

The Effect of Macroeconomic Instability on Earnings Management in Developed *versus* Emerging Countries

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Abstract

This study analyzes the effect of macroeconomic instability on both accrual-based and real earnings management, explicitly examining how this relationship compares between developed and emerging countries. The empirical study relies on a worldwide sample of 92,501 firm-year observations from 38 countries. Based on several variables related to economic environment conditions, we construct a macroeconomic instability index for each analyzed country, which change over the years. Econometric models are estimated using Ordinary Least Squares (OLS) approach, controlled for industry and year fixed effects. Our findings suggest that high levels of macroeconomic instability mitigate accrual-based earnings management in developed economies, whereas it encourages earnings manipulation by accruals in emerging ones. Findings also indicate a trade-off between accrual-based and real earnings management, but only in emerging countries. Overall, this study adds to the literature on the effect of economic environment on accounting quality and fills a gap in the previous literature focused on financial crises, by addressing macroeconomic instability for each year and country and broadening the discussion in different institutional contexts.

Keywords: Macroeconomic instability, Accrual-based earnings management, Real earnings management, Developed countries, Emerging countries.

1. Introduction

This study analyzes the effect of macroeconomic instability on both accrual-based and real earnings management, explicitly examining how this relationship compares between developed and emerging countries. Previous literature suggests that accounting practices are sensitive to the economic environment where firms are situated (Arnold, 2009), which seems to interfere in earnings management (Choi, Kim, & Lee, 2011; Flores, Weffort, Silva, & Carvalho, 2016; Filip & Raffournier, 2014, Kumar & Vij, 2017). However, superficial ways of detecting moments of macroeconomic instability, differences in the research methodologies, large sample data including countries with different institutional environments viewed as a whole, among others, seem to hinder understanding about the real effect of the macroeconomic conditions on earnings management. We fill this gap by arguing and providing empirical evidence that macroeconomic instability affects earnings management practices in developed and emerging economies in different ways, given the differences in the institutional conditions between the countries.

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 (Healy & Wahlen, 1999). The earnings management practices can be attributed to diverse factors, such as the firm's financial characteristics (Armstrong, Barth, Jagolinzer, & Riedl, 2010), private incentives (Barth, Landsman, & Lang, 2008), and aspects related to the institutional and economic environment (Ahmad-Zaluki, Campbell, Goodacre, 2011; Flores et al., 2016). Even though macroeconomic instability is commonly the focus in economic theory, Arnold (2009) 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.

Previous literature highlights that “economic conditions of the firm's country become critical forces in shaping managers' disclosure choices” (Isidro & Marques, 2015, p. 95). Based on this assumption, several researchers documented an influence of macroeconomic crisis on earnings management (Choi et al., 2011; Flores et al., 2016; Filip & Raffournier, 2014, Kumar & Vij, 2017). This association, among other explanations, is related to the fact that economic environment in which the individuals are situated are capable of interfering in the policy makers and investors strategies, given the possible feelings of insecurity that this scenario could bring to the agents (Czaya & Hesser, 2001). Thus, the uncertainty arising from unstable economic environments could impact managers decisions, including those related to accounting choices and, consequently, earnings management practices.

Despite a large number of studies discussing about the consequences of macroeconomic crises on earnings management practices, the empirical findings pointed out by these studies are conflicting. There are empirical studies providing evidence of an increase of earning management in financial crisis periods (Ahmad-Zaluki et al., 2011; Choi et al., 2011; Flores et al., 2016; Han & Wang, 1998), and others that present reduction (Cimini, 2015; Costa, Cerqueira, & Brandão, 2016; Filip & Raffournier, 2014, Kumar & Vij, 2017). Taking into account this divergence and given the differences in the institutional environment conditions, we propose that macroeconomic instability affect earnings management practices in developed and emerging economies in a different way.

The institutional environment of developed countries is characterized, among other aspects, by higher dispersion of capital, greater protection of minorities investors (Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2008) and a higher presence of investors' sophistication (Lima, Góis, De Luca, & Sousa, 2018). In these countries, where the stock exchange investments are higher compared to emerging markets, the capacity of monitoring

by shareholders is higher and more prevalent (La Porta, Lopez de Silanes, Shleifer, & Vishny, 2002). On the other hand, in emerging countries, given the lower legal protection of minority investors (Djankov et al., 2008), as well as lower market capitalization compared to large developed economies, periods of macroeconomic stress could give greater “freedom” for managers to manipulate accounting information by a certain “lack of monitoring” by outsiders – contrary to what could happen in developed countries, where macroeconomic instability could exert a disciplining effect on the preparers of the financial information.

Therefore, the question addressed in this study is whether factors related to the macroeconomic instability of the countries are associated with the level of earnings management practiced by firms in those countries. We also investigate whether the earnings management practices could be explained based on the macroeconomic instability in a different way depending on the nature of the countries (developed *versus* emerging).

The empirical study is based on 92,501 firm-year observations from 38 countries in the period of 2000-2017. Based on several variables related to economic environment conditions, we construct a macroeconomic instability index for each analyzed country, which change over the years. Our findings suggest that high levels of macroeconomic instability mitigate accrual-based earnings management in developed economies, whereas it encourages earnings manipulation by accruals in emerging ones. Findings also indicate a trade-off between accrual-based and real earnings management, but only in emerging countries. In general, they have several implications for the academic literature, complementing existing evidence by presenting consistent findings that earnings management practices are impacted in different ways, as well as to regulatory agencies, investors and other stakeholders, giving a more holistic view about the phenomenon in countries with different institutional conditions.

This paper builds upon prior research and makes contributions in the following ways. First, the literature on earnings quality, specifically in emerging markets, is still under 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 studies on the role of accounting in emerging markets are virtually nonexistent, despite its importance to international organizations such as the World Bank, the International Accounting Standards Board (IASB), and others. This study advances this discussion and proposes a specific discussion on the accounting quality in developed *versus* emerging economies in an isolated way, broadening the discussion about the effect of economic instability on earnings management in different institutional contexts.

Second, we contribute to the literature through our methodological aspects, using a robust cross-country index to capture the effect of economic instability on earnings management, involving different macroeconomic indicators related to this issue. Most of the previous research has focused on using dummies to represent moments of economic instability (e.g., Choi et al., 2011; Filip, & Raffournier, 2014; Flores et al., 2016; Xu, & Ji, 2016). By contrast, in order to obtain more specific results, we developed a continuous variable – *MACROINSTAB* index – for each year and country, drawing one factor in common from seven different macroeconomic indicators related to economic stress of the countries. General analysis of *MACROINSTAB* index demonstrate consistency of the indicator in the sense of showing high levels in periods of 2008-2009 global crisis, and differences between developed and emerging economies, among others.

