ACCOUNTING INFORMATION QUALITY OF LATIN AMERICAN FIRMS: THE INFLUENCE OF THE REGULATORY ENVIRONMENT[1]

QUALIDADE DA INFORMAÇÃO CONTÁBIL DAS EMPRESAS LATINO-AMERICANAS: A INFLUÊNCIA DO AMBIENTE REGULATÓRIO

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ABSTRACT
Objective: This study aimed to investigate the relationship between the regulatory environment and the quality of the accounting information of Latin American companies, specifically regarding earnings management through accruals.
Background: It is believed that the regulatory environment in which firms operate has an influence on the informational quality of disclosed financial reports, since by monitoring information regulatory bodies increase incentives for the elaboration of high quality financial reports (Shima & Gordon, 2011). On the other hand, other authors such as Silva, Galdi and Teixeira (2010) point out that when regulation originates from agencies linked to the state, governments susceptible to popular reaction

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could establish stricter rules or control sectors in a strategic way. Thus, companies regulated by public bodies could use earnings management practices in certain periods, such as election years.

Method: The study sample was comprised of companies listed on the main stock exchanges in Latin America, according to the availability of information in the Capital IQ® database – the main data source for this study – and that adopted IFRS as the basis for preparing their financial statements in the period analyzed (2011 to 2016), thus totaling 2,360 firm-year observations. Considering the absolute value of discretionary accruals as a proxy for earnings management, the results suggest that there is a positive relationship between the regulatory environment and the manipulation of profits. The final sample resulted in observations about the companies listed on the stock exchanges of Brazil, Chile, Mexico and Peru, where the statistical analyzes presented for each country, as well as considering the Latin American context.

Results: Our results indicate that the regulatory environment is positively related to the use of discretionary accruals for companies in Brazil, Peru, Mexico, and considering Latin America as a whole. For Chile, there does not seem to be any significant relationship between these factors, so that it is concluded that there are aspects related to the country level, whether economic, cultural, or institutional, that were not mentioned by this study and that are possibly able to influence the use of discretionary accruals as a form of earnings management.

Contributions: The results presented by the study contribute to the literature on information quality and regulation, first because they present evidence that regulation negatively influences the quality of accounting information, secondly because it investigates a context of emerging markets that despite the political instability, some studies predict a growth of in the coming years, especially those in Latin America, and third, because it analyzes the companies of these countries from an individual and collective perspective , allowing a discussion of the reality of each country, among them and with other contexts.

Keywords: Regulatory environment; information quality; earnings management; discretionary accruals; Latin America.

RESUMO

Objetivo: Este estudo teve como objetivo investigar a relação entre o ambiente regulatório e a qualidade das informações contábeis das empresas latino-americanas, especificamente no que se refere ao gerenciamento de resultados por meio de *accruals*.

Fundamento: Acredita-se que o ambiente regulatório em que as empresas operam influencia a qualidade informacional dos relatórios financeiros divulgados, pois, através do monitoramento das informações, os órgãos reguladores aumentam os incentivos para a elaboração de relatórios financeiros de alta qualidade (Shima & Gordon, 2011). Por outro lado, outros autores como Silva, Galdi e Teixeira (2010) apontam que, quando a regulação se origina de órgãos ligados ao Estado, os governos suscetíveis à reação popular poderiam estabelecer regras mais estritas ou controlar setores de forma estratégica. Assim, empresas reguladas por órgãos públicos poderiam utilizar práticas de gerenciamento de resultados em determinados períodos, como anos de eleição.

Método: A amostra do estudo foi composta por empresas listadas nas principais Bolsas de Valores da América Latina, de acordo com a disponibilidade de informações no banco de dados Capital IQ® - a principal fonte de dados para este estudo - e que adotou as IFRS como base para a elaboração de suas demonstrações financeiras no período analisado (2011 a 2016), totalizando, assim, 2.360 observações ano-base. Considerando o valor absoluto dos *accruals* discricionários como *proxy* para o gerenciamento de resultados, os resultados sugerem que existe uma relação positiva entre o ambiente

regulatório e o gerenciamento de resultados. A amostra final resultou em observações sobre as empresas listadas nas bolsas de valores do Brasil, Chile, México e Peru, onde as análises estatísticas apresentadas para cada país, bem como considerando o contexto latino-americano.

Resultados: Os resultados indicam que o ambiente regulatório está positivamente relacionado ao uso de *accruals* discricionários para empresas no Brasil, Peru, México e considerando a América Latina como um todo. Para o Chile, não parece haver nenhuma relação significativa entre esses fatores, de modo que se conclui que existem aspectos relacionados ao país, sejam econômicos, culturais ou institucionais, que não foram mencionados por este estudo e que são possivelmente capazes de influenciar o uso de *accruals* discricionários como uma forma de gerenciamento de resultados.

Contribuições: Os resultados apresentados pelo estudo contribuem para a literatura sobre qualidade e regulação da informação, primeiro porque apresentam evidências de que a regulação influencia negativamente a qualidade da informação contábil, em segundo lugar porque investiga um contexto de mercados emergentes que apesar da instabilidade política, alguns estudos prevêem crescimento nos próximos anos, especialmente na América Latina, e terceiro, porque analisa as empresas desses países a partir de uma perspectiva individual e coletiva, permitindo uma discussão da realidade de cada país, entre eles e com outros contextos.

Palavras-chave: Ambiente regulatório; qualidade da informação; gerenciamento de resultados; acréscimos discricionários; América latina.

