

Accounting earnings management and breach of covenants: an empirical study in Brazil

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Abstract

Objective: This study aims to show that the Brazilian companies listed on B3, due to the imminent breach of the ratios established in the covenants, have a higher level of earnings management.

Method: To identify the group of suspicious companies (close to the breach), we collected ratios of covenant breach in the notes to the financial statement, subsequently confronted with the performance indices generated based on Economática data. The analysis was developed using econometric tests, by means of multiple linear regression estimated by OLS.

Results: The results point to robust evidence that suspicious Brazilian companies (close to breach) act in order to improve their outcome, possibly to avoid the breach of covenants.

Contribution: this study aims to contribute to disclose the fragility of financial covenants inserted in debt contracts and, consequently, in the exposure to higher risk of third-party capital. Thus, the effect of the insertion of financial covenants would be reverse to what creditors expect.

Keywords: *Covenants; Ebitda; Earnings management; Discretionary accruals.*

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1. Introduction

Several studies relate the existence of earnings management to the cost of debt (Watts and Zimmerman, 1990; Healy and Whalen, 1999; Fields, Lys, and Vicent, 2001; Lopes and Martins, 2005), and these studies suggest that managers use accounting earnings for contractual reasons to meet the needs of contractual restrictions to facilitate or improve conditions for future loans. Thus, in the imminence of having a high cost of debt, companies would act in order to make alternative accounting choices in order to disclose better results and, consequently, reduce this cost.

Callen, Dou and Xin (2016), then, indicate the relationship between covenants and accounting conservatism in the contracting of private debt, conditioning this relationship to the extension of the information asymmetry between managers and creditors. They appoint that, with a high degree of asymmetry, conservatism and restrictive clauses restore the efficiency of the contract.

In this context, when closing debt contracts, creditors seek additional protections by inserting restrictive contractual clauses (covenants) to protect themselves from actions that are not aligned with their interests. Niklolaev (2010) and Reisel (2014) show that the importance of covenants lies in limiting managers' opportunistic actions such as managing accounting earnings. Studies also relate covenants with agency conflict. According to Fields, Lys and Vicent (2001), agency costs are generally related to contractual issues such as management remuneration and debt covenants, and this would be directly related to the company's accounting choices. For Zhang (2019), the breach of covenants also entails external disturbances such as loss of commercial credit.

According to Freudenberg, Imbierowicz, Saunders, and Steffen (2017), covenants attempt to lessen the agency conflict and, when these clauses are breached, creditors would act to "implement a tougher alliance structure". Demerjian and Owens (2016) also see the use of covenants in order to lessen the agency conflict.

It is remarkable that the breach of covenants would imply negative consequences for borrowing companies both internally, with the anticipation of the balance due, and externally, negatively influencing the relationship with suppliers for example.

In the Brazilian scenario, Silva (2008) points out that companies in general use hardly conservative accounting practices and that, in this case, there is evidence, indicating that managers adopt actual actions that mainly affect the cash flow in order to avoid the violation of covenant clauses. In the same sense, Dyreng, Vashishtha and Weber (2017) point to direct evidence on the poor quality of accounting information of profits used in performance measures of covenants, as companies also tend to disclose higher cash flow forecasts than GAAP earnings measures.

The Brazilian scenario represents an interesting source of research, as the 2015 Global Financial Stability Report by the International Monetary Fund points out that the level of indebtedness of Brazilian companies is 79%, and this measurement is taken between the total debt on equity and this index, ranking among the highest in emerging countries. In addition, while companies get more leveraged, the ability to cope with the debt service is lower in Brazil than in other emerging countries; also, the country has the highest real interest rate globally (International Monetary Fund, 2015).

It is suspected that Brazilian companies with a high debt ratio and the market with high interest rates would be motivating managers to avoid the breach and suffer harsh sanctions (such as anticipation of the debt balance) because, in a company with underperforming investors, suffering financial sanctions would become a severe blow.

The insertion of covenants seeks to mitigate conflicts between creditors and debtors by minimizing the risks of default (Smith & Warner, 1979). The effectiveness of covenants may be compromised by the managers' discretionary action though, and the presentation of financial reporting may be overshadowed by the practice of earnings management. This practice would be increasing the risk of the financial transaction and deluding creditors.

