

ACCOUNTING INFORMATION QUALITY AND SYSTEMATIC RISK IN EMERGING COUNTRIES

A QUALIDADE DA INFORMAÇÃO CONTÁBIL E O RISCO SISTEMÁTICO NOS PAÍSES EMERGENTES

ABSTRACT

This study analyzes how the interaction between a country's informational environment and accounting information quality is associated with the sensitivity to systematic risk of companies based in emerging markets. The analysis, based on data from 11,586 non-financial companies extracted from the LSEG Data & Analytics database between 2000 and 2021, comprises 202,193 observations. The results indicate that financial reporting quality is associated with firms' sensitivity to systematic risk, with variations depending on the metric used: a negative and significant relationship in the Dechow and Dichev (2002) model and a positive and significant relationship in the Modified Jones Model – an extension of Jones (1991). Additionally, firm-level variables such as leverage and market concentration (measured by the Herfindahl index) influence exposure to systematic risk. These findings can be interpreted through the lens of agency theory, as they highlight the importance of financial reporting quality in mitigating information asymmetry between investors and managers. High-quality financial statements can reduce uncertainty and agency costs by aligning market participants' expectations, thereby affecting asset pricing and corporate volatility. The study's main contribution lies in demonstrating that financial reporting quality is a key factor in firms' sensitivity to systematic risk in emerging markets. These results emphasize the need to enhance regulatory frameworks and corporate governance mechanisms to reduce information asymmetry and improve financial market efficiency.

Keywords: Accounting Information Quality. Systematic Risk. Information Environment. Emerging Markets. Agency Theory.

RESUMO

O estudo analisa como a interação entre o ambiente informacional do país e a qualidade da informação contábil está associada à sensibilidade ao risco sistemático das empresas sediadas em países emergentes. A análise, baseada em dados de 11.586 empresas não financeiras extraídos da base LSEG Data & Analytics entre 2000 e 2021, totaliza 202.193 observações. Os resultados indicam que a qualidade das informações contábeis está associada à sensibilidade das empresas ao risco sistemático, com variações dependendo da métrica adotada: relação negativa e significativa no modelo de Dechow e Dichev (2002) e positiva e significativa no modelo Jones Modificado (1991). Além disso, identificou-se que variáveis em nível de empresa, como endividamento e concentração de mercado (medida pelo índice de Herfindahl), influenciam a exposição ao risco sistemático. Esses achados podem ser interpretados sob a ótica da Teoria da Agência, pois refletem a relevância da qualidade da informação contábil na mitigação da assimetria informacional entre investidores e gestores. A qualidade das demonstrações financeiras pode reduzir incertezas e custos de agência ao alinhar as expectativas dos agentes de mercado, afetando a precificação de ativos e a volatilidade das empresas. A principal contribuição do estudo está em evidenciar que a qualidade da informação contábil é um fator relevante na sensibilidade das empresas ao risco sistemático em países emergentes. Esses resultados ressaltam a importância de aprimorar o ambiente regulatório e os mecanismos de governança corporativa para reduzir a assimetria informacional e potencializar a eficiência dos mercados financeiros.

Palavras-chave: Qualidade da Informação Contábil. Risco Sistemático. Ambiente Informacional. Mercados Emergentes. Teoria da Agência.

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1 INTRODUCTION

Accounting information quality varies across contexts and among users of financial statements (Dechow & Schrand, 2004), with its properties and characteristics potentially holding different levels of significance (Karagül & Özdemir, 2012). Regulatory factors, such as high-quality accounting standards, legal systems, and effective auditing practices, also impact this quality (Barth et al., 2008; Houqe et al., 2012; Soderstrom & Sun, 2007). Additionally, elements like ownership concentration, leverage, and economic performance influence it (Gaio, 2010; Isidro & Raoni, 2012). Leuz and Wysocki (2016) emphasize that accounting transparency is connected to institutional factors (investor protection, rule of law) and market components (cost of capital, liquidity, and ownership structure).

This role of accounting information becomes particularly relevant in emerging countries, where rapid growth and economic liberalization drive financial market development (Hoskisson et al., 2000; Wright et al., 2005). These countries are often viewed as more speculative and characterized by higher levels of risk and volatility compared to developed economies (Erb et al., 1996; Burnside et al., 2007). In this context, accounting information has long been used to analyze its influence on capital markets, as shown in classic studies by Beaver (1968), Ball and Brown (1968), and Watts and Zimmerman (1979), and in Brazil by Lopes (2002). Agency theory (Jensen & Meckling, 1976) contributes to this discussion by emphasizing that the separation between ownership and control can create conflicts of interest between shareholders and managers. As a result, accounting helps reduce information asymmetry between investors and economic agents, thereby enhancing market efficiency (ElKelish, 2021).

It remains unclear, however, how much accounting information reduces non-diversifiable risks in economies with multiple financial securities. Asset pricing models like the Capital Asset Pricing Model (CAPM) and portfolio theory distinguish between diversifiable and non-diversifiable risks (Lambert et al., 2007). In classical asset pricing models (Sharpe, 1964; Lintner, 1965), systematic risk is the component of risk that affects all market assets and cannot be eliminated through diversification. This risk is usually measured by the beta coefficient, which indicates how sensitive a firm's returns are to overall market fluctuations. Exposure to systematic risk shows how much a firm's returns respond to market-wide information (Boudén & Saada, 2022). If financial reports only transmitted firm-specific information, their quality would not be expected to relate to systematic risk. However, recent theoretical discussions suggest that financial reporting may also include information about the broader economy (Xing & Yan, 2019; Júnior et al., 2023).

