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Research Article

The Relationship between Earnings Management and Equity Market Timing

Open Access

A Relação entre Gerenciamento de Resultados e *Market Timing*

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ABSTRACT

Objective: this study aims to verify if companies that practice equity market timing have higher earnings management levels around the stock issue period. **Method:** we used a sample of 68 seasoned equity offerings (SEOs) in Brazil from 2004-2015. First, we ranked the sample among companies that used market timing (timers) behavior in the SEOs and those that did not (non-timers). Second, we estimated each company's earnings management levels by the Modified Jones and Modified Jones with ROA models. Finally, we tested the relationship between earnings management and equity market timing using a linear regression model. **Results:** the results show that the timers managed earnings more intensively in the quarters around SEOs than the non-timers. This happens to increase net income and consequently improve profitability ratios. Therefore, to explore opportunity windows, managers can inflate accounting profit through accruals and influence the market's ability to correctly price shares. **Conclusion:** Brazilian companies practice earnings management as a way of exploiting opportunity windows in the stock market. The conclusion reinforces the need for a careful analysis of the company's profits by investors, analysts, auditors, and regulators while allowing efforts to avoid such practices through compliance, governance, and regulation.

Keywords: equity market timing; earnings management; opportunity windows; stock market.

RESUMO

Objetivo: verificar se as empresas que praticam *equity market timing* apresentam níveis mais elevados de gerenciamento de resultados ao redor do período de emissão de ações. **Método:** a amostra compreende 68 ofertas sazonais de ações realizadas no Brasil, entre 2004 e 2015. Classificam-se as empresas entre *timers* e *non-timers* quanto à decisão de emissão de ações e estimam-se os níveis de gerenciamento de resultados de cada empresa por meio dos modelos Jones Modificado e Jones Modificado com ROA. A proposição de pesquisa é testada utilizando um modelo de regressão linear. **Resultados:** as empresas que praticam *equity market timing* gerenciam mais seus resultados, de modo a aumentar o lucro contábil, em relação às empresas que não fazem uso dessa prática. Portanto, os gestores, para explorar janelas de oportunidade, podem aumentar o lucro contábil por meio de *accruals* e, assim, influenciar a capacidade do mercado de precificar corretamente as ações. **Conclusão:** as empresas praticam o gerenciamento de resultados como uma forma de explorar janelas de oportunidades no mercado de ações brasileiro. Isso reforça a necessidade de uma análise mais cuidadosa dos lucros da empresa por investidores, analistas, auditores e reguladores, ao passo que exige esforços para evitar essas práticas por meio de *compliance*, governança e regulamentação.

Palavras-chave: *equity market timing*; gerenciamento de resultados; janelas de oportunidade; mercado de ações.

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INTRODUCTION

According to the market timing theory, firms seek to take advantage of temporarily favorable market conditions, and equity market timing refers to the practice of issuing shares at high prices and repurchasing at low (Baker & Wurgler, 2002). Then, firms tend to issue equity to exploit temporary fluctuations in the capital cost relative to other sources of capital (Alti, 2006).

There are two primary motivators of the market timing behavior: equity mispricing and temporal variation of adverse selection costs. Both factors are due to the excess of investors' optimism regarding the stock market conditions and referring to companies that have presented evolution in their profitability (Alti, 2006; Korajczyk, Lucas, & McDonald, 1991; Loughran & Ritter, 1995; Rangan, 1998; Ritter, 1991).

Brazil experienced significant economic growth in the 2000s, driven by increased credit and investment, which led to the capital market development (Guru & Yadav, 2019; Silva & Famá, 2011). Given the favorable economic scenario and high expectations of the last decades, Brazilian companies issued shares to take advantage of the existing 'opportunity windows' (Albanez, 2015; Albanez & Lima, 2014; Gomes, Magnani, Albanez, & Valle, 2019; Rossi Junior & Marotta, 2010). Moreover, these equity issues were more likely to occur after the announcement of above-expected earnings and favorable prospects for the company's future, especially in the quarters before the issuance of shares, implying positive abnormal returns in the periods before issuance (Domingos, Ponte, Paulo, & Alencar, 2017; Gomes et al., 2019).

The stock market is optimistic about firms' growth prospects, and managers can take advantage of this with the disclosure of information that investors believe is positive about the company's future (Korajczyk et al., 1991; Rangan, 1998). Besides this, managers can change the company's accounting policy to raise the optimism level about its future forecasts, changing investors' perception (Healy & Wahlen, 1999; Paulo, 2007). Studies such as those by Yu, Hagigi, and Stewart (2018), Du (2019), and Santana, Santos, Carvalho Júnior, and Martinez (2020) found a relationship between earnings management and investor perception.

Certain accounting choices are made to deceive investors as to the company's real economic and financial performance to obtain some private gain (Premti & Smith, 2020). This practice is essential when issuing shares because investors can pay an artificially high price for those shares if the earnings are inflated. Studies carried out in Brazil found strong evidence that executives manipulate the accounting information in response to stimuli in the capital market (Domingos et al., 2017; Gioielli, Carvalho, & Sampaio, 2013; Santana, Santos, Carvalho Júnior, & Martinez, 2020).

The process of public equity offering is particularly susceptible to earnings management (Domingos et al., 2017; Maatougui & Halioui, 2019; Premti & Smith, 2020). Companies have incentives to manage their earnings to induce investors to pay an overvalued share price. A profit increased benefits the company by obtaining higher amounts of capital, in detriment to the expected return of initial investors (Gioielli et al., 2013). In Brazil, evidence indicates that the earnings management practice is more intense in the period preceding public stock offerings (Domingos et al., 2017), and it is positively related to investor sentiment in the Brazilian capital market (Santana et al., 2020).

Thus, firms can be motivated to issue shares to take advantage of temporary opportunity windows, such as raising funds at an undervalued equity cost using market timing behavior. These companies can have incentives to improve their earnings, at least in the period around the issue of shares, to benefit from the number of proceeds raised. Therefore, the following question arises: Do companies using market timing behavior to issue shares have higher earnings management levels around the issue period than companies that do not use this behavioral strategy? There is no research that related market timing and earnings management for the Brazilian market.

