Revista de Contabilidade e Organizações
www.rco.usp.br

DOI: http://dx.doi.org/10.11606/issn.1982-6486.rco.2023.213704

Journal of Accounting and Organizations
www.rco.usp.br

Abnormal book-tax differences and non-compliance in the disclosure of EBITDA

Book-tax differences *anormal e a não conformidade na divulgação do EBITDA*

Gleison de Abreu Pontes[a], Sirlei Lemes[a], Jéssica Rayse de Melo Silva[a], Patrícia de Souza Costa[a]

[a] *Universidade Federal de Uberlândia – Brazil*

Keywords
ABTD.
EBITDA.
Earnings management.
Non-GAAP measures.
Earnings quality.

Abstract

This study aims to investigate the association between abnormal book-tax differences (ABTDs) and non-compliance in disclosing EBITDA figures. It employs a multilevel logistic model to examine data for this indicator from 340 openly traded non-financial Brazilian firms for the period from 2012 to 2021. The results indicate that ABTDs increase the probability of non-compliance in EBITDA disclosure, with variations in behavior among companies in distinct subsectors, suggesting its relevance in evaluating non-compliance with CVM Instruction 527/2012 (CVM is the Brazilian equivalent of the Securities and Exchange Commission). These findings contribute to the accounting literature, highlighting that asymmetry of information, conflicts of interest, the pursuit of various rewards, and assumptions related to ABTDs may result in informational biases. This is reflected in managed figures used in the EBITDA calculation and lower-quality information than what is required by the CVM norm for this indicator.

Palavras-chave
BTDA.
EBITDA.
Gerenciamento de resultados.
Medidas não GAAP.
Qualidade dos lucros.

Resumo

Esta pesquisa tem como objetivo investigar a associação entre a book-tax differences *anormal (BTDA) e a não conformidade na divulgação do EBITDA. Por meio de um modelo logístico multinível, foram analisados dados do indicador de 340 companhias abertas brasileiras não financeiras entre 2012 e 2021. Os resultados indicam que a BTDA aumenta a probabilidade de não conformidade na divulgação do EBITDA, com variações de comportamento entre companhias de subsetores distintos, o que sugere sua relevância na avaliação do não cumprimento da Instrução n. 527/2012 da Comissão de Valores Mobiliários (CVM). Esses achados contribuem para a literatura contábil, evidenciando que a assimetria de informações, conflitos de interesses e a busca por recompensas diversas, pressupostos da BTDA, podem resultar em vieses informacionais. Isso se reflete em números gerenciados transferidos para o EBITDA e em informações de menor qualidade em relação aos objetivos estabelecidos pela referida norma da CVM para o indicador.*

Article information
Received: June 27th, 2023
Approved: January 08th, 2024
Published: March 11th, 2024
Responsible editor: Prof. Dr. Sílvio Hiroshi Nakao

Practical implications

This paper provides support to users in terms of their understanding of possible informational biases in company reports, making it possible for them to direct their financial resources to those that offer the best opportunities for growth and income. Normative and fiscal bodies can focus mainly on the evaluation of the EBITDA publication norm and propose or revise similar norms.

Corresponding author: Tel. +55 (34) 3239-4411.
E-mail: gleison.orientador@gmail.com (G. A. Pontes); sirlei@ufu.br (S. Lemes); jessicar@ufu.br (J. R. M. Silva); patricia.costa@ufu.br (P. S. Costa).
Av. João Naves de Ávila, 2121 - Santa Mônica, Uberlândia - MG, 38408-100, Brazil.

1 INTRODUCTION

Since they are not in conformity with the Generally Accepted Accounting Principles (GAAPs) and the International Financial Reporting Standards (IFRSs), financial measures voluntarily disclosed by companies are considered to be non-GAAP (Brown, 2020). EBITDA is a non-GAAP measure used to reflect a company's potential to generate cashflow (Andrade & Murcia, 2019).

In Brazil, where the release of EBITDA figures is voluntary, a lack of standardization in the release of these figures led the CVM (the equivalent of the Securities and Exchange Commission) to approve Instruction 527 in 2012, which was updated on June 23, 2022 by CVM Resolution 156. According to these norms, calculating the EBITDA requires reconciling the net earnings for the period, incorporating taxes on profits, financial earnings, depreciation, amortization, and depletion (CVM, 2012, 2022).

EBITDA has been widely adopted by openly traded Brazilian firms, as has been noted in studies conducted by KPMG (2016) and the IBGC - Brazilian Institute of Corporate Governance (2020). Within this context, studies concerning EBITDA have focused mainly on its utility in financial analysis instead of the release of these figures (Andrade & Murcia, 2022). Examining studies which evaluate the content published about EBITDA, we can see that some openly traded Brazilian companies were not in compliance with CVM Instruction 527/2012 when it came into effect (Maragno et al., 2014). Moreover, these studies identified values and accounts which were inconsistent in reconciliating the EBITDA figures with financial statements and this Instruction, even for more recent periods (Kistner & Platt, 2023). These results indicate the importance of evaluating whether this norm is fulfilling its role of providing clarity and comparability to users through the uniform employment of this indicator, as envisaged by the explanatory note of CVM Instruction 527/2012 (CVM, 2012a).

The literature presents studies which suggest that non-GAAP measures can be used in an opportunistic manner, excluding recurrent expenses or presenting these exclusions in a way that influences user perceptions (Black & Christensen, 2009; Doyle et al., 2013; Guillamon-Saorin et al., 2017). These suggestions make it possible to question the existence of opportunism in the release of non-compliant EBITDA figures. However, the available evidence in the literature does not address the possibility that these non-compliant forms of releasing these figures are related to discretionary earnings management and as a result, the poor quality of their earnings.