Empirical research shows that stock returns are associated with firm characteristics. Bhattacharya et al. (2003) argue that cross country differences in stock markets arise from economic, political, and legal infrastructures that affect how accounting numbers are interpreted and used. Takamatsu (2015) stresses that each country's specific features and its capital market shape the content and timeliness of financial statements. These differences reflect institutional, regulatory, and governance factors that influence asset valuation. Foster et al. (2012) show that country-specific variables explain variations in how market participants analyze and use accounting information (Bhattacharya et al., 2003; Shah & Wan, 2023). Therefore, each country's informational environment affects accounting information through the interplay of accounting standards, enforcement, and corporate governance (Bhattacharya et al., 2003; Takamatsu & Fávero, 2017; Pringpong et al., 2023).

Core et al. (2015) find that firms with more objective and transparent reporting show lower sensitivity to systematic risk. Xing and Yan (2019), studying U.S. firms, also confirm this association. Collectively, these studies indicate a negative relationship at the country level between accounting information quality and systematic risk (Xing & Yan, 2019). Against this backdrop, the present study seeks to answer the following question: What is the relationship between accounting information quality and sensitivity to systematic risk across different informational environments in emerging countries? Accordingly, the main objective is to analyze how the interaction between a country's informational environment and accounting information quality relates to firms' sensitivity to systematic risk in emerging markets. To this end, the study uses a sample of 11,586 non-financial firms from emerging markets included in the Morgan Stanley Capital International (MSCI) Emerging Markets index for the period 2000–2021.

Emerging markets are more exposed to information asymmetry, which reflects environments with weaker investor protection. This occurs due to a higher risk of financial statement manipulation and less effective legal enforcement. Compared to developed markets, investors get less useful information from firms' disclosures (Fatma & Abdelwahed, 2010; Pringpong et al., 2023).

Numerous studies have analyzed the determinants of accounting information quality and its effects on the capital market (Xing & Yan, 2019; ElKelish, 2021; Latif & Shah, 2021; Júnior et al., 2023), as well as on systematic risk (Silva & Machado, 2019; Xing & Yan, 2019; Boudén & Saada, 2022). Additionally, authors such as Kanakriyah (2016), ElKelish (2021), and Shah and Wan (2024) have explored the influence of different factors on accounting information quality and its connection to returns or systematic risk. Based on this framework, this research employs a model with a long return window, analyzing stocks both at their current levels and in relation to changes in accounting variables. This approach aims to identify which aspects of the capital market, such as accounting standards and disclosure practices, effectively shape the purpose and usefulness of financial statements.

Considering the specificities of emerging markets mentioned above, it is fair to say that results observed in developed markets do not necessarily apply to this group of countries. Thus, this research contributes in several ways: first, by focusing on emerging markets and the importance of accounting information quality for understanding variations in

systematic risk in the stock market; and, second, by helping clarify how country-specific characteristics influence this relationship. The study seeks to fill a gap in the literature by investigating how countries' informational environments affect the relationship between accounting information quality and systematic risk – an aspect that remains underexplored, particularly in emerging markets (Xing & Yan, 2019; Júnior et al., 2023). Although previous studies have separately examined the effects of accounting information quality on risk or on the institutional environment, the interaction between these factors remains insufficiently understood. This study contributes by examining how institutional characteristics complement or substitute each other in shaping accounting information quality, using a sample of companies from emerging markets, where issues of informational asymmetry are often more severe than in developed economies.

Thus, the study advances the literature by deepening the understanding of the role of accounting information quality in determining the sensitivity of systematic risk, considering the institutional and informational characteristics of emerging countries. From a theoretical standpoint, the research expands the debate on the interaction between the informational environment, accounting disclosure, and asset pricing, offering empirical evidence in a context that remains relatively underexplored. From a practical perspective, the results may assist policymakers, regulators, and investors in assessing the informational efficiency of markets and in formulating strategies to reduce informational asymmetry and improve resource allocation.

2 LITERATURE REVIEW AND HYPOTHESES

2.1 Influences of the informational environment on accounting information quality

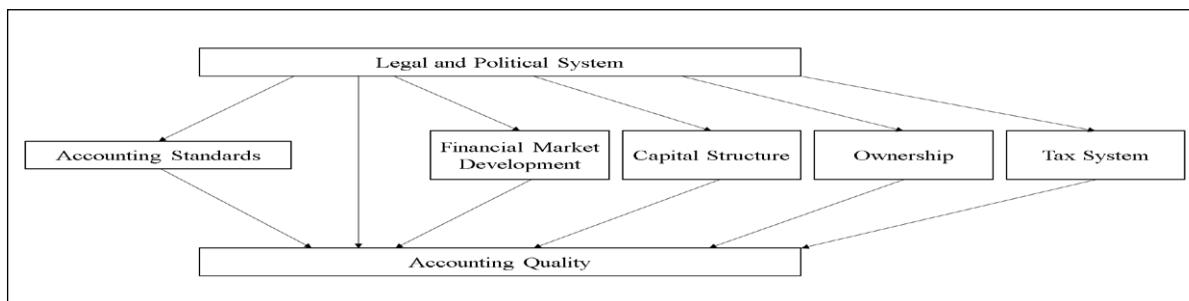
Akerlof (1970) explained information asymmetry in his study "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," where he examined the US second-hand car market. In the study, information asymmetry occurs when the owner knows the condition of the vehicle they want to sell, but the buyer does not. Because of this information gap, the buyer, unaware of the car's true condition, is likely to offer a price below the expected value. If the vehicle is of good quality, the owner may choose not to sell it, as doing so could result in a less favorable deal, such as losses compared to the car's fair value.

Jensen and Meckling (1976) discuss how conflicts of interest can develop among participants in a firm due to the separation between ownership and management. In emerging markets, these so-called agency conflicts may occur between owner-managers and external shareholders, as noted by Coutinho et al. (2006), who observe that such conflicts directly impact investment and financing decisions. As shown by Oliveira et al. (2013), the role of accounting is to produce information that explains patrimonial phenomena, builds models, performs analyses, facilitates control, and more. In this way, accounting information quality is a valuable trait in an economic environment but is diminished by informational asymmetry, which reduces the informational content that helps agents make investment decisions (Duarte & Lucena, 2018; Shah & Wan, 2023).

