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Earnings management and judicial recovery: evidence for brazilian companies

Gestión de ganancias y recuperación judicial: evidencia para empresas brasileñas

Gerenciamento de resultados e recuperação judicial: evidências para empresas brasileiras

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Abstract

Purpose: This study investigated the relationship between judicial recovery and insolvency with the Real Earnings Management (REM) level of publicly traded Brazilian companies in the period 2016-2020.

Methodology: The estimated econometric model was panel data regression. The dependent variable was the level of REM measured based on Roychowdhury (2006), which estimates the manipulation of real activities through the analysis of abnormal movements in operating cash flow, discretionary expenses and production costs. The sample collected from 2016 to 2020 consists of 723 non-financial companies.

Results: As main results, the study was able to demonstrate that there is an inverse relationship between judicial recovery and insolvency with earnings management. In other words, companies that are in judicial recovery or insolvent tend to have less earnings management. The findings of this research suggest that managers of companies undergoing judicial recovery have less incentive to engage in discretionary practices, as they are thus able to highlight their financial difficulties and obtain the judicial benefits of the process.

Contributions of the Study: Although many studies evaluate the factors that influence earnings management, this work seeks to contribute to the study of accounting earnings management and uses an operational proxy, associating it with companies undergoing judicial recovery. Furthermore, with evidence of less earnings management by these companies, there is a possible improvement in the shareholders' perspective regarding the future of the company's finances, thus also contributing to investors' decision-making.

Keywords: Earnings management, performance, judicial recovery, Brazilian companies.

Resumen

Objetivo: Este estudio investigó la relación entre la recuperación judicial y la insolvencia con el nivel de Real Earnings Management (REM) de empresas brasileñas que cotizan en bolsa en el período 2016-2020.

Metodología: El modelo econométrico estimado fue el de regresión de datos de panel. La variable dependiente fue el nivel de REM medido con base en Roychowdhury (2006), que estima la manipulación de actividades reales a través del análisis de movimientos anormales en el flujo de caja operativo, gastos discrecionales y costos de producción. La muestra recogida de 2016 a 2020 está formada por 723 empresas no financieras.

Resultados: Como principales resultados, el estudio pudo demostrar que existe una relación inversa entre la recuperación judicial y la insolvencia con la gestión de resultados. En otras palabras, las empresas que se encuentran en recuperación judicial o insolventes tienden a tener una menor gestión de ganancias. Los hallazgos de esta investigación sugieren que los gerentes de empresas en proceso de recuperación judicial tienen menos incentivos para involucrarse en

prácticas discrecionales, ya que así pueden resaltar sus dificultades financieras y obtener los beneficios judiciales del proceso.

Contribuciones del Estudio: Si bien numerosos estudios evalúan los factores que influyen en la gestión de resultados, este trabajo busca contribuir al estudio de la gestión de resultados contables y utiliza un proxy operativo, asociándolo a empresas en proceso de recuperación judicial. Además, al evidenciarse una menor gestión de ganancias por parte de estas empresas, existe una posible mejora en la perspectiva de los accionistas sobre el futuro de las finanzas de la empresa, contribuyendo así también a la toma de decisiones de los inversores.

Palabras clave: Gestión de resultados, desempeño, recuperación judicial, empresas brasileñas.

Resumo

Objetivo: Este estudo investigou a relação entre recuperação judicial e a insolvência com nível de *Real Earnings Management* (REM) de empresas brasileiras de capital aberto no período 2016-2020.

Metodologia: O modelo econométrico estimado foi a regressão de dados em painel. A variável dependente foi o nível de REM mensurado a partir de Roychowdhury (2006), que estima a manipulação de atividades reais por meio da análise das movimentações anormais de fluxo de caixa operacional, despesas discricionárias e custos de produção. A amostra coletada no período de 2016 a 2020 é composta por 723 empresas não financeiras.

Resultados: Como principais resultados, o estudo conseguiu evidenciar que existe uma relação inversa entre a recuperação judicial e a insolvência com o gerenciamento de resultados. Ou seja, companhias que estão em recuperação judicial ou insolventes tendem a ter um menor gerenciamento de resultados. Os achados desta pesquisa sugerem que os gestores de empresas em recuperação judicial têm menos incentivos para se envolverem em práticas discricionárias, pois, assim, conseguem evidenciar sua dificuldade financeira e obter os benefícios judiciais do processo.

Contribuições do Estudo: Embora muitos estudos avaliem os fatores que influenciam o gerenciamento de resultados, este trabalho busca contribuir com o estudo de gerenciamento de resultados contábeis e utiliza uma proxy operacional, associando-a com empresas em recuperação judicial. Além disso, com evidências de um menor gerenciamento de resultados por essas empresas, há uma possível melhora na perspectiva dos acionistas quanto ao futuro das finanças da empresa, e assim, também contribuindo para a tomada de decisão dos investidores.