In order to complement the studies and fill the existing gap, this research aims to verify whether, by approaching the ratios established in the covenants, Brazilian companies manage the accounting earnings related to the ratio established to avoid the breach of the covenant in question. Thus, we expect to answer the question: **Do Brazilian companies manage the accounting earnings to meet contractual clauses of covenants?**

This study evaluated 344 companies listed on Bovespa, 74 of which were selected, with present “covenants” with the *EBITDA* ratio. Creditors use this ratio as a proxy for performance and profit. Thus, 102 observations were generated throughout the research period, using Economatica as a data source.

A preliminary sample was selected, excluding companies whose short-term indebtedness was greater than the long-term indebtedness. Next, companies with an indebtedness level inferior to 20% were excluded as, in theory, these companies would be less motivated to manage earnings in view of the covenants.

The period from 2012 to 2016 was considered, justified by the creation of Normative Instruction 527/2012, which created a standardized calculation and disclosure of the *EBITDA* ratio, present in different covenants as a *proxy* of corporate performance.

After assessing the characteristics of the restrictive clauses and identifying the financial ratios present in the covenants, the ratios established in the covenants were classified and compared with the corporate performance ratios to check the proximity and establish a group of suspicious companies. Then, the relationship between the group of suspicious companies and earnings management was analyzed based on the discretionary accruals, calculated according to Kothari (2005).

Thus, this research contributes to the advancement of the literature, helping to explain situations that can make the accounting information less reliable. In terms of practical contribution, we hope to disclose if the covenant clauses achieve their original objective, which is to establish agreements/compromises to safeguard the creditors’ resources by monitoring the organization’s financial performance ratios, so as to measure the efficacy of the company’s management and its financial health. Furthermore, we expect to demonstrate that the fragility and consequent ineffectiveness of the restrictive clauses also contribute to the discussion of alternative forms of restrictions.

2. Theoretical Framework

2.1 Accounting Earnings Management

Accounting earnings management derives from the managers’ choice to respond to regulation or contracts, in a lawful or unlawful way, through favorable or unfavorable choices, improving or mitigating their earnings (Benham, 2005).

Several studies investigate the reliability and events that can alter the performance and financial information. Graham and Dodd (1934), in their work “Safety Analysis”, started the discussion on models for assessing American companies’ earnings per share.

According to Dechow *et al.* (1996), discretion in the accrual basis of recording its financial events enables the company to manipulate in order to disclose a good organizational performance. Nardi and Nakao (2009) supplement that, in an attempt to avoid frustration in the expectations of investors as well as creditors, who establish minimum limits of return in the debt clauses, motivation is created for this earnings management, as security and expectation of return are pillars of the relationship between company and investor. Thus, the company’s financial result is directly linked to the accounting information, including the return on capital.

According to Santos and Paulo (2006), the importance of this accounting information gives rise to the agents' incentive to manage earnings, so that they can present more inspiring accounting information and, consequently, motivating business performance. For Nardi and Nakao (2009), this information under the agency theory can be managed at the manager's need/will, so as to increase or decrease accounting earnings.

In this sense, researchers develop several models with a view to capturing the level of earnings management and measuring the quality of profit.

Dechow *et al.* (2010) present a model for the evaluation of profit quality based on the persistence of earnings and smoothness of profits; external indicators and investors' response to the earnings in an attempt to measure the trustworthiness of the profits presented. They conclude that the quality of the reported profits and the environment, as well as debt covenants, create potential motivation for companies to avoid a breach of the debt covenant through earnings management.

Several models have been developed through proxies, aiming to analyze and disclose earnings management. Healy's model (1985) confronts mean total accruals and total assets, considering the periods used to estimate the accruals.

DeAngelo (1986) also develops a model based on discretionary accruals on total assets, considering the previous period for measuring total assets. On the other hand, the Dechow model (1991) evaluates constant non-discretionary accruals for companies in the same sector and which would be constant over time.