Previous studies demonstrate that accounting plays a significant role in reducing information asymmetry and enhancing investor protection (Bushman & Smith, 2001; Easley & O'Hara, 2004; Louis & Robinson, 2005). However, little is known about how country-level characteristics influence the relationship between firm-level variables and accounting quality. Additionally, there is limited research (Xing & Yan, 2019; Martins & Barros, 2021) on these relationships within emerging markets. Despite the substantial growth of emerging stock markets in recent decades, little attention has been paid to exploring their informational environments (Martins & Barros, 2021; Shah & Wan, 2023).

The quality of information can be affected by several factors, such as regulation, the country's legal system (and its efficiency in business and markets), and the impact of the tax system, among others (La Porta et al., 1998; Barth et al., 2008; Houque et al., 2012). Figure 1 presents, in a structured manner, the determinants of accounting information quality, showing that accounting standards, the legal and political system, and incentives (financial market development, capital structure, ownership, and the tax system) affect accounting quality.

Figure 1: Determinants of Accounting Quality



Source: Adapted from Soderstrom and Sun (2007)

Emerging countries are characterized by markets that appear to be moving toward development and that possess some liquidity in debt and equity markets, as well as regulatory bodies, yet still fall short of the levels of efficiency, legal protection, and information quality found in developed countries (La Porta et al., 1997, 1998). These markets have experienced extensive transformations in recent decades, including in property rights, trade relations, and corporate governance, although countries like China and Russia show delayed development in disclosure practices (McCarthy & Puffer, 2008). Even so, significant growth has been observed in these markets, without a corresponding level of attention to examining the development of their informational environments (Ghysels et al., 2016).

In this context, agency theory, first introduced by Berle and Means (1932) and later developed by Jensen and Meckling (1976), becomes important for understanding how these markets operate. In emerging countries, where corporate governance is still developing, agency conflicts are usually more severe due to weaker legal protections for shareholders and external investors. Low accounting information quality and limited enforcement of regulations heighten the chances of information asymmetry, making it harder to oversee managers and increasing risks for investors (Fatma & Abdelwahed, 2010; Takamatsu & Fávero, 2017; Shah & Wan, 2023).

Given this scenario, investors naturally demand more information from firms, aiming for greater efficiency in accounting quality to reduce uncertainty and mitigate the impact of information asymmetry (Xing & Yan, 2019; ElKelish, 2021). Consequently, accounting plays a key role in minimizing agency problems by providing information that helps align the interests of managers and investors, thus contributing to a more transparent and efficient environment (ElKelish, 2021).

2.2 Companies' exposure to systematic risk and accounting information quality in the informational environment

As the complexity of business operations increases, stakeholders have become more demanding, leading accounting standard-setting bodies to reconsider various requirements that financial reports must meet (Moumen et al., 2015; ElKelish, 2021). Based on Lambert et al. (2007), Core et al. (2015) argue that high-quality disclosures by individual firms can lessen their exposure to systematic risk. This occurs because high-quality disclosure reduces the uncertainty factor in estimating expected returns.

One of the most well-known risk measures in the market is the beta coefficient (β_M), introduced by Sharpe (1964) and Lintner (1965) as part of the capital asset pricing model (CAPM). Built on Markowitz's (1952) portfolio theory, β_M quantifies relative risk. According to Brealey and Myers (2003), β_M indicates the marginal contribution of a stock to the market portfolio's risk or the stock's sensitivity to market movements. Thus, β_M represents the systematic risk that the stock faces. The part of risk that is idiosyncratic or non-systematic can, in turn, be eliminated through diversification in a well-constructed portfolio.

Regarding the environment in which information is generated, Bhattacharya et al. (2003) and Takamatsu and Fávero (2017) highlight that a country's institutional and informational characteristics, such as accounting standards, governance mechanisms, and enforcement levels, can influence the relevance of financial statements, especially in emerging economies. These factors shape users' perceptions of information and, consequently, affect stock prices in the capital market. According to Takamatsu and Fávero (2017), in environments with weaker legal protections and less developed governance structures, conflicts of interest between managers and shareholders tend to intensify. Additionally, Martins and Barros (2021) emphasize that, in these contexts, accounting information quality plays a key role in reducing informational asymmetry by providing more complete and reliable data for decision-making and mitigating the risk of managerial actions misaligned with investors' interests. The literature presents evidence of a negative relationship between financial variables and idiosyncratic risk (Chen et al., 2012; Isidro & Dias, 2017; Júnior et al., 2023). Francis et al. (2005) were the first to investigate the relationship between financial variables and beta, identifying a negative association between accruals quality and beta. Unlike these studies, this research examines the relationship between accounting information quality and firms' sensitivity to systematic risk. Agency theory suggests that informational asymmetry can increase conflicts between managers and investors, hindering the assessment of asset-related risks (Ahmed, 2023; ElKelish, 2021). High-quality accounting information can reduce this asymmetry by offering more accurate insights into firms' performance and financial flows. Considering the negative relationships documented in previous studies and the evidence from Xing and Yan (2019), who find a negative relationship between accounting information quality and exposure to systematic risk, the following hypothesis (H_1) is proposed:

H1: Accounting information quality is negatively related to firms' exposure to systematic risk in emerging countries.

According to Bushman et al. (2004), a country's disclosure environment arises from a system made up of multiple aspects. Its components collectively produce, disseminate, gather, and validate information. In summary, two main factors are identified for analyzing countries' informational environments. The first relates to financial disclosure, mainly connected to the country's economic policy, and focuses on the level and timeliness of financial transparency, as well as how it is interpreted and shared by the media. The second involves characteristics and disclosure related to governance structures, which are fundamentally linked to a country's legal and judicial systems.

