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Earnings management of brazilian firms in the IFRS era: The role of economic and institutional factors

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Abstract

This study investigates whether accounting quality – more specifically regarding the level of earnings management by accruals – is associated with a country's economic and institutional factors that change over time in IFRS era. Based on a sample of 1,387 Brazilian firm-year observations and data regarding 2011 to 2018, econometric models are estimated considering the absolute amount of discretionary accruals as proxy for earnings management and different aspects related to economic and institutional factors of preeminent importance to an emerging economy. We show that in general, high inflation, stock market volatility, and policy uncertainty rates, as well as lower regulatory quality, on average, are associated with a higher level of earnings management in Brazil. This study contributes to the accounting literature in emerging economies discussing the role of economic and institutional factors on accounting quality in the IFRS era in one of the largest developing country in the world. Compared to developed countries or even to other developing economies, Brazil stands out as an emerging economy of considerable economic and political instability, making it a valuable setting for this analysis.

JEL Code: M41, E02, P48, D01
Keywords: Earnings management; Economic and institutional factors; Emerging economies

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Introduction

This study investigates the level of earnings management of Brazilian listed firms in order to verify whether earnings management practices in emerging countries can be explained by factors related to economic and institutional environment of the firms that change over time in International Financial Reporting Standards (IFRS) era. While previous literature seems to be focused on the effect of IFRS adoption on earning management, we analyse the role of several institutional and economic factor in IFRS era, taking a set of companies from Brazil – one of the largest emerging economies in the world with a unique institutional setting characterized by weak legal and regulatory systems (Eng et al., 2018).

Earnings management remains a subject of much discussion in the accounting literature, given, among other reasons, its practical consequences to regulatory agencies, investors, market agents and other stakeholders. From this perspective, previous empirical literature suggests the economic relevance linked to earnings management practices, in general pointing out that higher levels of earnings management are associated, for instance, with higher cost of capital (Strobl, 2013), higher information asymmetry (Bhattacharya et al., 2013), higher financial leverage (An et al., 2016), and lower value relevance (Shan, 2015).

In order to increase the quality of accounting information in Brazil, the Law 11.638/2007 determined the convergence of Brazilian accounting standards with the IFRS. Thus, since 2010 the Brazilian listed firms were required to comply fully with the IFRS, which are recognized as standards with the potential to improve the quality of accounting information, considering, among other factors, the fact that they are principles-based standards and may, therefore, better reflect the firms' financial situation (Barth et al., 2008). The mandatory adoption of IFRS – not only in Brazil but also in other countries – and its effect on the level of earnings management is not a new issue. In this sense, Armstrong et al. (2010) comment that, in theory, IFRS are more rigorous in accounting alternatives and measurement requirements when compared to the local standards of several countries, making it possible for their application to reduce the accounting options (Wan Ismail et al. 2013), and to limit the opportunistic management criterion in the determination of accounting values.

A large stream of literature provides empirical evidence of a positive effect of IFRS adoption on earnings management using either comprehensive samples including firms from several countries (e.g. Barth et al., 2008; Chen et al., 2010; Ipino and Parbonetti, 2017) or samples including firms from single countries, as is the case of Brazil (Coelho et al., 2011; Joia and Nakao, 2014; Rathke et al., 2016; Macedo et al., 2013; Pelucio-Grecco et al., 2014; Santos and Cavalcante, 2014) where, in theory, enforcement of legislation is considered low (La Porta et al., 1997). However, when critically analysing empirical studies on the IFRS adoption effects, Kimeli (2017) points out that the studies reviewed did not properly consider

the effects of other variables such as political, institutional, legal, and macroeconomic factors despite the fact that they are likely to affect IFRS adoption, thereby contributing to varied results across nations.

Another stream of literature suggests that significant differences in accounting practices remain even in the IFRS era (e.g. Kvaal and Nobes, 2010; Nobes, 2013, 2011, 2008, 2006; Lourenço et al., 2015; Lourenço et al., 2018). These differences maybe due to: the existence of gaps, overt and covert options, vague criteria and interpretations, and measurement estimations (Nobes, 2006). Rathke et al. (2016) also provide evidence that in the IFRS era Brazilian and Chilean firms reveal a higher level of earnings management when compared to firms from the main Continental European economies (France and Germany) and firms from Anglo-Saxon countries with IFRS tradition (UK and Australia). Thus, even with a single set of high quality accounting standards (IFRS), it seems that countries' specific characteristics still play an important role in the way IFRS is implemented in each country.

However, although we know that economic differences between countries affect the level of earnings management, more research is needed on the effect of economic factors within a single country. This study fills this gap in the accounting literature in Brazil, by analysing the role of economic and institutional factors on the level of earnings management of a sample of 221 listed Brazilian firms in the IFRS era (2011-2018), totalling 1,387 firm-year observations. As pointed out by Rathke et al. (2016), the literature on earnings management in emerging markets is still under development. Even after the political and economic instability that culminated in President Dilma Rousseff's impeachment in 2016, the Brazilian government has implemented a series of actions in order to attract and retain foreign investment (Reyes et al., 2019). In fact, despite the intense corruption scandals revealed by the "Car Wash Operation", in addition to the intense political dispute in the 2018 elections, recently the Brazilian economy presented a good performed among emerging markets (CNBC, 2019). Thus, in an environment of low enforcement and high economic and political instability in which Brazilian firms are inserted, it becomes a relevant setting in which to analyse the factors that may affect the quality of accounting information after the adoption of international accounting standards. We use the absolute value of the discretionary accruals based on Kothari et al. (2005) as a proxy for earnings management. Then, we relate the level of earnings management with economic and institutional factors of preeminent importance to an emerging market, namely inflation rate, stock market volatility, macroeconomic performance, regulatory quality, and policy uncertainty. The empirical findings suggest that high inflation, stock market volatility, and policy uncertainty rates, as well as lower regulatory quality, on average, are associated with a higher level of earnings management in Brazil.

This study adds to the previous literature on earnings management in the following ways. First, while much of the scholarly literature about earnings management focuses on analysing the impact of IFRS on accounting amounts – in general comparing pre- and post-adoption IFRS periods (Barth et al.,

2008; Doukakis, 2014; Jeanjean and Stolowy, 2008), including Brazilian firms (Cardoso et al., 2015; Cavalier-Rosa and Tiras, 2013; Joia and Nakao, 2014; Silva and Fonseca, 2015) or even the Latin American countries as a whole (García et al., 2017; Steinbech and Tang, 2014), we analyze only the era of IFRS adoption in Brazil. In this perspective, we demonstrate a relevant temporal analysis about the possible practice of earnings management (2011-2018), which could be of considerable interest not only for academics, but also for market agents, about the actual performance of earnings management after the mandatory adoption of IFRS in 2010.

Second, we analyse the national economic and institutional factors few explored in the accounting literature on the issue of earnings management, mainly the incentives related to the instability of the economic environment. It is possible to find studies analysing the implications of specific moments of national economic crisis on the level of earnings management (Choi et al., 2011; Flores et al., 2016; Silva et al., 2014), usually measuring periods of crisis only through dummy variables in front of the panel analysed in these surveys. We advance in this regard by continuously measuring year-on-year economic instability through inflation, stock market volatility and policy uncertainty, contributing to the empirical literature characterizing the Brazilian companies that may explain earnings management practices in Brazil (Macedo et al., 2013, Coelho et al., 2017), without considering the role of economic and institutional environment in their investigation.

Finally, we highlight the economic importance of Brazil, standing out as one of the most developed economies in Latin American (Rebossio, 2015). Beyond that, Brazil is one of the "largest emerging economies in the world and has its unique institutional setting characterized by weak legal and regulatory systems, historically strong state influence, and significant gaps between domestic accounting standards and IFRS" (Eng et al., 2018, p. 2). In this perspective, Brazil stands out as one of the first countries that have adopted IFRS in Latin American, together with Mexico, making important an empirical analysis about both the economic and institutional environments that influence the quality of the accounting information of the firms of this country.