Finally, in a more practical way, presenting empirical evidence regarding the interference of the macroeconomic conditions of the countries analyzed on the earnings management practices, it is expected that the theoretical content and the empirical aspects of this study may raise discussions with regulatory agencies, investors and other stakeholders.

Several data about macroeconomic instability through the window time analyzed are presented and discussed (such as inflation, regulation market, stock volatility, among others), encompassing different indicator related to the economic environment between developed and emerging economies, giving a more holistic view about the phenomenon in countries with different institutional conditions.

The remainder of the paper is organized as follows. In the next section, we present some information about the impact of the macroeconomic environment on the quality of accounting information, as well as a literature review on the relationship between macroeconomic instability and earnings management, outlining the hypotheses. In the Sections 3 and 4 we describe the research design and present the main results. Finally, Section 5 presents the summary and concluding remarks.

2. Literature Review and Hypotheses

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) (Dechow, Ge, & Schrand, 2010).

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 agents influence the implementation of standards and laws, which can ultimately exert a substantial influence on financial reporting practices. Previous studies have also identified several other exogenous factors that might affect earnings management behavior, such as economic development and economic freedom (Belkaoui, 2004), the legal system, including rules and their enforcement (Leuz, Nanda, & Wysocki, 2003), cultural values (Han, Kang, Salter, & Yoo, 2010), and auditing quality (Tendeloo & Vanstraelen, 2008).

Discussed in the Economic Theory, macroeconomic instability involves subjects related to economic and financial crises, large swings in economic activity, high inflation, and excessive volatility in foreign exchange and financial markets. From this perspective, the instability of the macroeconomic environment "can increase uncertainty, discourage investment, impede economic growth, and hurt living standards" (International Monetary Fund, 2018a). About the association between macroeconomic instability and accounting practice, Ryan (2008) explains that times of crisis raise relevant issues for accounting research. 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. Therefore, the uncertainty arising from unstable economic environments could impact managers decisions, including those related to accounting choices and, consequently, earnings management practices, and this implies in difficulty for investors to assess earnings management in an uncertain environment (Cormier et al., 2013).

The prior literature provides evidence of an association between the characteristics of the economic environment in times of crisis and earnings management. 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. Ahmad-Zaluki et al. (2011) found an income-increasing earnings management in Malaysian firms IPOs but that this occurs primarily during a period of severe economic stress (the East Asian crisis). Choi et al. (2011) investigated whether reported information on gains and their components changed around the 1997-1998 Asian financial crisis, and they found that the absolute value of discretionary accruals of firms increase during the crisis. Flores et al. (2016) attempted to verify if during economic crises listed companies in the Brazilian capital market tended to adopt earnings management practices, showing a positive and significant relationship between economic crises and earnings management practices concerning listed companies.

However, the empirical findings on the literature related to the consequences of macroeconomic crises on earnings management are not conclusive. Analyzing 16 European countries during 2008-2009 financial crisis, Filip and Raffournier (2014) provide evidence that earnings management has significantly decreased in the crisis years. Empirical results presented by Cimini (2015) go in the same direction, but this author concluded that only in France and Luxembourg abnormal accruals estimated in the period before the crisis are higher than those estimated in crisis years. With a larger database encompassing 25 European countries, Costa, Cerqueira and Brandão (2016) found similar results, suggesting that earnings management by firms is lower in periods of financial crises. And analyzing Indian firms, Kumar and Vij (2017) found a high level of earnings management in Indian firms during pre-crisis periods, a significant decrease during crisis period, and an increase in the post-crisis period.

Lower levels of earnings management in recession periods may result from a higher demand for conservative earnings. Another reason is that litigation risk is probably higher during periods of more economic instability, when equity markets experience sharp drops in stock prices. Managers probably respond to this risk increase by a limitation of earnings manipulation practice. Therefore, contraction periods should be associated with less earnings management and, consequently more conservative earnings (Filip, & Raffournier, 2014).

Given the two approaches presented in the previous literature related to both negative and positive impact of macroeconomic instability environment on earnings management, it's presupposed that the mixed results could be explained by differences in the institutional environments between developed and emerging economies. From this perspective, the literature that investigates the effects of the institutional environment on accounting quality generally considers the level of economic development of countries as a relevant factor of these implications (Nobes, 2011). Therefore, these mixed empirical results related to macroeconomic crises on earnings management could be explained by differences in the level of economic development of each country.

Developed countries are characterized by high dispersion of capital and greater protection of minority investors (Djankov et al., 2008). In these countries, therefore, where the stock exchange investments are higher compared to emerging markets, the capacity of monitoring by shareholders is higher and more prevalent (La Porta et al., 2002). Cai, Rahman, and Courtenay (2008) comment that the level of economic development of countries may alter the demand for financial information from market participants, encouraging firms to improve

the quality of financial reporting as the economic development of the countries in which they are present grows.

Analyzing a sample of firms from 32 developed and emerging countries, Cai et al. (2008) present considerable evidence of negative relationships between the development of the country's economic market and the earnings management levels. Thus, taking these arguments together, we expect that macroeconomic instability would have a disciplining effect on the preparers of the financial information in developed countries, given, among others, a higher monitoring of shareholders (Djankov et al., 2008), a higher presence of investors' sophistication (Lima et al., 2018) and a higher protection of minority investors (La Porta et al., 2002). Based on these assumptions, the first hypothesis of this study is:

H₁: Macroeconomic instability is negatively associated with earnings management in developed countries.

On the other hand, emerging countries are characterized by “institutional environment voids”, where firms must respond to unpredictable (but predictably frequent) shocks – political instability, violence, macroeconomic fluctuations more aggressive, and even wars – without the benefit of specialized intermediaries that can analyze market information, facilitate transactions, and provide signals related to credibility (Gao, Zuzul, Jones, & Khanna, 2017). In these markets, therefore, managers could take advantage of moments of uncertainty to manage the accounting information in order to demonstrate a greater competitive differential, given the lower legal protection of minority investors and high concentration of stockholders (Djankov et al., 2008). From this perspective, analyzing emerging markets from Latin America, Rathke et al. (2016) present empirical evidence that firms from emerging countries present a higher level of earnings management than Continental European and Anglo-Saxon firms, and this opportunistic behavior remains significant when only global players (firms cross-listed in the United States) are analyzed.

In emerging countries, we could still mention a smaller volume of negotiations compared to large developed economies, which would give greater “freedom” for managers to manipulate accounting information due to a certain “lack of monitoring” by outsiders (Djankov et al., 2008). Empirical results that investigated earnings management in crisis period specifically in firms from emerging countries demonstrate higher level of earnings manipulation during macroeconomic instability, such as in Brazil (Flores et al., 2016), Asia (Choi et al., 2011), Portugal (Lisboa, 2016), China (Xu, & Ji, 2016) and Latin America (Viana Junior, Domingos, & Ponte, 2017). Based on these arguments, the second hypothesis is:

H₂: Macroeconomic instability is positively associated with earnings management in emerging countries.