These studies indicate that Abnormal Book-Tax Differences (ABTDs) offer insights regarding the poor quality of earnings, demonstrating their origins in discretionary earnings management (Brunozi et al., 2018; Morais & Macedo, 2021; Tang & Firth, 2011). This refers to the portion of the differences between accounting or book profits and tax profits which cannot be explained by regulatory aspects, and are the result of manipulations of book earnings and/or aggressive practices in tax planning (Pereira, 2010). ABTDs are a proxy which can capture book as well as tax earnings management, given that they can occur simultaneously (Tang, 2005).

Jensen and Meckling's agency theory (1976) postulates that agents seek to maximize their own interests rather than meet the objectives of the principal, which constitutes the agency problem. Considering that ABTDs can arise due to factors such as asymmetry of information, conflicts of interest, and agents' search for diverse forms of compensation, as discussed by Tang and Firth (2011), the EBITDA figures disclosed by companies can be derived from managed accounting earnings. Thus, reconciliations using this indicator can deviate from the CVM norm, possibly with the intention of influencing user perceptions regarding previously managed earnings and/or numbers derived from non-GAAP measures.

From this perspective, the main gap in this research is the exploration of whether the management of book and/or tax earnings, reflected in ABTDs, is associated with the content published about EBITDA in situations that are not compliant with CVM Instruction 527/2012. To cover this gap, the overall objective of this study is to investigate the association between ABTDs and non-compliance in the disclosure of EBITDA figures. This study analyzes reference forms of 340 openly traded Brazilian companies during the period from 2012 to 2021, using a multilevel logistic model to identify the influence that a lack of compliance in EBITDA figures can receive from ABTDs, recognizing the importance of these companies' business contexts.

Black and Christensen (2009) address the complexity of detecting informational biases in non-GAAP measures employed to reach strategic business targets. Given that the literature still has not clarified whether a lack of quality in earnings is associated with the EBITDA figures resulting from this practice in non-compliant disclosures, this study's results contribute to the field by suggesting the use of ABTDs as a tool to identify possible opportunistic behavior in non-GAAP measures.

Marques (2017) highlights the opportunity for new research about non-GAAP measures in various jurisdictions, emphasizing the importance of considering local specificities. This study addresses this gap by exploring non-GAAP measures in Brazil, a jurisdiction with particular characteristics which has a specific norm for disclosing EBITDA figures and the influence of fiscal issues, which even affect conformity with IFRSs (Costa, 2012). Within this context, it indicates that managers can employ various techniques such as the discretionary management of book earnings and the disclosure of non-compliant EBITDA figures to influence user perceptions.

This study's findings also offer insights in the debate regarding the incorporation of EBITDA into the GAAPs, emphasizing that compliance in disclosing EBITA figures can avoid opportunistic behavior associated with this practice.

2 THEORETICAL REFERENCES AND THE RESEARCH HYPOTHESIS

The disclosure of EBITDA figures is supported by the theoretical proposals of Verrecchia (2001) about discretion in manager decisions and the voluntary disclosure theory proposed by Dye (2001). From this perspective, managers opt to disclose information voluntarily when they perceive that the benefits of doing so are greater than the costs of not doing so (Barth et al., 2017). Even though these voluntary disclosures reduce the asymmetry of information, they do not totally eliminate risks of manager manipulation, given that determining the total reliability of this information comes at a high economic cost (Core, 2001).

Studies have investigated whether the disclosure of EBITDA figures fulfills its stated purpose of providing information regarding companies' potential to generate cash flow or whether it can be interpreted as opportunistic. Authors such as Maragno et al. (2014), Cormier et al., (2017), Andrade & Murcia (2019, 2022), Bouwens et al. (2019), Rozenbaum (2019) and Mey & Lamprecht (2021) have explored this question utilizing various approaches. Specific evidence indicates that between 2010 and 2012, openly traded Brazilian firms on the IBrX-100 Index disclosed EBITDA figures in an opportunistic manner that was not in compliance with CVM Instruction 527/2012 (Maragno et al., 2014). A more recent study by Kistner & Platt (2023) revealed discrepancies in EBITDA figures between 2018 to 2020, due to common errors in calculating the indicator in comparison with the calculation stipulated in the referred to CVM Instruction.

Book-tax differences (BTDs) can be broken down into normal (NBTDs) and abnormal (ABTDs). NBTDs are calculated to explain what part of these differences between book and tax profits demonstrate non-discretionary tendencies (Brunozi et al., 2019; Brunozi et al., 2018). Other non-NBTD variations in profits which are the origin of BTDs can be attributed to opportunistic behavior on the part of the managers. However, this behavior is not directly observable and, therefore it needs to be estimated through the discretionary component that is reflected by ABTDs. Thus, the literature demonstrates that ABTDs, the focus of this study, can be used to simultaneously reflect the management of book and/or tax earnings (Brunozi et al., 2018; Tang & Firth, 2011; Tang, 2005).

The opportunistic behavior of managers who seek to further their own interests by making discretionary accounting choices that are reflected by ABTDs, is supported by agency theory (Tang & Firth, 2011). From this theoretical perspective, incentive contracts can contribute to motives for earnings management. As a result, agents can arrive at larger book profits and smaller tax profits, increasing book profits and decreasing tax profits, or maintaining book profits steady while decreasing tax profits (Tang & Firth, 2011).

