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Macroeconomic Instability, Institutions and Earnings Management: An Analysis in Developed and Emerging Market Countries

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Macroeconomic Instability, Institutions and Earnings Management: An Analysis in Developed and Emerging Market Countries

ABSTRACT

We analyze the effect of macroeconomic instability on earnings management and the moderating role of country-level institutions, explicitly examining how this phenomenon compares between developed and emerging market countries. Focusing our analysis on macroeconomic instability instead of specific periods of financial crisis, we provide a more comprehensive view of the role played by the macroeconomic environment as a key determinant of accounting quality. The empirical study relies on a worldwide sample from 34 countries throughout the period 1998-2018. Based on several variables related to macroeconomic environment conditions, we construct a comprehensive macroeconomic instability index for each country allowing for changes over the years. Our findings suggest that when facing greater macroeconomic instability, firms from developed (emerging market) countries decrease (increase) the level of accruals-based earnings management, and both types of countries decrease the level of real earnings management. We also find evidence that the association between macroeconomic instability and accruals-based earnings management is lower in countries with stronger institutions, in both developed and emerging market countries.

Keywords: macroeconomic instability; accrual-based earnings management; real earnings management; countries' development; country-level institutions.

1. Introduction

This study analyzes the effect of macroeconomic instability on earnings management and the moderating role of country-level institutions, explicitly examining how this phenomenon compares between developed and emerging market countries. Previous studies on the consequences of macroeconomic environment on earnings management seem to focus on financial crises (e.g., Arthur et al., 2015; Filip & Raffournier, 2014; Kousenidis et al., 2013; Trombetta & Imperatore, 2014). These studies focus on samples predominantly comprising developed countries (primarily European Union countries), and usually take into account dummy variables or even gross domestic product to measure macroeconomic stress, which hardly captures the complexity linked to unstable economic environments. These studies report mixed findings.

We advance this discussion by proposing a measure of macroeconomic instability for each country that changes over the years and by providing empirical evidence that countries' macroeconomic instability levels affect earnings management practices in developed and emerging market economies in different ways. We also provide an important discussion on the role of institutions in dampening the effects of macroeconomic instability on earnings management, in both developed and emerging market countries. We find strong empirical evidence that changes in the macroeconomic environment do not affect firms uniformly, and that care should be taken when introducing a "one size fits all" approach.

Discussed mainly in the economic literature, macroeconomic instability involves issues related to large swings in economic activity, high inflation rates, increasing unemployment, the balance of payments disequilibrium, and excessive volatility in foreign exchange and financial markets. There are several negative consequences of high levels of macroeconomic instability, such as increased uncertainty and erosion of confidence, and degradation in standards of living (IMF, 2020). Therefore, the instability of macroeconomic environments seems to be one of the most crucial issues in contemporary macroeconomics (Skorobogatova, 2016).

The magnitude of unstable economic environments calls for a fundamental reassessment of all areas of business and economic research, including accounting practices (Arnold, 2009). The accounting literature empirically demonstrates how adverse macroeconomic environments (namely financial crises) affect earnings management (Arthur et al., 2015; Trombetta & Imperatore, 2014). This line of research relies on the assumption that macroeconomic conditions become critical forces in shaping managers' accounting choices.

The recurring corporate scandals involving accounting issues, such as the Enron and WorldCom in the United States, and even more recently the British Home Stores in the United Kingdom and the Petrobras in Brazil, serve as a constant alert for investors and regulators about the importance of preventing earnings management behavior. This issue is especially relevant

in emerging market countries², where greater information asymmetry faces investors (Martins & Barros, 2021) – making standard-setters take even more actions to mitigate these scandals in less developed economies.

Recently, the Securities and Exchange Commission (SEC) and the Public Company Accounting Oversight Board (PCAOB) highlighted emerging market risk disclosure and the inconsistency of the quality of financial information, requirements, and standards of such markets, stating that firms “that have operations in emerging markets, and investors in those companies, often face greater risks and uncertainties than in more established markets”³. This greater concern about fraud in emerging market countries compared to developed economies is corroborated by survey data from Ernst & Young pointing out that among 2,550 executives from 55 countries, fraud and corruption remain more prevalent in emerging markets (Ernst & Young, 2018).

We argue that managers’ (dis)incentives to engage in earnings management during periods of higher macroeconomic instability could differ between developed and emerging market countries. Indeed, several important factors distinguish developed and emerging market economies. Overall, developed countries enjoy better corporate governance systems (Bhagat et al., 2011), greater monitoring by shareholders (Djankov et al., 2008), higher levels of enforcement (Preiato et al., 2015) and litigation risk (Arthur et al., 2015).

More specifically, we argue that higher levels of macroeconomic instability could create an environment of higher pressure on preparers of financial information for firms in developed countries. Considering the greater scrutiny and pressure from the market and regulators regarding earnings management in those countries, and a potential increase of costs associated with those practices, we conjecture a negative association between macroeconomic instability

² The Economist (2014). The Dozy Watchdogs. In: The Economist, December 13, 2014, 24–26. www.economist.com/news/briefing/21635978-some-13-years-after-enron-auditors-stillcant-stop-managers-cooking-books-time-some.

³ PCAOB. (2020). *Public Statement: Emerging Market Investments Entail Significant Disclosure, Financial Reporting and Other Risks*; Remedies are Limited. <https://www.sec.gov/news/public-statement/emerging-market-investments-disclosure-reporting>.

and earnings management in such markets. In an opposite view, considering the poor institutional environment of emerging market economies, we also argue that managers in these markets could feel more freedom to engage in more earnings management during periods of economic instability and thereby report better results.

Prior accounting literature also demonstrates the role of country-level institutions as a key factor capable of dampening the influence of many external factors on both accounting and finance firm-level outputs, in firms from either developed or emerging market countries (e.g., Durnev & Kim, 2005; García-Sánchez & Noguera-Gámez, 2018). To the extent to which the countries' institutions are stronger (i.e. country laws are effectively enforced, corruption mitigated, political instability is controlled, and political institutions constrain politicians and political elites), managers are no longer less susceptible to external factors that may affect their decisions and choices regarding earnings manipulation. Based on this assumption, we also expect the effect of macroeconomic instability on earnings management to be less evident in both developed and emerging market countries having stronger institutions.

We test our hypotheses based on 51,911 firm-year observations from 34 countries using a large time window, covering around 20 years (1998 to 2018). Based on several variables related to economic environment conditions, we construct a macroeconomic instability index for each country analyzed, which changes over the years. Our findings suggest that when facing higher macroeconomic instability firms from developed (emerging market) countries decrease (increase) the level of accruals-based earnings management (AEM), and both types of countries reduce the level of real earnings management (REM). We also find evidence that the association between macroeconomic instability and AEM is lower in countries with stronger institutions, in both developed and emerging market countries. We perform several robustness checks in order to mitigate potential firm-level and industry-level differences among developed and emerging market firms that may underlie the differences behind developed and emerging market countries.

Our empirical study builds upon earlier research and makes contributions in the following ways. First, the literature on earnings management in emerging countries is under development (Chen et al., 2011) and still needs a better understanding on the effects of macroeconomic and institutional factors themselves, as well as the differences to this evidence in developed countries. We advance this dialog and propose a specific discussion on the earnings management incentives in developed *versus* emerging markets in an isolated way, broadening the conversation about the effect of macroeconomic instability on earnings management in different economic and institutional contexts. Second, we contribute to the literature methodologically by using a cross-country index to capture the effect of macroeconomic instability on earnings management, involving different macroeconomic indicators related to this issue, instead of using a dummy that represents moments of financial crises (e.g., Trombetta & Imperatore, 2014). Third, while previous studies focus only on accruals-based earnings management, we discuss and provide empirical findings regarding how firms from developed and emerging market countries worldwide react toward macroeconomic instability by using different strategies of earnings management to manipulate accounting amounts (AEM and REM).

Finally, in a more practical way, by presenting empirical evidence regarding the interference of country-level macroeconomic conditions on earnings management practices, we may raise discussions with standards-setting authorities, investors, and other stakeholders. Considerable data about macroeconomic instability throughout the period examined are presented and discussed, encompassing different indicators related to the economic environment between developed and emerging market economies, and giving a more holistic view of the phenomenon in countries with different institutional conditions.

The remainder of the paper is organized as follows. In the next section, we present the background and hypotheses. In Section 3 we describe the research design, and in Sections 4

and 5 we present the main results and the sensitivity/additional analysis, respectively. Finally, we provide a summary and concluding remarks.

2. Background and Development of Hypotheses

2.1. Macroeconomic Instability and Earnings Management

Country-level macroeconomic instability is currently one of the most crucial issues in macroeconomics (Skorobogatova, 2016). Indeed, the periods of severe instability of the macroeconomic environment worldwide in the 20th century have made macroeconomic instability a key issue in economic growth analysis (Cariolle & Goujon, 2015). Differently from financial crisis moments, countries and jurisdictions worldwide are always facing a certain degree of macroeconomic instability, which makes it an object of constant concern on the part of governments and international authorities. From this perspective – given that macroeconomic crises are considered by many as episodes of severe macroeconomic instability (Davoodi et al., 2021) –, even though a country is not necessarily going through a period of crisis, there will certainly always be a degree of macroeconomic instability that must be constantly monitored by governments.

In fact, from a historic point of view, market economies have exhibited an intrinsic propensity to fluctuate, sometimes with high macroeconomic instability periods, including recurrent economic crises – making some degree of macroeconomic instability inevitable (United Nations, 2016). Thus, even in cases that are not extreme (i.e., financial crisis periods), macroeconomic instability can be perverse to the macroeconomy, given the increased uncertainty and consequently the corrosion of investors' confidence (World Bank, 2014).

Therefore, macroeconomic instability involves issues related to large swings in economic activity, high inflation rates, increasing unemployment, the balance of payments disequilibrium, and excessive volatility in foreign exchange and financial markets. From this perspective, the instability of the macroeconomic environment can increase uncertainty,

discourage investment, prevent economic growth, and hurt standards of living (IMF, 2020). However, macroeconomic instability can also come accompanied by some economic benefits, creating investment opportunities for individuals and new business opportunities that multinational companies and other firms are often keen to exploit (Ramstetter, 2011). Some level of macroeconomic instability may even be desirable to the extent that development processes involve both quantitative and qualitative changes in all economic and social variables, and advance at uneven paces (United Nations, 2016).

Even though macroeconomic instability can also generate some economic benefits, mainly in terms of investments, at the aggregate level, countries with high levels of macroeconomic instability usually have more disadvantages than advantages in terms of socio-economic health (Ramstetter, 2011). From this perspective, high macroeconomic instability is strongly detrimental to economic development and social welfare, inhibiting or distorting long-term economic decisions related to productive investment, employment creation and innovation. Moreover, large swings in economic activity, volatility in exchange rates and financial markets and boom-and-bust episodes entail large economic and social costs, such as credit crunches, fiscal constraints, firm bankruptcies, job, and income losses, and increasing poverty (United Nations, 2016).

Previous economic literature provides an empirical and theoretical discussion that macroeconomic instability changes the beliefs, expectations, and perceptions of market agents (Bianchi & Ilut, 2017). In the accounting area, there is a stream of earlier studies that consistently demonstrate a potential association between the macroeconomic environment and managers' behavior concerning earnings management with a cross-country design (e.g., Arthur et al., 2015; Filip & Raffournier, 2014; Kousenidis et al., 2013; Trombetta & Imperatore, 2014). These previous accounting studies usually rely on the assumption that macroeconomic conditions become critical forces in shaping managers' accounting choices.