The study by Bushman and Piotroski (2006) complements these findings by exploring the role of legal and judicial systems, stock market regulation, and economic policy in accounting. The incentives that influence insiders, investors,

regulators, and other market participants provide the context for their analysis, with their results showing notable differences in the level of conservatism across countries, depending on their legal and political institutions.

Overall, Xing and Yan (2019) provide empirical support for the theoretical relationship between accounting information quality and firms' sensitivity to systematic risk, documenting a negative association between these variables. The informational environment directly affects information quality and the assessment of firms' exposure to systematic risk, since the availability and accessibility of information influence companies' capacity to understand and manage their risk exposure.

Agency theory suggests that informational asymmetry heightens conflicts between managers and investors, making it harder to accurately assess the risks faced by firms (Shah & Wan, 2023; Pringpong et al., 2023). In markets with weaker investor protections and limited regulatory enforcement, managers might engage in opportunistic actions, increasing uncertainty about systematic risk. In such contexts, accounting information quality can mitigate these conflicts by reducing informational asymmetry and offering better predictability of firms' risks. Therefore, based on the cited literature and agency theory, a negative relationship is expected between accounting information quality and firms' exposure to systematic risk. Considering the informational environment of the countries analyzed, the following hypothesis is proposed.

H2: A country's informational environment negatively moderates the relationship between accounting information quality and firms' exposure to systematic risk in emerging countries.

Latif and Shah (2021) identified a systematic pattern in risk-adjusted portfolio returns, showing that the relationship between the qualitative attributes of accounting information and the cost of capital is not due to temporary market inefficiency; instead, these qualitative attributes represent genuine risk factors. Therefore, this study seeks to advance the literature by examining how the informational environment influences the relationship between accounting information quality and firms' sensitivity to systematic risk. It combines financial variables with metrics of accounting information quality, including beta (which captures firms' exposure to systematic risk) and a governance-quality variable for the countries included in the sample.

3 METHODOLOGICAL PROCEDURES

3.1 Description of the Research Sample

The target population of this study consisted of publicly traded companies from emerging countries. To select these countries, the Morgan Stanley Capital International (MSCI) Emerging Markets Index was used. In 2022, this index included 24 emerging economies: Brazil, Chile, China, Colombia, the Czech Republic, Egypt, Greece, Hungary, India, Indonesia, South Korea, Kuwait, Malaysia, Mexico, Peru, Poland, Qatar, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, and the United Arab Emirates.

The data for the variables under investigation were collected from the LSEG Data & Analytics database, described later. Initially, to define the research sample and ensure the study's consistency, financial institutions were excluded from the initial sample, as their accounting standards may differ from those of other listed companies, and their capital structures may differ as well (Martins et al., 2021). Subsequently, companies that did not provide all the data required for the study were also excluded.

All information was collected in USD for all emerging countries, covering the period from 2000 to 2021. This time-frame was chosen because of the availability and consistency of the data needed to measure the variables of interest, as well as its capacity to capture structural changes in emerging markets over two decades. Including years prior to 2010 also allows the analysis to incorporate the effects of convergence to International Financial Reporting Standards (IFRS) on accounting information quality and its relationship with systematic risk. Although IFRS adoption may have impacted the comparability of accounting indicators, the entire period was retained to examine the evolution of this process and to control for its potential effects through the model's variables.

The initial sample consisted of 19,284 firms during the analysis period. Considering each firm-year as one observation per country, the final sample consisted of 11,586 companies, totaling 202,193 observations across 19 emerging countries. After defining the sample and collecting data, outliers (extreme observations) were managed using 1% winsorization at both ends of the distribution.

3.2 Definition of Variables

Beta measures systematic risk. Using the Beta variable (TR.WACCBeta) from LSEG Data & Analytics, it indicates how much a stock moves relative to the market. It is the covariance between the security's price movement and the market's price movement. Based on the available data, the beta calculation uses a 60-month rolling window with monthly returns. This can be expressed with the following equation:

$$\beta_i = \frac{\text{cov}((R_{i,t}), (R_{mt}))}{\sigma^2(R_{mt})} \quad (1)$$

(Equation (1) measures how much a given security tends to move with the market (Assaf Neto, 2005; Damodaran, 2005; Iudicibus & Lopes, 2004). In this expression, \hat{r}_i denotes the returns of security i , adjusted for its risk contribution to a diversified portfolio; \hat{r}_m refers to the returns of the market portfolio; and λ_i is the measure of the risk contribution of security i to the market portfolio.

The first independent variable, accounting information quality (AIQ), was measured in two ways. The first measure is discretionary accruals based on the model proposed by Dechow and Dichev (2002), which examines the relationship between accruals and cash flows and uses the model residual as a proxy for earnings management, as shown in Equation (2).

$$ACT_{it} = \beta_0 + \beta_1 CFO_{i(t-1)} + \beta_2 CFO_{it} + \beta_3 CFO_{i(t+1)} + \beta_4 \Delta REV_{it} + \beta_5 IMOB_{it} + \varepsilon_{it} \quad (2)$$

Here, ACT_{it} represents the company's total accruals; CFO is operating cash flow; ΔREV is the change in revenue; and $IMOB$ is the gross value of fixed assets. The subscripts i and t denote firm and year, respectively. The second measure of AIQ used in this study is based on Modified Jones Model – an extension of Jones (1991). In this model, AIQ is measured through abnormal accruals, requiring the calculation of total accruals, as shown in Equation (3).

$$AT_{it} = \beta_0 + \beta_1 (\Delta REV_{it} - \Delta CAR_{it}) + \beta_2 IMOB_{it} + \beta_3 ROA_{it} + \varepsilon_{it} \quad (3)$$

Here, AT_{it} represents the change in accounts receivable; ΔREV_{it} is the change in revenue; ROA_{it} is the gross value of fixed assets; and ε_{it} is return on assets. The residuals from Equation (3) serve as proxies for abnormal accruals. Higher absolute abnormal accruals indicate lower accounting information quality.

