Keys to reduce earnings management in emerging markets

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This paper examines earnings quality adapted to International Financial Reporting Standards in Mexican emerging capital market and how investor protection and audit quality to override managers' incentives to engage in earnings management. We evidence that the new accounting regulation could be considered of high quality financial reporting standard because it is associated with lower earnings management. The analyses also suggest that cross-listed firms have higher quality local generally accepted accounting principles accounting information as measured by earnings management. There is also evidence that earnings of Mexican companies with Big 4 auditors are of higher quality. The results contribute to the ongoing debate on whether high standards are sufficient and effective in countries with weaker investor protection rights.

Introduction

International accounting literature suggests that standards promulgated for developed countries may not be useful for participants in emerging markets (Prather-Kinsey, 2006). In fact, according to Perera (1989), the accounting information produced according to developed countries' accounting systems is not relevant to the decision models of less-developed countries. Nair (1982) argues that British and U.S. financial reports are prepared for investors in organized capital markets, whereas Latin American financial reports are prepared for creditors, owner-managers, and tax collectors. Accounting and financial information originating from developing countries is still difficult to trust, despite the urgent need for these countries to attract foreign investment and foreign capital, and despite the pressing demands from individual and institutional investors, lending institutions, and multinational agencies (Richter Quinn, 2004). These arguments, and others, have led some authors to strongly oppose the adoption of International Financial Reporting Standards (IFRS) by developing countries, and to support adapting it.

Accounting quality depends crucially not only on the quality of accounting standards but also of factors like regulatory enforcement, legal environment and managerial incentives (Ball, Kothari & Robin, 2000). The Mexican accounting standard-setter has taken the initiative to "adapt" its generally accepted accounting principles (GAAPs) to IFRS, rather than directly adopt it, in order to take into consideration its particular legal, political, and cultural environment.

Accordingly, the main purpose of this paper is to examine whether adaptation of standards to IFRS has converted Mexican GAAPs into high quality standards by reducing earnings management. In particular, we question whether IFRS are sufficient to override managers' incentives to engage in earnings management and affect the quality of reported earnings. The period analyzed includes the effects before and after the Mexican Institute of Public Accountants (IMCP) Comparability Project, through which many core accounting standards have been revised to make them compatible with IFRS. This allows a comparison of accounting amounts adapted to IFRS versus accounting amounts under domestic GAAPs. We investigate whether accounting earnings of firms in the post-adaptation period exhibit less earnings management than accounting earnings of firms in the pre-adaptation period. It can be expected that Mexican financial reporting quality improve because the IFRS adaptation, but not their enforcement.

Legal and political systems affect accounting quality directly, through enforcement of accounting standards and litigation against managers and auditors. The paper also examines the regulatory enforcement or corporate application of the standards through two control mechanism: market discipline and auditing quality. Controlling for these factors becomes an important task in the empirical research design. Previous research provides evidence that the magnitude of earnings management is on average higher in code-law countries with low investor protection rights, compared to common-law countries with high investor protection rights (Leuz, Nanda & Wysocki, 2003). Mexico is moving towards convergence with developed-country accounting standards but it provides the poorest legal protection to its shareholders (LaPorta *et al*., 1998; Lang, Raedy & Wilson, 2006).

Based on prior research that identifies investor protection as a key institutional factor affecting corporate policy choices, we focus on investor protection as a significant determinant of earnings management. In this respect, we question

whether adaptation of IFRS by a Mexican firm has a stronger effect on the quality of earnings of that firm when cross-listed on a well-developed capital market that is demanding in terms of information quality.

There is also evidence that the stock market perceives the earnings of Big 4 audited companies to be of higher quality (Teoh & Wong, 1993; Krishnan, 2003). However, the results of Maijoor and Vanstraelen (2006) and Francis and Wang (2008) report that the constraint constituted by a Big 4 auditor on earnings management is not uniform across countries. Francis and Wang (2008) find that earnings quality is higher for firms audited by Big 5 compared to non-Big 5 auditors only in countries with strong investor protection. In this respect, we question whether adaptation of IFRS by a Mexican company has a stronger effect on the quality of earnings of that company when is audited by a Big 4 audit firm. Exploration of the interaction between these factors and accounting standards can provide insights into differences in the economic consequences of changing accounting principles across countries.

This paper contributes to the literature in a number of ways and differs from prior research on the quality of IFRS accounting measures in three aspects. Firstly, while most previous papers examine the quality of accounting standard after the adoption to IFRS, we examine the quality of accounting standards adapted to IFRS. This study is the first to compare the quality of earnings using a unique sample of companies reporting under domestic standards during 1997-2005 and under "standards adapted to IFRS" during 2006-2009. Mexico is classified as a code law country characterized by weak investor protection, a less developed capital market and higher levels of earnings management than Anglo-American countries (Leuz *et al.*, 2003). On the other hand, Mexico is an emerging country that has experienced rapid growth in recent years. There is a need to investigate empirically this topic because empirical research carried out in the context of emerging markets remains scarce. The Mexico's movement to IFRS may provide new insights as firms from developing economies adapt their accounting system toward IFRS. No study, to our knowledge, has empirically examined this issue in developing countries. Our third contribution is that we also question if earnings quality is associated with the market discipline or with being audited a high quality auditor.

The remainder of this paper is organized as follows. In Section 2 we provide the theoretical background. Section 3 discusses previous research and develops hypotheses. Section 4 describes the research design. The results of the study are presented in Section 5. Finally, in Section 6 we summarize our results and discuss the implications of our analysis.

Institutional setting

Conscious of the need to adapt accountancy to the new requirements of decision makers, on 21 August 2001 the IMCP and other institutions[1] launched an initiative to create the Mexican Council for Research and Development of Financial Reporting Standards (CINIF), which has been responsible for issuing financial reporting accounting standards according to IFRS since 2005. As its main project, the CINIF (now CNIF) made a decision to conduct a study of IFRS and US GAAP to identify the most significant differences with a view to promoting its convergence. The first step was revising the framework as well as revising some old Mexican standards to adapt them closer to IFRS. The standards previously issued by the IMCP were called "General Accepted Accounting Principles in Mexico" and the standards issued by the CINIF are called "Financial Reporting Standards (FRS)".

There is a debate about the advantages of adaptation versus implementation. Conversion experience in Europe shows that conversion projects often take more time and resources than anticipated. They think that has led some companies to rush and risk mistakes or outsource more work than necessary, driving up cost and hindering the embedding of IFRS knowledge within the company. On the other hand, others think that conversion brings a one-time opportunity to comprehensively reassess financial reporting and take "a clean sheet of paper" approach to financial policies and processes. Such an approach recognizes that major accounting and reporting changes may have a ripple effect impacting many aspects of a company's organization.

The conversion from FRS to IFRS brings a long list of technical accounting changes from 2006. Mexican FRS framework requires following IFRS (as issued by the IASB) as suppletory when Mexican FRS provides no specific guidance for a particular transaction or event (NIF A-8, January 2006). They are gradually implemented, because of that we hope the quality of financial information has been improving along the time.

Finally, Mexico requires adoption of IFRS for all listed entities starting in 2012. In advance 2012, Mexican companies have been a rare opportunity to make time an early action allowed companies to control cost, understand and manage the challenging scope of implementation, and ensure a smooth transition plan. This process is expected to improve the quality and credibility of accounting information and improve the flow of capital and investment, and so lead to resulting in economic development.

The existence of corruption and social and economic inequality in Mexico can create a demand for low quality financial statements that managers and auditors may supply. The Mexican legal framework is based on the civil law tradition. There is no procedure for class action or shareholder derivative lawsuits. This state of affairs makes it difficult for minority shareholders to enforce their rights against management, directors or controlling shareholders. Mexico's dominating controlling family ownership structure, coupled with weak minority shareholder investor protection, creates a significant agency problem for outside investors. This weak legal environment might also facilitate opportunistic earnings management resulting in lower

earnings quality (e.g., Ball *et al.*, 2000; Leuz *et al.*, 2003; Siegel, 2005).