The remainder of this paper is organized as follows. Section 2 discusses the impacts of economic and institutional factors on the accounting quality, outlining the hypotheses. Section 3 describes the research design and Section 4 presents the empirical findings. Finally, Section 5 presents the summary and concluding remarks.

Background and Hypotheses

The firm's reported earnings are managed when the managers exercise discretion over the accounting numbers, which may be for firm-value-maximizing or opportunistic purposes (Watts and Zimmerman,

1990). Searching for reasons capable of explaining the earnings manipulation, the literature attributes earnings management practices to diverse factors, such as the firm's financial characteristics (Armstrong et al., 2010), private incentives (Barth et al., 2008), and aspects related to the economic and institutional environment (Türegün, 2020; Flores et al., 2016; Ahmad-Zaluki et al., 2011). In line with these arguments, "the incidence and magnitude of earnings management is not only a function of firm-specific corporate governance mechanisms, it also reflects a firm's exposure to external, macro-institutional forces such as investor protection, enforcement risk, private litigation, and investor beliefs" (Filatotchev et al., 2019, p. 1).

Thus, from an Organizational Theory perspective, we can argue that the way in which firms interact with the environment is influenced by the characteristics of that environment (Greenwood and Miller, 2010). The institutional environment is characterized by the elaboration of norms and requirements that organizations must conform to in order obtain support and legitimacy of the environment in which they are inserted (Meyer and Scott, 1992), and is therefore formed by a network of formal institutions and informal behaviours of individuals and organizations. In this way, the institutional perspective leaves the concept of an environment formed only by human, material, and economic resources to highlight the presence of legal and cultural elements, such as values, symbols, myths, and belief systems (Carvalho and Viera, 2002).

Scott (2007) points out that the understanding of the pressures of the institutional environment on organizations is studied in several fields of science, such as Economics, Political and Social Sciences, and Sociology. It is in this vein that we note several studies that point out the ability of the institutional environment to interfere in the accounting practices (e.g., Ball et al., 2003; Gray, 1988; Landsman et al., 2012; Preiato et al., 2015).

However, the economic environment also seems to influence the firm's behaviour. The characteristics of the economic environment in which individuals and organizations are inserted seem to make relevant contributions in the way economic agents shape and execute their actions (Czaya and Hesser, 2001). In this discussion, Rennó (2001) clarifies that scenarios linked to high levels of economic instability and scarcity of resources can also affect individuals' interpersonal trust. In this approach, environmental rules create incentives for economic agents such as managers or even controlling shareholders, given their preferences and cognitive abilities and how they shape the organization's results (Bruton et al., 2010).

In this sense, in a broad way it is reasonable to assume that the economic and institutional environment has an impact on the valuation of financial and non-financial information, since institutional factors (such as regulation and execution) and economic factors (related to macroeconomic performance, inflation, etc.) influence the development of accounting norms and practices. It is therefore reasonable to

assume that factors related to the economic and institutional environment of the countries have the capacity to shape the quality of financial reports and, in turn, affect the extent to which information is incorporated into the prices of market transactions (Ariff et al., 2014).

Nevertheless, the role of economic and institutional factors on the accounting quality in Brazil seems to be little explored in that country's scholarly literature. That literature seems instead to be focused only on regulated aspects (Coelho et al., 2011; Pelucio-Grecco et al., 2014), disregarding other important factors of the institutional environment, and even characteristics related to the micro and macroeconomic aspects. Compared to developed countries or even to other developing countries, Brazil stands out as an emerging economy of considerable economic and political instability, making it a valuable setting for our analysis.

In this study, five large dimensions related to the economic and institutional environment in which firms are located are considered, based on previous international accounting literature, their importance to economic agents, investors, and standard setters, and the availability of data to measure such factors, namely: (i) inflation, (ii) stock market volatility, (iii) macroeconomic performance, (iv) regulatory quality, and (v) policy uncertainty.

Inflation

The macroeconomic environments of high economic uncertainty – often tied to high inflation rates – can lead to the expectation that others will act in ways guided only by their immediate needs, disregarding the consequences of their acts for the lives of others and for future collective results (Rennó, 2001). In this vain, Silva et al. (2014) point out that in an environment of macroeconomic instability, earnings management practices can be encouraged, since the environment can be used as an "excuse" to justify losses incurred through poor management practices, masking the manager and avoiding her/his possible resignation.

In this discussion, high levels of inflation rate bring several impacts to firms' operations, such as higher unemployment and less consumer spending, which can lead to falls in company sales volumes and a consequent decrease of their profits (Kyrtsou & Labys, 2006), in addition to decline in both long-run and short-run stock market development (Ho, 2019). Within this discussion, Chenaf-Nicet and Rougier (2016) also suggest that a high rate of inflation creates uncertainty for organizations in relation to their assets and liabilities, and whether they reasonably and faithfully represent the instability in the economic environment.

It is in this perspective that empirical studies in the accounting area report higher levels of earnings management in times of economic crisis (Flores et al., 2016; Dimitras et al., 2015; Silva et al.,

2014; Trombetta and Imperatore, 2014; Choi et al., 2011). Viana et al. (2017), for instance, show empirically a positive association between inflation rate and earnings management by discretionary accruals in Latin America firms. Thus, it seems that the instability of the economic environment is able to induce insiders to act opportunistically in an attempt to maintain their "good results", even to the detriment of the other parties involved. Therefore, we hypothesize the following:

H_1: There is a positive association between the level of inflation and the level of earnings management.

Stock Market Volatility

According to Easley and O'Hara (2004), the methods that firms use to report earnings may be related to information risk and, therefore, to stock market volatility. In this discussion, the uncertainty environment generated by stock market volatility could alter the perception of economic agents – including changing their policies and changing their business goals. From this perspective, Rennó (2001, p.50) also points out that economic environments with high levels of uncertainty – such as highly volatile equity markets – can encourage economic agents, as managers, to act "only guided by their immediate needs, disregarding the consequences of their actions on the lives of others and for future collective results".

In the same direction, Koonce et al. (2005) point out that virtually all financial accounting issues involve decision-making, with perceptions of reality changing in times of uncertainty – which could be related to economic instability in the market – and changing the way economic facts are recorded. From the same perspective, Chen et al. (2012) also document empirical findings by suggesting a positive association between managerial discretion and idiosyncratic return volatility.

In this discussion, for instance, by taking into account 2,368 observations from the four largest Latin American countries in terms of economic development (Brazil, México, Chile, and Peru) between 2010 and 2016, Viana et al. (2017) point to empirical evidences of a positive relationships between earnings management and stock market volatility. Domingues et al. (2015) present similar results considering a sample of English firms from 1988 to 2015. Moreover, by considering a large data sample of 95,270 US firm-year observations, Rajgopal and Venkatachalam (2011) find that worsening earnings quality, usually associated to high earnings management, is positively associated with rising return volatility over the 40 years period 1962–2001. By considering those arguments, we hypothesize that:

H_2: There is a positive association between the level of stock market volatility and the level of earnings management.

Macroeconomic Performance

The macroeconomic performance of the country also seems to have implications for the accounting system of the economies, which may alter the quality and level of disclosure of firms (Glaum et al., 2013, Khanna et al., 2004) and the incentives of economic agents to engage in earnings management (Owens et al., 2016). In this view, Gaio (2010) comments that countries with poor macroeconomic performance may not provide adequate infrastructure, been too costly for firms to support credible external verification of accounting information, which consequently incentive firms to have fewer incentives to assure better earnings quality (i.e. earnings management). Similarly, Cai et al. (2008) suggest that high levels of macroeconomic performance of countries may alter the demand for financial information from market participants, encouraging firms to improve the quality of financial reporting. In addition, given that better macroeconomic performance attracts foreign direct investment (Saini and Singhania, 2018), it is likely that managers have fewer opportunities to become involved in earnings management practices through greater external monitoring.