Following Martins and Barros (2021), the Worldwide Governance Indicators (WGI) were used to capture each country's informational environment. The variables composing the country information environment index (CIEI) are measured as follows. The WGI provides aggregate and individual governance indicators for more than 200 countries and territories from 1996 to 2021, covering six governance dimensions: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption (World Bank Group, 2022). The WGI is standardized on a scale from 0 to 100, where higher scores indicate a better informational environment. As in Martins and Barros (2021), a principal component analysis (PCA) was applied to the six WGI dimensions to construct the CIEI. The resulting index ranges from 0 to 1, with higher values reflecting stronger information environments. The control variables follow Low (2009) and Xing and Yan (2019). To isolate the effect of accounting information quality on systematic risk, a set of variables related to firm risk was included, capturing key firm characteristics such as size, market value, profitability, leverage, and investment.

Table 1 presents all control variables and their expected signs, according to the theoretical rationale of the referenced authors.

Table 1 - Synthesis of the control variables

Variable	Description	Proxy	Expected Sign	References
$SIZE_{it}$	Firm size	$\ln (Total\ assets_{it})$	+/-	Mazzioni e Klann (2016), Potin et al. (2016), Almendra et al. (2018), Xing e Yan (2019)
MTB_{it}	Market-to-book ratio	$\frac{Market\ Value_{it}}{Equit_{it}}$	+	Low (2009), Potin et al. (2016), Xing e Yan (2019)
ROA_{it}	Return on total assets	$\frac{Operating\ Income_{it}}{Total\ Asset_{it-1}}$	-	Low (2009), Xing e Yan (2019)
$CAPEX_{it}$	Net capital Investments	$\frac{Capital\ Expenditure_{it}}{Total\ Assets}$	+	Low (2009), Xing e Yan (2019)
LEV_{it}	Leverage	$\frac{Interest-Bearing\ Liabilities_{it}}{Total\ Asset_{it}}$	-	Mazzioni e Klann (2016), Almendra et al. (2018), Rezaei e Heydari (2021)
SEG	Business segments	Number of operating segments of the firms in the sample	-	Low (2009), Xing e Yan (2019)
HHI	Herfindahl-Hirschman Sales Index	Sum of squared segment sales shares relative to total sales	+	Low (2009), Xing e Yan (2019)

Based on the theoretical framework and detailed description of these variables, and using systematic risk as the dependent variable (as defined in Equation 1), Model 4 was constructed to test H1, which predicts that higher accounting information quality is significantly and negatively associated with firms' exposure to systematic risk through known factors (control/accounting variables) in emerging countries. To test this hypothesis, systematic risk was estimated with the following regression model:

$$SR_{it} = \alpha_i + \beta_1 AIQ_{it} + \beta_2 AIP_{it} + \sum_j \beta_j control_{j, it} + País_{it} + \varepsilon_i \quad (4)$$

Here, SR_{it} denotes systematic risk, and AIQ_{it} is the proxy for accounting information quality. Because AIQ was measured using two metrics – the model by Dechow and Dichev (2002) and the Modified Jones Model – Equation 4 was estimated in two specifications to provide a robustness check of the results.

To examine whether the association between AIQ and systematic risk differs across emerging countries (H2), the model in Equation (5) was estimated. Based on the theoretical foundation and variable definitions presented above, and using systematic risk as the dependent variable, the model was structured as follows:

$$SR_{it} = \alpha_i + \beta_1 AIQ_{it} + \beta_2 CIEI_{it} + (\beta_3 AIQ_{it} * CIEI_{it}) + (\beta_4 AIQ_{it} * CIEI_{it} * Country_{it}) + \sum_j \beta_j control_{j, it} + \varepsilon_i \quad (5)$$

The dataset has both a cross-sectional dimension (multiple firms) and a temporal dimension (20 years). To test the hypotheses, the proposed models were estimated using multivariate panel data regressions. To determine the appropriate panel estimator (fixed effects, random effects, or POLS), the Breusch–Pagan, Chow, and Hausman tests were applied, all of which indicated that the random-effects model was the most appropriate. Additionally, tests for normality of residuals, multicollinearity, serial correlation, and heteroskedasticity were conducted, as these are fundamental assumptions of regression analysis.

4. RESULTS ANALYSIS

4.1 Descriptive Analysis of the Model Variables

This section presents the descriptive statistics of the variables for the annual data from 2000 to 2021. Table 2 reports the mean, standard deviation, median, maximum, and minimum values for the variables used in the model: Systematic risk (SR); accounting information quality (AIQ); size (SIZE); market-to-book (MTB); return on assets (ROA); net capital investments (NCI); leverage (LEV); business segments (SEG); and the Herfindahl–Hirschman sales index (HHI). Finally, the descriptive analysis of the variables that compose the countries' information environment index (CIEI) is presented.

Table 2 - Descriptive statistics of the analyzed variables

Variables	Mean	Standard Deviation	Median	Max	Min	Observations
SR	-1.343	1.992	-1.790	8.410	-1.315	202,193
AIQ1	2.819	10.369	15.949	133.785	-6.817	202,193
AIQ2	-5.851	2.092	-2.336	3.275	-3.601	202,193
SIZE	4.960	2.300	4.889	11.834	-8.225	202,193
MTB	5.705	3.890	0.628	32.383	-10.888	202,193
ROA	3.704	15.725	0.0207	73.427	-3.396	202,193
NCI	-7.660	1.983	-0.023	0.028	-11.021	202,193
LEV	0.700	5.190	0.537	37.802	6.510	202,193
SEG	5.400	2.640	6.000	10.000	1.000	202,193
HHI	3.050	1.789	3.510	9.680	0.000	202,193
CIEI	0.521	0.388	0.778	1	0	202,193
IFRS	0.999	0.028	1	1	0	202,193

Variables	Mean	Standard Deviation	Median	Max	Min	Observations
Voice and Accountability	47.728	21.259	59.134	89.423	2.347	202,193
Political Stability	26.940	15.930	21.226	92.462	1.005	202,193
Government Effectiveness	58.086	10.473	56.796	90.865	26.829	202,193
Regulatory Quality	48.412	10.891	45.588	92.718	19.459	202,193
Rule of Law	40.654	12.929	39.903	88.038	1.923	202,193
Control of Corruption	46.950	10.131	45.192	91.489	8.465	202,193

Note: SR = systematic risk; AIQ = accounting information quality; SIZE = firm's size; MTB = market-to-book; ROA = return on total assets; NCI = net capital investment; LEV = leverage; SEG = business segment; and HHI = Herfindahl-Hirschman sales index.