3. Research Design

The empirical analyzes relies on a sample composed of 12,121 firms from 38 non-US countries, which were selected based on the availability of financial-economic information of the companies in Global Compustat database. Consistent with previous earnings management literature (e.g., Chen, Miao, & Shevlin, 2015; Larson, Sloan, & Giedt, 2018) to eliminate firms subject to more complex earnings management incentives associated with their regulatory environment, we exclude both financial and utility firms from our analyses. We use data from the years 2000 to 2017. Thus, the final sample is composed of 92,501 firm-year observations, with about 45% corresponding to developed countries and the other half corresponding to the emerging ones. The classification of the countries in developed and emerging economies followed the International Monetary Fund (IMF) recommendations.

Despite some little differences, in general, the classification of countries between developed and emerging economies proposed by international institutions such as IMF, World Bank, and United Nations (UN) are similar in several aspects. To select the sample countries, first we look at the countries classified as “Advanced Economies” by the IMF. Then, we classified all these countries with available firm’s information on the Global Compustat database as Developed, if it was presented in the Advanced Economies list of IMF, and as Emerging, otherwise. Finally, we verified which of these countries had information available in the main sources used to construct the Macroeconomic Instability Index used in the statistic estimations, reaching the final number of 38 countries analyzed. Table 1 presents the sample distribution by country. China, Korea and Hong Kong are the most representative countries, respectively, with 27%, 8% and 6% of the overall firm-year observations.

Table 1 – Overall Sample. 2000-2017

Panel A:	Firms (N)	Freq.	Freq. Overall	Obs.	Freq. Group	Freq.
Australia	215	3.68%	1.77%	1,074	2.56%	1.16%
Austria	55	0.94%	0.45%	452	1.08%	0.49%
Belgium	99	1.70%	0.82%	798	1.90%	0.86%
France	595	10.20%	4.91%	4,541	10.81%	4.91%
Germany	635	10.88%	5.24%	4,826	11.49%	5.22%
Greece	222	3.80%	1.83%	1,746	4.16%	1.89%
Hong Kong	669	11.46%	5.52%	5,854	13.93%	6.33%
Ireland	42	0.72%	0.35%	309	0.74%	0.33%
Israel	305	5.23%	2.52%	1,811	4.31%	1.96%
Japan	380	6.51%	3.14%	2,937	6.99%	3.18%
Korea	1,359	23.29%	11.21%	7,924	18.86%	8.57%
Luxembourg	32	0.55%	0.26%	183	0.44%	0.20%
Malta	9	0.15%	0.07%	65	0.15%	0.07%
Netherlands	143	2.45%	1.18%	1,142	2.72%	1.23%
New Zealand	18	0.31%	0.15%	107	0.25%	0.12%
Norway	264	4.52%	2.18%	1,706	4.06%	1.84%
Portugal	52	0.89%	0.43%	424	1.01%	0.46%
Singapore	432	7.40%	3.56%	3,572	8.50%	3.86%
Spain	124	2.12%	1.02%	916	2.18%	0.99%
Switzerland	186	3.19%	1.53%	1,625	3.87%	1.76%
Total – Developed Countries	5,836	100.00%	48.14%	42,012	100.00%	45.43%
Panel B:	Firms(N)	Freq.	Freq. Overall	Obs.(N)	Freq. Group	Freq.
Argentina	43	0.68%	0.35%	364	0.72%	0.39%
Brazil	293	4.66%	2.42%	2,138	4.23%	2.31%
Chile	152	2.42%	1.25%	1,248	2.47%	1.35%
China	3,034	48.27%	25.03%	24,686	48.89%	26.69%
Hungary	25	0.40%	0.21%	123	0.24%	0.13%
India	112	1.78%	0.92%	713	1.41%	0.77%
Indonesia	392	6.24%	3.23%	3,356	6.65%	3.63%
Malaysia	646	10.28%	5.33%	5,548	10.99%	6.00%
Mauritius	10	0.16%	0.08%	54	0.11%	0.06%
Mexico	102	1.62%	0.84%	921	1.82%	1.00%
Oman	57	0.91%	0.47%	543	1.08%	0.59%
Pakistan	50	0.80%	0.41%	363	0.72%	0.39%
Peru	89	1.42%	0.73%	857	1.70%	0.93%
Philippines	148	2.35%	1.22%	1,283	2.54%	1.39%
Poland	551	8.77%	4.55%	3,160	6.26%	3.42%
South Africa	57	0.91%	0.47%	399	0.79%	0.43%
Sri Lanka	28	0.45%	0.23%	222	0.44%	0.24%
Thailand	496	7.89%	4.09%	4,511	8.93%	4.88%
Total – Emerging Countries	6,285	100.00%	51.83%	50,489	100.00%	54.60%
Total Overall	12,121		100.00%	92,501		100.00%

3.2. Earnings Management

We consider in our analyzes both accrual-based and real earnings management. Related to earnings manipulation through accrual accounting choices, following other relevant studies (Choi et al., 2011; Cohen, & Zarowin, 2010; Doukakis, 2014; Enomoto, Kimura, & Yamaguchi, 2015; Flores et al., 2016; Lo, Ramos, & Rogo, 2017), earnings management is measured using the absolute value of discretionary accruals. Doukakis (2014) observes that several models are used in accounting research as measurement mechanism of earnings management (e.g., Jones, 1991; Dechow et al., 1995; Kothari, Leone & Wasley, 2005, among others). In accordance with other studies related to earnings management practices in times of crisis (Flores et al., 2016), we use the modified version of the model proposed by Jones (1991) to measure discretionary accruals, which was developed by Dechow et al. (1995).

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). Where, TA_{it} are the total accruals, calculated as firm i 's net income minus cash flows from operations in year t ; Ats_{it-1} is the total assets for firm i in year $t - 1$; $\Delta Sales_{it}$ is the change in sales for firm i from year $t - 1$ to year t ; and $GPPE_{it}$ is the gross property, plant, and equipment for firm i in year t .

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

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). Where, NA_{it} are the non-discretionary accruals for firm i in year t ; and ΔAR_{it} is the change in receivables for firm i from year $t - 1$ to year t . All other variables are as previously defined.

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

Third, discretionary accruals (DA_{it}) are equal the difference between total accruals and the fitted non-discretionary accruals, defined in Equation (3). Where, DA_{it} are the discretionary accruals for firm i in year t . All other variables are as previously defined.

