



Effect of the mandatory adoption of IFRS on real and accruals-based earnings management: Empirical evidence from France

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Abstract

The main purpose of this study is to examine whether the mandatory IFRS adoption within French listed companies provides higher earnings quality. More precisely, we study the impact of mandatory IFRS adoption on two approaches of earnings management: real and accruals-based earnings management. This study focuses on a sample of 1488 firm-year observations, 124 firms drawn from the 250 French-listed companies during the period from 1999 to 2011. We use the panel data for our analysis. Specifically, the FGLS estimator method is conducted in our regression models. Our results indicate that the absolute value of discretionary accruals is significantly reduced six years after the mandatory adoption of IFRS. We also find a negative association between the real earnings management and the mandatory adoption of IFRS. Overall, we can deduce that earnings quality is improved in the post-IFRS period in the French context.

Keywords: Accruals-based earnings management; International Financial Reporting Standards (IFRS); Real earnings management.

1. Introduction

Following the wave of scandals in the stock market between 2000 and 2001, the introduction of more stringent regulations to restore the financial investor's [1] confidence was the target of regulatory body. Among the stringent regulation, we find EC regulation No. 1606/2002 of 19 July 2002, accepted by the European Parliament, obliged the adoption of International Financial and Reporting Standards (IFRS thereafter) for all listed companies on the European financial market. More specifically, since 1 January 2005, listed companies in the European Union are required to submit obligatory their financial statements in accordance with IFRS.

In this vein, among the central research question which was examined by previous research is: Have mandatory adoption of IFRS improves earnings quality by constraining management earnings discretion [2] in the E.U countries, namely France?

Through literature review, we found two principal shortcomings about this issue: The first shortcoming is that the prior literature (such as Capkun *et al.* 2008, Zeghal *et al.* 2012) on the impact of mandatory IFRS adoption on earnings management has concentrated mainly on the discretionary accruals as measure of earnings management. However, earnings management can be also undertaken by managers based on real transactions. This second strategy is qualified by "Real Earnings Management". It implies that manager deviate from an optimal plan actions only to affect earnings by changing the timing or structuring of real transactions, (Ewert & Wagenhofer 2005). Empirical studies, e.g. (Bartov 1993, Roychowdhury 2006), demonstrated that managers could manage earnings through sales, production, research and development expenditures and assets sales. To the best of our knowledge, until now, no studies have examined the effect of mandatory IFRS adoption on real earnings management. The second shortcoming is that the most of previous stud-

ies have focused essentially on a transitional period (periods proceeding and immediately after IFRS) when testing the effect of mandatory adoption on accruals-based earnings management. The empirical results of these studies were mixed in the case of France. For example, for the same analysis period (2003-2006), Callao & Jarne (2010) found an increase; however Zeghal *et al.* (2011) showed a decrease of accruals-based earnings management. This allows us to think that this period is especially influenced by the reaction of firm in the face of the regulatory change rather than by the enforcement role of IFRS.

Thus, the objectives of this paper are: Firstly, unlike previous studies, we investigate the effect of the mandatory implementation of IFRS on accruals-based earnings management using a much longer period time after IFRS. Secondly, we examine the association between mandatory adoption of IFRS and real earnings management.

Our empirical analysis will be conducted in France. This choice is justified by several reasons. First, France is traditionally regarded as representative of the continental European accounting model characterized by regulatory rigidity and legalistic outlook. The implementation of IFRS in European continental model, such as France, has entailed a considerable change in the philosophy of accounting, Callao & Jarne 2010. Otherwise, International accounting standards, inspired from Anglo-Saxon accounting model, are based on principles-based standards and oriented to shareholders. However, French accounting standards are based on rules-based standards and oriented to stakeholders. These major regulatory changes in accounting system have caused a controversy regarding the mandatory adoption of IFRS on France. In addition, as mentioned by Leuz *et al.* (2003), we suppose that level of earnings management in France, considered as a code-law country and which has a low investor protection, is high. Finally, to the best of our knowledge, no studies have examined the impact of the mandatory IFRS adoption on both real and accruals-based earnings management in the French

context. In other words, for example, we found that Zeghal *et al.* (2011) investigated the impact of mandatory IFRS adoption only on accruals-based earnings management. While JeanJean & Stolowy (2008) used the irregularities in distribution of earnings as an indication of earnings management to discover whether French companies have managed their earnings to avoid losses after the implementation of IFRS.

This study focuses on a sample of 1488 firm-year observations, 124 firms drawn from the 250 French-listed companies, from 1999 to 2011. We use the panel data for our analysis. Specifically, the FGLS estimator method is conducted in our regression models. Our results indicate that the absolute value of discretionary accruals is significantly reduced six years after the mandatory adoption of IFRS. We also find a negative association between the real earnings management and the mandatory adoption of IFRS. Overall, we can deduce that earnings quality is improved in the post-IFRS adoption period in the French context.

This study contributes to the ongoing debate on the effect of mandatory adoption of IFRS on earnings quality, precisely on earnings management. More specifically, firstly and unlike previous studies, it extends this line of inquiry by examining the use of other mechanism of earnings management which is not enough studied by prior literature, namely real earnings management through three real activities as defined by Roychowdhury (2006): give price discounts in orders to increase sales, engage in overproduction in order to reduce the cost of goods sold and keep a tight rein on discretionary spending to improve margins. Furthermore, it extend the post-IFRS adoption period when testing the effect of IFRS on discretionary accruals. Thus, allow us to improve the enforcement role of IFRS. Finally, to the best to our knowledge, this study is the first one to empirically examine the impact of mandatory adoption of IFRS on real and accruals-based earnings management in the French context. It contribute to the current debate on whether IFRS can play an effective role in reducing earnings management by limiting opportunistic management discretions in determining accounting numbers and managing real activities in a country characterized with weak investor protection and that have a major accounting change after the mandatory adoption of IFRS.

The remainder of this paper is structured as follows: Section 2 provides literature review and hypotheses development. Data and research design is described in Section 3. Section 4 presents our data analysis and results and we report our conclusion in Section 5.

2. Literature review and hypotheses development

The existence of agency problem (Jensen & Meckling 1976) between managers and the other users of financial information, namely stockholders, encourages managers to manipulate their accounting earnings in their own personal interest rather than for the benefit of the stockholders. In this context, managers behave opportunistically. The divergence of interest between managers and shareholders could induce managers to use the flexibility provided by the accounting standards to manage income opportunistically, thereby creating misrepresentations in the reported earnings.

The implementation of IFRS by the International Accounting Standards Board (IASB), formerly known as International Accounting Standards Committee (IASC), aims to increase transparency and to improve the earnings quality. Otherwise and as mentioned by JeanJean & Stolowy (2008, p.483): "IFRS should reduce the amount of reporting discretion relative to many local GAPP, and in particular, push firms to improve their financial reporting".

The review will focus on studies that examined the relationship between the mandatory adoption of IFRS and the two approach-

es of earnings management: real and accruals-based earnings management.

2.1. Mandatory adoption of IFRS and accruals-based earnings management

There is a growing research stream that empirically investigates the effect of mandatory adoption of IFRS on accounting earnings management around the world.