The results in Table 2 show the variability of the variables related to accounting information quality (AIQ1 and AIQ2), SR, and the control variables. AIQ1, measured using the Dechow and Dichev (2002) model, presents substantial dispersion, indicating heterogeneity in accruals and cash flows. AIQ2, based on the Modified Jones Model, displays negative values, suggesting lower accounting quality for some firms. SR has a negative mean and low variability.

The control variables also reveal heterogeneity among the sample firms. NCI presents negative means and medians, reflecting investment behavior and economic dynamics. ROA, NCI, and LEV exhibit considerable dispersion, reinforcing the sample's diversity and its relationship to AIQ. MTB has an average of 5.705, consistent with expected relationships between MTB ratios and risk-return dynamics.

The CIEI is constructed from seven variables, including IFRS adoption and indicators from the Worldwide Governance Indicators (WGI). IFRS adoption shows minimal dispersion, indicating that most emerging countries in the sample follow these standards. The WGI variables exhibit substantial variability, particularly in regulatory quality and political stability. The CIEI ranges from 0 to 1, with a mean of 0.521, reflecting a relatively weak informational environment in these countries. The principal component analysis (PCA) indicates that the first principal component explains 55.65% of the variance, demonstrating its relevance to the index structure.

Table 3 - Eigenvalue of the Principal Components: Country's Information Environment Index

Components	Eigenvalue	Ratio (%)	Cumulative (%)
Component 1	3.896	55.65	55.65
Component 2	1.117	15.97	71.62
Component 3	0.810	11.57	83.19
Component 4	0.614	8.78	91.98
Component 5	0.358	5.12	97.10
Component 6	0.125	1.79	98.90
Component 7	0.076	1.09	100.00

Bartlett and KMO Statistics	
Bartlett (sphericity)	< 2.2e-16 ***
KMO (sampling adequacy)	0.5

Note: Significance level: *p<0.1; **p<0.05; ***p<0.01

The results in Table 3 present the Kaiser–Meyer–Olkin (KMO) and Bartlett tests, used to assess the suitability of the PCA. The KMO statistic evaluates sampling adequacy, with values above 0.5 considered acceptable. In this study, the KMO value of 0.5 indicates minimally acceptable correlations. Bartlett's test rejects the null hypothesis of no correlation among variables ($p < 0.001$), confirming the appropriateness of PCA. According to the eigenvalues in Table 3 and the scree plot, the first two components, with eigenvalues greater than 1, were retained following Kaiser's (1960) criterion for constructing the CIEI.

4.2 Analysis of the Regression Model

Table 4 presents the results of the model estimation using the variables employed to test the first hypothesis, which posits that the accounting information quality (AIQ) is negatively related to firms' exposure to systematic risk (SR) in emerging countries. In estimation (1), the independent variable is AIQ based on the Dechow and Dichev (2002) model, which focuses on discretionary accruals by analyzing the relationship between accruals and cash flows, using the model residual as a proxy for earnings management. In estimation (2), abnormal accruals were estimated using the Modified Jones Model. The Breusch-Pagan test confirmed the adequacy of the random-effects specification ($\chi^2 = 261.22$; $p < 0.001$), indicating significant effects across the panel units.

Table 4 - Analysis of the Regression to test (H₁)

$$SR_{it} = \alpha_i + \beta_1 AIQ_{it} + \beta_2 AIP_{it} + \sum_j \beta_j controle_{j it} + País_{it} + \varepsilon_i \quad (4)$$

		Dependent Variable: SR	
		Random Effects	
		(1)	(2)
AIQ1		0.001*	
		(0.001)	
AIQ2			0.001***
			(0.003)
CIEI		0.003***	0.003***
		(0.001)	(0.001)
SIZE		-0.019***	-0.012***
		(0.002)	(0.002)
MTB		-0.005***	-0.006***
		(0.002)	(0.002)
ROA		-0.021***	-0.020***
		(0.003)	(0.003)
NCI		-0.035***	-0.058***
		(0.003)	(0.003)
LEV		0.113***	0.107***
		(0.009)	(0.009)
SEG		0.009**	0.009**
		(0.004)	(0.004)
HHI		0.001***	0.005***
		(0.001)	(0.002)
Constant		0.974***	0.955***
		(5.590)	(5.596)

	Dependent Variable: SR	
	Random Effects	
Observations	202,193	202,193
R ²	0.011	0.012
Adjusted R ²	0.011	0.012
F Statistic	1.614***	1,896***

SR = metric for systematic risk, calculated based on the three-factor model; **AIQ1** = Accounting Information Quality, measured using the Dechow and Dichev (2002) model; **AIQ2** = Accounting Information Quality, measured using the Modified Jones Model; **CIEI** = Countries' Informational Environment Index; **SIZE** = Firm's Size; **MTB** = Market-to-Book; **ROA** = Return on Total Assets; **NCI** = Net Capital Investment; **LEV** = Leverage; **SEG** = Business Segment; **HHI** = Herfindahl-Hirschman Sales Index, defined as a market concentration metric based on the level of sales.