This study investigates if Brazilian companies that practice equity market timing have higher earnings management levels around the period of offering new shares. The sample comprises 68 seasoned equity offers (SEOs) on the B3 S/A — Brasil, Bolsa, Balcão, the Brazilian stock exchange, between 2004 and 2015. As the classification of companies that practiced equity market timing happens through the abnormal returns before and after the public offerings, only SEOs are used due to the accessibility of data to calculate these returns, according to the method used by Gomes, Magnani, Albanez, and Valle (2019). In parallel, using a broader sample, the levels of earnings management for each company are estimated using the Modified Jones and Modified Jones with ROA models. After the classification of the companies between timers and non-timers and after calculating the levels of earnings management, we propose an econometric model with panel data to test the research proposition.

The results indicate that Brazilian companies that issued SEOs motivated by market timing behavior improved their earnings more intensively in the intervals around the stock issue period. This behavioral strategy is intended to enhance the company's profitability ratios and the possibility of initial overvaluation of the stock offered.

Most studies report that earnings management motivations focus on company-specific factors, and few studies have investigated the earnings management effects on temporary fluctuations in the stock market. By examining this relationship between market timing and earnings management, this work contributes to an increased understanding of the interactions between the stock market and companies' strategic behavior. Earnings management to increase profits near the issuance of shares is a practice that leads to the expropriation of investors' capital and thus is involved in the growing discussion about good administrative practices, compliance, and governance. In verifying whether the managers' and companies' opportunistic behavior is related to manipulating accounting results, the doors open to searching for solutions to avoid such practices.

THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

Equity market timing

Market timing theory has commonly been applied to financial decision-making in research that explores initial public offerings (Alti, 2006; Albanez & Lima, 2014; Loughran & Ritter, 1995; Rossi Junior & Marotta, 2010), seasoned equity offerings (Cai & Liu, 2006; Huang, Uchida, & Zha, 2016; Marsh, 1982; Taggart Jr., 1977), and share repurchases (Dittmar & Field, 2015; Ikenberry, Lakonishok, & Vermaelen, 1995).

The market timing theory originated in capital structure research as an alternative to tradeoff and pecking order theories. It is used to explain financing decision-making and firms' capital structure. According to Baker and Wurgler (2000), companies issue more stocks in periods that precede low market returns, and similarly, they assume more debt before periods of high returns. The fact that the issuance of shares precedes negative returns, both through IPOs and SEOs, suggests that the capital market is inefficient and that managers seek to exploit this inefficiency, taking advantage of possible mispricing and temporal variation of adverse selection costs.

The evidence of equity market timing relates that share issues often occur after abnormal positive returns or announcements of favorable prospects; therefore, issuing shares tends to occur after announcing earnings higher than expected by the market agents. Thus, according to market timing behavior, optimistic investors pay more for stocks because they believe in high future returns or even that managers cause investors' mispricing, which is also evidenced by the fact that share issues precede negative abnormal returns (Baker & Wurgler, 2000; Gomes et al., 2019; Loughran & Ritter, 1995; Rajan & Servaes, 1997; Ritter, 1991).

Usually, the abnormal return is the difference between the return of a firm's stock and the average return rate of the market, both calculated for the same period (Ritter, 1991). From the manager's point of view, it is possible to observe that the abnormal return before issuance serves as an indicator of the best moment to offer this type of asset (Baker & Wurgler, 2000). From the investor's perspective, the abnormal return after the issuance of shares may represent the market's perception of the financial decision made by the company or its operational performance, which can be evaluated as positive or negative by the market (Ritter, 1991; Silva & Famá, 2011).

Thus, by separating companies by abnormal returns before and after the issuance of shares, it is possible to infer that companies motivated by market timing were those in which the issuance of shares followed positive abnormal returns and preceded negative abnormal returns (Baker & Wurgler, 2000; Gomes et al., 2019; Ritter, 1991). This temporary mispricing can originate entirely outside the company. Still, managers are more likely to disclose good news about the company's profits since such information is reflected in stock prices promptly, especially when the stock market is warm.

In a rising market, the demand for shares and the participation of investors are more prominent. Still, the share demand may exceed the offering, which increases prices, and the more profit the company discloses, the higher the market value will be, and the more resources it will manage to capture with the placement of new shares (Chen, Qi, Shen, & Lin, 2011).

Earnings management

Two main ideas emerged from empirical studies on earnings management: opportunistic behavior and information efficiency. The first is related to the case in which managers seek to maximize their well-being by disclosing information that does not represent the company's real situation. The second idea assumes that managers may reveal information about their expectations regarding the company's future, which is quickly incorporated by the market (Scott, 2003).

The fact is that accounting standards offer some flexibility, and managers use their expertise to make choices (Healy & Wahlen, 1999). In this way, managers can manipulate the accounting information through their discretionary power, and the various possibilities of measurement criteria and accounting disclosure allow earnings management. Therefore, earnings management is the choice of the accounting policy that managers make to

achieve a specific objective (Scott, 2003). For this choice, managers judge the financial information and the operational activities to change the final report disclosed. The managers' real intention in the decisions is not observable, but they can deceive investors about its performance (Dechow & Skinner, 2000; Healy & Wahlen, 1999).

Usually, earnings management is observed through accruals, which are revenues earned or expenses incurred, impacting a company's net income, although money has not yet changed (Healy & Wahlen, 1999). Earnings management arises from the temporal question between profit and cash, or rather, between the accrual basis and the cash basis (Paulo, 2007). There are discretionary accruals and non-discretionary accruals. The former arises from accounting choices, while the latter is inherent in the activities of the enterprise.

The considerable interest in earnings management research comes especially from contract-based motivations (Healy & Palepu, 1990; Sweeney, 1994), reasons related to political regulations and uncertainties (Cahan, 1992; Key, 1997; Yung & Root, 2019), and capital market-based motivations (Chen et al., 2011; Dechow & Skinner, 2000; Domingos et al., 2017; Healy & Wahlen, 1999).

Domingos, Ponte, Paulo, and Alencar (2017) found evidence that Brazilian companies manage their earnings more intensely in periods close to share offerings. The authors analyzed public share offerings in the period 2004-2013. This earnings management by discretionary accruals aims to increase profits around the quarters of shares issue, resulting in a high starting price of the stock offer. In general, empirical evidence in Brazil and international markets indicates that the public stock offerings influence the earnings management practice (Chen et al., 2011; Domingos et al., 2017; Gioielli et al., 2013; Liu, Uchida, & Gao, 2014).

The present study focuses on earnings management and its motivations based on the stock market. More specifically, we analyze the relationship between earnings management and equity market timing, assuming that market timing behavior is a determinant of earnings management.