Tang & Firth (2011) have demonstrated that Chinese companies with strong incentives and opportunities for earnings management tend to present elevated levels of ABTDs. This evidence is supported by the findings of Brunozi et al. (2018, 2019) in the Brazilian context. These authors state that ABTDs are associated with low quality discretionary accruals and a lower consistency in the book earnings of the examined openly traded companies.

Non-GAAP measures like EBITDA can originate in book earnings which are subject to management. Managers seeking options which highlight more favorable numbers in non-GAAP measures (Bouwens et al., 2019) that can influence EBITDA disclosure decisions. These choices can be linked to the conduct of these agents in terms of manipulated profits, including disclosures that are not in compliance with regulatory norms, which can affect user perceptions of the company's performance.

Given this, we present the central hypothesis of this study: ABTDs can result in manipulated values and a lack of compliance in the disclosure of EBITDA figures.

3 METHODOLOGICAL PROCEDURES

This study's data consists of 2,069 annual observations in a sample of 340 openly traded non-financial Brazilian firms which disclosed their EBITDA figures between 2012 and 2021. The analyzed period covers significant changes that resulted from Law 11,638/2007, including the separation of accounting and tax norms, a reduction in governmental interference, and the recognition of the Accounting Pronouncements Committee (Costa, 2012). Within this context, CVM Instruction 527/2012 established specific rules for the disclosure of EBITDA figures by companies beginning in 2013, using the base year of 2012 (CVM, 2012). Financial firms were excluded due to the distinct nature of their operations and their specific regulation.

Table 1 displays the number of observations considered in this study.

Table 1
Total EBITDA disclosure observations

Description	n
Number of observations for non-financial companies from 2012 to 2021	2,649
(−) Number of observations for companies that did not disclose EBITDA figures	580
(=) Number of observations for companies that disclosed EBITDA figures	2,069

To evaluate the disclosure of EBITDA figures in accordance with CVM Instruction 527/2012, we analyzed the quantitative reconciliations of the numbers presented by these companies. This includes a detailed verification of information related to taxes on profits, financial expenses, depreciation, amortization, and depletion. In terms of compliance, the companies received values of 1 (non-compliant) or 0 (compliant) in accordance with the specifications of the CVM norm.

The data on the disclosed EBITDA figures covers its use to fulfill financial covenants and/or remunerate administrators as well as auditing information for these companies which was collected manually through reference forms which are available on the CVM website. The reference forms presented by these companies were utilized in this study, given that they are regulated by CVM Instruction 586/2017 and provide robustness to identify possible opportunistic disclosures related to EBITDA disclosures which are not in compliance with the regulatory norm.

This study did not include information on openly traded non-financial firms which had not opened their capital on the [B][3] stock exchange which were disclosed in a distinct manner in the reference forms. In addition, we exclusively analyzed information which was disclosed in accordance with CVM Instruction 527/2012 regarding EBITDA. Other forms of EBITDA disclosures, to fulfill financial covenants or for the remuneration of administrators were not included in this study.

The data utilized in this study related to BTDs, financial leverage, and differentiated levels of corporate governance were collected through the Economatica® platform. This data includes constant values in the accounting statements, financial-economic indicators, and company profile information. Information about the number of analysts who follow the company was obtained through the Refinitiv® platform.

The verification of the study's hypothesis was conducted by using a multilevel logistic model, details of which are presented in Table 2.

Table 2
Econometric models and study variables

Panel A – Multilevel logistic model

Level 1 (Equation 1)	$$p(Non\text{-}Comp.EBITDA)_{ij} = \frac{1}{1 + e^{-(b_{0j} + b_{1j}.ABTD_{ij} + b_{2j}.FinancialLeverage_{ij} + b_{3j}.AnalystsFollowing_{ij} + b_{4j}.Auditing_{ij} + b_{5j}.FinancialCovenant_{ij} + b_{6j}.RemunerationIndicator_{ij} + b_{7j}.DifferentiatedLevelsofGovernance_{ij})}}$$
Level 2 (Equation 2-9)	$$b_{0j} = \gamma_{00} + u_{0j}$$ $$b_{1j} = \gamma_{10}$$ $$\vdots$$ $$b_{7j} = \gamma_{70}$$
Final model (Equation 10)	$$p(Non\text{-}Comp.EBITDA)_{ij} = \frac{1}{1 + e^{-(\gamma_{00} + \gamma_{10}.ABTD_{ij} + \gamma_{20}.FinancialLeverage_{ij} + \gamma_{30}.AnalystsFollowing_{ij} + \gamma_{40}.Auditing_{ij} + \gamma_{50}.FinancialCovenant_{ij} + \gamma_{60}.RemunerationIndicator_{ij} + \gamma_{70}.DifferentiatedLevelsofGovernance_{ij} + \mu_{0j})}}$$

Panel B – Dependent variable

Variable	Specification
Non-compliant disclosure	Binary variable that indicates non-compliance with CVM Instruction 527/2012 in EBITDA disclosure.

Panel C – Explanatory variables

Variable	Specification	Expected result
BTD	Difference between the company's Profits Before Income Tax (PBIT) and Taxable Profits (TP) scaled by total assets.	?
ABTD	Total residuals of the company regression, estimated based on the studies of Brunozi et al. (2018, 2019) and Sant'Anna & Brunozi Júnior (2019).	+
NBTD	Difference between BTD and ABTD.	?

