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Do changes in accounting discretion affect earnings management? International evidence

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Abstract

Purpose: This study analyzes how variation in accounting discretion due to the adoption of the International Financial Reporting Standards (IFRS) affects the relationship between accrual-based earnings management (AEM) and real earnings management (REM).
Method: We build on Bae et al. (2008) to measure the Index of accounting discretion (IAD). Using a first-difference estimator and difference-in-differences (DiD) models and paired samples, we investigate how changes in accounting discretion affect earnings management in 43 countries in 2003–2007.
Results: Most related literature documents a trade-off between AEM and REM. Our study extends this literature by building an IAD and exploring how changes in the provision of accounting discretion affect earnings management. Our results show that increases in IAD positively (negatively) affect accrual-based earnings management (real earnings management). Therefore, providing accounting discretion encourages managers to change accruals and discourages them from changing real decisions for reporting purposes.
Contributions: We argue and show that understanding country-level variability in accounting discretion is crucial to understanding managers' overall discretion. Therefore, our article shows that accounting discretion is an important input of overall managerial discretion. We contribute to the literature by creating and providing an objective measure of accounting discretion (i.e., IAD) that focuses on the changes in discretion that managers have between the years before and after the IFRS adoption. This approach allows us to explore the heterogeneity of these changes at the country level due to IFRS adoption. We provide regulators with information to assess the desired and undesired consequences of the global harmonization of accounting rules and the country-level differences in IFRS effects on managerial decisions.

Keywords: Index of Accounting Discretion; Accrual-Based Earnings Management; Real Earnings Management; IFRS Adoption.

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Introduction

Previous literature suggests the external environment in which firms operate creates incentives to provide better (or worse) accounting information to investors (Christensen et al., 2013; Daskem et al., 2013; Leuz et al., 2003). In addition, since accounting rules provide discretion to managers (Leuz & Wysocki, 2016), they complement these incentives and play an essential role in reducing information asymmetry (Kothari, 2019). The rationale behind this evidence is that accounting rules give managers discretion to provide information to the market. Thus, the more freedom managers have, the more accurately they will represent the firm's performance.

However, managers often abuse their discretion, and earnings management practices are still common among listed firms (Burgstahler & Chuk, 2017), decreasing the quality of information investors receive (Kothari & Wasley, 2019; Siekkinen, 2016). Research suggests that managers use their discretion over accounting rules to hide poor economic performance, prevent contract dissolutions, and even omit performance information to avoid external intervention (Ahmed et al., 2013; Christensen et al., 2015; Watts & Zimmerman, 1986). This type of managerial interference is usually named accrual-based earnings management (AEM) (Kothari et al., 2016).

As well documented in the literature, AEM refers to the use of estimates and judgments to manipulate reported financial results (Burgstahler & Chuk, 2017; Dechow et al., 2010; Healy & Wahlen, 1999; Roychowdhury et al., 2019). In these situations, managers use the discretion allowed by local GAAP (Generally Accepted Accounting Principles), such as accounts receivable or payable, changing the timing of revenue and expense recognition, accounting choices, including those involving amortizable cost versus fair value, the timing of impairment losses (delayed or not), among others, to achieve their reporting goals. Using different types of proxies, essentially estimating discretionary accruals, the literature has often revealed that managers disclose adjusted financial statements, influencing the perception by investors and other stakeholders (Burgstahler & Chuk, 2017; Dechow et al., 2010; Healy & Wahlen, 1999; Roychowdhury, 2006; Roychowdhury et al., 2019).

In addition to AEM, managers may have incentives to adopt real earnings management (REM). According to Roychowdhury (2006, p. 336), the REM could be considered as: "...management actions that deviate from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds.'' Prior studies (e.g. Cohen, Dey & Lys, 2008; Cohen & Zarowin, 2010; Roychowdhury, 2006) suggest that REM primarily occurs through three types of real activities manipulation: manipulating operating cash flow (e.g., practices such as excessive discounting in sales), product costs (e.g., overproduction), and discretionary expenses (e.g., advertising, R&D, and SG&A). These actions aim at modifying short-term performance outcomes (Kałdoński & Jewartowski, 2020; Roychowdhury et al., 2019).

The literature presents mixed findings, with studies like Gunny (2010) and Al-Shattarat et al. (2018) showing that firms use REM to signal positive market prospects. However, while these practices may boost short-term performance, REM can harm long-term firm performance. Roychowdhury (2006) highlights that strategies such as excessive discounting and overproduction, although temporarily increasing profits, can ultimately reduce firm value by negatively affecting cash flows and future operations. Additionally, Cohen and Zarowin (2010), Kothari et al. (2016), Kim and Sohn (2013), and Pappas et al. (2019) suggest that REM not only impairs long-term performance but also has adverse effects on both equity and debt markets.

Although recent studies indicate that AEM and REM are substitutes (Cohen & Zarowin, 2010; Zang, 2012) and that managers trade-off these strategies due to their costs (regulatory scrutiny and litigation versus future performance decrease), there are configurations in which they can be complementary, for example, when the firms establish higher compensation levels to the CEOs (Chief Executive Officer) (Li, 2019). Therefore, discussing the factors that could drive this substitutive (or complementary) relationship between AEM and REM is an interesting topic in this literature. On top of that, although there is a range of studies on earnings management (Callao & Jarne, 2010; Healy & Wahlen, 1999; Kothari et al., 2016), the literature fails to account for rule-based differences in the level of discretion that managers have.

In this study, we build on Bae et al. (2008) to measure the Index of Accounting Discretion (IAD) and analyze the variation in discretion that occurred during the adoption of International Financial Reporting Standards (IFRS). Also, we use a dichotomous variable, IFRS, as an exogenous shock to accounting discretion, as this event triggered changes in reporting regulation rules in several countries in 2005. (Ipino & Parbonetti, 2017; Leuz & Wysocki, 2016). Based on extant literature, the most plausible hypothesis is that IFRS adoption would, on average, lead to an overall

increase in earnings quality (De George et al., 2016). Nevertheless, there is country-level heterogeneity of discretion at the time of IFRS adoption, possibly leading to conflicting predictions on the effect of IFRS adoption on earnings management practices (Leuz & Wysocki, 2016). First, if IFRS adoption enhances discretion, managers might increase AEM due to the greater flexibility provided by accounting standards, while potentially reducing REM, as it poses long-term risks to corporate value (Ipino & Parbonetti, 2017).

