

The Impact of International Financial Reporting Standards adoption on Earnings

Management: Evidence from EU countries

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Abstract

The European Parliament has introduced a regulation in 2002 requiring all public traded firms in the European Union (EU) to prepare their consolidated financial statements according to the International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS). Since 2005, more than 150 countries have adopted the IFRS. This is considered to be an outstanding improvement to accounting regulation that became a global concern of accounting scandals and bankruptcy during the recent financial crisis. Eventually, as firms are harmonizing their accounting and reporting standards, a question arises whether IFRS has an impact of this change on earnings manipulation and transparency of firms accounting reporting procedure. This chapter documents the impact of IFRS on earnings manipulation behaviour considering the impact of the financial crisis on the European banking system after 2008. An analysis of 1,688 listed firms from EU countries from 2000 to 2015 shows that although earnings management can be a possibility during financial crisis and IFRS can change managers' accrual earnings behaviour, but managers may still use real earnings manipulation to meet or beat their earnings target. The findings also indicate that strict accounting standards are not enough to mitigate earnings management, especially for financially distressed firms. We contribute to recent literature on earnings management to assist policy makers to take decision based on the earnings management techniques exercise by firms.

1. Introduction

We aim to examine the impact of International Financial Reporting Standards (IFRS) on two measures of earnings management, namely performance-adjusted accrual and real earnings management of financially distressed firms in the European Union (EU) countries. We reason that distressed firms have strong incentives to manipulate their earnings during financial crisis and adoption of IFRS can mitigate such behaviour during recent financial crisis. Prior studies show that firms try to avoid bankruptcy by managing their earnings upward and eliminate the associated costs (HassabElnaby et al. 2007; Dichev and Skinner 2002; Franz et al. 2014). In other words, if a firm is in financially distressed conditions, its managers can expect to have their compensation reduced and suffer loss of reputation (Gilson 1989) or eventually can lose their job. Thus, managers can save their benefits by achieving a reference point (meet or beat the earnings) and representing their firms as consistently growing firms. Previous literature indicates that managers prefer to show a stable performance by earnings management (Gunny, 2010; Braam et al., 2015). Although this procedure is costly because if detected, the firms may end up in a financial scandal, for certain types of earnings management it is not easily detectable by independent auditors (Graham et al, 2005).

Therefore, prior studies either indicate that managers use only accrual earnings management or both accrual and real earnings management to avoid financial distress. However, the existing studies fail to consider the mandatory adoption of IFRS and financial crisis. We, in this chapter, aim to analyse the impact of the adoption of IFRS on earnings management of the financially distressed (listed) firms in the EU countries. In addition, we examine the earnings management behaviour of financially distressed firms during financial crisis. For this purpose, two earnings management strategies are considered, namely real and accrual-based earnings management. Extant studies show that managers use these two types

of earnings management strategies, and substitute with each other when needed, in manipulating the reported earnings (Cohen et al., 2008; Cohen and Frazzini, 2008; Badertscher, 2011; Zang, 2012). The results from our study fill the gap in the existing literature on testing the change in managers' behaviour and the usage of earnings management techniques before and after the harmonization of international reporting standards and during financial crisis.

We use a data set of 1,688 listed firms from 26 EU countries during 2000- 2015. The results show that the financial crisis (that started in 2008 in the USA and the European debt crisis of 2009-2010) has motivated managers to manipulate their firms' earnings. However, as the IFRS adoption increases transparency in accounting system, firms choose more real earnings management, which is not easily detectable than accrual-based activities.

As accounting information is scrutinised in details, especially by auditors, it has been difficult for the financially distressed firms to wait until the end of financial year to do accrual earnings management. However, the financially distressed firms prefer to do more real earnings management when they are under extra pressure from the watchdogs after IFRS adoption and during financial crisis. We believe that to protect their reputation and not to show further distress the managers of financially distressed firms depend more on real earnings management.

This study contributes to the literature in three ways. Firstly, it adds to the literature by showing different types of earnings management strategies before and after the harmonization of accounting standards. Secondly, it investigates a cross-country dataset to conclude the effect of financial crisis and IFRS adoption together on the firms' earnings management behaviour. Finally, and most importantly, we use a probability of bankruptcy measure, which helps us to identify firms expected earnings manipulation behaviour in

anticipation of financial shock. These findings add to the body of literature examining alternative tools to manage earnings (e.g. Zang, 2012)

The remainder of the study is structured as follows. Section 2 includes literature review, Sections 3 and 4 present methodology and results. The final section concludes our study and includes directions for future research.