Palavras-chave: Gerenciamento de resultados, desempenho, recuperação judicial, empresas brasileiras.

1 Introduction

Several international and national studies relate Corporate Governance practices with the economic and financial performance of companies. Most of the time, the prospect of

investigations on Corporate Governance is related to agency problems arising from the separation of ownership and its control (Sousa, Bortoli & Soares, 2023).

Along these lines, Fields, Lys & Vicent (2001) argue that financial statements prepared by managers with greater knowledge about the company's performance can favor their own interests to the detriment of the interest of investors, leading to the so-called Real Earnings Management (REM).

In recent years, REM has been investigated from the perspective of the financial accounting literature, examining issues such as managerial action plans, influence of institutional factors, price reductions, asset sales, overproduction or share buybacks (Ali & Zhang, 2015; Coelho et al., 2016; Gonçalves et al., 2022; Osma et al., 2022; Roychowdhury, 2006). Evidence suggests that results can be managed by modifying factors such as the structure of investment, operation, and financing transactions (Osma et al., 2022; Vorst, 2016).

With regard to REM estimation, Jones' (1991) seminal model calculates non-discretionary accruals, which makes it possible to analyze the estimates, explaining the variation in revenue and investments in permanent assets. In the same vein, Kang and Sivaramakrishnan (1995), better known as the KS model, estimate discretionary accruals, enabling a better identification of fractions that present a high level of managed *accruals*, being able to reduce the problem of omitted variables by including additional variables, such as cost of goods sold, operating expenses and accounts receivable.

Roychowdhury (2006) proposes an estimation for REM that is based on the concept of operational results management. The author proposes calculation by means of abnormal cash flow operations, abnormal production costs, and abnormal discretionary expenses. And, with regard to companies with financial difficulties, some evidence reveals that these companies obtain greater incentives to carry out discretionary practices and earnings management (An et al., 2016; Coelho et al., 2016; Fiirst et al., 2020; Queiroz et al., 2018).

As for the studies that analyzed earnings management and judicial reorganization jointly, Ena et al. (2016) stand out, which analyzed companies in the United Kingdom and show that companies tend to manage profits upwards in the four years prior to filing for bankruptcy. The main mechanisms for this manipulation are accounting accruals and the implementation of real operational actions that deviate from normal practice.

In the Brazilian context, Queiroz et al. (2018), using companies listed on B3 as a sample, reported that companies in financial difficulties are more likely to manage their results than companies that are in a comfortable financial situation. And in a complementary study, Fiirst et al. (2020) show that the earnings management of insolvent companies is decreasing, since, three to four years before the filing for judicial reorganization or bankruptcy, managers try to mask the financial difficulties, however, closer to the event. Especially, in the last year, companies seek to show financial suffering in order to formalize the request for judicial reorganization or bankruptcy. In this context, the work aims to answer the following research question: **Is there a relationship between judicial reorganization and insolvency at the Real Earnings Management (REM) level of Brazilian publicly traded companies?**

Thus, the study aims to investigate the relationship between judicial reorganization and insolvency at the Real Earnings Management (REM) level of Brazilian publicly traded companies in the period from 2016 to 2020. The study advances in relation to previous studies carried out on the subject through the way of estimating the management of operating results, as proposed by Roychowdhury (2006). In addition, the study differs by analyzing in the same study, how companies that are in judicial reorganization and those that are insolvent tend to manage their results, in a period of analysis that is longer than previous studies and that covers the pandemic. In addition, the results are controlled by variables that were not considered in

previous studies, such as cash flow and net loss, unlike Queiroz et al. (2018) and Fiirst et al. (2020).

The study is relevant because it indicates, in the context of Brazilian companies, that companies that are under judicial reorganization or that are in insolvency tend to have a lower management of results. In addition, the study contributes by using the proposed model so that managers can make financial decisions that reduce the risk of filing for judicial reorganization or, as a last resort, the closure of their activities, avoiding generating an even more serious increase in unemployment in the country, as well as informality in the labor market.

The results of the study may also indicate to managers, especially judicial administrators, that during periods of insolvency or judicial reorganization, the adoption of practices aimed at minimizing earnings management is even more relevant to reestablish shareholder confidence and improve the company's financial prospects in the future. By encouraging the adoption of mechanisms that reduce earnings management, companies can increase their level of corporate governance and thus increase their stability in the market over time.