Hypothesis

Companies that conduct public offerings when their shares are overvalued practice market timing behavior (Baker & Wurgler, 2002). The practice of earnings management can lead to overvalued stock prices (Healy & Wahlen, 1999; Scott, 2003). A study that related the theoretical approaches to earnings management and market timing that deserves particular attention is that of Chen, Qi, Shen, and Lin (2011). The authors investigated how executives use market timing to manage earnings across different business cycles to maximize company value. They found that Chinese companies listed on the stock exchange choose to advertise more profits when the market is 'hot.' They also found that executives who do not disclose relatively large profits during warmer market periods are more likely to be fired.

In this line, we propose that equity market timing is a potential motivation for earnings management in Brazil. This work differs from that of Chen et al. (2011) mainly because we classify it between timers and non-timers by abnormal returns similar to what made Gomes et al. (2019) and not moments with large volumes of new issues (hot markets), as used by Chen et al. (2011). This is due to the lack of dynamism of the Brazilian capital market and the low number of stock launches over time.

We emphasize that for earnings management to be related to equity market timing, the mispricing that originates the opportunistic behavior of market timing cannot be exogenous to the company; that is, we assume that the managers contribute to causing mispricing in the market. On the contrary, if the mispricing is exogenous to the company's practices and policies, then no difference in earnings management intensity will be found among companies that practice market timing and those that do not. To answer the research question already presented, we test the following hypothesis:

> H1: There are significant differences in earnings management levels between companies that practice market timing behavior and those that do not practice around the period of issuing new shares.

METHODOLOGICAL PROCEDURES

We used descriptive analyzes, statistical tests to compare means (Wilcoxon test, z test), and linear regression techniques, using the ordinary least squares (OLS) method. We applied the Wilcoxon test of difference of means because the variables do not have a normal distribution and used the Stata software (version 16) to perform the tests and estimate the models.

Data and classification of timers and non-timers by abnormal returns

The selected sample comprises companies that issued new shares by SEOs from 2004 to 2015 in the Brazilian stock market. We used only seasoned offerings due to the data accessibility to calculate abnormal returns both following and preceding the issue. We collected all firms that performed SEOs in the database available on the website of B3 S/A — Brasil, Bolsa, Balcão (http://www.b3.com.br/

retrieved on March 15, 2017), between 2004 and 2015. In this timeframe, the Brazilian stock exchange registered 68 seasoned offerings of non-financial firms.

For calculating the abnormal returns, we employ the method used by Ritter (1991) of monthly benchmark-adjusted returns. The abnormal return is the difference between the firm's stock return and the average market return. In order to measure the abnormal return before and after the issuance of shares, each month was defined by successive periods of 21 trading days concerning the share issue date (event). Thus, month 1 consists of days 1-21 of the event, month 2 consists of days 22-42 of the event, and so on, until days 232-252 (12th month). We used the same method for the abnormal return before the issue of shares, but month 1 is formed by the 21 trading days of the shares before the date of issue until month 12 before the issue (days 232-252).

As done by Silva and Famá (2011), we used the Bovespa Index (Ibovespa) to calculate the average market return. Ibovespa is the main performance indicator of the stocks traded in the B3 S/A — Brasil, Bolsa, Balcão and contains major companies in the Brazilian capital market. The monthly abnormal returns observed were grouped in a time interval of one year by the cumulative average abnormal return (CAAR). Since we calculate the CAAR per company, represented by only one asset (one share), and not for an asset portfolio, the CAAR was adjusted only in time to reflect the abnormal return of 12 months. Last, we classified each SEO with negative and positive abnormal returns in the years before and after the issuance of shares.

The evidence in Ritter (2003) and Huang, Uchida, and Zha (2016) suggest that companies issue SEOs motivated by market timing behavior. Thus, managers make these offers when the stock is overvalued; in other words, managers have superior market timing skills. After the shares are issued, and the opportunity window closes, firms involved in market timing behavior tend to present negative abnormal returns in the short/medium range due to the adjustment of investors' expectations.

Figure 1 shows a tendency for issuing new shares after an increase in the current share price. Market efficiency cannot be inferred from this. On the contrary, market efficiency says that the issuing company's share price, on average, would not rise or fall (relative to the stock market index) after the issue.

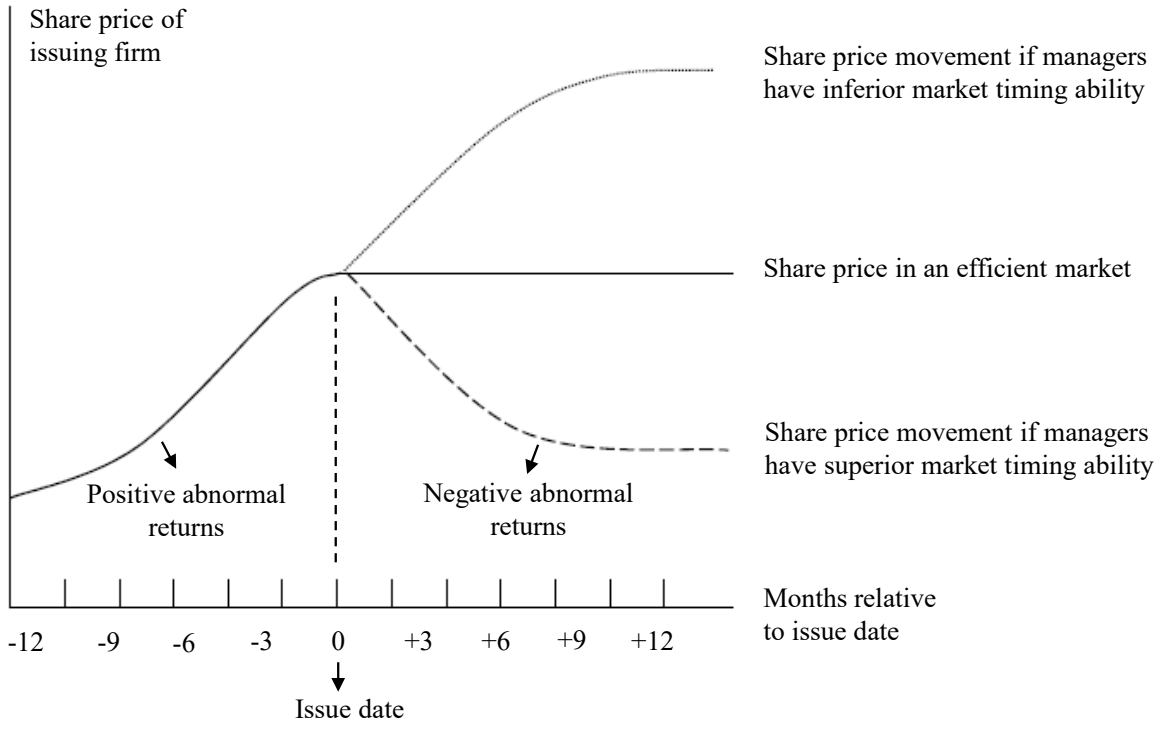

Figure 1. Share price adjustment and market timing.
Source: Modified by the authors based on Ross, Westerfield, and Jaffe (2013, p. 462).