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

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

Despite the relevance of previous literature in investigating earnings management through accrual-based earnings management, "examination of real earnings management is critical, because while accrual-based earnings management activities have no direct cash flow consequences, real earnings management does affect cash flows" (Doukakis, 2014, p. 552). In a broad way, real earnings management referred to real operational activities that firms are likely to employ to manipulate earnings figures. Following a relevant and extensive

accounting literature (Cohen, Mashruwala, & Zach, 2010; Cohen, & Zarowin, 2010; Lo et al., 2017; Zang, 2012), we consider the empirical models provided by Roychowdhury (2006) which examine the real earnings management in three metrics, namely: abnormal levels of productions costs, cash flows from operations, and discretionary expenses.

According to Doukakis (2014), real earnings management can take place by insiders boosting production more than necessary, spreading the fixed overhead costs over a larger number of units and lowering fixed costs per unit. Managers can also manipulate earnings by accelerating the timing of sales increasing the price discounts or more lenient credit terms. This will temporarily increase the sales volumes; however, these gains are likely to disappear once the firm's returns to the old pricing policy. These economic decisions will get in lower cash flows in the current period. Finally, managers can manipulate current earnings through decreases in discretionary expenses, such as those for advertising, research and development, and selling, general, and administrative expenses, which could result in higher current-period earnings. Through this perspective, managers can also manipulate current-period cash flows at the expense of future cash flows if the firm generally pays for such expenses in cash (Cohen, & Zarowin, 2010; Doukakis, 2014).

Therefore, according to Roychowdhury (2006), three distinct models are estimated, related to the normal levels of production costs, cash flows from operations, and discretionary expenses using the Equations (4), (5) and (6). Where, $PROD_{it}$ are the production costs, defined as the sum of cost of goods sold and the change in inventories for firm i from year $t - 1$ to year t ; CFO_{it} are the cash flows from operations taken from the statement of cash flows in year t ; and $DISX_{it}$ are the discretionary expenses defined as selling, general and administrative expenses for firm i in year t . All other variables are as previously defined.

$$\frac{PROD_{it}}{Ats_{it-1}} = \alpha_0 + \beta_1 \frac{1}{Ats_{it-1}} + \beta_2 \frac{Sales_{it}}{Ats_{it-1}} + \beta_3 \frac{\Delta Sales_{it}}{Ats_{it-1}} + \beta_4 \frac{\Delta Sales_{it-1}}{Ats_{it-1}} + \varepsilon_{it} \quad (\text{Equation 4})$$

$$\frac{CFO_{it}}{Ats_{it-1}} = \alpha_0 + \beta_1 \frac{1}{Ats_{it-1}} + \beta_2 \frac{Sales_{it}}{Ats_{it-1}} + \beta_3 \frac{\Delta Sales_{it}}{Ats_{it-1}} + \varepsilon_{it} \quad (\text{Equation 5})$$

$$\frac{DISX_{it}}{Ats_{it-1}} = \alpha_0 + \beta_1 \frac{1}{Ats_{it-1}} + \beta_2 \frac{Sales_{it}}{Ats_{it-1}} + \varepsilon_{it} \quad (\text{Equation 6})$$

The abnormal level of production costs (ABN_PROD), cash flows from operations (ABN_CFO), and discretionary expenses (ABN_DISX) are measured as the estimated residual from Equations (4), (5) and (6), respectively, which represent the proxies to unusually low cash flow from operations, unusually low discretionary expenses and unusually high production costs. As for accruals models, these regressions are estimated for each year and industry cluster with at least eight observations, expecting to partially control the industry-wide changes in economic conditions.

To capture the total effects of real earnings management, we combine the three individual measures to compute two comprehensive metrics of real earnings management activities: $RM1$ and $RM2$. For our first measure, $RM1$, consistent with Cohen and Zarowin (2010) and Zang (2012), we first multiply abnormal discretionary expenses by negative one (so that the higher amount, the more likely it is that the firm is cutting discretionary expenses) and add it to abnormal production costs. The higher the amount of this aggregate measure, the more likely the firm engaged in real earnings management activities. The second one, $RM2$,

again consistent with Cohen and Zarowin (2010) and Zang (2012), we first multiply abnormal cash flows from operations and abnormal discretionary expenses by negative one and then aggregate them into one measure. As for *RM1*, we multiply by negative one, so that the higher these amounts the more likely that the firm is engaging in sales manipulations and cutting discretionary expenditures to manage reported earnings upwards.

Similar to Cohen and Zarowin (2010) and Doukakis (2014), we do not multiply by negative one because higher production costs, as noted earlier, are indicative of overproduction to reduce costs of goods sold. We do not combine abnormal production costs and abnormal CFO, because in Roychowdhury (2006), the same activities that lead to abnormally high production costs also lead to abnormally low CFO; thus, adding these two amounts leads to double counting. Finally, there is a considerable number of companies that do not report separately their information about selling, general, and administrative expenses. Thus, following Doukakis (2014), to avoid reducing the sample by almost 15%, the models related to real earnings management are considering only 78,396 firm-year observations.

3.3. Macroeconomic Instability

Macroeconomic instability is a phenomenon that cannot be measured directly, that is affected by a variety of factors, such as inflation, market capitalization, gross domestic product, among others. Given this complexity, to measure it, Brave and Butters (2011) suggest that constructing an index is a useful way to implement information from different factors and conditions and, at the same time, minimize redundancy and the influence of outliers. These authors also point out that indices of this type have the advantage of capturing the interconnection of different indicators, an advantageous characteristic to allow the assessment of the intrinsic importance of each variable.

The Macroeconomic Instability Index (*MACROINSTAB*) is constructed using Principal Component Analysis (PCA) applied to seven proxies related to economic environment conditions, for each country and year. Namely we analyzed: inflation of the current year, inflation volatility of the last five years, gross domestic product (GDP) of the current year, annual GDP growth, market capitalization of the stock market, volatility of the stock market to the current year and regulation of the credit market.

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, Chenaf-Nicet and Rougier (2016) also suggest that a high rate of inflation creates uncertainty for organizations in relation to their assets and liabilities, and whether they reasonably and faithfully represent the instability in the economic environment.

The concept of macroeconomic instability could be related to fluctuations on GDP. In a broad way, GDP measures the monetary value of goods and services produced in a country, in a given period, and also includes some nonmarket production, such as defense or education services provided by the government (World Bank, 2018a). According to Claessens, Kose, & Terrones (2012, p. 179), "GDP is the most comprehensive measure to track economic activity for a large group of countries over a long time period", considering its direct reflection on the real situation of the economic environment. Among others, economic growth makes the development of financial system profitable and the establishment of an efficient contributes to stimulate economic development (Naceur, Ghazouani, & Omran, 2007).

