The Mandatory Introduction of IFRS as a Single Accounting Standard in the European Union and the Effect on Earnings Management

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Executive summary

In this study, it was investigated whether the mandatory adoption of IFRS from 1 January 2005 by all listed companies in the European Union led to significantly lower levels of earnings management. I found that, despite the stricter character of IFRS compared to national GAAP, accruals-based earnings management has strictly increased as a consequence of the adoption of IFRS. I further found that real earnings management has strictly increased, and that, despite the fact that both manifestations of earnings management strictly increased, due to the introduction of IFRS, they are increasingly used as substitutes of one another. This indicates that management looks for alternatives to manipulate earnings when accruals-based earnings management becomes more difficult, instead of lowering their earnings management activities. I was therefore unable to establish that IFRS has been successful in restricting earnings management

For the full text of this master thesis refer to the following webpage: http://hdl.handle.net/2105/5129.

1. Introduction

In 2002, the EU Council and Parliament accepted the IAS-directive (1606/2002/EC). This regulation requires that all listed companies in the member states, beginning on 1 January 2005, prepare their consolidated financial statements in accordance with International Financial Reporting Standards (IFRS). With this legislation, the discussion on the role of accountings standards in producing high quality financial reporting with little room for earnings management, has intensified and is expected to intensify even further.

While IFRS is thought to be more strict and rules-based, it also creates new opportunities for the exercising of judgement in the financial reporting process. Furthermore, new incentives to smooth earnings are created, in order to prevent the increase in volatility of earnings as a consequence of the introduction of IFRS. These conflicting effects make it hard to predict which effect IFRS will have on the prevalence of earnings management. Unfortunately, the existing literature on the effects of IFRS on the level of earnings management is also far from conclusive.

The mandatory adoption of IFRS thus creates opportunities for research on accounting standards and their effect on preventing earnings management. The fact that many countries now apply one single set of accounting standards creates an opportunity to research the isolated effect of tighter accounting standards, as the effect can now be researched in different institutional settings. However, new questions arise, due to the relatively newness of IFRS and some of its particularities, with the increased role of fair value as the most pronounced one. The main question therefore is whether IFRS is successful in reducing earnings management and producing high quality financial reporting. This leads to the following research question that is investigated in this study:

Has the mandatory adoption of IFRS from 1 January 2005 by all listed companies in the European Union led to significantly lower levels of earnings management?

To avoid the problems in existing research, the research design proposed in this study is different from that used in most earlier studies on this topic. Most important is that I consider the possibility that while accruals management could indeed be effectively reduced by stricter accounting standards, management could turn to real earnings management by strategically structuring transactions, to manipulate reported earnings. Because IFRS will not lead to a decrease in the incentives to manage earnings, and possibly even to increased incentives to do so, managers can still be expected to manage earnings. Real earnings management then becomes a feasible alternative for accruals-based earnings management.

The rest of this paper is organized as follows. In Chapter 2, a broad literature review is presented that considers the existing literature with respect to the effect of accounting standards in general, and IFRS in particular, on the prevalence of earnings management. In Chapter 3 my hypotheses are developed. The research methodology that is used to test these hypotheses is explained in Chapter 4. In Chapter 5 my results are presented and Chapter 6 concludes with the summary and conclusion.

2. Prior literature

2.1 Definitions
To consider whether the introduction of IFRS indeed enhances financial reporting quality, first of all a measure of financial reporting quality is needed. For this, the amount of earnings management is often considered. Earnings management is thought to have a

negative influence on the transparency and comparability of financial reporting (Heemskerk & Van der Tas, 2006).

In the wide range of literature regarding earnings management, several definitions of earnings management can be found. Healy and Wahlen (1999) provide us with the following definition:

"Healy and Wahlen (1999): "Earnings management occurs when managers use judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers."

Central theme in the above definition is the purposeful intervention by a firm's management in the financial reporting process. This intervention is possible because of the discretion available to management to do so. Standard setters allow managers a considerable amount of judgement in the financial reporting process. This enables managers to choose the reporting methods, estimates, and disclosures that match the firm best and thereby provide the most information for financial statement users (Healy & Wahlen 1999). However, greater discretion over financial reporting also creates opportunities for earnings management. In that case, choices made by a firm's management in the financial reporting process are not motivated by best reflecting their firm's underlying performance (Healy & Wahlen 1999). Instead, they are aimed at influencing the users of the financial reports in such a way that will benefit the organisation or its management.

Earnings management does not need to refer exclusively to the exercising of judgement in the accounting process. Another way to manipulate earnings is to strategically structure transactions. This can be done in several ways, including speeding up sales by providing greater discounts or cutting R&D expenses to increase earnings. Roychowdhury (2004) states that the failure to look at real earnings management next to accruals-based earnings management could well explain the lack of strong results in many previous studies. Graham et al. (2005) even find evidence that suggests that earnings management by real transactions is becoming more important than accounting earnings management. Therefore, in my study I consider both accounting earnings management or *accruals-based earnings management*, and specially designed transactions or *real earnings management*.