The regulation of the Securities Market Law, as it applies to publicly traded companies, is performed by the Mexican National Banking and Securities Commission (CNBV), a government oversight agency. The CNBV is responsible for the review and enforcement of disclosure compliance in financial statements of listed firms. The CNBV has authority to institute administrative proceedings, impose administrative sanctions, fines, suspension and disbarment of directors as well as management, and report market abuse offenses to the Attorney General. However, although the CNBV monitors adherence to accounting standards, effective sanctions for infractions are difficult to impose within the Mexican legal framework. Under the laws covering commercial activities in Mexico, there is no provision for civil or criminal penalties to deter fraudulent or erroneous financial reporting by board of directors. High quality corporate financial reporting can result only with proper enforcement of the established standards (Machuga & Teitel, 2009).

Previous literature and hypothesis development

There is substantial literature comparing quality of accounting numbers internationally as well as capital market effects of IFRS adoption (Daske & Gebhardt, 2006; Hail, Leuz & Wysocki, 2009). In general, the papers show evidence of the higher quality of US and international standards against local standards, but they differ in the definition of accounting quality, the period covered or the country of reference.

A growing body of literature suggests that the quality of IFRS-based accounting amounts equals or exceeds that of domestic GAAP-based accounting amounts. Barth, Landsman and Lang (2008) examine whether the application of IAS/IFRS results in higher accounting quality compared to non-US domestic standards. Using a sample drawn from companies from 21 countries, they find that accounting amounts for non-US firms applying domestic standards are also generally of lower quality than those for non-US firms applying IAS. These results are consistent with Aussenegg, Inwinkl & Schneider (2008) for a sample of public traded firms for 15 European Member States. A lower earnings management level for IAS adopters is especially pronounced and significant for German legal origin countries (Austria, Germany, and Switzerland) and for French legal origin countries (Belgium, France and the Netherlands). On the other hand, they do not find any change in earnings management in English legal origin countries (UK and Ireland) and Scandinavian legal origin countries (Denmark, Finland, Norway and Sweden). Soderstrom & Sun (2007) argue that cross-country differences in accounting quality are likely to remain following IFRS adoption, because accounting quality is a function of the firm's overall institutional setting, including the legal and political system of the country in which the firm resides.

On the other hand, Van Tendeloo &Vanstraelen (2005) show that IFRS do not impose a significant constraint on earnings management, as measured by discretionary accruals. On the contrary, adopting IFRS seems to increase the magnitude of discretionary accruals. These results are similar to Paananen & Lin (2009). They compare the characteristics of accounting amounts using a sample of German companies reporting under IAS during 2000-2002 (IAS period), IFRS during 2003-2004 (IFRS voluntary period) and 2005-2006 (IFRS mandatory period). They find a decrease in accounting quality after the mandatory EU adoption in 2005.

Since the adaptation of Mexican GAAPs to IFRS was initiated in 2006, our first hypothesis (H1) examines whether the quality of earnings differs before and after 2006. The purpose of this examination is to investigate whether accounting earnings of firms in the post-adaptation period exhibit less earnings management than accounting earnings of firms in the pre-adaptation period. Overall, the results of these studies do not provide clear evidence as to how the recent development in global accounting standards affects the quality of the accounting amounts. We assume that the recent developments in international accounting standards have led to changes in the quality of financial reporting over time. Therefore, the question remains whether accounting quality is higher as a result of the IMCP' initiatives and actions. We address these competing views by testing the following hypothesis:

H1: Adaptation of IFRS has reduced earnings management

Studies on cross-listing of firms provide another interesting insight into the effect of legal and political systems on accounting quality. Firms with a foreign exchange listing are presumed to have greater incentives to report transparently because they are subject to restrictions imposed by different countries and are exposed to a higher litigation risk. Therefore, it can be expected that earnings quality is enhanced when listed on an international capital market (Ball *et al.* 2000; Ball, Robin & Wu 2003). Furthermore, being listed on a foreign stock exchange implies a higher level of transparency, and, therefore, a lower level of earnings management is observed for these firms. Leuz *et al.* (2003) report that earnings management is more pervasive in countries where the legal protection of outside investors is weak, because in these countries insiders enjoy greater private control benefits and hence have stronger incentives to obfuscate firm performance. Lang, Lins and Miller (2003) find that cross-listed firms appear to be less aggressive in terms of earnings management and report accounting data that are more conservative. However, when they compare the characteristics of reconciled accounting data for cross-listed firms with data reported by a matched sample of US firms, the results indicate that earnings quality for cross-listed firms in the United States is lower than their US matched samples (Lang *et al.*, 2006). Cross-listed firms from countries with low investor protection show more signs of earnings management, suggesting that enforcement

by the Securities and Exchange Commission (SEC) to foreign firms may be less stringent than for US firms.

Although the decision to cross-list is not directly linked to domestic reporting choices, a body of literature summarized in Coffee (2002) suggests that cross-listing may serve a bonding role, causing systematic differences in terms of transparency between firms that opt into cross-listing on US markets and others on their local market. In this respect, we question whether adaptation of IFRS by a Mexican firm has a stronger effect on the quality of earnings of that firm when cross-listed on a well-developed capital market: New York Stock Exchange (NYSE) that is demanding in terms of information quality. Because firms with a foreign exchange listing are presumed to have greater incentives to report transparently, the negative relationship between IFRS adaptation and earnings management is expected to be larger when cross-listed on a well-developed international capital market.

H2: The reduction in earnings management due to adaptation of IFRS is more pronounced when a firm is cross-listed on a well-developed international capital market: NYSE.

The effectiveness of auditing, and its ability to constrain the management of earnings is expected to vary with the quality of the auditor. It is reported in the literature that a high quality audit frequently translates into lower accruals (Becker, Defond, Jiambalvo & Subramanyam, 1998; DeFond & Subramanyam, 1998; Francis, Maydew & Sparks, 1999). Theoretical support for such a quality differentiation is provided in DeAngelo (1981), who demonstrates analytically that larger audit firms have greater incentives to detect and reveal management misreporting. A number of studies have shown that Big 4 auditors constitute a constraint on earnings management (DeFond & Jiambalvo 1991, 1994; Becker *et al.*, 1998; Francis *et al.*, 1999). One explanation for higher quality earnings is that Big 4 auditors are more likely to issue audit reports than non-Big 4 auditors for the same set of client circumstances, which means that investors can have greater confidence in the reliability of earnings of Big 4 clients (Francis & Krishnan 1999, 2002). However, Francis and Wang (2008) find that earnings quality is higher for firms audited by Big 4 auditors compared to non-Big 4 auditors only in countries with strong investor protection. In this respect, we question whether adaptation of IFRS by a Mexican company has a stronger effect on the quality of earnings of that company when is audited by a Big 4 audit firm. Since previous research has shown that being audited by a Big 4 audit firm imposes a constraint on earnings management and enhances compliance with IFRS disclosure, measurement and presentation requirements, it can also be expected that adapting high quality standards has a larger effect on the reduction of earnings management when audited by a Big 4 firm.

H3: The reduction in earnings management due to adaptation of IFRS is more pronounced when a firm is audited by a Big 4 audit firm.

Research design

Sample

Our sample is drawn from the population of Mexican non-financial firms listed on the Mexican Stock Exchange (BMV) during 1997-2009. The principal sources of our data are the Infosel database. Financial statements are available for the 13-year period. Consistent with previous research, firms providing financial services such as financial institutions, holding companies and insurance firms are excluded, due to the specialized financial statements prevalent in these sectors. The sample size reflects our having winsorized at the 5% level all variables used to construct our measures to mitigate the effects of outliers on our inferences.