1. INTRODUÇÃO

Informational asymmetry is the phenomenon in which some economic agents have more information than others; that is, it is an imbalance in information or knowledge between parties during a transaction, whether economic or not (Fontana, Andrade, & Macagnan, 2013). From this perspective, regulation, conceived as the act of guaranteeing compliance with what is regulated (Lima, Oliveira, & Coelho, 2014), emerges as a way of offering users useful and relevant information, thus reducing informational asymmetry and increasing the confidence of stakeholders (Moraes, 2014).

Regulation acts as a mechanism that limits managerial discretion and its effect on owner wealth (Booth, Cornett, & Tehranian, 2002), since through mandatory disclosure of financial reports, regulators monitor economic agents (Michelon, Bozzolan, & Beretta, 2015). Regulations are important for markets, since they help reduce transaction costs and opportunistic behavior on the part of managers by requiring the disclosure of important information, and they also play the role of ensuring compliance with these rules (Shima & Gordon, 2011).

According to González and Mecca (2014), in countries where there is strong regulatory control, especially in Anglo-Saxon countries, where investors are protected by the legal system, a high level of transparency and consequent accounting information quality is observed. On the other hand, La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) point out that in Latin American countries, there is a regulatory environment of low level of legal protection for investors when compared to markets in developed countries.

In light of the above, several studies have sought to understand the influence of regulation on the quality of accounting information using various approaches (Arruda, Vieira, Paulo, & Lucena, 2015; Baioco, Almeida & Rodrigues, 2013; Costa, Costa, Amorim, & Baptista, 2009; Guevara, & Cosenza, 2006). In this discussion, it is imperative to know that information quality is a broad concept and can therefore be measured using different approaches and/or attributes, such as conservatism, earnings management, and the market value of the firm, among others (Paulo, Cavalcante, & Melo, 2012).

Considering the effect of the regulatory environment on the quality of the accounting information of open and closed companies and financial institutions from 1996 to 2013 – using the conservative models proposed by Ball and Shivakumar (2006) and the persistence described by Dechow and Schrand (2010), estimated using panel data – Arruda et al. (2015) concluded that the financial results of Brazilian financial institutions do not present conservative behavior and that the profits of closed companies are more persistent than those of publicly traded companies, resulting in greater predictability of future profits based on present profits.

Investigating whether the incentives arising from market regulation have any influence on the level of income smoothing of Brazilian companies with shares traded on the B3 between 1996 and 2009, based on the models developed by Eckel (1981) and the three measures of Leuz, Nanda, and Wysock (2003), Baioco et al. (2013) did not find an additional incentive for income smoothing. The authors stated that the non-regulated sectors presented a higher level of smoothing, demonstrating that the regulation carried out by Brazilian agencies (ANEEL, ANATEL, ANP, ANTT and ANTAQ) did not create an additional incentive for the smoothing of results.

Guevara, Iván & Cosenza (2006) investigated the main results management practices frequently performed by managers in Venezuelan industrial companies, highlighting the low contribution of the regulatory agencies of this country to increase the transparency and consequent increase of the informational quality of the analyzed financial statements.

Thus, considering that the institutional and organizational structure in which the firm operates and the magnitude of the influence of accruals change with accounting regulation, the rules system, and enforcement, it is understood that these factors directly affect the quality of the accounting information present in the financial statements published by companies (Paulo et al., 2012).

However, there is no consensus in the literature regarding the relationship between the regulatory environment and the quality of accounting information, since some studies have found a positive relationship (Baioco et al., 2013; Silva, Coelho, Lopes & Almeida, 2009) and others have found a negative relationship (Kolozsvari & Macedo, 2016; Rodrigues & Martins, 2010; Santos, Marcello, Zonatto, & Toledo Filho; Costa et al., 2009). This therefore indicates a gap to be addressed by this study.

Given the above, the study aims to analyze the relationship between the regulatory environment and the quality of accounting information in Latin America firms, more specificly regarding earnings management through accruals. The research population was defined by public companies from Latin American countries that traded shares in the Stock Exchanges from 2011 to 2016, whose information was available in the Capital IQ® database®, resulting in the sample represented by companies from Brazil, Chile, Mexico and Peru.

This is aided by descriptive statistics, parametric tests, and panel data analysis. The absolute amount of discretionary accruals, in accordance with the Jones (1991) model modified by Dechow, Sloan, and Sweeney (1995), was selected as the dependent variable. As an independent variable, we considered the dummy variable to characterize companies in regulated and non-regulated industries as a proxy for the regulatory environment of companies. We found evidence that the regulatory environment is positively related to the use of discretionary accruals in Brazil, Peru, Mexico, and Latin America as a whole.

Some aspects can be highlighted in relation to the contribution of the study. The first, is that the efficiency of economic regulation offers the investor greater security in relation to the resources invested in the capital market (Zanotta, 2005), so the study offers evidence on the influence of the regulatory environment of Latin American companies on the level of quality of accounting information in terms of protecting suppliers of financial resources. The second, is that in spite of political instability, some studies predict the growth of emerging markets in the coming years, especially the Latin American countries (Fitch Ratings, 2016), thus giving relevance to studies on these countries,

mainly for investors and regulators in the region. Third, there are few studies investigating the quality of accounting information in emerging countries compared to the vast literature on accounting systems in developed countries, despite the importance of the former to international organizations (Chen, Tangg, Jiang, & Lin, 2010). With the opening of financial markets to international capital from emerging countries from the 1990s onwards, the flow of these capitals, previously largely directed to developed countries, has also been directed to emerging countries, as Silva (2017) points out. This fact makes studies on the quality of accounting information in these countries become important. Fourth, the time window of our analysis (2011-2016) covers a period after the adoption of IFRS in the countries analyzed, which offers the possibility of comparing these results with others prior to IFRS adoption, thus broadening the discussion about the theme.