Taking into account five EU countries, Kousenidis et al. (2013) find that during the 2007-2009 subprime crisis, the change in most determinants of earnings quality favors higher earnings quality (less earnings management). Filip and Raffournier (2014) also find that earnings management decreased significantly in 16 European Union (EU) countries during the 2008–2009 financial crisis. Likewise, Arthur et al. (2015) compare the earnings quality of firms from 14 European countries during the 2005–2007 period and the financial crisis period (2008–2010), and find that the sample firms tended to present higher-quality financial reports (less earnings management) during the financial crisis than before it. Outside of the EU market, the empirical findings of Trombetta and Imperatore (2014) suggest that overall US-listed firms also engage in less earnings management during economic downturns, such as during the 2001-2002 Dotcom Bubble, and 2007-2009 subprime financial crisis.

At least two main points characterize these previous accounting studies. First, this literature is clearly concentrated on periods of financial crisis, especially on the 2007-2009 subprime crisis, usually demonstrating lower levels of earnings management during moments of an economic crash. Second, these studies consistently concentrate on developed countries, more specifically in the European Union market. We add to these previous accounting studies by analyzing an economic construct that goes beyond financial crisis (macroeconomic instability), and its association with earnings management in a lengthy time window of analysis (1998-2018), and by discussing how this association compares between developed and emerging market countries.

Given the potential effects of the macroeconomic environment in shaping managers' behavior concerning earnings management strategies, we argue that there are some advantages of considering macroeconomic instability levels instead of only periods of crisis. The economic literature consistently comments that the level of countries' economic stability is a continuing concern for governments, regulators, and investors in general (Allen et al., 2018). Thus, regardless of whether facing an economic crisis or not, economies worldwide always show

some level of macroeconomic instability, which is a continuing matter of concern to governments and international authorities such as the International Monetary Fund (IMF, 2020), the United Nations (2012), and the Organization for Economic Cooperation and Development (OECD, 2014), among others.

By analyzing a long period of analysis (1998-2018), including periods of high and low macroeconomic instability, we add to the accounting literature that seems to be focused only on analyzing periods of severe instability of the macroeconomic environment (financial crisis). Furthermore, it is difficult to precisely evaluate when an economic crisis effectively started in each country (Dimitras et al., 2015), given that the effect of financial crises on the overall economy depends on factors intrinsic to each country, such as fiscal, monetary, and exchange rate policies. Most accounting studies consider a restricted dummy variable to capture a crisis period (e.g., Cohen et al., 2014; Kousenidis et al., 2013; Trombetta & Imperatore, 2014), which ends up generating an evident bias because the 2007-2009 subprime crisis, for instance, did not affect all countries with the same intensity and in the same years.

Theoretically, financial accounting preparers have incentives to both increase and decrease earnings management during periods of high macroeconomic instability. On the one hand, managers could compensate lower earnings by increasing earnings management during recession periods, to avoid a large drop in the firm's stock price that would negatively impact their compensation (Charitou et al., 2007). On the other hand, it is also possible to argue that the increment of general market uncertainty, coupled with an increase in information asymmetry (Liao et al., 2014), makes investors and other stakeholders more careful when analyzing the information disclosed. Thus, with increased scrutiny on the financial accounting information reported, firms would decrease earnings management during periods of greater macroeconomic instability.

Taking this discussion as a whole, we argue that managers' (dis)incentives to engage in earnings management in periods of higher macroeconomic instability differ between developed

and emerging market countries. Indeed, several factors distinguish between developed and emerging market economies. In general, developed countries usually have greater international experience and exposure, better corporate governance systems and government regulation, and maturity regarding the domestic capital market (Bhagat et al., 2011). Moreover, developed countries are characterized by greater monitoring by shareholders and protection of minority investors (Djankov et al., 2008), higher levels of enforcement (Preiato et al., 2015), high levels of litigation risk (Arthur et al., 2015), and more robust institutional governance systems (e.g., Griffiths & Zammuto, 2005).

Concerning macroeconomic instability levels, from a historical point of view, emerging market countries have traditionally experienced much greater macroeconomic instability than developed economies (Cariolle & Goujon, 2015; Loayza et al., 2007). This happens because of (among other reasons) the lack of resources of emerging market countries to smooth out economic fluctuations, such as lower levels of international currency reserves, less developed inland markets, the lower financial-political scope for economic stimulation programs, and currency weakness (Gurtner, 2010). Also, significant external shocks, uncertain macroeconomic policies, and micro-economic rigidities could intensify macroeconomic downturns in emerging countries (Loayza et al., 2017). Moreover, the greater amount of financial innovation in developed countries could also alleviate the impact of investment booms and busts on macroeconomics (World Bank, 2010).

These characteristics that distinguish between developed and emerging market countries may influence the way that managers act during periods of greater (or less) macroeconomic instability. In developed countries, more severe periods of macroeconomic instability may increase the scrutiny and monitoring by auditors, creditors, and other stakeholders (Pong et al., 2007), which should result in greater pressure on managers for higher quality information – and consequently less earnings management. From this perspective, higher levels of enforcement (Preiato et al., 2015) and more robust institutional governance systems (Griffiths & Zammuto,

2005) in developed countries could ease pressure on firms for less earnings management during periods of elevated macroeconomic instability.

Moreover, conservatism is likely to increase in higher periods of economic instability in developed countries, especially due to the greater sophistication of investors, who are even more risk-averse (Jenkins et al., 2009). Thus, with more conservatism, earnings management is likely to decline (Bertomeu et al., 2017). Additionally, litigation risk is probably higher during periods of economic decline, when capital markets experience sharp drops in stock prices and volatility is exacerbated. Managers should respond to this risk increase by describing earnings management (Filip & Raffournier, 2014), especially in developed countries naturally characterized by high levels of risk of litigation, strong investor protection, and a diverse base of investors (Arthur et al., 2015; Liao et al., 2013). Indeed, the influence of litigation risk on earnings management is well documented (Huijgen & Lubberink, 2005).

High levels of macroeconomic instability are also likely to increase the costs associated with earnings manipulations, thereby discouraging managers from engaging in it (Trombetta & Imperatore, 2014). In this sense, accounting standards-setting bodies, such as the IASB and the FASB, among others, and capital market regulators undertake actions during more severe recession moments to improve financial reporting quality in hopes of restoring investor confidence (Arthur et al., 2015)⁴. Thus, considering greater enforcement in developed countries, it is likely that some of these actions should generate even greater pressure on financial accounting preparers for higher quality information (less earnings management).

On the contrary, emerging market countries are characterized by institutional environment voids whereby firms must respond to unpredictable (but predictably frequent) shocks – political instability, violence, aggressive macroeconomic fluctuations, and even wars

⁴ Arthur et al. (2015) and Liao et al. (2013), for instance, cite the fact that the IASB has modified its accounting standards for fair value accounting, and the Securities and Exchange Commission conducted a study on mark-to-market accounting at the beginning of the global subprime financial crisis. “These actions sent a clear message that these bodies were seriously concerned about the impact of financial reporting on investor confidence” (Arthur et al., p. 4).

– without the benefit of specialized intermediaries that can analyze market information, facilitate transactions, and provide signals related to credibility (Gao et al., 2017). For emerging market countries, we can also mention a smaller volume of negotiations compared to large developed economies, which would give greater “freedom” to managers to manipulate accounting information due to a certain “lack of monitoring” by outsiders (Djankov et al. 2008). In such less developed markets, therefore, given the lower scrutiny of auditors, regulators, and the market, managers could take advantage of moments of uncertainty to manage the accounting information and hence place the firms’ performance in the best possible conditions.

Firms from emerging market countries overall seem to be more involved with earnings management strategies than those from developed countries (Viana et al., 2022). Aligned with that, Durnev and Magnan (2017) demonstrate that firms domiciled in less stable countries with looser legal regimes are more likely to manage earnings. Lourenço et al. (2018) also demonstrate that a greater perception of corruption is related to higher incentives for firms to manipulate earnings in the case of emerging market countries, and that such results are not identified in developed countries, where the level of minority investors’ protection is higher. Moreover, Lin and Wu (2014) suggest that corporate governance regulations play a key role in reducing the earnings manipulation practice overall, however this phenomenon seems to be less pronounced in emerging market countries than in developed markets.

Thus, taking advantage of a weaker institutional environment, managers from emerging market countries could engage in more earnings management during high levels of macroeconomic instability in order to avoid, for instance, a drop in the firm’s stock price that would negatively impact their compensation and variable bonus payments (Charitou et al., 2007). Another reason would be the attempt to avoid violations of debt covenants (Filip & Raffounier, 2014), or even to maintain the firm’s reputation in more uncertain periods (Gao et al., 2017). Indeed, Graham et al.’s (2005) survey reveals that when the overall economy is down, managers make choices that boost earnings, until the economy recovers and earnings are

increasing. Given that many emerging market economies do not have the resources to stimulate the economy and protect themselves against economic fluctuations (Gurtner, 2010), it is likely that operational losses are even greater in firms from these countries – which would ultimately increase the incentive for earnings management practices, especially considering the weaker enforcement (Preiato et al., 2015) in these countries.

Taking those arguments together, we expect that high levels of macroeconomic instability could create an environment of high pressure on the preparers of the financial information of firms in developed countries. Therefore, considering the greater scrutiny and pressure from the market and regulators regarding earnings management in those countries, and a potential increase of costs associated with those practices, we expect a negative association between macroeconomic instability and earnings management in those markets. However, in an opposite view, we also conjecture that the poor institutional environment of emerging market economies, coupled with lower levels of enforcement and compliance, less investor protection, and lower audit quality, among other factors, could create an encouraging environment for these companies to engage in more earnings management practices in periods of higher macroeconomic instability. Formally, we hypothesize that:

H1: The level of macroeconomic instability is negatively associated with the level of earnings management in developed countries.

H2: The level of macroeconomic instability is positively associated with the level of earnings management in emerging market countries.

2.2. Macroeconomic Instability and Earnings Management: The Role of Institutions

Beyond the analysis on the association between macroeconomic instability and earnings management, we explore the potential moderating role of institutions in each type of country (i.e., developed and emerging market countries). Previous literature argues that country-level institutions create incentives that influence the behavior of corporate executives, investors,

standard setters, and other market participants, by shaping the properties of reported accounting numbers through a complex interplay of accounting standards, legal, market, regulatory, and political pressures, and reporting discretion exercised by managers (Bushman & Piotroski, 2006). From this perspective, preparers' (i.e. managers' and auditors') financial reporting incentives depend on the sources of demand for, and political influence on, financial reporting, involving the role of institutions (Ball et al., 2003). In this line, therefore, countries with stronger institutions constrain the actions of firms by increasing investor protections, causing several effects on the market in general, such as reducing asymmetric information and agency conflicts (Ellahie & Kaplan, 2021).

Given the importance of institutions to the business environment, a consistent and important strand of research points out the role of institutions as a key moderator component, capable of dampening the effect of several external factors on both accounting and finance firm-level outputs, in firms from either developed or emerging market countries (e.g., Chen et al., 2009; Choi et al., 2011; Durnev & Kim, 2005).

Relying on a sample of 27 countries in developed and emerging markets, Durnev and Kim (2005) demonstrate that even though the quality of governance practice is positively related to the growth opportunities, the concentration of cash flow rights, and the need for external financing, these relationships are weaker in countries with strong institutions. Based on a sample of 25 emerging market countries, Chen et al. (2009) find that firm-level corporate governance has a significantly negative effect on the cost of equity capital in emerging markets, and that the effect is less pronounced in countries with strong institutions. Choi et al. (2011) find that the Asian financial crisis of 1997–1998 led to a significant fall in the value relevance of discretionary accruals, based on a sample of 9 Asian countries, and that the fall was less severe for firms in countries with strong institutions.