Panel D – Control variables

Variable	Specification	Expected result
Financial leverage	Gross company debt divided by total assets.	+/–
Analysts following	Number of analysts following the company.	–
Auditing	Binary variable that indicates whether the company was audited by one of the main auditing (big four) firms.	–

Table 2
Econometric models and study variables

Panel D – Control variables		
Variable	**Specification**	**Expected result**
Financial covenant	Binary variable that indicates whether the company fulfills a financial covenant related to EBITDA.	–
Remuneration indicator	Binary variable that indicates whether the company uses EBITDA as an indicator to determine administrator remuneration.	–
Differentiated levels of governance	Binary variable that indicates whether the company belongs to the differentiated levels of corporate governance in the [B][3] stock exchange.	–

Note 1: Equations 1 to 10 were tested to investigate non-compliance for EBITDA disclosures and ABTDs, as well as the additional variables NBTDs and BTDs.

The result of the Z test was used to evaluate the random effects parameters for the null model in order to determine whether the observations collected regarding the non-compliance of EBITDA has a nested data structure. We also employed the likelihood ratio (LR) test to verify the fit of the multilevel logistic model (Fávero & Belfiore, 2017). Additional explanations about the study's methodological procedures can be found in the Appendix A.

4 RESULTS AND DISCUSSION

4.1 Descriptive analysis

The results in terms of EBITDA compliance with CVM Instruction 527/2012 are presented in Table 3.

Table 3
Compliance of EBITDA disclosure by year

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Obs. (n)
No	83	80	75	68	76	76	67	60	67	64	716
%	50	48	45	39	40	39	32	24	24	23	35
Yes	83	86	92	108	112	118	142	189	209	214	1,353
%	50	52	55	61	60	61	68	76	76	77	65
Obs. (n)	166	166	167	176	188	194	209	249	276	278	2,069

The results in Table 3 show a progressive increase in the compliance of EBITDA disclosure since the implementation of CVM Instruction 527/2012. Notably, the years 2020 and 2021, during the COVID-19 pandemic, were characterized by a greater incidence of EBITDA disclosure, which indicates that companies used this non-GAAP measure to highlight their operational performance.

Table 4 displays the results grouped by type of disclosure for the quantitative variables EBITDA and ABTD.

Table 4
Results for the quantitative variables EBITDA and ABTD

EBITDA							
Group	Obs. (n)	Mean	Standard deviation	Minimum	Median	Maximum	M-W test
Compliant	1,353	0.099	0.419	-14.597	0.106	2.505	4.082
Non-compliant	716	0.084	0.132	-1.360	0.093	0.703	P(z): 0.000
ABTDs							
Group	Obs. (n)	Mean	Standard deviation	Minimum	Median	Maximum	M-W test
Compliant	404	-0.016	0.060	-0.335	-0.015	0.776	-4.003
Non-compliant	280	-0.005	0.042	-0.161	-0.005	0.235	P(z): 0.000

Note 1: EBITDA: Value disclosed by the company, scaled using total assets.
Note 2: M-W Test: Mann-Whitney test based on posts; P(z): p-value of the Z test to compare the medians.

Table 4 reveals that the mean of EBITDA performance, as disclosed by companies in compliance, is superior to that of the non-compliant companies. The Mann-Whitney test for EBITDA performance confirms that the non-compliant companies have a lower median than the compliant companies (0.093 < 0.106). This result contradicts Maragno et al. (2014), and indicates the possibility that non-compliant companies adopted other disclosure management strategies after the implementation of CVM Instruction 527/2012.

In terms of ABTDs, the means obtained in this study, which are distant from zero and negative, resemble the ABTDs found by Brunozi et al. (2018) and Sant'anna & Brunozi (2019) in Brazil. This observation reveals a trend in favor of book and/or tax earnings management behavior in the openly traded Brazilian firms examined, which contrasts with the international context presented by Silva et al. (2022), who found positive ABTDs close to zero. In addition, the company means as well as medians were superior for the non-compliant group compared to those who made their disclosures in accordance with CVM guidelines. This finding is supported by the Mann-Whitney test, which suggests that these companies could be inflating their book profits and reducing tax profits (medians: −0.005 > −0.016 and −0.005 > −0.015).

4.2 Multilevel analysis

Table 5 displays the results of the null multilevel logistic model, which seeks to verify the variability in non-compliance of EBITDA disclosures among companies in distinct subsectors.

Table 5
Results of the null multilevel logistic model

Observations (n)		2,069	
Subsectors [B][3]		36	
	Coefficients		Standard error
Subsector var.	0.804		0.266
Z test		3.019	
LR test	chi^2		P(chi^2)
(HNM x GLM)	198.26		0.000
Log likelihood		-1,235.32	

Note 1: chi^2: Chi squared value for the LR test; P(chi^2): p-value of the Chi squared value for the LR test.

The results of Table 5 regarding the null model indicate better adherence of the multilevel analysis to infer the non-compliance of EBITDA disclosure. In analyzing the results of the Z test of 3.019 and the LR test with a p-value of 0.000, it may be observed that the observations present a nested data structure. In other words, the fact that a company belongs to a subsector permits variations in the non-compliance behavior of EBITDA disclosures among companies in distinct subsectors.

According to Fávero and Belfiore (2017), the estimate of the intraclass correlation makes it possible to indicate how much of the total variance of the error terms can be attributed to the behavior of the dependent variable on the examined level. Given that the study considers the nesting of the data among subsectors, the intraclass correlation is obtained through Equation 11.

$$rho = \frac{\tau 00}{\tau + \frac{\pi^2}{3}} + \frac{0.804}{0.804 + \frac{\pi^2}{3}} = 0.196 \; or \; 19.60\% \tag{11}$$

Considering the result obtained in Equation 11, it is possible to infer that 19.60% of the variance in the probability of non-compliance with EBITDA disclosure can be explained by the subsectors that these openly traded Brazilian companies belong to.