The article is structured in six sections. In the next section, we present some information about the regulatory environment and the quality of information, as well as the literature review on the relationship between the regulatory environment and the quality of accounting information and also describing the hypothesis of the study. The following two sections describe the data collection and analysis and discuss the results, followed by a section with robustness tests. Finally, a summary and conclusion are provided in the final section.

2. BACKGROUND

2.1 Regulatory Environment and Information Quality

According to Martins (2011), the object of accounting is the information needed for the management of an entity, as well as that used for management accountability. In order for this accounting information to be communicated in a qualified manner, it is essential that it is able to meet the needs of economic agents, that is, it has the capacity to influence the expectations of its users since it reflects future economic benefits (Marques, Silva, Louzada, & Amaral, 2015).

As a result of a set of social, economic, political, and behavioral factors, the economic agents linked to an organization do not have the same level of information, both in quantity and/or quality (Paulo et al., 2012). This phenomenon, in which there is an information or knowledge imbalance between parties during a transaction, is known as informational asymmetry. According to Moraes (2014), regulation contributes to providing useful and relevant information to users, reducing informational asymmetry, and thus increasing the confidence of a number of stakeholders. In the absence of regulated markets, external users do not have equal access to information and in this circumstance regulation takes on the role of justice, ensuring the rights of the least informed (Stigler, 1971).

From this perspective, it is believed that the regulatory environment in which firms operate has an influence on the informational quality of disclosed financial reports, since by monitoring information regulatory bodies increase incentives for the elaboration of high quality financial reports (Shima & Gordon, 2011). On the other hand, other authors such as Silva, Galdi and Teixeira (2010) point out that when regulation originates from agencies linked to the state, governments susceptible to popular reaction could establish stricter rules or control sectors in a strategic way. Thus, companies regulated by public bodies could use earnings management practices in certain periods, such as election years.

Moreover, Rodrigues and Martins (2010) affirm that due to the divergent regulatory environment, some sectors of the economy present more discretion in their accounts than others. Here, managers use their judgment to carry out accounting information management practices for several reasons, such as improving accounting indicators, reducing the variability of profits, as well as reducing the current value of taxes to be paid.

In view of this, the influence of the regulatory environment on the quality of accounting information could either be positive – by reducing transaction costs and increasing monitoring, or negative – by increasing the discretion in regulations, thus enabling a favorable environment for accounting data manipulation.

It is worth mentioning that the regulatory environment is characterized by the interaction between two distinct factors: the system of norms and enforcement. First, "norms stimulate individual behavior to something considered desirable by some criterion of social choice, or serve as a signaling for coordination among individuals" (Sunder, 2014, 196). Their relevance to the market is warranted as they help reduce transaction costs and opportunistic behavior by management through requiring the disclosure of important information (Shima & Gordon, 2011).

Law enforcement, pertaining to Anglo-Saxon terminology, concerns control mechanisms (Machado, 2006). According to Sarlo Neto (2004), regulators are the main element of the enforcement of disclosure of financial information. Strong enforcement will align the incentives for high-quality financial reporting, thus reducing the costs of monitoring contracts between economic agents. Accounting standards with a strong regulatory environment could increase the risk of non-compliance with these standards (Shima & Gordon, 2011).

2.2 Previous Empirical Studies and Hypotheses

Costa et al. (2009) investigated whether regulation affects the level of accounting conservatism in companies listed on the B3 from 1996 to 2006. The tests carried out involved panel data regressions, where the Basu (1997) models were run, introducing a dummy to capture the impact of regulation. The results obtained by the two models of conservatism adapted to the three regulation dummies did not enable any impact to be inferred.

When seeking to assess the impact of regulatory agencies on the level of conditional conservatism of accounting profits in Brazilian public companies from 1996 to 2007, Silva, et al. (2009) noted that there is no early record of economic losses due to the existence of regulatory agencies and that Brazilian publicly traded companies show no signs of conditional conservatism. It can be concluded that regulation does not constitute a sufficient incentive for managers to reduce informational asymmetry through financial statements.

Rodrigues and Martins (2010) investigated the management of accounting information through the technical provisions constituted by insurance companies in response to economic and tax regulations from 2001 to 2006. The results indicate that the directors of insurance companies influence technical provisions downwards if the values of solvency parameters and taxes are lower but, on the other hand, they influence technical provisions upwards if solvency parameter and tax values are higher. However, in order to give greater robustness to the results of the empirical research, the authors suggested the use of the estimation error for technical provisions as a dependent variable of the econometric models employed. The authors pointed out that this is not yet possible in Brazil, since the sector regulator does not provide the necessary information to calculate this variable, unlike in the North American insurance market.

Investigating the effect of economic regulation and presidential elections on company earnings management in the Brazilian capital market, Silva et al. (2010) analyzed 339 companies with shares listed on the São Paulo Stock Exchange –B3, in the periods 1993-1995, 1997-1999, 2001-2003, and 2005-2007, grouped into regulated sectors and sectors with lower regulation. The results suggest that, after the creation of regulatory agencies, Brazilian companies with shares listed on the B3 and acting in regulated sectors used accruals to manage their accounting results.

Santos et al. (2012) investigated whether companies listed on the B3 and belonging to regulated sectors engage in earnings management (EM) and whether the corporate governance index of these companies influences the level of earnings management in the period from 2005 to 2009. The results suggest earnings management in companies in regulated sectors. However, no statistically significant differences were found between the level of earnings management of companies in regulated sectors with corporate governance and companies without this characteristic.

When analyzing the manipulation of financial reports, from their empirical results Baioco et al. (2013) stated that while unregulated firms present greater incentives for earnings management mechanisms, the opposite is true for regulated firms, since regulation provides incentives to reduce the variability of profits reported to the market. Lopes, Pinheiro, and Dias Filho (2014) verified whether the Brazilian telecommunications companies listed on the B3 adopt earnings management practices based on the level of indebtedness or in order to reduce the variability of profits. The results suggest that, in a regulated sector, earnings management can be minimized by the regulatory effect, and thus the need to incur agency costs would be lower.