We classified 23 offerings that showed signs of equity market timing behavior (about 35% of 68 stock offers): only when share issue occurred after positive abnormal returns and before negative abnormal returns (in terms of CAAR) in a window of 12 months (-12, +12). The 68 offerings were made by 51 different companies, with some companies making more than one offering in the period analyzed. In such cases, we classified as a timer the firm with evidence of this practice with at least one stock offering. When the CAAR values are close to zero (CAAR < 1%) and it is impossible to classify the company between timer and non-timer confidently, we use a subsequent smaller window for the classification, 6 (-6, +6) or 3 (-3, +3) months. No company presented an impossibility of classification in the three different windows (12, 6, and 3 months). Therefore, we have 15 timers and 36 non-timers.

Earnings management models

Several models measure earnings management, many of them based on analysis of accruals (e.g., DeAngelo, 1986; Dechow, Sloan, & Sweeney, 1995; Healy, 1985; Jones, 1991; Kang & Sivaramakrishnan, 1995; Kothari, Leone, & Wasley, 2005). The models assume that discretionary accruals are a proxy for earnings management (Beckmann, Escobari, & Ngo, 2019). Accrual is the difference between net income and net operating cash flow. Thus, positive accruals mean higher profits than cash flows, and negative accruals indicate reported earnings lower than cash flows from operations. However, a definite difference between these indicators does not always imply earnings management to increase profits; only the discretionary part of accruals provides indications of manipulation. Therefore, discretionary accruals are intended to manipulate the firm's business, while non-discretionary accruals arise from its regular operations (Kothari et al., 2005).

We considered total accrual (TAC) as the difference between net income and cash flow, according to Equation (1) (Dechow et al., 1995). Furthermore, this can be segregated into discretionary accruals (DAC) and non-discretionary accruals (NDAC), as in Equation (2), in the light of Jones (1991) and Dechow, Sloan, and Sweeney (1995):

$$\text{TAC} = \text{Net Profit} - \text{Cash Flow} \quad (1)$$

$$\text{TAC} = \text{DAC} + \text{NDAC} \quad (2)$$

where:

TAC: total accruals; DAC: discretionary accruals; and NDAC: non-discretionary accruals. A positive DAC value indicates managers increase the reporting of profits and a negative DAC value that they reduce reported earnings.

We use discretionary accruals to capture accrual-based earnings management activities by firms. First, we use Equation (3) for calculating total accruals according to previous studies (Dechow et al., 1995; Healy, 1985; Jones, 1991).

$$\text{TAC}_{it} = \frac{(\Delta\text{CA}_{it} - \Delta\text{Cash}_{it}) - (\Delta\text{CL}_{it} - \Delta\text{STLoans}_{it}) - (\text{Depr}_{it})}{TA_{it-1}} \quad (3)$$

in which:

TAC_{it}: total accruals of company i at time t;

ΔCA_{it}: change in current assets of firm i from the end of time t-1 to the end of time t;

$\Delta Cash_{it}$: change in the cash and cash equivalents of firm i from the end of time t-1 to the end of time t;

ΔCL_{it}: change in the (current) liabilities of firm i from the end of time t-1 to the end of time t;

$\Delta STLoan_{it}$: change in short-term loans and financing of company i from the end of time t-1 to the end of time t;

$Depr_{it}$: amount of depreciation and amortization expenses of company i during period t;

TA_{it-1}: total assets of company i from the end of period t-1.

We calculate DAC as the difference between a firm's actual accruals and the normal level of accruals (Beckmann et al., 2019), where the normal level is estimated using the Modified Jones Model (Dechow et al., 1995, with the changes suggested by Kothari, Leone and Wasley (2005) and Modified Jones Model with ROA (Kothari et al., 2005). The difference between the models is that the second includes a performance measure to estimate NDAC. The Modified Jones with ROA considers the return on assets (ROA) variable in the accruals regression, used as a control for the company's performance and potential non-linear confounders (Banker, Byzalov, Fang, & Jin, 2020). Banker, Byzalov, Fang, and Jin (2020) point out that many studies in the top accounting journals use a Jones model variant with or without ROA control.

Equations (4) and (5) show the Modified Jones and Modified Jones with ROA models suggested by Kothari et al. (2005), respectively. These models consider the residual of the regression as discretionary accruals since they are not directly observable.

Modified Jones model:

$$\text{TAC}_{it} = \alpha + \beta_1\left(\frac{1}{\text{TA}_{t-1}}\right) + \beta_2(\Delta\text{R}_{it} - \Delta\text{AR}_{it}) + \beta_3(\text{PPE}_{it}) + \varepsilon_{it} \quad (4)$$

Modified Jones with ROA model:

$$TAC_{it} = \alpha + \beta_1\left(\frac{1}{TA_{t-1}}\right) + \beta_2(\Delta R_{it} - \Delta AR_{it}) + \beta_3(PPE_{it}) + \beta_4(ROA_{it}) + \varepsilon_{it} \quad (5)$$

where:

α: constant of the regression model;

β_1, β_2, β_3, and β_4: coefficients of the regression model;

TAC: total accruals of company i at time t;

TA: total assets of firm i from the end of period t-1;

ΔR: change in the net operating revenues of firm i from the end of time t-1 to the end of time t, weighted by the total assets at t-1;

ΔAR: change in accounts receivable of company i from the end of time t-1 to the end of time t, weighted by the total assets at t-1;

PPE: sum of the balances of the accounts 'Property, Plant and Equipment' and 'Deferred Assets (gross)' of firm i from the end of time t-1 to the end of time t, weighted by the total assets at t-1;

ROA: net income divided by total assets; return on assets (ROA) represents how profitable a company is relative to its total assets;

ε_{it}: residual of the regression, representative of the value of discretionary accruals.