On the one side, several studies found that the mandatory adoption of IFRS is associated with lower accounting earnings management. Barth *et al.* (2008) pointed out that accounting quality could increase if regulatory actions by standard setters limit management's opportunistic discretion in determining accounting amounts. Guenther *et al.* (2009) analyzed a large sample of German firms from 1998 to 2008 and found that mandatory adoption of IFRS reduced the use of discretionary accruals. Chen *et al.* (2010), based on 15 European Union countries over the period 2000-2007, showed a lower magnitude of absolute discretionary accruals, lower likelihood of managing earnings towards a target, and higher accrual quality after the IFRS adoption. More recently, Zeghal *et al.* (2011) and Zeghal *et al.* (2012) found the same result as Guenther *et al.* (2009) and Chen *et al.* (2010) and showed an improvement of earnings quality. Zeghal *et al.* (2011) were based on a sample of 353 French listed groups relating to the period 2003-2006, whereas Zeghal *et al.* (2012) used a sample of 1547 firms from 15 UE countries between 2001 and 2008. Similarly, Sun *et al.* (2011) demonstrated the same result in the U.S. context with a pre-IFRS period (2003-2005) and a post-IFRS period (2006-2008) whereas Liu *et al.* (2011) in the China context for the period 2005 to 2008.

On the other side, other researches showed that the mandatory adoption of IFRS not improved the earnings quality. Jeanjean & Stolowy (2008) analyzed the irregularities on distribution of earnings as a measure of earnings management. They examine whether companies in three IFRS first-time adopter countries, namely Australia, France and the UK have managed their earnings to avoid losses any less after the implementation of IFRS than in the pre-IFRS period. They report that earnings management in these countries did not decline after mandatory adoption of IFRS, and even increased in France. The empirical result obtained by Callao & Jarne (2010) indicate that earning management has intensified since the adoption of IFRS in 11 countries in Europe, as discretionary accruals have increased in the period following the implementation of IFRS. Using data in New Zealand from 2002 to 2009, Kabir *et al.* (2010) found that the absolute discretionary accruals become higher after the adoption of IFRS, suggesting lower earnings quality under IFRS than under pre-IFRS New Zealand GAAP. Similarly, using a sample of Egyptian listed firms around the time of introducing the 1997 and 2006 EAS versions, Elbannan (2011) found insignificant empirical evidence that earnings management decreases post-adoption. He attributes this result for example to the lack of compliance by financial statement preparers, improper regulatory enforcement mechanisms, the poor accounting infrastructure, and the inadequate practitioner training. More recently, Ruda (2012) concluded that firms in the emerging market of India which adopting IFRS were unable to control earnings management and thereby, improve earning quality. He mentioned that IFRS may not be superior or even effective in countries that do not have appropriate capital market paradigms and institutional infrastructures to support IFRS reporting rules.

Overall, the empirical findings of the effects of mandatory adoption of IFRS on accounting earnings management are mixed in prior studies. Those studies were mainly based on the transitional period analysis which is limited generally to the first one, two or three years after the mandatory adoption of IFRS. This analysis period is considered as short and is especially influenced by the reaction of firm in the face of the regulatory change rather than by the enforcement role of IFRS. In this study, we examine

the effect of the mandatory IFRS reporting over a much longer time period. Our study hypothesis is formalized as below:

H1: The level of accruals-based earnings management within French listed companies decrease as consequence of the mandatory IFRS adoption.

2.2- Mandatory adoption of IFRS and real earnings management

In general the academic literature, e.g. (Healy 1985, Defond & Jiambalvo 1994, Kasznik 1999, Healy & Wahlen 1999, Dechow & Skinner 2000, Kothari 2001), has addressed more attention to the issue of accounting earnings management via manipulation of discretionary accruals to the detriment of real earnings management. Nevertheless, a number of studies discuss the possibility that managerial intervention in the reporting process can occur not only via accounting methods, but also through real decisions. For example, the surveys conducted by Bruns & Merchant (1990) and Graham *et al.* (2005) showed that managers are willing to manipulate real business activities to manage reported earnings than to manipulate accruals. Roychowdhury (2006) explained this preference by the reversal and visible character of accruals which draw auditor or regulatory scrutiny. Also, Schipper (1989) and Beneish (2001) assumed that the real earnings management is often hard to detect because it is difficult to distinguish between an optimal decision management and a willingness to manipulate accounting numbers.

To date, to the best of our knowledge, no studies have examined directly the impact of mandatory IFRS adoption on real earnings management. Nonetheless, related studies show that the level of real earnings management increase with a higher level of audit quality (Chi *et al.* 2011), the presence of more stringent litigation and regulatory (Cohen *et al.* 2008, Zang 2012) and a less accounting flexibility (Ewert & Wogenhofer 2005).

Thus, based on these arguments and observations, we can say that accounting standards such as IFRS could constrain earnings management by accruals because this form of management is based on accounting options that draws the attention of auditors and accounting standard setters. However, they cannot limit the real earnings management which has benefits in terms of visibility and discretion. In our research, we test the following hypothesis:

H2: The level of real earnings management within French listed companies increase as consequence of the mandatory IFRS adoption.

3. Sample and research design

3.1. Sample and data description

We extract all accounting data available from the Thomson Reuters Eikon, Worldscope and Infinancial databases. Our final sample is drawn from the 250 French-listed companies.

Our analysis covers the period 1999-2011, split into two sub-periods in order to reflect the situation before and after the application of IFRS: The pre-IFRS period (1999-2004) and the post-IFRS period (2006-2011). We exclude the transition year (2005) to remove the adoption year effect. Indeed, contrary to previous studies, we have extended the study period to six years before and after the mandatory IFRS adoption. This allow us to well examine the impact of the enforcement role of IFRS rather than the reaction of firm in the face of the regulatory change IFRS on earnings management.

In order to improve the comparability of results among sample firms, consistent with previous studies (Cohen *et al.* 2008, Zang 2012), we exclude firstly financial institutions (SIC code 6000-6999), as their accounting measures are not always comparable with those of industrial firms. Secondly, we eliminate companies without a December 31 fiscal year-end. Then, we remove

non-compliant companies to French accounting standards in the period 1999-2004 and companies that do not obligatory adopt IFRS in the period of 2006-2011 [3]. Finally, we drop firm-year observations that do not have data available for at least six years forward and six years after the year of the mandatory adoption of IFRS, namely 2005.

After meeting the requirements for data availability yields, the final sample consists of 1488 firm-year observations over the period 1999-2011, including 6 industries with 124 individual firms [4].

Following Cohen *et al.* 2008, we require at least eight observations in each two-digit SIC industry-year group with available data to measure the discretionary accruals metrics and real earnings management proxies. Furthermore, to mitigate the influence of potential outliers, we winsorize all continuous variables at the top and bottom 1%, except variables expressed as percentage.

Tables 1 & 2 summarize the sampling selection procedure and distribution of the final sample by industry, respectively.

Table 1: Sample selection criteria

	Firms per year	Firm-Year observations
French firms with indice SBF 250 for the 1999-2011 period with exclusion of the adoption year, namely 2005	250	3000
(-) Financial institutions with SIC code 6000-6999	(36)	(432)
(-) Firms with fiscal year-end different to December 31	(41)	(492)
(-) Firms that not comply to French accounting standards in the 1999-2004 period and not obligatory adopt IFRS in the 2006-2011 period	(13)	(156)
(-) Firms with data not available for at least six years forward and six years after the year of the mandatory adoption of IFRS, namely 2005	(36)	(432)
= Total final sample	124	1488

Table 2: Final sample distribution by industry

Industries	SIC codes	Firms per year	Percentage of firms
Mining and construction	10-17	9	7.26
Manufacturing	20-39	55	44.36
Transport, communications electricity, gas and sanitary services	40-49	17	13.71
Wholesale trade	50-51	10	8.06
Retail trade	52-59	8	6.45
Services	70-89	25	20.16
Total		124	100

3.2. Earnings management measures

3.2.1. Accounting earnings management: discretionary accruals measure

The rich empirical literature on accounting earnings management has produced a several models to estimate discretionary accruals: e.g. (model developed by Healy 1985, model developed by DeAngelo 1986, cross-sectional model developed by Jones 1991, modified Jones model, sector model developed by Teoch *et al.* 1998, performance matched model of Kothari 2005).