Arruda et al. (2015) analyzed the conservative behavior and the persistence of accounting results of Brazilian public and non-public financial institutions from 1996 to 2013 and verified that their financial results do not present conservative behavior. In addition, the profits of non-public companies are more persistent than those of public companies.

Kolozsvari and Macedo (2016) analyzed the influence of income smoothing on the persistence of profits in Brazilian publicly traded companies listed on the B3 between 2004 and 2013. The results show an increase in the transience of the time series, enhanced by the presence of incoming smoothing, and it was observed that the disclosure of stability, communicated through a series of smooth profits, undermined the sustainability of the reported performance, captured by the series' persistence. Additional controls carried out show the influence of income smoothing on persistence as being negative for small companies and in the occurrence of losses, and positive in sectors with accounting regulation.

In the European context, Bouvatier, Lepetit & Strobel (2014) examine whether the way a bank can use loan loss provisions to smooth its revenue is influenced by its concentration of ownership and regulatory environment. The authors analyzed the financial statements of European commercial banks (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom), available in the BvD-BankScope database between 2004-2009. Based on the evidence, the authors pointed out that banks with higher ownership concentration use discretionary loan loss provisions to smooth their revenues, such behavior less pronounced in stronger supervisory regimes or higher quality external audit.

Inglés (2016) analyzed the accounting manipulation in the Spanish electric sector in the period 2003-2013, from the accrual adjustment model of Dechow et al. (1995), and observed the existence of manipulation (adjustments for discretionary accruals) in the companies analyzed. Among the motivators for manipulating results, the author pointed out the nature or contractual evaluation (indicating a possible attempt by regulatory authorities to improve their position through more funding from banks and investors).

Finally, analyzing regulation in another context, Bao and Lewellyn (2017) evaluated the relationship between ownership structure and earnings management in emerging markets. From a sample of 1,200 companies in 24 emerging markets (Argentina, Brazil, Bulgaria, Chile, China, Esto-

nia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine, and Venezuela), the authors noted that the quality of the regulatory environment strengthens the negative relationship between institutional ownership and earnings management.

Thus, the mixed results with respect to the theme are evident, with studies that have found a positive relationship (Baioco et al., 2013; Inglés, 2016;) and others that have found a negative relationship (Bao & Lewellyn, 2017; Kolozsvari & Macedo, 2016; Bouvatier, Lepetit & Strobel, 2014; Santos et al., 2012; Silva et al., 2009; Silva et al., 2010) between the regulatory environment and earnings management. It should be noted that some studies have not identified any relationship between regulation and accounting information quality (Costa et al., 2009). Finally, some studies have addressed the relationship between regulation and quality of accounting information in specific sectors; Lopes et al. (2014), for example, found a positive relation when analyzing the telecommunications sector, while Arruda et al. (2015) showed a negative relation when investigating the financial sector.

Derived from investigating the relationship between the regulatory environment and information quality in the Anglo-Saxon context, the empirical evidence of Michelon et al. (2015) and Shima and Gordon (2011) show that economic regulation strengthens monitoring mechanisms, thus signaling better quality financial reporting. Ball (2006) indicates that Anglo-Saxon countries, which are governed by the common law legal regime, are characterized by the presence of comparatively more developed markets and shareholder rights, and monitoring systems with an emphasis on timely recognition of losses in financial statements.

Watts and Zimmerman (1978) point out that regulatory procedures and interests influence the accounting process in regulated companies. Under this logic, the results of studies that relate the regulatory environment and informational quality, in the context of code law, reveal that public attention interferes in companies' published results and consequently in the elaboration of accounting information (Silva et al., 2010), which leads to government regulation in specific sectors that creates motivations for the management of accounting information (Rodrigues & Martins, 2010). Such evidence corroborates the findings of other authors (Kolozsvari & Macedo, 2016; Santos et al., 2012; Rodrigues & Martins, 2010; Silva et al., 2010).

Thus, considering that in Latin countries the elaboration of accounting information is strongly influenced by the interests of the State, in which regulatory agencies as representatives of government interests can contribute to the managers of regulated companies making accounting choices aimed at fulfilling regulatory interests, the following hypothesis arises:

Hypothesis: There is a positive relationship between the regulatory environment and earnings management.

3. REASERCH DESIGN

3.1 Sample

The study sample is comprised of publicly traded companies listed on the main stock exchanges in Brazil, México, Chile e Peru, based on the availability of information in the Capital IQ® database – the main data source for this study – and that adopted IFRS as the basis for preparing their statements in the period analyzed (2011 to 2016), thus totaling 2,360 firm-year observations. The sectoral classification proposed by Capital IQ® was used, as shown in Table 1, where the firm-year observations are presented by sector and country. It should be noted that insurance companies

and financial institutions were excluded, given the particularities of the sector, especially regarding the proposed model for measuring discretionary accruals.

Table 1 – Description of the Sample by Industry and Country

Painel A: Sample by Industry and Country

Sector	Brazil	Chile	Mexico	Peru	Latin America	%
Consumer Discretionary	332	94	65	19	510	21.54
Consumer Staples	106	177	48	48	379	16.01
Energy	52	6	0	4	62	2.62
Healthcare	43	18	4	0	65	2.74
Industrials	211	147	65	20	443	18.71
Information Technology	45	6	0	0	51	2.15
Materials	149	100	53	58	360	15.20
Real Estate	72	24	21	5	122	5.15
Telecommunication Services	27	24	8	4	63	2.66
Utilities	181	105	4	23	313	13.22
Total	1,212	699	268	181	2,360	100%

Painel B: Sample by Regulation and country

	Brazil	Chile	Mexico	Peru	Latin America	%
Regulated	480	141	65	25	711	30.13
Non-Regulated	732	558	116	243	1649	69.87
Total	1,212	699	268	181	2,360	100%

Source: Survey Data (2019).