For the treatment of outliers, we used the Winsor technique at the 1st and 99th percentiles. Table 1 presents the variables' descriptive statistics of the Jones-type models after the winsorizing, referring to the sub-sample.

Table 1. Descriptive statistics of the Jones-type models used in this study.

Variables	Mean	Standard deviation	Minimum	Maximum
TAC	-0.0135	0.0607	-0.2366	0.2072
1/TA	0.0000	0.0000	0.0000	0.0001
ΔR	0.0150	0.3874	-1.4145	0.7787
ΔAR	0.0090	0.0558	-0.1736	0.2889
(ΔR-ΔAR)	0.0049	0.3884	-1.4287	0.7752
PPE	0.3152	0.2457	0.0000	0.9095
ROA	0.0120	0.0847	-0.4405	0.2309

Note. Number of observations = 13,888. Variables of the model proposed by Dechow, Sloan, and Sweeney (1995) and the same model with the addition of ROA, a measure of performance suggested by Kothari, Leone and Wasley (2005). TAC = total accruals; TA = total assets; ΔR = change in net operating revenues; ΔAR = change in accounts receivable; PPE = sum of the balances of 'Fixed Assets' and 'Deferred Assets (gross),' weighted by total assets; ROA = return on assets.

We calculated the regression coefficients of Equations (4) and (5) in cross-sections, for each quarter, between the 2004-2015 period (in all 48 quarters). For this, we used sub-samples composed of all companies with common shares traded in the B3 S/A — Brasil, Bolsa, Balcão, except for financial companies (banks, insurance companies, etc.) and companies with missing data in the Economatica® database. The number of companies per quarter varies from 216 to 326. After estimating the coefficients, we calculated the regression residuals for each firm quarter using linear regressions. The residuals represent the discretionary accruals and are proxies for earnings management in Jones-type models.

Linear regression model with panel data

We proposed Model (6) to verify if the companies that used market timing behavior to issue stocks had higher earnings management levels in the periods near the offering. We created the variable *Issuance* based on the work of Gioielli, Carvalho, and Sampaio (2013), Sincerre, Sampaio, Famá, and Santos (2016), and Domingos et al. (2017). It assumes the value 1 in the quarters around the SEO (in the quarter of issue, the two previous quarters, and the quarter after the issue, totaling four quarters) and 0 in the other quarters.

In Equation (6), the combination of the variables *Timer* and *Issuance* represents the companies that practiced market timing in the quarter around the issue of shares. This combination and earnings management (EM) relationship is expected to be significant and positive (coefficient β_3). This model also has the single variables *Timer* and *Issuance* to identify specific effects of earnings management on companies that used the market timing behavior (*Timer*) and on quarters around the SEO (*Issuance*).

Regarding the control variables in Equation (6), a positive relationship between leverage (*Lev*) and EM is expected since highly leveraged companies tend to manage the earnings to increase profits to avoid a default of contractual covenants. For the coefficient of the variable growth (*Grow*), a positive sign is expected since more significant growth opportunities generate higher levels of discretionary accruals. For the variables *Size* and *ROA*, there are no clear expectations regarding the sign of its coefficients. The control variables used (*Lev, ROA, Size*, and *Grow*) are based on Brazilian market studies (Gioielli et al., 2013; Santana et al., 2020; Sincerre, Sampaio, Famá, & Santos, 2016).

$$EM_{it} = \alpha + \beta_1(\text{Timer}) + \beta_2(\text{Issuance}) + \beta_3(\text{Time x Issuance}) + \beta_4(Lev_{it}) + \beta_5(ROA_{it}) + \beta_6(Size_{it}) + \beta_7(Grow_{it}) + \varepsilon_{it} \quad (6)$$

in which:

EM: earnings management, measure obtained using the Modified Jones and Modified Jones with ROA models;

Timer: dummy variable that assumes value equal to 1 for companies that used the market timing and 0 otherwise;

Issuance: dummy variable that assumes value equal to 1 in the quarters around the SEO (in the quarter of issue, the two previous quarters, and the quarter after the issue, totaling four quarters) and 0 otherwise;

Lev: leverage, calculated by dividing loans and financing by total assets, all in t;

ROA: return on assets, calculated by dividing the net balance of period t by the total assets at t-1;

Size: calculated using the natural logarithm of the total assets;

Grow: sales growth, calculated through the variation in net operating revenue between t-1 and t, divided by the total assets at t-1.

From Model (6), we used the panel data method, which can be with random or fixed effects or pooled OLS. Estimation by random effects occurs when errors capture individual heterogeneity, and the individual (group or time) effect is not correlated with some of the observations. Fixed-effects estimation is recommended when heterogeneity may be related to intercepts and a particular impact on some observation (Wooldridge, 2010). In turn, pooled OLS does not consider individuals' attributes within the measurement set and no universal effects across time. We applied the F-test, the Hausman test, and the Breusch-Pagan test to choose the better between these three approaches.

The Newey-West correction was performed using variance/covariance matrices of robust parameters (robust forms) for the heteroscedasticity hypothesis. The existence of multicollinearity is also tested by analyzing the correlation between the model's explanatory variables through the variance inflation factor (VIF), where an average VIF higher than five is considered as indicating highly correlated regression coefficients (Wooldridge, 2010). We present the results of these tests, regressions, and data analyses in the next section.

ANALYSIS OF RESULTS

Table 2 reports the descriptive statistics of the model variables. Data are separated between timers and non-timers. The results are presented for the two earnings management proxies, the Modified Jones (EM_1) and the Modified Jones with ROA (EM_2) models. Companies classified as timers presented a smaller earnings management level that companies classified as non-timers, the difference of -0.007 is statistically significant. Table 2 also shows that the timers have, on average, less debt, higher ROA, small size, and low growth opportunities when compared to non-timers. These results are consistent with the fact that smaller and younger companies are often involved in equity market timing practices since investors are more optimistic about these firms' perspectives (Albanez & Lima, 2014; Alti, 2006; Gomes et al., 2019).

The expectation is to find a higher EM level by companies that engaged in market timing behavior around the issuance of shares. During this period, the difference in EM levels is aggravated (Domingos et al., 2017). Table 3 shows the means of the model's variables, segregated by periods: issuance period (Panel A) and other periods (Panel B). The table shows total companies have higher levels of EM in the issuance period compared to different periods. Around the SEO period, the average of the EM variable for companies classified as timers (EM_1 = 0.017 and EM_2 = 0.016) is higher than the average of

non-timers (EM_1 = 0.008 and EM_2 = 0.007) but not statistically significant, while the EM difference between groups is lower in other periods (EM_1 and EM_2 average of timers = -0.007 and -0.008, respectively; EM_1 and EM_2 average of non-timers = 0.003 and 0.002, respectively).