Note: Significance level: *p<0.1; **p<0.05; ***p<0.01

Table 4 reports the effects of the independent variables on firms' SR. Firm size (SIZE) showed a negative relationship with SR, contrary to previous findings (Boudin & Saada, 2022; Martins & Barros, 2021), suggesting that larger firms are less exposed to risk. Leverage (LEV) and the Herfindahl-Hirschman Index (HHI) exhibited a positive relationship with SR, suggesting that more concentrated markets and more indebted firms are more risk-sensitive, consistent with Low (2009) and Xing and Yan (2019). Return on assets (ROA) exhibited a negative and significant coefficient, indicating that more profitable firms tend to have lower SR, supporting the notion that efficient management reduces vulnerability to economic fluctuations (Martins & Barros, 2021; Shah & Wan, 2023).

The AIQ measures (AIQ1 and AIQ2) showed positive, significant coefficients, indicating that higher information quality is associated with greater exposure to SR. This finding contradicts part of the literature (Silva & Machado, 2019; Xing & Yan, 2019; Júnior et al., 2023), which suggests that more reliable information reduces information asymmetry and return volatility. Therefore, hypothesis H₁ – which predicted a negative relationship between AIQ and SR – was not confirmed.

One possible explanation for this result relates to the characteristics of emerging markets, which are marked by greater volatility, institutional fragility, and heterogeneity in accounting practices. Even firms with strong disclosure practices remain exposed to macroeconomic shocks and political uncertainties, which tend to increase SR. Moreover, higher timeliness and transparency of information may intensify price reactions to new expectations, heightening short-term market sensitivity (Ahmed, 2023; ElKelish, 2021).

Thus, although higher-quality accounting information reduces information asymmetry, it may simultaneously accelerate price adjustments, particularly in contexts of heightened uncertainty. The effect of informational quality on risk is therefore not linear and depends on the level of market development and efficiency.

The country information environment index (CIEI) showed positive and significant coefficients, indicating that more developed institutional environments do not necessarily reduce SR and may increase price sensitivity to new information (Martins & Barros, 2021). This finding aligns with efficient market theory, which states that a more robust informational environment facilitates the rapid incorporation of accounting and economic information into asset prices (Pringpong et al., 2023). In less efficient markets, information tends to diffuse more slowly and unevenly, smoothing volatility but maintaining higher informational asymmetry. Thus, the informational environment plays an ambiguous role: it improves access to and quality of information but also heightens market sensitivity to external shocks and shifts in expectations.

For the agency theory, the relationship between AIQ and SR arises from the reduction of informational asymmetry. More transparent firms tend to reduce the cost of capital (Ahmed, 2023; Easley & O'Hara, 2004), but they may also exhibit greater volatility because investors incorporate new information more quickly. In emerging markets, where governance issues are more recurrent, higher-quality information can reveal underlying risks, differing from what is observed in developed economies (Ahn et al., 2024; Xing & Yan, 2019). The effect on risk varies across countries, reflecting regulatory and structural differences that influence investor perceptions.

The rejection of hypothesis H₁ shows that, although AIQ matters for asset pricing, its effect on SR depends on the institutional environment and the level of capital market development.

The results for H2 – aimed at testing whether the association between AIQ and exposure to SR differs negatively among emerging countries – are presented in Table 5. The Breusch-Pagan test ($\chi^2 = 236.36$; df = 1; $p < 0.001$) confirmed the presence of significant individual effects, supporting the use of the random effects model.

Table 5 - Analysis of the Regression to test (H₂)

$$SR_{it} = \alpha_i + \beta_1 AIQ_{it} + \beta_2 CIEI_{it} + (\beta_3 AIQ_{it} * CIEI_{it}) + (\beta_4 AIQ_{it} * CIEI_{it} * Country_{it}) + \sum_j \beta_j control_{j, it} + \varepsilon_i \quad (5)$$

	Dependent Variable: SR	
	Random Effects	
	(1)	(2)
AIQ1	0.002*** (0.001)	
AIQ2		0.005*** (0.003)
CIEI	0.004*** (0.001)	0.004*** (0.001)
SIZE	0.019*** (0.002)	0.012*** (0.002)
MTB	-0.005* (0.002)	-0.006*** (0.002)
ROA	0.021** (0.003)	0.020*** (0.003)
NCI	-0.035*** (0.003)	-0.058*** (0.003)
LEV	-0.113** (0.009)	-0.107* (0.009)
SEG	0.009** (0.004)	0.009** (0.004)
HHI	0.001*** (0.007)	0.002*** (0.009)
AIC1:CIEI	-0.004** (0.001)	
AIC2:CIEI		0.003*** (0.001)
Constant	0.973*** (0.027)	0.953** (0.027)
Observations	202,193	202,193
R ²	0.011	0.012
Adjusted R ²	0.011	0.012
F Statistic	1.618***	1.908***

Note: This model incorporates the interaction between AIQ and CIEI.

SR = metric for systematic risk, calculated based on the three-factor model; **AIQ1** = Accounting Information Quality, measured using the Dechow and Dichev (2002) model; **AIQ2** = Accounting Information Quality, measured using the Modified Jones Model; **CIEI** = Countries' Informational Environment Index; **SIZE** = Firm's Size; **MTB** = Market-to-Book; **ROA** = Return on Total Assets; **NCI** = Net Capital Investment; **LEV** = Leverage; **SEG** = Business Segment; **HHI** = Herfindahl-Hirschman Sales Index, defined as a market concentration metric based on the level of sales.

Note: Significance level: *p<0.1; **p<0.05; ***p<0.01

Source: Elaborated by the author

The CIEI was analyzed both as an independent variable and in interaction with AIQ to explain SR. The results indicate that CIEI has a positive and statistically significant coefficient at the 1% level, suggesting that a more developed informational environment can increase SR. This may occur because markets with greater information availability enable more informed investment decisions, leading to higher trading volumes and greater volatility (Pringpong et al., 2023).