2. Literature review

Since 2005, more than 150 countries have adopted the IFRS. The regulation was introduced on 19 July 2002 by the European Parliament (1606/2002/EC), requiring all publicly traded firms in the EU to prepare their consolidated financial statements according to the International Accounting Standards and International Financial Reporting Standards (IAS/IFRS) from 2005. The accounting specialists broadly recognize the importance of moving through a set of global and harmonized accounting standards. However, IFRS adoption and its economic impact involve remarkable concerns (see Daske et al., 2008; Bhimani, 2008; Armstrong et al., 2010; Aharony et al., 2010). The main purpose of IFRS is to improve transparency in reporting of financial statement and to decrease asymmetric information and associated information costs (Ashbaugh et al. 2001, Ewert et al., 2005; Humphrey et al., 2009; Shima et al., 2011). The existing accounting regulations expect managers to present true and fair view of their firms, but managers manipulate earnings by applying accrual and real earnings management strategies (Badertscher, 2011; Braam et al., 2015). Accrual-based earnings management changes the accounting estimates and methods that a firm uses under the accepted accounting rules (Dechow et al., 2000) and real earnings management is a tool that permits companies to change the construction and the time of real transactions in order to meet short-term profit goals (Roychowdhury, 2006). Accrual-based

earnings management can be used only at the end of financial year and is less costly but being easily recognized than real earnings management (Graham et al., 2005; Gunny, 2010; Zang, 2012). Firms use accrual and real strategies as substitutes or complement in controlling firm's earnings (Cohen et al., 2008; Cohen and Zarowin, 2010; Badertscher, 2011; Zang, 2012). Earnings management acts as an intermediary for agency conflicts between managers and shareholders as it reduces the quality of accounting information (Asem et al., 2015).

The existing literature remains inconclusive about the impact of IFRS on earnings management and quality of accounting reporting in Europe. Firms following international standards show an improvement in quality of reporting, less earnings management, timely loss recognition, and value relevance (Daske and Gebhardt, 2006; Barth et al., 2008). However, many studies conclude that firms which are obliged to adopt IFRS do not demonstrate signs of improvement in accounting quality or less earnings management (Christensen et al., 2008; Jeanjean and Stolowy, 2008). Acceptance of international standards increases the market liquidity and the equity valuations, but it decreases the firms' cost of capital (Daske et al., 2008; Laux and Leuz, 2009). After the harmonization of accounting and reporting standards, an increase in the relevance of accounting figures' value is noticed and it does not affect the book value of the equity (Alali and Foote, 2012; Ahmed et al., 2013.). In addition, after acceptance of international accounting standards, earnings management is affected negatively (Antonio Marra et al., 2011).

Quality in financial reporting still remains a major concern. The international principles-based accounting standards at the same time provide opportunities for judgment, permitting earnings management techniques to grow. Besides existence of higher quality accounting standards, the characteristics of companies and the institutional settings are

allowing companies to implement discretion for earnings management (Ball et al., 2000; Leuz, 2003; Ball and Shivakumar, 2005; Burgstahler et al., 2006).

An improvement in the quality of reported financial information provides an indication about the firm's future cash flow (Liang, 2004). Again such adoption of high quality standards try to discourage the manipulation of earnings by making it costly and try to protect investors' interests (Iatridis, 2012). However, when firms have high probability to fail in future, managers of these financially distress firms are under immense pressure to show better earnings even when there exist strict accounting standards as they will try not to be fired based on poor financial performance (Huson et al., 1995; 2004; Mutchler et al., 1997; Kothari et al., 2009). Prior studies show evidence of significant positive relationship between the change in probability of bankruptcy and the interaction between earnings surprises and distress (e.g. Howe and Houston, 2016). Shares of financially distressed firms may be discounted at a higher rate because distress risk is priced (Fama and French, 1992; Rajan and Zingales, 1995). As firms are not sharing financial predictions with investors in debt and equity markets (Bhattacharya and Chiesa, 1995; Massa and Rehman, 2008; Chen and Martin, 2011) they have enough scope of earnings management to save firms' reputation and personal benefit. According to the '*comparability argument*' of the IFRS, it is less costly for investors to compare firms across different countries (see Armstrong et al., 2010; Covrig et al., 2007). Nevertheless, when the managers of financially distressed firms are using their discretion then the reporting incentives can change (Ball et al., 2000; Leuz, 2003; Burgstahler et al., 2006). Thus, it is important to test how does IFRS adoption influence the financially distressed firms in doing earnings management?

High tail risk of banks is considered as the most important reason of recent financial crisis. Banks assessed the riskiness of the firms based on the financial report of the firms and the credit rating done by external agencies who mainly base their assessments on firms'

reported financial statement (Jorion et al., 2009; Li et al., 2010). Financial statements prepared under IFRS become more comparable across countries (Chan et al., 2013). However, financially distressed firms are less transparent, especially during the financial crisis as earnings management overcast the true and fair view of the firms. Greater reduction in transparency of performance of firms during the financial crisis is associated with increased tail risk (Jin and Myers, 2006). Moreover, during financial crisis most of the European listed firms have started following IFRS, so we expect that managers of financially distressed firms are under extra pressure to present earnings surprise for their personal benefit.

In summary, we find evidence in literature about earnings management by financially distressed firms or changes in type of earnings management practices after IFRS or during financial crisis. However, there exists a gap in the literature is about types of earnings management practices followed by financially distressed firms after IFRS adoption and during financial crisis. Therefore, in particular, we examine the following question:

What type of earnings management does managers prefer in financially distressed firms after IFRS adoption and during the financial crisis?