2.2 Overview of prior literature

Due to the relative novelty of IFRS, the amount of research on the effect that the widespread adoption of IFRS has had on the level of earnings management in the EU is limited. Studies that do focus on IFRS, for the most part compare IFRS with US GAAP, making use of the availability of data of early adaptors in countries such as Germany and Switzerland. Tendeloo and Vanstraelen (2005) and Heemskerk and Van der Tas (2006) are examples of studies that focus on early adopters. Both studies address the question whether the adoption of IFRS is associated with lower levels of earnings management.

Tendeloo and Vanstraelen focus on Germany, and investigate whether German companies that have adopted IFRS engage significantly less in earnings management compared to German companies reporting according to German GAAP.

Using the absolute value of discretionary accruals as a measure of earnings management, Tendeloo and Vanstraelen (2005) are unable to establish that IFRS impose a significant constraint on earnings management. Adoption of IFRS even seems to increase the magnitude of discretionary accruals. However, when the authors take hidden reserves into consideration, there is no difference in earnings management behaviour between IFRS adopters and companies reporting under German GAAP. Also, companies that have adopted IFRS appear to engage more in earnings smoothing. But this increase is significantly reduced when the company has a Big 4 auditor.

Like Tendeloo and Vanstraelen (2005), Heemskerk and Van der Tas (2006) are unable to associate the adoption of IFRS with lower levels of earnings management. Heemskerk and Van der Tas gathered a research sample that consists of 160 financial reports of German and Swiss companies. Making use of the same earnings management proxies as Tendeloo and Vanstraelen (2005), they find that with the implementation of IFRS, the use of discretionary accruals has increased. Controlling for country of origin, industry or size does not significantly influence this result. For their measure of income smoothing, they find that with the implementation of IFRS, the use of accruals to smooth earnings has increased.

The results of their study leads Heemskerk and Van der Tas (2006) to conclude that earnings management has increased with the implementation of IFRS. The incentive to manage earnings in order to reduce the effect that IFRS has on the volatility of earnings, is identified by the authors as the main explanation for their results. They also point to the increased role of subjectivity under IFRS, which creates opportunities for management to manage earnings.

So, both Tendeloo and Vanstraelen (2005) and Heemskerk van Van der Tas (2006) are unable to associate IFRS with lower levels of earnings management compared to national GAAP. This is consistent with Goncharov and Zimmerman (2006), who focus on income smoothing, and find no significant difference in earnings management between German GAAP and IAS. Besides considering IFRS and German GAAP, Goncharov and Zimmerman also focus on US GAAP. They find that firms that report under US GAAP engage in earnings smoothing less often than firms that report under German GAAP or IAS. So while no significant differences between German GAAP and IAS are found, their results lead the authors to conclude that US GAAP is more effective at mitigating earnings management than either German GAAP or IAS.

Another study that investigates the comparative quality of IAS and US GAAP, is that of Barth et al. (2006). They find that firms applying IAS generally have lower accounting quality than US firms. In particular, IAS firms have a significantly lower variance of the change in net income, a lower ratio of the variances of the change in net income and

change in cash flows, a significantly more negative correlation between accruals and cash flows, and a higher frequency of small positive net income. Barth et al. also compare accounting amounts for IAS and US firms before and after the IAS firms adopt IAS. The results suggest that application of IAS reduces, but does not eliminate differences in accounting quality between the two sets of firms.

In the literature, but also in the financial press and by regulators, the focus has largely been on earnings management through the exercising of judgement in the accounting process. However, recent findings indicate that management is increasingly willing to sacrifice real economic value by using strategic transaction to manage earnings (Graham et al., 2005). As a possible explanation, Graham et al. (2005) state that in the post Enron and WorldCom era, and with the implementation of laws like the Sarbanes-Oxley Act, managers are afraid to use their discretion to manipulate accruals. Tighter accounting standards, also leave less room for managerial judgment in the financial reporting process.

Ewert and Wagenhofer (2005) study the effect of tightening accounting standards. They distinguish between accounting and real earnings management. Accounting earnings management concerns the way accounting standards are applied on given transactions and events. Real earnings management changes the timing or structuring of real transactions. Ewert and Wagenhofer find that as a consequence of tighter accounting standards, real earnings management strictly increases, which is interpreted as real earnings management substituting for the more difficult and thus costlier accounting earnings management.

However, although accounting earnings management thus becomes more difficult, the study shows that stricter accounting standards do not unambiguously reduce accounting earnings management. Ewert and Wagenhofer (2005) point to the trade-off between two effects of tighter accounting standards. On one hand, it becomes more difficult and thus costlier to engage in accounting earnings management. But at the same time, the reduction in accounting earnings management increases the association between reported earnings and the market price reaction. This stronger association increases the benefit and thus the incentives for a firm's management to engage in earnings management. So, Ewert and Wagenhofer show that tighter accounting standards not only lead to increased real earnings management, but also to increased incentives to manage earnings overall. The authors therefore conclude that that total earnings management can either decrease or increase with tighter accounting standards.