Overall, the widespread idea behind these studies is that to the extent that the countries' institutions are stronger, external factors become less important as determinants of the quality

of information. In other words, to the extent that country laws are effectively enforced, corruption mitigated, political instability is controlled, and political institutions constrain politicians and political elites (i.e., strong institutions) (Acemoglu et al., 2003), managers are no longer less susceptible to external variables that may eventually affect their decisions and choices regarding earnings manipulation. Based on this assumption, we therefore expect that the effect of macroeconomic instability on earnings management strategies by managers is less evident in both developed and emerging market countries with stronger institutions, formally stated in the following hypothesis:

H3: The negative (positive) association between macroeconomic instability and earnings management in developed (emerging market) countries is attenuated in countries with stronger institutions.

3. Research Design

3.1. Sample and Data

The empirical analysis relies on a sample composed of 9,109 non-financial firms from 34 countries. The firms are selected based on the availability of financial-economic information in the Thomson Reuters Datastream database. We use data from the years 1998 to 2018⁵ and we consider only observations with positive equity. Thus, the final sample is composed of 51,911 firm-year observations, with about 38% corresponding to developed countries (19,900) and the other part corresponding to the emerging market ones (32,011). The classification of the countries in developed and emerging market economies is based on a cross-referencing process using the International Monetary Fund, United Nations, World Trade Organization, and Morgan Stanley Capital International (MSCI) classification (Trimble, 2018). Table 1 presents

⁵ Given that the period encompasses the IFRS adoption, we also exclude the year of mandatory adoption to avoid the potential for confounding effects in the transition year, as suggested in the previous literature (e.g., Trimble, 2018).

the sample distribution by country. Among developed (emerging market) economies, Hong Kong, Germany, and Canada (China, Korea, and Brazil) are the most representative countries.

(Insert Table 1 here)

3.2. Variables

3.2.1. Earnings Management

The previous earnings management literature classifies the manipulation of accounting amounts into two categories, namely accruals-based earnings management (AEM) and real earnings management (REM). While AEM involves generally accepted accounting principles and resorts to accounting choices that seek to “obscure” or “mask” true economic performance (Dechow and Skinner, 2000), REM occurs when managers undertake actions that change the timing or structuring of an operation, investment, and/or financing transaction to influence the output of the accounting system (Gunny, 2010). We consider in our analyses both AEM and REM.

Regarding the earnings manipulation through AEM, following previous literature (e.g., Commerford et al., 2018; Doukakis, 2014; Larson et al., 2018; Trimble, 2018), earnings management is measured by using the amount of discretionary accruals. We consider the modified Jones discretionary accruals model, proposed by Dechow et al. (1995), according to Equation (1). Following Kothari et al. (2005), we include as additional regressor a measure of firm performance, namely return on assets. We estimate Equation (1) by taking into account cross-sectional industry regressions by country groups for each year, by requiring at least eight observations for each country-industry-year group. Using this approach, we expect to partially control for the industry-country-wide changes in economic conditions that could affect the dependent variables and allow the coefficients to vary across time (Doukakis, 2014). We use the unsigned residuals from this model as our measure of AEM.

$$TA_{it} = \alpha_0 + \beta_1 \frac{1}{Ats_{it-1}} + \beta_2 \frac{(\Delta Sales_{it} - \Delta REC_{it})}{Ats_{it-1}} + \beta_3 \frac{GPPE_{it}}{Ats_{it-1}} + \beta_4 ROA_{it} + \varepsilon_{it} \quad (1)$$

where

$$TA_{it} = \frac{(\Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta STDEBT_{it} - DEP_{it})}{Ats_{it-1}} \quad (2)$$

where, for each firm i in year t , TA are the total accruals. ΔCA is the change in current assets for each firm i from year $t-1$ to year t . ΔCL is the change in current liabilities. $\Delta CASH$ is the change in total cash reserve. $\Delta STDEBT$ is the change in the short-term debt. ΔDEP is the amount of depreciation expenses. Ats is the total assets. $\Delta Sales$ is the change in sales. ΔREC is the change in accounts receivables. $GPPE$ is the gross amount of property, plant, and equipment. ROA is the net income before extraordinary items scaled to total assets.

Following the previous literature on REM (e.g., Cohen et al., 2010; Doukakis, 2014; Trimble, 2018; Zang, 2012), we consider the empirical models provided by Roychowdhury (2006) regarding specifically to the abnormal levels of productions costs (ABN_PROD), cash flows from operations (ABN_CFO), and discretionary expenses (ABN_DISX), according to Equations (3), (4), and (5), respectively. The models are estimated taking into account cross-sectional industry regressions by country groups for each year, by requiring at least eight observations for each country-industry-year group. We use the residuals from these models as our measures of REM. We multiply ABN_CFO and ABN_DISX by -1 so that the higher the amount of these variables, the more likely it is that the managers are practicing price discount and cutting discretionary expenses, respectively (Zang, 2012; Cohen & Zarowin, 2010). Additionally, following Doukakis (2014) and Trimble (2018), among others, we aggregate all three REM proxies into one single variable, REM , which represents the sum of ABN_PROD , ABN_CFO , and ABN_DISX . Thus, the higher the amount of REM , the more likely it is that the firm engaged in REM practices.

$$\frac{PROD_{it}}{Ats_{it-1}} = \alpha_0 + \beta_1 \frac{1}{Ats_{it-1}} + \beta_2 \frac{Sales_{it}}{Ats_{it-1}} + \beta_3 \frac{\Delta Sales_{it}}{Ats_{it-1}} + \beta_4 \frac{\Delta Sales_{it-1}}{Ats_{it-1}} + \varepsilon_{it} \quad (3)$$

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

$$\frac{DISX_{it}}{Ats_{it-1}} = \alpha_0 + \beta_1 \frac{1}{Ats_{it-1}} + \beta_2 \frac{Sales_{it}}{Ats_{it-1}} + \varepsilon_{it} \quad (5)$$

where, for each firm i in year t , $PROD$ is the amount of production costs, defined as the sum of cost of goods sold and changes in inventory from the year $t-1$ to t . CFO is the amount of cash flows from operations calculated indirectly as net income minus total accruals. $DISX$ is the amount of discretionary expenses, defined as the sum of research and development (R&D), and selling, general, and administrative (SG&A) expenses. All other variables are as previously defined.

3.2.2. Macroeconomic Instability

Macroeconomic instability is a complex and multidimensional phenomenon that cannot be measured directly, as it is affected by a variety of factors, such as inflation, market capitalization, and gross domestic product, among others (Cariolle & Goujon, 2015). Indeed, international organizations such as the United Nations (2016) and the European Union⁶ recognize this complexity and assess macroeconomic instability not only through one but considering a bunch of macroeconomic indicators.

Therefore, in contrast with the previous literature, which is focused on periods of financial crises, especially the 2007-2009 subprime crisis, we use a macroeconomic construct that incorporates several indicators. Differently from moments of financial crises, countries and

⁶ European Union, Treaty on European Union (Consolidated Version), Treaty of Maastricht, 7 February 1992, Official Journal of the European Communities C 325/5; 24 December 2002, retrieved from <https://www.refworld.org/docid/3ae6b39218.html>.

jurisdictions worldwide are constantly facing a certain degree of macroeconomic instability. The United Nations (2016) states that some degree of macroeconomic instability is inevitable, while the International Monetary Fund (2020) states that the challenge for policymakers is to minimize the intrinsic instability in their own country. These points of view are based on the dynamic macroeconomics concepts, in which markets necessarily involve some degree of volatility, as well as gradual structural change (IMF, 2020).

Therefore, given that “economic crises are episodes of severe macroeconomic instability” (Davoodi et al., 2021, p. 9), even though a country may not necessarily be going through a period of crisis, there will certainly always be a degree of macroeconomic instability that must be constantly monitored by governments. Furthermore, in methodological terms, it is very difficult to precisely diagnose a crisis period *versus* a non-crisis period (Dimitras et al., 2015) – especially in a cross-country analysis involving several countries –, given that a financial crisis moment hardly affected all countries with the same intensity and in the same years.

We measure macroeconomic instability by constructing an index that considers different indicators linked to the countries’ macroeconomic environment. Brave and Butters (2011) highlight that the construction of an index through the involvement of different (but connected) variables has the advantage of capturing the interconnection of different indicators, an advantageous characteristic to allow the assessment of the intrinsic importance of each variable⁷.

We use a Macroeconomic Instability Index (*MacroInstab*) constructed by using principal component analysis (PCA) applied to six variables related to economic environment conditions, namely inflation rate, market capitalization, GDP per capita, current account balance, exports of goods and services, and unemployment rate. Table 2 shows the description

⁷ Brave and Butters (2011) use a similar approach to measure financial stability of the U.S. banking system between 1973 and 2010, by taking into account 100 financial indicators.

and measurement of each of those variables. We take into account relevant previous economic studies linked to macroeconomic instability in order to select these indicators (e.g., Loayza et al., 2007; Stein, 2012). We invert the scale of some of these indicators in order to interpret a high value of these indicators as higher levels of macroeconomic instability, based on the economic literature⁸. Therefore, to construct the *MacroInstab* we use a group of factors, the information of which is collected from different sources for each country and year, 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.

(Insert Table 2 here)

Previous economics literature provides a consistent theoretical and empirical support on the association between the variables included in our Index and macroeconomic instability levels, as we detail as follows. Some negative consequences in the macroeconomic environment can be seen with a rise of inflation, such as higher unemployment and lower consumer spending, which can lead to falls in company sales volumes and consequently a fall in profits (e.g., Kyrtsov & Labys, 2006). Indeed, inflation targeting as a stabilization policy is adopted by many central banks (Drumond & Porcile, 2012), with direct impacts and consequences for wages, the level of employment, or the exchange rate.

Concerning the market capitalization – the natural logarithm of stock market capitalization (% of GDP) – previous economic literature also provides evidence of a positive relationship between stock market development and long-run economic growth (Singh, 1997). This is consistent with the assumption that macroeconomic instability discourages internal and

⁸ For example, high levels of GDP per capita are associated with lower levels of macroeconomic instability (Creel et al., 2015). Thus, we invert the GDP measurement scale, based on the values of our sample, in such a way as to interpret high GDP per capita values as the higher levels of macroeconomic instability. We proceed with the same logic for all indicators (see Table 2).

external investors from participating in the stock market largely because the investment environment becomes unpredictable (Kemboi & Tarus, 2012).

The economics literature consistently demonstrates the key role of stock markets in promoting economic growth through several channels (Ho & Odhiambo, 2018). A sound and developed stock market play a vital role in stimulating economic activity and enhancing growth and development; an increase in capital formation enhances the existing stock of capital in an economy; it helps to improve the performance and growth of agriculture, industry and services; it provides funds for long-run investment projects and attracts investors by providing investment avenues to earn suitable investment returns; it increases research and development expenditures to improve production and sectoral productivity by providing employment opportunities and infrastructure development; and it also attracts foreign direct investment in domestic industry and contributes to economic growth (Shahbaz et al., 2016).

The concept of macroeconomic instability could also be linked to countries' GDP (Creel et al., 2015). Related to economic performance, 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 non-market production, such as defense or education services provided by the government (World Bank, 2018). GDP is actually considered the most comprehensive measure to track economic activity for a large group of countries over a long period of analysis, considering its direct reflection on the real situation of the economic environment. The GDP per capita – GDP divided by midyear population, according to the IMF – is used as the core indicator in evaluating the position of the economy of a country over time or relative to that compared to other countries (Bergh, 2009).