3. Methods

3.1 Sample

We begin with a dataset from all listed firms in the EU countries from 2000 to 2015. All listed firms in the EU countries are required to prepare their financial statements under IFRS from 2005 and onwards. We construct our dataset by merging information from Worldscope and the World Bank's database. Specifically, Worldscope contains historical data from the publicly reported financial statements of all listed companies around the world. Finally, the

World Bank database is used for the macroeconomic variables. After cleaning the data for missing information, our final dataset includes 1,688 listed firms in the 26 countries of the European Union from 2000 to 2015 that constructs 26,945 firm-year observations.

3.2 Measurement of Variables

3.2.1 Measurement of Real Earnings Management

According to the literature, there are three proxies of real earnings management for the related level of activities (Dechow et al., 1998; Roychowdhury, 2006; Cohen et al., 2008; Cohen and Zarowin, 2010). The first measure is the abnormal levels of cash flow from operations (REM-CFO), the second is the abnormal levels of costs of production (REM-Prod) and the third is the abnormal levels of discretionary expenses (REM-Disx). In order to be consistent with the prior studies (Dechow et al., 1998; Roychowdhury, 2006; Cohen et al., 2008; Cohen and Zarowin 2010), each proxy's parameters of regression analysis is estimated for the calculation of normal levels of discretionary expenses, cash flows from operations and production costs. Furthermore, Roychowdhury's (2006) method is followed, which states that the residuals represent the abnormal levels of discretionary expenses, production costs and cash flow from operations (i.e. the difference between the actual and the predicted normal levels).

The linear relationship between change in sales and sales expresses the normal levels of cash flow from operation. The following regression is estimated (Roychowdhury, 2006):

$$\frac{CFO_{i,t}}{Assets_{i,t-1}} = \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{SALES_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

Where $Assets_{i,t-1}$ are the total assets of company i at the end of period $t-1$; $CFO_{i,t}$ is the net receipts of cash that the company i received in period t ; $SALES_{i,t}$ are the net sales of company i in t period and $\Delta SALES_{i,t}$ is the difference between net sales from period $t-1$ to t of each company i .

The difference between the actual level of CFO and the normal level of CFO is the abnormal cash flow from operations. This is the predicted value (i.e. the residual) from

equation (1). The abnormal cash flow from operation is represented by the variable REM_CFO. It is a common strategy that managers provide more lenient credit terms and price discounts in order to increase sales. This expansion is temporarily and increases earnings of the underlying period, while it disappears when prices return to their pre-discount old level. Moreover, the firm ends with lower levels of cash flow in the current period. It is suggested that lower negative estimated residuals address more sales manipulation indicating low levels of operating cash flows in order to manage the earnings reported upward. Hence, the lower the value of abnormal cash flows, the higher the level of real earnings management.

Another action can be taken by managers to manipulate real activities earnings. Increased production allows management team to report lower cost of goods sold. The production cost (PROD) is defined as the sum of the changes in inventory during the period (ΔINV) and the cost of goods sold (COGS). The model for cost of goods sold is estimated as following:

$$\frac{COGS_{i,t}}{Assets_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{SALES_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (2)$$

Similarly, with the next model the inventory growth is estimated. It is the regression of the lagged change in sales and the contemporaneous sales.

$$\frac{\Delta INV_{i,t}}{Assets_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{\Delta SALES_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (3)$$

The normal level of production cost is estimated as follows and from equations (2) and (3) (Roychowdhury, 2006):

$$\frac{PROD_{i,t}}{Assets_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{SALES_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \beta_4 \frac{\Delta SALES_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (4)$$

The residual from equation (4) represents the abnormal production cost. In other words, it is the difference between the normal level of production costs and the actual production costs. REM_PROD is defined as the variable for abnormal production cost. It is common that the management team supports overproduction so that fixed overheads are distributed among

increased units and eventually the fixed cost per unit is reduced. Consequently, up to the point that the reduced fixed cost per unit is outweighed by the increase of marginal cost per unit, the total cost per unit will continue decreasing. The overproduction is presented in equation (4) with positive residuals (high levels of REM_PROD variable). Due to the overproduction of goods, the production cost of the period rises and at the same time the cash flow from operations decreases. These high levels of abnormal production costs (REM_PROD) indicate manipulation of real activity (i.e. more real earnings management).

Roychowdhury (2006) analyzes the third proxy for real earnings management which is called abnormal level of discretionary expenses. To start with, the normal level of discretionary expenses is estimated with equation (5).

$$\frac{DISX_{i,t}}{Assets_{i,t-1}} = \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{SALES_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (5)$$

Where $DISX_{i,t}$ represents the discretionary expenses of company i in period t . The discretionary expenses are calculated as the sum of research and development expenses (R&D) and SG&A expenses (SG&A expenses related to selling, general and administrative expenses). SG&A expenses that are not directly related to the production and advertising expenses are also included. On the other hand, research and development expenses are linked with all costs from development of new products and processes, applications or techniques.