Table 6 displays the results of the final multilevel logistic model. Three alternative models were developed with ABTD, NBTD, and BTD as additional variables.

Table 6.
Results for the final multilevel logistic model

Observations (n)	405		405		1.210	
Subsectors [B][3]	24		24		36	
	ABTD		NBTD		BTD	
Fixed components	Coefficients	P(z)	Coefficients	P(z)	Coefficients	P(z)
Intercept	-1.536	0.018	-1.565	0.027	-1.532	0.000
ABTD	13.058	0.005				

Table 6.
Results for the final multilevel logistic model

	ABTD		NBTD		BTD	
Fixed components	Coefficients	P(z)	Coefficients	P(z)	Coefficients	P(z)
NBTD			0.882	0.704		
BTD					2.543	0.017
Financial leverage	1.778	0.036	1.586	0.093	1.057	0.013
Analysts following	-0.592	0.045	-0.621	0.038	-0.056	0.004
Non-big four auditing	0.555	0.250	0.559	0.244	0.403	0.071
Financial covenant	-0.712	0.027	-0.791	0.014	-0.330	0.047
Remuneration indicator	0.114	0.679	0.081	0.767	0.183	0.250
Differentiated levels of governance	0.586	0.248	0.468	0.357	0.075	0.734
Random components	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error
Subsector var.	1.960	1.043	2.507	1.312	1.233	0.477
Z test	1.880		1.911		2.587	
Tests	chi^2	P(chi^2)	chi^2	P(chi^2)	chi^2	P(chi^2)
LR (HNM x GLM)	43.10	0.000	52.69	0.000	108.08	0.000
Wald chi^2	20.43	0.005	12.67	0.081	24.33	0.001
Log likelihood	-211.990		-216.281		-622.894	

Note 1: P(z): p-value of the Z test for the coefficients of the fixed component; chi^2: chi-squared value for the LR test; P(chi^2): p-value of the chi-squared value for the LR test.

The results of Table 6 confirm the positive and significant association between ABTDs and non-compliance in EBITDA disclosure, which supports the study's hypothesis. This study expands on the conclusions of previous studies such as Maragno et al. (2014) and Kistner & Platt (2023) by suggesting that non-compliance with CVM Instruction 527/2012 or identified errors in calculating the indicator can be intentional management disclosure strategies. The multilevel logistic model presents variations in the behavior of companies in distinct subsectors in terms of non-compliance in EBITDA disclosures with this result mainly supported by the significant p-value of the chi-squared value for the LR test.

The diversity of Brazilian legislation and the high tax level found in this country raise doubts about the book earnings of companies, as has been pointed out by Costa (2012) and Brunozi (2016). The ABTD evidence in this study indicates discretionary earnings management and a possible lack of earnings quality, which corroborates the previous conclusions of Brunozi et al. (2018, 2019) in relation to Brazil. This suggests that non-GAAP measures such as EBITDA may be due to the management of book earnings.

Even though some studies have not separated BTDs into normal and abnormal components, they contribute by indicating that positive total BTDs can be associated with a higher level of aggressive tax policy, exerting a positive influence on profitability in openly traded Brazilian firms (Martinez & Dalfior, 2015; Santos & Oliveira, 2020). Thus, the possibility that total BTDs can include portions which are regulatory and discretionary can explain the positive association between BTDs and non-compliance in terms of EBITDA disclosures. However, as has been demonstrated, the regulatory portion reflected by NBTDs does not present an association with non-compliance in terms of EBITDA disclosures.

In terms of the control variables, the results suggest that various levels of indebtedness can increase the probability of non-compliance in EBITDA disclosures (the ABTD and BTD models). This finding suggests that managers manipulate the information disclosed in this measure, avoiding compliance with the rules established by the CVM norm. This probability is supported by Bouwens et al. (2019) who point out that managers can use EBITDA to distract attention from a company's indebtedness. On the other hand, the results for the three estimated models indicate that companies with financial covenants linked to EBITDA have a lower probability of non-compliance in their disclosure, which appears to contribute to compliance with the CVM norm in contracts with financial institutions.

In terms of the analysts following variable, the results indicate the presence of professionals following a company's performance can increase the probability that it will be in compliance in terms of EBITDA disclosure in the three models that we have prepared. Even though Doyle et al. (2013) argue that managers can use non-GAAP measures in an opportunistic manner to exceed analyst expectations and demonstrate better performance, this study's findings, in agreement with Ali & Zhang (2015), indicate that managers can feel pressure from analysts, which can impede opportunistic disclosures.

In terms of the results for the auditing variable, it was not possible to affirm that there was an influence of employing or not employing big four auditing firms on compliance in EBITDA disclosures. It should be noted that in Brazil, the CVM determines that the EBITDA figures disclosed by companies are subject to verification, maintaining this practice in the current norm expressed by CVM Resolution 156/2022.

In the same manner it was not possible to affirm the influence of EBITDA as a remuneration indicator in compliance with the norm. However, this variable may be relevant in other contexts, given that Rozenbaum (2019) identifies a positive association between the use of EBITDA for manager remuneration and the publication of this measure to meet investor demands for information.