3.2 Dependent and Independent Variable Measurement

The degree of earnings management through accruals was considered as a dependent variable. According to Martinez (2008), accruals are the difference between net income and net operating cash flow; that is, they are the income accounts that make up the profit, but do not represent financial transactions. Accruals may be non-discretionary and linked to the reality of the business, while discretionary accruals are values linked to management discretion, which may lead to "artificial" changes in the profit for the period, demonstrating so-called earnings management.

It is in this discussion that we observe a robust group of national (Domingos, Ponte, Paulo, & Alencar, 2017; Viana Junior, Domingos, & Ponte, 2017) and international studies (Doukakis, 2014; Rathke, Santana, Lourenço, & Dalmácio, 2016) that use the absolute amount of discretionary accruals to measure earnings management. In line with this literature, this study uses the model by Dechow et al. (1995), adapted from Jones (1991) – hence known as the Modified Jones model.

In general, the model proposed by Dechow et al. (1995) is understood through three steps. First, a model of expected total accruals, used for controlling changes in economic circumstances, is estimated according to Equation (1). Then, the estimated coefficients of Equation (1) are used to estimate firm-specific non-discretionary accruals (NAit) for the sample firms, as observed in Equation (2). Finally, the discretionary accruals (DA) are equal to the difference between the total increase and the non-discretionary accruals, according to Equation (3).

$$\frac{TA_{it}}{Ats_{it-1}} = \beta_0 \frac{1}{Ats_{it-1}} + \beta_1 \frac{\Delta Sales_{it}}{Ats_{it-1}} + \beta_2 \frac{GPPE_{it}}{Ats_{it-1}} + \varepsilon_{it} \tag{1}$$

$$NA_{it} = \hat{\beta}_0 \frac{1}{Ats_{it-1}} + \hat{\beta}_1 \frac{(\Delta Sales_{it} + \Delta AR_{it})}{Ats_{it-1}} + \hat{\beta}_2 \frac{GPPE_{it}}{Ats_{it-1}} \tag{2}$$

$$DA_{it} = \left(\frac{TA_{it}}{Ats_{it-1}}\right) - NA_{it} \tag{3}$$

Where:

TAit = total accruals, calculated as firm i's net income minus cash flows from operations in year t taken from the cash flow statement;

Atsit-1 = total assets for firm i in year t-1;

ΔSalesit = change in sales for firm i from year t-1 to year t;

GPPEit = gross property, plant, and equipment for firm i in year t;

NAit = non-discretionary accruals for firm i in year t;

ΔARit = change in accounts receivable for firm i from year t-1 to year t.

DAit = discretionary accruals for firm i in year t.

It should also be noted that, in line with Doukakis (2014), Chen et al. (2010), and Cohen, Dey and Lys (2008), the models were estimated for each year and economic sector with at least eight observations. Using this approach, it is expected that changes in the economic sector in economic conditions that may affect the dependent variables and allow the coefficients to vary over time can be partially controlled.

The regulatory environment was considered as an independent variable. As in previous studies (Costa et al., 2009), the regulation variable will be measured using a dummy variable, in which 1 will be attributed to companies in economic industries regulated by some type of regulatory agency, and 0 will be used for companies belonging to non-regulated environments. In order to classify the economic industries of the analyzed countries between regulated and non-regulated, a large consultation was carried out on the website of the federal governments of the four countries analyzed (Brazil, Chile, Mexico, and Peru), as well as a bibliographic survey of studies that have used the same methodological proposal for industry classification. Based on these analyses, Table 2 shows the industries that are considered regulated, as well as the respective previous studies.

Tabela 2 – Classification of Regulated Industries

Country	Basis	Regulatory Agency	Primary Industry
Brazil	Saravia (2003); Saravia (2005); Silva et al. (2009)	ANEEL	Electric Utilities; Independent Power Producers and Energy Traders; Multi-Utilities; Renewable Electricity.
		ANATEL	Integrated Telecommunication Services; Wireless Telecommunication Services; Cable and Satellite; Broadcasting.
		ANP	Integrated Oil and Gas; Gas Utilities; Oil and Gas Exploration and Production; Oil and Gas Equipment and Services; Oil and Gas Refining and Marketing; Oil and Gas Storage and Transportation.
		ANVISA	Agricultural Products; Brewers; Pharmaceuticals; Personal Products; Packaged Foods and Meats; Healthcare Supplies; Healthcare Distributors; Fertilizers and Agricultural Chemicals; Drug Retail; Paper Packaging.
		ANS	Healthcare Services; Managed Healthcare.

		ANA	Water Utilities.
		ANTT	Trucking; Railroads; Highways and Railtracks.
		ANTAQ	Marine; Marine Ports and Services.
		ANAC	Airlines.
Chile	Barra (2017); Rojas (2013)	SCJ	Casinos and Gaming.
		SEC	Electric Utilities; Independent Power Producers and Energy Traders; Renewable Electricity; Gas Utilities; Oil and Gas Refining and Marketing.
		SIS	Healthcare Facilities.
		SISS	Water Utilities.
Mexico	Culebro and Laporte (2013); García (2012); Ayllón and Ruiz (2007)	COFETEL	Integrated Telecommunication Services; Wireless Telecommunication Services; Cable and Satellite; Broadcasting.
		CRE	Electric Utilities; Independent Power Producers and Energy Traders; Multi-Utilities; Renewable Electricity; Gas Utilities; Oil and Gas Refining and Marketing.
Peru	Ordóñez (2004); Velaochaga (2008)	OSINERGMIN	Electric Utilities; Multi-Utilities; Independent Power Producers and Energy Traders; Multi-Utilities; Renewable Electricity; Gold; Copper; Steel; Diversified Metals and Mining.
		SUNASS	Water Utilities.
		OSIPTEL	Integrated Telecommunication Services; Wireless Telecommunication Services; Cable and Satellite; Broadcasting.