Based on a sample of 70,955 observations for the fiscal years 1993-1999 across 48 countries, Shen and Chih (2005) find that higher macroeconomic performance decreases the level of earnings management. By taking into account 568 firm-year from the hotel industry in 15 countries between 2007 and 2013, Paiva and Lourenço (2016) also demonstrate a negative association between earnings management and macroeconomic performance. Similarly, using data from 19 countries over the 1990-2015 period, El Ghoul et al. (2020) also find a negative association between earnings management and macroeconomic performance. Therefore, given the influence of the level of macroeconomic performance on the level of earnings management, it can be expected that different levels of macroeconomic performance across time are associated with different levels of earnings management. Therefore, we hypothesize that:

H_3: There is a negative association between the level of macroeconomic performance and the level of earnings management.

Regulatory Quality

Possibly one of the most important institutional factors mentioned in the literature, the level of legal enforcement of countries is point out in several studies as a possible explanation for the improvement of accounting information after IFRS adoption (Christensen et al., 2013; Holthausen, 2009). In this discussion, "academics and practitioners have agreed that enforcement of applicable accounting standards, in particular, has a bearing on financial reporting practice and related market outcomes" (p. Preiato et al., 2015, p. 2). Thus, the quality of the financial information would be a function of both the quality of the

applied accounting standards and the overlapping of the regulation of the standards by the firms. Hope (2003) points out that with adequate absence of application, even the best accounting standards will be ineffective.

Cai et al. (2008) examined the effect of IFRS and its application in managing financial statement results using more over 100,000 base year observations from 2000 to 2006 in 32 countries and pointed out that countries with greater oversight usually have less earnings management levels. On this basis, in a multinational analysis involving 16 European countries, Landsman et al. (2012) present empirical results of an improvement in the accounting information content after the adoption of IFRS, but this improvement is influenced by the level of enforcement in the countries analysed. From this perspective, thus, "the enforcement of the law might eliminate opacity and information asymmetries, which eventually would decrease managers' discretionary power" (Saona et al., 2020, p. 127).

Based on those arguments, in view of a possible relationship between the practices of earnings management and the level of legal enforcement of countries, as well as the influence of this institutional factor on the quality of information before and after the adoption of IFRS, it is hypothesized that:

H_4: There is a negative association between the level of regulatory quality and the level of earnings management.

Policy Uncertainty

Concerns on policy uncertainty seem to have intensified in the wake of the global financial crisis, serial crises in the European market, and partisan policy disputes in the United States (Baker et al., 2016). Policy uncertainty includes monetary and fiscal policy uncertainty that may cause fluctuations in firm expectations and managerial judgments (Yung and Root, 2019). Traditionally, the literature on policy uncertainty "mainly focuses their attention on the examination of the effects of policy uncertainty on macroeconomic variables" (Antonakakis et al., 2013, p. 87). However, more recently, some studies also dedicate to analyse several negative consequences for firms and investors operating in uncertain political environments (e.g., Yung and Root, 2019; Gulen and Ion, 2016; Kang et al., 2014; Wang et al., 2014; Antonakakis et al., 2013). For example, Gulen and Ion (2016) document a strong negative relationship between firm-level capital investment and the aggregate level of uncertainty associated with future policy and regulatory outcomes. Besides, Antonakakis et al. (2013) also empirically demonstrate strong evidences that a rise in the policy uncertainty dampens stock market returns. Moreover, Kang et al. (2014) also document results by suggesting that policy uncertainty depresses firms' investment decisions; this effect, in addition, seems to be greater for firms with higher firm-level uncertainty and during a recession.

Considering a setting of 52,352 firm-year observations from China, Wang et al. (2014) also demonstrate that policy uncertainty and corporate investment are inversely related.

Research specifically on the effect of policy uncertainty on earnings management appears to be scanty. Recently, based on 81,395 firm-year observations from 18 countries, among 2001–2014, Yung and Root (2019) find convincing evidences that policy uncertainty is associated with earnings management. More specifically, these authors document that firms increase (decrease) earnings management when policy uncertainty is high (low), given that firms faced with a more uncertainty environment can use account amounts in order to counterbalance economic policy uncertainty. Specifically in the case of emerging markets, as in the case of Brazil, given the lower enforcement – which in itself could already facilitate the manipulation of profits; coupled with an increase in pressure from managers for better results, given the negative consequences to firms raised by high uncertainty environments; one might expect to witness stronger tendencies to practice earnings management in periods of higher levels of policy uncertainty. Therefore, we hypothesize that:

H_5: There is a positive association between the level of policy uncertainty and the level of earnings management.

Research Design

Sample

The empirical study relies on a sample of 221 Brazilian non-financial listed firms. We use data from the years 2011 to 2018, encompassing, thus, only the post-IFRS adoption period, considering the mandatory IFRS adoption in Brazil in 2010. It should be noted that in 2016 the Brazilian stock market had the highest volume of domestic trading in Latin America (WEF, 2017). In addition, recent political scandals in the region appear to have caused negative economic implications in the region (Barbosa Filho, 2017). These factors, among others, make the discussions about earnings management practices in the country, from both a scholarly and a professional point of view, highly valuable.

The final sample comprises a total of 1,387 firm-year observations. Table 1 presents the sample distribution by industry (SIC code) and year. The Manufacturing is the most representative industry, which represents around 54% of the sample. Besides, for the whole period analysed, we observe a continuous distribution of the number of observations per year, around 12% for each fiscal year.

Table 1
Sample distribution by industry and year

Panel A: Industry (SIC Code)

SIC Code	Division	N	%	% Cum.
2000-3999	Manufacturing	748	53.93	53.93
4000-4999	Transportation, Communications, Electric, Gas and Sanitary service	420	30.28	84.21
5200-5999	Retail Trade	77	5.55	89.76
7000-8999	Services	142	10.24	100.00
	Total	1,387	100.00	-

Panel B: Year

Year	N	%	% Cum.
2011	159	11.46	11.46
2012	164	11.82	23.29
2013	177	12.76	36.05
2014	179	12.91	48.95
2015	182	13.12	62.08
2016	175	12.62	74.69
2017	177	12.76	87.45
2018	174	12.55	100.00
Total	1,387	100.00	-

Earnings management measures

Following an extensive accounting literature (e.g. Osma et al., 2020; García-Sánchez et al., 2020; Baker et al., 2019; Goel, 2018; Huang et al., 2018; Cupertino et al., 2017; Enomoto et al., 2015; Doukakis, 2014; Choi et al., 2011; Chen et al., 2010), we use the absolute amount of discretionary accruals as the proxy for earnings management. In fact, "manipulation of discretionary accruals is a common approach by which firms engage in earnings management, and it is discussed extensively in the literature" (Kama and Melumad, 2020, p. 361), although some noisy issues on the estimation of accruals process (e.g., McNichols and Stubben, 2018). The absolute amount of discretionary accruals are computed based on the well-known Jones (1991) model, modified by Dechow et al. (1995). Moreover, following a large and relevant body of previous literature (e.g., Osma et al., 2020; Lara et al., 2020; Black et al., 2017), we include as an additional regressor the firms' return on assets as suggested by Kothari et al. (2005). We

consider the residuals from Equation (1) as the amount of discretionary accruals ($|Acc|_{it}$), in unsigned approach.

$$\frac{TA_{it}}{Ats_{it-1}} = \beta_0 \frac{1}{Ats_{it-1}} + \beta_1 \frac{(\Delta Sales_{it} - \Delta AR_{it})}{Ats_{it-1}} + \beta_2 \frac{GPPE_{it}}{Ats_{it-1}} + \beta_3 ROA_{it} + \varepsilon_{it} \quad (1)$$

where, for each firm i in year t, TA_{it} are the total accruals, calculated as firm i's net income minus cash flows from operations in year t taken from the statement of cash flows. Ats_{it} is the total assets. $\Delta Sales_{it}$ is the change in sales. ΔAR_{it} is the change in accounts receivable. $GPPE_{it}$ is the gross property, plant, and equipment. ROA_{it} is the net income before extraordinary items scaled to total assets.