Results obtained by Cohen et al. (2007), which focus on earnings management in the pre- and post- Sarbanes Oxley Periods, are a further indication that stricter rules aren't necessarily successful in restricting earnings management. They authors find evidence that a substitution effect exists between accruals-based earnings management and real earnings management. The researches document that accruals-based earnings management increased steadily in the years before the passage of SOX, followed by a significant decline in the years afterwards. Conversely, the level of real earnings management declined prior to SOX, and increased significantly in the post-SOX period. Therefore, Cohen et al. (2007) not only show that other mechanisms apart from accounting

standards play a role in restricting earnings management, but they are also able to document a substitution effect between the two main manifestations of earnings management.

3. Hypotheses development

From the overview of previous research, it can be learned that existing literature is far from conclusive with respect to the effects of the adoption of IFRS on the prevalence of earnings management. However, some possible explanations for this lack of conclusive findings can be identified. First of all, most existing research on the effect of IFRS on the level of earnings management focuses on data samples from before 2005. In this year IFRS became mandatory for listed companies in the European Union. Before that date, in countries like Germany and Switzerland, firms could voluntarily choose to adopt IFRS. This means that research results from these earlier studies could be biased by factors such as self-selection and false signalling.

Also, due to a lack of effective enforcement and a lack of knowledge about IFRS (then IAS) by both regulatory and legal bodies and users of financial statements, a firm's management could falsely state that it complied with IFRS, while in fact this was hardly the case. When these companies are included in the research sample, the results will naturally be biased towards IFRS being not effective in restricting earnings management. The same applies to the problem with self selection. Companies that already had high quality financial reporting could comply with IFRS relatively easy, thereby making a statement to their investors about their financial reporting quality. However, when high financial reporting quality is the reason behind the voluntary adoption of IFRS, complying with IFRS will naturally not have a significant effect on financial reporting quality. Again, this could significantly bias the results of earlier studies.

Another important consequence of the focus of most earlier research on the period before 2005, is the fact that the IASB's improvements project, under which existing standards are being revised and new standards are issued, had not been started at the time of the research. In recent years, many standards have been revised and new IFRS standards have been issued. It can be expected that this has dramatically increased the quality of the standards. Therefore, results from earlier research probably are not representative for the current standards.

Also, while there is convincing evidence that real earnings management nowadays is used intensively to manage earnings, most existing exclusively focus on accruals-based earnings management. This means that a large part of earnings management activities is probably not considered in these studies. This in turn leads results obtained in these studies to be not representative of the magnitude of all manifestations of earnings management combined.

Together, these considerations lead me to believe that the results in previous research on the effect of IFRS on the level of earnings management are not representative for the

effect that the widespread adoption of IFRS from 1 January 2005 has had on the magnitude of earnings management in the EU member states. Based on the above, I expect the results in most previous studies to be biased towards IFRS being ineffective in restricting earnings management.

IFRS is characterised by stricter rules, which reduces the possibilities for accruals-based earnings management. The increased importance of subjectivity with respect to fair value accounting has an opposite effect. But if the decreased tolerance towards accounts manipulation by users and regulators as a consequence of recent accounting scandals is taken into account, it can be expected that the overall effect of IFRS on accruals-based earnings management is a restrictive one. Therefore, the first hypothesis is:

H1: The widespread adoption of IFRS in the European Union from 1 January 2005, has led to an absolute decrease of the level of accruals-based earnings management by listed companies in the EU member states.

However, as stated earlier, accruals-based earnings management is only part of the story. Management seems to increasingly turn to real earnings management to manipulate earnings. Furthermore, with the introduction of IFRS, earnings are thought to become more volatile, while previous research shows that management likes to present a smooth earnings path. Volatile earnings are, among others, associated with higher risk and thus lead to higher capital costs. With incentives to manage earnings remaining the same, or even increasing as a consequence of increased incentives to smooth earnings, management can be expected to look for alternative ways to manage earnings. Consistent with findings in previous studies, I hypothesize that management shifts away from accruals-based earnings management towards real earnings management. The second hypothesis therefore is:

H2: The widespread adoption of IFRS in the European Union from 1 January 2005, has led to an absolute increase of the level of real earnings management by listed companies in the EU member states.

As I hypothesize that accruals-based earnings management *decreases* and real earnings management *increases* as a consequence of the adoption of IFRS, I implicitly assume that there is a substitution effect between the two manifestations of earnings management. I expect accruals-based earnings management to decrease as a consequence of stricter accounting standards. At the same time, management can be expected to turn to alternative ways to manage earnings, mainly real earnings management, as incentives to do so remain the same or even increase. To test the existence of a substitution effect, my third hypothesis is:

H3: The widespread adoption of IFRS in the European Union from 1 January 2005, has led to a substitution effect, with accruals-based earnings management and real earnings management increasingly used as substitutes of one another.

With this hypothesis I test whether, in the post-IFRS period, accruals-based earnings management and real earnings management are more used as substitutes of one another instead of as complementary ways to manage earnings, compared to the pre-IFRS period.