Source: Survey Data (2019)

In the search for greater robustness of the proposed econometric model, control variables from the scientific literature on the subject (Dechow et al. 1995; Doukakis, 2014; Chen et al., 2010; Cohen et al., 2008; Rathke et al., 2016; Viana Junior et al., 2017) that are related to the theme in question were used, namely: size, liabilities, earnings before interest and taxes over , market capitalization, operating cash flow, sales, American Depositary Receipts (ADR) auditing and year.

The size variable can have a positive or negative effect on earnings management (EM). For Hochberg (2012), financial statements of larger companies are more complex and can be a facilitating aspect of earnings management. However, these companies can also be monitored by market analysts, which could reduce EM opportunities. The more indebted companies are expected to practice less EM, since they are more closely monitored by debt holders (Gray, Kang, Lin, & Tang, 2015). Regard to the market capitalization variables, it is expected to positively explain the EM practices, since the market value of the companies captures subjective effects such as the expectation of the economic agents of future cash generation, informational asymmetry and growth opportunities (Hand, 2001). Thus, management is motivated to practice EM to meet stakeholder expectations. In this way, the same is expected for the variables earnings before interest and taxes over and sales. Regard to the ADR variable, it should be noted that the enforcement of US legislation may mitigate the EM practice, as well as the presence of a well-known audit firm.

3.3 Model

Based on the variables investigated, the econometric model proposed in this study is presented according to Equation (4):

$|ACCRUALS|_{it}$
$$= \alpha_0 + \beta_1 REGULAR_{it} + \beta_2 SIZE_{it} + \beta_3 LIAB_{it} + \beta_4 EBIT_{it} + \beta_5 MKT_{it}$$
$$+ \beta_6 CASHFlow_{it} + \beta_7 TURN_{it} + \beta_8 ADR_{it} + \beta_9 BIGF_{it}$$
$$+ \sum_{n=1}^{3} \delta_n YEAR_{i,t} + \varepsilon_{it} \qquad (4)$$

Where:

|Accruals| = absolute amount of discretionary accruals by Dechow et al. (1995);

REGULAR = dummy variable, in which 1 is attributed to companies in the economic industries regulated by some type of regulatory agency, and 0 is used otherwise;

SIZE = the natural logarithm of end of year total assets;

LIAB = total liabilities over total assets;

EBIT = earnings before interest and taxes over total assets;

MKT = market capitalization over total assets;

CASHFlow = operating cash flow over total assets;

TURN = sales divided by end of year total assets;

ADR = dummy variable that equals one if a firm has ADRs listed on a US stock exchange, and zero otherwise;

BIGF = dummy variable that equals one if the firm's auditor is PwC, KPMG, E&Y, or Deloitte, and zero otherwise;

YEAR = dummy variables for each analyzed year.

The estimation of the model was performed using the Tobit regression. The use of the Tobit model was because it was a censored regression model (Gujarati, & Porter, 2011).

The model was processed using panel data. Considering the nature of the dependent, independent, and control variables and the application of the appropriate tests (Breusch and Pagan and Hausman), we opted for Random Effects estimates. The estimated parameters are heteroskedasticity robust (White, 1980).

4. EMPIRICAL FINDINGS

Table 3 shows the descriptive statistics of the variables used in the analyses. The coefficient of variation (CV) of the Accruals variable is high (1.2837), showing a large variation in relation to the sample mean. Other variables also presented high CVs, namely EBIT (1.3295), MKT (1.1588), and CASHFlow (1.3392). For all these variables the data are heterogeneous, with considerable data dispersion, presenting standard deviations greater than the mean value.

Tabela 3 – Descriptive Statistics of Continuous Variables

Variables	N	Mean	Medium	Min.	Max.	SD	CV
|Accruals|	2,363	0.0704	0.0464	0.0000	1.2465	0.0904	1.2837
SIZE	2,363	6.8224	6.9196	0.2585	12.6965	1.7718	0.2597
LIAB	2,363	0.3121	0.2978	0.0000	1.8600	0.2013	0.6450
EBIT	2,363	0.0846	0.0857	-1.2118	1.3049	0.1125	1.3295
MKT	2,363	0.7903	0.5353	0.0002	13.3040	0.9158	1.1588
CASHFlow	2,363	0.0669	0.0662	-0.3398	1.2957	0.0895	1.3392
TURN	2,363	0.6455	0.5699	-0.0182	5.8363	0.4808	0.7449

|Accruals| = absolute amount of discretionary accruals by Dechow et al. (1995); SIZE = the natural logarithm of end of year total assets; LIAB = total liabilities over total assets; EBIT = earning before interest and taxes over total assets; MKT = market capitalization over total assets; CASHFlow = operating cash flow over total assets; TURN = sales divided by end of year total assets.

The hypothesis of differences in averages between the regulated and unregulated industries of the countries from the t test is shown in Table 4. The null hypothesis is rejected for Peru, Mexico, and Latin America as a whole, and thus the hypothesis of differences in discretionary accruals according to industry regulation is valid, with there being statistical significance; that is, the regulated industries present higher accruals for these countries. On the other hand, it was not possible to verify the same significant differences for companies in Brazil and Chile, indicating that in these countries industry regulation does not seem to have an influence on earnings management practices.

