

**IMPACTS OF ECONOMIC INSTABILITY ON ACCOUNTING INFORMATION QUALITY:
EMPIRICAL EVIDENCE IN LATIN AMERICA**

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1. INTRODUCTION

The question we address is whether accounting information quality is associated with factors related to economic instability. More specifically, we investigate whether the accounting amounts of Latin American firms – analyzed in terms of earnings management – could be explained by the inflation (consumer price index) and stock market volatility conditions in which these companies operate. In general, our results indicate that in times of greater economic instability, the managers of the companies seem to use accruals more to manage their results, corroborating with the theoretical framework proposed by the literature review (Arnold, 2009; Bezemer, 2010; Hopwood, 2009).

Following other studies (Barth, Landsman, & Lang, 2008; Doukakis, 2014; Jeanjean, & Stolowy, 2008), we interpret accounting information that exhibits less earnings management as being of higher quality. Earnings management occurs when managers use judgment in presenting accounts and in transactions to change financial reporting in order to mislead some stakeholders about the company's underlying economic performance or to even influence contractual outcomes that depend on reported accounting numbers (Healy & Wahlen, 1999).

The literature on earnings quality attributes managers' earnings management practices to diverse issues, such as the firm's financial characteristics (Armstrong, Barth, Jagolinzer, & Riedl, 2010), private incentives (Barth et al., 2008), and aspects related to the institutional and economic environment (Ahmad-Zaluki, Campbell, Goodacre, 2011; Flores, Weffort, Silva, & Carvalho, 2016). Even though economic instability is commonly the focus in economic theory, Arnold (2009, p. 803) points out that the magnitude of financial and economic crises calls for a fundamental reassessment of all areas of business and economic academia, including accounting research. Following the constant increase in means of communication, the globalization of economies, and other factors, an increasingly systematic relationship can be established in which economic effects that were previously viewed as isolated phenomena are now being assessed in wide-ranging areas of knowledge. This situation forms a multidisciplinary prism that can assist in providing a broader understanding of these phenomena (Flores et al., 2016).

Thus, it becomes possible to imagine a relationship between earnings management practices and the economic instability that affects companies. Ahmad-Zaluki et al. (2011) comment that during periods of economic stress most firms probably exhibit lower earnings, which could possibly encourage policy makers to engage in income-increasing earnings management to compensate for the decrease of operational performance.

This study is based on a broad sample of companies listed on the main stock exchanges of four Latin American countries (Brazil, Chile, Mexico, and Peru), during the period from 2010 to 2016 - totaling 2,368 firm-year observations. We employ a series of econometric modeling, considering earnings management as the dependent variable, measured using the amount of discretionary accruals, as proposed by the Modified Jones Model (Dechow, Sloan, & Sweeney, 1995); and economic instability in the countries as the independent variable, measured by annual inflation – using the Consumer Price Index – as well as by the annual volatility in stock exchange trading in the respective countries. Several control variables were inserted into the econometric modeling, as proposed by the literature.

We found evidence of positive and statistically significant relationships between the amount of discretionary accruals and economic instability (represented by both inflation and annual stock exchange volatility). The results are robust in considering different approaches to parameter estimation. The evidence persists in robustness tests considering alternative models for the operationalization of discretionary accruals. We therefore present significant evidence

that in periods of greater economic instability, managers seem to use accounting choices more strongly to manipulate results, possibly in order to achieve their goals, which may be more difficult in times of more aggressive economic crises.

Some aspects support the contribution of this study to the accounting literature. First, the literature on earnings quality in emerging markets is still in development (Rathke, Santana, Lourenço, & Dalmácio, 2016). Chen, Hope, Li, and Wang (2011) comment that compared with the vast literature on developed countries' accounting systems and managers' reporting incentives, the scientific production on the role of accounting in emerging markets is virtually nonexistent, despite its importance to international organizations such as the World Bank, the International Accounting Standards Board (IASB), and others. Regarding the economic aspects, despite the political instability, some studies foresee the growth of emerging markets in the next years, especially Latin American countries (Fitch Ratings, 2016), giving relevance to studies on these countries, principally for investors and regulators in the region.

Second, we expect to contribute to the literature through our methodological aspects, using different metrics to capture the effects of economic instability on earnings management. In this sense, to the best of our knowledge, most of the research has focused on using dummies to represent moments of economic instability (Choi, Kim, & Lee, 2011; Flores et al., 2016; Silva, Weffort, Flores, & Silva, 2014). On the other hand, in order to obtain more specific results, we use continuous variables for each year and country, analyzing two dimensions normally linked to economic instability: inflation and stock exchange volatility. Third, the temporal window of our analysis (2010-2016) covers a period after IFRS adoption in the countries analyzed, which offers the possibility of comparing these results with others from moments before IFRS adoption, thus broadening the discussion on the theme.

The remainder of this paper is structured in five more sections. In the next section, we present some information about the impacts of the economic environment on the quality of accounting information, as well as a literature review on the relationship between economic instability and earnings management, outlining the hypotheses. 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.

2.1. EARNINGS MANAGEMENT AND THE ECONOMIC ENVIRONMENT

Informational quality corresponds to fulfilling the attributes desired in information published for users, whose main interest is to know company numbers in order to protect their investments. Chaney, Faccio, and Parsley (2011) highlight the existence of an extensive debate about how accounting statements can provide quality information about a company's present and future performance. However, the quality of accounting information is a concept that cannot be measured yet by a single variable, thus it has to be measured by several attributes, with the most researched ones being: relevance, persistence, conservatism, and earnings management (Almeida, Sarlo Neto, Bastianello, & Moneque, 2012; Barth et al., 2008; Lopes & Walker, 2008).

Within this discussion, earnings management, related to exercising earnings discretion in an opportunistic manner, is a matter of serious concern to shareholders, creditors, standard setters, and regulators in global capital markets (Defond 2010, Gray, Kang, Lin, & Tang, 2015; Healy, & Wahlen, 1999; Leuz, Nanda, & Wysocki, 2003). Investors and creditors in every nation depend on accountants to provide fair and reliable financial information regardless of national culture or orientation. Financial statement users must be certain that company-reported information, on which they base decisions, is accurate. Companies that engage in earnings management may mislead the public regarding the true economic profitability and/or variability and sustainability of their operations (Geiger, O'Connell, Clikeman, Ochoa, Witkowski, & Basioudis, 2006). Dechow and Skinner (2000) point out that the concept of earnings

management is not clear. For Healy and Wahlen (1999), for example, earnings management occurs when managers use judgment in recording accounts and in transactions to change financial reporting in order to mislead some stakeholders about the company's underlying economic performance or to even influence contractual outcomes that depend on reported accounting numbers.

