The impact of mandatory IFRS adoption on earnings management: Evidence from Morocco: A multinomial logit approach

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Abstract. The purpose of this paper is to investigate whether the transition to IAS/IFRS deters or facilitates greater earnings management (Earnings smoothing), and assess the level of earnings management according to the accounting standards applied by companies listed on the Moroccan stock market. To achieve this goal, a logistic regression model is proposed to explain the effect of IFRS adoption in the Moroccan context. A quantitative study is carried out using a sample of 74 firms listed in the Casablanca Stock Exchange over a period of five years (2010-2015). As a result, we find convincing evidence that the implementation of IFRS contributed to less earnings management compared to the local accounting standards. This study should be of interest to regulators and policymakers as they are expected to assess the impacts of adopting IFRS.

1. Introduction
The present study makes use of real openly available Moroccan data to investigate whether mandatory adoption of the International Financial Reporting Standards (IFRS) reduced the level of earnings management. Previous researches show that there is a link between the degree of investor protection rights and earnings management magnitude. In fact, the latter tend to be higher on average in code-law countries with low investor protection rights, compared to common-law countries with high investor protection rights [7, 8]. There is little research examining the underlying effect of IAS/IFRS mandatory adoption on earnings management in Moroccan companies. The finding of our study show that mandatory adoption of IAS/IFRS by Moroccan companies has contributed to the reduction of earnings management level. Thus, our study contributes to the accounting literature by examining IFRS-adopting firms in comparison with local benchmark firms to investigate the earnings management in a non-European developed market economy. The remainder of this paper is organized as follows. Section 2 provides theoretical background and hypotheses for this study. The research design is presented in Section 3. The results are discussed in Section 4. Finally, in Section 5, we summarize our results, discuss the implications and limitations of our analysis and give suggestions for further research.

2. Literature review and hypothesis development
Studies on the financial reporting effects of IFRS adoption include a focus on the properties of accounting numbers, especially properties that proxy for earnings management. The accounting
literature defines earnings management as management’s intervention in the external financial reporting process with the intent of obtaining private gains via influencing investors perceptions of the firm’s economic performance or influencing the firm’s contractual outcomes see [17]. It was reported in [16] that IFRS, unlike the rules-based GAAP, is more of a principles-based accounting standard designed to bring consistency to financial statements across different industries and countries. Thus, IFRS can arguably handles the economics of a transactions and financial reporting better than GAAP. The conversion to IFRS can be beneficial in terms of reducing earnings management as well as limiting the likelihood of manager’s opportunism thanks to its recognition and disclosure requirements, which puts further restrictions on the scope of managerial discretion in comparison to the standard domestic GAAP [7, 9]. Despite the aforementioned advantageous, some conflicting results were deduced from comparing the level of discretionary accruals before and after IFRS adoption as well as between countries adopting IFRS and those not adopting it. Based on cross-country studies, [2], observed an increase in earnings management following IFRS adoption in the EU, and in New Zealand and Australia, respectively. On the other hand, [5] found IFRS adoption to be associated with reduced earnings management. Houqe, Van Zijl, Dunstan, and Karim [12] found that adoption of IFRS without an increase in the degree of investor protection did not improve earnings quality. More recently, Capkun, Collins, and Jeanjean [6] concluded in their study of 29 countries that adjustments made to IFRS in 2005 increased earnings management. They attribute this finding to the increased flexibility provided by the 2005 IFRS amendments.

In single-country contexts, [14, 3], all found IFRS adoption to be associated with lower earnings management in Greece, Australia, and Malaysia, respectively. In Germany, Christensen, [4] observed a reduction in earnings management practices for firms that voluntarily adopted IFRS, but not for the mandatory adopters of IFRS; thus, they concluded that incentives to improve accounting quality rather than IFRS adoption lead to improved accounting quality. In Brazil, [19] found that when some IFRS were used with Brazilian, there was no decrease in earnings management, but full adoption of IFRS (from 2010 to 2011) reduced earnings management. In China, [21], and [26] found IFRS adoption to be associated with reduced earnings management. In contrast, van [8], both Jeanjean and Stolowy (2008) and Paananen and Lin (2009), concluded that adoption of IFRS increased earnings management in Germany and France, respectively. Other studies in Canada [1], Australia [27], and China [15] found no significant reduction in earnings management as a result of IFRS adoption. [23] concluded that IFRS adoption increased income smoothing and aggressive reporting of accruals, also [11] observed no significant impact on both accrual and real earnings management following mandatory IFRS adoption.