Similarly, with the other two proxies, the residual estimated from equation (5), represents the abnormal level of discretionary expenses. The variable REM_DISX is defined as the abnormal discretionary expenses. Firms can report higher current earnings by reducing the discretionary expenses; the concern here is that they increase the current cash flow at the expense of future cash flows. Finally, the lower the value of abnormal discretionary expenses (REM_DISX) the higher the level of real earnings management. All or some of the real earnings management techniques that are mentioned above can be used by the firm's management team.

High level of production costs, and/or low levels of abnormal discretionary expenses and cash flows from operations are indications that companies engage high levels of real earnings management given the amount of sales. These three measures of real earnings

management are combined to calculate some broad metrics concerning the manipulation of real activities in a firm.

3.2.2 Measurement of Accrual Based Earnings Management

Following recent studies, the level of accrual-based earnings management activities can be estimated with two proxies of discretionary accruals. As academics and practitioners consider earnings management an important issue in order to study managerial behavior, the first proxy is the estimation of discretionary accruals using the cross-sectional Jones model (Dechow et al., 1995; Cohen et al., 2008). It is argued that this model is found to have “the most power in detecting earnings management” (Dechow et al., 1995). Bartov et al. (2001) and Guay et al. (1996) further support that the modified Jones model is proved to be reliable in the identification of earnings management. The model is estimated for each company i and period t as follows:

$$\frac{TA_{i,t}}{Assets_{i,t-1}} = \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (6)$$

Where $Assets_{i,t-1}$ is the total assets of company i at the end of period $t-1$, $\Delta Sales_{i,t}$ is the change in sales from year $t-1$ to year t per company i , $PPE_{i,t}$ is the net value of property, plant and equipment. Finally, $TA_{i,t}$ indicates the total accruals of company i for the fiscal year t . Total accruals can be computed as the difference between the earnings before extraordinary items and discontinued operations (EBXI) and the operation cash flows from operations (CFO). In order to compute total accruals, the balance sheet approach is followed using the formula as below:

$$TA_{i,t} = (\Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - DEP_t) / Assets_{i,t-1} \quad (7)$$

Where ΔCA_t is the movement in current assets from year $t-1$ to year t , ΔCL_t is the change in current liabilities for the same time period, $\Delta Cash_t$ is the movement in cash and cash equivalents, ΔSTD_t is the change in debt included in current liabilities, DEP_t represents the depreciation and amortization expense.

In order to estimate the normal accruals of the company (NA_{it}), the estimated coefficients from the equation (6) are used in the following equation as follows:

$$NA_{i,t} = \widehat{\beta}_1 \frac{1}{Assets_{i,t-1}} + \widehat{\beta}_2 \frac{(\Delta SALES_{i,t} - \Delta AR_{i,t})}{Assets_{i,t-1}} + \widehat{\beta}_3 \frac{PPE_{it}}{Assets_{i,t-1}} \quad (8)$$

Where $\Delta AR_{i,t}$ indicates the movement in accounts receivable from year t to year t-1 of company i. The discretionary accruals ($DA_{i,t}$), are calculated with the following equation (9). It is the difference between the total accruals ($TA_{i,t}$) and the normal accruals of the company (NA_{it}).

$$DA_{i,t} = \frac{TA_{i,t}}{Assets_{i,t-1}} - NA_{i,t} \quad (9)$$

The second measure to capture the managerial behavior and accrual-based earnings management is discretionary current accruals, which is developed in accordance with Kothari et al. (2005), Chaney et al. (2011) and Ashbaugh et al (2003). The performance adjusted measure of discretionary current accruals indicated as REDCA is used. With this method, the performance of the firm is controlled with ROA. ROA_{it} is calculated as the net earnings before extraordinary items divided by total assets. Furthermore, current accruals divided by total assets of the company is calculated as the sum of total accruals (TA) from equation (7) and depreciation and amortization expense divided by total assets. The next step is the estimation of the following equation (10) in order to end up with the expected current accruals of each firm per year (ECAPC):

$$\frac{CA_{i,t}}{Assets_{i,t-1}} = \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{ROA_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (10)$$

Finally, current discretionary accruals are estimated with the usage of equation (11):

$$REDCA_{i,t} = TCA_{i,t} - ECAPC_{i,t} \quad (11)$$

Where ECAPC represents the expected performance-adjusted total current accruals of each company i in period t and TCA the total current accruals of each company i in period t. ROA controls the performance effect on the discretionary accruals (Chaney et al., 2011). Earnings

that are reported in the financial statements can be increased through the flexibility of earnings management provided from accounting items. It should be underlined that for the two measures of accrual based earnings management, the absolute difference between the total current accruals and the expected performance-adjusted total current accruals is calculated. Also, the absolute difference is calculated between the total accruals and the normal accruals.