According to McKee (2005), earnings management is the activity of managing accounting numbers with certain objectives, which can be, among others, increasing or decreasing accounting results (target earnings), reducing profitability to increase future profit (big bath accounting), or reducing the variability of accounting results (income smoothing). Despite these and other approaches to management practices used by companies, earnings management by accruals stands out as being the most recurrent method used in the literature to recognize the manipulation of profits by managers (Beneish, 2001), involving revenues and expenses being recognized based on the accrual basis, and which have not necessarily performed financially; that is, there has been no mandatory receipt of revenue or actual payment of the accrual expense. From this perspective, the accruals total is formed of both discretionary and non-discretionary accruals. Non-discretionary accruals are a proxy for the recognition of accruals outside the field of manager judgment, i.e. outside of accounting choices; on the other hand, discretionary accruals are related to earnings management practices in which the manager decides to manipulate the accounting numbers to increase or decrease the amounts for reasons that are not consistent with the reality of the business. Thus, in accordance with representative literature (Beneish, 2001; Chen, Tang, Jiang, & Lin, 2010; Choi et al., 2011; Cohen, Dey, & Lys, 2008; Cohen, & Zarowin, 2010; Dechow et al., 1995; Doukakis, 2014; Enomoto, Kimura, & Yamaguchi, 2015; Flores et al., 2016; Jones, 1991; Larcker, & Richardson, 2004; McNichols, 2000; Rathke et al., 2016; Wan Ismail, Khairul, Zijl, & Dunstan, 2013), we focus on the amount of discretionary accruals as a proxy for earnings management.

The literature on earnings quality attributes managers' earnings management practices to diverse issues, such as the firm's financial characteristics (Armstrong et al., 2010), private incentives (Barth et al., 2008), and aspects related to the institutional and economic environment (Ahmad-Zaluki et al., 2011; Flores et al., 2016). According to Ball (2006), local economic and political forces determine how managers, auditors, courts, regulators, and other parties influence the implementation of standards and laws, which can ultimately exert a substantial influence on historical financial reporting practices. Previous studies have also identified several other exogenous factors that might affect earnings management behavior, such as human and economic development, economic freedom (Riahi-Belkaoui, 2004), the legal system, including rules and their enforcement (Leuz et al., 2003), cultural values (Han, Kang, Salter, & Yoo, 2010), and auditing quality (Tendeloo & Vanstraelen, 2008).

Thus, accounting practices for recognition, measurement, and disclosure are sensitive to the environment in which they are applied, responding to stimuli arising from legal systems, the political and economic characteristics of users and preparers of financial statements, cultural values, and other sources (Flores et al., 2016). Ahmad-Zaluki et al. (2011) comment that during periods of economic stress, most firms probably exhibit lower earnings, which may possibly encourage policy makers to engage in income-increasing earnings management to compensate for the decrease in operational performance.

Ryan (2008) explains that times of crisis raise relevant issues for accounting research and related teaching. According to the author, it might be possible to analyze the impacts of financial crises via issues related to psychological phenomena, which have primarily been addressed using experimental-behavioral methods. Within this discussion, Koonce and Mercer (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. Czaya and Hesser

(2001) also suggest that the variables related to the economic environment in which the individuals are situated are capable of interfering in the agents' mental and psychic state, given the possible feelings of insecurity that this scenario could bring to the agents. Thus, the uncertainty arising from unstable economic environments could encourage managers to act opportunistically in an attempt to maintain their "good results", even to the detriment of the other parties involved.

Thus, it is possible to identify some studies that have focused on investigating the relationship between earnings management practices and the characteristics of the economic environment in times of crisis. Han and Wang (1998) investigated whether firms that expect increases in earnings resulting from sudden product price increases use accounting accruals to reduce earnings and, thus, political sensitivity. Specifically, oil firms' accruals are analyzed in a period of rapid gasoline price increases during the 1990 Persian Gulf crisis. The authors show that oil firms that expected to profit from the crisis used accruals to reduce their reported quarterly earnings during the Gulf crisis. In contrast to previous research, it was verified that the tendency to release good earnings news early, documented in prior research, is reversed for oil firms during the Gulf crisis. This finding suggests that the benefit of disclosing "good news" (i.e., earnings increases) early may have been out-weighed by the political costs associated with timely releases of the information.

Showing income-increasing earnings management in Malaysian IPOs but that this occurs primarily during a period of severe economic stress (the East Asian crisis), Ahmad-Zaluki et al. (2011) found the requirement to provide a profit guarantee appears to reduce rather than encourage earnings management. Within this market of high ownership concentration, ownership concerns also appear to constrain IPO earnings management. Owners are willing to forego 'opportunistic' earnings management and signaling opportunities to increase their likelihood of retaining control of the company post-IPO. IPO companies engaging in aggressive earnings management have significantly worse market-based performance than their more conservative counterparts, but only during the economic crisis period.

In investigating whether and how reported information on gains and their components changed around the 1997-1998 Asian financial crisis, Choi et al. (2011) used a sample of 10,406 firms from nine Asian countries, from 1995 to 2000, for regression analyses, revealing the following: first, the crisis led to a significant decline in the value relevance of discretionary accruals but had no significant impact on the value relevance of non-discretionary earnings components such as operating cash flows and non-discretionary accruals; second, the decrease in the value relevance of discretionary accruals during the crisis was more severe for firms in countries with weak institutions than for those in countries with strong institutions; and third, the value relevance of discretionary accruals declined to a greater extent for firms with high information asymmetries than for firms with low information asymmetries.