The Jones model (1991) differs by considering the changes economic events cause in the discretionary accruals, mainly by the variation of revenues and fixed assets. Jones modified (1995) considers that earnings can be managed and evaluates the variation of sales and receivables as a way to measure forward sales management.

Kang and Sivaramakrishnan (1995) developed a model that investigates the relationship/reflection of costs and expenses in the balance sheet accounts, as well as Pae (2005), who included the evaluation of operating cash flow and the relationship with the company's total accruals.

Dechow and Dichev (2002) relate accounting earnings and profit through cash flow income in previous, present, and future periods. Martinez (2013) evaluates earnings management from profit management perspectives to achieve established goals or expectations, smoothing by reducing profit variability and decreasing present earnings to inflate future ones.

According to Lopes and Tukamoto (2007), scientific research has advanced in recent decades in countries such as the United States, England, and developed countries, by deepening research on the subject in order to identify and measure this practice. On the other hand, in emerging countries, empirical evidence is still rare.

According to Martinez (2013), research in Brazil adopts the same focus, as the regulatory model is worn out; in addition, there is the fact of a broad access to companies' economic-financial data, as well as the concern with the quality of Accounting Information characteristic of the positivist imprint.

2.2 Restrictive Contractual Clauses (Covenants)

Covenants are intended to safeguard the creditors' rights through the compromise between company/creditor and, therefore, set financial ratios to monitor the organization's performance. According to Zhang and Yang (2013), these covenants also benefit the shareholders by reducing the cost of third-party capital.

Beiruth and Fávero (2016) highlight the relevance of the theme in Accountancy, as there are many financial indicators in debt contracts, but they indicate that there are few related studies and, in their work, present the main results on the theme.

According to Christensen and Nikolaev (2012), these covenants fall into two categories, capital covenants and performance covenants, the former attempting to minimize the agency conflict while the latter measures the company efficiency. This effort takes place in order to safeguard the third-party capital during the period of the debt contract.

According to Inamura (2009), the agency theory is justified by the presence of covenants in debt contracts, while the conflict of interests should limit the managers' action in order to safeguard the creditors' interests at minimally acceptable levels.

The importance of covenants lies in limiting opportunistic actions of managers such as managing accounting earnings. Thus, they should help prevent the probability of default or even increase the recovery value and, consequently, decrease the information asymmetry (Nikolaev, 2010; Reisel, 2014).

The use of these performance measures would serve to indirectly control improper management actions. This monitoring seeks financial information to strengthen confidence, which in practice may not occur as, through the discretionary choices, the managers may improve results and achieve goals artificially. What is worse, the presence of these financial ratios and their sanctions can turn into a motivating factor for earnings management.

Studies related a possible breach of covenants with accounting events. In these cases, the number of financial covenants related to the loan was used as a proxy. Demerjian (2011), Christensen and Nikolaev (2012) also develop a theory that relates the intensity of the use of these clauses by counting covenants, instead of the probability of violation.

Silva (2008) also points out that research results on accounting earnings management and the relationship with covenants may vary over time due to the dynamic nature of business or even variations arising from the (social and regulatory) environment.

In this sense, the adoption of IFRS could affect the results of new research, as well as the standardization of EBITDA caused by Normative Instruction CVM 527/2012. According to that Instruction, the Brazilian Securities Commission (CVM) establishes the need to preserve the quality of information intended for investors and indicates that even non-accounting information, as in the case of EBITDA, should deserve the same care and treatment given to accounting information, as this information is relevant and influences the economic decisions of the financial statements.

Even though it is not a ratio present in the financial statements, EBITDA is calculated based on these statements using the following equation: $EBITDA = \text{Net Operating Profit} + \text{Depreciation} + \text{Amortization}$.

In addition, Dechow (1996) indicates that debt clauses can motivate earnings management to avoid their breach. Thus, the research hypothesis arises: Brazilian companies are managing earnings to avoid breaching the covenants.

2.3 Hypothesis development

Studies relate the earnings management hypothesis and the relationship with *covenants*. According to Watts and Zimmerman (1990), the closer to a financial ratio established in the covenants, the greater the probability of the manager acting by increasing earnings or managing accounting ratios.

