 **(0.000)**	1.981 **(0.001)**	1.212 (0.190)	1.313 (0.107)	1.234 (0.167)
2002	*0.004* *84*			2.533 (0.000)	2.190 **(0.000)**	1.536 (0.023)	7.865 **(0.000)**	2.732 **(0.000)**	1.672 **(0.007)**	1.050 (0.406)	1.117 (0.296)
2003	*0.011* *88*				1.156 **(0.247)**	1.649 (0.010)	3.106 **(0.000)**	1.079 **(0.357)**	1.515 **(0.023)**	2.411 (0.000)	2.267 (0.000)
2004	*0.009* *90*					1.426 **(0.047)**	3.591 **(0.000)**	1.247 **(0.143)**	1.310 (0.096)	2.085 **(0.000)**	1.960 **(0.001)**
2005	*0.006* *90*						5.122 **(0.000)**	1.779 **(0.003)**	1.089 (0.340)	1.462 (0.033)	1.374 (0.061)
2006	*0.033* *92*							2.879 **(0.000)**	4.705 **(0.000)**	7.488 **(0.000)**	7.040 **(0.000)**
2007	*0.011* *97*								1.634 **(0.008)**	2.601 **(0.000)**	2.445 **(0.000)**
2008	*0.007* *97*									1.591 **(0.011)**	1.496 (0.023)
2009	*0.004* *98*										1.064 (0.379)

Panel B: Annual sales manipulation differences

		2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
	Mn sq. Dg fr.	*0.011* *87*	*0.010* *89*	*0.007* *91*	*0.014* *96*	*0.020* *98*	*0.073* *98*	*0.017* *98*	*0.012* *101*	*0.009* *100*	*0.011* *100*
2001	*0.011* *87*		1.107 (.317)	1.736 **(.005)**	1.258 (.139)	1.718 **(.005)**	6.394 **(.000)**	1.458 **(.037)**	1.078 (.361)	1.287 (.111)	1.006 (.491)
2002	*0.010* *89*			1.568 (.017)	1.393 (.057)	1.903 **(.001)**	7.079 **(.000)**	1.615 **(.011)**	1.193 (.198)	1.162 (.232)	1.113 (.303)
2003	*0.007* *91*				2.183 **(.000)**	2.983 **(.000)**	11.098 **(.000)**	2.532 **(.000)**	1.871 **(.001)**	1.349 (.074)	1.746 **(.004)**
2004	*0.014* *96*					1.366 (.063)	5.083 **(.000)**	1.160 (.234)	1.167 (.222)	1.618 **(.009)**	1.251 (.134)
2005	*0.020* *98*						3.720 **(.000)**	1.178 (.209)	1.595 **(.011)**	2.211 **(.000)**	1.709 **(.004)**
2006	*0.073* *98*							4.384 **(.000)**	5.933 **(.000)**	8.225 **(.000)**	6.358 **(.000)**
2007	*0.017* *98*								1.353 (.066)	1.876 **(.001)**	1.450 **(.033)**
2008	*0.012* *101*									1.386 (.052)	1.072 (.365)
2009	*0.009* *100*										1.294 (.100)

Panel C: Annual overproduction differences

		2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
	Mn sq. Dg fr.	*0.019* *67*	*0.027* *83*	*0.023* *83*	*0.030* *88*	*0.033* *89*	*0.040* *89*	*0.041* *90*	*0.034* *95*	*0.031* *95*	*0.070* *95*
2001	*0.019* *67*		1.423 **(.068)**	1.213 (.207)	1.592 (.024)	1.724 (.010)	2.112 **(.001)**	2.177 **(.001)**	1.817 (.005)	1.647 (.016)	3.675 (.000)
2002	*0.027* *83*			1.174 (.234)	1.119 **(.304)**	1.211 (.189)	1.484 **(.035)**	1.530 **(.025)**	1.277 **(.128)**	1.157 (.249)	2.583 (.000)
2003	*0.023* *83*				1.313 **(.106)**	1.422 (.053)	1.742 **(.006)**	1.795 **(.004)**	1.498 **(.030)**	1.358 (.077)	3.031 (.000)
2004	*0.030* *88*					1.083 **(.354)**	1.327 **(.093)**	1.368 **(.071)**	1.141 (.266)	1.034 **(.437)**	2.309 **(.000)**
2005	*0.033* *89*						1.225 **(.170)**	1.263 **(.136)**	1.054 (.402)	1.047 (.414)	2.132 (.000)
2006	*0.040* *89*							1.031 **(.444)**	1.163 **(.235)**	1.283 **(.116)**	1.688 **(.007)**
2007	*0.041* *90*								1.198 **(0.192)**	1.322 **(.090)**	1.688 **(.006)**
2008	*0.034* *95*									1.103 **(.316)**	2.232 (.000)
2009	*0.031* *95*										2.232 (.000)