In addition, investors can also use the results presented, since, although companies that are insolvent or that are in the process of judicial reorganization usually present themselves with riskier investments, the fact that they have a lower management of results can be understood as a mitigating factor of the risks of investments related to these assets. The results may also motivate the formulation of new public policies aimed at reducing the management of companies' results and thus attracting more investors to the national market.

2 Literature Review

2.1 Results Management

Financial statements provide a detailed view of the financial operations of companies, enabling a comprehensive assessment of the performance and, consequently, the financial health of organizations. Thus, due to the need to control the company's internal economic fluctuations, one of the most reliable sources that accurately represent the economic phenomena commonly used is the accounting information generated by the accountants responsible for it (Oliveira et al., 2000). In addition, not only limited to the possibilities aimed at managing the financial health of organizations and managing their performance over the period stipulated in the analysis, financial statements play a key role in financial transparency before stakeholders. In this context of management and income statement, organizations can resort to strategies to deliberately influence the presentation of accounting figures, with the aim of achieving specific goals (Oliveira et al., 2000).

According to Schipper (1989), one of the forerunners of the theme that deals with the management of results, the deliberate intervention of the managers or accountants responsible for the companies in the financial statements has the purpose of disclosing to the interested public certain targeted improvements and possible numerical and result distortions. This deliberate intervention in the financial statements has as its main objective to create results that are distorted from the reality performed by the companies in an attempt to give better visibility through the disclosure of internal data to the external world. With optimized results, it becomes possible to make it possible to make the company more attractive to shareholders and possible future investors (Watts & Zimmerman, 1986).

Healy and Wahlen (1999) state that company managers can use their own judgment and directed to the benefit in order to modify financial reports and, subsequently, financial

statements. The remodeling of the results goes beyond the simplistic idea of faceting the statements in order to generate a better understanding and internal monitoring, having as an additional vision the improvement of financial attractiveness, the increase of the company's commercial robustness and the subsequent generation of possible speculations that can increase internal capital.

According to Martinez (2001), earnings management is based on the need for managers to manipulate accounting results in order to increase or decrease profits, reduce variability, as well as reduce current profits for the sake of future profits. In his study, the author demonstrates that companies that practice management through accruals are able to trick, in the short term, external stakeholders in relation to the financial statements and the market, but lose their prestige and are harshly punished in the medium and long term. Even though this practice can generate problems for managers and for the companies that practice it, it is a legal practice and does not constitute criminal activities with the intention of defrauding results (Gunny, 2005; Martinez, 2013).

In 1990, Han and Wang (1998) conducted a study of U.S. oil companies, which expected to make a higher profit during the Persian Gulf crisis due to the sudden increase in the prices of goods and services. It was found that oil companies used targeted adjustments (accruals) to decrease their quarterly profits and thus avoid costs due to tax increases and unnecessary political attention. This study demonstrated that the use of adjustments is not only linked to the attempt to generate better results, but also to adapt the company's present reality for financial and fiscal gains in the future.

In order to demonstrate the possibility of earnings improvement by high-ranking managers in companies, the authors Assenso-Okofu et al. (2021) sought to prove the relationship between CEO compensation and earnings management by compiling 1800 observations of companies during the period from 2005 to 2010, using multiple regression analysis and performing other econometric tests. The authors claim to have found a direct relationship between the practice of earnings management and the incremental compensation of CEOs, leading to the need for aligned corporate governance without distorted understandings.

Souza et al. (2022), in a study for Brazilian companies, analyzed the impact of the IFRS15 standard on earnings management. The findings revealed that there is evidence of a reduction in the quality of accruals of companies in the technology sector, as well as an increase in earnings management in general, especially in the industrialized products sector. Thus, the authors concluded that there was no evidence that the standards improved the accounting disclosure of Brazilian companies.

In order to enable the reduction of results management in companies, the practice of corporate governance should be strengthened with the purpose of enhancing internal policies and non-dynamic regulations that prevent the modification of financial results with particular inclinations of the responsible managers. According to Barros et al. (2013), the managers responsible for disclosing financial results are committed to issuing them with the highest possible reliability in order to ensure assertive and reliable decision-making. Even if this is the expected reality, managers are subject to decision-making based on their own interests, thus corroborating the idea of strengthening corporate governance in order to generate better reliability and future potential of the company (Xie et al., 2003).

Thus, it is essential to deepen the understanding of the factors that motivate companies to adopt earnings management practices, which may include the postponement of expenses until the anticipation of revenues, aiming to mitigate financial results over time. Some studies have highlighted the influence of financial hardship as one of the main drivers of these strategies.