Dechow *et al.* (1995) assessed the ability of these models to detect earnings management via discretionary accruals. As a result, they concluded that the modified cross-sectional Jones model is more reliable compared to other models. In addition, Barton & Simko (2002) argued that this model can capture the effect of the discretion of the managers in previous years. Also, this model has been widely used by recent studies to approximate accounting earnings management, (such as Cohen *et al.* 2008, Ipino & Parbonetti 2011, Zang 2012). In this way, we rely in our study on the modified Jones model to measure discretion-

ary accruals. In addition, we use the cross-sectional approach to measure discretionary accruals. This approach allows us to partially control for industry changes in economic conditions that affect total accruals while allowing the coefficients to vary across time, (DeFond & Jiambalvo 1994, Cohen et al. 2008, Ipino & Parbonetti 2011). Thus, we estimate the modified Jones model for every industry classified by its two-digit SIC code as follow:

$$TA_{i,t}/Assets_{i,t-1} = \alpha_0 (1/Assets_{i,t-1}) + \alpha_1 (\Delta REV_{i,t} - \Delta REC_{i,t}) / Assets_{i,t-1} + \alpha_2 (PPE_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t} \quad (1)$$

Where: $TA_{i,t}$ = total accruals for firm i in year t , measured as net income before extraordinary items less operating cash flows ($TA = EBXI_{i,t} - CFO_{i,t}$); $\Delta REV_{i,t}$ = change in revenues from preceding period. $\Delta REV_{i,t}$, measured by revenues in year t less revenues in year $t-1$ for firm i , ($\Delta REV_{i,t} = REV_{i,t} - REV_{i,t-1}$); $\Delta REC_{i,t}$ = change in accounts receivable from preceding period, measured by receivables in year t less receivables in year $t-1$ for firm i , ($\Delta REC_{i,t} = REC_{i,t} - REC_{i,t-1}$); $PPE_{i,t}$ = gross value of property, plant, and equipment for firm i in year t ; and $Assets_{i,t-1}$ = total assets for firm i in year $t-1$. All variables are scaled by beginning total assets to adjust for heteroskedasticity. The residual ($\varepsilon_{i,t}$) from this regression is the estimate of discretionary accruals, $DA_{i,t}$.

To compute discretionary accruals, we proceed as follow:

Step 1: we calculated total accruals (TA) for each observation, which is equal to the difference between net income before extraordinary items and operating cash flows, defined as $TA = EBXI_{i,t} - CFO_{i,t}$

Step 2: we computed the level of non-discretionary accruals (NDA) for each observation by using coefficients estimates ($\alpha'_0, \alpha'_1, \alpha'_2$) from the following equation:

$$NDA_{i,t}/Assets_{i,t-1} = \alpha'_0 (1/Assets_{i,t-1}) + \alpha'_1 (\Delta REV_{i,t} - \Delta REC_{i,t}) / Assets_{i,t-1} + \alpha'_2 (PPE_{i,t}/Assets_{i,t-1}) \quad (2)$$

Step 3: we deducted the level of discretionary accruals (DA) by calculating the difference between total accruals (TA) and non-discretionary accruals (NDA). The error term ($\varepsilon_{i,t}$) represents the portion of discretionary accruals, defined as $DA = TA - NDA$.

In this study, we use the absolute value of discretionary accruals to measure the extent of the accounting earnings management.

3.2.2- Real earnings management

According to some researchers (Beneish 2001), the real earnings management is often difficult to detect. They show that it is difficult to distinguish between an optimal decision and willingness to manipulate accounting numbers (Schipper 1989). Consequently, it is hard to develop an appropriate measure of real earnings management. Recently, Roychowdhury (2006) contradicted this and introduced a measure of the level of three individual real earnings management metrics that is now widely adopted in the literature. These measures are associated to the abnormal levels of cash flow from operations, discretionary expenses and production costs. Subsequent studies (such as Cohen et al. 2008, Cohen & Zarowin 2010) considered that the three individual variables have a different implication on earnings. So, in order to avoid this, these studies used a more comprehensive measure by computing a single variable that combine the three individual real earnings management metrics.

Hence, as in Roychowdhury (2006), Cohen et al. (2008) and Cohen & Zarowin (2010), we take into account of these three individual real activities:

- 1) Sales manipulation by accelerating the timing of sales through increased price discounts or more lenient credit terms, which would abnormally decrease cash flow from operations.
- 2) Overproduction by reporting lower Cost of Goods Sold (COGS) through increased production. Roychowdhury (2006) argued that managers could provide limited time discounts to increase sales toward the end of the year and building

up excess inventory to lower reported COGS. Also, managers of manufacturing firms can produce more goods than necessary to meet expected demand in order to manage earnings upward. With higher production levels, fixed overhead costs are spread over a larger number of units, lowering fixed costs per unit. As long as the reduction in fixed costs per unit is not offset by any increase in marginal cost per unit, total cost per unit declines. This implies that reported COGS is lower and the firm reports better operating margins.

3) Reduction of discretionary expenditures (i.e., R&D, SGA and advertising expenditures) to decrease reported expenses. Reducing such expenses will boost current period earnings. It could also lead to higher current period cash flows (at the risk of lower future cash flows) if the firm generally paid for such expenses in cash.

To measure the level of real earnings management, we rely on three steps.

Step 1: Following the model developed by Dechow et al. (1998) as implemented in Roychowdhury (2006), we approximate the normal levels of each type of real activity as linear function of sales and changes in sales.

To estimate the normal levels of cash flow from operation, we run the following cross-sectional regression for each industry and year:

$$CFO_{i,t}/Assets_{i,t-1} = \alpha_0 + \alpha_1 (1/Assets_{i,t-1}) + \beta_1 (Sales_{i,t}/Assets_{i,t-1}) + \beta_2 (\Delta Sales_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t} \quad (3)$$

Where: $CFO_{i,t}$ is cash flow from operation for firm i in year t ; $Sales_{i,t}$ is sales revenue in period t for firm i ; $\Delta Sales_{i,t}$ is change in sales revenue. It measured by sales in year t less sales in year $t-1$ for firm i ($\Delta S_{i,t} = S_{i,t} - S_{i,t-1}$); $Assets_{i,t-1}$ is total assets for firm i in year $t-1$.

Production costs are defined as the sum of Cost of Goods Sold (COGS) and the change of inventory (ΔINV) for firm i in year t .

$$COGS_{i,t}/Assets_{i,t-1} = \alpha_0 + \alpha_1 (1/Assets_{i,t-1}) + \beta_1 (Sales_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t} \quad (4)$$

$$\Delta INV_{i,t}/Assets_{i,t-1} = \alpha_0 + \alpha_1 (1/Assets_{i,t-1}) + \beta_1 (\Delta Sales_{i,t}/Assets_{i,t-1}) + \beta_2 (\Delta Sales_{i,t-1}/Assets_{i,t-1}) + \varepsilon_{i,t} \quad (5)$$

Using above equation (4) and (5), we estimate the normal level of production costs as:

$$PROD_{i,t} = \alpha_0 + \alpha_1 (1/Assets_{i,t-1}) + \beta_1 (Sales_{i,t}/Assets_{i,t-1}) + \beta_2 (\Delta Sales_{i,t}/Assets_{i,t-1}) + \beta_3 (\Delta Sales_{i,t-1}/Assets_{i,t-1}) + \varepsilon_{2i,t} \quad (6)$$

Where: $PROD_{i,t}$ is production costs for firm i in year t ; $Sales_{i,t}$ is sales revenue in period t for firm i ; $\Delta Sales_{i,t}$ is change in sales revenue. It measured by sales in year t less sales in year $t-1$ for firm i ($\Delta S_{i,t} = S_{i,t} - S_{i,t-1}$); $\Delta Sales_{i,t-1}$ is measured by sales in year $t-1$ less sales in year $t-2$ for firm i ($\Delta S_{i,t-1} = S_{i,t-1} - S_{i,t-2}$); $Assets_{i,t-1}$ is total assets for firm i in year $t-1$.