Finally, in terms of differentiated levels of corporate governance, although the previous studies of Cormier et al. (2017), Lima et al. (2021), and Andrade & Murcia (2022) point to the informational benefits of EBITDA in companies that are considered to have strong governance, the results of Table 6 were statistically significant for this variable.

5 FINAL CONSIDERATIONS

This study investigates the association between ABTDs and non-compliance in terms of EBITDA disclosure in 340 openly traded Brazilian firms listed on the [B][3] stock exchange from 2012 to 2021 using a multilevel logistic model. The results do not allow us to reject the study's theoretical hypothesis, and they indicate that in capital markets with elevated levels of ABTDs and EBITDA disclosures which are subject to specific regulation information should be analyzed with care due to the possibility that they contain informational bias.

This study offers contributions to the literature by exploring the relevance of non-GAAP measures such as EBITDA. Compared to previous studies, such as Maragno et al. (2014), who observed an increase in non-compliant openly traded Brazilian firms in the initial years of the implementation of CVM Instruction 527/2012, and Kistner & Platt (2023), who identify errors in disclosures of this indicator in subsequent years, the results of this study represent an advance by suggesting that Brazilian managers use various techniques to influence user perceptions. This includes measures that result from book earnings management and non-compliant EBITDA disclosures, which indicates that the search for the best performance and identified errors in this indicator may be interpreted as opportunistic behavior.

This study's results offer insights regarding the debate about the incorporation of EBITDA in the GAAPs. The widespread us of this measure in Brazil, including its association with fulfilling financial covenants, suggests that it can be included in mandatory company information. In addition, these results can improve the communication of accounting information in financial statements, promoting compliance in EBITDA disclosures and thus contributing by impeding opportunistic behavior associated with the publication of these figures.

One limitation of this study is related to its classification of non-compliance, which may not cover all possible nuances in the disclosure of EBITDA. A suggestion for future research would be studies that consider the current resolution in Brazil and other norms applicable to non-GAAP measures and test them in relation to earnings quality metrics. Another suggestion is to investigate the disclosure of non-GAAP measures in different scenarios to verify whether there is a prevalent relationship with ABTDs.

REFERENCES

Alcalde, A., Fávero, L. P. L., & Takamatsu, R. T. (2013). EBITDA margin in Brazilian companies - variance decomposition and hierarchical effects. *Contaduría y Administración*, 58(2), 197–220. https://doi.org/10.1016/S0186-1042(13)71215-4

Ali, A., & Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics*, 59(1), 60–79. https://doi.org/10.1016/j.jacceco.2014.11.004

Andrade, G. V., & Murcia, F. D-R. (2019). Uma análise crítica sobre os ajustes adicionais considerados nas divulgações da medida não-GAAP "EBITDA ajustado" em relatórios de companhias listadas brasileiras. *REPeC – Revista de Educação e Pesquisa em Contabilidade*, 13(4), 469–486. https://doi.org/10.17524/repec.v13i4.2412

Andrade, G. V. de, & Murcia, F. D-R. (2022). EBITDA: Fatores determinantes da divulgação da medida não-gaap no mercado acionário brasileiro. *RECFin – Revista Evidenciação Contábil & Finanças*, 10(1), 18–35. https://doi.org/10.22478/ufpb.2318-1001.2022v10n1.50526

Barth, M. E., Cahan, S. F., Chen, L., & Venter, E. R. (2017). The economic consequences associated with integrated report quality: capital market and real effects. *Accounting, Organizations and Society*, 62(2017), 43–64. https://doi.org/10.1016/j.aos.2017.08.005

Beck, T., Demirgüç-Kunt, A., & Levine, R. (2003). Law, endowments, and finance. *Journal of Financial Economics*, 70(2), 137–181. https://doi.org/10.1016/S0304-405X(03)00144-2

Black, D. E., & Christensen, T. E. (2009). US managers' use of 'pro forma' adjustments to meet strategic earnings targets. *Journal of Business Finance & Accounting*, 36(3–4), 297–326. https://doi.org/10.1111/j.1468-5957.2009.02128.x

Black, E. L., Christensen, T. E., Joo, T. T., & Schmardebeck, R. (2017). The relation between earnings

management and non-GAAP reporting. *Contemporary Accounting Research*, 34(2), 750–782. https://doi.org/10.1111/1911-3846.12284

Bouwens, J., de Kok, T., & Verriest, A. (2019). The prevalence and validity of EBITDA as a performance measure. *Comptabilité Contrôle Audit*, Tome 25(1), 55–105. https://doi.org/10.3917/cca.251.0055

Brown, N. C. (2020). Tornando-se de capital aberto: os benefícios e as armadilhas das métricas não GAAP. *REPeC – Revista de Educação e Pesquisa em Contabilidade*, 14(2), 145–157. https://doi.org/10.17524/repec.v14i2.2670

Brunozi Júnior, A. C. (2016). *Os efeitos das book-tax differences anormais na qualidade dos resultados contábeis em empresas de capital aberto listadas no Brasil*. Universidade Vale do Rio dos Sinos.