The highest average discretionary accruals obtained in the regulated industries was in Peru, with 0.1076, followed by Mexico with 0.0833, then Brazil with 0.0827, and finally Chile with the lowest average (0.0553), which is corroborated by a study from Viana Junior et al. (2017) that, when relating the use of discretionary accruals by companies with high economic instability indexes, identified these three countries as the ones with the highest levels of discretionary accruals. Contrary to Lopes et al. (2014), which indicates that regulation contributes to a reduction in company earnings management, Peru and Mexico showed a higher average use of discretionary accruals by regulated industries compared to unregulated ones. In the case of Peru, the regulated industries presented an average of more than 83% in relation to the non-regulated industries. For Mexico, this number was higher by more than 66%.

Tabela 4 – Discretionary Accruals: sample division by primary industry and country

Country	Industry Classification	N	Mean	*t* test	p-value
Brazil	Regulated	480	0.0827	-1.1674	0.243
	Non-Regulated	732	0.0757		
Chile	Regulated	141	0.0553	0.8323	0.405
	Non-Regulated	558	0.0605		
Peru	Regulated	25	0.1076	-3.0509	0.002
	Non-Regulated	243	0.0587		
Mexico	Regulated	65	0.0833	-3.6755	0.000
	Non-Regulated	116	0.0501		
Latin America	Regulated	711	0.0782	-3.0550	0.002
	Non-Regulated	1,649	0.0663		

Table 5 shows the correlation matrix between the continuous variables. Discretionary accruals presented a significant relationship with all the variables in the analysis, except TURN. In general, there was a positive relationship of 22.51% with the variable LIAB and a negative relationship of 21.49% with the variable EBIT, showing an inverse relationship between indebtedness and the quality of information, and the higher the operating profit, the higher the quality of profits. We also highlight the SIZE and MKT variables, which present a negative and significant relationship at 1% so that larger companies tend to use fewer discretionary accruals, as do companies with higher market values. Larger firms tend to undergo more scrutiny by both investors and market analysts, which could explain less use of discretionary accruals (Watts & Zimmerman, 1978). Similarly, Schuster's (2016) study showed a negative correlation between firm size variables and the level of earnings management measured by the use of discretionary accruals; however, it did not claim to be significant. The size variable was also negative and significant in relation to the accruals studied by Rathke et al. (2016), so that larger firms tend to have a lower level of earnings management.

Tabela 5 – Coefficient of correlation of continuous variables

	|Accruals|	SIZE	LIAB	EBIT	MKT	CASHFlow	TURN
|Accruals|	1,000						
SIZE	-0,1475***	1,000					
LIAB	0,2251***	0,0921***	1,000				
EBIT	-0,2149***	0,1190***	-0,1428***	1,000			
MKT	-0,0933***	-0,0018	-0,1763***	0,4351***	1,000		
CASHFlow	0,0892***	0,0463**	-0,1316***	0,6064***	0,4014***	1,000	
TURN	0,0287	-0,1121***	-0,0509**	0,1523***	0,1811***	0,1023***	1,000

|Accruals| = absolute amount of discretionary accruals by Dechow et al. (1995); SIZE = the natural logarithm of end of year total assets; LIAB = total liabilities over total assets; EBIT = earning before interest and taxes over total assets; MKT = market capitalization over total assets; CASHFlow = operating cash flow over total assets; TURN = sales divided by end of year total assets.
Source: Survey Data (2019).

Table 6 addresses the effects of the regulatory environment on earnings management. The regulatory environment is positively related to the use of discretionary accruals at a significance level of 1% for Brazil, Peru, Mexico, and Latin America. However, confirmed by the descriptive analysis, for Chile there was not a strong influence on the use of discretionary accruals as a way of managing earnings. Rathke et al. (2016) states that there are considerable differences between the levels of earnings management of Latin American firms in relation to Anglo-Saxon firms and firms in Continental Europe, even after analyzing factors that alone would influence better quality information. These differences are mainly due to national factors related to institutional and economic issues. Along the same lines, a study by Han, Kang, Salter, and Yoo (2010) points out that cultural and institutional aspects, as well as the legal system of each country, can be reflected in the manager's degree of discretion.

The EBIT and CASHFlow variables had a greater effect on the degree of earnings management. The first suggests that the level of operating profit is negatively related to earnings management for Brazil, Peru, and Latin America, with there being no significance for Chile and Mexico. The second is positively related, showing that the higher the cash flow, the greater the discretionary accruals, except for Chile. Corporate debt (ratio of liabilities to total assets) is statistically significant for Brazil, Chile, Peru, and Latin America at 1% and for Mexico at 10%, showing that higher indebtedness may result in a higher level of discretionary accruals, however, to a lower degree than the EBIT and CASHFlow variables, which have a significantly greater explanatory power.

Although Rathke et al. (2016) found a significant influence of the existence of ADRs on earnings management, so that companies that have them have a lower level of management, except for Latin American companies, because national factors seem to be able to influence this aspect, increasing the level of earnings management of these companies. In this study, the fact that the companies own ADR (shares traded on the New York Stock Exchange) did not present statistical significance regarding the level of earnings management.