We model discretionary expenses by the following:

$$DISEX_{i,t}/Assets_{i,t-1} = \alpha_0 + \alpha_1 (1/Assets_{i,t-1}) + \beta_1 (Sales_{i,t-1}/Assets_{i,t-1}) + \varepsilon_{3i,t} \quad (7)$$

Where: $DISEX_{i,t}$ is the discretionary expenditures in year t for firm i . $DISCX$ is defined as the sum of advertising expenses, R&D expenses and Selling, General and Administrative (SG&A) expenses; $Sales_{i,t-1}$ is sales revenue in period $t-1$ for firm i ; $Assets_{i,t-1}$ is total assets for firm i in year $t-1$.

Step 2: We measure abnormal levels of each type of real activity by calculating the difference between the total value and the normal level calculated using estimated coefficients. In other words, abnormal cash flow from operations (denoted as AB_CFO) is the actual cash flow from operations minus normal cash flow from operations predicted from equation 3, Abnormal production costs (denoted as AB_PROD) is total value of production costs minus the normal level of production costs predicted from equation 6 and the abnormal discretionary spending

(denoted as AB_DISEX) is the total value of discretionary expenses minus the normal level of discretionary expenses predicted from equation 7. Otherwise, the abnormal levels of each type of real activities manipulation (AB_CFO, AB_PROD, AB_DISEX) are computed as the residual ($\varepsilon_{1i,t}$, $\varepsilon_{2i,t}$, $\varepsilon_{3i,t}$) from the relevant estimation model.

Then, consistent with previous studies (Zang 2007, Cohen & Zarowin 2010, Zang 2012), we multiply the residuals from the estimation models of CFO and DISEX by negative one, such that higher values indicate, respectively, the firm is engaging in sales manipulation and is cutting discretionary expenses to manage reported earnings upwards. Whereas, the residual of the estimation model of PROD is a positive measure of real earnings management, such that the higher of this amount, the more likely that managers overproduce inventories to reduce reported costs of goods sold.

Step 3: In order to capture the total effect of real earnings management, we rely on three global proxies. For our first proxy, REM_PROXY 1, consistent with Cohen *et al.* (2008), we use the sum of three standardized real earnings management meas-

ure (AB_CFO, AB_PROD, AB_DISCX). For the second measure, REM_PROXY 2, consistent with Cohen & Zarowin (2010), we aggregate the abnormal discretionary expenses with the abnormal production costs. For our third measure, REM_PROXY 3, again consistent with Cohen & Zarowin (2010), we compute the sum of abnormal cash flow from operations and abnormal discretionary expenses. So, the higher the amount of these aggregate measures, the more likely the firm engaged in real earnings management.

However, we acknowledge that the three individual variables have different implications for earnings that may dilute any results using the three global proxies alone, Cohen & Zarowin (2010). We thus report results corresponding to the single real earnings management proxies (RM_PROXY 1, RM_PROXY 2, RM_PROXY 3) as well as the three individual real earnings management proxies (AB_CFO, AB_PROD, AB_DISCX).

Table 3 provides descriptive statistics of the final sample for the proxies of real and accruals-based earnings management by industry for the period of 1999-2011

Table 3: Descriptive statistics for the final sample by industry

Variables	Final sample	Industries with SIC codes					
	N= 1488	10-17 N= 108	20-39 N= 660	40-49 N= 204	50-51 N= 120	52-59 N= 96	70-89 N= 300
Proxy of accruals earnings management							
ABS_AD							
Mean	0.197	0.083	0.051	0.061	0.049	0.033	0.762
Std. Dev.	1.427	0.099	0.046	0.058	0.043	0.025	3.116
Median	0.047	0.051	0.040	0.046	0.037	0.029	0.203
Min	0.000	0.002	0.000	0.000	0.000	0.000	0.000
Max	41.241	0.589	0.296	0.428	0.298	0.112	41.241
Proxies of real earnings management							
AB_CFO							
Mean	-0.064	-0.065	-0.055	-0.056	-0.093	-0.044	-0.082
Std. Dev.	0.086	0.149	0.080	0.073	0.073	0.052	0.086
Median	-0.062	-0.070	-0.057	-0.056	-0.095	-0.044	-0.079
Min	-0.726	-0.609	-0.726	-0.305	-0.416	-0.173	-0.344
Max	0.413	0.413	0.315	0.202	0.104	0.073	0.229
AB_PROD							
Mean	0.502	0.351	0.547	0.371	0.890	0.819	0.291
Std. Dev.	0.701	0.290	0.840	0.415	0.830	0.577	0.446
Median	0.385	0.327	0.407	0.283	0.863	0.857	0.240
Min	-3.494	-0.396	-1.524	-0.341	-3.494	-1.125	-1.240
Max	14.338	1.59	14.338	2.281	3.299	2.282	3.359
AB_DISCX							
Mean	-0.014	0.022	-0.006	-0.050	0.094	0.072	-0.094
Std. Dev.	0.222	0.178	0.236	0.128	0.365	0.148	0.160
Median	-0.007	-0.012	0.006	-0.007	0.013	0.116	-0.067
Min	-1.908	-0.275	-1.908	-0.648	-0.504	-0.454	-0.892
Max	1.613	0.602	0.667	0.168	1.613	0.383	0.381
RM_PROXY 1							
Mean	0.423	0.308	0.484	0.264	0.891	0.847	0.115
Std. Dev.	0.751	0.405	0.879	0.455	0.854	0.605	0.474
Median	0.315	0.284	0.373	0.160	0.717	0.858	0.099
Min	-2.753	-0.546	-1.690	-0.758	-2.753	-1.482	-1.295
Max	14.370	1.472	14.370	2.092	3.757	2.336	2.952
RM_PROXY 2							
Mean	0.487	0.374	0.540	0.321	0.984	0.891	0.197
Std. Dev.	0.742	0.378	0.873	0.438	0.849	0.603	0.459
Median	0.370	0.373	0.418	0.250	0.838	0.899	0.175
Min	-2.724	-0.453	-1.857	-0.824	-2.724	-1.483	-1.055
Max	14.306	1.536	14.306	2.211	3.799	2.420	3.176
RM_PROXY 3							
Mean	-0.079	-0.043	-0.062	-0.106	0.000	0.027	-0.176
Std. Dev.	0.245	0.245	0.248	0.150	0.396	0.158	0.196
Median	-0.071	-0.087	-0.045	-0.079	-0.080	0.057	-0.150
Min	-2.635	-0.706	-2.635	-0.693	-0.570	-0.506	-0.929
Max	1.718	0.619	0.631	0.271	1.244	0.394	0.514

Notes: This table provides descriptive statistics for the proxies of real and accruals-based earnings management by industry for the period of 1999-2011. The transition year 2005 is excluded to remove the adoption year effect. The industries by SIC code are defined

as: 10-17: Mining and construction; 20-39: Manufacturing; 40-49: Transport, communications electricity, gas and sanitary services; 50-51: Wholesale trade; 52-59: Retail trade; 70-89: Services. All variables are defined in the table 4.