Flores et al. (2016) attempted to verify if during economic crises listed companies in the Brazilian capital market tended to adopt earnings management practices. Their sample consisted of 3,772 firm-years observations, covering 13 years (1997 to 2009). They developed regression models considering discretionary accruals as a proxy for earnings management (dependent variable), crises as a macroeconomic factor (dummy variable of interest), ROA, market-to-book, size, leverage, foreign direct investment (FDI), and sector as control variables. Unlike in previous earnings management studies, two approaches were used in data panel regression models and multiple crises were observed simultaneously. Statistical tests revealed a significant relationship between economic crises and earnings management practices concerning listed companies in Brazil for both approaches used.

So, considering the analysis of previous studies, in particular the results of the research by Han and Wang (1998), Ahmad-Zaluki et al. (2011), Choi et al. (2011), and Flores et al.

(2016), which observed changes in earnings management behavior in economic crises, the following research hypothesis was proposed for testing:

Hypothesis: There is a positive and significant relationship between earnings management and economic instability.

3. REASERCH DESIGN

3.1. Sample and data

Our sample consists of an unbalanced panel formed of 609 companies listed in Latin American exchanges, in the period 2010-2016, using data available from the *Capital IQ* database – the main source of information for the development of this study –, comprising four countries in the region (Brazil, Chile, Mexico, and Peru). Table 1 shows the sample divided by sector, according to the Capital IQTM database classification.

Table 1 – Overall Descriptive Statistics of Quantitative Variables

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	1,128	701	268	181	2,368	100.00

In order to preserve the comparability between the companies from the different countries, we only examined information in the period after IFRS adoption became mandatory in the countries, resulting in different years being analyzed between the countries (IFRS, 2017).

3.2. Measuring earnings management and economic instability

Following other studies (Beneish, 2001; Chen et al., 2010; Choi et al., 2011; Cohen et al., 2008; Cohen, & Zarowin, 2010; Dechow et al., 1995; Doukakis, 2014; Enomoto et al., 2015; Flores et al., 2016; Larcker, & Richardson, 2004; McNichols, 2000; Rathke et al., 2016; Wan Ismail et al., 2013), we measured earnings management using the absolute amount discretionary accruals. Doukakis (2014) observes that several models are used in accounting research as measurement mechanism of earnings management (Jones, 1991; Dechow et al., 1995; McNichols, 2000). In accordance with other studies related to earnings management practices in times of crisis (Flores et al., 2016), we chose to use the modified version of the model proposed by Jones (1991) to measure discretionary accruals, which was developed by Dechow et al. (1995). As we seek to contribute to the literature on the subject, we believe that the modified Jones model (Dechow et al., 1995) is the best choice because it enables comparison with the proposed literature.

The methodology for estimating discretionary accruals according to Dechow et al. (1995) can be expressed in three steps. First, it starts with an expectations model for total accruals to control for changes in economic circumstances, as represented in Equation (1):

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

Where:

TA_{it} = total accruals, calculated as firm i 's net income minus cash flows from operations in year t ;

$Assets_{it-1}$ = total assets for firm i in year $t-1$;

$\Delta Sales_{it}$ = change in sales for firm i from year $t-1$ to year t ;

$GPPE_{it}$ = gross property, plant, and equipment for firm i in year t .

Second, the coefficient estimates from Equation (1) are used to estimate the firm-specific non-discretionary accruals (NA_{it}) for the sample firms, as seen in Equation (2):

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

Where:

NA_{it} = non-discretionary accruals for firm i in year t ;

ΔAR_{it} = change in accounts receivable for firm i from year $t-1$ to year t .

All other variables are as previously defined.

Third, discretionary accruals (DA) equal the difference between total accruals and the fitted non-discretionary accruals, defined as:

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

Where:

DA_{it} = discretionary accruals for firm i in year t .

All other variables are as previously defined.

In accordance with Doukakis (2014), Chen et al. (2010), and Cohen et al. (2008), the models were estimated for each year and industry cluster with at least eight observations. Using this approach, we hoped to partially control the industry-wide changes in economic conditions that could affect the dependent variables and allow the coefficients to vary across time.

The measuring of economic instability was operationalized in two ways: one proxy related to inflation – Consumer Price Index (CPI), and another related to stock exchange trading volatility. As pointed out by Kyrtsov and Labys (2006), effects of economic crises arising from economically unstable environments can be related not only to fluctuations in foreign exchange and stock markets, but also to price volatility in the market.

Some consequences in the macroeconomic environment can be seen with a rise of inflation, such as higher unemployment and less consumer spending, which can lead to falls in company sales volumes and a consequent decrease of their profits (Kyrtsov & Labys, 2006). Within this discussion, Abdellah, Chenaf, and Rougier (2012) also comment 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. Thus, we considered the natural logarithm of the annual consumer price index for the countries – as used in other relevant research (Anyanwu, 2012; Badar, & Javid, 2013; Buckley et al., 2007; Kyrtsov, & Labys, 2006) –, and the natural logarithm of the annual stock exchange volatility index for the countries, available from Global Financial Development by the World Bank (2017), as proxies for economic instability.

3.3. Empirical model

Our econometric model uses the absolute value of discretionary accruals as the dependent variable, and the variables related to economic instability in the countries (consumer price index and stock market volatility) as independent variables. Looking for more robust estimates, based in an extensive literature (Ahmad-Zaluki et al., 2011; Chen et al., 2010; Cohen et al., 2008; Doukakis, 2014; Flores et al., 2016; Guan, Pourjalali, Sengupta, & Teruya, 2005; Jeanjean, & Stolowy, 2008; Nabar, & Boonlert-U-Thai, 2007; Paredes, & Wheatley, 2017; Rathke et al., 2016; Silva et al., 2014), we added the control variables ROA, SIZE, DEBT, EBITDA, MKT, Δ LL, ADR, and BIGF – which represent, respectively, profitability, firm size, leverage, EBITDA, market capitalization, variability in net income, ADR, and big four auditors. Therefore, when the control variables were added, the regression model was given by:

$$\begin{aligned} |ACCRUALS|_{it} &= \alpha_0 + \beta_1 ECOINST_{tj} + \beta_2 ROA_{it} + \beta_3 SIZE_{it} + \beta_4 DEBT_{it} \\ &+ \beta_5 EBITDA_{it} + \beta_6 MKT_{it} + \beta_7 \Delta LL_{it} + \beta_8 ADR_{it} + \beta_9 BIGF_{it} + \varepsilon_{it} \end{aligned} \quad (4)$$

Where:

|ACCRUALS|: absolute discretionary accruals;

ECOINST: variables that represent economic instability (consumer price index and stock market volatility) in year t and country j ;

ROA: net income over total assets;

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

DEBT: total liabilities over total assets;

EBITDA: Earning before income, tax, depreciation, and amortization over total assets;

MKT: market capitalization over total assets;

Δ LL: variability in net income over 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.