Countries' account balance – measured by the sum of net exports of goods and services, net primary income, and net secondary income scaled by countries' GDP – seems to remain an important indicator in debates around economic frictions and macroeconomic instability (Gruber & Kamin, 2007). In practical terms, account imbalances refer to the deficits and

surpluses of the current account positions. Countries' account imbalances can also be seen as continuous financing of net negative consumption of deficient economies (Sadiku et al., 2015). Based on a sample of 19 countries, Gruber and Kamin (2007) show empirically that economic downturns are systematically associated with higher current account imbalances. In addition to the evident economic consequences, high levels of account imbalances also appear to have adverse effects on countries' internal political negotiation, especially among businesses, trade unions, and parliamentarians on unfair practices (Ghosh & Ramakrishnan, 2020).

Countries' export levels – measured by the exports of goods and services scaled by countries' GDP – also have a strong effect on macroeconomic growth, tax, and redistribution policy (Cariolle & Goujon, 2015). High levels of export directly encourage the production of goods for exports, increases specialization to exploit economies of scale, and incentivize imports of high-quality products and technologies, having a positive impact on technological change, capital efficiency, and labor productivity (Konya, 2006). In fact, previous empirical studies point to a positive association between exports and the economic development of countries (e.g., Sanjuán-López & Dawson, 2010).

High levels of unemployment also seem to be a concern for many governments and jurisdictions and are considered a symptom of instability of the macroeconomic environment (Byrne & Strobl, 2004; Folawewo & Adeboje, 2017). Even though unemployment is an issue of concern for policymakers in developing economies, the developed countries are not exempt (Folawewo & Adeboje, 2017). Indeed, the unemployment rate is an important measure of the state of an economy and is considered by many to be the most widely used indicator of the well-being of a labor market (Byrne & Strobl, 2004). Moreover, the unemployment rate reveals the aggregate performance of the economy, that is, it mirrors aggregate economic activities (Folawewo & Adeboje, 2017). Beyond its impact on macroeconomic outputs, unemployment has devastating long-lasting effects on people's lives, affecting living standards in retirement, prospects of generations, and damaging small businesses and family expenditures. Such

consequences increase the instability of the macroeconomic environment by reducing current and future tax revenues and receipts, increasing government support on health, education, and other social services, and consequently resulting in lower economic growth⁹.

3.2.3. Institutions

Following previous literature (e.g., Álvarez-Botas et al., 2021; Poretti et al., 2018), we measure country-level institutions based on the Rule of Law index, according to the Worldwide Governance Indicators project, which captures “the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence”¹⁰. The Rule of Law index includes indicators such as the “degree of enforcement of court orders”, “confidence in judicial system”, “intellectual property rights protection”, “efficiency of legal framework in challenging regulations”, “practical ability of the administration to limit tax evasion”, and “the risk that the state or other sovereign political authority will deprive”, among others. In addition to being widely used and validated by previous literature, the Rule of Law index has the advantage of being measured by each country over the years, giving greater variability to the concept of institutions both within and between countries.

3.3. Empirical Model

Our empirical estimations consider both AEM and REM as the dependent variables, and the macroeconomic instability index (*MacroInstab*) as the main independent variable. To test hypothesis H1 (H2) – whether macroeconomic instability is negatively (positively) associated with earnings management in developed (emerging market) countries – we estimate Equation

⁹ Parliament of Australia (2000). House of Representatives Committees. Inquiry into issues specific to older workers seeking employment, or establishing a business, following unemployment. Chapter 2 - Consequences of unemployment. https://www.aph.gov.au/parliamentary_business/committees/house_of_representatives_committees?url=ewr/owk/report/index.htm

¹⁰ See Rule of Law Index at the <https://info.worldbank.org/governance/wgi/Home/Documents> for a full definition, data, and sources.

(6), taking into account the total sample (i.e. including both developed and emerging market countries)¹¹:

$$EM_{itj} = \alpha_0 + \beta_1 MacroInstab_{tj} + \beta_2 Emerging_j + \beta_3 MacroInstab_{tj} \times Emerging_j + \gamma \sum Controls + \varepsilon \quad (6)$$

where, for each firm i in year t and country j , EM is both AEM and REM. *MacroInstab* is the index of macroeconomic instability for each country j and year t . *Emerging* is a dummy variable equaling 1 for firm-year observations from emerging market countries, and zero otherwise.

In Equation (6), when firm-year observations are from developed countries (i.e., *Emerging* = 0), we expect the coefficient β_1 to be significantly negative, indicating that macroeconomic instability decreases earnings management in developed economies. On the contrary, when firm-year observations are from emerging market countries (*Emerging* = 1), we expect the sum of the coefficients β_1 and β_3 to be significantly positive, indicating that macroeconomic instability increases earnings management in emerging market economies.

Looking for more robust estimates based on extensive literature (e.g., Commerford et al., 2018; Doukakis, 2014; Larson et al., 2018; Trimble, 2018), control variables related to earnings management are considered in all estimations. All variables are described in Table 3.

To test hypothesis H3 – whether the negative (positive) association between macroeconomic instability and earnings management in developed (emerging market) countries is mitigated in countries with stronger institutions – we estimate Equation (7), taking into account the total sample (i.e. including both developed and emerging market countries), as follows:

¹¹ We prioritize the analysis taking the total sample considering that from a statistical theory perspective, the estimation seems to yield a more precise estimate, and is considered preferable in terms of the accuracy of the common variance to be based on more degrees of freedom when compared to “separate samples” approach (Scheepers, 2016), i.e. developed and emerging market countries subsamples.

$$\begin{aligned}
EM_{itj} = & \alpha_0 + \theta_1 MacroInstab_{tj} + \theta_2 Emerging_j + \theta_3 Institutions_j \\
& + \theta_4 MacroInstab_{tj} \times Emerging_j + \theta_5 MacroInstab_{tj} \times Institutions_j \\
& + \theta_6 Emerging_j \times Institutions_{tj} \\
& + \theta_7 MacroInstab_{tj} \times Emerging_j \times Institutions_{tj} + \gamma \sum Controls + \varepsilon \quad (7)
\end{aligned}$$

where, *Institutions* is the country-level institutions, measured by the rule of law index, according to the Worldwide Governance Indicators project. All other variables are as previously defined.

In Equation (7), we expect that the coefficients θ_1 and θ_2 remain the same as those concerning their respective variables presented in Equation (6). Moreover, when firm-year observations are from developed countries (i.e. *Emerging* = 0), and from countries with stronger institutions (i.e. *Institutions* > 0), we expect the sum of the coefficients θ_1 , and θ_5 to be significantly higher than the coefficient θ_1 , indicating that institutions attenuate the negative effect of macroeconomic instability on earnings management in developed economies. Moreover, when firm-year observations are from emerging market countries (i.e. *Emerging* = 1), and from countries with stronger institutions (i.e. *Institutions* > 0), we expect the sum of the coefficients θ_1 , θ_4 and θ_7 to be significantly lower than the sum of coefficients θ_1 and θ_4 , indicating that institutions attenuate the positive effect of macroeconomic instability on earnings management in emerging market economies.

Equations (6) and (7) are estimated by using the Ordinary Least Squares (OLS) approach¹², controlling for industry-, year-, and country-fixed effects. To adjust for possible

¹² We also evaluate potential endogeneity issues in our estimations, specifically concerning macroeconomic instability and institutions as suggested by previous macroeconomic literature (e.g. Acemoglu et al., 2003). However, we actually find weak correlations between the model error term (considering either AEM or REM) with both instability and institutions, i.e. close to zero, which already suggested that our model do not face endogeneity problem. Moreover, following Gillanders and Whelan (2014) and, therefore, considering countries' latitude (La Porta et al., 1999) as an instrument for institutions, Durbin-Wu-Hausman test do not suggest the presence of endogeneity issues, either in AEM (1.29; $p > 0.10$) or in REM (0.70; $p > 0.10$). Based on such analyses, we actually confirm that our models do not face endogeneity problems.

cross-sectional and serial correlations, standard errors are corrected for firm-clustering effects (Petersen, 2009). To avoid outlier bias, we do not consider observations below (above) the 1st (99th) percentile for each continuous variable included in the estimation models¹³.

4. Empirical Findings

4.1. Macroeconomic Instability Index Measurement

Our main independent variable is the Macroeconomic Instability Index (*MacroInstab*) constructed by using principal component analysis (PCA) applied to six variables related to economic environment conditions, namely inflation rate, market capitalization, GDP per capita, current account balance, exports of goods and services, and unemployment rate (see Table 2 for description and measurement of each of those variables). Table 4, Panel A, shows the correlations among the selected countries' macroeconomics indicators used to construct the variable *MacroInstab*. As expected, all the indicators are positively and significantly correlated with one another. Panel B details the results of PCA considering the six selected countries' macroeconomics indicators. Also, both the Kaiser-Meyer-Olkin measure of adequacy ($KMO = 0.704$) and Bartlett's test of sphericity ($938.19, p < 0.00$) suggest that PCA procedures are adequate.

Taking into consideration the more traditional rule of considering only eigenvalues greater than 1, the findings indicate the extraction of two factors, which explains around 70% of the total variables' variance. Thus, in order to extract only one index that represents the total variance of the six selected countries' macroeconomic indicators, we consider the weighted rank-sum criterion, in which, the values of the two factors obtained are weighted by the respective proportions of shared variance, with the subsequent ranking of the observations based on the findings obtained. This criterion is well accepted because it considers the

¹³ Our empirical findings remain the same by winsorizing each continuous variable included in the estimation models at 1% and 99% tail in order to avoid outliers.

performance of all the selected variables, since considering only the first factor may not consider the positive performance, for instance, obtained in a certain variable that may share a considerable proportion of variance with the second factor (Favero & Belfiore, 2019).

(Insert Table 4 here)

Figure 1 shows the mean of *MacroInstab*, over the years, separately for the developed and emerging market countries. In general, the index clearly captures three moments of high levels of macroeconomic instability, namely the 1997 Asian financial crisis¹⁴, the 2002 stock market crash, and the 2007-2009 subprime mortgage crisis. Previous economic literature provides robust evidence of worldwide economic meltdowns due to financial contagion for all three of those events (Boubaker et al., 2016). We also highlight that during the entire temporal window investigated, as expected, developed countries present, on average, lower levels of *MacroInstab* compared to emerging market ones.

Emerging market countries have traditionally experienced high levels of macroeconomic instability than developed economies (Cariolle & Goujon, 2015), either by the lack of resources of emerging market countries to sustain against economic downturns (Gurtner, 2010), or even by the higher levels of financial innovation in developed countries, which can alleviate the impact of economic booms and busts on macroeconomics (World Bank, 2010).

(Insert Figure 1 here)

4.2. Descriptive Statistics

Table 5 shows the descriptive statistics of the variables included in the estimation models, segregating the observations by developed and emerging market economies. Overall, the mean values of both *AEM* and *REM* are statistically lower ($p < 0.01$) for developed countries (0.0629 and -0.0107, respectively) when compared to the emerging market ones (0.0721 and 0.0164, respectively). This is consistent with previous accounting literature that provides empirical

¹⁴ Despite the high levels of the *MacroInstab* for the year 1997, we recognize the limitation of our analysis with regard to capturing greater instability for the 1997 Asian financial crisis given that we do not have enough data to calculate the index before that year for the purposes of comparison.

evidence of higher levels of earnings management in emerging market countries, compared to developed ones (e.g., Lin & Wu, 2014; Lourenço et al., 2018).