Lastly, I consider listed companies from six different countries in my research sample. Several studies address the fact that there is more to restricting earnings management and enhancing financial reporting quality than high quality accounting standards alone. As Ball et al. (2003) state "…*it is incomplete and misleading to classify countries in terms of their formal accounting standards, or even their standard setting institution, without giving substantial weight to the institutional influences on preparers' actual financial reporting incentives.*" Therefore, I control for these institutional factors.

Considering differences in the institutional context and because of the different accounting traditions in the countries from my sample, I expect that the adoption of IFRS will have different effects in different countries. In countries where earnings management was relatively high in the pre-IFRS period, I expect the introduction of a set of high quality accounting standards such as IFRS, to have had a relatively large effect at restricting earnings management. And although accounting standards are not all there is to restricting earnings management, the fact that the implementation of IFRS in the EU member states is part of a larger action plan to enhance investor protection and effective and efficient capital markets further enhances this expectation. Therefore, my last hypothesis is:

H4: The widespread adoption of IFRS in the European Union from 1 January 2005, has had different effects in different countries, with the restricting effect on the level of earnings management being the highest in countries with the highest levels of earnings management in the pre-IFRS period.

4. Research Design

I focus on two main kinds of earnings management, namely accruals-based earnings management and real earnings management.

4.1 Accruals based earnings management

Magnitude of discretionary accruals

As a first measure of accruals-based earnings management, I consider the magnitude of discretionary accruals. Total accruals exist of non-discretionary accruals, which are normally related to economic activity, and discretionary accruals, that result from manipulative actions by management. Only total accruals can be observed, which means that discretionary accruals have to be estimated. Several models have been developed for this purpose, under which the Modified Jones Model (Dechow et al., 1995). This model is among the ones most frequently used in studies on the relation between accounting

standards and the level of earnings management, and will also so be used in this study, although I make some modifications.

The Modified Jones Model has received heavy criticism. By some studies, it is found to generate tests of low power for detecting earnings management of economically plausible magnitudes (e.g. accruals of 1% to 5%) (Peasnell et al., 2000). This leads to Type II errors, in which the null hypothesis of no earnings management is wrongly accepted. Also, in the case of extreme financial performance, the model is poorly specified, in that it attributes these extremes to earnings management (Peasnell et al., 2000). So in this case, Type I errors pose a problem, in that researches wrongly reject the null hypothesis of no earnings management.

Several improvements have been proposed in the literature to deal with these problems. Following Peasnell et al. (2000), I use a cross-sectional model. This, among other things, generates larger sample size, thereby increasing both the efficiency and reliability of the results. Also, to deal with the problem of misspecification in the case of extreme financial performance, I include the change in cash flow from operations as an extra variable in the regression. Dechow (1994) finds that the change in operating cash flow is negatively correlated with total accruals. Also, Jeter and Shivakumar (1999) argue that including cash flow from operations in the regression model not only increases precision, but also increases the power to detect earnings management, especially at lower levels of earnings manipulation.

Apart from the adjusted Model proposed above, I will also use the original Modified Jones Model, adjusted for credit sales. This increases comparability of the results with earlier studies which also use this model. Also, using the two models to estimate discretionary accruals could be informative as to the relative quality of both models.

Using the cross-sectional approach to estimate discretionary accruals, first firms are matched on year (t) and industry (k). A minimum of six observations per regression is required. Than, in the first stage of the two-stage cross-sectional regression, for each 2 digit SIC-year groupings, accruals are regressed on the change in sales adjusted by credit sales ($\Delta ADJREV$), gross property, plant, and equipment (PPE), and the change in cash flow from operations (ΔCFO), using the following regression.

(1) $TA_{it}/A_{i, t-1} = \alpha_{1t}[1/A_{i, t-1}] + \alpha_2[\Delta ADJREV_{it}/A_{i, t-1}] + \alpha_3[PPE_{it}/A_{i, t-1}] + \alpha_4[\Delta CFO_{it}/A_{i,t-1}] + \varepsilon_{it}$

All variables in the model are scaled by lagged total assets ($A_{i,t-1}$) to reduce heteroscedasticity. ε_{it} is included as an error term. Total accruals (TA_{it}) are calculated as earnings before extraordinary items and discontinued operations ($EBXI_{it}$) minus the operating cash flows from continuing operations (CFO_{it}):

(2) $TA_{it} = EBXI_{it} - CFO_{it}$

As said, apart from the model stated above, I will also use the original Modified Jones Model, adjusted for credit sales:

(3) $\quad TA_{it}/A_{i,t-1} \; = \; \alpha_{1t}[1/A_{i,t-1}] + \alpha_2[\Delta ADJREV_{it}/A_{i,t-1}] + \alpha_3[PPE_{it}/A_{i,t-1}] + \varepsilon_{it}$

After the first stage, the coefficient estimates from equation (1) and (3) are used to estimate the firm-specific non-discretionary accruals (NDA_{it}) for the sample firms:

(4) $\quad NDA_{it} \; = \; \hat{a}_{1t}[1/A_{it-1}] + \hat{a}_2[\Delta ADJREV_{it}/A_{it-1}] + \hat{a}_3[PPE_{it}/A_{it-1}] + \hat{a}_4[\Delta CFO_{it}/A_{i,t-1}]$

And for the Modified Jones Model:

(5) $\quad NDA_{it} = \; \hat{a}_{1t}[1/A_{it-1}] + \hat{a}_2[\Delta ADJREV_{it}/A_{it-1}] + \hat{a}_3[PPE_{it}/A_{it-1}]$

Finally, discretionary accruals (DA_{it} for the Modified Jones Model, $DA_{it}(\Delta CFO)$ for the model that controls for financial performance) are calculated as:

(6) $\quad DA_{it}$ or $DA_{it}(\Delta CFO) \; = \; TA_{it}/A_{it-1} - NDA_{it}$

In this study, the desire by management to reduce the volatility of earnings is considered as one of the main incentives for earnings management. This means that earnings can be managed downwards as well as upwards. Furthermore, no specific corporate events are distinguished that drive earnings management activities. Because accruals reverse over time, and no assumptions are made regarding the direction in which earnings are managed, I compute the absolute value of discretionary accruals to proxy for earnings management. My proxies for accruals-based earnings management will therefore be the absolute value of discretionary accruals, calculated with either the ΔCFO model, **ABS_DA(ΔCFO)**, or the Modified Jones Model, **ABS_DA**.

Income smoothing

Apart from the magnitude of discretionary accruals, I also consider a second measure of accruals-based earnings management. Following Tendeloo and Vanstraelen (2005), and Heemskerk and Van Der Tas (2006), I use the correlation between total accruals and cash flow from operations as a proxy for income smoothing. A negative correlation between accruals and cash flow is inherent to accrual accounting. However, accruals can also be managed to smooth the variability in cash flow from operations. Differences in the magnitude of the negative correlation between total accruals and cash flow from operations before and after IFRS are then indicative for the difference in the magnitude of income smoothing in the two periods.

4.2 Real earnings management

Apart from focussing on manipulating earnings by using discretion over the accounting process, I also consider real earnings management. As I did with accruals, I rely on previous

studies for my proxies for real earnings management. Following, among others, Roychowdhury (2006), I consider the abnormal level of cash flow from operations, and the abnormal level of production costs to be proxies for the level of real earnings management. These proxies have been used and proven to be valid in subsequent studies by, among others, Gunny (2006) and Cohen (2007).

Roychowdhury (2006) considers three manipulation methods that affect the levels of cash flow from operations and productions costs:

1. Sales manipulation, which is accelerating the timing of sales by offering increased price discounts or more lenient credit terms.
2. The reduction of discretionary expenses, which include advertising expense, research and development, and SG&A expenses.
3. Overproduction, which involves lowering cost of goods sold by increasing production.

From this, it follows that:

1. Abnormally high price discounts and overproduction lead to *abnormally high production costs* relative to sales.
2. Price discounts and overproduction have a *negative* effect on contemporaneous abnormal cash flow from operations, while reducing discretionary expenditures has a *positive* effect. Therefore, the net effect on abnormal CFO is *ambiguous*.

Abnormal cash flow from operations

The estimating models that I use are based on Roychowdhury (2006), which is in turn based on Dechow et al. (1998). First, normal CFO is expressed as a linear function of sales (S_{it}) and the change in sales (ΔS_{it}). Again, all variables in the model are scaled by lagged total assets ($A_{i,t-1}$) to reduce heteroscedasticity:

(7) $CFO_{it}/A_{i,\,t-1} = \alpha_{1t}[1/A_{it-1}] + \alpha_{2t}[S_{it}/A_{i,\,t-1}] + \alpha_{3t}[\Delta S_{it}/A_{i,\,t-1}] + \varepsilon_{it}$

Then, in the second stage, normal cash flow from operations ($NCFO_{it}$) is calculated using the estimated coefficients from equation (7):

(8) $NCFO_{it}/A_{i,\,t-1} = \hat{a}_{1t}[1/A_{it-1}] + \hat{a}_{2t}[S_{it}/A_{i,\,t-1}] + \hat{a}_{3t}[\Delta S_{it}/A_{i,\,t-1}]$

Lastly, abnormal cash flow from operations (R_CFO) is measured as the actual cash flow from operations (CFO_{it}) minus the estimated normal cash flow from operations ($NCFO_{it}$).

(9) $R\_CFO = CFO_{it}/A_{i,\,t-1} - NCFO_{it}/A_{i,\,t-1}$

As explained earlier, the effect of the different real earnings management activities on cash flow is ambiguous. Futhermore, no direction of earnings management is predicted in this study. Therefore, as with discretionary accruals, I use the absolute value of abnormal CFO (**ABS_R_CFO**), as my first proxy for real earnings management. However, to be consistent with earlier studies, I will also consider the nominal value of R_CFO.