On the other hand, according to Graham et al. (2005, p. 66), managers "candidly admit that they would take real economic actions such as delaying maintenance or advertising expenditure and would even give up positive [net present value] projects, to meet short-term earnings benchmarks." So, if IFRS adoption restricts discretion, managers might decrease AEM due to lower accounting flexibility and increase REM (Abughazaleh et al., 2011). On top of that, we need to consider not only the direction (positive, neutral, or negative) but the magnitude of the differences in accounting discretions due to IFRS adoption.

Considering the above, we ask the following research question: how do increases in accounting discretion due to IFRS adoption affect earnings management strategies (i.e., AEM and REM)? To answer this question, we execute three empirical tests. First, we built an IAD for 62 countries in 2004 (prior to IFRS adoption) and 2005 (IFRS adoption). During this period, there was a significant imbalance between countries that had adopted IFRS and those that had not (Wysocki, 2011). Second, we estimate ordinary least squares (OLS) models to analyze the association between the IAD and both AEM and REM. Due to missing values related to the financial variables analyzed, our sample was reduced to 43 countries, including both IFRS adopters and non-adopters. Along similar lines, we estimate a first difference model to mitigate potential firm-level time-invariant effects and to control for IAD increases due to IFRS. This approach helps us understand how some countries that adopted practices similar to IFRS behaved after mandatory adoption in 2005, as an indirect experience of IFRS in countries, like the United Kingdom (Nobes, 2011).

Finally, for robustness, we estimate difference-in-differences (DiD) models with paired samples to control for potential differences in firm-level observable characteristics between countries that adopted IFRS in 2005 (i.e., the treatment group) and those that did not (i.e., the control group), assuming that the impact was sudden and exogenous.

Our contributions are threefold. First, we contribute to the IFRS adoption literature by providing evidence of how IFRS adoption affects the quality of accounting information over the years after the adoption. Second, we build an index (i.e., IAD) that focuses on the changes in accounting discretion that managers have between the years before and after IFRS adoption, leading us to explore country-level heterogeneity in these discretion changes(Bae et al., 2008). Therefore, we contribute to previous literature that does not explore variations in accounting discretion, at the rule level, around IFRS adoption (Callao & Jarne, 2010; Ipino & Parbonetti, 2017). To summarize, we estimate different models, including a DiD model that provides evidence about how accounting discretion affects earnings management practices and whether there are differences in their levels between countries that adopted IFRS in 2005 and those that did not.

2 Related literature

2.1 Accounting discretion

Previous literature on accounting discretion provides conflicting evidence of whether it increases or hurts firm value. Some studies suggest that accounting discretion benefits firm valuation because managers can exert their best judgment about timing, pricing, revenues, deferred expenses, and cost recognition, leading to better accounting information and pricing in listed firms (Bowen et al., 2008; DeAngelo, 1987; Dechow & Skinner, 2000; Lin, 2006; Subramanyam, 1996; Watts & Zimmerman, 1990). Additionally, when managers have a room of accounting discretion, they can prepare and implement an appropriate compensation contract with value-enhancing incentives to signal good behavior through accounting choices (Basu, 1997; Becker et al., 1998; Lin, 2006; Subramanyam, 1996). For example, managers can adopt conservative accounting, which reduces current profits and decreases managerial compensation in the short term while signaling the expectation of long-term profitability. Thus, allowing some degree of accounting discretion might help managers to provide more reliable and value-maximizing results. Consequently, this line of reasoning suggests that accounting discretion can improve long-term performance and benefit investors (Barth et al., 2008; Bartov et al., 2002; Basu, 1997; Becker et al., 1998; Dechow & Skinner, 2000; Lin, 2006).

On the flip side, several studies suggest that managers can use accounting discretion for asset omission, classification shifting, profit smoothing, and, in the extreme, corruption practices (Christie & Zimmerman, 1994; Dechow et al., 1995; Fields et al., 2001; Holthausen, 1990; Smith et al., 2001; Watts & Zimmerman, 1978). All these decisions are expected to affect the quality of financial statements, cost of capital, and hurt firm valuation (Barth et al., 2008; Bowen et al., 2008; Florou & Pope, 2012; Gaio & Raposo, 2011). Moreover, managers can use their discretion over accounting rules to hide poor economic performance, prevent contract dissolutions, and even hide profit to avoid external intervention (Watts & Zimmerman, 1986). Along the same lines, DeAngelo

(1987) argues that when managers feel threatened by shareholders, they use accounting discretion to show a better, more positive company image to outsiders and external shareholders. Supporting this literature, the Enron and WorldCom scandals provide empirical evidence of the cons of accounting discretion to shareholders (Bowen et al., 2008; Chung et al., 2002).

However, the extant literature on accounting discretion often uses distinct empirical proxies and does not converge to one single variable (Alissa et al., 2013; Bens & Johnstion, 2009; Bowen et al., 2008; Dechow et al., 2010; Kalyta, 2009). For example, DeAngelo (1987) uses total accrual (the difference between net income and operating cash flows). Bowen et al. (2008) combine variables such as 1) discretionary accruals (i.e., the modified Jones model from Dechow et al., 1995), 2) earnings smoothing (i.e., the standard deviation of operating cash flows divided by the standard deviation of revenues), and 3) the incidence of small positive earnings surprises. Moreover, some articles used differences between policy choices and disclosure rules as a proxy, like Huizinga and Laeven (2012) which use mortgage-backed securities classifications (e.g., amortized cost or fair value), and Bushman and Williams (2012) which use loan provisioning practices.

2.2 IFRS adoption and accounting practices

Since the late 1990s, previous international accounting literature has attempted to classify national accounting systems (Basu et al.,1998; Doupnik & Salter, 1993; Leuz, 2010; Leuz et al., 2003). However, Nobes (2011) is the first to classify countries systematically based on their post-IFRS accounting practices. He analyses accounting practices in seven countries in the European Union plus Australia and concludes that, despite attempts at accounting harmonization, two groups persist: 1) the Anglo-Saxons and 2) Continental Europe. Nobes (2011, p. 281) argues that "if the European Union (EU) 's harmonization efforts had succeeded, one would not expect to see the U.K. still classified with Australia rather than with the other EU countries." Overall, Nobes (2011) argues that accounting practices are generally resistant to harmonization. This result is aligned with the study of Watts and Zimmerman (1990), which suggests that accounting practices tend to be very stable.