Singh (1997) demonstrates evidence on a positive relationship between stock market development and long-run economic growth. In the same sense, Rousseau and Wachtel (2000) show that the ratio of market capitalization to GDP accelerates macroeconomic growth. And this is consistent with the assumption that the macroeconomic instability seems to discourage internal and external investors to participate in the stock market largely because the investment environment becomes unpredictable (Kemboi, & Tarus, 2012).

Table 2 – Macroeconomic factors: proxies, references and data

Dimension	General description	Specific descriptions	References	Source
Inflation of the Current Year	Percentage related to annual Consumer Price Index (CPI)	It represents the cost of the basic basket at a given time expressed relative to a base year in the Consumer Price Index (CPI), and the percentage change in the CPI over a certain period is consumer price inflation, the most widely used measure of inflation (for example, if the base year CPI is 100 and the current CPI is 110, inflation is 10 percent over the period). The CPI basket is mostly kept constant over time for consistency, but it is tweaked occasionally to reflect changing consumption patterns (for example, to include new hi-tech goods and to replace items no longer widely purchased).	Klomp and Haan (2009); Viana Junior, Domingos and Ponte (2017)	Fraser Institute (2018)
Inflation Volatility of the Last Five Years	Standard deviation of the inflation of the current year from the last five years			
GDP of the Current Year	Natural logarithm of the total GDP from the countries in dollar	GDP measures the monetary value of goods and services produced in a country, in a given period, and also includes some nonmarket production, such as defense or education services provided by the government. To determine “real” GDP, its nominal value is adjusted to consider price changes to allow us to see whether the value of output has gone up because more is being produced or simply because prices have increased. The growth rate of real GDP was used as an indicator of the general health of the economy. In broad terms, an increase in real GDP is interpreted as a sign that the economy is doing well. When real GDP is growing strongly, employment is likely to be increasing as companies hire more workers for their factories and people have more money in their pockets.	Chen, Ng, and Tsang (2014); Cohen and Zarowin, (2010); Dimitras, Kyriakou and Iatridis (2015); Gopalan and Jayaraman (2012); World Bank (2018a)	World Bank (2018a)
Annual GDP Growth	Percentual difference of GDP from $t - 1$ to t			
Regulation of the Credit Market of the Current Year	Index of credit market regulation that range from 0 to 10, where 0 means higher regulatory restrictions and 10 lower regulation	Index of credit market regulation is related to how regulations restrict entry to markets and interfere with the freedom to engage in voluntary exchanges, reducing economic freedom. The index, therefore, focus on regulatory constraints that limit free trade in credit markets, involving components such as ownership of banks, private sector credit and negative real interest rate controls.	Chen et al. (2014); Wieczynska (2015); Stein (2012)	Fraser Institute (2018)
Stock Market Capitalization	Stock market capitalization to GDP	Market capitalization (also known as market value) is the share price times the number of shares outstanding (including their several classes) for listed domestic companies. Investment funds, unit trusts, and companies whose only business goal is to hold shares of other listed companies are excluded. Data are end of year values.	Chen et al. (2014); Dimitras et al. (2015); Gopalan and Jayaraman (2012)	World Bank (2018b)
Stock Market Volatility of the Current Year	Volatility of the stock market	Stock price volatility is the average of the 360-day volatility of the national stock market index.	Klomp and Haan (2009); Viana Junior et al. (2017)	World Bank (2018c)

Finally, related to market regulation, the International Monetary Fund (2018b) propose that a macroeconomic disequilibrium can be “self-induced” by poor macroeconomic management. Related to this issue, Giannone, Lenza and Reichlin (2011) demonstrate that set of policies that favor liberalization in credit markets (regulatory quality) are negatively correlated with countries’ resilience to the recent recession as measured by output growth in 2008 and 2009. Theoretically and empirically, Stein (2012) discusses about several impacts of government market regulation through monetary policies on costly financial crises, indicating a convinced association between market regulation and macroeconomic instability.

In this sense, to construct the Macroeconomic Instability Index (*MACROINSTAB*) we use a group of factors, whose information were collected from different sources, according to Table 2. The index is represented by the factor scores associated with the first principal component, presented in a standardized way in the interval [0, 1]. Thus, countries with higher *MACROINSTAB* should have greater macroeconomic instability. In the Principal Component Analysis (PCA), both the Kaiser-Meyer-Olkin measure of adequacy ($KMO=0.572$) and the Bartlett’s test of sphericity ($\chi^2= 553.152$, $p<0.01$) suggest that our PCA is adequate. The parallel analysis method confirmed the first component retained for the *MACROINSTAB*.

3.4. Empirical Models

The empirical models proposed use both accrual-based (Dechow et al., 1995) and real earnings management (Roychowdhury, 2006) as the dependent variables, and the Macroeconomic Instability Index (*MACROINSTAB*) as independent one. Looking for more robust estimates, based in an extensive literature (e.g., Ahmad-Zaluki et al., 2011; Barth et al., 2008; Doukakis, 2014; Flores et al., 2016; Jeanjean, & Stolowy, 2008; Lo, Ramos, & Rogo, 2017; Rathke et al., 2016), control variables related to earnings management are inserted in these models, according to Equation 7. Where, for each firm i in year t , EM_{it} is both accrual-based and real earnings management; ROA_{it} is the net income in year t divided by total assets; $SIZE_{it}$ is the natural logarithm of total assets; $NETCASH_{it}$ is the operating cash flow in year t divided by total assets; $LEVERAGE_{it}$ is the total liabilities divided by total assets; $GROWTH_{it}$ is the percentage change in sales from $t - 1$ to t ; $LOSS_{it}$ is a dummy variable that assumes 1 (one) for company-year observations with negative net income and 0 (zero) otherwise; $IFRS_{it}$ is a dummy variable that assumes 1 (one) for company-year observations referring to financial statements prepared according to IFRS standards and 0 (zero) otherwise; $D.Industries$ and $D.Years$ referred to dummies for industries (taking two digits of SIC code) and years, respectively.

$$EM_{it} = \alpha_0 + \beta_1 MACROINSTAB_{tj} + \beta_2 ROA_{it} + \beta_3 SIZE_{it} + \beta_4 NETCASH_{it} + \beta_5 LEVERAGE_{it} + \beta_6 GROWTH_{it} + \beta_7 LOSS_{it} + \beta_8 IFRS_{it} + \sum D.Industries + \sum D.Years + \varepsilon_{it} \quad (Equation 7)$$

Considering the question addressed of analyzing whether macroeconomic instability of countries is associated with earnings management, the models are estimated separately for firm-year observations from developed and emerging countries. Based on the literature review and hypotheses H_1 and H_2 , it’s expected that the coefficient β_1 should be negative and significant for firm-year observations from developed countries (H_1), and positive for firm-year observations from emerging ones (H_2). The models are estimated using Ordinary Least Squares (OLS) approach, controlled for industry and year fixed effects. To adjust for possible

cross-sectional and serial correlations, standard errors were corrected for firm-clustering effects. All continuous firm variables are winsorized at 1% in order to avoid outliers.