The final sample comprises 975 firm-year observations, relating to the period 1997-2009. All companies in our sample are listed firms. We divide the sample according to the year of the financial statements. Financial statements under Mexican GAAPs between 1997 and 2005 belong to the Pre-adaptation period, while financial statements under “standards adapted to IFRS” between 2006 and 2009 belong to the Post-adaptation period.

Panel A of Table 1 shows the distribution of the sample of 975 firms by year. 678 firms or 69,50% of the sample belong to the pre-adaptation period (1997-2005) while 297 (30,50%) firms belong to the post-adaptation period (2006-2009). In general, the sample firms are spread across a wide range of years, with greatest representation from the period 2003-2006. Panel B of Table 1 provides and industry breakdown. The sample also comprises a range of industries, with the greatest proportion from commerce and services.

Table 1: Sample characteristics

Panel A: Composition by Year		
	Number of firm-year observations	Percentage of firm-year observations
Pre-adaptation period	678	69,50
1997	62	6,40
1998	71	7,30
1999	72	7,40
2000	76	7,80
2001	75	7,70
2002	79	8,10
2003	80	8,20
2004	82	8,40
2005	81	8,30
Post-adaptation period	297	30,50
2006	80	8,20
2007	79	8,10
2008	71	7,30
2009	67	6,90
Total	975	100
Panel B: Composition by Industry		
	Number of firm-year observations	Percentage of firm-year observations
Manufacturing	198	20,30
Construction	180	18,50
Commercial	318	32,60
Service	279	28,60
Total	975	100

Table 2 shows that the proportion of firms having a NYSE listing is smaller in the pre-adaptation period (27%) compared with the post-adaptation period (29%). As presented in Table 2, 81% of the firms are being audited by a Big 4 auditor.

Table 2: Number of observations by accounting standards, auditor and listing

	Big 4	Non-Big 4	Total
Domestic accounting standards (1997-2005)			
NYSE listing	155	26	181 (27%)
No NYSE listing	393	104	497 (73%)
Total	548 (81%)	130 (19%)	678
Standards adapted to IFRS (2006-2009)			
NYSE listing	65	20	85 (29%)
No NYSE listing	176	36	212 (71%)
Total	241 (81%)	56 (19%)	297

Model and Variables Definitions

The aim of our paper is to examine how the new accounting regulation influences the level of discretionary accruals. In order to evaluate the effect of the new accounting regulation on discretionary accruals, in our first stage, we investigate the relation between new accounting regulation, listing on the NYSE and audited by a Big 4 audit firm, we regress the absolute value of discretionary accruals [Abs(DACC)] on NAR, NYSE, AUD and control variables (Model 1). The coefficient of NAR captures the differential effect of earnings management in the post versus pre-adaptation period. In the same model, the coefficient of NYSE captures the differential effect of earnings management across NYSE and non-NYSE firms and coefficient of AUD captures the differential effect of earnings management across firms with Big 4 versus non Big 4 auditors. In the first analysis, the following model is estimated:

$$\begin{aligned} Abs(DACC)_{it} = {} & \beta_0 + \beta_1 NAR_{it} + \beta_2 NYSE_t \\ & + \beta_3 AUD_{it} + \beta_4 SIZE_{it} \\ & + \beta_5 LEV_{it} + \beta_6 GROWTH_{it} \\ & + \beta_7 Abs(CFO)_{it} \\ & + \beta_8 DEBT_ISS_{it} \\ & + \beta_9 ASSET_TURN_{it} + \beta_{10} BI_{it} \\ & + \varepsilon_{it} \end{aligned} \quad (1)$$

where $Abs(DACC)_{it}$ is the absolute value of discretionary accruals in year t, scaled by lagged total assets; NAR is a dummy variable (compliance with adapted IFRS=1, else=0); $NYSE$ is a dummy variable (company listed on $NYSE$ =1, else=0); AUD is a dummy variable (company has Big 4 auditor=1, else=0); $SIZE_{it}$ is the natural logarithm of total assets in year t; LEV as end-of-year total liabilities divided by end-of-year total equity; $GROWTH_{it}$ as percentage change in sales; $Abs\ (CFO)_{it}$ as absolute value of annual net cash flow from operating activities, scaled by lagged total assets; $DEBT_ISS_{it}$ as the percentage change in total liabilities during the period; $ASSET_TURN_{it}$ as sales divided by end-of-year total assets ; BI is a vector of industry dummies (Manufacturing industry, Construction industry, Commercial industry).

In the second stage, to test whether the reduction in earnings management is more pronounced when a firm is cross-listed on the $NYSE$ or has a Big 4 auditor, we introduce the interaction variables $NAR*NYSE$ and $NAR*AUD$ in the regression analysis (Model 2). Hence, our empirical model is as follows:

$$\begin{aligned} Abs(DACC)_{it} = {} & \beta_0 + \beta_1 NAR_{it} + \beta_2 NYSE_t \\ & + \beta_3 AUD_{it} + \beta_4 NAR * NYSE \\ & + \beta_5 NAR * AUD + \beta_6 SIZE_{it} \\ & + \beta_7 LEV_{it} + \beta_8 GROWTH_{it} \\ & + \beta_9 Abs(CFO)_{it} \\ & + \beta_{10} DEBT_ISS_{it} \\ & + \beta_{11} ASSET_TURN_{it} + \beta_{12} BI_{it} \\ & + \varepsilon_{it} \end{aligned} \quad (2)$$

The control variables which may affect earnings manipulation are firm size, growth, financing structure, need for capital, and frequency of debt (Ashbaugh, 2001; Pagano, Röell & Zehner, 2002; Tarca, 2004; Barth, Landsman, Lang & Williams, 2006; and Lang *et al.*, 2006). As a proxy for firm size we use the natural logarithm of total assets (SIZE). We expect firm size to have a negative relationship with discretionary accruals due to big firms being less likely to be able to hide abnormal accruals than small firms, which tend

to be neglected by financial analysts and the press. Closer scrutiny by outsiders can potentially reduce managers' opportunities to exercise their accounting discretion in big firms.

In addition, the risk of debt is measured by the liability to equity ratio (LEV). According to Park and Shin (2004), firms that face financial constraints or distress have an incentive to adjust earnings upward in order to avoid a potential loss from disclosing a financial problem. This argument would predict a positive relationship between discretionary accruals and financial leverage.

We control for a firm's growth opportunities by using the percentage change in sales (GROWTH). Firms with high growth opportunities present more important investment opportunities, which leads managers to influence, through the exercise of accounting discretion, the probability of obtaining the financing they need in the future. Furthermore, Skinner and Sloan (1999) find that the market severely penalizes growth firms for negative earnings surprises. Therefore, growth firms have relatively strong incentives to meet earnings benchmarks, perhaps to avoid increase in the cost of capital or to maintain access to capital. Hence, firms with a high percentage change in sales may have higher discretionary accruals than firms with a low percentage change in sales.

Furthermore, the absolute value of operating cash flow scaled by lagged total assets (CFO) is included as a performance measure, since the estimated discretionary accruals are too large for firms experiencing extreme financial performance (Van Tendeloo & Vanstraelen, 2005). Dechow, Sloan and Sweeney (1995) report that the matching principle results in a natural smoothing property of accounting accruals which causes negative (positive) non-discretionary accruals to occur in a period with extreme positive (negative) cash flows of which a part will be incorrectly attributed to income-decreasing (income-increasing) discretionary accruals. We include the cash flow from operations to control for this potential misspecification. The expected relationship between absolute operating cash flow and absolute discretionary accruals is positive.