In a search for the best estimation for the panel data methodology, the Chow, Hausman, and Breush-Pagan test was carried out. In addition to panel estimation, we also regressed the data using Ordinary Least Squares (OLS) estimator with a view to confirming or not the parameters. We applied the White (1980) correction to ensure that the coefficients were robust in terms of heteroskedasticity. To address multicollinearity, we calculated the Variance Inflation Factor (VIF) in each model and excluded variables with a VIF greater than 10.

4. EMPIRICAL RESULTS

Table 2 shows the CPI and STCKV variables by year, related to economic instability in the countries. Focusing on the CPI variable, the results indicate an increase in inflation in Brazil between 2011 and 2015, explained by the recent political scandals experienced in the country in the last years. Similarly, increases in inflation can also be seen in Peru between 2013 and 2016. For the other countries (Chile and Mexico), also with respect to inflation, rises and falls can be seen from one year to the next, signaling greater economic stability in these countries compared to Brazil and Peru.

Table 2 – Overall Descriptive Statistics of Quantitative Variables

Country	Metric	2011	2012	2013	2014	2015	2016
Brazil	CPI	1.8925	1.6871	1.8252	1.8451	2.2006	2.1679
	STCKV	3.0642	3.1972	3.0945	3.0588	-	-
Chile	CPI	1.2042	1.0983	0.6534	1.4798	1.4699	1.3324
	STCKV	2.7224	2.9529	2.5263	2.6435	-	-
Mexico	CPI	-	-	1.3355	1.3910	1.0006	1.0378
	STCKV	-	-	2.6287	2.6894	-	-
Peru	CPI	-	-	1.0318	1.1774	1.2664	1.2790
	STCKV	-	-	2.7758	2.7983	-	-
Total	Mean CPI	1.5484	1.3927	1.2115	1.4733	1.4844	1.4543
	Mean STCKV	2.8933	3.0751	2.7563	2.7975	-	-

CPI = natural logarithm of consumer price index; STCKV = natural logarithm of stock market volatility index calculated by the World Bank. 2011 and 2012 were not considered for Mexico and Peru because in these countries mandatory adoption of IFRS began in 2013 (IFRS, 2017). The STCKV variable is only available until 2014.

Observing the volatility of stock exchanges in the region, through the STCKV variable in Table 1, it should also be noted that despite the increasing inflation in Brazil, the dispersion in stock market trading decreases from 2012 to 2014. It's possible to observe still that Brazil showed higher values for the CPI and STCKV variables in all the years analyzed. It is important to highlight that in Brazil in 2015, corruption scandals affected the economic environment as a whole, beginning with the impeachment process for President Dilma Rousseff. In Chile, it should also be noted that the STCKV variable has a high value in 2012 and less so in 2013. It is possible to observe that in Mexico and Peru the CPI and STCKV increased from 2013 and 2014, with inflation continuing to increase in Peru over the analyzed period.

Table 3 shows the descriptive statistics for absolute discretionary accruals by country. It is possible to observe that the Brazilian companies present the highest discretionary accruals, followed by the companies from Mexico, then Peru, and finally Chile. Also, we note that in countries with high values for economic instability, such as Brazil, the mean absolute discretionary accruals present high values, as well as in countries where economic instability variables are increasing in value, for example Mexico (STCKV) and Peru (CPI and STCKV).

However, it is possible to observe that of the sample analyzed, the Chilean companies present lower average absolute discretionary accruals, which may show lower levels of earnings management, since the economic instability variables (CPI) presented a decrease over the period analyzed.

Table 3 – Descriptive Statistics of Absolute Discretionary Accruals by country

Variables	N	Mean	Median	p.25	p.75	SD	Min	Max	CV
Brazil	1,218	0.0795	0.0517	0.0243	0.0959	0.1039	0.0001	1.2187	1.3064
Chile	701	0.0595	0.0427	0.0214	0.0729	0.0659	0.0001	0.6953	1.1067
Mexico	268	0.0633	0.0397	0.0181	0.0780	0.0775	0.0011	0.5046	1.2252
Peru	181	0.0621	0.0410	0.0186	0.0848	0.0603	0.0001	0.3517	0.9709
Total	2,368	0.0704	0.0465	0.0223	0.0849	0.0887	0.0001	1.2187	1.2600

Table 4 shows the test of means (*t*-test) and analysis of variance (ANOVA) of mean discretionary accruals by country. It is possible to observe that in 2013, 2014, and 2016, the means are statistically different. It can be seen that for most of the period analyzed the Brazilian companies managed their accounting results more intensely compared with the companies of the other countries analyzed. It should be noted that Brazil presented greater economic instability during the period analyzed. Thus, there is evidence of a positive relationship between earnings management practices and economic instability.

Table 4 – Analysis of Variance (ANOVA) – Mean Discretionary Accruals by Country

Year		Brazil	Chile	Mexico	Peru	<i>t</i> -test (<i>p</i> -value)	ANOVA (<i>p</i> -value)
2011	N	192	110	-	-	(0.421)	-
	Mean	0.0622	0.0569	-	-		
2012	N	206	114	-	-	(0.806)	-
	Mean	0.0704	0.0726	-	-		
2013	N	201	116	62	36	-	(0.026)
	Mean	0.0755	0.0536	0.0859	0.0552		
2014	N	213	117	69	40	-	(0.072)
	Mean	0.0760	0.0574	0.0583	0.0649		
2015	N	209	123	75	39	-	(0.151)
	Mean	0.0700	0.0506	0.0515	0.0663		
2016	N	197	121	62	66	-	(0.000)
	Mean	0.1237	0.0661	0.0604	0.0615		
Total	N	1,218	701	268	181	-	(0.000)
	Mean	0.0795	0.0595	0.0632	0.0621		

Table 5 shows the descriptive statistics of all the continuous variables used in the estimations. It is possible to observe for the period analyzed that, on average, the companies in the sample present negative variation in net income (ΔLL). There is also a high degree of heterogeneity of companies with regard to both profitability (ROA) and variation in net income (ΔLL), with coefficient of variation of 13.34 and -13.37, respectively. In the same sense, although less intense, there is still a high variation in the discretionary accruals of the companies (coefficient of variation of 1.26), suggesting different policies of recognition of profits by Latin America companies analyzed. Finally, in the opposite direction, there are still low variations on the TAM and DEBT variables, signaling, on average, the selection of companies with a similar volume of assets and indebtedness policies.