3.2.3 Measurement of financially distress variable

Following Mutchler et al (1997), we construct our main independent variable called probability to bankruptcy. This variable is a proxy for financially distressed firms. Franz et al (2014) use credit rating data to create a proxy for financially distressed firms of the USA. However, in our case the credit ratings are neither available for all the sample firms nor consistent over the years. Therefore, to construct the probability to bankruptcy (proxy for financial distress), we first identify firms as distressed and non-distressed if one of the following criteria is satisfied: (1) negative working capital in the last financial year before bankruptcy, (2) a loss from operations, or (3) if the firm has 3 consecutive years of negative ROA (the following year is coded as 1). In this procedure, we find 43% firms are stressed. We create a dummy variable (distress) equals to 1 if a firm is stressed and 0 otherwise. In the second stage, we estimate the probability of bankruptcy by a logit regression considering 'distress' as dependent variable. The independent variables are current assets/total assets, current assets/ current liabilities, cash/total assets, current assets/sales, long-term debt/total assets and firm size (measured as log of the number of employees). All these independent variables are included with a one-year lag. In order to test the time (before and after the mandatory adoption of IFRS in the EU member countries in 2005), a year dummy variable is introduced, indicated as IFRS. IFRS is equal to one in case the loan is initiated during or after 2005. We also create a dummy variable indicating the financial crisis. We define it as 1 if

year is 2008-2010 (to include both financial crisis started in the USA and European debt crisis), and 0 otherwise.

We use a number of control variables at firm's level in our models. Following recent researches, the firm-specific variables included as control variables are the market to book ratio, the natural log of return on equity and leverage (Chaney et al., 2011; Cohen et al., 2008; Zang, 2012). Market to book is calculated as the ratio of market capitalization to the common shareholders' investment in the firm and leverage is the long-term debt divided by total assets. We also include firm size and net sales.

We follow studies related to earning management by Faccio (2006, 2010) and included inflation and gross domestic product per capita as country-level control variables. These variables are collected from World Bank's database. The logarithm of a country's average percentage of change in consumer prices per country represents the variable inflation (Leuz et al., 2003). Furthermore, Chaney et al. (2011) state that inflation represents a measure about the business cycle of a company and the variations in its economic activities. On the other hand, a country's economic growth and development is indicated by gross domestic product per capita (GDP/CAP). GDP/CAP variable is computed as the natural logarithm of the changes in gross domestic product (GDP) per capita (CAP) in order to be in line with Chaney et al. (2011).

3.3 Empirical Model

In order to examine the above-mentioned research question the following model is used in this study

$$\text{Earnings Management} = a_0 + a_1 \text{Financial Distress} + a_2 \text{Adoption of IFRS} + a_3 \text{Firms' Characteristics} + a_4 \text{Country level controls} + \varepsilon \quad (12)$$

The dependent variable is performance adjusted accrual earnings management and real earnings management measures.

4. Results

In this section, we report our findings. Table 1 reports the descriptive statistics of the variables used in the chapter. The mean, median standard deviation and the upper quartile value are consistent with the existing studies related to earnings management and financially distressed firms (Braam et al., 2015).

[Insert Table 1 about here]

In Table 2 we summarize the total number of firms in each of the sample countries considered in our study. In this table, we find that there are significantly more firms in France, Germany and Italy compared to other countries. Thus, to check the unbiasedness of the sample, we re-run the estimation on a sample without these countries, and the findings are similar to the full sample.

[Insert Table 2 about here]

Table 3 represents the correlation between main variables explained in the previous section. When the correlations between earnings management are negative, it indicates that managers are using accrual and real earnings management measures as a substitute of each other. Managers also prefer to use a combination of different real earnings management measures if required which is consistent with the exiting literature (Cohen et al., 2008).

[Insert Table 3 about here]

We examine the earnings management behavior of financially distressed firms and report the findings in Table 4. We find that, in general, financially distressed firms prefer to do more accrual earnings management compared to real earnings management. As financially distressed firms are more highlighted by media and are always treated strictly by auditors, we believe that it is very difficult for the managers of these firms to do any type of earnings management. Therefore, we find statistically significant but small coefficient of accrual earnings management (0.005). Nevertheless, large firms do more real earnings management than accrual-based earnings management.

[Insert Table 4 about here]

In Table 5, when we consider the earnings management behavior by financially distressed firms during the financial crisis, we find managers are doing significantly less accrual (-0.004) and more real earnings management. Negative *Disx* (-0.076), *CFO* (-0.019) and positive *Prod* (0.035) indicate that during the financial crisis managers of European financially distressed firms try to report earnings shock and to do that they manipulate earnings throughout the year. Waiting until the end of financial year to manipulate earnings to meet earnings benchmark, mainly during a financial crisis may not be sufficient for financially distressed firms.

[Insert Table 5 about here]

The impact of IFRS adoption on managers' preferences for earnings management is reported in Table 6. We find that integrated accounting reporting failed to stop managers

from doing real earnings management. Statistically significant and negative REM Disx (-0.163), REM CFO (-0.006) and positive REM Prod (0.060) support our argument that strict accounting standards forced managers of financially distressed firms to adopt measures to manipulate earnings in short run ignoring the long-term performance of the firms. Real earnings management helps managers to report higher earnings, which they do without being caught by auditors. The inflated earnings shows an earnings shock for financially distressed firms and managers are able to maintain personal benefits even during financial crisis and under IFRS environment.