Table 2. Descriptive statistics.

Statistics	Sub-samples	Variables					
		EM_1	EM_2	Lev	ROA	Size	Grow
Mean	Total	0.002	0.001	0.310	0.026	15.543	0.020
	Timers	-0.003	-0.004	0.257	0.034	15.208	0.019
	Non-timers	0.004	0.003	0.332	0.023	15.680	0.021
Difference of means	Timers - Non-timers	-0.007***	-0.007***	-0.075***	0.011***	-0.472***	-0.002
Standard deviation	Total	0.052	0.051	0.149	0.043	1.525	0.296
	Timers	0.059	0.058	0.140	0.043	1.345	0.282
	Non-timers	0.048	0.048	0.147	0.042	1.573	0.301
Minimum	Total	-0.262	-0.251	0.004	-0.115	12.740	-0.990
	Timers	-0.237	-0.234	0.004	-0.115	12.740	-0.990
	Non-timers	-0.262	-0.251	0.004	-0.115	12.740	-0.990
Maximum	Total	0.253	0.251	0.684	0.166	20.045	0.519
	Timers	0.253	0.251	0.684	0.166	18.443	0.519
	Non-timers	0.245	0.240	0.684	0.165	20.045	0.519

Note. Number of observations = 2,009. Timers = companies that practiced market timing. Non-timers = companies that did not practice market timing. EM_1 = earnings management estimated using the Modified Jones model. EM_2 = earnings management estimated using the Modified Jones model with ROA. Lev = leverage. ROA = return on assets. Size = size. Grow = sales growth. Rejection of the null hypothesis, Wilcoxon test (z) of difference of means: *** significance at 1%; ** significance at 5 %; * significance at 10%.

Table 3. Mean of the model's variables, segregated by periods.

Panel A: Issuance period								
Statistics	Sub-samples	Variables						
		N.	EM_1	EM_2	Lev	ROA	Size	Grow
Mean	Total	268	0.011	0.010	0.297	0.029	15.336	0.033
	Timers	92	0.017	0.016	0.259	0.030	14.978	0.028
	Non-timers	176	0.008	0.007	0.316	0.029	15.523	0.036
Diff. of means	(Timers — Non-timers)	-	0.009	0.009	-0.057***	0.001	-0.545**	-0.008
Panel B: Other periods								
Statistics	Sub-samples	Variables						
		N.	EM_1	EM_2	Lev	ROA	Size	Grow
Mean	Total	1,741	0.000	-0.001	0.312	0.026	15.575	0.018
	Timers	491	-0.007	-0.008	0.257	0.035	15.252	0.017
	Non-timers	1,250	0.003	0.002	0.334	0.022	15.702	0.019
Diff. of means	(Timers — Non-timers)	-	-0.010***	-0.010***	-0.077***	0.013***	-0.450***	-0.002

Note. Timers = companies that practiced market timing. Non-timers = companies that did not practice market timing. EM_1 = earnings management estimated using the Modified Jones model. EM_2 = earnings management estimated using the Modified Jones model with ROA. Lev = leverage. ROA = return on assets. Size = size. Grow = sales growth. Rejection of the null hypothesis, Wilcoxon test (z) of difference of means: *** significance at 1%; ** significance at 5 %; * significance at 10%.

In general, the results of Table 3 show that companies that practice market timing have relatively greater variability in EM. In the issuance period, timers have higher discretionary accruals, and in the other periods, timers have lower levels of EM compared to non-timers. Thus, companies that practice market timing seek to expose better profits to influence investors when issuing shares. The timers' EM in other periods is much lower, which points to a reversal since the earnings management increases in the quarters close to the issuance of new shares. Additionally, it is possible to observe in Table 3 a pattern similar to the results in Table 2 for other variables, such as size and leverage.

Table 4 presents the regression models' results, with the analysis focused on the period around the issuance of shares. We used models with random effects for three reasons: (a) the test results of Breusch-Pagan Lagrange multiplier (Wooldridge, 2010), which indicated the presence of unobserved heterogeneity (therefore, the use of pooled OLS technique is throw away), (b) the test results of Hausman indicate that the fixed effects are not correlated with the explanatory variables (therefore, random effects is the appropriate technique), and (c) the existence and inclusion of variable that do not vary over time (*Timer*).

We found a significant difference in earnings management level around the issuance period of companies that used the market timing behavior in the issuance of these new securities (variable: *Timer x Issuance*). This difference is positive and significant at the 5 % level for the estimate with random effects on both Jones Modified and Jones Modified with ROA models. This result leads us to accept H_1, evidencing that companies use earnings management to explore opportunity windows in the Brazilian stock market. Dummy *Timer* also proved to be significant, but with the negative sign indicating that companies that practice market timing have, on average, a lower level of earnings management than companies that do not use this practice.

The difference in signals between variables *Timer* and (*Timer x Issuance*) points out that earnings management does not increase or decrease actual profit in the long turn, but changes the profit distribution in different times (Chen et al., 2011; Paulo, 2007). Therefore, our results show that companies that practice market timing seek to expose higher earnings around the stock issue period (income maximization). In contrast, in non-issue periods, these companies decrease discretionary accrual levels and, consequently, profit (income minimization).

The *Issuance* variable is not significant, despite the positive sign in line with the findings by Domingos et al. (2017) that the earnings management practice is more intense in the period around public stock offerings. The control variable ROA showed a positive and significant relationship with EM in the Modified Jones model. This relationship is expected since the managers are motivated to present a company's favorable performance to the stakeholders to maintain their reputation or company's reputation (Kothari et al., 2005).

In Table 4, the *Size* variable presents statistical significance at the 1% level. Size is negatively related to earnings management. One explanation for this is that the larger the company, the closer it is followed by analysts, investors, and creditors, which may reduce earnings management opportunities (Gioielli et al., 2013; Paulo, 2007). The *Grow* variable is negatively related to EM, contrary to expected, which is evidence that growth firms have an incentive to smooth earnings through accruals because earnings volatility increases perceived firm risk (Bowen, Rajgopal, & Venkatachalam, 2008).