Equation (1) is estimated over each industry-year clusters with at least 15 observations. Thus, I expect to partially controls for industry-wide changes in economic conditions that affect the accruals estimations and allows the coefficients to vary across time (Doukakis, 2014). The accounting data used to compute each of these measures were collected from the Compustat database.

Economic and institutional factors

In order to investigate whether accounting quality is associated with a country's economic and institutional factors that change over time, we use the following economic and institutional factors: inflation, stock market volatility, macroeconomic performance, regulatory quality, and policy uncertainty. Table 2 presents the way that each of these variables is measured, as well as the source of the data used in this study.

Table 2
Economic and institutional factors: proxies, references and data

Dimension	Specific descriptions	References	Source
Inflation ($Inflation_t$)	It represents the cost of the basic basket at a given time expressed relative to a base year in the consumer price index (CPI), and the percentage change in the CPI over a certain period is consumer price inflation, the most widely used measure of inflation. (For example, if the base year CPI is 100 and the current CPI is 110, inflation is 10 percent over the period.) The CPI basket is mostly kept constant over time for consistency, but it' is tweaked occasionally to reflect changing consumption patterns—for example, to include new hi-tech goods and to replace items no longer widely purchased.	Bruno and Easterly (1998); Klomp and Haan (2010); Stiglitz (2000); Viana et al. (2017)	International Monetary Fund (2020a)
Stock Market Volatility ($Volatility_t$)	Standard deviation of the daily logarithmic returns of Ibovespa, considering the common assumption of 252 trading days in the year	Bruno and Easterly (1998); Klomp and Haan (2010); Stiglitz (2000); Viana et al. (2017)	Calculated by the authors
Macroeconomic Performance ($Macro\ Performance_t$)	GDP measures the monetary value of final goods and services — that is, those that are bought by the final user — produced in a country in a given period of time (say a quarter or a year). It counts all of the output generated within the borders of a country. GDP is composed of goods and services produced for sale in the market and also includes some nonmarket production, such as defence or education services provided by the government. To determine "real" GDP, its nominal value is adjusted to take into account price changes to allow us to see whether the value of output has gone up because more is being produced or simply because prices have increased. The growth rate of real GDP was used as an indicator of the general health of the economy. In broad terms, an increase in real GDP is interpreted as a sign that the economy is doing well. When real GDP is growing strongly, employment is likely to be increasing as companies hire more workers for their factories and people have more money in their pockets. When GDP is shrinking, as it did in many countries during the recent global economic crisis, employment often declines.	Dimitras et al. (2015); Engelberg et al. (2012); Gopalan and Jayaraman (2012); Simpson (2013)	International Monetary Fund (2020b)
Regulatory Quality ($Regulatory_t$)	More than 50 items of qualitative and quantitative aspects related to the macroeconomic and political scenario are weighted in the calculation of the index, such as (i) intensity of local competition, (ii) financial freedom, (iii) regulation of commodity and fuel prices by the State, (iv) factors related to customs, commercial, labour, and fiscal regulations, among other aspects. Different international bases are captured and consolidated for general index formation, such as Freedom House Countries at the Crossroads, Latinobarometro, Institutional Profiles Database, Business Enterprise Environment Survey, etc. The countries' scores, catalogued per year, range from -2.5 for countries with lower regulatory quality to +2.5 for countries with higher regulatory quality.	Chen et al. (2015); Isidro and Raonic (2012); Wieczynska (2015)	World Bank (2020)
Policy Uncertainty (Policy $Uncertainty_t$)	Policy uncertainty includes monetary and fiscal policy uncertainty that may cause fluctuations in firm expectations and managerial judgments. To measure policy-related economic uncertainty, Baker et al. (2016) construct an index from three types of underlying components. One component quantifies newspaper coverage of policy-related economic uncertainty. A second component reflects the number of federal tax code provisions set to expire in future years. The third component uses disagreement among economic forecasters as a proxy for uncertainty.	Gulen and Ion (2016); Kang et al. (2014); Baker et al. (2016); Yung and Root (2019)	Baker et al. (2016)

Empirical model

To test the research hypotheses, we estimate the following regression model to examine the effect of economic and institutional factors on the level of earnings management:

$$|\text{Acc}|_{i,t} = \beta_0 + \beta_1 \text{Country Factors}_t + \gamma \text{ Controls}_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where |Acc| is absolute discretionary accruals for the firm i in year t, based on Kothari et al. (2005). Country Factors is the variables that represent the economic and institutional factors (inflation, stock market volatility, macroeconomic performance, regulatory quality, and policy uncertainty) in year t.

Based on extensive previous earnings management literature (e.g., Osma et al., 2020; García-Sánchez et al., 2020; Baker et al., 2019; Goel, 2018; Huang et al., 2018; Cupertino et al., 2017; Enomoto et al., 2015; Doukakis, 2014; Choi et al., 2011; Chen et al., 2010), we also consider in Equation (2) several control variables. Size is the natural logarithm of total assets of the period in US dollar. Leverage is the total leverage scaled by total assets of the period. Growth is the percentual growth of net sales from the year t-1 to t. Ebit is the earnings before interest and taxes scaled by total assets of the period. Turn is the net sales scaled by total assets of the period. Dissue is the percentual growth of total leverage from the year t-1 to t. Tangibility is the gross property, plant and equipment scaled by total assets of the period. ADR is a dummy variable, which equals one for firm-year observations with ADR in the U.S. market, and zero otherwise. Loss is a dummy variable, which equals one for firm-year observations with negative net income, and zero otherwise. Big Four is a dummy variable, which equals one for firm-year observations if the firm's auditor is PwC, KPMG, E&Y, or D&T, and zero otherwise. All variables description is described in Appendix A.

The proposed model is estimated using OLS estimations[1], controlled by industry fixed effects. All continuous firm variables are winsorized at 1% and 99% tail in order to avoid outliers (Cox, 2006), and the standard errors are corrected for firm-clustering effects (Petersen, 2009).

[1] Given the possible inconsistency of the estimated parameters due to the truncation of the dependent variable, robustness tests are run considering Tobit (1958) regression models. In general, the estimated coefficients are similar to those presented with OLS estimates.

Empirical Findings

Table 3 presents the descriptive statistics of the continuous variables used in the empirical study. The mean value of the absolute discretionary accruals is 0.0653, which is consistent with earlier earnings management literature on emerging markets (e.g. Rathke et al., 2016; Saona and Muro, 2018). Moreover, from the 1,387 firm-year observations, around 32% present negative net income, 21% has ADRs listed on US stock exchange, and 73% are audited by big four auditors.