4. Empirical Findings

Table 3 shows the descriptive statistic of the continuous variables, segregating the observations by developed and emerging economies. Overall, firm-year observations from developed countries presented lower median to */DAccruals/*, *RM1*, and *RM2* compared to emerging ones. These results suggest a lower level of both accrual-based and real earnings management for firms from developed countries, corroborating previous literature (Lourenço et al., 2018; Rathke et al., 2016).

Table 3 – Overall Descriptive Statistics of Continuous Variables. 200-2017

Panel A: Developed Countries	N	Mean	Median	SD	Min	Max
<i>/DAccruals/</i>	42,012	0.0843	0.0493	0.1010	0.0001	0.5258
<i>RM1</i>	33,764	-0.0670	-0.0394	0.3571	-1.2505	1.2465
<i>RM2</i>	33,764	-0.0287	-0.0245	0.2011	-0.9063	0.9068
<i>ROA</i>	42,012	0.0029	0.0275	0.1380	-0.6687	0.2789
<i>SIZE</i>	42,012	7.5532	6.8852	3.3722	2.0040	15.7470
<i>NETCASH</i>	42,012	0.0503	0.0572	0.1062	-0.3424	0.3391
<i>LEVERAGE</i>	42,012	0.5256	0.5282	0.2389	0.0479	1.4782
<i>GROWTH</i>	42,012	0.1148	0.0509	0.4338	-0.7340	2.6652
Panel B: Emerging Countries	N	Mean	Median	SD	Min	Max
<i>/DAccruals/</i>	50,489	0.0829	0.0515	0.0959	0.0001	0.5258
<i>RM1</i>	44,632	-0.0037	-0.0098	0.2736	-1.2505	1.2465
<i>RM2</i>	44,632	-0.0176	-0.0211	0.1702	-0.9063	0.9068
<i>ROA</i>	50,489	0.0318	0.0359	0.1033	-0.6687	0.2789
<i>SIZE</i>	50,489	7.8275	7.5684	2.4464	2.0040	15.7470
<i>NETCASH</i>	50,489	0.0596	0.0562	0.0954	-0.3424	0.3391
<i>LEVERAGE</i>	50,489	0.4740	0.4639	0.2468	0.0479	1.4782
<i>GROWTH</i>	50,489	0.1564	0.1004	0.4198	-0.7340	2.6652
Panel C: Entire Sample	N	Mean	Median	SD	Min	Max
<i>/DAccruals/</i>	92,501	0.0835**	0.0505	0.0982	0.0001	0.5258
<i>RM1</i>	78,396	-0.0309***	-0.0203	0.3138	-1.2505	1.2465
<i>RM2</i>	78,396	-0.0224***	-0.0223	0.1842	-0.9063	0.9068
<i>ROA</i>	92,501	0.0187***	0.0321	0.1212	-0.6687	0.2789
<i>SIZE</i>	92,501	7.7029***	7.3838	2.9069	2.0040	15.7470
<i>NETCASH</i>	92,501	0.0554***	0.0567	0.1005	-0.3424	0.3391
<i>LEVERAGE</i>	92,501	0.4974***	0.4938	0.2446	0.0479	1.4782
<i>GROWTH</i>	92,501	0.1375***	0.0751	0.4267	-0.7340	2.6651

/DAccruals/ is the absolute discretionary accruals calculated based on the Modified Jones Model (Dechow et al., 1995). *RM1* is an aggregate measure of real earning management activities calculated as the sum of abnormal discretionary expenses multiplied by negative one and abnormal production costs. *RM2* is an aggregate measure of real earnings management activities calculated as the sum of abnormal cash flows and abnormal discretionary expenses, both multiplied by negative one. *MACROINSTAB* is the index of macroeconomic instability of the countries. *ROA* is the net income divided by total assets. *SIZE* is the natural logarithm of total assets. *NETCASH* is the operating cash flow divided by total assets. *LEVERAGE* is the total liabilities divided by the total assets. *GROWTH* is percentage change in sales. ** and *** denote significant differences of means (Student's t-test) between developed and emerging groups at 5% and 1%, respectively.

Figure 1 shows the mean of *MACROINSTAB* from developed, emerging and overall analyzed countries over the period. The index captures the global recession period related to the 2007-2009 subprime mortgage crisis for both developed and emerging countries, suggesting a high generalized dilution of the economic consequences of this worldwide event for countries with different level of development, as suggested by Mirzaei, Moore and Liu (2013). We also observed that during all temporal window investigated, developed countries presented, on average, lower level of *MACROINSTAB* compared to emerging ones. As suggested by Gurtner (2010), many emerging economies do not have the resources to

stimulate the economy and protect themselves against economic fluctuations such as developed countries, which is reflected in the results presented through the *MACROINSTAB*.

Figure 1 – Macroeconomic Instability Index among Developed, Emerging and Overall Countries. 2000-2017

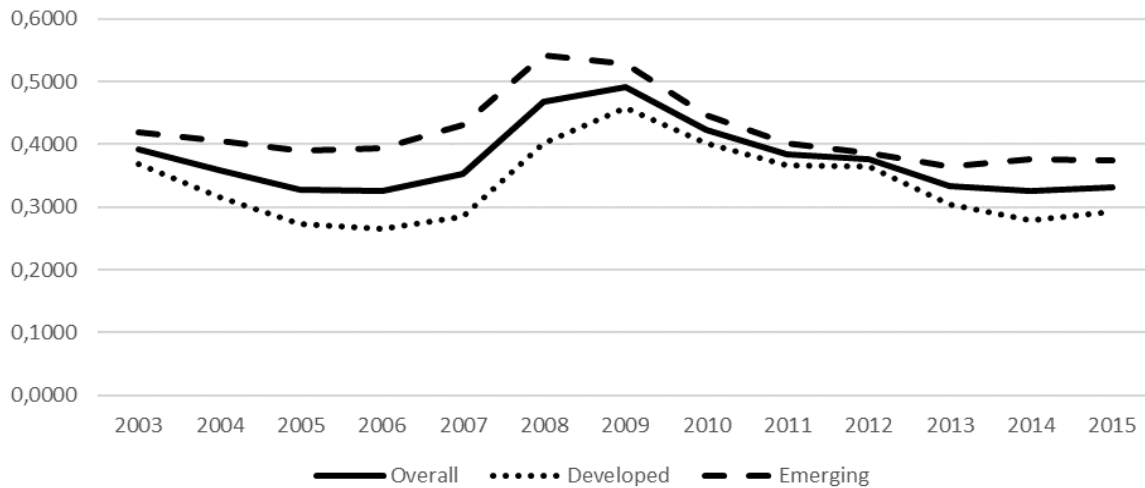


Table 4 presents the Pearson correlation matrix between the continuous variables. Panels A, B and C show the correlation only in developed countries, only in emerging ones and considering the entire sample, respectively. We observe a negative and significant correlation between */DAccruals/* and *MACROINSTAB* in developed countries, and positive for emerging ones, which signals a confirmation of the proposed research hypotheses that economic instability discourages (encourages) earnings management practices in developed (emerging) countries (e.g., in accordance with Cai et al., 2008; Choi et al., 2011; Djankov et al., 2008; Viana Junior et al., 2017). However, considering the variables related to real earnings management, *RM1* and *RM2* are negative correlated to *MACROINSTAB* in both developed and emerging countries.