Our results indicate that managers may be contributing to the mispricing of investors through earnings management. The difference found in the companies' earnings management levels between those that practice and those that do not practice market timing behavior points to a positive relationship between equity market timing and earnings management. Both strategies can be used opportunistically. Therefore, to exploit opportunity windows, companies manage their earnings to increase their accounting profit by disclosing better-than-real performance to the market. After that, these companies issue shares, taking advantage of the overvalued price or undervalued funding cost, to the detriment of investors' expectations.

Higher earnings management in the quarters around the issuance of new shares may increase the share price and, consequently, the amount of proceeds raised (Chen et al., 2011; Domingos et al., 2017; Gomes et al., 2019; Maatougui & Halioui, 2019; Premti & Smith, 2020). Although the results do not allow concluding whether the companies obtained a larger of resources practicing these strategies, the evidence that earnings management has motivations that come from the capital market corroborates studies such as Healy and Wahlen (1999), Dechow and Skinner (2000), Chen et al. (2011), and Domingos et al. (2017). The findings that market timing behavior can serve as motivation for earnings management in Brazil, with the two practices being related, mean this study makes a unique contribution to improve understanding of the interplay of the market and Brazilian companies' behavior.

Table 4. Regression and hypothesis test results: Regression of the difference in the level of earnings management around the stock issue period — timers versus non-timers.

	Equation (6)					
	EM_1 Modified Jones			EM_2 Modified Jones with ROA		
	Coef.	z-statistic	p-value	Coef.	z-statistic	p-value
Timer	-0.012	-2.05	0.041**	-0.012	-2.05	0.040**
Issuance	0.003	0.74	0.461	0.003	0.85	0.394
(Timer x Issuance)	0.015	2.11	0.035**	0.013	1.98	0.048**
Lev	-0.008	-0.77	0.443	-0.004	-0.35	0.729
ROA	0.069	2.18	0.029**	0.010	0.30	0.762
Size	-0.005	-3.67	0.000***	-0.005	-3.89	0.000***
Grow	-0.009	-2.33	0.020**	-0.007	-1.85	0.064*
Constant	0.081	4.01	0.000***	0.085	4.21	0.000***
N		2,009			2,009	
Wald Prob > Chi^2		0.000***			0.000***	
R^2 overall		3.41%			3.35%	
R^2 between		10.34%			11.92%	
R^2 within		1.90%			1.48%	
VIF Maximum		1.71			1.71	
Estimation Method		Random Effects			Random Effects	
F-Test (all u_i=0)		6.77			6.98	
Prob > F		0.000***			0.000***	
Breusch-Pagan Test		585.63			615.03	
Prob > $Chibar^2$		0.000***			0.000***	
Hausman Test		3.75			5.33	
Prob > Chi^2		0.710			0.502	

Note. EM_1 = earnings management estimated using the Modified Jones model. EM_2 = earnings management estimated using the Modified Jones model with ROA. Timer = dummy variable that assumes value equal to 1 for companies that used the market timing (only when share issue occurred after positive abnormal returns and before negative abnormal returns considered a window of 12 months), and 0 otherwise. Issuance = dummy variable that assumes value equal to 1 in the quarters around the SEO (in the quarter of issue, the two previous quarters and the quarter after the issue, totaling four quarters), and 0 otherwise. (Timer x Issuance) = dummy variable that assumes value equal to 1 in the quarters around the SEO for companies that used market timing, and 0 otherwise. Lev = leverage. ROA = return on assets. Size = size. Grow = sales growth. Rejection of the null hypotheses: *** significance at 1%; ** significance at 5%; * significance at 10%.

Robustness checks

We carried out two robustness tests. First, we used a different time window (a six-month window) to classify companies that practiced equity market timing and those that did not. This minimizes a possible methodological limitation related to the use of only one window of time. We considered just windows of less than a year, corroborating evidence that windows of opportunity are temporary and short-term (Alti, 2006; Gomes et al., 2019). Second, we added the interaction variable (*Timer x Issuance x ROA*) to identify whether companies with more earnings management use market timing by disclosing higher profits and profitability since they can also manage to decrease reported earnings.

Table 5 shows the results (Equation 6) with the *Timer* variable being calculated considering a window of six months (+6, -6), using the same methodology described in section 3.1. We have 13 timers and 38 non-timers in the six-month window (the difference is two firms compared to the 12-month window). *Timer* and *Issuance*'s interaction variable coefficient remains positive in the two models, significant at 10% in estimating random effects. Although the evidence is not extremely strong, the results converge to those presented in Table 4 and accept the hypothesis (H_1).

Table 5. Robustness analysis: regression of the difference in the level of earnings management around the stock issue period — timers versus non-timers, classified considering a window of six months (+ 6, -6).

	Equation (6)					
	EM_1 Modified Jones			EM_2 Modified Jones with ROA		
	Coef.	z-statistic	p-value	Coef.	z-statistic	p-value
Timer	-0.008	-1.23	0.220	-0.008	-1.25	0.211
Issuance	0.003	0.94	0.348	0.004	1.05	0.293
(Timer x Issuance)	0.013	1.89	0.058*	0.012	1.77	0.077*
Lev	-0.007	-0.63	0.528	-0.002	-0.21	0.832
ROA	0.069	2.16	0.031**	0.010	0.30	0.763
Size	-0.005	-3.67	0.000***	-0.005	-3.89	0.000***
Grow	-0.009	-2.32	0.020**	-0.007	-1.85	0.064*
Constant	0.081	3.89	0.000***	0.085	4.09	0.000***
N		2,009			2,009	
Wald Prob > Chi^2		0.000***			0.000***	
R^2 overall		2.63%			2.57%	
R^2 between		6.32%			7.92%	
R^2 within		1.88%			1.46%	
VIF Maximum		1.65			1.65	
Estimation Method		Random Effects			Random Effects	
F-Test (all u_i=0)		6.74			6.95	
Prob > F		0.000***			0.000***	
Breusch-Pagan Test		675.68			705.61	
Prob > $Chibar^2$		0.000***			0.000***	
Hausman Test		2.27			3.79	
Prob > Chi^2		0.894			0.705	

Note. EM_1 = earnings management estimated using the Modified Jones model. EM_2 = earnings management estimated using the Modified Jones model with ROA. Timer = dummy variable that assumes value equal to 1 for companies that used the market timing (only when share issue occurred after positive abnormal returns and before negative abnormal returns considered a window of six months), and 0 otherwise. Issuance = dummy variable that assumes value equal to 1 in the quarters around the SEO (in the quarter of issue, the two previous quarters, and the quarter after the issue, totaling four quarters), and 0 otherwise. (Timer x Issuance) = dummy variable that assumes value equal to 1 in the quarters around the SEO for companies that used market timing, and 0 otherwise. Lev = leverage. ROA = return on assets. Size = size. Grow = sales growth. Rejection of the null hypotheses: *** significance at 1%; ** significance at 5 %; * significance at 10%.