Another issue discussed in this literature is that many countries have adopted local versions of IFRS practices, keeping some accounting practices from the pre-IFRS period (Ball, 2006; Nobes, 2006). These local practices arise from the pressure of regulatory agents, tax systems, and local stakeholders' demands for more information. Additionally, because most countries have adopted IFRS only for consolidated financial statements, managers can navigate through a room of accounting choices and estimations in non-consolidated statements to meet local requirements (Nobes, 2013).

Thus, although IFRS harmonization efforts have aimed to enhance uniformity and comparability in financial reporting across companies from different countries, Nobes (2013) argues that even after a prolonged adoption period, it remains possible to classify countries into subgroups based on their pre-IFRS accounting practices. Similar arguments are advanced by Nobes and Stadler (2014) and Lourenço et al. (2015).

2.3 AEM and REM in IFRS adoption

Although international accounting literature assumes that the adoption of IFRS is associated with an environment with higher-quality accounting reports (Leuz & Wysocki, 2016), part of the same literature considers that IFRS not only increased significantly the accounting discretion for managers but also the opportunities for earnings management (Al-Amri et al., 2017; Capkun et al., 2016; Nobes, 2013). Nevertheless, previous literature does not agree on which strategy AEM or REM is more prevalent (Ipino & Parbonetti, 2017; Li, 2019).

The earnings management literature predicts a trade-off between AEM and REM (Cohen et al., 2008; Cohen & Zarowin, 2010; Zang, 2012). Following Ipino and Parbonetti (2017) increased accounting discretion from IFRS adoption may lead managers to shift from REM, with its more harmfulconsequences, to AEM. On the other hand, Sellami and Fakhfakh (2013) argue that IFRS increased disclosure requirements; thus, both AEM and REM should be suppressed. On top of that, some studies indicate a complementary relationship between these practices (Li, 2019; Matsuura, 2008) particularly when the firm establishes higher compensation levels for the CEO.

Nevertheless, previous IFRS literature on AEM and REM predominantly uses a dichotomous IFRS variable as a proxy for earnings management, which may not lead to accurate empirical results (Christensen et al., 2013; Gray et al., 2015; Ipino & Parbonetti, 2017; Judge et al., 2010; Leuz & Wysocki, 2016). As evidenced by Bae et al. (2008), countries had different levels of IFRS similarities, which can lead to varying levels of accounting discretion earned and, therefore, different effects for each country at the time of IFRS adoption.

This section has three takeaways. First, the previous literature (i.e., Basu et al., 1998; Hung, 2001; Lourenço et al., 2015; Nobes, 2011, 2013; Nobes & Stadler, 2014) shows that countries had different levels of convergence to IFRS before adoption, resulting in varying gains in accounting discretion after IFRS adoption. Although all these countries reached the same level of discretion, the

magnitude of the gain depended on their initial levels. Second, although researchers have not yet reached a clear consensus on a single measure of accounting discretion, they also face the challenge that the concept of "earnings quality" can vary depending on the decision context (Dechow et al., 2010). Third, previous literature has focused on developed countries with very limited samples of countries. Thus, the debate about whether emerging markets converge to developed countries' rules and the degree of harmonization is still open.

3 Earnings management variable measurement

3.1 AEM

To calculate AEM, we use the model of Jones (1991) because it aggregates the net effect of all accounting decisions into a single proxy (DeAngelo, 1987; Healy, 1985, Watts & Zimmerman, 1990). We use two versions of this model: the modified Jones model of Dechow et al. (1995) (i.e., AEM1) and the one by Kothari et al. (2005) (i.e., AEM2). The following equations represent these

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_{1,t}\frac{1}{A_{i,t-1}} + \beta_{2,t}\frac{\Delta SALE_{i,t}-\Delta REC_{i,t}}{A_{i,t-1}} + \beta_{3,t}\frac{PPE_{i,t}}{A_{i,t-1}} + \mu_{i,t} \quad (1)$$

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_{1,t}\frac{1}{A_{i,t-1}} + \beta_{2,t}\frac{\Delta SALE_{i,t}-\Delta REC_{i,t}}{A_{i,t-1}} + \beta_{3,t}\frac{PPE_{i,t}}{A_{i,t-1}} + \beta_{4,t}ROA_{i,t-1} + \mu_{i,t} \quad (2)$$

Where TA is total accruals; ΔSALE is the change in total revenue; ΔREC is the change in net receivables; PPE is plant, property, and equipment; and ROA is the return on assets.

The rationale is that the independent variables of Equations (1) and (2) explain normal levels of accruals, and any unexplained variation (i.e., earnings management via accruals) is left to the residuals. Therefore, we obtain AEM through the residuals of Equations (1) and (2). We estimate Equations (1) and (2) by country, industry, and year, and we require at least ten observations for each two-digit NAICS code industry (for more details, see Ipino & Parbonetti, 2017; Leuz et al., 2003; McNichols, 2002).

3.2 REM

We follow Roychowdhury (2006) and Li (2019) and calculate three alternative proxies to REM. The following equations represent these proxies:

$$\frac{OCF_{i,t}}{A_{i,t-1}} = \beta_{1,t}\frac{1}{A_{i,t-1}} + \beta_{2,t}\frac{SALE_{i,t}}{A_{i,t-1}} + \beta_{3,t}\frac{\Delta SALE_{i,t}}{A_{i,t-1}} + \mu_{i,t} \quad (3)$$

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \beta_{1,t}\frac{1}{A_{i,t-1}} + \beta_{2,t}\frac{SALE_{i,t}}{A_{i,t-1}} + \beta_{3,t}\frac{\Delta SALE_{i,t}}{A_{i,t-1}} + \beta_{4,t}\frac{\Delta SALE_{i,t-1}}{A_{i,t-1}} + \mu_{i,t} \quad (4)$$

$$\frac{DISEXP_{i,t}}{A_{i,t-1}} = \beta_{1,t}\frac{1}{A_{i,t-1}} + \beta_{2,t}\frac{SALE_{i,t-1}}{A_{i,t-1}} + \mu_{i,t} \quad (5)$$

Where OCF is operating cash flow, PROD is production costs, DISEXP is discretionary expenses, SALE is total revenue, and TA is total assets. The variable PROD is the sum of the costs of goods sold (COGS) and inventory variation, and DISEXP is the sum of R&D expenses, advertising, and SG&A. The residuals of Equations (3) to (5) represent abnormal levels of discretionary cash flow, production, and expenses, respectively. Following Roychowdhury (2006) and Li (2019), we combine the three proxies for REM to compute a single variable, where REM = residuals from Eq. (3) + residuals from Eq. (4) – residuals from Eq. (5), thus mitigating concerns about measurement errors.