Table 5 – Overall Descriptive Statistics of Quantitative Variables

Variables	N	Mean	Median	p.25	p.75	SD	Min	Max	CV
ABS_DA	2,368	0.0704	0.0465	0.0223	0.0849	0.0887	0.0001	1.2187	1.2600
ROA	2,368	0.0118	0.0274	-0.0016	0.0594	0.1579	-3.2349	2.2185	13.3371
SIZE	2,368	6.8213	6.9182	5.7008	7.9105	1.7699	0.9858	12.6965	0.2595
DEBT	2,368	0.3147	0.2978	0.1848	0.4048	0.2121	0.0000	2.4426	0.6740
EBITDA	2,368	0.0838	0.0854	0.0458	0.1282	0.1105	-1.2118	1.1938	1.3189
MKT	2,368	0.7920	0.5346	0.2865	0.9576	0.9272	0.0002	13.3040	1.1707
ΔLL	2,368	-0.0112	-0.0044	-0.0264	0.0120	0.1498	-3.1684	1.9820	-13.3728

ABS_DA = Absolute discretionary accruals calculated using Modified Jones Model (Dechow et al., 1995). ROA = Return on assets. SIZE = Firm size (Ln(total assets)). DEBT = Total liabilities over total assets. EBITDA = earnings before interest taxes depreciation and amortization over total assets. MKT = Market capitalization over total assets. ΔLL = variability in net income over total assets.

Table 6 shows the correlation matrix for the continuous variables. It is possible to observe that the CPI and STCKV variables are positively correlated with absolute discretionary accruals, which suggests a higher level of results management in times of greater economic instability, according to the rationale proposed for Hypothesis 1. The discretionary accruals variable is correlated with all the explanatory variables, confirming previous studies (Han & Wang, 1998; McNichols, 2000; Hand, 2001; Ahmad-Zaluki et al., 2011; Choi et al., 2011; Silva, Weffort, Flores, and Silva, 2014; Flores et al., 2016).

With regards to the economic instability variables, it is important to highlight that the CPI variable is correlated with the ROA, EBITDA, and MKT variables, which may indicate

that economic instability affects the companies' performance and consequently their market value. The STCKV variable is correlated with the ROA variable, and this correlation is negative, as it is for the CPI variable, allowing us to infer that in periods of higher stock volatility and higher inflation, companies tend to present lower results. Thus, the results presented for the two variables - CPI and STCKV - reinforce that in a period of economic instability, companies tend to present lower results as pointed out by Ahmad-Zaluki et al. (2011). Moreover, as shown, the economic instability variables are correlated.

Table 6 – Correlation Matrix for Continuous Variables

	ABS_DA	CPI	STCKV†	ROA	SIZE	DEBT	EBIT	MKT	ALL
ABS_DA	-								
CPI	0.1200	-							
<i>p-value</i>	(0.0000)	-							
STCKV†	0.0699	0.7847	-						
<i>p-value</i>	(0.0073)	(0.0000)	-						
ROA	-0.3445	-0.1002	-0.0578	-					
<i>p-value</i>	(0.0000)	(0.0000)	(0.0264)	-					
SIZE	-0.1306	0.0857	0.1238	0.1098	-				
<i>p-value</i>	(0.0000)	(0.0000)	(0.0000)	(0.0000)	-				
DEBT	0.2484	0.1821	0.1422	-0.3450	0.0732	-			
<i>p-value</i>	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0004)	-			
EBITDA	-0.2787	-0.0832	-0.0251	0.5475	0.1476	-0.1519	-		
<i>p-value</i>	(0.0000)	(0.0001)	(0.3361)	(0.0000)	(0.0000)	(0.0000)	-		
MKT	-0.0934	-0.0636	0.0030	0.2725	-0.0070	-0.1485	0.4198	-	
<i>p-value</i>	(0.0000)	(0.0020)	(0.9089)	(0.0000)	(0.7331)	(0.0000)	(0.0000)	-	
ALL	-0.1344	-0.0076	-0.0287	0.6818	-0.0008	-0.1683	0.2109	-0.0329	-
<i>p-value</i>	(0.0000)	(0.7108)	(0.2716)	(0.0000)	(0.9675)	(0.0000)	(0.0000)	(0.1096)	-

† Statistics calculated based on 1,474 firm-year observations.

ABS_DA = Absolute discretionary accruals calculated using Modified Jones Model (Dechow et al., 1995). CPI = consumer price index for each country and year. STCKV = stock exchange volatility index for each country and year. ROA = Return on assets. SIZE = Firm size (Ln(total assets)). DEBT = Total liabilities over total assets. EBITDA = earnings before interest taxes depreciation and amortization over total assets. MKT = Market capitalization over total assets. ALL = variability in net income over total assets.

Table 7 shows the effect of economic instability on earnings management using both OLS and panel data estimators. It is possible to observe that the CPI and STCKV variables explain the absolute discretionary accruals variable. From the regression models presented, it is possible to affirm that the economic instability variables positively explain earnings management practices. These results are in agreement with the literature (Han & Wang, 1998; Ahmad-Zaluki et al., 2011; Choi et al., 2011; Flores et al., 2016) and do not refute the hypothesis raised in the study that there is a positive and significant relationship between earnings management and economic instability. In a more detailed analysis, it is still possible to observe that in both the OLS and panel estimations, the models that better explain the variation of the discretionary accruals are those that consider the economic instability approximated by stock market volatility (STOCKV), suggesting a better explanatory power of this variable when compared to inflation (CPI).