Abnormal production costs

Production costs are defined as the sum of cost of goods sold (COGS) and the change in inventory during the year. First, COGS are modelled as a linear function of contemporaneous sales:

(10) $CGOS_{it}/ A_{i, t-1} = \alpha_{0t} + \alpha_{1t}[1/A_{it-1}] + \alpha_{2t}[S_{it}/A_{i, t-1}] + \varepsilon_{it}$

Inventory growth is modelled as:

(11) $\Delta INV_{it}/ A_{i, t-1} = \alpha_{0t} + \alpha_{1t}[1/A_{it-1}] + \alpha_{2t}[\Delta S_{it}/A_{i, t-1}] + \alpha_{3t}[\Delta S_{i, t-1}/A_{i, t-1}] + \varepsilon_{it}$

Thus, inventory growth is modelled as a function of current sales and lagged sales. Next, production costs (PROD) are defined as the sum of COGS and INV. Using (6) and (7), production costs are then modelled as:

(12) $PROD_{it}/ A_{i, t-1} = \alpha_{0t} + \alpha_{1t}[1/A_{it-1}] + \alpha_{2t}[S_{it}/A_{i, t-1}] + \alpha_{3t}[\Delta S_{it}/A_{i, t-1}] + \alpha_{4t}[\Delta S_{i, t-1}/A_{i, t-1}] + \varepsilon_{it}$

Again, in the second stage, abnormal production costs (R_PROD) are estimated as the observed production costs, minus the estimated normal production costs, which in turn is calculated by using the obtained coefficients from the first stage.

5. Tests and results

5.1 Sample description

I investigate the prevalence of earnings management in two main time periods: the pre-IFRS period, and the post-IFRS period. The pre-IFRS period extends from 2000 through 2004, and the post-IFRS period extends from 2005 through 2006.

My sample includes listed companies from Belgium, Denmark, Finland, Italy, The Netherlands and Sweden. In all these countries, IFRS is mandatory for listed companies from 1 January 2005. Although Sweden is not a member of the EU, the audit report and basis of presentation note refer to IFRS as adopted by the EU.

I exclude financial institutions (SIC 60-69) and utility companies (SIC 40-49) from my sample, as these industries are subject to specific accounting requirements and sometimes significant government intervention and regulation, which affects the earnings figures. Companies of which data of all variables is not available, firm equity is negative, or total or discretionary accruals are above 100% of lagged total assets, are also excluded from the sample. Due to the restriction that a minimum of six observations per regression is required, my sample includes observations from three industries, namely: Manufacturing (SIC 20-39), Wholesale Trade (SIC 50-59), and Services (SIC 70-89).

5.2 Model specification

I performed regression analysis to control for the differences in earnings management incentives. The earnings management proxies are regressed on IFRS and a number of other independent variables, to test whether IFRS has an effect on the levels of earnings management, apart from other factors that may also play a role. For my proxies for accruals-based earnings management, ABS_DA and ABS_DA(ΔCFO), I use the following model:

EM_t $= \delta_0 + \delta_1 YEAR_t + \delta_2 IFRS_t + \delta_3 ROA_t + \delta_4 CFO_t + \delta_5 LNEMPL_t + \delta_6 LEVERAGE_t + \delta_7 IND + \delta_8 COUNTRY + \delta_9 COUNTRY*IFRS + \varepsilon_{1t}$

Where:

EM_t	=	EM-proxy, either ABS_DA or ABS_DA(ΔCFO)
$YEAR_t$	=	calendar year
$IFRS_t$	=	dummy variable (pre-IFRS = 0, post-IFRS = 1).
ROA_t	=	return on assets in year t.
CFO_t	=	cash flows from operations in year t, divided by lagged total assets.
$LNEMPL_t$	=	natural logarithm of the number of employees in year t.
$LEVERAGE_t$	=	ratio of long term debt over common equity in year t.
IND	=	industry dummy:

      SIC 20-39 (Manufacturing) = 1;
      SIC 50-59 (Wholesale trade) = 2;
      SIC 70-89 (Services) = 3

COUNTRY   =   country dummy:
      Italy = 1;
      Belgium = 2;
      The Netherlands = 3
      Denmark = 4;
      Finland = 5;
      Sweden = 6.

To test for the effect of the implementation of IFRS on my real earnings management proxies, I use a similar model:

RM_t $= \delta_0 + \delta_1 YEAR_t + \delta_2 IFRS_t + \delta_3 ROA_t + \delta_4 LNEMPL_t + \delta_5 LEVERAGE_t + \delta_6 IND + \delta_7 COUNTRY + \delta_8 COUNTRY*IFRS + \varepsilon_{1t}$

Where RM is either absolute abnormal cash flow from operations (ABS_R_CFO) or abnormal production costs (R_PROD).