In the case of Morocco, only few studies examined the impact of international financial reporting standards adoption on earning management. The main purpose of this paper is to investigate whether the firms in Morocco adopting international standards or IFRS is associated with reduced levels of earnings management and thus have better reported earnings than non-adapting firms. Earnings management is measured by reported discretionary accruals and the correlation between operating cash flow and accruals. Hence, our hypothesis is as follows:

**Hypothesis H₁**: Moroccan Companies, which have adopted IFRS, engage significantly less in earnings management compared to firms reporting under domestic GAAP.

3. Research methodology

In this section, we first present the selection procedure for our sample for the verification of hypothesis $H₁$. Then, we describe the estimating procedure for discretionary accruals.
3.1. Sample

The sample is drawn from the 75 Moroccan-listed companies from data available in Casablanca Stock Exchange and The Moroccan Capital Market Authority (MCMA). We have eliminated financial services firms (11) in view of the peculiarities of the financial industry, its specific regulation and because of the fundamental differences in their financial accounting relative to nonfinancial firms. Furthermore, we have excluded Finance company and other financial activities (7), and those firms without financial statements for the period 2010 to 2015, as at least one-year data in this period were needed for comparative purposes. Taking these steps, we arrived at a final sample of 56 listed non-financial companies. The demographics characteristics of the remaining sample are described in Table 1.

| Panel A: Sample selection criteria | Number of firms |
|-----------------------------------|-----------------|
| Total number of firms listed as at 2015 (population) | 75 |
| Less financial services firms | 11 |
| Total non-financial services firms | 7 |
| No. of firms without financial statements for the period 2010-2015 | |
| **Final sample** | **56** |

Table 1: Sample

3.2. Empirical model and variables

3.2.1. Dependent variable: the discretionary accrual (DA)

There are no best ways of measuring earnings management, and there are many proxies used in the literature [25]. We focus on discretionary accruals as the proxy of earnings management. Previous researchers have proposed various models to measure discretionary accruals [28, 29, 22]. In this study, we adopted the popular discretionary accrual model of Dechow, Sloan, and Sweeney[28], which is a modification of [29] model to calculate discretionary accruals (DA) because this model has been widely used in most recent studies for discretionary accruals estimation. The discretionary accrual (DA) is the difference between total accrual (TA) and the non-discretionary accrual (NDA). We took the following steps in estimating the discretionary accrual. First, we estimated the modified Jones model as in equation 1 below:

\[
\frac{TACC_{it}}{TA_{it-1}} = a_{0j} \frac{1}{TA_{it-1}} + a_{1j} \frac{(\Delta SALES_{it} - \Delta AR_{it})}{TA_{it-1}} + a_{2j} \frac{PPE_{it}}{TA_{it-1}} + \varepsilon_{it}
\]

Where

- \( TACC_{it} \) = difference between net income before extraordinary items and cash flow from operations for firm \( i \) in year \( t \);
- \( TA_{it} \) = total assets for firm \( i \) in year \( /t \);
- \( \Delta AR_{it} \) = change in account receivables for firm \( i \) in year \( t \), derived by \( AR_{t} - AR_{t-1} \);
- \( \Delta SALES_{it} \) = change in sales for firm \( i \) in year \( t \), derived by \( SALES_{t} - SALES_{t-1} \);
- \( PPE_{it} \) = property plant and equipment for firm \( i \) in year \( t \).

First, we estimate the coefficients \((a_{0j}, a_{1j} \text{ and } a_{2j})\) for each industry. Second, using the estimated coefficients \((\hat{a}_{0j}, \hat{a}_{1j}, \hat{a}_{2j})\) from industry division regressions, we evaluate the nondiscretionary component of total accruals \((NDA)\) for each company in our sample (equation 2):
Third, the proxy for discretionary accruals consists of the accruals prediction error. The discretionary accruals proxy is obtained by calculating the difference between total accruals and estimated non-discretionary accruals (Equation 3):

$$DA_{it} = TA_{it} - NDA_{it}$$ (3)

3.2.2. Independent variable: adoption of IFRS  In order to analyze the role of adopting international accounting standards or IFRS in earnings management, we use a dummy variable, IFRS, which equals 1 if a firm follows IFRS along with local GAAP, and zero if it does not follow IFRS. As discussed earlier, adoption of international accounting standards or IFRS can potentially have both positive and negative effects on earnings quality.