Following Lang *et al.* (2006), firms may choose to cross list to raise capital, so we include control for debt issuance (DEBT_ISS) (percentage change in liabilities during the period). Further, accruals behavior may vary based on capital intensity, which may also affect the need to raise capital, so we include an asset turnover control (ASSET_TURN) (sales for the period divided by year-end total assets). Finally, we include industry dummies (BI) to control for industry effects on earnings management.

Following Petersen (2009), we use t-statistics based on standard errors clustered at the firm and the year level, which are robust both to heteroscedasticity and within-firm serial correlation[1].

Measurement of abnormal accruals

Following Dechow *et al.* (1995), we compute the accrual component of earnings as:

$$Total\ Accruals_{it} = (\Delta CA_{it}\Delta Cash_{it}) - (\Delta CL_{it} - \Delta STD_{it}) - Dep_{it} \quad (3)$$

where ΔCA_{it} = change in total current assets; $\Delta Cash_{it}$ = change in cash and cash equivalents; ΔCL_{it} = change in total current liabilities; ΔSTD_{it} = change in long-term debt included in current liabilities; Dep_{it} = depreciation and amortisation expenses.
We use the cross-sectional version of the modified Jones (1991) model to estimate the non-discretionary component of total accruals (TAC) (DeFond & Jiambalvo, 1994; Yeo, Tan, Ho & Chen, 2002; Larcker & Richardson, 2004).

$$\frac{TAC_{it}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{\Delta REV_{it}}{A_{i,t-1}} + \beta_2 \frac{PPE_{it}}{A_{i,t-1}} + \varepsilon_{it} \quad (4)$$

For each year and industry we regress total accruals (TAC) on the change in revenues (ΔREV) and the level of gross property, plant and equipment (PPE), scaled by lagged total assets (A_{t-1}) in order to avoid problems of heteroskedasticity.

The estimation of the regression coefficients is carried out using all Mexican firms available in the Infosel database. The model is estimated in its cross-sectional version for each industry-year combination based on the industry classification of the Mexican Stock Exchange. Industry-years with fewer than six observations are excluded from the analysis (DeFond & Jiambalvo, 1994; Park & Shin, 2004).

Using the estimates for the regression parameters, $\left(\hat{\beta}_0, \hat{\beta}_1, \hat{\beta}_2\right)$, we estimate each sample firm's non-discretionary accruals (NDCA) by adjusting the change in sales for the change in accounts receivable (ΔAR) to allow for the possibility that firms could have manipulated sales by changing credit terms (Dechow *et al*., 1995).

$$NDCA_{it} = \hat{\beta}_0 + \hat{\beta}_1 \frac{\Delta REV_{it} - \Delta AR_{it}}{A_{i,t-1}} + \hat{\beta}_2 \frac{PPE_{it}}{A_{i,t-1}} \quad (5)$$

and we define discretionary accruals ($DACC_{it}$) for firm i in year t as the remaining portion of Total accruals:

[1] The results are similar if we cluster by firm and include dummy variables for each time period.

$$DACC_{it} = \frac{TAC_{it}}{A_{i,t-1}} - NDCA_{it} \quad (6)$$

Following previous studies (Warfield, Wild & Wild, 1995; Gabrielsen, Gramlich & Plenborg, 2002) we employ the absolute value of discretionary accruals [Abs(DACC)] as our measure of earnings manipulation.

Results

Descriptive statistics and univariate results

The descriptive statistics of estimated discretionary accruals and control variables are presented in Table 3. The mean value of earnings management moves around 0,03 to -0.03. Negative discretionary accruals are larger than positive discretionary accruals.

Table 3: Descriptive statistics

Variable	Min	Max	Mean	Median	STD
Abs (DACC)	0.0002	0.1859	0.0362	0.0263	0.0329
DACC ≥ 0	0.0002	0.1634	0.0365	0.0267	0.0319
DACC < 0	-0.1859	-0.0002	-0.0359	-0.0252	0.0339
Control variables					
SIZE	10.9353	20.2511	15.8203	15.9171	1.6934
LEV	0.0281	1.9781	0.4762	0.4721	0.1993
GROWTH	-0.8205	7.3577	0.1947	0.1244	0.4939
Abs (CFO)	0.0004	0.3921	0.0896	0.0776	0.0624
DEBT_ISS	-0.8019	5.3366	0.2183	0.1083	0.4842
ASSET_TURN	0.0436	2.8845	0.8202	0.7243	0.4776

where Abs(DACC) is the absolute value of discretionary accruals using Dechow modified model; SIZE: natural logarithm of total assets in year t; LEV: as end-of-year total liabilities divided by end-of-year total equity; GROWTH: as percentage change in sales; Abs (CFO): absolute value of annual net cash flow from operating activities, scaled by end-of-year total assets; DEBT_ISS: as the percentage change in total liabilities during the period, ASSET_TURN: as sales divided by end-of-year total assets.

The independent sample t-test is applied to test whether discretionary accruals are influenced by the new accounting regulation introduced in Mexico (Table 4, Panel A). A two-level categorical variable is introduced to code whether the report was from 1997 to 2005 (group 1) or from 2006 to 2009 (group 2). In this case, since the Levene's test significance is less than 0.05, the reported results consider that the homogeneity of group variances did not exist. The univariate results on (absolute) discretionary accruals suggest that before the IMCP' Convergence Project (1997-2005) firms report significantly higher absolute discretionary accruals than after the IMCP' Convergence Project (2006-2009). There are significant differences in the reporting levels of (absolute) discretionary accruals before and after the Convergence Project. The adaptation to Mexican GAAP to IFRS is associated with lower levels of (absolute) discretionary accruals. Hence, adapted IFRS are associated with lower earnings management.

Results based on the mean of the absolute value of discretionary accruals presented in panel B of Table 4 indicate that non-crosslisted firms have a greater amount of discretionary accruals than do cross-listed firms, and suggest that non-cross-listed firms manage earnings more than do cross-listed firms. Panel C of Table 4 reports differences between the Big 4 and non-Big 4 samples with respect to the (absolute) discretionary accruals. Companies being audited by a Big 4 audit firm report significantly lower (absolute) discretionary accruals than when are audited by a non-Big 4 audit firm.

Table 4: Descriptive statistics on discretionary accruals

Panel A							
	Before IMCP' Convergence Project (1997-2005)			After IMCP' Convergence Project (2006-2009)			Difference t-statistic (two-tailed sign)
Total sample	Mean	Median	STD	Mean	Median	STD	
Abs (DACC)	0.0376	0.0268	0.0350	0.0330	0.0255	0.0273	-2.243*** (0.000)
DACC < 0	-0.0367	-0.0243	0.0358	-0.0336	-0.0262	0.0276	0.951** (0.039)
DACC ≥ 0	0.0387	0.0285	0.0340	0.0326	0.0242	0.0272	-2.215*** (0.008)
Panel B							
	Non-Cross-Listers			Cross-listers			Difference t-statistic (two-tailed sign)
Total sample	Mean	Median	Std	Mean	Median	Std	
Abs (DACC)	0.0384	0.0282	0.0335	0.0302	0.0198	0.0304	-3.585*** (0.001)
DACC < 0	-0.0382	-0.0293	0.0334	-0.0297	-0.0167	0.0347	2.381 (0.655)
DACC ≥ 0	0.0385	0.0275	0.0336	0.0307	0.0242	0.0256	-2.744*** (0.002)
Panel C							
	No Big 4			Big 4			Difference t-statistic (two-tailed sign)
Total sample	Mean	Median	Std	Mean	Median	Std	
Abs (DACC)	0.0467	0.0359	0.0387	0.0337	0.0247	0.0309	-4.263*** (0.000)
DACC < 0	-0.0491	-0.0386	0.0426	-0.0323	-0.0232	0.0302	3.695*** (0.000)
DACC ≥ 0	0.0440	0.0350	0.0336	0.0350	0.0263	0.0314	-2.279 (0.214)

*, **, *** significantly different from zero at the α = 0.10, 0.05 and 0.01 level, respectively, (two-tailed)
where Abs (DACC)= absolute value of discretionary accruals using Dechow modified model.