2.2 Judicial Reorganization

Studies on judicial reorganization and bankruptcy have stood out for helping companies that are in financial difficulties to get back on their feet and not cause a socioeconomic impact in their place of origin. According to Ross et al. (1995), the situation of financial difficulty occurs when the operating cash flows are not sufficient to allow the payment of current obligations. It is estimated that there will be between 1,297 and 1,313 requests for judicial reorganizations filed in 2020 by Brazilian companies (Mattos & Martins Proença, 2021). With regard to bankruptcy filings, there was a jump of 12.7% compared to the number of filings in 2019 (Boa Vista, 2020).

Business managers are tasked with leading their respective companies, following primary objectives such as the possibility of achieving profits and specific financial objectives, but this scenario is not always observed in the most diverse private initiatives and their subsequent sectors of activity. To the detriment of the economic difficulties faced by companies, their state of insolvency is subject to the possibility of judicial reorganization or bankruptcy (Guimarães & Moreira, 2008; Opler & Titman, 1994).

For Kayo and Famá (1996), the concept of financial crisis faced by companies and the possibility of insolvency is commonly confused. The financial crisis is linked to the devaluation of assets and the decrease in the liquidity of balance sheets. Insolvency, on the other hand, is the total inability to pay obligations to creditors, in which case the company may enter into judicial reorganization or bankruptcy (Altman, 1993; Guimarães & Moreira, 2008). Judicial reorganization occurs when the company experiences serious financial difficulties, but has the possibility of reorganizing. A company is officially bankrupt when it files for bankruptcy in federal or state court with no possibility of reorganization (Brigham et al., 2001).

Nigam and Boughanmi (2017) demonstrate in their study that the identification by managers in advance of negative signs linked to financial difficulties, through the analysis and monitoring of the main financial and market indicators, enables the reversal of the situation of the imminent feasible crisis. With preventive and assertive actions, based on the analyses mentioned above, the risk of requests for judicial reorganization and insolvency naturally decreases as obligations are fulfilled and financial "health" is restored (Sayari & Mugan, 2020).

For the authors Inekwe et al. (2018), accounting indicators and market variables have a vital value in monitoring the financial health of companies and help managers in decision-making on a daily basis. The authors demonstrate in their study that, even with daily monitoring of accounting and market indicators linked to the company and apparent growth on different fronts, internal and external factors that are not entirely predictable offer risks and must be taken into account (Sayari & Mugan, 2020). The prediction of financial difficulty is possible through the monitoring of indicators, thus enabling actions that mitigate the possible risks of insolvency (Sayari & Mugan, 2020).

With the non-resolution of the economic/financial crisis in the company and the insolvency achieved due to the total inability to settle the present debts, it becomes possible to file for judicial reorganization or the bankruptcy decree. If the option is judicial reorganization, the primary objective is to prevent the company from entering a state of bankruptcy, thus enabling the negotiation of its obligations through the preparation of a recovery plan and discharge of obligations with its creditors (Guimarães & Moreira, 2008; Opler & Titman, 1994).

According to Borges and Rech (2021), programs aimed at reversing the situation of financial difficulty in Brazilian companies do not have significant effectiveness with regard to

the settlement of debts and the payment of taxes to the state. The study prepared by the authors demonstrates the existence of flaws in the tax regularization programs, thus not offering a real possibility of protecting the company's capital and the social good of the workers dependent on it. When the company's capital is weakened and its obligations to the state, suppliers and employees are not fulfilled, the possibility of insolvency becomes a reality.

Borges and Rech (2021) and Pêgas (2017) demonstrated in their studies that companies in financial difficulties are hardly able to pay their debts through tax regularization programs. Not being able to meet the commitments and agreements arising from the recovery programs, the company is faced with the problem previously addressed concerning financial difficulties, worsening the existing situation or remaining in the same state as that prior to the entry into the program.

Tron et al. (2023) analysed a set of Italian companies not listed in Unlikely to Pay (UTP) seeking to understand the relationships between corporate governance characteristics and financial difficulty. The results show that the use of corporate governance variables – especially with regard to the CEO's tenure and stability in the composition of the board of directors – increases the accuracy of the Random Forest technique and influences the success of the company's recovery process. Benedetti e Hahn (2023) analyze the economic and financial indicators of Brazilian companies under judicial reorganization in order to identify the evolution or not in their indicators. As for the results, two of the three companies analyzed did not show little or no evolution in their indicators, indicating that, after the approval of the judicial reorganization, they did not evolve, but such result is linked to the internal and external factors in which the organization finds itself. In a complementary study, Grossert et al. (2022) reports that the main means of reorganization adopted by companies under judicial reorganization in Brazil are debt renewal operations, mergers and acquisitions, capital increases, sale of assets, and issuance of securities.