[Insert Table 6 about here]

4. Robustness Checks

We use a number of robustness checks by changing the specification of our variables and sample. Following prior literature, such as Cohen and Zarowin (2010) and Zang (2012), we construct few proxies for earnings management. The first proxy, REM_PROXY1, is computed by multiplying the abnormal level of discretionary expenses (REM Disx) with negative one and then adding the abnormal levels of production costs (REM Prod). The higher the values on this measure, the more possible it is for the firm to manipulate production costs and discretionary expenses by reducing them. Following Cohen et al. (2010), we computed our second proxy, REM_PROXY2, by multiplying discretionary expenses (REM Disx) by negative one and then adding the abnormal level of cash flows from operations (RM CFO). For this proxy, if the value is high, this is probably an indicator that the firm is manipulating sales and discretionary expenses by decreasing them. We compute our third proxy, REM_PROXY3, (following Cohen et al. 2008), as the sum abnormal levels of discretionary expenses (REM Disx) and cash flows from operations (REM CFO) multiplied by negative one and the abnormal level of production costs (REM Prod). The higher the level of manipulation in real activities within the firm, the higher is the value of

this proxy. With these proxies, we estimate our models and find that our main results remain qualitatively same (the results are not reported).

5. Conclusion

This study examines the impact of mandatory adoption of IFRS in the EU countries on earnings management strategies of managers of financially distressed firms. When we consider all firms in our sample, there is a tendency of doing accrual earnings management as the firms are more concerned with their reputation and long-term performance. However, the result is different for financially distressed firms. The managers of financially distressed firms are always under pressure from stakeholders of the firms. Consistent with existing literature, we find that during financial crisis, managers of distressed firms prefer real earnings management. In addition, we also find that after adoption of IFRS and especially during financial crisis, the EU firms do more real earnings management than the period before IFRS adoption. The findings from our study also indicate that strict accounting standards fail to mitigate earnings management, particularly for financially distressed firms. Managers try to maintain their personal benefit and to show short-term better performance they depend more on real earnings management by ignoring the long-term performance of the firms.

The study fills the gap in the academic literature related to earnings management after IFRS adoption and during the financial crisis by financially distressed firms. Our study can benefit policy makers and accounting professionals particularly in financial institutions to assess their credit risk while dealing with firms during the financial crisis. Future study may extend the recent study by considering the cost aspects associated with earnings management.

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Table 1: Descriptive statistics for variables used in estimations

Variable	Obs.	Mean	SD	Median	P75	
Accrual Earnings Management	26945	0.191	24.824	0.019	0.042	
REM (Disx)	26945	-0.472	47.457	-0.028	0	
REM (Prod)	26945	-0.04	8.635	0.089	0.142	
REM (CFO)	26945	0.014	1.14	0.001	0.056	
Distress (Logit regression)	14308	-0.052	0.72	-0.027	0.325	
S&P Credit Rating (Dummy)	26945	0.001	0.03	0	0	
Firm Size	21162	8.152	2.039	8.192	9.498	
ROE	21787	-2.391	2088.053	11.43	19.76	
Market-to-Book	23061	3.473	76.334	1.581	2.79	
Sales (/100,000)	23087	58.159	210.778	8.23	30.713	
Leverage	23054	0.292	8.353	0.134	0.251	
Inflation	26944	2.32	2.918	2.01	2.81	
GDP/Cap	25245	1.307	2.884	1.53	2.82	
<i>Variables for logit model</i>						
Cash/ Total assets	22321	0.081	0.133	0.079	0.124	
Current assets/Sales	22399	6.648	332.464	0.465	0.678	
Current assets/ Current Liabilities	22529	2.53	28.992	1.342	1.876	
Current assets/ Total assets	22532	0.459	0.225	0.45	0.619	

Notes: The sample includes 1,688 listed firms in the 26 countries of the European Union from 2000 to 2015, which includes 26,945 firm-year observations.

Table 2: Number of firms in each country

Country	Number of Firm	Percentage
AUSTRIA	33	1.95
BELGIUM	62	3.67
BULGARIA	39	2.31
CROATIA	38	2.25
CYPRUS	40	2.37
CZECH REPUBLIC	14	0.83
DENMARK	39	2.31
ESTONIA	15	0.89
FINLAND	45	2.67
FRANCE	203	12.03
GERMANY	208	12.32
GREECE	39	2.31
HUNGARY	27	1.6
IRELAND	26	1.54
ITALY	108	6.4
LITHUANIA	24	1.42
LUXEMBOURG	12	0.71
MALTA	15	0.89
NETHERLANDS	85	5.04
POLAND	36	2.13
PORTUGAL	43	2.55
ROMANIA	43	2.55
SLOVENIA	33	1.95
SPAIN	75	4.44
SWEDEN	54	3.2
UNITED KINGDOM	332	19.67
Total	1,688	100