Regarding the control variables, it is possible to observe that the ROA, SIZE, DEBT, MKT, and ALL variables explain the absolute discretionary accruals variable. The ROA variable has the purpose of controlling the bias that may exist between EM and company performance, however, the results refute the findings by Silva, Weffort, Flores, and Silva (2014) and McNichols (2000), since negative significance was found between ROA and earnings management. The size variable could have a positive or negative effect on EM. For Hochberg (2012), the financial statements of larger companies are more complex and can be a facilitating

aspect for earnings management. However, these companies are also liable to be monitored by market analysts, which could reduce earnings management opportunities. It was expected that more indebted companies would practice less earnings management, since they are more closely monitored by debt holders (Gray, Kang, Lin, & Tang, 2015); however, no positive relationship was perceived between the variables, which indicates that more indebted companies tend to practice earnings management in order to disclose accounting results conducive to management. It was possible to verify that the MKT variable positively explains earnings management practices, since the companies' market value captures subjective effects such as the expectation by economic agents for future cash generation, informational asymmetry, and growth opportunities (Hand, 2001). Thus, management is motivated to practice earnings management in order to meet the expectations of stakeholders.

Table 7 – Effect of economic instability on earnings management

Variables	Ordinary Least Squares		Panel Data – Random Effects	
CPI	0.0150*** (3.51)	-	0.0156*** (3.27)	-
STOCKV	-	0.0135** (2.00)	-	0.0162*** (2.07)
ROA	-0.1810* (-1.59)	-0.2654*** (-8.42)	-0.1534 (-1.30)	-0.2654 (-9.12)
SIZE	-0.0040*** (-3.26)	-0.0031*** (-3.21)	-0.0043*** (-2.80)	-0.0030 (-2.56)
DEBT	0.0616** (2.10)	0.0254** (2.07)	0.0654** (1.98)	0.0194 (1.56)
EBITDA	-0.0950 (-0.78)	0.0346 (0.88)	-0.1070 (-0.86)	0.0275 (0.65)
MKT	0.0074* (1.83)	0.0063** (2.18)	0.0061 (1.51)	0.0063 (2.07)
ΔLL	0.0821* (1.73)	0.0597** (1.95)	0.0670 (1.43)	0.0627 (2.13)
ADR	0.0040 (0.57)	-0.0064 (-1.20)	0.0048 (0.53)	-0.0065 (-0.95)
BIGF	-0.0100** (-2.11)	-0.0047 (-1.27)	-0.0102** (-1.91)	-0.0045 (-1.05)
_cons	0.0666*** (7.73)	0.0408** (2.11)	0.0683 (6.63)	0.0345 (1.52)
N	2,368	1,474	2,368	1,474
F Test	11.81***	22.94***	-	-
χ ² Test	-	-	64.28***	155.03***
R ²	0.1794	0.2734	-	-
R ² overall	-	-	0.1786	0.2730

Dependent variable is ABS_DA (Absolute Discretionary Accruals calculated using Modified Jones Model (Dechow et al., 1995)). CPI = consumer price index for each country and year. EXV = stock exchange volatility index for each country and year. ROA = Return on assets. SIZE = Firm size (Ln(total assets)). DEBT = Total liabilities over total assets. EBITDA = earnings before interest taxes depreciation and amortization over total assets. MKT = Market capitalization over total assets. ΔLL = variability in net income over total assets. ADR = dummy variable for American Depositary Receipt. BIGF = dummy variable for Big Four auditing firm. Estimated coefficients and standard errors robust in terms of heteroskedasticity (White, 1980). ***, **, and * denote 1, 5, and 10% statistical significance of the coefficients.

5. ROBUSTESS TESTS

In order to provide a more solid conclusion to the discussion, we used an alternative proxy for earnings management proposed by Larcker and Richardson (2004). In a general vision, 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).

BM is included as a proxy for expected growth in the firm's operations. Succinctly, BM is included as an instrument for expected growth in the firm's operations – the expectation is to observe large accruals for growing firms. CFO was included to control the possibility of unexpected accruals being misspecified in firms with extreme levels of performance. Despite some criticisms, it is possible to observe other relevant research that supports the relevance of the alteration proposed by the Larcker and Richardson (2004) model (Rathke et al., 2016).

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

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

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

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

Table 8 show the effects of inflation – represented by the Consumer Price Index (CPI) – and stock market volatility – represented by the Stock Exchange Volatility Index from Bloomberg – on discretionary accruals, as proposed by Larcker and Richardson (2004). In the results presented in Table 7 it is possible to observe a positive and significant relationship between discretionary accruals and the proxies used to represent economic instability in the Latin American countries. The results are consistent considering both OLS and panel estimates. In the same perspective of the results obtained considering the amounts of accruals calculated based on Dechow et al. (1995), the models that better explain the variation of the discretionary accruals are those that consider the economic instability approximated by stock market volatility (STOCKV) – considering the R² value –, confirming a better explanatory power of this variable when compared to inflation (CPI).

Regarding the control variables, some outcomes remain the same considering the discretionary accruals proposed by Dechow et al. (1995), such as the negative impact of ROA and positive impact of MKT and ΔLL on discretionary accruals. However, the ADR dummy, which had no significance in Table 7, now appears as having a negative relationship with discretionary accruals – suggesting that Latin American firms with ADRs have less earnings management than others, corroborating with previous studies that point to better enforcement of North American legislation to contain earnings manipulation practices (Black, & Nakao, 2017; Rathke et al., 2016).