The literature points out that one of the practices that companies in judicial reorganization can seek to make up their results is results management. An et al. (2016), for a sample of 1800 UK companies, identify that companies tend to manage profits upwards in the four years prior to filing for bankruptcy. The main mechanisms for this manipulation are accounting accruals and the implementation of real operational actions that deviate from normal practice.

In the case of Brazilian companies, Queiroz et al. (2018) reported that companies in financial difficulties are more likely to manage their results than companies that are in a comfortable financial situation. In a recent study, Fiirst et al. (2020) show that the earnings management of insolvent companies is decreasing, since, three to four years before the filing for judicial reorganization or bankruptcy, managers try to mask financial difficulties. However, closer to the event, especially in the last year, companies seek to show financial suffering to formalize the request for judicial reorganization or bankruptcy. Therefore, it can be understood that, in periods prior to judicial reorganization, there is a greater propensity to manage results, while in periods when companies are in the process of reorganization, this trend is reversed.

In this sense, the work establishes the following hypotheses:

H1: Insolvent companies have greater earnings management.

H2: Companies under judicial reorganization have less management of results.

3 Methodological aspects

3.1 Survey classification and sample composition

The data were collected through the Economática platform, a tool used to access and analyze financial and economic information of organizations. In this context, a time interval from 2016 to 2020 was established as a premise for data collection. Excel was chosen for the processing of the database due to its versatile ability to manipulate information. In the aforementioned treatment, steps were carried out, such as cleaning, organization and preliminary analysis of the data, in order to ensure the consistency of the information used in the research. With the data properly treated, the collected database presented minimum conditions to be used in Stata, statistical software for data science

The sample is composed of 723 non-financial companies with the following subdivision by sector of activity: Energy Sector, 67 (9.27%); Trade, 57 (7.88%); Steel & Metallurgy, 52 (7.19%); Food and Beverages, 51 (7.05%); Construction, 49 (6.78%); Telecommunications, 46 (6.38%); Chemistry, 43 (5.95%); Textiles, 38 (5.26%); Transportation and Services, 33 (4.56%); Vehicles and Parts, 28 (3.87%); Electronics, 21 (2.90%); Oil and Gas, 18 (2.49%); Mining, 17 (2.35%); Industrial Machinery, 13 (1.80%); Agriculture and Fisheries, 12 (1.66%); Software and Data, 12 (1.66%); Pulp and Paper, 10 (1.38%); Non-Metals Mining, 9 (1.24%); and others with 147 (20.33%). Of the initial sample collected, 348 companies had their active status and 375 were canceled

3.2 Research Variables

In order to estimate the relationship between earnings management and judicial reorganization, the level of Real Earnings Management proposed by Roychowdhury (2006) was estimated. The REM was calculated by combining three proxies, namely: abnormal cash flow operations, abnormal production costs, and abnormal discretionary expenses. Each of these components will be detailed below:

Abnormal cash flow operations concern companies managing their earnings, accelerating the momentum of sales and increasing earnings, as well as offering discounts and lenient credit terms (Luo, 2019; Roychowdhury, 2006). To calculate abnormal cash flow transactions, the following regression was used:

$$AbnCFO_{ti} \frac{CSFO_t}{A_{t-1}} = \beta_0 + \beta_1 * 1/A_{t-1} + \beta_2 * (\Delta S_t/A_{t-1}) + \varepsilon_t$$

Where CFO t is the cash flow from operations in year t; A t –1 is the lag of total assets in year t; S t is the total sales in a year t; and Δ S t is the change in total sales during year t.

Regarding abnormal production costs, managers can also manipulate earnings by reducing the cost of goods sold by producing more products than necessary in order to allocate costs over a large number of units, which increases the profit margin (Roychowdhury, 2006). To calculate the abnormal production costs, the following cross-sectional regression models were used:

$$AbnPROD_{ti} \frac{PROD_t}{A_{t-1}} = \beta_0 + \beta_1 * 1/A_{t-1} + \beta_2 * (S_t/A_{t-1}) + \beta_3 * (\Delta S_t/A_{t-1}) + \beta_4 * (\Delta S_t/A_{t-1}) + \varepsilon_t$$

Where: $PROD_t$ are the costs of production in the period (t); Δs_{t-1} is the difference between total sales in current and previous years; and the other variables are similar to those already defined in equation 1.