For Reis, Lamounier and Bressan (2015), companies manage earnings in order to avoid disclosing losses through operational decisions. In this perspective, earnings management may also happen to avoid disclosing losses or unsatisfactory earnings that would directly affect the debt contract.

Cristensen and Nikolaev (2012) and Demerjian (2011) identified a significant decrease in the use of ratios based on the balance sheet in the covenants, demonstrating the creditors' lesser interest in these results. On the other hand, greater interest is observed with the establishment of financial ratios in the covenants of profit accounts and income statements.

Ball, Li and Shivakumar (2013), as well as Fávero and Beiruth (2016), identified that, after the adoption of IFRS, the use of accounting and financial ratios decreased and this reflection was caused by the greater flexibility in the choice between accounting rules.

In the Brazilian context, in addition to the economic scenario, with high interest rates and a high ratio of indebtedness, it was found that the covenants present in the notes to the financial statements report the use of performance ratios, generally using the EBITDA proxy for monitoring and evaluation.

Thus, according to the literature approach, this study intends to test the following hypothesis:

- **H₁ = Brazilian companies that border on a breach of the ratios established in the covenants present a higher level of earnings management to improve their performance and avoid the breach.**

3. Research Method

The objective of this study is to verify whether Brazilian companies manage earnings in order to improve their performance and avoid breaching the covenants.

To develop the study, Brazilian companies listed on Bovespa were considered as the research universe. The sample was limited to the companies most likely to breach the covenants.

In principle, companies with less long-term loans and financing than short-term loans and financing were excluded as, in theory, companies that have large-scale short-term financing would not have incentives towards earnings management due to the breach of covenants, because the payment of the debt occurs in the same financial year, not producing effects from the perspective of the breach.

Next, the indebtedness ratio was analyzed, setting higher than 20% of indebtedness as the cut-off point. The following equation was used to calculate the level of indebtedness: $IR = [(Liabilities/Assets) * 100]$, liabilities including Current Liabilities (due in the short term) + Non-Current Liabilities (due in the long term). The ratio established in the research considers that there would be no incentive to manage accounting earnings as a result of debt contracts of companies with a small external financing margin because, in theory, the breach of covenants would not cause significant financial problems due to the magnitude of the equity.

Thus, this study worked with the sample of 74 companies that possessed financial covenants, indebtedness ratio superior to 20%, and long-term loans and financing higher than short-term loans and financing.

The period from 2012 to 2016 is justified by the creation of Normative Instruction 527/2012, which standardized the calculation and disclosure of the EBITDA ratio, present in several covenants. In this study, the EBITDA ratio was used, excluding ratios with the term “adjusted”, considering the Net Operating Profit + depreciation and amortization for calculation purposes.

To construct the database, the notes to the financial statements collected on the Bovespa website were analyzed, in the period from 2012 till 2016, starting with the reading and interpretation of the restrictive clauses to identify and classify the financial ratios in the covenants. The clauses present in financing/loan contracts and in the issuance of debentures were considered. Thus, document analysis was used as the methodological approach. Heteroscedasticity and normality of the residues were tested to second the use of the OLS estimator with White’s correction. The results are presented in Table 2, in the results section.

In the notes to the financial statements that served as a source for this research, searches were carried out for the terms “covenant”, “clauses”, “restrictive” and “EBITDA”, in order to locate and identify the financial ratios responsible for the restrictions. After locating the ratios in the covenants, four groups of more recurring financial ratios were identified, which were:

Table 1

Covenant ratios

Ratio in the <i>Covenants</i>	Calculation formula	Source
Ebitda margin	$\frac{EBITDA}{RECEITALIQUIDA}$	Notes to the financial statements
Net debt and Ebitda	$\frac{DIVIDALIQUIDA}{EBITDA}$	Notes to the financial statements
Ebitda and Financial Expense	$\frac{EBITDA}{DESPESAFINANCEIRA}$	Notes to the financial statements
Debt service coverage ratio (dscr)	$\frac{EBITDA}{PASSIVOACURTOPRAZO}$	Notes to the financial statements

We define the Suspicious variable as those companies that show indicators inferior to 10% or 5% of the limit established by the respective covenant. The intuition is that these companies are at greater risk of breaching the limit and suffering the established sanctions and, thus, have greater incentives to manage earnings in the attempt to avoid breaching the covenant.