The univariate results on discretionary accruals, as presented in Table 5, suggest that for companies cross-listed on the NYSE, the adaptation of IFRS is significantly associated with lower absolute discretionary accruals (Panel A). For companies being audited by a Big 4 audit firm, IFRS adaptation is significantly associated with different reporting levels of absolute discretionary accruals (Panel C).

Table 5: Univariate analysis on discretionary accruals

Panel A Cross-listers							
	Before IMCP' Convergence Project (1997-2005)			**After IMCP' Convergence Project (2006-2009)**			Difference t-statistic (two-tailed sign)
	Mean	Median	STD	Mean	Median	STD	
Abs(DACC)	0.0315	0.0205	0.0327	0.0271	0.0195	0.0239	-1.188** (0.048)
DACC < 0	-0.0315	0.0165	0.0377	-0.0240	-0.0173	0.0227	1.353** (0.049)
DACC ≥ 0	0.0314	0.0244	0.0261	0.0293	0.0221	0.0248	-0.445 (0.562)
Panel B Non-Cross-Listers							
	Before IMCP' Convergence Project (1997-2005)			**After IMCP' Convergence Project (2006-2009)**			Difference t-statistic (two-tailed sign)
	Mean	Median	STD	Mean	Median	STD	
Abs(DACC)	0.0399	0.0294	0.0355	0.0350	0.0267	0.0282	-1.990***(0.005)
DACC < 0	-0.0386	-0.0288	0.0349	-0.0371	-0.0297	0.0285	0.406 (0.153)
DACC ≥ 0	0.0412	0.0305	0.0361	0.0336	0.0255	0.0280	-2.278***(0.009)
Panel C Big 4							
	Before IMCP' Convergence Project (1997-2005)			**After IMCP' Convergence Project (2006-2009)**			Difference t-statistic (two-tailed sign)
	Mean	Median	STD	Mean	Median	STD	
Abs(DACC)	0.0348	0.0248	0.0327	0.0313	0.0236	0.0260	-1.630** (0.010)
DACC < 0	-0.0321	-0.0224	0.0310	-0.0329	0.0262	0.0280	0.236 (0.725)
DACC ≥ 0	0.0375	0.0276	0.0342	0.0302	0.0226	0.0247	-2.523***(0.002)
Panel D Non-Big 4							
	Before IMCP' Convergence Project (1997-2005)			**After IMCP' Convergence Project (2006-2009)**			Difference t-statistic (two-tailed sign)
	Mean	Median	STD	Mean	Median	STD	
Abs(DACC)	0.0495	0.0409	0.0412	0.0403	0.0278	0.0317	-1.647* (0.078)
DACC < 0	-0.0528	-0.0415	0.0459	-0.0367	-0.0261	0.0261	2.132** (0.020)
DACC ≥ 0	0.0447	0.0368	0.0329	0.0428	0.0321	0.0352	-0.242 (0.770)

*, **, *** significantly different from zero at the α = 0.10, 0.05 and 0.01 level, respectively, (two-tailed) where Abs (DACC)= absolute value of discretionary accruals using Dechow modified model.

Table 6 provides a correlation matrix for the variables, with Spearman correlations in the upper quadrant and Pearson correlations in the lower quadrant. Correlations between the variables are generally modest, suggesting that multicollinearity is not a substantive issue.

Table 6: Correlation matrix

	Abs(DACC)	NAR	NYSE	Aud	Size	Lev	Growth	CFO	Debt_Issu	Asset_Turn
Abs (DACC)	1	-0.046	-0.126**	-0.138**	-0.203**	0.055	-0.028	-0.070*	0.036	-0.015
NAR	-0.083**	1	-0.013	0.006	0.171**	0.069*	-0.131**	-0.006	-0.034	0.062
NYSE	-0.109**	-0.013	1	-0.001	0.287**	0.133**	0.032	0.026	-0.017	-0.075*
Aud	-0.103**	0.006	-0.001	1	0.095**	-0.160**	0.054	0.030	0.019	0.106**
Size	-0.207**	0.172**	0.296**	0.099**	1	0.241**	0.057	0.043	0.038	-0.080*
Lev	0.081*	0.072*	0.131**	-0.184**	0.198**	1	-0.148**	-0.034	-0.006	-0.212**
Growth	-0.022	-0.120**	0.012	0.049	-0.005	-0.106**	1	-0.037	0.440**	0.148**
Abs (CFO)	0.344**	0.019	0.053	0.065*	0.165**	-0.154**	0.124**	1	0.004	0.201**
Debt_Issue	0.040	-.065*	-0.020	0.046	-0.009	-0.032	0.375**	0.084**	1	0.024
Asset_Turn	0.006	0.049	-0.054	-0.013	-0.125**	-0.162**	0.033	0.014	-0.026	

**, * Significantly different from zero at the 0.01 and 0.05 levels, respectively, (two-tailed)
where Abs(DACC) is the absolute value of discretionary accruals using Dechow modified model; NAR: Dummy variable (compliance with adapted IFRS=1, else=0); NYSE: Dummy variable (company listed on NYSE =1, else=0); AUD: Dummy variable (company has Big 4 auditor=1, else=0); SIZE: natural logarithm of total assets in year t: LEV: as end-of-year total liabilities divided by end-of-year total equity; GROWTH: as percentage change in sales; Abs (CFO): absolute value of annual net cash flow from operating activities, scaled by end-of-year total assets; DEBT_ISS: as the percentage change in total liabilities during the period, ASSET_TURN: as sales divided by end-of-year total assets.

Multivariate Analysis

The results of Model 1 are presented in Table 7. To test Hypothesis 1, the regression analysis is first performed without the interaction variables. We use *t*-statistics based on standard errors clustered at the firm and the year level (Petersen, 2009), which are robust both to heteroscedasticity and within-firm serial correlation. The results show a consistently significant negative relationship between the accounting standard dummy (NAR) and absolute discretionary accruals. The discretionary accruals are substantially lower for the post-adaptation period than for the pre-adaptation period, and this difference is statistically significant at the 0.05 level. These results provide strong evidence for the effect of IFRS adaptation in reducing earnings management by Mexican listed firms. Our findings provide support for Hypothesis 1. These results are consistent with the findings of Leuz and Verrecchia (2000); Bartov, Goldberg and Kim (2005) and Hung and Subramanyam (2007), who argue that IFRS serves as a proxy for a credible commitment to higher quality accounting. These results are in contrast with the findings of Van Tendeloo and Vanstraelen (2005), who found that the IFRS adoption in Germany was not significant in reducing earnings management.

The results show that increased enforcement does significantly enhance the reduction of discretionary accruals. The results show a consistently significant negative relationship between foreign exchange listing dummy (NYSE) and discretionary accruals. Having a cross-listing on the NYSE appears to significantly reduce the level of reported discretionary accruals. Our results are consistent with Leuz *et al.* (2003), Lang *et al.* (2003), Van Tendeloo and Vanstraelen (2005), Burgstahler, Hail & Leuz (2006), Nabar and Boonlert-U-Thai (2007) and Cahan, Liu and Sun (2008). In particular, cross-listing firms face increased enforcement by the SEC, a more demanding litigation environment, and enhanced disclosure and reconciliations to US GAAP, all of which may affect the kinds of firms attracted to US cross-listing and the characteristics of their accounting data (Lang *et al.*, 2003).