3.3. Control variables

According to previous studies, there are other factors that are expected to influence earnings management and which require to be controlled in order to improve the degree of external validity of our results. We consider the following factors as control variables.

- 1) The company size (denoted as *SIZE*): measured as the natural logarithm of total assets. Previous studies (e.g. Watts & Zimmerman 1987) was documented that large firms have low earnings management.
- 2) The growth opportunities (denoted as *GROWTH*): The annual percentage change in sales is used as a measure of growth opportunities. This measure is also used by Summers & Sweeney (1998), Chen *et al.* (2010) and Ipino Parbonetti (2011).
- 3) Increase in Equity (denoted as *EISSUE*): is the annual percentage change in common stocks. This variable was used by several previous studies such as Chen *et al.* (2010), Sun *et al.* (2011) and Zeghal *et al.* (2012).
- 4) Increase in debt (denoted as *DISSUE*): calculated as the annual percentage change in total liabilities (e.g. Chen *et al.* 2010, Sun *et al.* 2011).
- 5) The leverage (denoted as *LEV*): The leverage is measured as total long term debt over total assets, Chen *et al.* (2010). It is expected that the coefficient on this ratio is positively correlated with real earnings management. According to Roychowdhury (2006) and Kim *et al.* (2011), most companies with high leverage resorted to real earnings management to avoid the violation of debt covenants.
- 6) Turnover (denoted as *TURN*): Following Barth *et al.* (2008) and Sun *et al.* (2011), the turnover is measured as the ratio of sales to total assets.
- 7) Cash-flows from operations (denoted as *CFO*): represents the operating cash flow normalized by total assets at the beginning of the period. It is included as a performance measure. Cheng & Thomas (2006) document that company with a significant operational cash flows record low tendency of earnings management by discretionary accruals and vice versa. This measure is also recently used by Sun *et al.* (2011) and Zeghal *et al.* (2012).
- 8) Firm's auditor (denoted as *BIG4*): is a dummy variable coded 1 if the firm's auditor is at least one of the big 4, that is, PwC, KPMG, E&Y or D&T and 0 otherwise. This measure was also used by Chi *et al.* (2011) and Ipino Parbonetti (2011) for the case of real earnings management and Becker *et al.* (1998), Francis *et al.* (1999), Krishnan (2003), Zeghal *et al.* (2011) in the case of accruals earnings management.

3.4. Empirical models

We run the following regression to examine the impact of mandatory IFRS adoption on real earnings management in addition of accruals-based earnings management.

$$EM_{i,t} = \alpha_0 + \alpha_1 \text{POST_IFRS05}_{i,t} + \alpha_2 \text{SIZE}_{i,t} + \alpha_3 \text{GROWTH}_{i,t} + \alpha_4 \text{EISSUE}_{i,t} + \alpha_5 \text{DISSUE}_{i,t} + \alpha_6 \text{LEV}_{i,t} + \alpha_7 \text{CFO}_{i,t} + \alpha_8 \text{TURN}_{i,t} + \alpha_9 \text{BIG4}_{i,t} + \varepsilon_{i,t}$$

Where: *EM*: presents accruals-based earnings management measure and real earnings management metrics. Precisely, the accruals-based earnings management is estimated by *ABS_AD* and real earnings management by *AB_CFO*, *AB_PROD*, *AB_DISCX*, *RM_PROXY 1*, *RM_PROXY 2* and *RM_PROXY 3*. We have seven models in total. *POST_IFRS05*: is an indicator variable that takes the value 1 during the post-IFRS period

(2006-2011) and the value 0 for the pre-IFRS period (1999-2004). *SIZE*, *GROWTH*, *EISSUE*, *DISSUE*, *LEV*, *CFO*, *TURN* and *BIG4* are the control variables. α_j : is the coefficient of the control variables with $j = 2$ to 9. ε : is the residual of the model. Table 4 presents the variable definitions.

Table 4: Variables definitions

Codes	Variable definitions
Dependent variables	
ABS_AD	The absolute value of discretionary accruals computed using the Modified Jones Model, (Dechow <i>et al.</i> 1995).
AB_CFO	The level of abnormal cash flow from operations computed as in Roychowdhury (2006). It is a negative measure of real earnings management.
AB_PROD	The level of abnormal production costs computed as in Roychowdhury (2006), where production costs are defined as the sum of Costs of Goods Sold and change in inventories. It is a positive measure of real earnings management.
AB_DISCX	The level of abnormal discretionary expenses computed as in Roychowdhury (2006), where discretionary expenses are the sum of advertising expenses, R&D expenses and SG&A expenses. It is a negative measure of real earnings management.
RM_PROXY 1	It represents the sum of the standardized three real earnings management proxies computed as in Cohen <i>et al.</i> (2008). $\text{RM_PROXY 1} = -\text{AB_CFO} + \text{AB_PROD} - \text{AB_DISEXP}$
RM_PROXY 2	The sum of the standardized two real earnings management proxies, Cohen & Zarowin (2010). $\text{RM_PROXY 2} = \text{AB_PROD} - \text{AB_DISEXP}$
RM_PROXY 3	The sum of the standardized two real earnings management proxies, Cohen & Zarowin (2010). $\text{RM_PROXY 3} = -\text{AB_CFO} - \text{AB_DISEXP}$
Independent variables	
POST_IFRS05	Binary variable that takes the value 1 during the post-IFRS period (2006-2011) and the value 0 for the pre-IFRS period (1999-2004).
Control variables	
SIZE	Company size measured as the natural logarithm of total assets.
GROWTH (%)	Growth, measured as the annual percentage change in sales.
ISSUE (%)	Increase in equity, measured as the annual percentage change in common equity.
DISSUE (%)	Increase in debt, measured as the annual percentage change in total liabilities.
LEV	Leverage, measured as total long term debt over total assets.
TURN	Turnover is measured as the ratio of sales to total assets.
CFO	Cash flow from operations, measured as cash flow from operations deflated by total assets of the year end.
BIG4	Dummy variable equals to 1 if the firm's auditor is at least one of the big 4, 0 otherwise.

Our sample has two dimensions: one for companies and one for time (indicated respectively by the indices *i* and *t*). These two features point out that we use the panel data for our analysis.

In order to choose the appropriate panel estimation method, we conducted several tests of model specification. Firstly, we run a test specification of individual effects. The result of the test shows an error probability of 0.000 for all the models. This allows us to reject the null hypothesis of no specific effects. Then, we run the Hausman test which allows us to differentiate between random and fixed effects. The result of this test indicates that random-effects suit our data for the models 1, 2, 4 and 7 and that fixed-effects suit our data for the models 3, 5 and 6. Furthermore, we run the Breusch-Pagan test which indicates the presence of heteroscedasticity in all the models. Besides the

pesaran's test, which is suitable for our data [5], shows the cross sectional dependence in all the models. Finally, the hypothesis of the autocorrelation of errors is tested by the Wooldridge test. The result of this test indicates the existence of autocorrelation among errors.

To conclude, the appropriate estimator when dealing with both Heteroskedastic error structure with cross sectional correlation and error autocorrelation is the Feasible Generalized Least Squares (FGLS).