3.3 Index of accounting discretion (IAD)

We build on the Bae et al. (2008) to measure the IAD. Bae et al. (2008) developed an index to assess the differences in accounting practices between local GAAP and IFRS for 49 countries in 2000–2001, using 21 items. Similarly, to buid the IAD, we also rely on the research 'GAAP 2001: A Survey of National Accounting Rules Benchmarked Against International Accounting Standards' (Nobes, 2001), but have expanded our sample to 62 countries, aligning with the total analyzed in this research.

Starting from the same 21 items, we identify those that mark differences in the level of accounting discretion allowed to managers. More specifically, we adapt the protocol of Bae et al. (2008) to find those items that meet the following criteria: 1) the item provides discretion according to previous literature (Basu et al., 1998; Hung, 2001; Stadler & Nobes, 2014), 2) the item is a key accounting item according to previous literature (Basu et al., 1998; Bae et al., 2008; Hung, 2001; Stadler & Nobes, 2014), and 3) the item shows variations in at least three countries. Based on these criteria, we selected the 16 items (out of the original 21) that provide accounting discretion. We then calculate IAD by summing all the 16 items for every country in our sample (see Table 1).

Table1. IAD

Panel A: The 16 discretionary items included in the IAD

Discretionary item	Source of discretion
1) SIC 11. 3/4/6	Can foreign exchange losses resulting from severe currency devaluations be capitalized?
2) IAS No. 36	Are there rules calling for impairment testing for long-term assets, or are impairments only recorded when deemed permanent?
3) 17 IAS No. 38.42	Is the capitalization of R&D costs permitted?
4) IAS 22.40	Is goodwill calculated by reference to fair value rather than to net book values?
5) IAS 16.29	If tangible fixed assets are revalued, must the valuations be kept up-to-date?
6) IAS No. 17	Is the capitalization of leases required or permitted?
7) IAS 37.45	Are there rules calling for the discounting of provisions?
8) IAS No. 19	Are there rules accounting for employee benefit obligations (other than defined contribution plans in some cases)?
9) IAS No. 32.18/.23	Are companies required to account for their financial instrumenon substance over form?
10) IAS 39.69	Are financial assets measured at fair value?
11) IAS 39.93	Are trading and derivative liabilities required to be measured at fair value?
12) IAS No. 35	Are there rules outlining the treatment of discontinued operations?
13) IAS 39.142	Is hedge accounting allowed?
14) IAS 40.28	Are revaluation gains and losses on investment properties allowed or are they required to be reported in the income statement?
15) IAS No. 8.6	Is a broader definition of extraordinary items permitted?
16) IAS 38.56	Is pre-operation capitalization allowed?

Panel B: Score of 16 discretionary items by country - Before and after IFRS adoption in 2005

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	IAD 2004	IAD 2005
Argentina	0	0	1	0	1	0	0	1	1	1	0	0	0	0	1	0	5	5
Australia	1	1	1	1	0,5	1	1	1	1	0	0	1	1	0	0	0	11	13.5
Austria	0	0	1	1	0,5	0,5	0	0	1	0	0	0	0	0	1	1	6,5	13.5
Belgium	1	1	1	0	1	0,5	0	1	0	0	0	1	0	0	1	1	8,5	13.5
Brazil	0	0	0,5	0	1	0	0	1	0	0	0	0	0	0	0	1	3,5	3,5
Bulgaria	1	0	0	1	0	0	0	1	1	0	1	0,5	0	1	1	0	8,5	8,5
Canada	0	1	1	1	0,5	1	0	1	1	1	1	0,5	0	1	0	0,5	11	11
Chile	1	0	1	0	1	1	0	0	0	0	0	0	1	0	1	0	6	6
China	0	1	1	0	0,5	0,5	0	1	0	0,5	0	0	0	0	1	0	6	6
Cyprus	1	1	1	1	0,5	1	1	1	1	1	1	0,5	1	1	0	0	13,5	13,5
Czech Republic	0,5	0	1	0	0,5	0	0	1	0	0	0	0,5	1	0	1	1	6,5	13.5
Denmark	1	0	1	0	0,5	0	1	1	0	0	0	1	0	0	1	0	7	13.5
Egypt	1	1	1	1	0,5	0	1	0	0	0	0	1	0	1	0	0,5	8,5	8,5
Estonia	1	0	1	0	0,5	1	1	1	0	0,5	0	0	0	0	0	0	6,5	6,5
Finland	1	0	1	0	0,5	1	0	1	0	0	0	0	0	0	1	0	6	13.5
France	1	0	1	1	1	1	0	1	0	1	1	1	0	0	1	0	10	13.5
Germany	0,5	1	1	1	0,5	0	0	0	0	0	0	1	0	0	1	0	6	13.5
Greece	0	1	1	1	0	0	0	1	0	0	0	0	0,5	0	1	1	7	13.5
Hong Kong	1	1	1	1	0,5	0	1	1	0	0	1	0	0	1	0	0	9	13.5
Hungary	1	0	1	1	0,5	0,5	0	1	0	0	0	0,5	0	0	1	0	6	13.5
Iceland	1	0	1	1	0	0	0	1	1	0	0	1	0	0	0	1	8	13.5
India	0	0	1	1	1	1	0	1	0	0	0	0	0	0	0	0	5	5
Indonesia	1	1	1	1	0,5	1	1	0	1	0	0	0,5	1	1	0	0	10,5	10,5
Iran	1	0	1	1	0,5	1	0	1	0	0	0	0	0	1	0	0	7	7
Ireland	1	1	1	1	0,5	1	1	1	0	0	0	1	0	1	0	0	10	13.5
Israel	1	1	1	1	0,5	0	0	1	1	1	1	0	0	0	0	0	9	9
Italy	1	0	1	1	0,5	0	0	1	0	0	0	0	0	0	1	0	6	13.5
Japan	1	0	1	1	0,5	1	0	0	1	1	0	0,5	0	0	1	1	9,5	9,5
Kenya	1	1	1	1	0,5	1	1	1	1	1	1	0,5	1	1	0	0	13,5	13,5
S. Korea	1	1	1	1	0,5	1	0	1	0	0	0	0,5	0	1	0	0	8,5	8,5
Latvia	0	0	1	1	0,5	0	0	1	1	0	0	0	0	0	0	0	4	13.5
Lithuania	1	0	0	1	1	1	1	1	1	0	0	0	0	0	1	0	7	13.5
Luxembourg	0	0	1	1	0,5	0	0	1	0	0	0	0	0	0	1	1	6	13.5
Malaysia	1	0	1	1	0,5	1	1	1	0	0	0	1	0	0	0	0	8	8
Mexico	0	1	1	1	0,5	1	1	0	1	1	1	1	1	1	0	1	13	13
Morocco	1	1	1	1	1	0	0	1	0	0	1	0,5	0	0	0	1	7,5	7,5
Netherlands	1	1	1	1	1	1	0	0	1	1	1	0	0	1	1	0	11	13.5
New Zealand	1	0	1	1	0,5	1	1	1	1	1	0	1	1	1	0	0	12	12
Norway	1	0	1	1	0,5	1	1	1	0	0	0	1	0	1	0	0	9	13.5
Pakistan	1	0	1	1	0,5	1	1	1	0	0	0	1	0	0	0	0,5	8,5	8,5
Peru	1	1	1	1	1	1	1	1	1	0	0	1	0	1	0	0	11	11
Philippines	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	1	5	5
Poland	0	0	1	0	0,5	0,5	0	1	0	0	0	1	0	1	1	0	5,5	13.5
Portugal	0,5	0	1	1	0,5	1	1	1	0	0	1	1	0	0	1	0	9	13.5
Romania	1	1	1	1	0,5	1	1	1	1	1	1	0,5	1	1	0	0	13,5	13.5
Russia	1	0	1	0	1	0,5	0	1	0	1	0	0	1	0	1	0	7,5	7,5
Saudi Arabia	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	4	4
Singapore	1	1	1	1	0,5	1	1	1	1	0	0	0	1	1	0	0	11	11
Slovakia	0	0	1	0	0,5	0	0	1	0	0	0	0	0	0	0	0	3	13.5
Slovenia	1	1	1	1	0,5	1	1	1	1	0	0	0	1	0	1	0	10	13.5