The results also indicate that having a Big 4 auditor (AUD) have a significant impact on the magnitude of absolute discretionary accruals. The coefficient on the variable AUD is negative and significant, suggesting that having a Big 4 auditor have a significant impact in reducing earnings management. Consistent with previous Anglo-Saxon studies (Becker *et al.*, 1998; Francis *et al.*, 1999), our findings support the hypothesis that higher quality audits would constrain earnings management more than lower quality audits. One explanation for higher quality earnings is that Big 4 auditors are more likely to issue audit reports than non-Big 4 auditors for the same set of client circumstances, which means that investors can have greater confidence in the reliability of earnings of Big 4 clients (Francis & Krishnan, 1999, 2002). Another reason for higher earnings quality is that Big 4 clients have smaller abnormal accruals, which is consistent with Big 4 auditors constraining aggressive earnings management and resulting in more credible earnings announcements (Becker *et al.*, 1998; Francis *et al.*, 1999; Krishnan, 2003).

Table 7: Regressions of absolute discretionary accruals on independent variables and control variables

Model 1: $\text{Abs (DACC)}_{it} = \beta_0 + \beta_1 \text{NAR}_{it} + \beta_2 \text{NYSE}_t + \beta_3 \text{AUD}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \beta_6 \text{GROWTH}_{it} + \beta_7 \text{Abs(CFO)}_{it} + \beta_8 \text{DEBT_ISS}_{it} + \beta_9 \text{ASSET_TURN}_{it} + \beta_{10} \text{BI}_{it} + \varepsilon_{it}$

Model 2: $\text{Abs (DACC)}_{it} = \beta_0 + \beta_1 \text{NAR}_{it} + \beta_2 \text{NYSE}_t + \beta_3 \text{AUD}_{it} + \beta_4 \text{NAR*NYSE} + \beta_5 \text{NAR*AUD} + \beta_6 \text{SIZE}_{it} + \beta_7 \text{LEV}_{it} + \beta_8 \text{GROWTH}_{it} + \beta_9 \text{Abs (CFO)}_{it} + \beta_{10} \text{DEBT_ISS}_{it} + \beta_{11} \text{ASSET_TURN}_{it} + \beta_{12} \text{BI}_{it} + \varepsilon_{it}$

	Model 1		**Model 2**	
Variables	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic
Intercept	0.0940	6.19***	0.0951	6.36***
NAR	-0.0035	-1.67**	-0.0082	-2.56***
NYSE	-0.0051	-1.55*	-0.0060	-1.42*
AUD	-0.0090	-2.46***	-0.0102	-2.36***
NAR*NYSE			0.0021	0.43
NAR*AUD			0.0051	1.02
SIZE	-0.0046	-3.89***	-0.0046	-3.95***
LEV	0.0190	2.74***	0.0192	2.77***
GROWTH	-0.0012	-0.76	-0.001	-0.74
Abs (CFO)	0.0682	2.36***	0.0682	2.33***
DEBT_ISS	0.0046	4.53***	0.0046	4.53***
ASSET_TURN	0.0012	0.30	0.0012	0.28
Industry Dummies	Yes		Yes	
N	975		975	
R^2 (adjusted)	0.104		0.105	
F	8.65***		7.49***	

Notes: *, **, *** Significantly different from zero at the 0.10, 0.05 and 0.01 levels, respectively, (two-tailed)
where Abs (DACC)= absolute value of discretionary accruals, NAR = Dummy variable (compliance with adapted IFRS=1, else=0), NYSE= Dummy variable (company listed on NYSE =1, else=0), AUD= Dummy variable (company has Big 4 auditor=1, else=0), SIZE = natural logarithm of total assets in year t, Abs (CFO): absolute value of annual net cash flow from operating activities, scaled by end-of-year total assets, LEV= as end-of-year total liabilities divided by end-of-year total equity, GROWTH= as percentage change in sales, DEBT_ISS= as the percentage change in total liabilities during the period, ASSET_TURN= as sales divided by end-of-year total assets. Models include industry dummies. Regressions are run using two-way cluster standard errors (Petersen, 2009) at the time and firm level which are robust to both heteroscedasticity and within-firm serial correlation.

To test Hypothesis 2 and 3, the interaction variables of interest NAR*NYSE and NAR*AUD are included in the regression analysis (Model 2). The results, presented in Table 7 show that increased enforcement does not significantly enhance the reduction of discretionary accruals during the post-adaptation IFRS period. Our findings do not provide support for Hypothesis 2. One possible explanation for this finding could be that firms planning to cross-list in the United States may gradually change their accounting reporting behavior before cross-listing on a well-developed capital market that is demanding in terms of information quality and transparency. In particular, even if the firm has relatively transparent reporting before cross-listing, the added regulatory requirements and litigation exposure associated with cross-listing may cause firms to change local reporting (Lang *et al.*, 2003). In this sense, Reese and Weisbach (2001) show that firms cross-listing on US markets tend to raise more capital in local markets following cross-listing, suggesting that firm's cross-list to bond themselves to more transparency even in their home market.

Having a Big 4 auditor does not reduce the level of reported discretionary accruals of companies during the post-adaptation IFRS period. Our findings do not provide support for Hypothesis 3. In Mexico, the largest internationally affiliated accounting firms dominate the market for audits. The reputation of the large accounting firms potentially offsets the apparent weakness in certification requirements and the political environment. Our results are consistent with Bauwhede and Willekens (1998) and Othman and Zeghal (2006), who argue that the factors that create incentives and constraints on earnings management may vary for different environments, and that therefore some results of Anglo-Saxon studies may not hold across countries.

In terms of the control variables, in both Models, we find that absolute discretionary accruals are decreasing in size, but increasing in leverage, profitability and debt issuance. Agency and political costs explain why firm size is significantly associated with earnings management. The coefficient size is significant and negative. Firm size is clearly a business characteristic that exhibits differences in the degree of earnings management, showing that high size firms have less discretionary accruals. This is often used as a proxy for political sensitivity. Large firms with large profits may try to manage earnings downwards (Zimmerman, 1983; Liberty & Zimmerman, 1986). The larger the firm, the more likely managers are to choose income-decreasing accruals.

The control variable Leverage (Lev) is found to be significantly and positively related to absolute discretionary accruals. High leverage has been found to be associated with closeness to the violation of debt covenants (Press &

Weintrop, 1990), and debt covenant violation has been found to be associated with discretionary accrual choice (DeFond & Jiambalvo, 1994). To avoid debt covenant violation, managers of highly leveraged firms have incentives to make income-increasing discretionary accruals. However, high leverage is also associated with financial distress (Beneish & Press, 1995). According to DeAngelo, DeAngelo & Skinner (1994), troubled companies have large negative accruals related to contractual renegotiations that provide incentives to reduce earnings. Our results are consistent with Watts and Zimmerman (1978), Dichev and Skinner (2002), DeFond and Jiambalvo (1994) and Sweeney (1994).

The coefficient of the control variable Abs (CFO) is significantly positive. Dechow *et al.* (1995) and McNichols (2000) report that firms with abnormally high (low) earnings have positive (negative) shocks to earnings that include an accrual component and thus, firms with high (low) earnings tend to have high (low) cash flows and high (low) accruals. As a consequence, one is more likely to find a positive relationship for the most profitable firms. Our results are consistent with the findings of Van Tendeloo and Vanstraelen (2005).

Finally, the control variable debt issuance (DEBT_ISS) is found to be significantly and positively related to absolute discretionary accruals. We do not find an association between grow, asset turnover and absolute discretionary accruals. Both coefficients are not statistically significant.

Sensitivity Analyses

In this section we carry out several sensitivity tests to assess the robustness of the results reported in the previous section. First, we check if the results of the discretionary accruals model are robust to alternative ways of modelling abnormal accruals, such as the original version of the Jones (1991) model[2] and the Performance-Matched Modified Jones Model[3] proposed by Kothari, Leone and Wasley (2005).