Table 5 also suggests that firms from developed countries seem to be, on average, larger (*Size*) and less profitable (*Return on Assets*), and to issue more long-term debt (*Long-Term Debt*) compared to those from emerging market countries. Moreover, developed countries' firms also seem to have higher operating cash-flows (*Cash*), tangibility (*Tangibility*), and lower levels of growth concerning both total liabilities (*Dissue*) and common stock (*Eissue*). Finally, we also find evidence that developed countries present high proportions of firms audited by Big 4 auditors (*Big Four*), financial statements according to IFRS (*IFRS*), and reported losses (*Loss*).

(Insert Table 5 here)

Table 6 presents the Pearson correlation matrix between the continuous variables, with the developed (emerging market) countries sample presented below (above) the diagonal. The *MacroInstab* is negatively and statistically correlated with *AEM* (-0.0778; $p < 0.01$), and *REM* (-0.0343; $p < 0.001$) in developed countries. In addition, *MacroInstab* is positively correlated with both *AEM* (0.0071) and *REM* (0.0025) emerging market countries, even though not statistically significant at conventional levels. Although based only on univariate analysis, these findings are overall aligned with H1 and H2, which state that the level of macroeconomic instability is negatively (positively) associated with the level of earnings management in developed (emerging market) countries.

We observe that *AEM* and *REM* are also significantly correlated at conventional levels with the majority of control variables, whether in developed or emerging market countries, suggesting the importance of controlling for these variables in multivariate analyses as observed in the previous literature (e.g., Commerford et al., 2018; Doukakis, 2014; Larson et al., 2018; Trimble, 2018). Finally, multicollinearity problems also seem to be negligible considering that the association between independent variables is still below 0.65.

(Insert Table 6 here)

4.3. Regression Results

4.3.1. *The Effect of Macroeconomic Instability on Earnings Management*

Table 7 reports the H1 and H2 test results using OLS regression estimates, according to Equation (6). For AEM estimation we find that the coefficient of *MacroInstab* is significantly negative (-0.022 ; $p < 0.10$), and the one of *MacroInstab x Emerging* is significantly positive (0.055 ; $p < 0.01$). Moreover, we find that the sum of the coefficients of *MacroInstab* and *MacroInstab x Emerging* is positive ($-0.022 + 0.055 = 0.033$). These empirical findings suggest that higher levels of macroeconomic instability are negatively (positively) associated with accruals-based earnings management in developed (emerging market) countries. In other words, it seems that managers in developed (emerging market) countries engage less (more) in earnings management by accruals when the macroeconomic environment where firms are situated is more unstable. These findings support H1 and H2. Moreover, for REM estimation, the coefficient of *MacroInstab* is significantly negative (-0.135 ; $p < 0.01$), and the one of *MacroInstab x Emerging* is not statistically significant at conventional levels (0.026). These empirical findings suggest that higher levels of macroeconomic instability are negatively associated with real earnings management, whether in developed or emerging market countries. In other words, it seems that managers from both developed and emerging market countries engage less in earnings management by real operations when the macroeconomic environment where firms are situated is more unstable.

(Insert Table 7 here)

Previous accounting studies in developed countries already suggest lower levels of earnings management during periods of severe instability of macroeconomic environment (e.g., Arthur et al., 2015; Filip & Raffournier, 2014; Kousenidis et al., 2013; Trombetta & Imperatore, 2014). However, these studies are concentrated only in AEM. Therefore, despite the relevance of earlier accounting literature in investigating the association between macroeconomics and

earnings management through AEM, the analysis of REM is also critical, because while accrual-based earnings management activities have no direct cash flow consequences, real earnings management interferes on cash flows (Doukakis 2014). We add to previous studies and consider in our analyses both AEM and REM.

Hence, we argue that in developed countries – characterized, e.g., by better corporate governance systems and government regulation (Bhagat et al., 2011), greater monitoring by shareholders and protection of minority investors (Djankov et al., 2008), and high levels of enforcement (Preiato et al., 2015) – a higher level of macroeconomic instability generates a generalized feeling of conservatism, increasing the scrutiny of the financial reporting, and therefore a lower level of earnings management. Furthermore, high levels of macroeconomic instability are likely to increase the costs associated with earnings manipulations, given that such managerial practices could arise from the possible actions by auditors, and legal liability (Trombetta & Imperatore, 2014), especially in developed countries distinguished by a superior level of audit quality.

Moreover, the weaker institutional environment of emerging market countries – characterized, e.g., by lower levels of enforcement, compliance and audit quality – could in fact create an enabling environment for firms in these markets to becoming more involved in accrual practices. From this perspective, therefore, managers from emerging market countries could engage in more AEM during high levels of macroeconomic instability to avoid, for instance, a large drop in the firm's stock price that would have negative consequences on their compensation and variable bonus payments (Charitou et al., 2007). Also, the negative association between the macroeconomic instability and REM in emerging market countries could be the result of a potential trade-off between the two different earnings manipulation practices. The accounting literature provides results on this trade-off between AEM and REM (Ipino & Parbonetti, 2017; Lara et al., 2020; Zang, 2012), generally arguing on the relative costs of the two earnings management activities (Zang, 2012).

In this way, when reaching their earnings targets by AEM, firms from emerging markets can reduce REM. Indeed, previous literature also demonstrates that firms domiciled in less stable countries with looser legal regimes are more likely to manage earnings through AEM than REM (Durnev & Magnan, 2017). Besides, REM also increases the cost of capital, by imposing greater long-term costs on the firm's investors for its negative impact on future cash flows (Paredes & Wheatley, 2017). Thus, managers in these markets could then take advantage of the looser enforcement to maintain their good results in periods of macroeconomic instability through AEM, avoiding negative impact on future cash flows linked to REM.

In Table 7, concerning control variables, we also find evidence that smaller, less leveraged, lower growth firms, and those under local GAAP (IFRS) standards, are engaged with more (less) levels of AEM (REM), whether in developed or emerging market countries. Finally, in AEM (REM) estimations, a negative and statistically significant coefficient is found for REM (AEM), but only in emerging market country samples, suggesting that managers use accrual and real operations earnings management tactics as substitute mechanisms in those markets.

4.3.2. *The Effect of Macroeconomic Instability on Earnings Management: The Role of Institutions*

Table 8 reports the H3 test results using OLS regression estimates, according to Equation (7). For AEM estimation we find that the coefficient of *MacroInstab* is significantly negative (-0.084 ; $p < 0.01$), and the one of *MacroInstab x Institutions* is significantly positive (0.035 ; $p < 0.05$). We also find that the sum of *MacroInstab* and *MacroInstab x Institutions* is higher ($-0.084 + 0.035 = -0.049$) than *MacroInstab* (-0.084). Furthermore, the coefficient of *MacroInstab x Emerging* is significantly positive (0.130 ; $p < 0.01$), and the one of *MacroInstab x Emerging x Institutions* is significantly negative (-0.059 ; $p < 0.01$); finally, the sum of the coefficients *MacroInstab*, *MacroInstab x Emerging* and *MacroInstab x Emerging x Institutions*

$(-0.084 + 0.130 - 0.059 = -0.013)$ is lower than the sum of the coefficients *MacroInstab* and *MacroInstab x Emerging* $(-0.047 + 0.130 = 0.083)$. These empirical findings suggest that higher levels of macroeconomic instability are negatively (positively) associated with accruals-based earnings management in developed (emerging market) countries, but that association is lower in countries with stronger institutions.

In other words, it seems that in developed (emerging market) countries with stronger institutions, the negative (positive) effect of macroeconomic instability on earnings management by accruals is dampened. These findings support H3. Moreover, for REM estimation, the coefficient of *MacroInstab* is significantly negative $(-0.187; p < 0.10)$, while the ones of *MacroInstab x Emerging* (0.058) , *MacroInstab x Institutions* (0.047) and *MacroInstab x Emerging x Institutions* (-0.013) are not statistically significant at conventional level. These empirical findings suggest that higher levels of macroeconomic instability are negatively associated with real earnings management in both developed and emerging market economies, whether in countries with weaker or stronger institutions.

(Insert Table 8 here)

Considering the empirical estimations as a whole, our empirical findings support the prediction that the instability of the macroeconomic environment seems to be associated with the manipulation of accounting amounts, whether in developed or emerging market countries. However, our results reveal that in periods of high macroeconomic instability, firms from developed (emerging market) economies are more likely to decrease (increase) accruals-based earnings management practices. Moreover, we demonstrate that firms of both developed and emerging market countries are more likely to decrease real earnings management in periods of high macroeconomic instability. Finally, our findings also demonstrate that institutions play a key role in dampening the association between macroeconomic instability and accruals-based earnings management, whether in developed or emerging market countries. Focusing our analysis on macroeconomic instability instead of specific periods of financial crisis, we provide

a more comprehensive view of the role played by the macroeconomic environment as a key determinant of accounting quality.

5. Sensitivity and Additional Analyses

Striving for more robustness in our results, we also perform several robustness checks. First, considering the large representativeness of firm-year observations from Hong Kong (China) in developed (emerging market) countries, we also estimate Equations (6) and (7) without those observations, in order to check if the exclusion of such observations materially changes our inferences (see Table 9, Panel A). Second, although all our estimations are controlled for industry fixed effects, differences in industry characteristics can also vary between countries and consequently cover what is being identified as developed or emerging market countries. In this sense, to mitigate possible differences between the industries of firms in the two groups of countries, we estimate our econometric models considering only manufacturing firms (SIC 2000-4000), from both developed and emerging market countries (see Table 9, Panel B).

Third, considering the unbalanced number of firm-year observations from developed and emerging market countries, we also re-estimate our main model after matching the number of observations between developed and emerging market countries using the propensity score matching (PSM) methodology, with no replacement, by using the control variables analyzed in Equations (6) and (6). With this procedure, we select only observations from the two types of countries with similar firm-level incentives, and therefore, check if our empirical findings are robust based on this sub-sample (see Table 9, Panel C). Fourth, following Chen et al. (2018), in order to mitigate potential bias and incorrect inferences linked to Type I and Type II errors in AEM and REM estimations, we additionally include among the control variables the regressors of the first-step regressions in Equations (6) and (7) (see Table 9, Panel D).

Fifth, we also test if our results are sensitive to the debt structure of firms from developed and emerging market countries. Previous literature provides evidence that corporate

debt is an important factor in explaining earnings management (e.g., Rodríguez-Pérez & Van Hemmen, 2010), even though that literature offers mixed results. Additionally, firms from developed countries present different corporate debt structures from those from emerging market countries (e.g., Stephan et al., 2011). Therefore, differences in the way firms finance their assets can also vary between firms from the two types of countries and, consequently, cover what is being identified as developed or emerging market countries.

To mitigate possible differences related to corporate finance structures at the firm-level between firms from two types of countries, we perform another PSM in order to select only firms with similar equity-based structures. More specifically, we create the variable *Equity Structure*, which is the total equity over total assets for each firm-year, and selected firms from the two types of countries, by using PSM, with similar *Equity Structure*¹⁵. Then, we check if our empirical findings are robust based on this sub-sample (see Table 9, Panel E). Overall, the robustness checks in Table 9 provide fundamentally the same results as those presented in our main estimations regarding the coefficients of *MacroInstab*, *Emerging* and *Institutions* variables.

(Insert Table 9 here)

Sixth, to mitigate both measurement errors and bias intrinsic to the estimations process of traditional earnings management variables (Trimble, 2018), we estimate our main models by considering alternative measures for both AEM and REM. More specifically, we take into account the Modified Jones model proposed by Dechow et al. (1995) without any additional variable (*AEM_Alternative1*), and include the one-year lag of total accruals (*AEM_Alternative2*) as suggested by Dechow et al. (2012). Furthermore, instead of considering the overall sum of *ABN_PROD*, *ABN_CFO*, and *ABN_DISX*, we follow previous literature

¹⁵ In order to check if the sub-samples in fact are formed by firms with similar debt-structure, we compare the mean of *Equity Structure* of firms from developed (mean = 0.4546) and emerging market countries (mean = 0.4532). Traditional *t*-Student statistics reveal no differences between the two groups at conventional levels ($p > 0.10$).