Table 8 – Robustness Tests: Effect of economic instability on earnings management

Variables	Ordinary Least Squares		Panel Data – Random Effects	
CPI	0.0192*** (4.79)	-	0.0192*** (4.38)	
EXV	-	0.0262*** (4.16)	-	0.0286*** (3.97)
ROA	-0.2737** (-2.18)	-0.3676*** (-8.01)	-0.2313 (-1.55)	-0.3697*** (-6.37)
SIZE	-0.0034** (-2.47)	-0.0023** (-2.22)	-0.0039** (-1.97)	-0.0022 (-1.60)
DEBT	0.0418 (1.33)	0.0139 (1.06)	0.0493 (1.22)	0.0066 (0.46)
EBITDA	-0.1822 (-1.39)	-0.0322 (-0.70)	-0.1845 (-1.25)	-0.0362 (-0.70)
MKT	0.0175*** (2.97)	0.0175*** (4.12)	0.0140* (1.87)	0.0170*** (3.26)
ΔLL	0.1439** (2.22)	0.1326*** (3.26)	0.1217 (1.57)	0.1374*** (2.84)
ADR	-0.0077* (-1.73)	-0.0105** (-2.53)	-0.0067 (-1.20)	-0.0119** (-2.22)
BIGF	-0.0103** (-2.24)	-0.0035 (-0.98)	-0.0107** (-2.15)	-0.0034 (-0.81)
_cons	0.0566*** (6.87)	-0.0076 (-0.41)	0.0605*** (5.75)	-0.0125 (-0.59)
N	2,368	1,474	2,368	1,474
F Test	17.72***	33.12***	-	-
χ ² Test	-	-	86.53***	202.69***
R ²	0.2865	0.4012	-	-
R ² overall	-	-	0.2848	0.4006

Dependent variable is ABS_DA (Absolute Discretionary Accruals calculated using Modified Jones Model by Larcker and Richardson (2004)). CPI = consumer price index for each country and year. EXV = stock exchange volatility index for each country and year. ROA = Return on assets. SIZE = Firm size (Ln(total assets)). DEBT = Total liabilities over total assets. EBITDA = earnings before interest, taxes, depreciation, and amortization, over total assets. MKT = Market capitalization over total assets. ΔLL = variability in net income over total assets. ADR = Dummy variable for American Depositary Receipt. BIGF = Dummy variable for Big Four auditing firm. Estimated coefficients and standard errors robust in terms of heteroskedasticity (White, 1980). ***, **, and * denote 1, 5, and 10% statistical significance of the coefficients.

6. DISCUSSION AND CONCLUSIONS

We investigated whether the accounting values of four Latin-American countries' firms (Brazil, Chile, Mexico, and Peru) – analyzed in terms of earnings management – could be explained by the inflation (consumer price index) and stock market volatility where these companies operate. The study is based on a broad sample of companies listed on the main stock exchanges during the period from 2010 to 2016, totaling 2,368 firm-year observations. We employed a series of econometric models, considering earnings management calculated by the amount of discretionary accruals as the dependent variable, as proposed by the Modified Jones Model (Dechow, Sloan, & Sweeney, 1995); and economic instability as the independent variable, measured by annual inflation – using the Consumer Price Index – as well as by annual volatility in stock exchange trading in the respective countries. The results obtained from this study support the proposed hypothesis, indicating positive and statistically significant relationships between the amount of discretionary accruals and economic instability in the countries, represented by both inflation and annual stock exchange volatility. Robustness tests considering alternative estimations of discretionary accruals confirm the results presented.

The results suggest that managers, in times of greater economic instability, use accounting choices more strongly to manipulate results, possibly in order to achieve their goals,

which may be more difficult in times of more aggressive economic crises. Thus, in a period of economic instability, financial statements may not present reliable information relevant to the decision-making of various users, such as investors and creditors. This relates to concerns about how professional judgment through accounting choices affects the quality of accounting information, and how accounting itself plays a role in reducing informational asymmetry and ensuring compliance with the contract in question.

Finally, for future research the addition of other models for estimating accruals is suggested, and a comparison of the Latin American context with others, such as the European, Asian, and North American ones, since legal systems, including rules and their enforcement (Leuz et al., 2003), and cultural values (Han, Kang, Salter, & Yoo, 2010), influence the quality of accounting information.

References

- Abdellah, K., Chenaf, D. N., & Rougier, E. (2012). FDI and macroeconomic volatility: a close-up on the source countries. *Cahiers du GREThA*, 21(1), 2012. Available from <<http://cahiersdugretha.u-bordeaux4.fr/2012/2012-21.pdf>>. Accessed on May 11 2017.
- Ahmad-Zaluki, N. A., Campbell, K., Goodacre, A. (2011). Earnings management in Malaysian IPOs: The East Asian crisis, ownership control, and post-IPO performance. *The International Journal of Accounting*, 46(2), 111-137.
- Almeida, J. E. F., Sarlo Neto, A., Bastianello, R. F., & Moneque, E. Z. (2012). Alguns aspectos das práticas de suavização de resultados no conservadorismo das companhias abertas listadas na BM&FBovespa. *Revista Contabilidade & Finanças*, 23(58), 65-75.
- Anyanwu, J. C. (2012). Why does foreign direct investment go where it goes? New evidence from African countries. *Annals of Economics and Finance*, 13(2), 425-462.
- Armstrong, C. S., Barth, M. E., Jagolinzer, A. D., & Riedl, E. J. (2010). Market reaction to the adoption of IFRS in Europe. *The Accounting Review*, 85(1), 31-61.
- Arnold, P. J. (2009). Global financial crisis: The challenge to accounting research. *Accounting, Organizations and Society*, 34(6), 803-809.
- Badar, M., & Javid, A. Y. (2013). Impact of macroeconomic forces on nonperforming loans: An empirical study of commercial banks in Pakistan. *Transactions on Business and Economics*, 10(1), 40-48.
- Ball, R. (2006). IFRS: Pros and Cons for Investors. *Accounting & Business Research*, 36(4), 5-27.
- Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research*, 46(3), 467-498.
- Beneish, M. D. (2001). Earnings management: A perspective. *Managerial Finance*, 27(12), 3-17.
- Bezemer, D. J. (2010). Understanding financial crisis through accounting models. *Accounting, Organizations and Society*, 35(7), 676-688.
- Black, R., & Nakao, S. H. (2017). Heterogeneidade na qualidade do lucro contábil entre diferentes classes de empresas com a adoção de IFRS: evidências do Brasil. *Revista Contabilidade & Finanças*, 28(73), 113-131.
- Buckley, P. J., Clegg, L. J., Cross, A. R., Liu, X., Voss, H., & Zheng, P. (2007). The determinants of Chinese outward foreign direct investment. *Journal of International Business Studies*, 38(4), 499-518.
- Chaney, P. K., Faccio, M., & Parsley, D. (2011). The quality of accounting information in politically connected firms. *Journal of Accounting and Economics*, 51(1), 58-76.
- Chen, F., Hope, O. K., Li, Q., & Wang, X. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*, 86(4), 1255-1288.