Table 3
Descriptive statistics

Variables	N	Mean	Median	p.25	p.75	SD	Min	Max
$\|Acc\|_{it}$	1,387	0.0653	0.0471	0.0222	0.0861	0.0626	0.0001	0.3587
$Size_{it}$	1,387	6.4281	6.5452	5.2054	7.6809	1.9044	0.4147	10.1486
$Leverage_{it}$	1,387	0.6834	0.6049	0.4573	0.7743	0.3840	0.0507	1.7966
$Growth_{it}$	1,387	0.0952	0.0751	-0.0300	0.1616	0.3982	-0.8635	3.1841
$EBIT_{it}$	1,387	0.0517	0.0591	0.0194	0.1058	0.1123	-0.6800	0.3096
$Turn_{it}$	1,387	0.7208	0.6535	0.4181	0.9355	0.4631	0.0000	3.4648
$Dissue_{it}$	1,387	0.1233	0.0782	-0.0256	0.1875	0.3847	-0.7515	4.2950
$Tangibility_{it}$	1,387	0.5197	0.4818	0.2177	0.7872	0.3837	0.0020	1.9178
$Loss_{it}$	1,387	0.3172	-	-	-	-	-	-
ADR_{it}	1,387	0.2069	-	-	-	-	-	-
Big $Four_{it}$	1,387	0.7311	-	-	-	-	-	-

Continuous variables. $|Acc|_{it}$ represents the accruals-based earnings management according to Kothari et al. (2005) model. $Size_{it}$ is the natural logarithm of total assets of the period in US dollar. $Leverage_{it}$ is the total leverage scaled by total assets of the period. $Growth_{it}$ is the percentual growth of net sales from the year t-1 to t. $Ebit_{it}$ is the earnings before interest and taxes scaled by total assets of the period. $Turn_{it}$ is the net sales scaled by total assets of the period. $Dissue_{it}$ is the percentual growth of total leverage from the year t-1 to t. $Tangibility_{it}$ is the gross property, plant and equipment scaled by total assets of the period. Dummy variables. $Loss_{it}$ is a dummy variable, which equals one for firm-year observations with negative net income, and zero otherwise. ADR_{it} is a dummy variable, which equals one for firm-year observations with ADR in the U.S. market, and zero otherwise. Big $Four_{it}$ is a dummy variable, which equals one for firm-year observations if the firm's auditor is PwC, KPMG, E&Y, or D&T, and zero otherwise. The mean of dummy variables represents the percentual of firm-year observations that assumed value 1.

Table 4 shows the values of economic and institutional factors by year. In general, we observe a high level of inflation and stock volatility during 2014 to 2016, as well a considerable decline of macroeconomic performance in the same period, when compared with other years analysed. This information confirms the period of macroeconomic recession experienced by the Brazilian economy in recent years, especially around 2014-2016 (Barbosa Filho, 2017; Holland, 2019), originated, among others, from poor public management (Holland, 2019), increased political uncertainty in the 2014 elections (Financial Times, 2014), as well as from the corruption scandals revealed by the massive operation of the Brazilian federal police, known as "Operation Car Wash" (BBC, 2018). Table 4 also reveals high levels of policy uncertainty between 2016-2018, possibly the result of intense political uncertainty after Dilma Houlsef's presidential impeachment in 2016, as well as the uncertainty surrounding the 2018 presidential elections (Forbes, 2018).

Table 4
Economic and institutional factors by year

Dimension	2011	2012	2013	2014	2015	2016	2017	2018
$Inflation_t$	6.6400	5.4000	6.2000	6.3300	9.0300	8.7400	3.4500	3.6600
$Volatility_t$	0.2500	0.2200	0.2000	0.2500	0.2300	0.2700	0.1900	0.2200
Macro $Performance_t$	0.5982	-0.2099	0.0351	-0.0350	-1.0866	0.0001	0.4607	-0.3175
$Regulatory_t$	0.1700	0.0900	0.0700	-0.0800	-0.1900	-0.2100	-0.1100	-0.3100
Policy $Uncertainty_t$	7.3819	7.2516	7.4114	7.4864	8.0056	8.2180	8.3328	7.5914

$Inflation_t$, $Volatility_t$, Macro $Performance_t$, $Regulatory_t$, Policy $Uncertainty_t$ are economic and institutional factors related to inflation, stock market volatility, macroeconomic performance, regulatory quality, and policy uncertainty, respectively.

Table 5 presents the correlation matrix between the continuous variables used in the empirical analysis. The variables Inflation, Volatility, and Policy Uncertainty present a positive and significant correlation with the proxy of earnings management, by indicating that the instability of the economic environment is able to induce managers to manipulate the accounting numbers (Choi et al., 2011; Flores et al., 2016, Viana Júnior et al., 2017). Moreover, we find a positive association of Policy Uncertainty with Inflation, Volatility, which also confirm previous economics literature (e.g., Jones and Olson, 2013). Besides, we also observe that the variables Macro Performance and Regulatory are negatively correlated with earnings management levels, by suggesting that high levels of macroeconomic performance and

enforcement can mitigate earnings management practices. Although these results are not based on multivariate analysis, they confirm the hypotheses H1, H2, H3, H4 and H5 of this study. Moreover, we also find a positive (negative) and significant correlation between the earnings management measure and Leverage, Growth, Turn, and Dissue (Size, Ebit, and Tangibility), suggesting the importance of controlling for these variables in multivariate analyse.

Table 6 presents the summary statistics resulting from the estimation of Model (2) regarding the relationship between Brazilian economic and institutional factors and the level of earnings management. The coefficients of the variables Inflation (0.001, t-stat = 1.83), Volatility (0.089, t-stat = 1.55), and Policy Uncertainty (0.008, t-stat = 1.95), which seek to capture the effects of the economic environment, are positive and statistically significant at conventional levels. These results indicate that the economic environment seems to affect the quality of accounting information, since in an environment of economic instability – characterized, among other, by high inflation, volatility, and policy uncertainty – managers feel motivated to manage the accounting numbers in order to avoid losses, or even to counterbalance economic downturns (Yung and Root, 2019; Viana et al., 2017; Flores et al., 2016; Rajgopal and Venkatachalam, 2011). These findings hence corroborate H1, H2, and H5.

Table 5
Pearson correlation matrix between continuous variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. $\|Acc\|_{it}$	-											
2. $Inflation_t$	0.056*											
3. $Volatility_t$	0.020*	-0.388***										
4. Macro $Performance_t$	-0.049*	-0.448***	-0.280***									
5. $Regulatory_t$	-0.057**	-0.001	-0.703***	0.483***								
6. Policy $Uncertainty_t$	0.056**	0.153***	0.066**	-0.057**	-0.604***							
7. $Size_{it}$	-0.251***	-0.024	-0.011	0.033	0.041	-0.037						
8. $Leverage_{it}$	0.167***	-0.010	0.045*	-0.031	-0.085***	0.082***	-0.243***					
9. $Growth_{it}$	0.086***	-0.026	-0.014	0.011	0.050*	-0.074***	0.116***	-0.042				
10. $Ebit_{it}$	-0.087***	-0.021	-0.011	0.022	0.066***	-0.097***	0.234***	-0.386***	0.159***			
11. $Turn_{it}$	0.067***	0.004	-0.032	-0.003	0.036	-0.031	-0.196***	0.032	0.031	0.179***		
12. $Dissue_{it}$	0.089***	0.031	-0.043	-0.021	0.084***	-0.102***	0.106***	0.015	0.305***	0.011	-0.059**	
13. $Tangibility_{it}$	-0.090***	-0.021	-0.015	0.020	0.045***	-0.030	-0.075***	0.129***	0.008	-0.182***	-0.046*	-0.065**

$|Acc|_{it}$ represents the accruals-based earnings management according to Kothari et al. (2005) model. $Inflation_t$ is the percentage related to annual Consumer Price Index. $Volatility_t$ is the volatility of Ibovespa – the principal benchmark index of stocks from local stock market (B3). Macro $Performance_t$ is the change in annual real GDP. $Regulatory_t$ is the index of regulatory quality according to World Bank. Policy $Uncertainty_t$ is the policy uncertainty index according to Baker et al. (2016). $Size_{it}$ is the natural logarithm of total assets of the period in US dollar. $Leverage_{it}$ is the total leverage scaled by total assets of the period. $Growth_{it}$ is the percentual growth of net sales from the year t-1 to t. $Ebit_{it}$ is the earnings before interest and taxes scaled by total assets of the period. $Turn_{it}$ is the net sales scaled by total assets of the period. $Dissue_{it}$ is the percentual growth of total leverage from the year t-1 to t. $Tangibility_{it}$ is the gross property, plant and equipment scaled by total assets of the period. All continuous firm variables are winsorized at 1% and 99% tail in order to avoid outliers. Number of observations = 1,387.

*, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively.

Table 6
Effects of economic and institutional factors on earnings management

Variables	Equation (1)	Equation (2)	Equation (3)	Equation (4)	Equation (5)
_cons	0.094***	0.084***	0.102***	0.102***	0.045
	(6.24)	(4.38)	(6.79)	(6.96)	(1.42)
$Inflation_t$	0.001*				
	(1.83)				
$Volatility_t$		0.089*			
		(1.55)			
$Macro\ Performance_t$			-0.416		
			(-1.43)		
$Regulatory_t$				-0.017*	
				(-1.69)	
$Policy\ Uncertainty_t$					0.008*
					(1.94)
$Size_{it}$	-0.009***	-0.009***	-0.009***	-0.009***	-0.008***
	(-4.79)	(-4.81)	(-4.95)	(-4.82)	(-4.83)
$Leverage_{it}$	0.016*	0.016*	0.018**	0.015*	0.015*
	(1.86)	(1.84)	(2.01)	(1.75)	(1.756
$Growth_{it}$	0.016**	0.015**	0.015**	0.015**	0.015**
	(2.04)	(2.01)	(1.98)	(2.00)	(2.01)
$Ebit_{it}$	-0.023	-0.022	-0.020	-0.021	-0.020
	(-0.73)	(-0.72)	(-0.61)	(-0.69)	(-0.66)
$Turn_{it}$	0.007	0.007	0.008	0.007	0.007
	(1.25)	(1.27)	(1.40)	(1.31)	(1.29)
$Dissue_{it}$	0.011*	0.011*	0.010*	0.012*	0.012*
	(1.76)	(1.79)	(1.72)	(1.91)	(1.95)
$Tangibility_{it}$	-0.017***	-0.017***	-0.016***	-0.01***	-0.017***
	(-3.12)	(-3.14)	(-2.83)	(-3.09)	(-3.12)
$Loss_{it}$	0.005	0.006	0.005	0.006	0.006
	(1.07)	(1.17)	(1.07)	(1.29)	(1.23)
ADR_{it}	0.009	0.009	0.009	0.009	0.009
	(1.51)	(1.53)	(1.58)	(1.52)	(1.52)
$Big\ Four_{it}$	-0.002	-0.002	-0.001	-0.001	-0.001
	(-0.32)	(-0.28)	(-0.12)	(-0.19)	(-0.24)
N	1,218	1,218	1,218	1,218	1,218
F-test	8.52***	8.72***	8.54***	8.54***	8.57***
R^2 overall	0.2738	0.2754	0.2762	0.2749	0.2705

The dependent variable is |Acc|it, which represents the accruals-based earnings management according to Kothari et al. (2005) model. Inflationt is the percentage related to annual Consumer Price Index. Volatilityt

is the volatility of Ibovespa – the principal benchmark index of stocks from local stock market (B3). Macro Performancet is the change in annual real GDP. Regulatoryt is the index of regulatory quality according to World Bank. Policy Uncertaintyt is the policy uncertainty index according to Baker et al. (2016). Sizeit is the natural logarithm of total assets of the period in US dollar. Leverageit is the total leverage scaled by total assets of the period. Growthit is the percentual growth of net sales from the year t-1 to t. Ebitit is the earnings before interest and taxes scaled by total assets of the period. Turnit is the net sales scaled by total assets of the period. Dissueit is the percentual growth of total leverage from the year t-1 to t. Tangibilityit is the gross property, plant and equipment scaled by total assets of the period. Lossit is a dummy variable, which equals one for firm-year observations with negative net income, and zero otherwise. ADRit is a dummy variable, which equals one for firm-year observations with ADR in the U.S. market, and zero otherwise. Big Fourit is a dummy variable, which equals one for firm-year observations if the firm's auditor is PwC, KPMG, E&Y, or D&T, and zero otherwise. Dummy industries are included in all models. All continuous firm variables are winsorized at 1% and 99% tail in order to avoid outliers. Standard errors corrected for firm-clustering effects (Petersen, 2009).
*, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively.

Moreover, we also find that the variable Regulatory (-0.017, t-stat = 1.69) present negative and statistically significant coefficient. This result is also consistent with the findings of Landsman et al. (2012) regarding the influence of the level of enforcement on the improvement of accounting quality after the IFRS adoption. More specifically, these results suggest that in periods of greater enforcement, Brazilian firms seem to be less involved in accruals-based earnings management practices. This empirical result hence corroborates H4.

Finally, contrary to our theoretical background, the coefficient of the variable Macro Performance (-0.416, t-stat = 1.43) is not statistically significant. This result suggests that in Brazil the macroeconomic performance seems to exert no influence on the practices of earnings management by managers, contrary to previous international accounting literature which demonstrates the significant of such country-level factor (e.g., Shen and Chih, 2005; Paiva and Lourenço, 2016; El Ghoul et al., 2020). Therefore, our findings do not allow us to corroborate H3.

Regarding the control variables, our results suggest that smaller (Size), high leveraged (Leverage), high growth (Growth), and less "tangibilized" firms (Tangibility), on average, are associated to high levels of earnings management. Overall, those findings are aligned with previous literature (e.g., Cupertino et al., 2017; Silva et al., 2014). We also find that the variables Ebit, Turn, Loss, ADR, and Big Four do not explain the level of earnings management of Brazilian listed firms. Indeed, the fact of Big Four auditors are not significantly associated to a higher accounting information quality seems to be a little surprise, given the importance of auditor in emerging markets – usually characterized by lower levels of country-level informativeness (Martins and Barros, 2021). However, previous auditing literature seems to raise doubts on the real role of the Big Four auditors in providing higher audit quality (e.g., Lawrence et al., 2011), even in emerging markets countries (Abid et al., 2018). From this perspective, differences in audit-quality between Big Four and non-Big Four auditors could be related to client characteristics, such

as client size (Lawrence et al., 2011), and not necessarily due to the fact that these auditors promote better auditing process than their counterparts – which would justify the non-significance of the variable Big Four in our estimates.

Seeking more robustness in our results, we proceed in some alternative analyses as follow. First, we estimate Model (2) by splitting the sample into firm-year observations with negative and positive discretionary accruals, as suggested by previous earnings management literature (e.g., Chen et al., 2018a; Chan et al., 2015; Epps and Guthrie, 2010). The results concerning positive accruals estimations, evidenced in Table 7, confirm the estimations of previous findings, by suggesting that in periods of high stock market volatility (Volatility = 0.187, t-stat = 1.64) and policy uncertainty (Policy Uncertainty = 0.017, t-stat = 2.33), as well as lower regulatory quality (Regulatory = -0.033, t-stat = -1.88), firms seem to be more engaged in earnings management practices by accruals – which confirm H2, H4, and H5. Furthermore, taking into account the negative accruals estimations, our results also suggest that high levels of inflation (Inflation = 0.017, t-stat = 2.33), and lower levels of macroeconomic performance (Macro Performance = -0.636, t-stat = -1.70), seem to incentive earnings management in Brazilian firms. Finally, concerning the controls inserted, we observe that overall they are significant in only positive, or even negative, accruals estimations. This confirms the expectation that the variation between positive and negative accruals is explained by different factors.