(Cohen & Zarowin, 2010; Zang, 2012) and segregate *REM* to form two alternative variables for real operations earnings management – one variable by summing only the abnormal levels of productions costs and abnormal levels of discretionary expenses (*REM_Alternative1*), and the other by summing only the abnormal levels of cash flows from operations and abnormal levels of discretionary expenses (*REM_Alternative2*).

Seventh, we also proceed in our AEM estimations by considering Tobit (1958) regression instead of traditional OLS approach, due to potential inconsistencies of the estimated parameters given the truncation of the dependent variable (absolute values), as suggested in previous accounting literature (e.g., Cassell et al., 2015). Untabulated findings reveal that our results remain whether considering different proxies for both AEM and REM or even considering Tobit regression estimates instead of traditional OLS ones.

Finally, we also investigate whether our results hold in years of economic crisis. More specifically, we focus on the subprime crisis (2007-2009), and we create a dummy variable (*Crisis*) which assume one for firm-year observation in these specific years, and zero otherwise¹⁶. Then, we interact the variables *Crisis* with *MacroInstab* and *MacroInstab x Emerging*. The results are presented in Table 10. For AEM estimation we find that the coefficients of both *MacroInstab* (-0.060; $p < 0.01$), and *MacroInstab x Crisis* (-0.017; $p < 0.05$) are significantly negative; while *MacroInstab x Emerging* (0.102; $p < 0.01$) and *MacroInstab x Emerging x Crisis* (0.026; $p < 0.05$) are both significantly positive. Moreover, for REM estimation, the coefficients *MacroInstab* (-0.038), *MacroInstab x Emerging* (-0.107), *MacroInstab x Crisis* (0.013) and *MacroInstab x Emerging x Crisis* (-0.009) are not statistically significant at conventional level. Those results overall suggest that higher levels of macroeconomic instability are negatively (positively) associated with accruals-based earnings

¹⁶ In this additional analysis, we consider only firm-year observations after 2004, in order to avoid confounding effects from previous financial crisis, such as the 1997 Asian financial crisis and the 2000-2002 dot-com bubble.

management in developed (emerging market) countries, and that such association is higher in the period of subprime crisis (2007-2009).

(Insert Table 10 here)

In other words, it seems that in developed (emerging market) countries, during financial crises, the negative (positive) effect of macroeconomic instability on earnings management by accruals is potentialized. Finally, we do not find any evidence on the moderating role of financial crises on the association between macroeconomic instability and earnings management by real operations.

6. Conclusions

This study investigates the effect of macroeconomic instability on earnings management and the moderating role of country-level institutions, explicitly examining how this phenomenon compares between developed and emerging market countries. We add to the literature by documenting that firms from developed and emerging market countries react differently in their earnings management strategies during periods of high macroeconomic instability. More specifically, our results suggest that, when facing greater macroeconomic instability, firms from developed (emerging market) countries decrease (increase) the level of accruals-based earnings management, and both types of countries decrease the level of real earnings management. Moreover, we demonstrate the importance of country-level institutions in dampening the effects of macroeconomic instability on accruals-based earnings management, whether in developed or emerging market countries.

Our results demonstrate the role of countries' economic development in the way that firms react to the instability of the macroeconomic environment adopting different strategies of earnings management, by accruals and operating activities. Our empirical findings have several implications not only for the academic literature, but also to regulatory agencies, investors, and

other stakeholders by giving a more holistic view of the effect of the economic environment on earnings management in countries with different economic and institutional conditions.

Despite the methodological rigor of our analysis considering several robustness tests, our results are not free of limitations. We are aware that some missing variables at the country-level could be proxied by the Developed and Emerging categories used in this study. Thus, despite our efforts to mitigate such concerns (e.g., controlling for country-fixed effects and important country-level variables), we cannot guarantee whether it is the level of development of the country or other country-specific factors that drive earnings management or both. This aspect makes that the results of this study, which is a certain way have an exploratory nature, must be analyzed with caution.

Moreover, our results concerning the effects of macroeconomic instability on earnings management are based more on country-level distinctions, even though financial and reporting decisions occur at a micro-level/firm-level. Therefore, our research can be expanded by exploring the role of specific country-level characteristics on the association between macroeconomic instability and earnings management that could potentially proxy the developed and emerging market countries categories, such as countries' capital market nature. Moreover, future researcher can also explore groups of firms with similar economic and institutional characteristics, which may possibly generate different results from the general empirical findings presented herein related to a more country-level view.

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Table 1 – Sample distribution by country

Developed Countries	Firm-Year Obs. (N)	% N	% N Cum.
Australia	305	1.53	1.53
Austria	342	1.72	3.25
Belgium	300	1.51	4.76
Canada	2,652	13.33	18.09
Denmark	113	0.57	18.65
Finland	96	0.48	19.14
France	1,248	6.27	25.41
Germany	3,337	16.77	42.18
Greece	1,126	5.66	47.83
Hong Kong	3,715	18.67	66.50
Hungary	34	0.17	66.67
Ireland	116	0.58	67.26
Israel	1,726	8.67	75.93
Italy	792	3.98	79.91
Luxembourg	102	0.51	80.42
Netherlands	886	4.45	84.87
Norway	647	3.25	88.13
Spain	202	1.02	89.14
Sweden	251	1.26	90.40
United Kingdom	1,910	9.60	100.00
Total – Developed Countries	19,900	100.00	-
Emerging Market Countries	Firm-Year Obs. (N)	% N	% N Cum.
Argentina	7	0.02	0.02
Brazil	2,187	6.83	6.85
Chile	992	3.10	9.95
China	10,792	33.71	43.67
Korea (South)	10,084	31.50	75.17
Malaysia	1,894	5.92	81.08
Mexico	642	2.01	83.09
Peru	292	0.91	84.00
Poland	1,225	3.83	87.83
Russian Federation	722	2.26	90.08
Singapore	1,712	5.35	95.43
South Africa	58	0.18	95.61
Sri Lanka	26	0.08	95.70
Turkey	1,378	4.30	100.00
Total – Emerging Market Countries	32,011	100.00	-

Table 2 – Macroeconomic Instability Index: proxies, references, and data source

Variable	General description	Specific descriptions	Source
<i>Inflation_{it}</i>	Inflation, consumer prices (annual %)	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.	International Monetary Fund
<i>Market Capitalization_{it}</i> (Inverted signal)	Natural logarithm of stock market capitalization (% of 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.	World Bank
<i>GDPperCap_{it}</i> (Inverted signal)	Natural logarithm of GDP per capita (current US\$)	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.	World Bank
<i>Balance_{it}</i> (Inverted signal)	Current account balance (% of GDP)	Current account balance is the sum of net exports of goods and services, net primary income, and net secondary income.	World Bank
<i>Exports_{it}</i> (Inverted signal)	Exports of goods and services (% of GDP)	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.	World Bank
<i>Unemployment_{it}</i>	Unemployment, total (% of total labor force)	Unemployment refers to the share of the labor force that is without work but available for and seeking employment.	International Labour Organization, ILOSTAT database

Table 3 – Variables’ description

Dependent variables	
AEM_{itj}	represents the accruals-based earnings management, based on the modified version of the model proposed by Jones (1991) to measure discretionary accruals, proposed by Dechow et al. (1995), by additionally considering return on assets (Kothari et al., 2005).
REM_{itj}	represents the real earnings management according to Roychowdhury (2006), by the sum of abnormal production costs (ABN_PROD), abnormal discretionary expenses (ABN_DISX) multiplied by minus one, and abnormal cash flows from operations (ABN_CFO) multiplied by minus one.
Main independent variables	
$MacroInstab_{jt}$	is the macroeconomic instability level for each year t and country j .
$Emerging_j$	is a dummy variable, which equals one for firm-year observations from emerging market countries, and zero otherwise.
$Institutions_{itj}$	is the rule of law index, according to the Worldwide Governance Indicators project.
$Size_{itj}$	is the natural logarithm of end of year total assets.
$Return\ on\ Assets_{itj}$	is the net income scaled by end of year total assets.
$Long-Term\ Debt_{itj}$	is the end of year long-term debt scaled by end of year total assets.
$Growth_{itj}$	is the percentage change in sales from the year $t-1$ to t .
$Loss_{itj}$	is a dummy variable, which equals one for firm-year observations if net income is lower than 0, and zero otherwise.
$Cash\ Flows_{itj}$	is the annual net cash flow from operating activities divided by end of year total assets.
$Big\ Four_{itj}$	is a dummy variable, which equals one for firm-year observations if the firm’s auditor is PwC, KPMG, EY, or DTT, and zero otherwise.
$IFRS_{itj}$	is a dummy variable, which equals one for firm-year observations referring to financial statements prepared according to IFRS standards only in post-IFRS mandatory period, and zero otherwise.
$Tangibility_{itj}$	is the property, plant, and equipment scaled by end of year total assets.
$Dissue_{itj}$	is the percentage change in total liabilities.
$Eissue_{itj}$	is the percentage change in common stock.
$Country\ Debt_{itj}$	is the total stock of loans and debt securities issued by nonfinancial corporations as a share of GDP, according to the IMF.
Robustness test variables	
$AEM_Alternative1_{itj}$	is an alternative measure of the accruals-based earnings management, based on the modified version of the model proposed by Jones (1991) to measure discretionary accruals, proposed by Dechow et al. (1995) without any additional regressor.
$AEM_Alternative2_{itj}$	is an alternative measure of the accruals-based earnings management, based on the modified version of the model proposed by Jones (1991) to measure discretionary accruals, proposed by Dechow et al. (1995), by additionally considering the one-year lag of total accruals (Dechow et al., 2012).
$REM_Alternative1_{itj}$	is an alternative measure of the real earnings management according to Roychowdhury (2006), by the sum of only the abnormal levels of discretionary expenses (ABN_DISX) multiplied by minus one, and the abnormal levels of productions costs (ABN_PROD).
$REM_Alternative2_{itj}$	is an alternative measure of the real earnings management according to Roychowdhury (2006), by the sum of only the abnormal levels of discretionary expenses (ABN_DISX) multiplied by minus one, and the abnormal levels of cash flows from operations (ABN_CFO) multiplied by minus one.

Table 4 – Macroeconomic Instability Index: Principal component analysis**Panel A – Correlation among macroeconomic instability variables**

	1.	2.	3.	4.	5.	6.
1. <i>Inflation_{ij}</i>	1.0000					
2. <i>Market Capitalization_{ij}</i>	0.4033***	1.0000				
3. <i>GDPperCap_{ij}</i>	0.1571***	0.4521***	1.0000			
4. <i>Balance_{ij}</i>	0.0232***	0.3264***	0.3031***	1.0000		
5. <i>Exports_{ij}</i>	0.0483*	0.4141***	0.3241***	0.4275***	1.0000	
6. <i>Unemployment_{ij}</i>	0.0529*	0.0805**	0.1688***	0.3216***	0.2201***	1.0000

Panel B – Principal component analysis (*MacroInstab_{ij}*)

Bartlett test = 938.19***

KMO = 0.704

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	2.5259	1.3211	0.4210	0.4210
Factor2	1.2048	0.3534	0.2008	0.6218
Factor3	0.8514	0.2569	0.1419	0.7637
Factor4	0.5944	0.0984	0.0991	0.8627
Factor5	0.4960	0.1685	0.0827	0.9454
Factor6	0.3275	—	0.0546	1.0000

Variables	Factor1	Factor2	Uniqueness
<i>Inflation_{ij}</i>	0.4997	-0.5088	0.4914
<i>Market Capitalization_{ij}</i>	0.7207	-0.3179	0.3796
<i>GDPperCap_{ij}</i>	0.6766	-0.3152	0.4428
<i>Balance_{ij}</i>	0.7270	0.4091	0.3041
<i>Exports_{ij}</i>	0.8228	0.2143	0.2770
<i>Unemployment_{ij}</i>	0.3056	0.7295	0.3745

This table presents the main statical results concerning the principal component analysis of the macroeconomic instability index. All variables defined in Table 2.