Finally, I also consider a second measure of accruals-based earnings management. Following Tendeloo and Vanstraelen (2005), and Heemskerk and Van Der Tas (2006), I use the correlation between total accruals and cash flow from operations as a proxy for income smoothing. Differences in the magnitude of the negative correlation between total accruals and cash flow from operations before and after IFRS are indicative for the difference in the magnitude of income smoothing in the two periods.

$$ACC_t = \delta_0 + \delta_1 YEAR_t + \delta_2 IFRS_t + \delta_3 ROA_t + \delta_4 CFO_t + \delta_5 IFRS_t*CFO_t + \delta_6 LNEMPL_t + \delta_7 LEVERAGE_t + \delta_8 IND + \delta_9 COUNTRY + \delta_{10} COUNTRY*IFRS + \varepsilon_{1t}$$

ACC_t is the value of total accruals in year t, scaled by lagged total assets. The interaction variable $IFRS_t*CFO_t$ is included to test for the effect of IFRS on the negative correlation between total accruals and cash flow from operations. As hypothesized in **H1**, I expect accruals-based earnings management, under which income smoothing, to decrease after the introduction of IFRS. In other words, I expect that the introduction of IFRS leads to a less negative correlation between total accruals and cash flow from operations, compared to the pre-IFRS period. Therefore, a positive coefficient for this interaction variable is expected.

5.3 Regression results: accruals-based earnings management
From my regression analysis, LEVERAGE and the interaction variable COUNTRY*IFRS prove to be insignificant, and are therefore excluded from further analysis. The interaction variable IFRS*COUNTRY, also didn't prove to be significant. I was unable to establish that the effect of IFRS on restricting earnings management, after controlling for the other variables in the model, is different across the countries in my sample. Therefore H4 is rejected, and because of the lack of significance, I have excluded the interaction variable from further analysis.

Possibly, the relatively newness of IFRS is to blame for the lack of significant results for this interaction variable. It was found by some studies that with respect to the 2005 implementation of IFRS, financial statements retained a strong national identity (Ernst & Young, 2006). Due to unfamiliarity with IFRS, companies seem to have adopted IFRS in a way that deviates as little as possible from prior local standards, at least until IFRS practice has developed internationally. If in different countries, companies have adopted IFRS in a way that is as much as possible consistent with previous national GAAP, then the implementation will have had little effect on the relative levels of earnings management in the different countries of my sample.

For YEAR, I get a negative and significant coefficient, meaning that for my sample period, a declining trend in time of accruals-based earnings management can be observed. This decline is not directly caused by the introduction of IFRS. Possibly, the knowledge that the implementation of IFRS would go through in 2005 has had an effect in earlier years, as companies anticipated on this fact. Also, other initiatives such as that related to corporate governance could have caused the level of earnings management to decline.

Finally, the dummy for IFRS proves to be significant and has a positive coefficient. This indicates that the implementation of IFRS has had an increasing effect on the level of earnings management. This is in contrast to what I hypothesize in **H1**, but consistent to what Tendeloo and Vanstraelen (2005), and Heemskerk and Van der Tas (2006) find. After controlling for other incentives for earnings management, this finding means that IFRS is unsuccessful in diminishing the level of earnings management. IFRS even seems to increase

the amount of earnings management. Increased discretion in the accounting process, partly due to the introduction of fair value, could be to blame for this finding. Also, the increasing volatility of earnings, and thus increased incentives to smooth them, could cause earnings management to increase after the introduction of IFRS.

5.4 Regression results: income smoothing

Regression analysis for income smoothing also shows an increasing effect for IFRS. Apart from leading accruals based earnings management measured by the magnitude of discretionary accruals to increase, income smoothing therefore also increases in response to the introduction of IFRS. This is inconsistent with **H1**, which is therefore rejected.

My findings on accruals based earnings management indicate that IFRS has an increasing effect on accruals-based earnings management. At the same time however, time-trend analysis shows that the overall level of accruals-based earnings management for my total sample is significantly lower in the post-IFRS period compared to the pre-IFRS period. How then to explain this contradiction?

The decreasing trend in accruals-based earnings management, independent of the introduction of IFRS, could possibly be explained by the anticipation of firms on the implementation of IFRS in 2005, as well as other initiatives such as those related to corporate governance. These factors may have also caused an acceleration in the decreasing trend from 2005, in turn leading to significant lower levels of accruals-based earnings management in the post-IFRS period independent of the implementation of IFRS itself. Based on my findings, this decreasing trend has accelerated *despite of* the implementation of IFRS, as IFRS itself has an increasing effect on accruals-based earnings management.

5.5 Regression results: real earnings management

For abnormal cash flow from operations, consistent with my models for accruals-based earnings management, a decreasing trend in time is found, as well as a positive effect of IFRS. Thus, apart from leading to increased accruals-based earnings management, based on my findings the implementation of IFRS also leads to increased real earnings management. This is consistent with **H2**, which is therefore accepted. However, in stead of a substitution effect between the two main manifestations of earnings management, this increase in real earnings management goes hand in hand with an increase in accruals-based earnings management.

For abnormal production costs, most independent variables are not significant. Based on the lack of significance found for almost all independent variables, it could be seriously questioned whether the model used to estimate abnormal production costs is reliable. Based on the R Square of only 0,037 for the regression model with R_PROD, many explanatory variables are missing in the model. The R Square of 0,211 for the model with ABS_R_CFO leads to more confidence in the results found, although there is still room for more explanatory variables.