Table 7
Effects of economic and institutional factors on earnings management: Positive and negative accruals

Variables	Positive Accruals					Negative Accruals				
	Eq. (1)	Eq. (2)	Eq. (3)	Eq. (4)	Eq. (5)	Eq. (1)	Eq. (2)	Eq. (3)	Eq. (4)	Eq. (5)
_cons	0.117***	0.082**	0.125***	0.123***	-0.007	0.073***	0.074***	0.077***	0.079***	0.051
	(4.31)	(2.268)	(4.72)	(4.98)	(-0.13)	(4.784)	(3.64)	(5.43)	(5.39)	(1.48)
$Inflation_t$	0.001					0.001*				
	(0.78)					(1.45)				
$Volatility_t$		0.187*					0.026			
		(1.64)					(0.42)			
Macro $Performance_t$			0.156					-0.636*		
			(0.30)					(-1.70)		
$Regulatory_t$				-0.033*					-0.011	
				(-1.88)					(-0.90)	
Policy $Uncertainty_t$					0.017**					0.004
					(2.33)					(0.92)
$Size_{it}$	-0.010***	-0.001***	-0.010***	-0.009***	-0.009***	-0.007***	-0.008***	-0.008***	-0.007***	-0.007***
	(-3.45)	(-3.50)	(-3.48)	(-3.55)	(-3.58)	(-3.56)	(-3.58)	(-3.74)	(-3.56)	(-3.58)
$Leverage_{it}$	-0.003	-0.003	-0.003	-0.005	-0.005	0.025***	0.025***	0.028***	0.025***	0.025***
	(-0.21)	(-0.22)	(-0.20)	(-0.42)	(-0.41)	(2.74)	(2.73)	(3.24)	(2.72)	(2.70)
$Growth_{it}$	0.029***	0.029***	0.030***	0.029***	0.031***	-0.004	-0.004	-0.006	-0.005	-0.005
	(2.92)	(2.94)	(2.91)	(2.94)	(3.07)	(-0.54)	(-0.59)	(-0.68)	(-0.59)	(-0.61)
$Ebit_{it}$	-0.078*	-0.078*	-0.075	-0.079*	-0.077*	0.013	0.014	0.014	0.015	0.015
	(-1.76)	(-1.79)	(-1.64)	(-1.81)	(-1.78)	(0.31)	(0.33)	(0.34)	(0.36)	(0.37)
$Turn_{it}$	0.005	0.004	0.006	0.005	0.005	0.011*	0.012*	0.013*	0.012*	0.012*
	(0.59)	(0.62)	(0.74)	(0.68)	(0.72)	(1.76)	(1.80)	(1.94)	(1.83)	(1.80)
$Dissue_{it}$	0.008	0.009	0.008	0.010	0.010	0.012	0.012	0.011	0.013	0.013
	(0.99)	(1.02)	(0.93)	(1.14)	(1.17)	(1.38)	(1.42)	(1.32)	(1.45)	(1.48)
$Tangibility_{it}$	-0.009	-0.009	-0.008	-0.008	-0.00	-0.020***	-0.021***	-0.021***	-0.020***	-0.021***
	(-0.99)	(-0.93)	(-0.80)	(-0.89)	(-0.81)	(-3.06)	(-3.12)	(-3.13)	(-3.12)	(-3.11)
$Loss_{it}$	-0.001	-0.001	0.001	-0.001	-0.001	0.006	0.007	0.005	0.007	0.007

	(-0.09)	(-0.08)	(0.19)	(-0.03)	(-0.17)	(1.01)	(1.09)	(0.77)	(1.15)	(1.12)
ADR_{itj}	0.011	0.011	0.011	0.011	0.010	0.006	0.006	0.007	0.006	0.006
	(1.17)	(1.20)	(1.16)	(1.22)	(1.09)	(0.94)	(0.95)	(1.02)	(0.93)	(0.96)
Big $Four_{it}$	-0.016	-0.016*	-0.011	-0.014	-0.011	0.008	0.008	0.010*	0.008	0.008
	(-1.64)	(-1.65)	(-1.61)	(-1.51)	(-1.51)	(1.31)	(1.36)	(1.71)	(1.37)	(1.34)
N	531	531	526	531	531	856	856	847	856	856
F-test	3.734***	3.803***	3.789***	3.671***	3.885***	5.233***	5.243***	5.616***	5.195***	5.217***
R^2 overall	0.1881	0.1911	0.1920	0.1920	0.1951	0.1440	0.1421	0.1541	0.1431	0.1430

The dependent variable is $|Acc|_{it}$, which represents the accruals-based earnings management according to Kothari et al. (2005) model. $Inflation_t$ is the percentage related to annual Consumer Price Index. $Volatility_t$ is the volatility of Ibovespa – the principal benchmark index of stocks from local stock market (B3). Macro $Performance_t$ is the change in annual real GDP. $Regulatory_t$ is the index of regulatory quality according to World Bank. Policy $Uncertainty_t$ is the policy uncertainty index according to Baker et al. (2016). $Size_{it}$ is the natural logarithm of total assets of the period in US dollar. $Leverage_{it}$ is the total leverage scaled by total assets of the period. $Growth_{it}$ is the percentual growth of net sales from the year t-1 to t. $Ebit_{it}$ is the earnings before interest and taxes scaled by total assets of the period. $Turn_{it}$ is the net sales scaled by total assets of the period. $Dissue_{it}$ is the percentual growth of total leverage from the year t-1 to t. $Tangibility_{it}$ is the gross property, plant and equipment scaled by total assets of the period. $Loss_{it}$ is a dummy variable, which equals one for firm-year observations with negative net income, and zero otherwise. ADR_{it} is a dummy variable, which equals one for firm-year observations with ADR in the U.S. market, and zero otherwise. Big $Four_{it}$ is a dummy variable, which equals one for firm-year observations if the firm's auditor is PwC, KPMG, E&Y, or D&T, and zero otherwise. Dummy industries are included in all models. All continuous firm variables are winsorized at 1% and 99% tail in order to avoid outliers. Standard errors corrected for firm-clustering effects (Petersen, 2009).
*, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively.

Second, as previous mentioned, given the variability of models used in the earlier literature to estimate discretionary accruals, we also developed the analysis based on Dechow et al. (1995), Dechow et al. (2012), as well as considering an aggregate accruals model by considering the firm-year mean of the standardized values of three absolute amount of discretionary accruals models (Dechow et al., 1995; Kothari et al., 2005; Dechow et al., 2012). The results are evidenced in Table 8. The findings concerning the influence of economic and institutional factors on the level of earnings management remain the same, consistent with H1, H2, H3, H4, and H5.

Table 8
Robustness test: Effects of economic and institutional factors on earnings management

Panel A: Earnings Management based on Dechow et al. (1995) – $|Acc2|_{it}$

Variables	$Inflation_t$	$Volatility_t$	Macro $Performance_t$	$Regulatory_t$	Policy $Uncertainty_t$
_cons	0.106***	0.094***	0.105***	0.103***	0.036
	(5.44)	(3.87)	(5.2)	(5.19)	(0.83)
Country $Factors_t$	0.0003	0.057	-0.68*	-0.039***	0.009*
	(0.26)	(0.76)	(-1.74)	(-2.97)	(1.79)
Controls Inserted	YES	YES	YES	YES	YES
N	1,387	1,387	1,373	1,387	1,387
R^2 overall	0.269	0.269	0.277	0.274	0.271

Panel B: Earnings Management based on Dechow et al. (2012) – $|Acc3|_{it}$

Variables	$Inflation_t$	$Volatility_t$	Macro $Performance_t$	$Regulatory_t$	Policy $Uncertainty_t$
_cons	0.102***	0.078***	0.103***	0.098***	-0.021
	(4.64)	(2.99)	(4.77)	(4.55)	(-0.43)
Country $Factors_t$	0.001	0.111*	0.116	-0.036**	0.016***
	(0.30)	(1.47)	(0.26)	(-2.48)	(2.83)
Controls Inserted	YES	YES	YES	YES	YES
N	1,295	1,295	1,282	1,295	1,295
R^2 overall	0.231	0.232	0.236	0.236	0.236