The variable (*Timer x Issuance*) indicates that companies that practice equity market timing feature higher earnings management levels around the issue period. When replacing (*Timer x Issuance*) with the interaction variable (*Timer x Issuance x ROA*) in the initial model, we get to identify if companies with more earnings management use the market timing through the disclosure of higher profits and profitability. Table 6 shows that this happens: the ROA of companies that practice equity market timing has a positive and significant relationship (at the level of 5%) with the EM variable around the issuance period of SEOs (on both Modified Jones and Modified Jones with ROA models).

In addition to the inclusion of the variable (*Timer x Issuance x ROA*), we include two other variables, (*Timer x ROA*) and (*Issuance x ROA*). (*Timer x ROA*) indicates the timers' profitability while the (*Issuance x ROA*) shows the profitability around the issuance period of non-timers. This is necessary for the model to capture specific movements of the different interaction variables.

Table 6 corroborates the previous results. It shows that the timers' profitability (*Timer x ROA*) is positively related to earnings management. In the periods around the issue of shares, this relationship intensifies (*Timer x Issuance x ROA*). According to Chen et al. (2011), the most profitable companies may release more profit in the window of opportunity to boost stock prices; however, low-profit companies may not provide more profits, although they have the same motivation. The results allow us to infer that earnings management increases the timers' profit in the issue period to exploit opportunity windows since timers are, on average, more profitable companies.

Table 6. Robustness analysis: relationship between the level of earnings management and the ROA around the stock issue period — timers versus non-timers.

	Equation (6) modified					
	EM_1 Modified Jones			EM_2 Modified Jones with ROA		
	Coef.	z-statistic	p-value	Coef.	z-statistic	p-value
Timer	-0.016	-2.50	0.012**	-0.016	-2.52	0.012**
Issuance	0.003	0.56	0.572	0.003	0.58	0.560
(Timer x Issuance)	0.003	0.30	0.762	0.002	0.18	0.860
(Timer x Issuance x ROA)	0.377	1.98	0.048**	0.382	2.02	0.044**
(Timer x ROA)	0.139	2.09	0.037**	0.141	2.14	0.032**
(Issuance x ROA)	0.022	0.24	0.807	0.036	0.39	0.696
Lev	-0.007	-0.69	0.493	-0.003	-0.27	0.790
ROA	0.0123	0.33	0.743	-0.049	-1.29	0.199
Size	-0.005	-3.81	0.000***	-0.005	-4.03	0.000***
Grow	-0.009	-2.45	0.014**	-0.007	-1.98	0.048*
Constant	0.086	4.19	0.000***	0.090	4.39	0.000***
N		2,009			2,009	
Wald Prob > Chi^2		0.000***			0.000***	
R^2 overall		3.95%			3.97%	
R^2 between		9.96%			11.83%	
R^2 within		2.61%			2.24%	
VIF Maximum		2.91			2.91	
Estimation Method		Random Effects			Random Effects	
F-Test (all u_i=0)		6.80			7.01	
Prob > F		0.000***			0.000***	
Breusch-Pagan Test		585.23			614.42	
Prob > $Chibar^2$		0.000***			0.000***	
Hausman Test		5.14			6.47	
Prob > Chi^2		0.822			0.693	

Note. EM_1 = earnings management estimated using the Modified Jones model. EM_2 = earnings management estimated using the Modified Jones model with ROA. Timer = dummy variable that assumes value equal to 1 for companies that used the market timing (only when share issue occurred after positive abnormal returns and before negative abnormal returns considered a window of 12 months), and 0 otherwise. Issuance = dummy variable that assumes value equal to 1 in the quarters around the SEO (in the quarter of issue, the two previous quarters, and the quarter after the issue, totaling four quarters), and 0 otherwise. (Timer x Issuance) = dummy variable that assumes value equal to 1 in the quarters around the SEO for companies that used market timing, and 0 otherwise. (Timer x Issuance x ROA) = return on assets in the quarters around the SEO for companies that used market timing. (Timer x ROA) = return on assets for companies that used market timing. (Issuance x ROA) = return on assets in the quarters around the SEO for companies that did not use market timing. Lev = leverage. ROA = return on assets. Size = size. Grow = sales growth. Rejection of the null hypotheses: *** significance at 1%; ** significance at 5 %; * significance at 10%.

FINAL CONSIDERATIONS

This paper investigated whether companies that practice equity market timing in issuing shares have higher earnings management levels around the issuance period than companies that do not use this strategy in Brazil. After separating timers from non-timers and calculating earnings management measurement, we tested the research proposition using an econometric model with panel data.

We verified that companies that practice the market timing behavior manage earnings more than companies that do not. Timers increase the accounting profit in an attempt to exploit opportunity windows. This happens in the quarters around the period of the stock offerings. Based on this evidence, we concluded that earnings management is intensified when the company aims to exploit opportunity windows in the stock market (market timing behavior).

Earnings management can benefit the company by attracting financial resources by offering shares to the detriment of initial investors' expectations of returns. Companies have manifest incentives to manage their earnings, to induce investors to pay an overvalued stock price, and market timing is one of these incentives. The intention to take some temporary opportunity window can fuel managers to increase the earnings management levels. Managers can manipulate the accounting information through their discretionary power, giving various stakeholders (such as investors and shareholders) a distorted perception of reality, at least for a short time. This research reinforces the need for a careful analysis of the company's profits by investors, analysts, auditors, and regulators.

This paper presents the relationship between market timing and earnings management as two related corporate strategies. It does not enter into the discussion of good administrative practices, compliance, and governance, or how bad or good these behaviors are for various market players, especially shareholders and investors. We recommend such analyses as suggestions for future work.

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Data Availability

The authors chose not to share their database, and claim that they do so in view of the fact that earnings management and market timing can be considered undesirable (non-competitive) practices by the market and, as the database is restricted (small), according to the authors they may be able to identify the companies, generating negative externalities for the companies that carry out such practices and, consequently, legal risk to the authors.

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