The regression results for ABS_R_CFO are consistent with my time-trend analysis, where I established that the level of real earnings management measured as the absolute abnormal cash flow from operations is significantly higher in the post-IFRS period. So despite of a decreasing trend in real earnings management during my sample period, real earnings management is significantly higher in the post-IFRS period, with IFRS adding to this increased magnitude.

5.6 Regression results: substitution effect EM/RM

Lastly, I test the substitution effect between the two main manifestations of earnings management by including a proxy for real earnings management as an independent variable in the regression for accruals-based earnings management, and vice versa. Given the lack of significant results, abnormal production costs are excluded from this analysis.

I included my proxy for real earnings management, ABS_R_CFO, as an extra control variable in my regression for accruals-based earnings management. I have excluded cash flow from operations, as I now included abnormal cash flow from operations, which is part of total CFO. The interaction variable IFRS*ABS_R_CFO, is included to test whether the introduction of IFRS has led to a substitution effect between accruals-based earnings management and real earnings management.

Results obtained from the regression analysis show that there is still talk of a decreasing trend in accruals-based earnings management during my sample period, and IFRS still has an increasing effect on accruals-based earnings management. For my interaction variable with IFRS, IFRS*ABS_R_CFO, I obtain a negative coefficient, although not significant for the regression with ABS_DA(ΔCFO). The obtained negative coefficient indicates that the introduction of IFRS has led to a substitution effect between the two main manifestations of earnings management, although both accruals-based earnings management and real earnings management have strictly increased. Results show that the introduction of IFRS has led to a more negative relation between accruals-based earnings management and real earnings management, meaning that in the post-IFRS period, accruals-based earnings management and real earnings management are increasingly used as substitutes of one another.

Controlling for accruals based earnings management in my regression for real based earnings management leads to similar results. Again, the signs of the obtained coefficients are mostly unchanged, with also for real earnings management a decreasing trend in time during my sample period, and an increasing effect of the adoption of IFRS on the level of earnings management. The signs of the coefficients for the accruals-based management proxies, as well as for the interaction variables, are consistent with that obtained for the regression of absolute discretionary accruals when controlled for real earnings management. The negative coefficient for the interaction variables indicates that the introduction of IFRS had led the two main manifestations of earnings management to be increasingly used as substitutes of one another. This is consistent with **H3**, which is thus accepted.

6. Summary and conclusions

In this study, I investigated whether the mandatory adoption of IFRS from 1 January 2005 by all listed companies in the European Union has led to significantly lower levels of earnings management. I hypothesized that due to the stricter character of IFRS compared to national GAAP, combined with the decreased tolerance towards accounts manipulation by users and regulators as a consequence of recent accounting scandals, accruals-based earnings management has strictly declined after the introduction of IFRS. However, results obtained from regression analysis indicate exactly the opposite, namely that accruals-based earnings management has *increased* as a consequence of the adoption of IFRS.

I also hypothesized that management shifts away from accruals-based earnings management towards real earnings management. With incentives to manage earnings remaining the same or even increasing as a consequence of increased incentives to smooth earnings, I expected management to look for alternative ways to manage earnings. Regression analysis confirmed that real earnings management has strictly increased as a consequence of the introduction of IFRS.

So both accruals-based earnings management and real earnings management has *increased* as a consequence of the implementation of IFRS. However, I also expected that there would be talk of a substitution effect between the two manifestations of earnings management, as accruals-based earnings management was expected to *decrease* and real earnings management to *increase* as a consequence of the implementation of IFRS. To test whether there is still talk of a substitution effect between the two manifestations of earnings management, I performed additional regression analysis. From this, I indeed found that IFRS has led the two manifestations of earnings management to be increasingly used as substitutes of one another, despite the fact that the magnitude of both manifestations of earnings management have strictly increased in the post-IFRS period compared to the pre-IFRS period.

Lastly, I considered whether the implementation of IFRS has led to different effects in the different countries in my sample. However, regression analysis shows that the country in which a company is based has no significant influence on the effect of IFRS on the level of earnings management. This could be explained as IFRS having the same effect on the relative levels of earnings management in different countries. But it could also be interpreted as IFRS being ineffective in restricting earnings management all together. This last interpretation is consistent with the rest of my obtained results, as well as with the finding in earlier studies that IFRS is mainly applied in line with national accounting traditions.

Based on these findings therefore, I am unable to establish that for my total research sample IFRS has led to less accruals-based earnings management. Although accruals-based earnings is significantly lower in the post-IFRS period than in the pre-IFRS period, regression analysis shows that when controlled for differences in earnings management incentives, IFRS has led to an increase in accruals-based earnings management. This is consistent with earlier studies, such as that by Tendeloo and Vanstraelen (2005) and

Heemskerk and Van der Tas (2006). My results also show that IFRS has led to an increase in real earnings management. With both accruals-based earnings management and real earnings management increasing as a consequence of the adoption of IFRS, it can be stated that based on my findings, IFRS has not been successful in restricting earnings management.

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