Table 3: Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Accrual Earnings Management	1.000												
2.REM (Disx)	-0.952	1.000											
3.REM (Prod)	-0.953	0.999	1.000										
4.REM (CFO)	0.931	-0.990	-0.992	1.000									
5.Distress (Logit regression)	0.005	-0.010	-0.010	0.021	1.000								
6.S&P Credit Rating (Dummy)	-0.001	0.000	0.001	-0.001	-0.015	1.000							
7.Firm Size	-0.034	0.004	0.005	0.006	0.187	-0.005	1.000						
8.ROE	-0.001	0.000	-0.002	0.016	-0.034	-0.011	0.053	1.000					
9.Market-to-Book	0.002	-0.001	-0.003	0.010	-0.041	-0.003	-0.014	0.100	1.000				
10.Sales (100,000)	-0.010	0.003	0.004	-0.001	0.085	-0.008	0.410	0.006	-0.008	1.000			
11.Leverage	0.012	-0.021	-0.020	0.025	0.349	0.014	0.216	0.021	0.004	0.044	1.000		
12.Inflation	0.009	-0.004	-0.003	0.002	-0.127	0.027	-0.156	0.003	-0.023	-0.057	-0.031	1.000	
13.GDP/Cap	-0.007	0.009	0.010	-0.012	-0.225	-0.003	-0.118	0.003	-0.005	-0.044	-0.077	0.245	1.000

Notes: The sample includes 1,688 listed firms in the 26 countries of the European Union from 2000 to 2015, which includes 26,945 firm-year observations. For variable definitions, see Section 3.

Table 4: Earnings management by financially distress firms

All regression models are estimated using quantile regression.

$$EM = \beta_0 + \beta_1 \text{Financial Distress} + \beta_2 \text{Credit Rating} + \beta_3 \text{Size} + \beta_7 \text{Log (ROE)} \\ + \beta_4 \text{Market to book} + \beta_5 \text{Sales} + \beta_6 \text{Leverage} + \beta_7 \text{Log (Inflation)} \\ + \beta_8 \text{Log(GDP per capita)} + \text{Country effect} + \varepsilon$$

EM is measured by one proxy of performance adjusted accrual earnings management measure and three earnings management measures involving discretionary expenses, production cost and cash flow from operations. By construction, negative coefficients of real earnings management measure related to discretionary expenses and cash flow from operations refer to increase in real earnings management. *, * and ** represent significance at the 10%, 5%, and the 1% level respectively (two-tailed test). t-statistics are in parentheses.

Variables	Accrual Earnings (Performance-adjusted)	Real Earnings Management		
		REM (Disx)	REM (Prod)	REM (CFO)
Financial Distress	0.005*** (4.49)	0.108*** (9.09)	-0.035*** (-5.49)	0.058*** (23.73)
S&P Credit Rating (Dummy)	0.006 (0.13)	0.006 (0.09)	0.023 (0.55)	-0.011 (-0.12)
Firm Size	-0.001*** (-4.89)	0.003 (1.60)	0.005*** (5.35)	-0.003*** (-8.75)
Log (ROE)	0.000 (1.00)	-0.032*** (-13.60)	-0.031*** (-15.94)	0.017*** (19.50)
Market to Book	0.000*** (14.69)	-0.001*** (-15.34)	-0.006* (-1.90)	0.002** (1.96)
Sales	0.000 (0.61)	-0.000 (-1.33)	0.000*** (17.90)	0.000 (0.59)
Leverage	-0.000 (-0.10)	-0.004 (-0.17)	0.113*** (9.09)	-0.066*** (-11.90)
Log (Inflation)	-0.002** (-2.40)	-0.036*** (-5.22)	-0.014*** (-4.24)	0.007*** (6.10)
Log (GDP per Cap)	-0.003*** (-6.77)	0.036*** (8.03)	0.011*** (5.08)	0.004*** (4.77)
Country effect	Yes	Yes	Yes	Yes
Constant	0.033*** (16.60)	-0.107*** (-5.72)	0.035*** (3.35)	0.014*** (3.15)
Pseudo R ²	0.019	0.013	0.038	0.059
Observations	11,197	11,197	11,197	11,197

Table 5: Earnings management by financially distressed firms during financial crisis

All regression models are estimated using quantile regression.

$$EM = \gamma_0 + \gamma_1 \text{Financial distress} + \gamma_2 \text{Crisis} + \gamma_3 \text{Distress} * \text{Crisis} + \gamma_4 \text{Credit Rating} \\ + \gamma_5 \text{Size} + \gamma_6 \text{Log (ROE)} + \gamma_7 \text{Market to book} + \gamma_8 \text{Sales} + \gamma_9 \text{Leverage} \\ + \gamma_{10} \text{Log (Inflation)} + \gamma_{11} \text{Log(GDP per capita)} + \text{Country effect} + u$$

EM is measured by one proxy of performance adjusted accrual earnings management measure and three earnings management measures involving discretionary expenses, production cost and cash flow from operations. By construction, negative coefficients of real earnings management measure related to discretionary expenses and cash flow from operations refer to increase in real earnings management. *, * and ** represent significance at the 10%, 5%, and the 1% level respectively (two-tailed test). t-statistics are in parentheses.