Subsequently, data were collected in Economatica to generate the companies' performance ratios for the sake of comparison with the ratios mentioned above and present in the covenants. The EBITDA margin ratio was collected directly from Economatica; the other ratios are not available and had to be calculated in this research.

To calculate the Net Debt/EBITDA ratio, the Total long-term loans + Total short-term loans and short-term financing - Sash and cash equivalent / Net Operating Profit + Depreciation + Amortization was used.

To calculate the EBITDA/Financial Expense ratio, Net Operating Profit + Depreciation and Amortization/Financial Expense was used.

To calculate the debt service coverage ratio (dscr), Net Operating Profit + Depreciation and Amortization/Total of loans and short-term financing was used.

Based on the identification of the performance ratio, the proximity to the breach ratio of the covenants was evaluated. Thus, the dummy variable of this study emerges, in which companies that maintain performance ratios bordering on the breach ratios established in the covenants by up to 10% are classified as “suspicious”, and companies that maintain ratios bordering on the breach ratios established in the covenants by more than 10% are classified as “non-suspicious”, i.e., less on the verge of a breach.

Observing the dummy variable created to measure the level of approximation of the ratios to the ratios established in the covenants by up to 10%, in total, 102 observations were obtained, 64 being classified as non-suspicious and 38 as suspicious. During the data collection in the companies surveyed, cases were found in which there are financing and issuance of debentures with different financial constraint values, varying according to the issue date. It is highlighted that, even in case of a difference in the established values, the companies maintained the same formula for calculating the ratio. In this research, the most critical value was always used, on the verge of the breach, corresponding to the extreme value (minimum or maximum depending on the ratio) established by the company.

It is also highlighted that the companies that breached the covenants are not part of the sample, even if they managed to get a waiver from their creditors.

To measure earnings management, Jones' model was used (1991):

$$NDA_{it} = \alpha \left(\frac{1}{A_{t-1}} \right) + \beta_1 (\Delta R_{it}) + \beta_2 (PPE_{it}) \quad (\text{Equation 1})$$

Where:

- NDA_{it} = non-discretionary *accruals* of company i in period t ;
- R_{it} = variation of net revenues of company i from period $t-1$ to period t ;
- PPE_{it} = account balances of Fixed Assets and (gross) Deferred Assets of company i at the end of period t , by total assets at the end of period $t-i$;
- A_{it-1} = total company assets at the end of period $t-1$;
- α , β_1 e β_2 = regression parameters

To measure the parameters, the following equation is used:

$$TA_{it} = \alpha \left(\frac{1}{A_{t-1}} \right) + \beta_1 (\Delta R_{it}) + \beta_2 (PPE_{it}) + V_{it} \quad (\text{Equation 2})$$

Where:

- TA_{it} = total accruals of company i in period t , weighted by total assets at the end of period $t-i$;
- ΔR_{it} = variation in net revenues of company i from period $t-i$ to period t , weighted by total assets at the end of period $t-i$;
- PPE_{it} = balances of Fixed Assets and (gross) Deferred Assets accounts of company i at the end of period t , weighted by total assets at the end of period $t-i$;
- A_{t-1} = total company assets at the end of period $t-1$;
- V_{it} = regression residue

For Earnings Management (EM):

$$GR = TA_{it} - NDA_{it} \quad (\text{Equation 3})$$

Where:

- TA_{it} = total accruals of company i in period t , weighted by total assets at the end of period $t-i$;
- NDA_{it} = non-discretionary *accruals* of company i in period t ;

Finally, the model developed to test the research hypothesis is as follows:

$$GR_{it} = \beta_0 + \beta_1 \text{suspeita}_{it} + \beta_2 \text{Tam}_{it} + \beta_3 \text{Btd}_{it} + \beta_4 \text{Fcx}_{it} + \beta_5 \text{Cresc}_{it} + \beta_6 \text{Lev}_{it} + \beta_7 \text{Ki}_{it} + \beta_8 \text{Tang}_{it} + \varepsilon_t$$

Where the model variables are defined as:

- EM= Earnings management defined by value of discretionary *accruals*, calculated using Kothari's model (2005).