Panel C: Earnings Management based on Aggregate Measure – $|Acc.Agg|_{it}$

Variables	$Inflation_t$	$Volatility_t$	Macro $Performance_t$	$Regulatory_t$	Policy $Uncertainty_t$
_cons	0.101***	0.085***	0.102***	0.100***	0.015
	(5.61)	(3.89)	(5.70)	(5.59)	(0.40)
Country $Factors_t$	0.001*	0.080	-0.265	-0.032***	0.011**
	(0.64)	(1.26)	(-0.80)	(-2.76)	(2.55)
Controls Inserted	YES	YES	YES	YES	YES
N	1,295	1,295	1,282	1,295	1,295
R^2 overall	0.249	0.250	0.256	0.254	0.253

The dependent variable are $|Acc2|_{it}$, $|Acc3|_{it}$ and $|Acc.Agg|_{it,}$ which represent the accruals-based earnings management based on Dechow et al. (1995), Dechow et al. (2012), and considering an aggregate measure, respectively (see Appendix A). Country $Factors_t$ represents the economic and institutional factors. $Inflation_t$ is the percentage related to annual Consumer Price Index. $Volatility_t$ is the volatility of Ibovespa

– the principal benchmark index of stocks from local stock market (B3). Macro Performance$_t$ is the change in annual real GDP. Regulatory$_t$ is the index of regulatory quality according to World Bank. Policy Uncertainty$_t$ is the policy uncertainty index according to Baker et al. (2016). Control variables and dummy industries are included in all models. All continuous firm variables are winsorized at 1% and 99% tail in order to avoid outliers. Standard errors corrected for firm-clustering effects (Petersen, 2009).
*, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively.

Finally, we also consider potential bias on two main aspects related to econometric estimations issues, namely "accruals two-steps" approach and truncation of the dependent variable. Thus, we follow the Chen et al. (2018b) recommendations regarding the high probably existence of biased coefficients and standard errors that can lead to incorrect inferences, regarding both Type I and Type II errors in the typical "two steps" procedure on accruals estimation. Thus, in robustness analyses we also include among the control variables the regressors of the first-step regressions in all estimations. Furthermore, considering possible inconsistencies of the estimated parameters due to the truncation of the dependent variable (absolute values), as robustness tests we also re-run Model (2) based on Tobit (1958) regression approach, following previous earnings management literature (e.g., Osma et al., 2020; García-Sánchez et al., 2020; Huang and Sun, 2017). In all alternative scenarios, we consistently find the same results regarding the coefficient of our main variables (not tabulated).

Taken together, our empirical results confirm the general idea about the influence of institutional and economic factors on accounting quality of Brazilian firms in the IFRS era. We present evidence about the role of variables at the country level in the Brazilian context on the quality of the accounting information reported, emphasizing the relevance of a holistic view between the accounting process, the individual characteristics of the companies, and the organizational environment in which they are inserted. Therefore, we contribute to an important debate not only for academics, but also for investors, standard setters, and other stakeholders by demonstrating the role of these country-level factors on the quality of information reported in an important Latin America emerging country (i.e. Brazil) during a period of mandatory adoption of standards generally considered to be of high quality (i.e. IFRS era).

Conclusions

This study investigates whether earnings management practices in an emerging country are associated with economic and institutional factors that change over time. Based on a sample of Brazilian listed firms, our findings suggest that in periods of higher inflation, stock market volatility and policy uncertainty, as well as lower regulatory quality, managers are more likely to engage in earnings management practices. The results are robust considering different models of accrual estimations. Thus, the importance of the Brazilian economic and institutional environment is reaffirmed as a moderating factor for the quality of

the accounting information presented by the Brazilian firms, namely regarding to earnings management strategies. Therefore, we add to previous literature by considering several economic and institutional factors, in the same study, specifically taking into account only IFRS era in one of the most representativeness emerging markets. Furthermore, we also contribute to the earnings management literature by raising discussion on policy uncertainty, especially in Brazil where recent political and corruption scandals seem to have generated repercussions for investors and stakeholders in general.

Furthermore, our results suggest that accounting practices of Brazilian listed firms are sensitive to the economic environment in which they operate. Therefore, it is important to consider the effects of variables related to economic and institutional factors to analyse the quality of accounting information after the adoption of IFRS, since it can have a significant influence in the accounting practices. It is therefore necessary for regulators to take actions to ensure that countries are assisted in improving the application of IFRS in order to obtain maximum benefits from the adoption of this new set of accounting standards.

However, admittedly, these results should be considered with caution given that we cannot be sure that our findings regarding the level of earnings management are truly attributable to changes in the country economic characteristics rather than to changes in firms' economic characteristics, which may be influenced by the state of the economy as a whole. Furthermore, we also state the fact that there are firms in Brazil involved in corruption scandals throughout our period of analysis, which can potentially interfere with our results. Moreover, beyond the country-level characteristics and control variables which we take into account in our estimations, there are other important factors related to the earnings management strategies adopted by managers that we do not analyse in our study (i.e. the ethics of managers, the individual corporate environment, and specific laws that impose penalties for bad practices in the management and accounting).

Therefore, we envision that future research should also consider in their analyses some of those omitted variables, as well as explore the role of economic and institutional factors as determinant of other dimensions of the quality of accounting information, in addition to features involving earnings management (e.g., earnings conservatism, persistence, etc.). Future research in international accounting may also be interested in comparing the results presented with other emerging economies, or even comparing these empirical findings with those from developed countries, in order to investigate possible differences/similarities due to characteristics intrinsic to the countries to be analysed.

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Annex

Variables definitions

Dependent variables	
$\|Acc\|_{it}$	represents the accruals-based earnings management, based on the modified version of the model proposed by Jones (1991) to measure discretionary accruals, proposed by Dechow et al. (1995), by additionally considering return on assets (Kothari et al., 2005).
Independent variables	
$Inflation_t$	is the percentage related to annual Consumer Price Index.
$Volatility_t$	is the volatility of Ibovespa – the principal benchmark index of stocks from local stock market (B3).
Macro $Performance_t$	is the change in annual real GDP.
$Regulatory_t$	is the index of regulatory quality according to World Bank.
Policy $Uncertainty_t$	is the policy uncertainty index according to Baker et al. (2016).
Control variables	
$Size_{it}$	is the natural logarithm of total assets of the period in US dollar.
$Leverage_{it}$	is the total leverage scaled by total assets of the period.
$Growth_{it}$	is the percentual growth of net sales from the year t-1 to t.
$Ebit_{it}$	is the earnings before interest and taxes scaled by total assets of the period.
$Turn_{it}$	is the net sales scaled by total assets of the period.
$Dissue_{it}$	is the percentual growth of total leverage from the year t-1 to t.
$Tangibility_{it}$	is the gross property, plant and equipment scaled by total assets of the period.
$Loss_{it}$	is a dummy variable, which equals one for firm-year observations with negative net income, and zero otherwise.
ADR_{it}	is a dummy variable, which equals one for firm-year observations with ADR in the U.S. market, and zero otherwise.
Big $Four_{it}$	is a dummy variable, which equals one for firm-year observations if the firm's auditor is PwC, KPMG, E&Y, or D&T, and zero otherwise.
Robustness tests variables	
$\|Acc2\|_{it}$	represents the accruals-based earnings management based on Dechow et al. (1995).
$\|Acc3\|_{it}$	represents the accruals-based earnings management based on Dechow et al. (2012).
$\|Acc.Agg\|_{it}$	represents the accruals-based earnings management based on aggregate measure, by considering the firm-year mean of the standardized values of three absolute amount of discretionary accruals models based on Dechow et al. (1995), Kothari et al. (2005), and Dechow et al. (2012).