Brunozi Júnior, A. C., Kronbauer, C. A., Alves, T. W., & Martinez, A. L. (2019). Book-tax differences anormais e persistência dos resultados contábeis e tributários em empresas de capital aberto listadas no Brasil. *Revista Universo Contábil*, 15(1), 07–26. https://doi.org/10.4270/ruc.2019101

Brunozi Júnior, A. C., Kronbauer, C. A., Martinez, A. L., & Alves, T. W. (2018). BTD anormais, accruals discricionários e qualidade dos accruals em empresas de capital aberto listadas no Brasil. *Revista Contemporânea de Contabilidade*, 15(35), 108–141. https://doi.org/10.5007/2175-8069.2018v15n35p108

Comissão de Valores Mobiliários. (2012a). *Instrução CVM n. 527 de 04 de outubro de 2012*. Recuperado de: http://www.cvm.gov.br/legislacao/instrucoes/inst527.html

Comissão de Valores Mobiliários. (2012b). *Nota explicativa à Instrução CVM n. 527 de 04 de outubro de 2012*. Recuperado de: https://conteudo.cvm.gov.br/export/sites/cvm/legislacao/notas-explicativas/anexos/nota527.pdf

Comissão de Valores Mobiliários. (2022). *Resolução CVM n.o 156, de 23 de junho de 2022*. Recuperado de: https://conteudo.cvm.gov.br/legislacao/resolucoes/resol156.html

Core, J. E. (2001). A review of the empirical disclosure literature: discussion. *Journal of Accounting and Economics*, 31, 441–456. https://doi.org/10.1016/S0165-4101(01)00036-2

Cormier, D., Demaria, S., & Magnan, M. (2017). Beyond earnings: do EBITDA reporting and governance matter for market participants? *Managerial Finance*, 43(2), 193–211. https://doi.org/10.1108/MF-07-2016-0205

Costa, P. de S. (2012). *Implicações da adoção das IFRS sobre a conformidade financeira e fiscal das companhias abertas brasileiras*. Universidade de São Paulo.

Doyle, J. T., Jennings, J. N., & Soliman, M. T. (2013). Do managers define non-GAAP earnings to meet or beat analyst forecasts? *Journal of Accounting and Economics*, 56(1), 40–56. https://doi.org/10.1016/j.jacceco.2013.03.002

Dye, R. A. (2001). An evaluation of "essays on disclosure" and the disclosure literature in accounting. *Journal of Accounting and Economics*, 32, 181–235. https://doi.org/10.1016/S0165-4101(01)00024-6

Fávero, L. P. L., & Belfiore, P. (2017). *Manual de análise de dados: estatística e modelagem multivariada com Excel®, SPSS® e STATA®*. Rio de Janeiro: Elsevier.

Guillamon-Saorin, E., Isidro, H., & Marques, A. (2017). Impression management and non-GAAP disclosure in earnings announcements. *Journal of Business Finance & Accounting*, 44(3–4), 448–479. https://doi.org/10.1111/jbfa.12238

Gujarati, D. N., & Porter, D. C. (2011). *Econometria básica* (5º ed). Porto Alegre: Bookman.

IBGC - Instituto Brasileiro de Governança Corporativa. (2020). *Remuneração dos Administradores* (7º ed). São Paulo: Instituto Brasileiro de Governança Corporativa.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Kistner, S. P., & Platt Neto, O. A. (2023). Análise metodológica dos EBITDA incompatíveis divulgados pelas companhias listadas na B3: identificação das variáveis divergentes nas conciliações. *Revista Ambiente Contábil*, 15(2), 19–40. https://doi.org/10.21680/2176-9036.2023v15n2ID30732

KPMG. (2016). *Divulgações contábeis 2016 - Um estudo sobre as políticas contábeis críticas, medições não contábeis e as modificações no relatório do auditor independente*. Recuperado de: https://assets.kpmg.com/content/dam/kpmg/br/pdf/2016/11/br-divulgacoes-contabeis-outubro-2016.pdf

La Porta, R., L-S., F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113–1155. https://doi.org/10.1086/250042

Leal, R. P. C., & Saito, R. (2003). Finanças corporativas no Brasil. *RAE Eletrônica*, 2(2). https://doi.org/10.1590/S1676-56482003000200005

Lima, S. L. L., Araújo, M. da P., & Murcia, F. D. R. (2021). Fatores determinantes da probabilidade de divulgação voluntária de informações financeiras das empresas. *Revista Evidenciação Contábil & Finanças*, 9(1), 44–62. https://doi.org/10.22478/ufpb.2318-1001.2021v9n1.51107

Maragno, L. M. D., Borba, J. A., & Fey, V. A. (2014). Como as empresas mais negociadas no Bm&Fbovespa divulgam o EBITDA? *Revista de Contabilidade do Mestrado em Ciências Contábeis da UERJ*, 19(1), 58–79.

Marques, A. (2017). Non-GAAP earnings: international overview and suggestions for future research. *Meditari Accountancy Research*, 25(3), 318–335. https://doi.org/10.1108/MEDAR-04-2017-0140

Martinez, A. L., & Dalfior, M. D. (2015). Agressividade fiscal entre companhias controladoras e controladas. *Revista da Receita Federal: Estudos Tributários e Aduaneiros*, 2(1), 344–362.

Mey, M. T., & Lamprecht, C. (2021). The association between EBITDA reconciliation quality and opportunistic disclosure. *South African Journal of Accounting Research*, 35(2), 87–110. https://doi.org/10.1080/10291954.2020.1817268

Morais, H. C. B., & Macedo, M. A. S. (2021). Relationship between earnings management and abnormal book-tax differences in Brazil. *Revista Contabilidade & Finanças*, 32(85), 46–64. https://doi.org/10.1590/1808-057x202009230

Murcia, F. D-R., & Santos, A. (2009). Fatores determinantes do nível de disclosure voluntário das companhias abertas no Brasil. *Revista de Educação e Pesquisa em Contabilidade (REPeC)*, 3(2), 72. https://doi.org/10.17524/repec.v3i2.68

Pereira, M. J. R. C. (2010). *A conformidade book-tax e o seu impacto nos lucros, nos fluxos financeiros e na fiscalidade*. Universidade do Porto.