- Chen, H., Tang, Q., Jiang, Y., & Lin, Z. (2010). The role of international financial reporting standards in accounting quality: evidence from the European Union. *Journal of International Financial Management Accounting*, 21(3), 220-278.
- Choi, J. H., Kim, J. B., & Lee, J. J. (2011). Value relevance of discretionary accruals in the Asian financial crisis of 1997–1998. *Journal of Accounting and Public Policy*, 30(2), 166-187.
- Cohen, D.A., Dey, A., & Lys, T.Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-oxley periods. *The Accounting Review*, 83(3), 757-787.
- Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics*, 50(1), 2-19.
- Czaya, A., & Hesser, W. (2001). Standardization systems as indicators of mental, cultural and socio-economic states. *Philosophy & Technology*, 14(3), 24-40.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review*, 70(2), 193-225.
- Dechow, P. M., & Skinner, D. J. (2000). Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizons*, 14(2), 235-250.
- DeFond, M. L. (2010). Earnings quality research: Advances, challenges and future research. *Journal of Accounting and Economics*, 50(2), 402-409.
- Doukakis, L. C. (2014). The effect of mandatory IFRS adoption on real and accrual-based earnings management activities. *Journal of Accounting and Public Policy*, 33(6), 551-572.
- Enomoto, M., Kimura, F., & Yamaguchi, T. (2015). Accrual-based and real earnings management: An international comparison for investor protection. *Journal of Contemporary Accounting & Economics*, 11(3), 183-198.
- Fitch Ratings. (2016). *Second Year of Economic Contraction Poses Challenges for Latin America*. Available from <<https://www.fitchratings.com/site/pr/1013022>>. Accessed on Dec 27 2016.
- Flores, E., Weffort, E. F. J., Silva, A. F. D., & Carvalho, L. N. G. (2016). Earnings management and macroeconomic crises: Evidences from Brazil and USA capital markets. *Journal of Accounting in Emerging Economies*, 6(2), 179-202.
- Gray, S. J., Kang, T., Lin, Z., & Tang, Q. (2015). Earnings management in Europe post IFRS: do cultural influences persist? *Management International Review*, 55(6), 827-856.
- Guan, L., Pourjalali, H., Sengupta, P., & Teruya, J. (2005). Effect of cultural environment on earnings manipulation: A five Asia-Pacific country analysis. *Multinational Business Review*, 13(2), 23-41.
- Han, S., Kang, T., Salter, S., & Yoo, Y. K. (2010). A cross-country study on the effects of national culture on earnings management. *Journal of International Business Studies*, 41(1), 123-141.
- Han, J. C., & Wang, S. W. (1998). Political costs and earnings management of oil companies during the 1990 Persian Gulf crisis. *The Accounting Review*, 73(1), 103-117.
- Hand, John R. M. The economic versus accounting impacts of R&D on U.S. market-to-book ratios. Working paper series, 2001.
- Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *The Accounting Horizons*, 13(4), 365-383.
- Hopwood, A. G. (2009). The economic crisis and accounting: Implications for the research community. *Accounting, Organizations and Society*, 34(6), 797-802.
- Hochberg, Y. V. (2012). Venture Capital and Corporate Governance in the Newly Public Firm. *Review of Finance*, 16(2), 429-480.
- IFRS. (2017). *Who uses IFRS Standards?* Available from <<http://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/>>. Accessed on Jul 14 2017.

- Jeanjean, T., & Stolowy, H. (2008). Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption. *Journal of Accounting and Public Policy*, 27(6), 480-494.
- Koonce, L., & Mercer, M. (2005). Using psychology theories in archival financial accounting research. *Journal of Accounting Literature*, 24(1), 175-214.
- Kyrtsou, C., & Labys, W. C. (2006). Evidence for chaotic dependence between US inflation and commodity prices. *Journal of Macroeconomics*, 28(1), 256-266.
- Larcker, D. F., & Richardson, S. A. (2004). Fees paid to audit firms, accrual choices, and corporate governance. *Journal of Accounting Research*, 42(3), 625-658.
- Leuz, C., Nanda, D., & Wysocki, P. (2003). Investor protection and earnings management: An international comparison. *Journal of Financial Economics*, 69(3), 505-527.
- Lopes, A. B., & Walker, M. (2008). Firm-level incentives and the informativeness of accounting reports: an experiment in Brazil. *Working Paper*. Retrieved on Jun 28 2009, from <http://ssrn.com/abstract=1095781>.
- McNichols, M. (2000). Research design issues in earnings management. *Journal of Accounting Studies*, 8(19), 313-345.
- McKee, T. E. (2005). *Earnings management: an executive perspective*. Ohio: Thomson.
- Nabar, S., & Boonlert-U-Thai, K. K. (2007). Earnings management, investor protection, and national culture. *Journal of International Accounting Research*, 6(2), 35-54.
- Paredes, A. A. P., & Wheatley, C. (2017). The influence of culture on real earnings management. *International Journal of Emerging Markets*, 12(1), 21-42.
- Rathke, A. A. T., Santana, V. D. F., Lourenço, I., & Dalmácio, F. Z. (2016). International financial reporting standards and earnings management in Latin America. *Revista de Administração Contemporânea*, 20(3), 368-388.
- Ryan, S. G. (2008). Accounting in and for the subprime crisis. *The Accounting Review*, 83(6), 1605-1638.
- Silva, A. F. D., Weffort, E. F. J., Flores, E. D. S., & Silva, G. P. D. (2014). Earnings management and economic crises in the Brazilian capital market. *Revista de Administração de Empresas*, 54(3), 268-283.
- Wan Ismail, W., Khairul, K., Zijl, T., & Dunstan, K. (2013). Earnings quality and the adoption of IFRS-based accounting standards: Evidence from an emerging market. *Asian Review of Accounting*, 21(1), 53-73.
- White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Journal of the Econometric Society*, 48(4), 817-838.
- World Bank (2017). *Global Financial Development*. Available from <<http://databank.worldbank.org/data/reports.aspx?source=Global-Financial-Development>>. Accessed on Jun 28 2017.