We report these results in Table 8 (Jones model) and Table 9 (Kothari model). The findings of the different versions of the models are qualitatively the same as those reported in the previous section. New accounting regulation has a significant influence on discretionary accruals. The results support Hypothesis 1, suggesting that the adaptation to IFRS have a significant impact on the magnitude of these alternative discretionary accruals. The results of the models also show that having a cross-listing on the NYSE does significantly enhance the reduction of discretionary accruals. There is no significant association between absolute discretionary accruals and having a Big 4 auditor. The findings of the two models do not provide support for Hypothesis 2 nor Hypothesis 3.

Finally, we show the results based on the sign of the discretionary accruals (Table 10). In the context of audit quality, Ashbaugh *et al.* (2003) show that this separation of positive and negative discretionary accruals better captures the potential asymmetric relation between the variables and earnings management.

The results show a consistently significant negative relationship between the accounting standard dummy (NAR) and positive discretionary accruals, and a significant positive relationship between NAR and negative discretionary accruals. The discretionary accruals are substantially lower for the post-adaptation period than for the pre-adaptation period. These results provide strong evidence for the effect of IFRS adaptation in reducing earnings management by Mexican listed firms. The results of the models also show that having a cross-listing on the NYSE does significantly enhance the reduction of positive discretionary accruals. Furthermore, we find evidence that AUD is significantly related to discretionary accruals.

[2] 4. Jones Model (Jones 1991)

$$\frac{\mathrm{TA_{it}}}{\mathrm{A_{i,\,t\,-\,1}}} = \beta_0 + \beta_1 \frac{\Delta REV_{it}}{A_{i,t-1}} + \beta_2 \frac{PPE_{it}}{A_{i,t-1}} + \varepsilon_{it}$$

where TA is total accruals; ΔREV is the change in sales and PPE is the level of gross property, plant and equipment.

[3] 5. Kothari Model

$$\frac{\mathrm{TA_{it}}}{\mathrm{A_{i,\,t\,-\,1}}} = \beta_0 + \beta_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{i,t-1}} + \beta_2 \frac{PPE_{it}}{A_{i,t-1}} + \beta_3 \frac{ROA_{it}}{A_{i,t-1}} + \varepsilon_{it}$$

where TA is total accruals; ΔREV is the change in sales; ΔREC is the change in receivables; PPE is the level of gross property, plant and equipment; and ROA is return on asset

Table 8: Regressions of absolute discretionary accruals on independent variables and control variables. Jones Model (sensitivity test)

Model 1: $\text{Abs (DACC)}_{it} = \beta_0 + \beta_1 \text{NAR}_{it} + \beta_2 \text{NYSE}_t + \beta_3 \text{AUD}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \beta_6 \text{GROWTH}_{it} + \beta_7 \text{Abs(CFO)}_{it} + \beta_8 \text{DEBT_ISS}_{it} + \beta_9 \text{ASSET_TURN}_{it} + \beta_{10} \text{BI}_{it} + \varepsilon_{it}$

Model 2: $\text{Abs (DACC)}_{it} = \beta_0 + \beta_1 \text{NAR}_{it} + \beta_2 \text{NYSE}_t + \beta_3 \text{AUD}_{it} + \beta_4 \text{NAR*NYSE} + \beta_5 \text{NAR*AUD} + \beta_6 \text{SIZE}_{it} + \beta_7 \text{LEV}_{it} + \beta_8 \text{GROWTH}_{it} + \beta_9 \text{Abs (CFO)}_{it} + \beta_{10} \text{DEBT_ISS}_{it} + \beta_{11} \text{ASSET_TURN}_{it} + \beta_{12} \text{BI}_{it} + \varepsilon_{it}$

	Model 1		**Model 2**	
Variables	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic
Intercept	0,093	5,48***	0,096	5,70***
NAR	-0,004	-1,70**	-0,011	-3,90***
NYSE	-0,005	-1,60*	-0,007	-1,79**
AUD	-0,009	-2,19**	-0,011	-2,27**
NAR*NYSE			0,004	1,12
NAR*AUD			0,007	1,55
SIZE	-0,004	-3,46***	-0,004	-3,53***
LEV	0,018	2,48***	0,019	2,54***
GROWTH	-0,002	-1,36	-0,002	-1,34
Abs (CFO)	0,085	2,53***	0,085	2,49***
DEBT_ISS	0,004	6,23***	0,004	6,17***
ASSET_TURN	0,001	0,20	0,001	0,18
Industry Dummies	Yes		Yes	
N	975		975	
R^2 (adjusted)	0,104		0,106	
F	8.03 ***		6.99***	

Notes: *, **, *** Significantly different from zero at the 0.10, 0.05 and 0.01 levels, respectively, (two-tailed)
The dependent variable is absolute discretionary accruals calculated according to Jones Model. NAR is a dummy variable (compliance with adapted IFRS=1, else=0); NYSE is a dummy variable (company listed on NYSE =1, else=0); AUD is a dummy variable (company has Big 4 auditor=1, else=0); SIZE is the natural logarithm of total assets in year t; Abs (CFO): absolute value of annual net cash flow from operating activities; LEV is end-of-year total liabilities divided by end-of-year total equity; GROWTH is the percentage change in sales; DEBT_ISS is the percentage change in total liabilities during the period; ASSET_TURN is sales divided by end-of-year total assets. Models include industry dummies. Regressions are run using two-way cluster standard errors (Petersen, 2009) at the time and firm level which are robust to both heteroscedasticity and within-firm serial correlation.

Table 9: Regressions of absolute discretionary accruals on independent variables and control variables. Kothari Model (sensitivity test)

Model 1: $\text{Abs (DACC)}_{it} = \beta_0 + \beta_1 \text{NAR}_{it} + \beta_2 \text{NYSE}_t + \beta_3 \text{AUD}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \beta_6 \text{GROWTH}_{it} + \beta_7 \text{Abs(CFO)}_{it} + \beta_8 \text{DEBT_ISS}_{it} + \beta_9 \text{ASSET_TURN}_{it} + \beta_{10} \text{BI}_{it} + \varepsilon_{it}$

Model 2: $\text{Abs (DACC)}_{it} = \beta_0 + \beta_1 \text{NAR}_{it} + \beta_2 \text{NYSE}_t + \beta_3 \text{AUD}_{it} + \beta_4 \text{NAR*NYSE} + \beta_5 \text{NAR*AUD} + \beta_6 \text{SIZE}_{it} + \beta_7 \text{LEV}_{it} + \beta_8 \text{GROWTH}_{it} + \beta_9 \text{Abs (CFO)}_{it} + \beta_{10} \text{DEBT_ISS}_{it} + \beta_{11} \text{ASSET_TURN}_{it} + \beta_{12} \text{BI}_{it} + \varepsilon_{it}$

	Model 1		**Model 2**	
Variables	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic
Intercept	0,086	5,36***	0,088	5,57***
NAR	-0,003	-1,50*	-0,009	-9,08***
NYSE	-0,003	-0,96*	-0,005	-1,56*
AUD	-0,008	-2,39***	-0,009	-2,55***
NAR*NYSE			0,007	2,74
NAR*AUD			0,005	1,06
SIZE	-0,004	-3,66***	-0,004	-3,75***
LEV	0,014	2,17***	0,015	2,28***
GROWTH	-0,002	-1,30	-0,002	-1,29
Abs (CFO)	0,113	3,83***	0,113	3,83***
DEBT_ISS	0,004	12,56***	0,004	12,79***
ASSET_TURN	0,002	0,60	0,002	0,60
Industry Dummies	Yes		Yes	
N	975		975	
R^2 (adjusted)	0,113		0,116	
F	6.65***		5.85***	

Notes: *, **, *** Significantly different from zero at the 0.10, 0.05 and 0.01 levels, respectively, (two-tailed)
The dependent variable is absolute discretionary accruals calculated according to Kothari Model. NAR is a dummy variable (compliance with adapted IFRS=1, else=0); NYSE is a dummy variable (company listed on NYSE =1, else=0); AUD is a dummy variable (company has Big 4 auditor=1, else=0); SIZE is the natural logarithm of total assets in year t; Abs (CFO): absolute value of annual net cash flow from operating activities; LEV is end-of-year total liabilities divided by end-of-year total equity; GROWTH is the percentage change in sales; DEBT_ISS is the percentage change in total liabilities during the period; ASSET_TURN is sales divided by end-of-year total assets. Models include industry dummies. Regressions are run using two-way cluster standard errors (Petersen, 2009) at the time and firm level which are robust to both heteroscedasticity and within-firm serial correlation.