When it comes to abnormal discretionary spending, the conventional way to manipulate profits is to manage expenses such as research and development (R&D), advertising, sales and administration, training, and employee maintenance. In this case, managers can, for example, delay R&D expenses or reduce advertising spending to also reduce cash outflow and increase profit. The equation below drove the calculations:

$$AbnDISEXPEN_{ti} \frac{EXPEN_t}{A_{t-1}} = \beta_0 + \beta_1 * 1/A_{t-1} + \beta_2 * (S_{t-1}/A_{t-1}) + \varepsilon_t$$

Where: $DISEXPEN_t$ are discretionary expenses; and the other variables are those defined in equation 1. Since the consolidated REM is used to measure the dependent variable, the methodology of Roychowdhury (2006) is used to calculate the REM, according to the following equation:

$$REM_{t,i} = Abn CFO_{t,i} * + Abn DISEXP_{t,i} ** - Abn PROD_{t,i} ***$$

Where: $REM_{i,t}$ is the comprehensive REM in the firm (i) in the year (t); and $Abn CFO_{t,i}$ are the abnormal cash flow transactions in the firm (i) in the year (t), which is the residuals calculated in equation 1. In addition, $Abn DISEXP_{t,i}$ is the abnormal discretionary expense in the company (i) in the year (t), which is the residuals calculated in equation (2). Finally, $Abn PROD_{t,i}$ is the abnormal cost of production in firm (i) in year (t), which is the residue calculated in equation 3.

Table 1 below shows the variables used in the research.

Table 1
Research variables

Variable	Metric	Expected ratio	Authors	Source of collection
Dependent				
REM Real Earnings Management	$REM_{t,i} =$ $AbnCFO_{t,i} * + AbnDISEXP_{t,i}$ $** - AbnPROD_{t,i} ***.$	-	Luo (2019); Roychowdhury (2006);	Economática
Independent				
Judicial Reorganization (Recovery)	Dummy that is equal to one (1) for companies under judicial reorganization and zero (0) otherwise	Positive		CVM

Insolvency	Dummy with a value of "1" when the company's Shareholders' Equity is negative and "0" for the opposite	Negative	Ross et al. (2011) and Coelho et al. (2017)	Economática
Control				
CFO	Cash flow from operations for year t scaled by total assets at the beginning of year t.	Positive	Dal Magro et al. (2019); Roychowdhury (2006).	Economática
TAM	Log of total assets in year t.	Positive	Dal Magro et al. (2019); Kim et al. (2019).	Economática
CRESC	$(Total_{it} \text{ Asset} - Total_{it-1} \text{ Asset}) / Total \text{ Asset}_{it-1}$	Positive	Coelho et al. (2017)	Economática
ALAV _{it-1}	Total debt weighted by total assets at the beginning of year t.	Positive	Dal Magro et al. (2019).	Economática
ROA _{it-1}	Return on assets at the beginning of year t.	Negative	Dal Magro et al. (2019);	Economática
LOSS _{it-1}	Dummy variable that is equal to one (1) for companies with a net loss for the year t-1 and zero (0) otherwise.	Negative	Dal Magro et al. (2019).	Economática

Source: Survey data.

The data referring to the companies under judicial reorganization were extracted from their reference forms made available at the Brazilian Securities and Exchange Commission (CVM). Regarding the classification of insolvent companies, the criterion used is also described by Ross et al. (2011) and Coelho et al. (2017), who classify as insolvent companies that have negative equity, that is, the value of the assets is lower than the value of the debts. In this sense, companies that have an increase in their difficulty in meeting their financial obligations to the point that they do not have the capacity to pay them in full are characterized as insolvent (Ross et al, 2011).

For this study, two unbalanced panel regression models were constructed. The proposed model 1, described below, sought to investigate whether the judicial reorganization process influences the management of real results (REM).

$$REM = \beta_0 + \beta_1 \text{ Judicial reorganization} + \beta_2 \text{ Alav}_{it-1} + \beta_3 \text{ ROA}_{it-1} + \beta_4 \text{ Loss}_{it-1} + \beta_5 \text{ CFO} + \beta_6 \text{ Cresc} + \beta_7 \text{ firmsize} + \text{ Error term}$$

Model 2, on the other hand, explains whether insolvency influences the level of management of firms' real results.

$$REM = \beta_0 + \beta_1 \text{Insolvency} + \beta_2 \text{Alav it-1} + \beta_3 \text{ROA it-1} + \beta_4 \text{Loss it-1} + \beta_5 \text{CFO} + \beta_6 \text{Cresc} + \beta_7 \text{firm size} + \text{Error term}$$

4 Survey Results

4.1 Descriptive Statistics

Table 2 presents the description of the research variables, containing means, standard deviation, minimum and maximum values for companies in the process of judicial reorganization and companies that have not entered into judicial reorganization.