Table 4 – Correlation Matrix. 2000-2017

Panel A: Developed Countries (N = 42,012)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. <i>/DAccruals/</i>								
2. <i>RM1</i> †	0.0663***							
3. <i>RM2</i> †	0.0844***	0.8354***						
4. <i>MACROINSTAB</i>	-0.0469***	-0.0785***	-0.0511***					
5. <i>ROA</i>	-0.2914***	-0.0855***	-0.1858***	-0.0510***				
6. <i>SIZE</i>	-0.1705***	0.0695***	0.0096*	0.0041***	0.1489***			
7. <i>NETCASH</i>	-0.1649***	-0.1472***	-0.4265***	0.0310***	0.5801***	0.1033***		
8. <i>LEVERAGE</i>	0.0926***	0.0565***	0.0883***	0.1668***	-0.2524***	-0.0105**	-0.1034***	
9. <i>GROWTH</i>	0.1175***	-0.0766***	-0.0999***	-0.1178***	0.1290***	-0.0051	0.0312***	-0.0349***
Panel B: Emerging Countries (N = 50,489)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. <i>/DAccruals/</i>								
2. <i>RM1</i> †	0.0422***							
3. <i>RM2</i> †	0.0694***	0.7889***						
4. <i>MACROINSTAB</i>	0.0327***	-0.0479***	-0.0384***					
5. <i>ROA</i>	-0.1709***	-0.1445***	-0.1800***	-0.0142***				
6. <i>SIZE</i>	-0.1078***	-0.0278***	-0.0238***	0.1839***	0.1132***			
7. <i>NETCASH</i>	-0.1651***	-0.2217***	-0.5431***	-0.0199***	0.4268***	0.0913***		
8. <i>LEVERAGE</i>	0.1515***	0.1407***	0.1333***	0.0979***	-0.3968***	0.1271***	-0.1544***	
9. <i>GROWTH</i>	0.1358***	-0.0996***	-0.1238***	0.0350***	0.1980***	0.0316***	0.0280***	-0.0085*
Panel C: Entire Sample (N = 92,501)								

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. <i>/DAccruals/</i>								
2. <i>RM1</i> †	0.0529***							
3. <i>RM2</i> †	0.0763***	0.8115***						
4. <i>MACROINSTAB</i>	-0.0071**	-0.0354***	-0.0354***					
5. <i>ROA</i>	-0.2335***	-0.0991***	-0.1785***	-0.0028				
6. <i>SIZE</i>	-0.1410***	0.0311***	-0.0044	0.0940***	0.1392***			
7. <i>NETCASH</i>	-0.1651***	-0.1764***	-0.4828***	0.0166***	0.5108***	0.0995***		
8. <i>LEVERAGE</i>	0.1245***	0.0888***	0.1088***	0.0982***	-0.3263***	0.0485***	-0.1340***	
9. <i>GROWTH</i>	0.1266***	-0.0812***	-0.1102***	-0.0240***	0.1642***	0.0138***	0.0317***	-0.0255***

/DAccruals/ is the absolute discretionary accruals calculated based on the Modified Jones Model (Dechow et al., 1995). *RM1* is an aggregate measure of real earnings management activities calculated as the sum of abnormal discretionary expenses multiplied by negative one and abnormal production costs. *RM2* is an aggregate measure of real earnings management activities calculated as the sum of abnormal cash flows and abnormal discretionary expenses, both multiplied by negative one. *MACROINSTAB* is the index of macroeconomic instability of the countries. *ROA* is the return on assets. *SIZE* is the natural logarithm of total assets. *NETCASH* is the operating cash flow divided by total assets. *LEVERAGE* is the total liabilities divided by the total assets. *GROWTH* is percentage change in sales. *, ** and *** denote significance of correlations at 10%, 5% and 1%, respectively. † Statistics calculated based on 33,764, 44,632 and 78,396 firm-year observations to Panel A, B and C, respectively.

Additionally, */DAccruals/*, *RM1*, and *RM2* are also correlated with all control variables, suggesting the importance of controlling for these variables in multivariate analyses, as observed in the previous literature (e.g., Ahmad-Zaluki et al., 2011; Barth et al., 2008; Doukakis, 2014; Flores et al., 2016; Jeanjean, & Stolowy, 2008; Lo, Ramos, & Rogo, 2017; Rathke et al., 2016).

Table 5 reports the H_1 and H_2 test results using OLS regression estimates. Regarding the */DAccruals/* model, we find that the coefficient of *MACROINSTAB* is negative and statistically significant for developed countries, and positive and statistically significant in the estimation considering the firms from emerging economies. These findings support the prediction that periods of higher macroeconomic instability seem to cause a disciplinary effect on the preparers of the accounting information in developed countries, and an incentive to earnings management practice in emerging ones, which confirm both the hypotheses H_1 and H_2 . These findings are consistent with previous studies that investigated the effect of financial crisis in the level of earnings management in developed economies (positive effect), as European countries (Filip & Raffournier, 2014; Kumar & Vij, 2017), and in emerging ones (negative effect), such as Malaysia (Ahmad-Zaluki et al., 2011) and Brazil (Flores et al., 2016).

On the other hand, considering the real earnings management measures represented by *RM1* and *RM2*, we observe a negative and significant coefficient of *MACROINSTAB* for both developed and emerging countries. These findings suggest that higher levels of instability in the macroeconomic environment discourages both accruals and real earnings management in developed countries. However, as analyzing only firm-year observations from emerging economies, our findings indicate that high levels of macroeconomic instability are positively associated with accruals-based and negatively associated with real earnings management.