4. Empirical results

4.1. Descriptive statistics

Table 5: Descriptive statistics for variables related to the regression model before and after the mandatory adoption of IFRS

Variables	Pre-IFRS adoption period (1999-2004)						Post-IFRS adoption period (2006-2011)					
	N	Mean	Median	Std. Dev.	Min	Max	N	Mean	Median	Std. Dev.	Min	Max
Dependent variables												
<i>Proxy of accounting earnings management</i>												
ABS_AD	744	0.298	0.053	1.946	0.000	41.241	744	0.096	0.041	0.517	0.000	10.125
<i>Proxies of real earnings management</i>												
AB_CFO	744	-0.053	-0.051	0.099	-0.726	0.413	744	-0.075	-0.071	0.070	-0.467	0.173
AB_PROD	744	0.570	0.438	0.875	-3.494	14.338	744	0.434	0.333	0.455	-0.570	2.940
AB_DISCX	744	0.017	-0.001	0.269	-1.908	1.613	744	-0.046	-0.015	0.158	-1.068	0.476
RM_PROXY 1	744	0.535	0.432	0.912	-2.753	14.370	744	0.311	0.222	0.521	-1.007	2.837
RM_PROXY 2	744	0.588	0.485	0.907	-2.724	14.306	744	0.387	0.286	0.511	-1.052	2.964
RM_PROXY 3	744	-0.035	-0.034	0.296	-2.635	1.718	744	-0.122	-0.097	0.171	-1.023	0.410
Control variables												
SIZE	744	7.300	7.223	2.179	2.481	11.757	744	7.861	7.592	1.965	2.481	11.757
GROWTH	744	0.192	0.072	1.765	-0.879	46.776	744	0.091	0.067	0.298	-0.827	5.944
ISSUE	744	0.155	0.000	1.081	-0.970	18.750	744	1.601	0.000	38.99	-0.998	9.156
DISSUE	744	0.189	0.062	0.693	-0.858	12.061	744	0.887	0.033	0.329	-0.535	4.760
LEV	744	0.152	0.129	0.138	0.000	0.969	744	0.163	0.153	0.133	0.000	1.136
TURN	744	1.025	0.938	0.601	0.012	4.859	744	0.932	0.867	0.521	0.025	4.751
CFO	744	0.071	0.073	0.095	-0.770	0.831	744	0.084	0.078	0.077	-0.599	0.892
BIG4	744	0.620	1.000	0.485	0.000	1.000	744	0.620	1.000	0.485	0.000	1.000

Notes: This table provides descriptive statistics for variables related to the regression model in the period pre-IFRS (1999-2004) and post-IFRS (2006-2011). The full sample consists of 1488 firm-year observations representing 124 unique firms during the period from 1999 to 2011. The transition year 2005 is excluded. For variable definitions, please refer to Table 4.

According to the results found in Table 5, for the accounting earnings management, the means (medians) of the absolute value of discretionary accruals represents approximately 29.8% (5.3%) in the pre-IFRS adoption period and 9.6% (4.1%) in the post-IFRS adoption period. We conclude that the accounting earning management was reduced greatly between the two periods. Thus, the implementation of IFRS is effective to constraint the discretionary accruals in French context.

Furthermore, for the proxies of real earnings management, table 5 reveals the means (medians) of the three individual variables of real earnings management as calculated by Roychowdhury (2006). The abnormal cash flow from operations, abnormal production costs and abnormal discretionary spending represent respectively -5.3% (-5.1%), 57% (43.8%), -1.7% (-0.1%) in the pre-IFRS adoption periods and -7.5% (-7.1%), 43.4% (33.3%), -4.6% (-1.5%) for the period preceding the adoption of IFRS. So, we can deduce that managers engage less in sales manipulation, overproduction and reduction of discretionary expenditures after the mandatory adoption of IFRS. Moreover, the mean and median of three aggregate variables of real earnings management (RM_PROXY 1, RM_PROXY 2, and RM_PROXY 3) are also less under IFRS compared to local GAPP.

Overall, we can say that the French managers don't engage in the two approaches of earnings management. So, we note that there is a higher accounting quality six years after the mandatory adoption of IFRS for the French companies.

Finally, in terms of control variables, descriptive statistics show that there is an increase in company size (SIZE), annual percentage change in common stocks (EISSUE), annual percentage

change in total liabilities (DISSUE), leverage (LEV), cash flow from operations (CFO) and a decrease in growth opportunities (GROWTH) and turnover (TURN).

Table 5 presents summary descriptive statistics; we report respectively the observation number, mean, median, standard deviation, Min and Max of the absolute value of discretionary accruals as based on the modified Jones model of Dechow et al. (1995), the proxies of real earnings management as calculated by Roychowdhury (2006), Cohen et al. (2008) and Cohen & Zarowin (2010) and the control variables before and after the mandatory adoption of IFRS.

4.2. Univariate analysis

The major problem encountered in the choice of explanatory variables is the fact that the variables must be independent. To detect multicollinearity problems, we have used the pairwise Pearson correlations. Thus, Table 6 reports univariate Pearson correlations for explanatory variables related to the full sample of 1488 firm-year observations over the period 1999-2011.

The results of the correlation matrix show on the one hand that the IFRS is correlated positively and significantly with both the company size (SIZE) (0.134) and cash flow from operations (CFO) (0.071) and on the other hand is correlated negatively and significantly with the annual percentage change in total liabilities (DISSUE) (-0.092) and the turnover (TURN) (-0.082). Also, as we can see from table 6, the company size (Size) is correlated negatively with the turnover (TURN) and the growth opportunities (GROWTH) at the level of 0.05 and 0.01 respectively and positively correlated with both leverage (LEV) and Firm's auditors (BIG4) at the level of 0.01. The correlation between the growth opportunities (GROWTH) and the annual percentage change in total liabilities (DISSUE) is also positive (0.233). Furthermore, leverage (LEV), cash flow from operations (CFO) and turnover (TURN) are correlated significantly with the annual percentage change in total liabilities (DISSUE), with a correlation coefficients (0.063), (-0.051) and (-0.113) respectively.

Moreover, results report that the leverage is correlated negatively and significantly with both (CFO) and turnover (TURN). Finally, there is a positive correlation between cash flow from operations (CFO) and turnover (TURN), with a correlation coefficient of 0.105 and a negative correlation between firm's auditor (BIG4) and turnover (TURN) (-0.221).

Overall, we can deduce that there is not a serious multicollinearity problem the fact that the correlation between explanatory variables is below the value of 0.7.

4.3. Analysis of empirical results

Table 6: Pearson correlations for independent and control variables

Variables	IFRS	SIZE	GROWTH	ISSUE	DISSUE	LEV	CFO	BIG4	TURN
IFRS	1								
Sig. p value	---								
SIZE	0.134***	1							
Sig. p value	0.000	---							
GROWTH	-0.039	-0.056**	1						
Sig. p value	0.123	0.030	---						
ISSUE	0.026	-0.003	0.000	1					
Sig. p value	0.312	0.891	0.977	---					
DISSUE	-0.092***	-0.026	0.233***	-0.002	1				
Sig. p value	0.000	0.311	0.000	0.917	---				
LEV	0.044	0.197***	-0.016	-0.027	0.063**	1			
Sig. p value	0.089	0.000	0.525	0.294	0.013	---			
CFO	0.071***	0.009	-0.007	-0.004	-0.051**	-0.122***	1		
Sig. p value	0.005	0.728	0.763	0.849	0.048	0.000	---		
BIG4	-0.000	0.265***	-0.030	0.023	0.022	0.036	-0.009	1	
Sig. p value	1.000	0.000	0.241	0.370	0.378	0.164	0.723	---	
TURN	-0.082***	-0.301***	-0.030	0.002	-0.113***	-0.306***	0.105***	-0.221***	1
Sig. p value	0.001	0.000	0.239	0.918	0.000	0.000	0.000	0.000	---

Notes: This table reports Pearson correlations for independent and control variables for the full sample of 1488 firm-year observations over the period 1999-2011. **, *** indicate significance at the 5% and 1% levels, respectively. Please see Table 4 for variable descriptions.