Tabela 6 – Effects of the Regulatory Environment on earnings management

Variables		Brazil	Chile	Peru	Mexico	Latin America
REGULATION		0.0183**	-0.0006	0.0519***	0.0306**	0.0185***
		(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
SIZE		-0.0075***	-0.0036**	-0.0118***	-0.0037	-0.0058***
		(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
LIAB		0.0892***	0.0535***	0.1520***	0.0512*	0.0905***
		(0.01)	(0.02)	(0.03)	(0.03)	(0.01)
EBIT		-0.3809***	0.0137	-0.4170***	-0.1232	-0.3340***
		(0.02)	(0.04)	(0.05)	(0.08)	(0.02)
MKT		0.0012	-0.0048	-0.0042	-0.0094	-0.0002

		(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
CASHFlow		0.3113***	0.0227	0.4967***	0.3280***	0.2870***
		(0.03)	(0.04)	(0.07)	(0.08)	(0.02)
TURN		0.0058	0.0044	0.0235**	0.0282**	0.0120**
		(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
ADR		0.0098	-0.0017	0.0085	-0.0307	0.0045
		(0.01)	(0.01)	(0.01)	(0.03)	(0.01)
BIGF		-0.0113	-0.0114	-0.0015	*omitted*	-0.0098***
		(0.01)	(0.01)	(0.01)	-	(0.00)
_cons		0.1071***	0.0761***	0.0936***	0.0369*	0.0839***
		(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
N		1,212	699	268	181	2,360
Chi Square		360.12***	24.98**	150.05***	54.23***	537.99***
R²		0.1705	0.0137	0.2456	0.1076	0.1116

Dependent variable is |Accruals| (Absolute Discretionary Accruals calculated using Modified Jones Model (Dechow et al., 1995)). REGULATION = dummy variable, in which 1 is attributed to companies in the economic industries regulated by some type of regulatory agency, and 0 otherwise; SIZE = the natural logarithm of end of year total assets; LIAB = total liabilities over total assets; EBIT = Earning before interest and taxes over total assets; MKT = market capitalization over total assets; CASHFlow = operating cash flow over total assets; TURN = sales divided by end of year total assets; ADR = dummy variable that equals one if a firm has ADRs listed on a US stock exchange, and zero otherwise; BIGF = dummy variable that equals one if the firm's auditor is PwC, KPMG, E&Y, or Deloitte, and zero otherwise. Dummies for the year inserted, but not presented for space reasons. Standard error in brackets. Coefficients estimated in Ordinary Least Squares (OLS) and heteroskedasticity robust (White, 1980). ***, **, and * denote 1, 5, and 10% statistical significance of the coefficients.

5. SENSITIVTY TESTS

In the search for more robust results, we also used an alternative model for estimating accruals, as proposed by Larcker and Richardson (2004) and already analyzed in previous studies (Rathke et al., 2016; Viana Junior et al., 2017). In a general overview, Larcker and Richardson (2004) included in the Jones (1991) model two additional independent variables that, according to the authors, are shown to be correlated with measures of unexpected accruals: the book-to-market ratio (BM) and current operating cash flows (CFO).

Similar to the Jones (1991) model estimation (see section 3), the model adapted by Larcker and Richardson (2004) is estimated according to the following equations:

$$\frac{TA_{it}}{Assets_{it-1}} = \beta_0 \frac{1}{Assets_{it-1}} + \beta_1 \frac{\Delta Sales_{it}}{Assets_{it-1}} + \beta_2 \frac{GPPE_{it}}{Assets_{it-1}} + \beta_3 BM + \beta_4 CFO + \varepsilon_{it} \qquad (5)$$

$$NA_{it} = \hat{\beta}_0 \frac{1}{Assets_{it-1}} + \hat{\beta}_1 \frac{(\Delta Sales_{it} + \Delta AR_{it})}{Assets_{it-1}} + \hat{\beta}_2 \frac{GPPE_{it}}{Assets_{it-1}} + \hat{\beta}_3 BM + \hat{\beta}_4 CFO \qquad (6)$$

$$DA_{it} = \left(\frac{TA_{it}}{Assets_{it-1}}\right) - NA_{it} \qquad (7)$$

In general, the robustness tests (not presented here for space reasons) show similar results to those presented in Table 6. In all the countries analyzed, the coefficient of the REGULATION variable was positive and significant, confirming the propensity of companies located in regulated environments to manage earnings more compared to those in non-regulated environments.

6. CONCLUSION

This study investigated whether earnings management practices are influenced by the regulatory environment in which Latin America companies operate. The study was based on a sample of 2,360 companies in the period from 2011 to 2016. In general, our results support the hypothesis that there is a positive relationship between the regulatory environment and earnings management – except for companies from Chile, where there was no relationship between the factors. So, it is concluded that there are economic, cultural, or institutional aspects related to the country, which were not mentioned by this study, that can also possibly influence the use of discretionary accruals as a way of managing earnings.

Using earnings management as a proxy for information quality demonstrates that accounting decisions can shape this information, and it is up to accounting to improve this quality, thus reducing the asymmetry of information and fulfilling its role of providing reliable information to its users. The regulation of the economic industries, in turn, can contribute to a reduction in informational quality and raise levels of earnings management. This is possibly because managers of regulated companies can be influenced to engage in earnings management in order to fulfill regulatory interests, such as: improving economic indices and meeting economic goals required by the regulator; reducing the variability of profits to show stable economic performance; or even for election purposes.

The results presented by the study contribute to the literature on information quality and regulation, first because they present evidence that regulation negatively influences the quality of accounting information, secondly because it investigates a context of emerging markets that despite the political instability, some studies predict a growth of in the coming years, especially those in Latin America, and third, because it analyzes the companies of these countries from an individual and collective perspective , allowing a discussion of the reality of each country, among them and with other contexts.

For future studies, it is suggested that institutional factors related to cultural, social, economic, and other aspects be included, which can explain the differences between countries and how these differences are able to influence earnings management and, consequently, the quality of accounting information. It is also suggested to include the variable of real earnings management (by operational activities), since in a regulatory environment, companies can substitute management by accruals for the management of operational activities. Besides, control variables in order to capture the characteristics of the analyzed countries that may influence the level of informational quality such as the variation of Gross Domestic Product - GDP, perception of corruption, inflation, etc.

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