- Suspicious:1 (suspicious) if the performance ratio is bordering 10% of the limit set in the covenants and 0 (not suspicious) if the company's performance ratio surpasses the border of 10% of the ratio set in the covenants.
- Size = $(Siz = AT_{it})$, calculates the size of the company measured by the value of the total asset in *reais*. According to Gu, Lee and Rosett (2005), larger companies have lower variability of accruals and less incentive for management due to the political cost. For Nardi and Nakao (2009), these characteristics explain the negative relationship between size and EM, in which larger companies have fewer discretionary accruals.
- *Book Tax Differences* (BTD) = $(\text{Accounting Profit} - \text{Tax Profit}) / \text{Total Assets}$ calculates the difference between accounting profit and tax profit, divided by the total asset of the company in the same year. According to Ferreira *et al.* (2012), there is a directly proportional relationship between *book-tax-differences* (BTD) and discretionary accruals. They point out that companies manage their earnings in the same sense as the observed BTD signal.
- Debt coverage = $(Fcx_{it-1} = EBITDA_{it-1} / PO_{it-1})$, calculated through the EBITDA (earnings before interest, taxes and depreciation and amortization expense) divided by short-and long-term debt. According to Nardi and Nakao (2009), this variable is able to measure the cash flow for debt compliance purposes, thus establishing a relationship with the possible ability to avoid financial difficulties.
- Growth = $(Cresc_{it-1} = (AT_{it-1} - AT_{it}) / AT_{it-1})$, calculated through the total assets of the previous period minus the total assets of the current period divided by the total assets of the previous period. Gu, Lee and Rosett (2005) used growth as a control variable for EM. The indication is that, in case of company growth, the discretionary accruals would increase proportionately.
- Leverage = $(Lev_{it-1} = DivLP_{it-1} / AT_{it-1})$, calculated by dividing the long-term debt by the company's total assets. According to Watts and Zimmerman (1990), the higher the level of indebtedness, the greater the likelihood of managers acting to improve their earnings.
- Cost of debt = $(Ki_{it} = Desp.Financ_{it} / PO_{it-1})$, calculated by dividing the company's financial expense by the short-and long-term debt. Francis *et al.* (2005) indicate that, the greater the earnings management, the higher the cost of companies' external debt.
- Tangibility = $(Tang_{it-1} = (Imobliq_{it-1} - RR_{it-1}) / (AT_{it-1} - RR_{it-1}))$, calculated by reducing the revaluation reserve of the net fixed assets divided by the difference in total assets minus the revaluation reserve. According to Valle (2008), the amount of tangibles improves the capacity to raise funds by discouraging earnings management. The model variables were winsorized at 2.5% to eliminate possible outliers that could distort the result.

4. Results Analysis

Table 2 shows the diagnostic tests to validate the estimator used and the statistical tests performed. To check for heteroscedasticity, the White test and the Breusch-Pagan test were performed. Both tests indicated the presence of heteroscedasticity, indicating the need to correct the standard errors. Thus, the estimator used for the econometric analyses is the OLS with White's correction. To test the normality of the residues, the Jarque-Bera and Wilk-Shapiro tests were performed. Both tests did not reject the null hypothesis of normality of the residues, indicating that the statistical results are reliable.

Table 2

Diagnostic tests

	Heteroscedasticity test		Normality test	
		P-valor		P-valor
White		0.0140	Jarque-Bera	0.4457
Breusch-Pagan		0.0000	Wilk-Shapiro	0.7573

Tables 3 and 4 present the results of the multiple linear regression OLS (Ordinary Least Squares) for the model proposed in the research. A variance inflation factor (VIF) test was also performed to check for the existence of multicollinearity in the proposed model, which would result in increased variance and loss of efficiency. As can be evidenced in both tables, the test did not indicate the existence of severe multicollinearity and the tests presented are reliable.