(Continued)

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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	IAD 2004	IAD 2005
South Africa	1	1	1	1	0,5	1	1	1	1	1	1	0	1	1	0	0	13	13.5
Spain	0,5	0	1	0	0,5	0	0	1	0	0	0	1	0	0	1	0	5	13.5
Sweden	1	0	1	1	1	1	0	1	0	0	0	1	0	0	0	0	7	13.5
Switzerland	1	0	1	1	0,5	0	0	0	0	0	0	0	1	0	1	1	7	13.5
Taiwan	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	4	4
Thailand	1	1	0	1	0,5	1	1	1	1	1	0	0	0	0	0	0	9	9
Tunisia	1	1	1	1	0,5	1	1	1	0	0	0	0	0	0	0	0	8	8
Turkey	1	0	1	1	0,5	0	0	1	0	0,5	0	0	0	0	1	1	6,5	13.5
Ukraine	1	1	1	1	0,5	1	1	1	0	0	0	0	0	0	0	0	7	7
United Kingdom	1	1	1	1	0,5	1	1	1	0	0	0	1	0	1	0	0	10	13.5
United States	1	1	1	1	0,5	1	0	0	0	1	1	0,5	0	1	0	0	9,5	9,5
Venezuela	1	1	1	1	0	1	0	1	0	1	1	0	0	0	0	0	9	13.5

Obs.: The Standard Interpretations Committee (SIC) and International Accounting Standards (IAS) used for reference are those with accounting instructions or criteria used by the 2001 Generally Accepted Accounting Principles survey of Nobes (2001). In each item, we use the description defined by Nobes (2001) to identify accounting discretion present in the SIC, IAS, and/or local rules, following Bae et al. (2008). We code this measure as zero when there is no discretion, as 0.5 for some discretion, or one when there is full or significant discretion.

The IAD Cronbach's alpha is around 0.75, suggesting that the 16 items complement each other and combine different dimensions of accounting discretion. We also conduct a factorial analysis to understand whether the 16 items are convergent or measure various aspects of discretion. Because the 16 items are complementary, we would expect more than one factor with an eigenvalue higher than one, but not too many factors. This analysis leads to two factors with eigenvalues greater than one and a Kaiser–Meyer–Olkin (KMO) statistic around 0.64. Overall, these validation steps attest to the internal validity of the IAD and that it is a good proxy for accounting discretion. Table 2 contains these estimates.

Table 2. Cronbach's Alpha and Factor Analysis for IAD

Item	Alpha	Average Inter-item Correlation	KMO	Uniqueness
Item 1	0.7385	0.1584	0.7263	0.8202
Item 2	0.7197	0.1461	0.8389	0.6525
Item 3	0.7641	0.1776	0.2567	0.9992
Item 4	0.7328	0.1546	0.5819	0.7677
Item 5	0.7166	0.1442	0.7603	0.6093
Item 6	0.7476	0.1649	0.5672	0.9507
Item 7	0.7249	0.1494	0.7121	0.6430
Item 8	0.7670	0.1799	0.5159	0.9999
Item 9	0.7340	0.1554	0.5969	0.7355
Item 10	0.7340	0.1554	0.5610	0.7723
Item 11	0.7305	0.1530	0.6210	0.7363
Item 12	0.7518	0.1680	0.4092	0.9613
Item 13	0.7355	0.1564	0.5290	0.8302
Item 14	0.7150	0.1433	0.7731	0.6021
Item 15	0.7320	0.1540	0.6930	0.7482
Item 16	0.7482	0.1654	0.6094	0.8729
Overall	**0.7500**	**0.1579**	**0.6378**	

Obs.: For more details about the 16 items, consult Panel A of Table 1.