Table 2
Descriptive Statistics

Companies without judicial reorganization						Companies under judicial reorganization				
VAR	Note	Mean	Std. Dev.	Min	Max	Note	Mean	Std. Dev.	Min	Max
REM	1,244	-0.31918	45.0256	-1021.745	910.802	83	-2.002884	7.631331	-7.729263	47.37716
TAM	1,735	14.0344	2.81001	3.96706	18.4379	105	13.60033	1.527186	10.39305	18.22432
ALAV	1,493	1.67420	7.18738	.0005066	101.888	99	2.163068	1.636511	.4433084	10.18293
CRES	1,493	5.00460	85.0582	0	2269.41	102	1.170921	1.833136	0	14.32654
ROA	1,735	3.15778	137.118	-32.63997	5711.03	105	-1.1500974	1.80853	-10.71322	14.53854
CFO	1,656	3.3390	107.241	-1152.784	3539.51	105	.0043535	.0870401	-.5941728	.2914237

Source: Survey data.

Regarding the number of observations of the Real Earnings Management (REM) variable, companies that are not under judicial reorganization presented 1,244 and those that are under judicial reorganization totaled 83. After the analysis of the REM variable, it was found that companies that are not under judicial reorganization presented an average of -0.31918 and those that are under judicial reorganization, -2.002884. Thus, companies under judicial reorganization have a lower average of Real Earnings Management.

In congruence with the study by Gu et al. (2005), leverage is more present in companies that are in judicial reorganization compared to those that are not in this situation. With regard to the TAM (Size) variable, the result showed a higher average in companies that are not in judicial reorganization and lower in those that are in this situation, with a value of 14.03 in the former and 13.60 in those that are in judicial reorganization.

With regard to the performance variables, ROA and Growth, the companies in the process of judicial reorganization presented lower averages than the sample of companies that did not file for judicial reorganization. The ROA variable showed an average of 3.15778 in companies that are not in this process and 1.80 in those that are in recovery, thus corroborating the results found by Dal Magro et al. (2019).

The Growth variable showed a higher average value in companies that are not in judicial reorganization and lower in those that are in the process of reorganization. Companies that are not in this situation had an average of 5.00460 and those that are had an average of 1.17. These results show that companies that are under judicial reorganization have lower growth compared to healthy companies.

4.2 Correlation Analysis

For this study, the correlation scale developed by Dancey and Reidy (2005) is considered, according to which, if the result obtained is from 0.1 to 0.3, there is a weak correlation, from 0.4 to 0.6, a moderate correlation, and from 0.7 to 0.9, the correlation is considered strong (Akoglu, 2018).

Table 3

Correlation Analysis

	REM	Prj	TAM	ALAV	CRES	ROA	CFO	Loss
REM	1.0000							
TAM	-0.0673*	-0.0130	1.0000					
ALAV	0.0004	0.0124	-0.1997*	1.0000				
CRES	-0.5714*	-0.0078	-0.0282	-0.0050	1.0000			
ROA	-0.0051	-0.0041	-0.0820*	-0.0097	0.0042	1.0000		
FCO	0.4524*	-0.0052	0.0142	-0.0035	0.6785*	-0.0007	1.0000	

Source: Survey data.

The REM variable showed a negative and significant correlation with the TAM (Size) variable, corroborating the results obtained by Richardson (2000). The REM (earnings management) variable did not show any correlation with the Alav (Leverage) variable. On the other hand, the REM variable showed a negative and significant correlation with Cres (Growth), which is a different result from that found by Richardson (2000) and Gu et al. (2005).

The REM (earnings management) variable showed a positive and significant correlation with the Cash flow variable, demonstrating that the more results are managed, the higher your cash flow will be. This result corroborates previous studies by Dal Magro et al. (2019), Guo et al. (2015) and Roychowdhury (2006).

4.3 Estimated Models

To define the models, a normality analysis was performed. In addition, the Variance Inflation Factor (VIF) test was performed, which showed a mean below 10 for all variables, indicating that there is no multicollinearity among the variables. The results of the Hausman tests showed a fixed effect for both models. For the Wald and Wooldridge tests, heteroscedasticity corrected by the robust command was identified.