Table 3

Earnings Management vs. Suspicious Companies

This table presents the estimated coefficients for the Kothari model (2005) Discretionary accruals versus suspicious companies 10% (close to breaching the covenants).				
Variable	Dependent Variable Earnings management			
	Coefficient	P-value	Coefficient	P-value
Constant	0.122	0,070	0.0942	0.303
Suspicious	-0.0202	0.028	-0.0234	0.016
Size	-0.0053	0.159	-0.0047	0.365
BTD	-0.3140	0.055	-0.3515	0.065
Debt coverage	0.0114	0.695	0.0140	0.699
Growth	0.0651	0.122	0.0863	0.074
Leverage	0.0472	0.121	0.0606	0.128
Cost of debt	0.0673	0.213	0.1278	0.061
Tangibility	-0.0367	0.054	-0.0314	0.148
Observations	102		102	
R-squared	0.2103		0,2540	
FE Year	No		Yes	
FE Sector	No		Yes	
VIF	1,24		1,88	

Obs.: Earnings management (EM) calculated using the discretionary accruals through Kothari's model (2005). Companies close to 5% of the ratios established in the covenants represented by the variable suspicious, Size represents the company's total Assets (siz), Book Tax Difference represents the difference between the accounting profit and the tax profit (btd), debt coverage ratio *Ebitda* divided by the short and long-term debt (covdeb), asset variation that captures the company's growth (grow), leverage generated by dividing the long-term debt by the total Assets, the cost of debt variable demonstrates the result of the financial expenses confronted with the short and long-term debt, the tangibility (tang) demonstrates the net fixed assets, i.e. total assets minus revaluation reserves. The results presented are robust for heteroscedasticity.

The regression result is consistent according to the literature, as the results for the variable suspicious, which represents companies close to breaching covenants, is significant at 5%, suggesting a relationship between companies close to breaching covenants and the use of discretionary accruals. This result strengthens the research hypothesis that, when approaching the breach of covenants, Brazilian companies would act in order to manage their earnings and avoid the breach.

This result contributes to the positivist theory, establishing a discussion about the effectiveness of standards (covenants) and the practical effects in the business context, as suggested by Watts and Zimmerman (1990), because the closer a company is to the breach of the debt contract, the more managers tend to select accounting procedures to anticipate the recognition of profits. As demonstrated by Dechow (1996), which indicated that there is the possibility of accounting choices in order to improve earnings and avoid breaching the restrictive clauses. This also underlines the results by Silva (2008) that Brazilian companies use hardly conservative accounting practices and that their actions occur to affect the cash flow and avoid the breach of covenants.

It is also in line with the study by Dyreng, Vashishtha and Weber (2017) about evidences of bad accounting information quality, particularly about profits used in covenant performance measures.

The result for size, in accordance with Gu, Lee, and Rosett (2005), points out that company size could be negatively related to earnings management, as larger companies have more incentive to reduce political costs, which in turn would inhibit discretionary accounting choices. The result was not statistically significant though. The signal of the result for BTD was contrary to the expectations, according to Ferreira *et al.* (2012), who appoint a directly proportional relationship between the *Book Tax Differences* (BTD) and the discretionary accruals.

Nardi and Nakao (2009) present the debt coverage capacity, according to the company's cash flow, thus establishing a direct relationship with accounting choices that improve the earnings by anticipating revenues, but the results were not significant. The result for growth is significant when we consider the fixed effect of year and sector, in line with the literature. According to Gu, Lee and Rosett (2005), accruals vary more strongly in growing companies. Both results indicate the possibility of opportunistic behavior consistent with earnings management in order to avoid breaching covenants, seeking to increase the asset or EBITDA.

Table 4 shows the result for companies suspected of earnings management in order not to breach the covenant at less than 5% of the established limit. The results are qualitatively equal, generating robustness for the conclusions found in this article.

Table 4

Earnings Management vs. Suspicious Companies

This table presents the estimated coefficients for the Kothari model (2005)
Discretionary accruals versus suspicious companies 5% (close to breaching the covenants).