3.2.3. Control Variables  Although, we are investigating how adoption of IFRS can influence the extent of earnings management, there are other firm intrinsic factors that can influence earnings management and which require to be taken into account in the estimations. On the basis of earlier studies we consider firms size (SIZE), total long-term debt/total assets (LEV), Operating cash flows (CFO), (AUDIT), ( EISSUE) and (DISSUE) in a firm as the control variables. The discretionary accrual was then regressed on IFRS adoption and other control variables. The logistic regression model is therefore appropriate in our analysis. In this setting, the model is written as (Equation 4):

$$Logit(P) = P(DA) = \gamma_0 + \gamma_1IFRS_{it} + \gamma_2ROA_{it} + \gamma_3SIZE_{it} + \gamma_4CFO_{it} + \gamma_5AUDQ_{it} + \gamma_6LEV_{it} + \gamma_7EISSUE_{it} + \gamma_8DISSUE_{it} + \epsilon_{it}$$

Where

- $DA_{it}$ = discretionary accrual for firm $i$ at period $t$;
- $IFRS_{it-1}$ = binary variable, 1 for companies adopting IFRS and 0 for companies not adopting IFRS. According to $H_1$, we expect a negative relationship between IFRS adoption and discretionary accruals, that is, $\gamma_1 < 0$. The rest of the control variables are in line with previous studies [18, 4] and are denoted as follows:
- $LEV_{it}$ = leverage measured as total debt divided by total assets of firm $i$ at period $t$;
- $SIZE_{it}$ = company size measured as the log of total assets of firm $i$ at period $t$;
- $ROA_{it}$ = profitability measured as a ratio of returns to total assets of firm $i$ at period $t$;
- $AUDQ_{it}$ = binary variable, that takes the value 1 if an independent audit committee exists and 0 otherwise;
- $DISSUE = $ binary variable, 1 for new debt issue and 0 for no debt issue by firm $i$ at period $t$;
- $EISSUE = $ binary variable, 1 for new equity issue and 0 for no equity issued by firm $i$ at period $t$;
4. Results and discussion

Our main hypothesis states that mandatory adoption of IAS/IFRS by Moroccan companies contribute to the reducing the level of earnings management. To test this hypothesis, we compared earnings management level between two groups: the firms that follow IFRS and those that do not. Before beginning this analysis, it was important to check the normality of variables in order to choose the appropriate statistical tests. We used the Kolmogorov-Smirnov test to check the normality of variables in our study. The results of this test show that certain variables follow the normal law and others do not. Consequently, we used the t-test of mean equality for those variables following the normal law and the Wilcoxon non-parametric test of mean equality for the remaining variables. The results of comparing the two groups are presented in Table 2. Table 2 presents the descriptive statistics for all variables; this table shows also that all means of all variables of the IFRS group for the period (2010-2015) are significantly smaller than non-IFRS group (2010-2015). The two groups are thus statistically different for the variables DA. Therefore, earnings management is less important after the mandatory adoption of IAS/IFRS. The mean company size increased following IFRS adoption and corresponds to the increase in the average total assets in the IFRS group. Although not significantly different, the mean cash flow from operations (CFO) increased in the IFRS group, possibly due to the increased total assets, which generates more cash flow from operations. The mean return on assets (ROA) dropped substantially in IFRS group. This is likely due to the significant increase in the average value of total assets. The mean leverage is higher but not significantly different in the IFRS group, corresponding to the increase in new debt issue (DISSUE). The significant reduction in the new equity issue may be a result of debt capital being substituted for it. There is a slight reduction in the use of the Big 4 audit firms following IFRS adoption, probably due to the increased cost of employing a Big 4 audit firm. The mean for change in turnover slightly increased in the IFRS group. The reduction in the mean for change in account receivables, and an increase in operating cash flows, reflects the possibility that cash sales increased IFRS group. The mean for PPE and total assets significantly increased in the IFRS groups. The model of logistic regression allows us to calculate the coefficients B with an iterative algorithm, based on the method of maximum likelihood. The X2 test verifies the following null hypothesis:

\[ H_0 : \gamma = \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = \gamma_6 = \gamma_7 = \gamma_8 = \gamma_9 = 0 \]

Table 3 presents the results of the model of logistic regression used to test our previously established research hypothesis. From Table 3, we can conclude that the model tested is generally significant. Indeed, the Chi-square test has a value of 59.182 and is significant (p = 0.000). Then we reject the null hypothesis stating that all coefficients are zero. The Nagelkerke R2 indicates that 59.6% of the probability of belonging to the group that managed their earnings the least, following the adoption of IFRS, is explained by the eight variables in the model. Consequently, we can conclude that our main hypothesis \( H_1 \) is verified: The mandatory adoption of IAS/IFRS by Moroccan companies has contributed to the reduction of earnings management level.
Table 2: Descriptive statistics of variables the IFRS-group and Non-IFRS group.