4 Empirical design

Our empirical design initially analyzes the impact of the IAD on both AEM and REM in countries that adopted IFRS in 2005. We start with an OLS model represented by the following Equation:

$$AEM_{i,t} \text{ or } REM_{i,t} = \alpha_i + \beta_1 IADi_{i,t} + \beta_2 X_{i,t} + \varepsilon_{i,t} \quad (6)$$

where AEM is either AEM1 or AEM2 (i.e., one of the two modified Jones models), REM represents the combination of the three REM estimates, and Xit is a vector of control variables, based on previous literature (Berger et al., 1998; Cheng & Warfield, 2005; Gow et al., 2016; Larcker et al., 2007; Watts & Zimmerman, 1986). To mitigate concerns about omitted variable bias due to firm-level time-invariant effects, we also estimate a first-difference version of Equation (6).

$$\Delta AEM_{i,t} \text{ or } \Delta REM_{i,t} = \Delta\beta_1 IAD_{i,t} + \Delta\beta_2 X_{i,t} + \Delta\varepsilon_{i,t} \quad (6.1)$$

Finally, for robustness, we include countries that did not adopt IFRS in 2005 and conduct a DiD analysis, represented by Equation 7.

$$AEM_{i,t} \text{ or } REM_{i,t} = \alpha_{i,t} + \beta_1 dIFRS_{i,t} + \beta_2 d2005_{i,t} + \beta_3 dIFRS_{i,t} \times d2005_{i,t} + \beta_4 X_{i,t} + \varepsilon_{i,t} \quad (7)$$

where the right-hand side includes year, industry, and country fixed effects; dIFRS is a dummy variable that equals one if the country adopted IFRS in 2005; d2005, is a dummy variable that equals one for observations after 2005; and X is a vector of control variables. In other words, the main assumption behind Equation Eq. (7) is that an exogenous shock on discretion occurred in 2005 in those countries that adopted IFRS (i.e., the treatment group), but not in the other countries (i.e., the control group).

Our initial sample consists of all countries for which we could calculate the IAD (62 countries). After excluding firm-level missing data and countries with fewer than 150 observations during the analyzed period, our sample is reduced to 49,047 firm-year observations

from 43 countries, with 20 that adopted IFRS in 2005. Our sample consists of non-financial firms for which the required data from 2003 to 2007 are available in Refinitiv Eikon®. Panel A of Table 3 presents the descriptive statistics of all the empirical variables used throughout the study. The last two columns of Panel A suggest that all empirical variables differ between the treatment and control groups (i.e., the t-statistics of the mean difference test are significant), which is expected, as there was no parity treatment between the groups.

Table 3. Descriptive Statistics

	Countries that adopted IFRS in 2005			Countries that did not adopt IFRS in 2005			Mean difference test	
Variables				**Obs.**	**Mean**	**S.d.**	**Diff**	**T-Test**
Panel A – Without Matching Statistics								
AEM 1	9,353	0.1131	0.2214	39,694	0.0795	0.1226	-0.0336	-19.9344
AEM 2	9,353	0.4474	2.8830	39,694	0.2906	0.3575	0.01493	-10.5004
REM	9,353	-0.0142	0.1500	39,694	-0.0346	0.3880	-0.0204	-5.0082
LEV	9,353	0.6094	0.3185	39,694	0.5739	0.2800	-0.0355	-10.7399
CASH	9,353	0.0810	0.1570	39,694	0.0828	0.1472	0.0017	1.0312
ROA	9,353	0.0242	0.1427	39,694	0.0325	0.0965	0.0082	6.7517
TANG	9,353	0.3051	0.2566	39,694	0.3634	0.2394	0.0582	20.8884
SIZE	9,353	19.1385	1.9984	39,694	19.1181	1.5989	-0.0204	-1.0592
Z	9,353	1.3879	1.7892	39,694	1.4159	1.6399	0.0280	1.4598
BTM	9,353	0.9286	0.9880	39,694	0.9835	1.3937	0.0548	3.6019
Panel B – Entropy Matching Statistics (covariates)								
LEV	9,353	0.6094	0.3185	39,694	0.6094	0.3185	0.00	0.00
CASH	9,353	0.0810	0.1570	39,694	0.0810	0.1570	0.00	0.00
ROA	9,353	0.0242	0.1427	39,694	0.0242	0.1427	-0.00	0.00
TANG	9,353	0.3051	0.2566	39,694	0.3051	0.2566	-0.00	0.00
SIZE	9,353	19.1385	1.9984	39,694	19.1385	1.9984	0.00	0.00
Z	9,353	1.3879	1.7892	39,694	1.3879	1.7892	-0.00	0.00
BTM	9,353	0.9286	0.9880	39,694	0.9286	0.9887	-0.00	0.99
Panel C –Propensity Score Matching (covariates - year 2004)								
LEV	1,655	0.5987	0.2894	1,655	0.6144	0.3056	0.0156	1.5135
CASH	1,655	0.0853	0.1691	1,655	0.0806	0.1432	-0.0046	-0.8486
ROA	1,655	0.0235	0.1343	1,655	0.0216	0.1247	-0.0018	-0.4145
TANG	1,655	0.3170	0.2511	1,655	0.3164	0.2336	-0.0005	-0.0672
SIZE	1,655	19.1002	2.0129	1,655	19.0884	1.6672	-0.0117	-0.1829
Z	1,655	1.4036	1.7172	1,655	1.3867	1.7866	-0.0169	-0.2780
BTM	1,655	0.99172	1.1253	1,655	1.0478	1.2153	0.0561	1.3792

Obs.: The term AEM1 represents the absolute value of the residuals from Equation (1), AEM2 the absolute value of residuals from Equation (2), REM represents the residuals from Equation (3) plus the residuals from Equation (4) minus the residuals from Equation (5). The covariates are SIZE, which equals the natural logarithm of the book value of total assets; LEV is total liabilities divided by lagged total assets; CASH is cash and equivalents divided by total assets minus cash and equivalents; ROA is net income divided by total assets; TANG is property, plant, and equipment divided by lagged total assets; Z is equal to (3.3 × net income before extraordinary items + sales + 1.4 × retained earnings + 1.2(total current assets – total current liabilities), all divided by total assets; and BTM is the book value of common equity divided by the market value of equity.