Variable	Dependent Variable Earnings management			
	Coefficient	P-value	Coefficient	P-value
Constant	0.1288	0.064	0.0978	0.282
Suspicious	-0.0171	0.073	-0.0235	0.047
Size	-0.0058	0.134	-0.0049	0.340
BTD	-0.3350	0.044	-0.3543	0.070
Debt coverage	0.0137	0.637	0.0152	0.677
Growth	0.0661	0.133	0.0902	0.075
Leverage	0.0468	0.125	0.0598	0.135
Cost of debt	0.0650	0.235	0.1343	0.049
Tangibility	-0.0394	0.041	-0.0367	0.107
Observations	102		102	
R-squared	0.1972		0.2452	
FE Year	No		Yes	
FE Sector	No		Yes	
VIF	1.24		1.91	

Obs.: Earnings management (EM) calculated using the discretionary accruals through Kothari's model (2005). Companies close to 5% of the ratios established in the *covenants* represented by the variable suspicious, Size represents the company's total Assets (siz), Book Tax Difference represents the difference between the accounting profit and the tax profit (btd), debt coverage ratio *Ebitda* divided by the short and long-term debt (covdeb), asset variation that captures the company's growth (grow), leverage generated by dividing the long-term debt by the total Assets, the cost of debt variable demonstrates the result of the financial expenses confronted with the short and long-term debt, the tangibility (tang) demonstrates the net fixed assets, i.e. total assets minus revaluation reserves. The results presented are robust for heteroscedasticity.

In practical terms, the results focus on evidence that companies are inflating their earnings to avoid breaching operational covenants. The creditor, a directly interested party, when imposing performance benchmarks for companies, seeks a management behavior consistent with what is expected to ensure the payment of the debt the covenant is tied to. The result evidenced here is that the firm may be deliberately making up the indices to avoid contractual punishments that would grant greater economic security to the creditor.

5. Final Considerations

Earlier studies reported on the existence of covenants in order to reduce the agency conflict and protect third party capital by monitoring indicators that reflect the financial position and performance of the company. Therefore, sanctions are imposed in case of non-compliance with these covenants. Such sanctions range from the imposition of higher interest rates, limitation of investments, distribution of dividends to the anticipation of debt. Hence, companies close to breaching these ratios may be practicing earnings management to avoid the breach.

This study assessed the relationship between the suspicious companies at the verge of breaching the covenants and the presence of *discretionary accruals*. Companies with accounting ratios bordering on 10% of the ratios established in the covenants were considered suspicious.

The results indicate that the general average earnings management is higher in suspicious companies than in non-suspicious ones. The average is positive for the suspicious group and negative for the non-suspicious group, indicating that the suspicious companies make choices that increase their gains/earnings, while the non-suspicious companies act in the opposite sense, making choices that reduce/mitigate their gains/earnings. Thus, the results suggest that Brazilian companies on the verge of breaching the covenants would be acting in order to improve their performance and unilaterally circumvent the debt contract through accounting choices.

The choices would be directly related to the companies' profit/performance, as the main ratio related to the performance measure in the covenants is EBITDA. This indicates opportunistic behavior of the managers, who seek to avoid breaching the covenants and remain free from possible sanctions that would be imposed.

This research contributes to the fact that, by establishing profit-based ratios, generally using EBITDA as a proxy, creditors cannot limit the managers' actions, who through their accounting choices artificially misrepresent the earnings monitored, avoiding sanctions. Thus, the primary objective of the creation of covenants ends up being unilaterally annulled. Hence, the expectation is created that ratios with a lower level of influence of managers' discretionary action could be more effective in this control.

The limitations of this research are related to the fact that the magnitude of the sanction imposed in the covenants cannot be observed, which in theory could increase or decrease the need to avoid the breach. In addition, the results are limited to the analyzed period and the companies surveyed.

As a suggestion for future research, the magnitude of the debt and the restrictions imposed on companies can be analyzed as, in theory, this could increase or decrease the need to avoid the breach. In addition, the characteristics of the restrictions present in the covenants can be investigated, evaluating performance and equity ratios.

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