The interaction between AIQ and CIEI produced distinct results across the two models. Under the Modified Jones Model (AIQ2), the relationship was positive and significant, indicating that a more robust informational environment can enhance AIQ, as reported by Takamatsu and Fávero (2017) and Martins and Barros (2021). In contrast, the Dechow and Dichev model (AIQ1) showed a negative, significant relationship, suggesting that higher information quality, as measured by discretionary accruals, can reduce SR.

Model (5) examined whether the informational environment negatively affects the relationship between AIQ and SR. The interaction between AIQ1 and CIEI showed a negative and significant coefficient, while the interaction between AIQ2 and CIEI was positive and significant. This indicates that the effect of the informational environment varies depending on the metric used to assess AIQ.

From the perspective of agency theory, the relationship between AIQ and SR can be explained by reduced informational asymmetry (Ahmed, 2023). More developed informational environments mitigate agency problems by increasing transparency and lowering monitoring costs (Ahmed, 2023; ElKelish, 2021). However, more efficient and transparent markets can reflect new information in asset prices more quickly, increasing volatility. Thus, the interaction between AIQ and the informational environment can reduce uncertainty when improved information enhances performance predictability, or raise risk when transparency exposes firms to greater price fluctuations. Emerging countries offer investment diversification opportunities due to their high-risk return profiles, as reflected in variables such as SR and ROA. Investors in these markets face higher costs, information asymmetry, illiquidity, SR, and weaker investor protections, making AIQ an important factor for decision-making (Ahn et al., 2024). High-quality information helps market efficiency by providing data that influence asset prices (Jensen & Meckling, 1976).

The results for hypothesis H_2 – which evaluates the moderating role of the CIEI – suggest that CIEI has a positive and significant association with SR. Although more advanced informational environments reduce information asymmetry, they also make asset prices more sensitive to external shocks (Easley & O'Hara, 2004; Ahmed, 2023).

The interaction between AIQ and CIEI reinforces this duality. In the Dechow and Dichev model (AIQ1), the interaction was negative and significant, suggesting that higher-quality information can mitigate the influence of the informational environment on risk. In the Modified Jones Model (AIQ2), the interaction was positive and significant, indicating that more detailed and timely information can increase volatility. These findings demonstrate that the relationship between transparency and risk is not linear and depends both on the metric used to assess information quality and on the informational context of each country.

From a practical standpoint, the results show that investors should recognize that higher informational quality does not guarantee a reduction in SR; more transparent firms may be more sensitive to market shocks. For managers, the results emphasize the need to adopt consistent disclosure practices to balance transparency and stability. For regulators, the findings highlight the importance of strengthening institutional governance and oversight mechanisms to ensure that improvements in informational quality translate into lower aggregate risk.

In summary, the findings indicate that AIQ quality in emerging markets does not necessarily reduce SR. Its interaction with the informational environment and institutional characteristics can generate ambiguous effects, showing that transparency, although essential, may increase volatility in contexts of institutional fragility. The relationship between informational quality and risk therefore depends on the country context, market efficiency, and the metric used to measure AIQ.

5 FINAL CONSIDERATIONS

This study analyzed how the interaction between a country's informational environment and accounting information quality is associated with the sensitivity of companies based in emerging economies to systematic risk. To address the research question, a panel data regression model with random effects was employed. Data were collected from non-financial firms operating in emerging markets included in the Morgan Stanley Capital International (MSCI) Emerging Markets Index, resulting in a sample of 11,586 companies. The dataset covers the period from 2000 to 2021 and comprises 202,193 firm-year observations.

The regression results indicate that accounting information quality, measured using the Dechow and Dichev (2002) model and the Modified Jones Model – an extension of Jones (1991), is positively and significantly associated with systematic risk in emerging markets. Thus, the study provides evidence refuting the first research hypothesis. In this context, it can be inferred that the variable capturing firms' sensitivity to systematic risk has an explanatory relationship with accounting information quality in emerging economies, and that high-quality financial reporting plays an important role in these markets by significantly influencing investor decision-making.

The study also showed that variables such as firm size and return on assets affect exposure to systematic risk, while each country's informational environment conditions the relationship between accounting information quality and systematic risk. However, the hypothesis that this environment reduces sensitivity to systematic risk was not statistically supported. This suggests that accounting transparency alone may not be sufficient to reduce market volatility in emerging economies.

These findings have relevant implications for policymakers and investors in emerging markets. For regulators, the results indicate that improvements in accounting standards should be accompanied by policies to reduce market concentration and strengthen investor protection to mitigate systemic risks (Pringpong et al., 2023). Measures such as strengthening regulatory enforcement and increasing transparency in sector-level disclosures may help create a less volatile market environment.

For investors, evidence that more highly leveraged firms and those operating in more concentrated markets exhibit higher systematic risk underscores the importance of portfolio diversification. Furthermore, the relationship between accounting information quality and risk suggests that institutional investors may use governance indicators and transparency measures to assess the stability of their investments.

Among the study's innovative contributions, the results suggest that future accounting reforms in emerging markets should consider not only the quality of financial reporting but also the impact of improved transparency on market dynamics and risk perception. In addition, corporate governance policies should be aligned with regulatory reforms that promote greater liquidity and predictability in equity markets.

Finally, it is important to emphasize that the findings should not be generalized to all emerging markets. The results are limited to the analysis period (2000–2021) and to the countries included in the MSCI index. Additional sampling limitations should be acknowledged, especially concerning variables related to systematic risk, which may be measured differently across samples and could affect the number of firms included in the analyses. Furthermore, the quality of accounting information can be assessed using alternative methods not employed in this study.

As recommendations for future research, it is suggested that the relationship between accounting information quality and exposure to systematic risk be examined using alternative analytical methods. Further studies may also investigate the influence of additional aspects of countries' informational environments, such as national default rates and macroeconomic indicators. Finally, comparing the evidence obtained here for emerging markets with results from developed economies would offer valuable insights.

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