Table 7: Univariate results of IFRS adoption on earnings management

Panel A: IFRS adoption and accruals-based earnings management						
Variables	Number of observations		Median		Median difference	Wilcoxon test (p)
	Pre-IFRS	Post-IFRS	Pre-IFRS	Post-IFRS		
ABS_AD	744	744	0.053	0.041	-0.012	-4.834 (0.000) ***
Panel B: IFRS adoption and real earnings management						
Variables	Number of observations		Median		Median difference	Wilcoxon test (p)
	Pre-IFRS	Post-IFRS	Pre-IFRS	Post-IFRS		
AB_CFO	744	744	-0.051	-0.071	-0.020	-5.769*** (0.000)
AB_PROD	744	744	0.438	0.333	-0.105	-4.819*** (0.000)
AB_DISCX	744	744	-0.001	-0.015	-0.014	-5.952*** (0.000)
RM_PROXY 1	744	744	0.432	0.222	-0.210	-7.151*** (0.000)
RM_PROXY 2	744	744	0.485	0.286	-0.199	-6.401*** (0.000)
RM_PROXY 3	744	744	-0.034	-0.097	-0.063	-8.099*** (0.000)

Notes: This table provides real and accruals-based earnings management proxies' test of difference of the two groups: non-IFRS group (1999-2004) and IFRS group (2006-2011). We used for all the proxies of real and accruals-based earnings management the Wilcoxon test because the test Kolmogorov-Smirnov shows that these variables don't follow the normal law. *** indicates significance at the 1% level (two tailed). For variable definitions, please refer to Table 4.

As we can say from table 7, all the median of all the variables for the post-IFRS period (2006-2011) are significantly smaller than for the pre-IFRS period (1999-2004). Therefore, the level of both real and accruals-based earnings management is reduced after the obligatory adoption of IFRS in the French companies. The findings of the impact of mandatory adoption of IFRS on the absolute value of discretionary accruals is consistent with those found by the study of Zeghal *et al.* (2011) based on transitional period (2003-2006). Nonetheless, with the use of a longer time period after adoption of IFRS, our findings can confirm the

4.3.1. Univariate results

Table 7 presents the univariate analysis results of IFRS adoption on real and accruals-based earnings management. We used for all the proxies of real and accruals-based earnings management the non-parametric Wilcoxon test because the test Kolmogorov-Smirnov [6] show that these variables don't follow the normal law.

enforcement role of IFRS in the reduction of the opportunism of managers in terms of accruals manipulation.

For real earnings management, there is a lack of studies which examine the relation between real earnings management and mandatory adoption of IFRS. Based on related studies (e.g. Cohen *et al.* 2008, Cohen & Zarowin 2010, Chi *et al.* 2011, Zang 2012) which suppose that the level of real earnings management increase with a high audit quality and with the presence of stringent litigation and regulatory regime; our findings are not consistent with our prediction and these related studies.

4.3.2. Multiple regression analysis

Table 8 presents the FGLS regression results of the impact of the mandatory adoption of IFRS on real and accrual-based earnings management. More precisely, Panel A reports the effect of IFRS on the magnitude of discretionary accruals calculated based on the modified Jones model of Dechow et al. (1995). While Panel B provides the effect of IFRS on three individual proxies of real earnings management computed as Roychowdhury (2006) and Panel C shows three summary proxies of real earnings management measured as Cohen et al. (2008) and Cohen & Zarowin (2010) in the post-IFRS period.

The results of regression (Table 8- Panel A) of Jones modified model show that the variable POST_IFRS05 has a significant effect on the magnitude of the discretionary accruals. Consistent with our expectation, we find a negative coefficient of -0.114 and significant at the 5% level ($t=-2.13$). This result is consistent with the findings in prior studies in the French context (Zeghal et al. 2011, Zeghal et al. 2012), suggesting that the mandatory adoption of IFRS improve the earnings quality by constraining accruals management. For the control variables, Panel A indicates that the coefficients of the variables annual percentage change in total liabilities (DISSUE) ($\alpha_5=0.040$) and cash flow from operations (CFO) ($\alpha_8=0.424$) are significant at the level of 1% in the post IFRS period.

As shown in Panel B of table 8, results of regression using the three components of the real earnings management calculated as

Roychowdhury (2006) reveal that the variable POST_IFRS05 has a significant effect only on the abnormal discretionary expenses. We find a negative coefficient of -0.541 ($t=-2.50$), suggesting that the mandatory adoption of IFRS by French companies are associated with less discretionary expenses. However, in the second and third regressions, we fail to find significant coefficients on IFRS, suggesting that the implementation of IFRS is not associated with more abnormal cash flow from operations and abnormal production costs.

Furthermore, results of regression, in the Panel C of table 8, indicate that the mandatory adoption of IFRS has significant and negative effect on one of the three aggregate measures of real earnings management, namely the REM_PROXY 3 calculated as Cohen & Zarowin (2010). Precisely, it represents the sum of abnormal cash flow from operation and abnormal discretionary expenses. We find a negative coefficient of -0.058 ($t=-2.20$) on IFRS. Thus, contrary with our prediction, the mandatory adoption of IFRS is associated with less overall real earnings management. For the REM_PROXY 1 and REM_PROXY 2, we fail to find significant coefficients on IFRS.

Overall, our empirical findings related to the effect of the mandatory adoption of IFRS on real and accruals-based earnings management show an improvement of earnings quality in the French context.

Table 8: Impact of the mandatory adoption of IFRS on real and accruals-based earnings management

Panel A: The absolute value of discretionary accruals						
Model 1: $ABS_AD_{i,t} = \alpha_0 + \alpha_1 POST_IFRS05_{i,t} + \sum \alpha_j * Control_{i,t} + \epsilon_{i,t}$						
Variables	ABS_AD					
	Coefficients	t-statistic (P-value)				
Intercept	0.278	2.00 (0.046)**				
IFRS	-0.114	-2.13 (0.033)**				
SIZE	-0.019	-0.98 (0.327)				
GROWTH	-0.0003	-0.22 (0.826)				
ISSUE	-0.008	-0.32 (0.750)				
DISSUE	0.040	3.90 (0.000)***				
LEV	0.001	-0.03 (0.979)				
TURN	-0.019	0.68 (0.499)				
CFO	0.424	4.76 (0.000)***				
BIG4	0.041	0.57 (0.570)				
Wald chi2(9) = 51.92 Prob > chi2 = 0.000***						
Number of observation = 1488						
Panel B: Individual proxies of real earnings management						
Model 2: $AB_CFO_{i,t} = \alpha_0 + \alpha_1 POST_IFRS05_{i,t} + \sum \alpha_j * Control_{i,t} + \epsilon_{i,t}$						
Model 3: $AB_PROD_{i,t} = \alpha_0 + \alpha_1 POST_IFRS05_{i,t} + \sum \alpha_j * Control_{i,t} + \epsilon_{i,t}$						
Model 4: $AB_DISCX_{i,t} = \alpha_0 + \alpha_1 POST_IFRS05_{i,t} + \sum \alpha_j * Control_{i,t} + \epsilon_{i,t}$						
Variables	AB_CFO		AB_PROD		AB_DISCX	
	Coefficients	t-statistic (P-value)	Coefficients	t-statistic (P-value)	Coefficients	t-statistic (P-value)
Intercept	-0.057	-1.45 (0.148)	-0.0004	-0.0004 (0.998)	.0250	0.39 (0.699)
IFRS	-0.008	-0.650 (0.514)	0.0327	0.50 (0.620)	-.0541	-2.50 (0.012)**
SIZE	0.002	0.50 (0.620)	-0.0153	-0.42 (0.673)	.0024	0.25 (0.806)
GROWTH	-0.003	-0.37 (0.715)	-0.1382	-2.47 (0.013)	-.00869	1.36 (0.173)
ISSUE	-0.000	-0.50 (0.614)	0.0473	1.25 (0.211)	.0007	0.87 (0.383)
DISSUE	-0.012	-1.24 (0.215)	0.1240	3.77 (0.000)***	-.0362	-3.97 (0.000)***
LEV	-0.052	-1.34	-0.1243	-0.40	.0714	0.92