Table 4
Estimated Models

Model	Recovery	Insolvency
PRJ	-1.0792*	
	(-1.74)	
INS		-1.0002**
		(-2.40)
TAM	-1.2122***	-1.2533***
	(-2.68)	(-2.75)
ALAV	0.3795***	0.3817***
	(4.41)	(4.51)
CRES	0.1209***	0.1210***
	(112.34)	(112.38)
ROA	1.2216***	1.2220***
	(2.83)	(2.83)
FCO	-1.4865***	-1.4873***
	(-282.82)	(-285.68)
LOSS	-0.1295	-0.0490
	(-0.71)	(-0.28)
_cons	16.6409**	17.3218**
	(2.50)	(2.58)
N	1134	1134
Chow	0.0000	0.0000
F	0.0000	0.0000
Wooldridge	0.0000	0.0000
Wald	0.0000	0.0000

Note: a) The Standard Error is in parentheses; b) (*) statistically significant at the level of 10%; (**) statistically significant at the level of 5%; (***) statistically significant at the level of 1%; c) the VIF test had a coefficient lower than 10 for all variables.

Source: *Survey data.*

Model 1 measures the relationship between the REM variable and the judicial reorganization process, observing a negative and significant relationship for the variable between the results management proxy and the judicial reorganization process, corroborating hypothesis 1 of this research, which indicates that companies, when filing for judicial reorganization, manage fewer results. especially the operational ones. The findings of this research express that managers of companies under judicial reorganization have fewer incentives to engage in discretionary practices, as they are able to evidence their financial difficulty and obtain the judicial benefits of the process. An et al. (2016) and Fiirst et al. (2020) show that the earnings management of insolvent companies is decreasing, since, three to four years before the filing for judicial reorganization or bankruptcy, managers try to mask financial difficulties. However, closer to the event, especially in the last year, companies seek to show financial suffering to formalize the request for judicial reorganization or bankruptcy.

As for model 2, which deals with the relationship between earnings management and insolvency, the results are contrary to hypothesis 2, presenting a negative and significant coefficient. In this sense, companies with financial difficulties, based on the balance of their liabilities, tend to have less earnings management. These results are similar to those found by Oliveira (2011) and Coelho et al. (2017), who report that, in the event of a serious state of insolvency, when there is a path of no return to bankruptcy, managers with no prospects of improvement for the company's financial situation may stop resorting to results management practices.

With regard to the control variables, it is observed in model 1 that the operating cash flow and the size of the firm are negatively related to the REM level, indicating that favored firms with a good level of cash flow scaled by total assets and larger firms manage less of their real results focused on operating activities.

On the other hand, ROA, Growth and Leverage showed a positive relationship with REM, which was also expected if the literature was observed. The results for these variables are in the direction expected in other studies and corroborate the authors Dal Magro et al. (2019) and Guo et al. (2015).

5 Final Thoughts

The article investigated the relationships between earnings management, insolvency and judicial reorganization of companies listed on B3. When studying the management of results, the proxy suggested by Roychowdhury (2006) was estimated because it uses variables related to operations and that are often directly related to financial difficulties.

The descriptive statistics pointed out that companies in judicial reorganization manage their results less, as well as have higher leverage, lower growth, profit and operating cash flow. In addition, they are more prone to financial losses.

Regarding Hypothesis 1, a negative and significant relationship was identified between insolvent companies and earnings management practices. The results revealed that companies with financial difficulties, based on their net worth balance, tend to have a lower level of earnings management. In addition, the literature shows that, although companies in financial

difficulty are often more likely to manage their results than companies that are in a comfortable financial situation (Queiroz et al., 2018), because they can attract new investments without showing a bad situation. However, Fiirst et al. (2020) show that the earnings management of insolvent companies is decreasing. Three to four years before filing for judicial reorganization or bankruptcy, managers try to mask financial difficulties. However, closer to the event, especially in the last year, companies seek to evidence the financial suffering to formalize the request for judicial reorganization or bankruptcy.

As for hypothesis 2, the results showed that companies, when filing for judicial reorganization, manage fewer results, especially operational ones. Companies under judicial reorganization have fewer incentives to engage in discretionary practices, as they are able to evidence their real financial difficulty and obtain the judicial benefits of the process.

In relation to corporate governance, the results reveal the importance of understanding the set of elements that lead companies to face financial difficulties and how managers make decisions to mitigate the impact on investor behavior. In view of this, in addition to contributing to the incipient literature on managerial reorganization in Brazil, the study brought important advances, namely: a) use of a sample of Brazilian companies, b) adoption of alternative methodological aspects for the estimation of the earnings management proxy, c) evaluation of the existence of significant differences between companies with financial difficulties and those under judicial reorganization.

It is also worth noting that the study can contribute to signaling to investors and auditors the behavior of earnings management practices in periods of financial difficulties, assisting in decision-making and strategy planning.

As a limitation of the article, it is noted the sampling of restricted data from Brazilian companies and the use of variables restricted to the proposed models. For future studies, it is suggested to collect data from a wider range of Brazilian companies or to expand frontiers based on studies with data from Latin American companies

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