Variables	Accrual Earnings (Performance-adjusted)	Real Earnings Management		
		REM (Disx)	REM (Prod)	REM (CFO)
Financial Distress	0.005*** (6.45)	0.118*** (11.60)	-0.040*** (-8.25)	0.060*** (28.77)
Financial Crisis	-0.002*** (-3.08)	0.092*** (10.28)	-0.000 (-0.06)	0.011*** (5.64)
Distress x Crisis	-0.004*** (-3.17)	-0.076*** (-2.79)	0.035*** (3.66)	-0.019*** (-3.02)
S&P Credit Rating (Dummy)	0.006 (0.12)	0.023 (0.23)	0.021 (0.53)	-0.010** (-2.41)
Firm Size	-0.001*** (-5.04)	0.001 (0.76)	0.004*** (5.33)	-0.004*** (-9.67)
Log (ROE)	0.000 (0.73)	-0.032*** (-13.34)	-0.031*** (-25.27)	0.017*** (19.21)
Market to Book	0.000*** (3.23)	-0.001 (-1.23)	-0.006* (-1.94)	0.003** (2.14)
Sales	0.000 (0.94)	-0.000 (-1.01)	0.000*** (16.46)	0.000 (0.67)
Leverage	-0.000 (-0.20)	-0.000 (-0.01)	0.114*** (11.94)	-0.065*** (-12.43)
Log (Inflation)	-0.001** (-2.14)	-0.039*** (-6.38)	-0.014*** (-6.17)	0.007*** (4.95)
Log (GDP per Cap)	-0.003*** (-7.82)	0.038*** (8.77)	0.011*** (5.87)	0.005*** (5.37)
Country effect	Yes	Yes	Yes	Yes
Constant	0.034*** (16.94)	-0.101*** (-5.56)	0.038*** (3.55)	0.014*** (3.35)
Pseudo R ²	0.020	0.015	0.039	0.062
Observations	11,197	11,197	11,197	11,197

Table 6: Impact of adoption of IFRS on earnings management

All regression models are estimated using quantile regression.

$$EM = \alpha_0 + \alpha_1 \text{Financial distress} + \alpha_2 \text{IFRS dummy} + \alpha_3 \text{IFRS} \\
+ \alpha_4 \text{Financial Crisis} + \alpha_5 \text{Size} + \alpha_6 \text{Log (ROE)} \\
+ \alpha_7 \text{Market to book} + \alpha_8 \text{Sales} + \alpha_9 \text{Leverage} + \alpha_{10} \text{Log (Inflation)} \\
+ \alpha_{11} \text{Log(GDP per capita)} + \text{Country effect} + \epsilon$$

EM is measured by one proxy of performance adjusted accrual earnings management measure and three earnings management measures involving discretionary expenses, production cost and cash flow from operations. By construction, negative coefficients of real earnings management measure related to discretionary expenses and cash flow from operations refer to increase in real earnings management. +, * and ** represent significance at the 10%, 5%, and the 1% level respectively (two-tailed test). t-statistics are in parentheses.

Variables	Accrual Earnings (Performance-adjusted)	Real Earnings Management		
		REM (Disx)	REM (Prod)	REM (CFO)
Financial Distress	0.015*** (11.33)	-0.018 (-1.29)	-0.070*** (-8.82)	0.060*** (21.17)
IFRS Dummy	0.003*** (3.92)	0.010 (1.21)	-0.049*** (-12.12)	0.006*** (4.07)
IFRS x Distress	-0.013*** (-8.95)	-0.163*** (-10.93)	0.060*** (7.00)	-0.006** (-2.07)
Financial crisis	-0.003*** (-3.80)	0.070*** (10.27)	0.017*** (5.45)	0.007*** (5.01)
S&P Credit Rating (Dummy)	0.001 (0.06)	-0.060 (-0.92)	-0.002 (-0.11)	-0.007 (-0.21)
Firm Size	-0.001*** (-5.57)	0.003** (2.10)	0.004*** (5.32)	-0.004*** (-10.33)
Log (ROE)	0.000 (0.75)	-0.033*** (-15.58)	-0.029*** (-15.86)	0.017*** (22.48)
Market to Book	0.000*** (3.27)	-0.001 (-1.56)	-0.005* (-1.67)	0.002** (2.28)
Sales	0.000 (0.52)	-0.000* (-1.80)	0.000*** (17.98)	-0.000 (-0.38)
Leverage	0.000 (0.11)	0.011 (0.53)	0.109*** (9.74)	-0.065*** (-14.06)
Log (Inflation)	-0.001* (-1.93)	-0.042*** (-6.89)	-0.012*** (-3.80)	0.006*** (4.76)
Log (GDP per Cap)	-0.003*** (-5.77)	0.039*** (9.13)	0.010*** (4.49)	0.005*** (5.43)
Country Effect	0.003* (1.67)	-0.011 (-0.98)	0.041*** (5.93)	-0.002 (-0.39)
Constant	0.033*** (15.27)	-0.121*** (-7.00)	0.058*** (5.56)	0.012*** (2.86)
Pseudo R ²	0.025	0.016	0.043	0.062
Observations	11,197	11,197	11,197	11,197