		(0.180)		(0.692)		(0.358)	
TURN	0.028	3.66 (0.000)***	0.4950	8.34 (0.000)***	-0.037	-0.14 (0.888)	
CFO	-0.629	-19.70 (0.000)***	0.2144	1.29 (0.196)	-0.638	-0.95 (0.340)	
BIG4	0.011	0.66 (0.508)	0.1488	1.29 (0.196)	-0.248	-0.72 (0.473)	
	Wald chi2(9) (Prob > chi2)	502.18 (0.000)***		203.45 (0.000)***		31.98 (0.000)***	
	Number of observation	1488		1488		1488	
Panel C: Aggregate proxies of real earnings management							
Model 5: RM_PROXY 1 $i_{it} = \alpha_0 + \alpha_1 \text{POST_IFRS05}_{i,t} + \sum \alpha_j \text{Control}_{i,t} + \varepsilon_{i,t}$							
Model 6: RM_PROXY 2 $i_{it} = \alpha_0 + \alpha_1 \text{POST_IFRS05}_{i,t} + \sum \alpha_j \text{Control}_{i,t} + \varepsilon_{i,t}$							
Model 7: RM_PROXY 3 $i_{it} = \alpha_0 + \alpha_1 \text{POST_IFRS05}_{i,t} + \sum \alpha_j \text{Control}_{i,t} + \varepsilon_{i,t}$							
		RM_PROXY 1		RM_PROXY 2		RM_PROXY 3	
Variables	Coefficients	t-statistic (P-value)	Coefficients	t-statistic (P-value)	Coefficients	t-statistic (P-value)	
Intercept	-0.056	-0.23 (0.817)	0.334	1.49 (0.135)	-0.012	-0.30 (0.767)	
IFRS	-0.142	-1.54 (0.123)	-0.144	-1.59 (0.112)	-0.058	-2.20 (0.028)**	
SIZE	0.022	0.71 (0.477)	0.011	0.42 (0.677)	-0.000	-0.01 (0.996)	
GROWTH	-0.112	-1.77 (0.077)*	-0.255	2.35 (0.019)**	-0.018	-1.53 (0.127)	
ISSUE	0.033	0.77 (0.441)	0.011	0.16 (0.872)	0.001	1.22 (0.224)	
DISSUE	0.051	1.37 (0.169)	0.034	0.96 (0.337)	-0.020	-1.28 (0.200)	
LEV	-0.393	-1.70 (0.089)*	-0.182	-0.70 (0.486)	0.071	1.24 (0.214)	
TURN	0.445	6.03 (0.000)***	0.380	3.88 (0.000)***	0.031	1.15 (0.252)	
CFO	-0.452	1.65 (0.099)*	-0.243	-0.32 (0.746)	-0.706	-14.01 (0.000)***	
BIG4	0.104	0.83 (0.404)	-0.096	-0.62 (0.535)	-0.031	-0.58 (0.561)	
	Wald chi2(9) Prob > chi2	77.52 (0.000)***		45.46 (0.000)***		273.80 (0.000)***	
	Number of observation	1488		1488		1488	

Notes: This table provides the regression results of the impact of the mandatory adoption of IFRS on real and accrual-based earnings management. *, ** and *** indicates significance at the 10%, 5% and 1% levels, respectively. For variable definitions please refer to Table 4.

5. Conclusion

In the light of the compulsory implementation of IFRS, as of 1 January 2005, the purpose of this paper was to examine the impact of the mandatory adoption of IFRS on real and accruals-based earnings management in the French context. More specifically, for the approach of accounting earnings management, we relied on modified Jones model to capture the extent of discretionary accruals. For the real earnings management approach, we used three individual proxies computed as Roychowdhury (2006) and in order to capture the total effect of real earnings management we calculated single proxies consistent with Cohen et al. (2008) and Cohen & Zarowin (2010).

Our empirical tests were based on 1488 firm-year observations from French context over the period 1999 to 2011. As mentioned by Guenther et al. (2009, p.27): "Focusing on a single country study, we keep the institutional framework constant which allows us to observe directly whether IFRS standards were drivers of earnings quality".

Our results showed firstly that the absolute value of discretionary accruals is reduced six years after the mandatory adoption of IFRS. Besides, unlike our prediction, we also found that the real earnings management is less associated with the obligatory implementation of IFRS. These findings are consistent with the literature that suggests that the mandatory improve earnings quality by restraining the manager's opportunism when managing the accruals and the real business decisions.

Our results are of great interest to decision makers, accounting standard setters and researchers. For decision makers, the adoption of IFRS may insure a reduction of opportunism of managers when managing their earnings, suggesting that the agency problem between the principal and the agent tend to decrease. Besides that, it may give a positive signal to investors as information asymmetry tends to diminish, Tarca (2004). For accounting standard setters, this study also may help them to improve a main attributes of earning quality, namely the reliability. More precisely, by taking into account the other way which managers can manipulate their results through the manipulating of management decisions (e.g. operating decisions). For researchers, real earnings management seems a fruitful area for future research.

However, our results should be interpreted considering some limitations. First, we do not examine the direction value of accruals discretionary and abnormal real activities. Further research could study whether and how firms take real actions and accounting numbers to manage earnings downward or upward after the implementation of IFRS. Other than that, it will be interesting to consider the other determinants of earnings quality related to the incentive of earnings management, governance and all event that have an impact on earning quality including the financial security law of 2003 susceptible, as well as IFRS, to influence the earnings management in France. Furthermore, the association between the mandatory adoption of IFRS and the others real management decisions, namely investment and financing decisions (e.g. asset sales and securitization) could be explored in future research.

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Notes

- [1] Financial investors need reliable, credible and relevant accounting information, to assist them in their decision making process.
- [2] Healy & Whalen (1999, p. 368) state that: "Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers". Thus, two ways which executives can manage earnings are by the manipulation of accounting decisions through accruals- described as "Accounting Earnings Management" and/or manipulation of real business decisions via cash-flows- identified as "Real Earnings Management".
- [3] We are based on the coding for accounting standards proposed by Worldscope. Otherwise, a firm is selected if it is coded (23) in the years 2006-2011 and (1), (8), (10), (11), (17), (18), (19), (21) in the years 1999-2004. Worldscope defines these categories as follows: (23) IFRS; (1) Local standards; (8) Local standards with EU and IASC guidelines; (10) Local standards with some EU guidelines; (11) Local standards - inconsistency problems; (17) Local standards with some OECD guidelines; (18) Local standards with some IASC guidelines;

(19) Local standards with OECD and IASC guidelines; (21) Local standards with a certain reclassification for foreign companies.

- [4] The final sample of 124 companies consists of balanced data because the exclusion of a firm in one year for any reason automatically leads to the exclusion of the same firm from the other years.
- [5] Pesaran's test is suitable for our data than Breusch-Pagan test because the number of years ($t=12$) is small than the number of firm ($N=124$).
- [6] Also, Shapiro-Wilk (W), Shapiro-Francia (W') confirm the predictions found by the test of Kolmogorov-Smirnov.