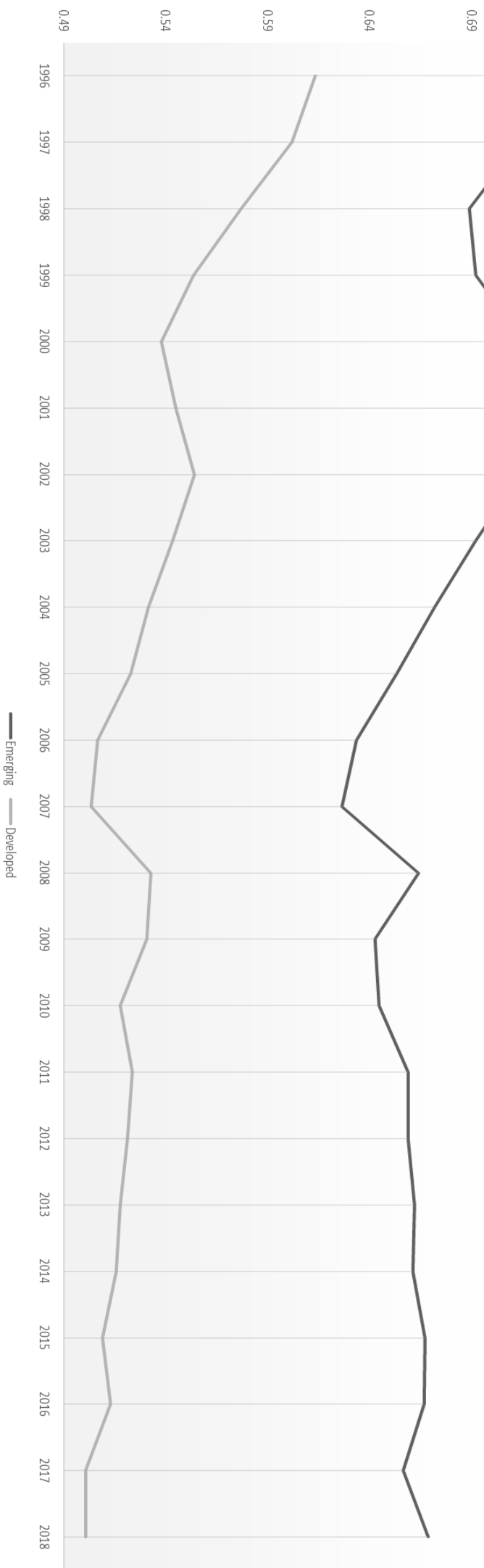


Figure 1 – Temporal analysis of the Macroeconomy Instability Index

Table 5 – Descriptive statistics of firm-level variables

Panel A: Developed Countries						
	N	Mean	Median	Max	Min	SD
<i>AEM</i>	19,900	0.0629***	0.0434	0.4847	0.0000	0.0639
<i>REM</i>	19,900	-0.0107***	0.0112	0.9142	-1.2407	0.2999
<i>Size</i>	19,900	20.3899***	20.2093	25.5024	15.0630	2.0289
<i>Return on Assets</i>	19,900	0.0126***	0.0308	0.2861	-0.7027	0.1065
<i>Long-Term Debt</i>	19,900	0.1741***	0.1488	0.6825	0.0000	0.1420
<i>Growth</i>	19,900	0.1230	0.0619	5.3761	-0.7788	0.4038
<i>Cash Flows</i>	19,900	0.0556***	0.0676	0.4712	-0.6910	0.1179
<i>Tangibility</i>	19,900	0.6106***	0.5474	2.3125	0.0068	0.4241
<i>Dissue</i>	19,900	0.1572**	0.0466	5.4356	-0.7275	0.4972
<i>Eissue</i>	19,900	0.0667***	0.0000	2.8052	-0.6260	0.2349
<i>BigFour</i>	19,900	0.7569***	—	—	—	—
<i>IFRS</i>	19,900	0.6574**	—	—	—	—
<i>Loss</i>	19,900	0.2608***	—	—	—	—
Panel B: Emerging Market Countries						
	N	Mean	Median	Max	Min	SD
<i>AEM</i>	32,011	0.0721***	0.0509	0.4683	0.0000	0.0700
<i>REM</i>	32,011	0.0164***	0.0386	0.6254	-0.9522	0.2111
<i>Size</i>	32,011	20.2453***	20.1798	24.5111	16.4657	1.6512
<i>Return on Assets</i>	32,011	0.0268***	0.0287	0.2491	-0.4094	0.0684
<i>Long-Term Debt</i>	32,011	0.1225***	0.0913	0.5081	0.0000	0.1119
<i>Growth</i>	32,011	0.1259	0.0850	2.3754	-0.6350	0.2936
<i>Cash Flows</i>	32,011	0.0460***	0.0500	0.4235	-0.4051	0.1020
<i>Tangibility</i>	32,011	0.5794***	0.5486	1.8152	0.0077	0.3492
<i>Dissue</i>	32,011	0.1692**	0.0802	3.6962	-0.6364	0.4105
<i>Eissue</i>	32,011	0.0909***	0.0000	2.3137	-0.3276	0.2683
<i>BigFour</i>	32,011	0.5069***	—	—	—	—
<i>IFRS</i>	32,011	0.6441**	—	—	—	—
<i>Loss</i>	32,011	0.1806***	—	—	—	—

This table presents the descriptive statistics of the firm-level variables included in the estimation models. All variables defined in Table 3. The mean of dummy variables (*BigFour*, *IFRS* and *Loss*) represents the percentage of firm-year observations that assumed value one. *, **, *** denote significance difference of means considering Student's *t*-test (test of proportions) for continuous (dummy) variables between developed and emerging groups at 10%, 5%, and 1%, respectively.

Table 6 – Correlation matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. <i>AEM</i>	—	0.00345	-0.0778***	-0.0688***	-0.0775***	-0.0103	-0.0687***	0.126***	-0.112***	-0.163***	0.201***	0.120***	0.107***
2. <i>REM</i>	0.0169*	—	-0.0343***	-0.00114	-0.0108	-0.411***	0.0443***	-0.0355***	-0.264***	0.0250***	-0.0123*	0.0143*	0.0353***
3. <i>MacroInstab</i>	0.00706	0.00251	—	-0.583***	0.240***	0.0281***	0.126***	0.0342***	0.0151**	0.0727***	0.0475***	0.0247***	-0.111***
4. <i>Institutions</i>	-0.00759	-0.0416***	-0.401***	—	0.0837***	0.000257	0.00899	0.0463***	0.0178*	0.0442***	0.0443***	0.0568***	-0.187***
5. <i>Size</i>	-0.192***	-0.0393***	-0.0392***	-0.372***	—	0.143***	0.359***	0.0410***	0.0843***	0.0251***	0.0128*	-0.000639	0.141***
6. <i>Return on Assets</i>	-0.0838***	-0.288***	-0.0503***	-0.0650***	0.249***	—	-0.0851***	0.209***	0.430***	-0.0152**	0.0443***	-0.0190***	-0.0992***
7. <i>Long-Term Debt</i>	-0.0938***	0.0668***	0.0941***	-0.0917***	0.242***	-0.0630***	—	0.0186***	-0.0124*	0.196***	0.0525***	-0.00381	-0.155***
8. <i>Growth</i>	0.121***	-0.0380***	-0.0629***	-0.0583***	-0.0422***	0.0800***	0.00846	—	-0.0296***	-0.0837***	0.332***	0.134***	0.00502
9. <i>Cash Flows</i>	-0.0971***	-0.250***	0.0456***	-0.00175	0.201***	0.660***	-0.0246***	-0.0209*	—	0.233***	-0.147***	-0.108***	-0.137***
10. <i>Tangibility</i>	-0.137***	0.0211**	0.180***	0.0371***	0.0899***	-0.0240***	0.214***	-0.0684***	0.147***	—	-0.121***	-0.0721***	-0.248***
11. <i>Dissue</i>	0.192***	-0.0249***	-0.0685***	-0.0752***	-0.0277***	0.0214**	0.0534***	0.308***	-0.0709***	-0.0875***	—	0.113***	0.0309***
12. <i>Issue</i>	0.109***	0.0225**	-0.0175*	-0.0737***	-0.0369***	-0.101***	0.0140*	0.161***	-0.134***	-0.0115	0.207***	—	0.0561***
13. <i>Country Debt</i>	0.0181*	-0.0135	-0.645***	0.293***	0.165***	0.00306	0.000713	0.0301***	-0.0617***	-0.130***	0.0299***	0.0236***	—

This table presents the Pearson correlation matrix between the continuous variables. Developed (emerging) countries sample results are presented below (above) the diagonal. All variables defined in Table 3. ***, ** and * indicate significance at 1%, 5%, and 10% levels of statistical significance for two-tailed tests.

Table 7 – Effect of macroeconomic instability on earnings management

	<i>AEM</i>		<i>REM</i>	
	Coeff.	<i>t</i> -Stat	Coeff.	<i>t</i> -Stat
<i>const</i>	0.142***	(12.17)	-0.162**	(-2.29)
<i>MacroInstab</i>	-0.022*	(-1.68)	-0.135*	(-1.72)
<i>Emerging</i>	0.029	(0.80)	-0.098	(-0.73)
<i>MacroInstab x Emerging</i>	0.055***	(3.34)	0.026	(0.28)
Control Variables				
<i>Size</i>	-0.004***	(-16.81)	0.014***	(7.31)
<i>Return on Assets</i>	0.011	(1.37)	-0.871***	(-27.81)
<i>Long-Term Debt</i>	-0.018***	(-5.95)	0.036**	(1.97)
<i>Growth</i>	0.010***	(7.82)	0.007**	(2.02)
<i>Loss</i>	0.007***	(6.86)	0.003	(0.76)
<i>Cash Flows</i>	-0.019***	(-2.75)	-0.256***	(-17.87)
<i>Big Four</i>	-0.001	(-1.32)	-0.028***	(-4.70)
<i>IFRS</i>	-0.005***	(-4.37)	0.015***	(2.96)
<i>Tangibility</i>	-0.017***	(-15.10)	0.022***	(3.03)
<i>Dissue</i>	0.022***	(21.52)	-0.013***	(-4.57)
<i>Eissue</i>	0.016***	(11.30)	-0.007*	(-1.70)
<i>Country Debt</i>	0.000***	(5.64)	-0.000***	(-2.81)
<i>Institutions</i>	0.002	(0.88)	-0.008	(-0.74)
<i>AEM</i>	—	—	-0.004	(-0.18)
<i>REM</i>	-0.000	(-0.18)	—	—
<i>Country-FE</i>	YES		YES	
<i>Industry-FE</i>	YES		YES	
<i>Year-FE</i>	YES		YES	
Observations	51,911		51,911	
R-squared	0.1073		0.1539	

This table reports the estimation results of an OLS regression with both discretionary accruals (real earnings management) as dependent variables, according to Equation (6). All variables defined in Table 3. Reported *t*-statistics are based on firm-clustering effects. ***, **, and * indicate significance at 1%, 5%, and 10% levels of statistical significance for two-tailed tests.