Table 10: Regressions of positive and negative discretionary accruals on independent variables and control variables. Dechow model (sensitivity test)

Model 1: $DACC_{it} = \beta_0 + \beta_1 NAR_{it} + \beta_2 NYSE_t + \beta_3 AUD_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 GROWTH_{it} + \beta_7 Abs(CFO)_{it} + \beta_8 DEBT_ISS_{it} + \beta_9 ASSET_TURN_{it} + \beta_{10} BI_{it} + \varepsilon_{it}$

Model 2: $DACC_{it} = \beta_0 + \beta_1 NAR_{it} + \beta_2 NYSE_t + \beta_3 AUD_{it} + \beta_4 NAR*NYSE + \beta_5 NAR*AUD + \beta_6 SIZE_{it} + \beta_7 LEV_{it} + \beta_8 GROWTH_{it} + \beta_9 Abs\ (CFO)_{it} + \beta_{10} DEBT_ISS_{it} + \beta_{11} ASSET_TURN_{it} + \beta_{12} BI_{it} + \varepsilon_{it}$

	Model 1		**Model 2**	
Variables	**DACC≥0**	**DACC<0**	**DACC≥0**	**DACC<0**
Intercept	0.075***	-0.106**	0.073 ***	-0.110***
	(5,55)	(-5,96)	(4,94)	(-6,31)
NAR	-0.005*	0.001*	-0.003*	0.013**
	(-1.55)	(0,45)	(-1,27)	(2,08)
NYSE	-0.005*	0,003	-0.007***	0,003
	(-1.70)	(0,52)	(-2,59)	(0,39)
AUD	-0.008*	0.010**	-0,006*	0.014**
	(-1.83)	(2,03)	(-1,18)	(2,41)
NAR*NYSE			0,005	0,002
			(0,69)	(0,87)
NAR*AUD			-0,004	-0.016**
			(-1,37)	(-2,31)
SIZE	-0.002*	0.006***	-0.002 *	0.006***
	(-1.76)	(4,94)	(-1,74)	(4,99)
LEV	-0,004	-0.040***	-0,004	-0.040***
	(-0.50)	(-4,04)	(-0,48)	(-4,19)
GROWTH	-0,004	-0,001	-0,004	-0,001
	(-0.99)	(-0,21)	(-1,01)	(-0,25)
Abs (CFO)	-0,02	-0.165***	-0,019	-0.161***
	(-0.52)	-5,35	-0,50	-5,21
DEBT_ISS	0.008**	-0,002	0.008***	-0,002
	(-3,02)	(-1,37)	(3,09)	(-1,55)
ASSET_TURN	0,002	0,000	0,002	0,000
	(-0,53)	(-0,02)	(0,57)	(0,03)
Industry Dummies	Yes	Yes	Yes	Yes
N	509	466	509	466
R^2 (adjusted)	0,075	0,218	0,076	0,225
F	3.49***	7.09***	3.02***	6.21***

The dependent variable is discretionary accruals calculated according to Dechow Model. NAR is a dummy variable (compliance with adapted IFRS=1, else=0); NYSE is a dummy variable (company listed on NYSE =1, else=0); AUD is a dummy variable (company has Big 4 auditor=1, else=0); SIZE is the natural logarithm of total assets in year t; Abs (CFO): absolute value of annual net cash flow from operating activities; LEV is end-of-year total liabilities divided by end-of-year total equity; GROWTH is the percentage change in sales; DEBT_ISS is the percentage change in total liabilities during the period; ASSET_TURN is sales divided by end-of-year total assets. Models include industry dummies. Regressions are run using two-way cluster standard errors (Petersen, 2009) at the time and firm level which are robust to both heteroscedasticity and within-firm serial correlation.

Conclusions and discussion

The purpose of this study is to investigate empirically whether the new accounting regulation in Mexico could be considered a high quality financial reporting standard because it is associated with lower earnings management. Since the adaptation of Mexican GAAPs to IFRS was initiated in 2006, we investigate whether accounting earnings of firms in the post-adaptation period exhibit less earnings management than accounting earnings of firms in the pre-adaptation period. The results of our study suggest an increase in accounting quality from 2006. We find that firms applying standards adapted to IFRS show less earnings management than firms applying domestic standards.

We also examine whether earnings quality improves as a country's investor protection environment becomes stronger. Consistent with Bradshaw and Miller (2005) and Lang *et al.* (2006), we find that firms that cross-listed on US market exhibit significantly less earnings management than firms listed on a domestic market. Our results suggest that earnings quality is higher as the country's investor protection regime becomes stronger. The analyses also suggest that cross-listed firms have higher quality local GAAP accounting information as measured by earnings management. Cross-listed firms gradually change their accounting reporting behavior before cross-listing on a well-developed capital market that is demanding in terms of information quality and transparency. These results are in line with those obtained by Lang *et al.* (2003) who confirmed the hypothesis that with cross-listing firms, the added scrutiny and legal exposure may have substantial implications for accounting choice, even absent changes in local requirements.

There is also evidence that earnings of Mexican companies with Big 4 auditors are of higher quality. These results add to the literature on audit quality by demonstrating a direct relation between audit quality and earnings management.

One reason for higher earnings quality is that Big 4 clients have smaller abnormal accruals, which is consistent with Big 4 auditors constraining aggressive earnings management and resulting in more credible earnings announcements (Becker *et al.*, 1998; Francis *et al.*, 1999; Krishnan, 2003).

These findings contribute to the current debate on whether high quality standards are sufficient and effective in countries with weak investor protection. The enforcement role of legal systems is especially important when considering the accounting quality following the adoption of IFRS. The IASB issues IFRS, but does not have enforcement power. Enforcement power thus resides in the security exchanges and courts where firms are listed (Schipper, 2005). Our results suggest that increase in accounting quality is mainly driven by changes in accounting standards, but even within a country, differences in enforcement and incentives can result in differences in reported accounting data. The regulation is itself an inherently political process. Making sense of the political economy of regulation involves making sense of national patterns of regulation (Moran, 2010). Our study reinforces the findings in other studies that earnings are of relatively higher quality in countries with stronger legal systems and investor protection environment.

The implication of these results is that the work carried out by the CINIF has been effective due to a reduction in earnings management and is reflected in the higher accounting quality after the adaptation of Mexican accounting standards to IFRS. Analysis of the determinants of accounting quality has important policy implications. Recently, the comparability strategy has been changed because CNBV has approved IFRSs as directly mandatory for listed companies as of 2012. Our results indicate that accounting quality has improved after the Convergence Project. Future research needs to establish whether the change in strategy responds or not to the success achieved by the CINIF in order to increase the quality of financial reporting. In short, the CNBV should monitor the enforcement and the market discipline from 2012, when IFRS will be effective for listed companies.

The results of this study are subject to the following limitations. First, we only consider one aspect of earnings quality: the level of earnings management. Second, although we have controlled for various earnings management incentives, it is acknowledged that there may be other incentives to manage earnings that have not been controlled for. Further research could benefit from examining the relationship between IFRS adaptation and other aspects of earnings quality, such as earnings conservatism and value relevance.

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