Panels B and C of Table 3 present the statistics and mean difference test results after the samples are paired. We match observations in the year before IFRS adoption (i.e., 2004) and keep the pairs in the main analysis. Panel B shows the statistics of entropy balancing (Hainmueller, 2012; Hainmueller & Xu, 2013). Entropy balancing reweights the control group sample of observations to have the same moments as the treatment group sample. Panel B of Table 4 shows that, after we match the first and second moments, the mean differences between the treatment and control groups are not significant. Additionally, we match observations using propensity score matching (PSM). Thus, for each observation in the treated group, we find the most similar observation in the control group. Panel C presents the descriptive statistics and the t-test results for the mean differences after PSM.

5 Results

In Table 4, the estimated coefficients for the OLS (Panel A) and first-difference (Panel B) models highlight the impact of accounting discretion, measured by the IAD, on AEM and REM. We initially analyzed the 20 countries that adopted IFRS in 2005 from our final sample of 43 to assess the variation in accounting discretion following the change in standards. In Panel A, we observe that the IAD has a positive association with both AEM measures (AEM1 and AEM2), with t-statistics ranging from 2.39 to 2.82 for OLS and 3.47 to 5.40 for first-difference, indicating that as accounting discretion increases, managers tend to intensify the use of accruals to manage earnings. This finding corroborates previous studies, such as those by Ahmed et al. (2013), which show that the

adoption of more flexible standards, such as IFRS, can increase accounting discretion and, consequently, AEM.

Table 4. IAD and Earnings Management in countries that adopted IFRS in 2005

	Panel A – OLS			Panel B – First difference		
	AEM1	AEM2	REM	AEM1	AEM2	REM
IDC	0.01*	0.09**	-0.01**	0.01***	0.04***	-0.00
	[2.39]	[2.82]	[-2.61]	[5.40]	[3.47]	[-0.59]
LEV	0.08***	0.44*	0.10***	0.08***	0.36+	0.10***
	[6.80]	[2.22]	[9.36]	[4.47]	[1.71]	[5.49]
CASH	0.03+	0.17	-0.04	0.06	-0.51	-0.21***
	[1.81]	[0.63]	[-1.52]	[1.31]	[-1.38]	[-4.85]
ROA	-0.07*	0.15	-0.91***	-0.11**	-0.34+	-0.44***
	[-2.32]	[0.64]	[-19.61]	[-2.63]	[-1.90]	[-8.33]
TANG	-0.05***	-0.33*	-0.09***	-0.06*	-0.41	-0.00
	[-3.44]	[-2.18]	[-5.98]	[-2.13]	[-1.51]	[-0.13]
SIZE	-0.01***	-0.01	-0.01***	0.04*	0.39+	-0.05***
	[-9.09]	[-1.03]	[-6.79]	[2.17]	[1.85]	[-3.86]
Z	-0.00+	-0.02	0.01+	0.00	-0.01	-0.00
	[-1.93]	[-1.39]	[1.67]	[0.15]	[-0.33]	[-0.41]
BTM	-0.00	0.02	0.00	-0.00	0.09+	0.00
	[-1.64]	[0.86]	[1.23]	[-0.43]	[1.81]	[0.49]
Constant	0.22***	-0.69+	0.11	-0.00	-0.04	0.01
	[5.03]	[-1.73]	[1.14]	[-0.35]	[-1.28]	[0.85]
F-stat	27.072	18.924	34.126	14.962	7.987	20.506
R-squared	0.137	0.045	0.368	0.031	0.008	0.080
Observations	9,353	9,353	9,353	7,956	7,956	7,956

Obs.: The term AEM1 represents the absolute value of the residuals from Equation (1), AEM2 the absolute value of residuals from Equation (2), REM represents the residuals from Equation (3) plus the residuals from Equation (4) minus the residuals from Equation (5). The covariates are SIZE, which equals the natural logarithm of the book value of total assets; LEV is total liabilities divided by lagged total assets; CASH is cash and equivalents divided by total assets minus cash and equivalents; ROA is net income divided by total assets; TANG is property, plant, and equipment divided by lagged total assets; Z is equal to (3.3 × net income before extraordinary items + sales + 1.4 × retained earnings + 1.2(total current assets – total current liabilities), all divided by total assets; and BTM is the book value of common equity divided by the market value of equity. ***, **, *, and + denote significance at the 0,1%, 1%, 5%, and 10% levels, respectively.

On the other hand, IAD presents a negative association with REM, suggesting that managers prefer to avoid practices such as the manipulation of operating activities, which can have negative long-term impacts on the firm, as discussed by Zang (2012). However, in the first-difference model (Panel B), the signs of the coefficients remain consistent with those of the OLS model, but IAD does not present a significant association with REM, suggesting that, when controlling for unobserved effects at the firm level, the relationship between accounting discretion and REM may be more complex than initially apparent.

In Table 5, which presents the estimates of the DiD model, we observe that the main coefficients corroborate the results presented in Table 4. The adoption of IFRS in 2005 resulted in a positive adjustment in AEM practices and a negative adjustment in REM practices. This result is robust regardless of the type of matching used (no matching, entropy balancing, or Propensity Score Matching – PSM).

Table 5. Diff-in-Diff on earnings management after IFRS adoption

	AEM1			AEM2			REM		
	Without	**Entropy**	**PSM**	**Without**	**Entropy**	**PSM**	**Without**	**Entropy**	**PSM**
Before 2005									
Control [C]	0.280	0.327	0.319	0.308	0.116	0.252	0.308	0.126	0.132
Treated [T]	0.302	0.338	0.339	0.321	0.127	0.253	0.350	0.228	0.174
Diff [T-C]	0.022 ***	0.011 ***	0.020 ***	0.012	0.011	0.001	0.041 ***	0.101 ***	0.042 ***
T-Stats	7.90	3.12	4.92	0.48	1.35	0.03	2.98	5.59	2.86
After 2005									
Control [C]	0.284	0.328	0.321	0.294	0.109	0.211	0.402	0.261	0.211
Treated [T]	0.319	0.355	0.349	0.506	0.311	0.352	0.382	0.263	0.198
Diff [T-C]	0.035 ***	0.027 ***	0.029 ***	0.212 ***	0.203 ***	0.140 ***	-0.020 **	0.002	-0.013
T-Stats	17.32	7.65	8.76	11.52	4.67	5.05	1.98	0.33	1.06
Diff-in-Diff	0.013 ***	0.015 ***	0.009 *	0.199 ***	0.192 ***	0.139 ***	-0.061 ***	-0.099 ***	-0.055 ***
T-Stats	3.62	3.13	1.69	6.30	4.58	3.16	3.58	5.25	2.88
Obs. (C)	9,353	9,353	7,845	9,353	9,353	7,845	9,353	9,353	7,845
Obs. (T)	39,694	39,694	7,688	39,694	39,694	7,688	39,694	39,694	7,688
Controls	Sim	Sim	Sim	Sim	Sim	Sim	Sim	Sim	Sim