| Variables | Non-IFRS GROUP | IFRS GROUP | Univariate analysis |
|-----------|----------------|------------|--------------------|
|           | Min  | Max  | Mean  | Std.Dev | Min  | Max  | Mean  | Std.Dev | T     | X*   | Wilcoxon |
| DA        | 0.008 | 0.389 | 0.124 | 0.074   | 0.008 | 0.389 | 0.115 | 0.065   | 0.159 | n/a  | 0.261    |
| SIZE      | 11.66 | 20.08 | 16.12 | 1.60    | 11.66 | 20.19 | 16.42 | 1.69    | 0.045**| n/a  | 0.057*   |
| LEV       | 0.117 | 1.504 | 0.584 | 0.240   | 0.117 | 1.50  | 0.610 | 0.233   | 0.2731 | n/a  | 0.245    |
| ROA       | -0.26 | 0.39  | 0.101 | 0.107   | 0.259 | 0.393 | 0.071 | 0.110   | 0.012**| 4.84**,p=0.028 | 0.031**   |
| CFO       | -8.43 | 95.17 | 4.24  | 11.19   | -8.43 | 95.17 | 5.87  | 15.18   | 0.145 | n/a  | 0.284    |
| AUQ       | 0     | 1     | 0.637 | 0.482   | 0     | 1     | 0.592 | 0.493   | 0.241 | 51.84***,p=0.00 | 0.241    |
| DISSUE    | 0     | 1     | 0.302 | 0.460   | 0     | 1     | 0.385 | 0.488   | 0.073* | n/a  | 0.072*   |
| EISSUE    | 0     | 1     | 0.041 | 0.2     | 0     | 1     | 0.021 | 0.143   | 0.072* | 17.64***,p=0.00 | 0.072*   |
| TACC      | 0.98  | 112   | 3.278 | 9.27    | 390   | 94.30 | 3.492 | 9.542   | 0.783 | n/a  | 0.409    |
| △SALES    | -272  | 208   | 4.58  | 182     | -223  | 107.0 | 2.5   | 20.50   | 0.257 | n/a  | 0.012**  |
| △AR       | 16.5  | 26    | 873   | 3.65    | 20.300| 30.70 | 765   | 5.164   | 0.797 | n/a  | 0.219    |
| PPE       | 3.561 | 349   | 15,500| 41.3    | 5,700 | 748.0 | 26    | 72      | 0.049**| n/a  | 0.051*   |
| TA        | 86.22 | 526   | 33,800| 69.6    | 108.08| 985.0 | 55    | 129     | 0.024**| 20.64**,p=0.00 | 0.057**  |

Table 3: Results of the logistic regressions.

| Variables | Sign provided | B coef | Wald | Significance threshold (p value) |
|-----------|---------------|--------|------|----------------------------------|
| SIZE      | ?             | -0.092 | 0.655| 0.530                            |
| LEV       | +             | 0.411  | 2.015| 0.040                            |
| ROA       | +             | -2.246 | 3.74 | 0.050                            |
| CFO       | +             | 0.030  | 3.15 | 0.017**                          |
| AUQ       | +             | 0.050  | 0.291| 0.016**                          |
| DISSUE    | +             | 0.040  | 13.383| 0.052                           |
| EISSUE    | ?             | 1.058  | 0.291| 0.055                            |
| TACC      | +             | 0.005  | 5.606| 0.006                            |
| △SALES    | +             | 0.145  | 5.764| 0.059                            |
| △AR       | +             | 0.198  | 6.234| 0.140                            |
| PPE       | +             | 2.205  | 1.140| 0.056                            |
| TA        | +             | 1.456  | 2.502| 0.160                            |
| Constant(γ0) |       | -5.393 | 14.383| 0.000**                          |

5. Conclusion

The purpose of this study was to investigate whether Moroccan companies that have adopted IFRS engage significantly less in earnings management compared to Moroccan companies reporting under domestic GAAP. This study is based on a sample of 75 Moroccan-listed companies from data available in Casablanca Stock Exchange Moroccan companies. The results of our study suggest that the mandatory adoption of IAS/IFRS by Moroccan companies has reduced the use of discretionary accruals. These findings contribute to the current debate on whether high quality standards are sufficient and effective in countries with weak investor protection.
rights. They indicate that in general, adopters of IFRS cannot be associated with lower earnings management. The results of this study are subject to the following limitations. First, we used earnings management as a measure of the quality of financial statements. Further research could analyze the impact of mandatory adoption of IAS/IFRS on other financial reporting quality dimensions such as timeliness, comparability, predictability, and earnings conservatism. Second, although we have considered various important earnings management incentives, there may be other incentives to manage earnings that have not been covered here. Finally, because of the non-international character of our study, we were unable to analyze the impact of institutional factors on mandatory adoption of IAS/IFRS. In fact, in future research, it would be interesting to analyze the impact of mandatory adoption of IAS/IFRS for several countries and to test the impact of institutional variables (such as the legal system, tax system, and culture) on the implementation of these standards.

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