Zang (2012) shows empirically that managers use real activities manipulation and accrual-based earnings management as substitutes. According to the author, considering that both real activities manipulation and accrual-based earnings management are costly activities, firms are likely to face different levels of constraints for each strategy, which will lead to varying abilities to use them. Given the desired level of earnings, therefore, when discretion is more constrained for one earnings management tool, the manager will make more use of the other (Zang, 2012). The trade-off between the two practices is confirmed in other empirical research in different contexts (Cohen, & Zarowin, 2010; Enomoto et al., 2015; McGuire, Omer, & Sharp, 2011).

We confirm this trade-off in our empirical finds, but only in emerging economies where financial resources appear to be scarcer, and political and macroeconomic instability seem to

be more aggressive when compared to developed countries (Gao et al., 2017). On the other side, considering a greater presence of sophisticated investors, a greater dispersion of capital and, therefore, a higher level of management monitoring by outsiders, managers from firms situated in developed countries seem to suffer a greater scrutiny for high quality accounting information in periods of higher macroeconomic instability, which would discourage both the practices of earnings management, by accruals-based and by real activities.

Considering the large representativeness of Chinese firms in our database, we also estimated the model dropping firm-year observations from China in the emerging countries estimations (not tabulated). The coefficient of *MACROINSTAB* variable remains the same.

Table 5 – Effect of Macroeconomic Instability on Accrual-based and Real Earnings Management. 2000-2017

	Accrual-based Earnings Management		Real Earning Management			
	Developed	Emerging	RM1		RM2	
	Developed	Emerging	Developed	Emerging	Developed	Emerging
<i>constant</i>	0.1239*** (0.004)	0.0798*** (0.003)	0.1181*** (0.022)	0.1414*** (0.015)	0.0087 (0.011)	0.0488*** (0.007)
<i>MACROINSTAB</i>	-0.0618*** (0.005)	0.0108** (0.005)	-0.2819*** (0.034)	-0.1592*** (0.021)	-0.1080*** (0.016)	-0.0950*** (0.011)
<i>ROA</i>	-0.2095*** (0.010)	-0.0854*** (0.014)	0.0795*** (0.031)	-0.0504 (0.034)	0.1885*** (0.016)	0.1786*** (0.019)
<i>SIZE</i>	-0.0035*** (0.000)	-0.0036*** (0.000)	0.0084*** (0.001)	-0.0001 (0.001)	0.0030*** (0.001)	0.0019** (0.001)
<i>NETCASH</i>	0.0202 (0.012)	-0.1083*** (0.011)	-0.5283*** (0.038)	-0.5871*** (0.028)	-0.9599*** (0.020)	-1.0711*** (0.014)
<i>LEVERAGE</i>	0.0196*** (0.003)	0.0407*** (0.003)	0.0969*** (0.018)	0.1276*** (0.013)	0.0676*** (0.009)	0.0637*** (0.007)
<i>GROWHT</i>	0.0331*** (0.002)	0.0369*** (0.002)	-0.0771*** (0.006)	-0.0665*** (0.005)	-0.0530*** (0.003)	-0.0543*** (0.003)
<i>LOSS</i>	0.0018 (0.002)	0.0059*** (0.002)	0.0204*** (0.008)	-0.0312*** (0.006)	0.0055 (0.004)	-0.0146*** (0.003)
<i>IFRS</i>	-0.0106*** (0.002)	0.0038*** (0.001)	-0.0213** (0.011)	-0.0149** (0.007)	-0.0003 (0.005)	-0.0015 (0.003)
<i>Dummies Industry</i>	<i>Inserted</i>	<i>Inserted</i>	<i>Inserted</i>	<i>Inserted</i>	<i>Inserted</i>	<i>Inserted</i>
<i>Dummies Year</i>	<i>Inserted</i>	<i>Inserted</i>	<i>Inserted</i>	<i>Inserted</i>	<i>Inserted</i>	<i>Inserted</i>
N° Obs.	42,012	50,489	33,764	44,632	33,764	44,632
F Test	104.82***	84.57***	33.19***	52.04***	119.89***	256.34***
R ²	0.1486	0.1104	0.0662	0.0975	0.2177	0.3431

This table shows the coefficient estimates and standard-errors (in parentheses) from the OLS regressions. Errors are clustered at the firm level, and the estimation of standard errors is robust to heteroscedasticity and to firm- and industry-level error correlations. In **Accrual-Based Earnings Management estimations**, the dependent variable is *|DAccruals|*, the absolute value of discretionary accruals calculated based on the Modified Jones Model (Dechow et al., 1995). In **Real Earnings Management estimations**, the dependent variables are *RM1*, which represents an aggregate measure of real earning management activities calculated as the sum of abnormal discretionary expenses multiplied by negative one and abnormal production costs, and *RM2*, which represents an aggregate measure of real earnings management activities calculated as the sum of abnormal cash flows and abnormal discretionary expenses, both multiplied by negative one. *MACROINSTAB* is the index of macroeconomic instability of the countries. *ROA* is the return on assets. *SIZE* is the natural logarithm of total assets. *NETCASH* is the operating cash flow divided by total assets. *LEVERAGE* is the total liabilities divided by the total assets. *GROWTH* is percentage change in sales. *LOSS* is a dummy variable that assumes 1 (one) for firm-year observations with negative net income and 0 (zero) otherwise; *IFRS* is a dummy variable that assumes 1 (one) for company-year observations referring to financial statements prepared according to IFRS standards and 0 (zero) otherwise. Dummies Industries and Years inserted in all estimations. “Developed Countries” are estimated only with firm-year observations from developed countries. “Emerging Countries” are estimated only with firm-year observations from emerging countries. ** and *** denote significance at 5% and 1%, respectively.

Taken together, the results of this study indicate that macroeconomic instability is able to interfere in accounting quality information, given, among others, the increase uncertainty and their reflection on the strategy of managers. However, considering the relevant differences in the institutional environment among the countries, our finds corroborate with the prediction that periods of macroeconomic stress affect earnings management practices by manager in developed and emerging economies in different ways.

5. Summary and Conclusions

This study investigates the effect of macroeconomic instability on both accrual-based and real earnings management, explicitly examining how this relationship compares between developed and emerging countries. We add to the extant literature by documenting that high levels of macroeconomic instability mitigate accrual-based earnings management in developed economies, whereas it encourages earnings manipulation by accruals in emerging ones. Findings also indicate a trade-off between accrual-based and real earnings management, but only in emerging countries. Our findings suggest that in periods of macroeconomic instability, the accrual-based and real earnings management may be particularly relevant for accounting information quality, especially in emerging countries.

The empirical findings have several implications not only for academia literature by addressing macroeconomic instability for each year and country and broadening the discussion in different institutional contexts, but also to regulatory agencies, investors and other stakeholders by giving a more holistic view about the effect of the economic environment on earnings management in countries with different institutional conditions.

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