Table 8 – Effect of macroeconomic instability on earnings management: The role of institutions

	<i>AEM</i>		<i>REM</i>	
	Coeff.	<i>t</i> -Stat	Coeff.	<i>t</i> -Stat
<i>const</i>	0.197***	(9.94)	-0.164**	(-2.09)
<i>MacroInstab</i>	-0.084***	(-3.10)	-0.187*	(-1.81)
<i>Emerging</i>	-0.034	(-0.84)	-0.087	(-0.62)
<i>Institutions</i>	-0.031***	(-2.79)	-0.016	(-0.39)
<i>MacroInstab x Emerging</i>	0.130***	(4.28)	0.058	(0.51)
<i>MacroInstab x Institutions</i>	0.035**	(2.17)	0.047	(0.71)
<i>Emerging x Institutions</i>	0.056***	(3.93)	-0.026	(-0.53)
<i>MacroInstab x Emerging x Institutions</i>	-0.059***	(-2.72)	-0.013	(-0.17)
Control Variables				
<i>Size</i>	-0.004***	(-16.80)	0.014***	(7.30)
<i>Return on Assets</i>	0.012	(1.41)	-0.871***	(-27.81)
<i>Long-Term Debt</i>	-0.018***	(-5.87)	0.035*	(1.95)
<i>Growth</i>	0.010***	(7.85)	0.007**	(2.03)
<i>Loss</i>	0.007***	(6.88)	0.004	(0.77)
<i>Cash Flows</i>	-0.019***	(-2.74)	-0.257***	(-17.88)
<i>Big Four</i>	-0.001	(-1.26)	-0.028***	(-4.69)
<i>IFRS</i>	-0.006***	(-4.74)	0.015***	(3.02)
<i>Tangibility</i>	-0.017***	(-15.02)	0.022***	(3.04)
<i>Dissue</i>	0.022***	(21.50)	-0.013***	(-4.59)
<i>Eissue</i>	0.016***	(11.26)	-0.007*	(-1.67)
<i>Country Debt</i>	0.000***	(6.93)	-0.000***	(-2.75)
<i>AEM</i>	—	—	-0.003	(-0.16)
<i>REM</i>	-0.000	(-0.16)	—	—
<i>Country-FE</i>	YES		YES	
<i>Industry-FE</i>	YES		YES	
<i>Year-FE</i>	YES		YES	
Observations	51,911		51,911	
R-squared	0.1073		0.1539	

This table reports the estimation results of an OLS regression with both discretionary accruals (real earnings management) as dependent variables, according to Equation (7). All variables defined in Table 3. Reported *t*-statistics are based on firm-clustering effects. ***, **, and * indicate significance at 1%, 5%, and 10% levels of statistical significance for two-tailed tests.

Table 9 – Robustness tests**Panel A – Excluding China and Hong Kong**

	<i>AEM</i>		<i>REM</i>	
	Coeff.	<i>t</i> -Stat	Coeff.	<i>t</i> -Stat
const	0.180***	(6.90)	0.023	(0.17)
<i>MacroInstab</i>	-0.075**	(-2.33)	-0.400***	(-2.67)
<i>Emerging</i>	-0.020	(-0.45)	-0.254	(-1.40)
<i>Institutions</i>	-0.034**	(-2.18)	-0.111	(-1.29)
<i>MacroInstab x Emerging</i>	0.099***	(2.69)	0.252	(1.53)
<i>MacroInstab x Institutions</i>	0.042**	(2.02)	0.156	(1.41)
<i>Emerging x Institutions</i>	0.044**	(2.36)	0.067	(0.73)
<i>MacroInstab x Emerging x Institutions</i>	-0.051*	(-1.88)	-0.105	(-0.85)
<i>Control variables</i>	YES		YES	
<i>Country-, Industry-, and Year-FE</i>	YES		YES	
Observations	37,404		37,404	
R-squared	0.1057		0.1402	

Panel B – Only firms from SIC 2000-4000

	<i>AEM</i>		<i>REM</i>	
	Coeff.	<i>t</i> -Stat	Coeff.	<i>t</i> -Stat
const	0.202***	(8.10)	-0.250**	(-2.31)
<i>MacroInstab</i>	-0.068**	(-2.01)	-0.309**	(-1.98)
<i>Emerging</i>	-0.049	(-0.79)	-0.357	(-1.39)
<i>Institutions</i>	-0.025*	(-1.69)	-0.064	(-1.00)
<i>MacroInstab x Emerging</i>	0.137***	(3.57)	0.203	(1.19)
<i>MacroInstab x Institutions</i>	0.157	(0.73)	0.157	(1.46)
<i>Emerging x Institutions</i>	0.055***	(3.02)	0.013	(0.18)
<i>MacroInstab x Emerging x Institutions</i>	-0.044*	(-1.58)	-0.131	(-1.08)
<i>Control variables</i>	YES		YES	
<i>Country-, Industry-, and Year-FE</i>	YES		YES	
Observations	30,445		30,445	
R-squared	0.1131		0.1980	

Panel C – PSM controlling for all control variables

	<i>AEM</i>		<i>REM</i>	
	Coeff.	<i>t</i> -Stat	Coeff.	<i>t</i> -Stat
const	0.141***	(6.46)	-0.225**	(-2.51)
<i>MacroInstab</i>	-0.066**	(-2.41)	-0.166	(-1.59)
<i>Emerging</i>	0.015	(0.743)	0.020	(0.14)
<i>Institutions</i>	-0.025**	(-2.19)	-0.012	(-0.29)
<i>MacroInstab x Emerging</i>	0.095***	(2.99)	0.034	(0.28)
<i>MacroInstab x Institutions</i>	0.026*	(-1.60)	0.040	(0.60)
<i>Emerging x Institutions</i>	0.039**	(2.67)	-0.023	(-0.44)
<i>MacroInstab x Emerging x Institutions</i>	-0.035	(-1.55)	-0.006	(-0.07)
<i>Control variables</i>	YES		YES	
<i>Country-, Industry-, and Year-FE</i>	YES		YES	
Observations	39,800		39,800	
R-squared	0.1075		0.1479	

Table 9 – (continued)**Panel D – Chen et al.'s (2018) correction of AEM and REM estimation process**

	<i>AEM</i>		<i>REM</i>	
	Coeff.	<i>t</i> -Stat	Coeff.	<i>t</i> -Stat
const	0.185***	(9.17)	-0.138*	(-1.73)
<i>MacroInstab</i>	-0.082***	(-3.01)	-0.242**	(-2.32)
<i>Emerging</i>	-0.042	(-1.04)	-0.191	(-1.24)
<i>Institutions</i>	-0.031***	(-2.78)	-0.036	(-0.90)
<i>MacroInstab x Emerging</i>	0.130***	(4.26)	0.117	(1.03)
<i>MacroInstab x Institutions</i>	0.036**	(2.18)	0.074	(1.12)
<i>Emerging x Institutions</i>	0.055***	(3.89)	-0.004	(-0.08)
<i>MacroInstab x Emerging x Institutions</i>	-0.060***	(-2.73)	-0.034	(-0.44)
<i>Control variables</i>	YES		YES	
<i>Country-, Industry-, and Year-FE</i>	YES		YES	
Observations	51,911		51,911	
R-squared	0.1090		0.1801	

Panel E – PSM controlling only for *Equity Structure*

	<i>AEM</i>		<i>REM</i>	
	Coeff.	<i>t</i> -Stat	Coeff.	<i>t</i> -Stat
const	0.161***	(7.23)	-0.024	(-0.25)
<i>MacroInstab</i>	-0.073***	(-2.67)	-0.214**	(-2.02)
<i>Emerging</i>	-0.008	(-0.36)	0.181**	(1.99)
<i>Institutions</i>	-0.028**	(-2.45)	-0.041	(-0.96)
<i>MacroInstab x Emerging</i>	0.105***	(3.22)	0.033	(0.28)
<i>MacroInstab x Institutions</i>	0.032*	(1.95)	0.076	(1.12)
<i>Emerging x Institutions</i>	0.048***	(3.15)	0.026	(0.50)
<i>MacroInstab x Emerging x Institutions</i>	-0.047**	(-2.02)	-0.033	(-0.42)
<i>Control variables</i>	YES		YES	
<i>Country-, Industry-, and Year-FE</i>	YES		YES	
Observations	39,800		39,800	
R-squared	0.1037		0.1585	

This table reports the estimations results of OLS regressions with both discretionary accruals (real earnings management) as dependent variables, according to Equation (7), in order to test the robustness of the main findings. All variables defined in Table 3. Reported *t*-statistics are based on firm-clustering effects. ***, **, and * indicate significance at 1%, 5%, and 10% levels of statistical significance for two-tailed tests.

Table 10 – Effect of macroeconomic instability on earnings management: The role of financial crisis

	<i>AEM</i>		<i>REM</i>	
	Coeff.	<i>t</i> -Stat	Coeff.	<i>t</i> -Stat
<i>const</i>	0.165***	(11.77)	-0.220***	(-2.67)
<i>MacroInstab</i>	-0.060***	(-3.26)	-0.038	(-0.34)
<i>Emerging</i>	0.007	(0.20)	-0.022	(-0.15)
<i>Crisis</i>	-0.002	(-0.44)	-0.044***	(-3.05)
<i>MacroInstab x Emerging</i>	0.102***	(4.72)	-0.107	(-0.92)
<i>MacroInstab x Crisis</i>	-0.017**	(-2.04)	0.013	(0.53)
<i>Emerging x Crisis</i>	-0.014**	(-2.40)	0.020	(1.09)
<i>MacroInstab x Emerging x Crisis</i>	0.026**	(2.49)	-0.009	(-0.27)
Control Variables				
<i>Size</i>	-0.004***	(-16.17)	0.015***	(8.04)
<i>Return on Assets</i>	0.019**	(2.09)	-0.901***	(-26.70)
<i>Long-Term Debt</i>	-0.016***	(-4.84)	0.031	(1.61)
<i>Growth</i>	0.010***	(7.14)	0.008**	(2.33)
<i>Loss</i>	0.008***	(6.65)	0.005	(1.07)
<i>Cash Flows</i>	-0.027***	(-3.60)	-0.242***	(-16.61)
<i>Big Four</i>	-0.001	(-1.34)	-0.029***	(-4.85)
<i>IFRS</i>	-0.004***	(-3.33)	0.021***	(3.79)
<i>Tangibility</i>	-0.015***	(-12.45)	0.017**	(2.29)
<i>Dissue</i>	0.021***	(19.63)	-0.013***	(-4.47)
<i>Eissue</i>	0.017***	(10.53)	-0.006	(-1.30)
<i>Country Debt</i>	0.000***	(6.19)	-0.000	(-1.34)
<i>Institutions</i>	0.003	(0.98)	-0.023**	(-1.97)
<i>AEM</i>	—	—	-0.002	(-0.08)
<i>REM</i>	-0.000	(-0.08)	—	—
<i>Country-FE</i>	YES		YES	
<i>Industry-FE</i>	YES		YES	
<i>Year-FE</i>	YES		YES	
Observations	44,917		44,917	
R-squared	0.1077		0.1569	

This table reports the estimation results of OLS regressions with both discretionary accruals (real earnings management) as dependent variables, according to Equation (7), in order to investigate the role of economic crisis in our analysis. All variables defined in Table 3. Reported *t*-statistics are based on firm-clustering effects. ***, **, and * indicate significance at 1%, 5%, and 10% levels of statistical significance for two-tailed tests.