Obs.: The column denoted Without presents the results without matching and includes the full sample, Entropy means data with entropy matching and includes the full sample weighted, and PSM contains the results with the matched sample by PSM and includes all observations of the paired firms in the year of 2004. The term AEM1 represents the absolute value of the residuals from Equation (1), AEM2 the absolute value of residuals from Equation (2), REM represents the residuals from Equation (3) plus the residuals from Equation (4) minus the residuals from Equation (5). The covariates are SIZE, which equals the natural logarithm of the book value of total assets; LEV is total liabilities divided by lagged total assets; CASH is cash and equivalents divided by total assets minus cash and equivalents; ROA is net income divided by total assets; TANG is property, plant, and equipment divided by lagged total assets; Z is equal to (3.3 × net income before extraordinary items + sales + 1.4 × retained earnings + 1.2(total current assets – total current liabilities), all divided by total assets; and BTM is the book value of common equity divided by the market value of equity. The treated sample consists of firms from countries that did apply IFRS after 2005. ***, **, *, and + denote significance at the 0,1%, 1%, 5%, and 10% levels, respectively.

These results reinforce the existing literature on the trade-off between AEM and REM, as evidenced by Cohen et al. (2008) and Zang (2012). In environments with greater discretion, managers tend to opt for AEM, which, despite being a form of short-term adjustments, presents fewer long-term costs compared to REM. The preference for AEM is also justified by the fact that the consequences of REM, such as cuts in R&D or general and administrative expenses, can compromise the company's innovation and sustainable growth, which is consistent with the findings of Callao and Jarne (2010).

In methodological terms, the robustness of the results for different matching methods (entropy balancing and PSM) suggests that the adoption of IFRS has consistently impacted earnings management decisions, regardless of potential selection biases. This is particularly relevant considering the concerns raised by studies such as Isidro et al. (2020), which emphasize the challenges of isolating the impact of institutional characteristics in multinational studies.

Finally, it is important to highlight that, although the increase in accounting discretion significantly impacts AEM, it is necessary to consider other factors, such as institutional quality and regulatory enforcement, which can also influence managerial choices (Isidro et al., 2020). As Wysocki (2011) noted, managers may adjust their earnings management strategies based on the institutional constraints of each country.

6 Discussion and concluding remarks

In this study, we contribute to the accounting discretion literature by providing the IAD, and evidence that, when accounting discretion increases, managers increase AEM but decrease REM. Our index is based on accounting rules. Consequently, the IAD mitigates the criticism of measuring discretion using earnings management proxies (Alissa et al., 2013; Bens & Johnstion, 2009; Bowen et al., 2008; Dechow et al., 2010; Kalyta, 2009). By building the IAD, we have created a way to understand how IFRS changes discretion, how discretion varies, and how managers make earnings management decisions in different countries.

Our results indicate that broader accounting flexibility is associated with an increase in AEM, corroborating the findings of Ahmed et al. (2013) and Christensen et al. (2015). These studies suggest that changes in accounting standards, such as the mandatory adoption of IFRS, can increase managers' discretion, resulting in greater accrual adjustments to achieve short-term earnings objectives.

Also, the empirical evidence presented by Roychowdhury (2006) and Zang (2012) also supports our conclusion, showing that in specific corporate events, such as secondary stock issuances, managers choose a trade-off between AEM and REM. By introducing an IAD, our results offer a new perspective on how accounting rules affect managerial decisions, better addressing the limitations of traditional models that use earnings management proxies. The proposed IAD provides a more precise understanding of the impact of accounting standards on earnings management practices in different institutional contexts.

The intuition behind our results is that managers with greater accounting discretion are more likely to prefer AEM over REM, as the consequences of AEM are typically smaller and short-term, while REM can have negative long-term effects on the firm's valuation. This preference is corroborated by Callao and Jarne (2010) and Cohen et al. (2008). Zang (2012) also confirms that relative costs and the rigidity of institutional and governance constraints have influenced the choice between AEM and REM.

However, it is important to consider the limitations of the study. Isidro et al. (2020) point out that many studies face difficulties in isolating the effects of individual country attributes due to the high interdependence between these attributes. The correlation between institutional and political variables could complicate the accurate attribution of changes in accounting standards to specific company results. Li et al. (2023) and Wysocki (2011) highlight that regulatory changes, such as the adoption of IFRS, have varied effects depending on the level of enforcement and institutional quality, simultaneously influencing the use of AEM and REM.

The DiD results, which used three estimates for the earnings management proxies: 1) without matching, 2) with entropy balancing, and 3) with Propensity score matching (PSM), address the "attribution problem" raised by Isidro et al. (2020), providing an approach to mitigate the effect of changes in accounting discretion on earnings management strategies. The analysis suggests that the increase in discretion with IFRS adoption, measured by the IAD and the dichotomous IFRS variable, is associated with an increase in AEM and a decrease in REM. This reinforces the idea that adopting accounting standards, such as IFRS, can significantly influence earnings management practices.

For future research, it is crucial to explore how different aspects of accounting standards and regulatory enforcement affect accounting discretion and earnings management choices in various institutional contexts. Furthermore, it would be valuable to further investigate the specific channels through which corruption perceptions are influenced by IFRS adoption, and to explore the experience with IFRS and how this varies across countries with different levels of institutions and

enforcement. A more detailed analysis of institutional variables and their interactions could provide additional insights into the effects of mandatory financial regulations and how they impact accounting practice globally.

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