Rozenbaum, O. (2019). EBITDA and managers' investment and leverage choices. *Contemporary Accounting Research*, 36(1), 513–546. https://doi.org/10.1111/ijlh.12426

Sant'anna, V. S., & Brunozi Júnior, A. C. (2019). Governança corporativa, tmt e book-tax differences (BTD) anormais em empresas de capital aberto listadas no Brasil. *Advances in Scientific and Applied Accounting*, 12(2), 165–187. https://doi.org/10.14392/ASAA.2019120209

Santos, D. G., & Oliveira, A. S. (2020). Agressividade fiscal e a lucratividade nas empresas do setor de energia elétrica do Brasil. *Revista Catarinense da Ciência Contábil*, 19, 1–18. https://doi.org/10.16930/2237-766220203044

Silva, G. C. P. (2018). *Informação non-gaap: evidências do seu value relevance, e uma análise do trade-off entre oportunismo e eficiência na qualidade do seu reporte*. Universidade Federal da Paraíba. Recuperado de: https://repositorio.ufpb.br/jspui/handle/123456789/12982

Silva, J. R. M., Costa, P. S., & Santos, M. A. (2022). Corrupção dos países e book-tax differences anormal: uma análise multinível. *Revista de Contabilidade e Organizações*, 16(34), e188514. https://doi.org/10.11606/issn.1982-6486.rco.2022.188514

Tang, T., & Firth, M. (2011). Can book–tax differences capture earnings management and tax Management? Empirical evidence from China. *The International Journal of Accounting*, 46(2), 175–204. https://doi.org/10.1016/j.intacc.2011.04.005

Tang, T. Y. H. (2005). Book-tax differences, a proxy for earnings management and tax management - empirical evidence from China. *SSRN Electronic Journal*, 1–36. https://doi.org/10.2139/ssrn.872389

Verrecchia, R. E. (2001). Essays on disclosure. *Journal of Accounting and Economics*, 32, 97–180. https://doi.org/10.1016/S0165-4101(01)00025-8

Wooldrige, J. M. (2012). *Introductoy econometrics: A modern approach*. Applied Discrete-Choice Modelling (5o ed). Mason: Cengage Learning. https://doi.org/10.4324/9781351140768-8

Appendix A

To investigate the association between ABTDs and non-compliance in EBITDA disclosures, Table 1 summarizes the results of studies which highlight the expected behavior of the control variables selected in this study.

Table 1.
Description of the control variables

Variables	Specification	Expected signs	Studies
Financial leverage	Higher levels of financial leverage can negatively or positively affect compliance with the CVM norm.	+/–	Bouwens et al. (2019); Rozenbaum (2019).
Analysts following	Greater number of analysts following the company can reduce non-compliance because managers can seek to positively affect the perceptions of these professionals.	–	Ali and Zhang (2015); Cormier et al. (2017).
Auditing	Big Four auditing firms can contribute to a reduction in non-compliance in EBITDA disclosure.	–	Lima et al. (2021).
Financial covenant	The combined use of EBITDA to communicate with the market and fulfill financial covenants fosters an improved flow of information.	–	Rozenbaum (2019).
Remuneration indicator	The combined use of EBITDA to communicate with the market and remunerate administrators fosters an improved flow of information.	–	Rozenbaum (2019).
Differentiated levels of governance	The differentiated levels of corporate governance constitute agency costs which can diminish the asymmetry of information. Thus, it is expected that companies in these levels will have less non-compliance in terms of EBITDA disclosures.	–	Cormier et al. (2017); Lima et al. (2021); Andrade and Murcia (2022).

The fact that a company examined in this study belongs to a subsector can result in the natural existence of a lack of conformity with EBITDA disclosures in other subsectors which, depending on the context, can suggest the existence of a nested data structure (Fávero & Belfiore, 2017). Due to this consideration, the research data may be analyzed using a two-level binary logistic model – the levels consist of the company and the subsector. The company level (Level 1) presents the independent variables and the control variables X1, ..., XQ referring to each company *i* (i = 1, ..., n). The subsector level (Level 2) presents the independent variables and the control variables W1, ..., WS referring to each subsector j (j = 1, ..., J), which do not vary for observations that belong to the same subsector (Fávero & Belfiore, 2017).

Equations 1 and 2 provide the algebraic formulations used in the binary logistic models with two levels to estimate the behavior of the examined variables, as proposed by Fávero & Belfiore (2017).

$$p_{ij} = \frac{1}{1 + e^{-(b_{0j} + b_{1j}.X_{1ij} + b_{2j}.X_{2ij} + \ldots + b_{Qj}.X_{Qij})}} \quad (1)$$

"In which p_{ij} represents the probability of the occurrence of the event of interest for each observation *i* that belongs to a given group *j*, and b_{qj} (q = 0, 1, ..., Q) refers to the Level 1 coefficients" (Fávero & Belfiore, 2017, p. 926).

$$b_{qj} = \gamma_{q0} + \sum_{s=1}^{S_q} \gamma_{qs}.W_{sj} + u_{qj} \quad (2)$$

"In which γ_{qs} (s = 0, 1, ..., S_q) refers to the Level 2 coefficients, and u_{qj} are the Level 2 random effects, which are normally distributed with a mean of zero and a variance of τ_{qq}. In addition, occasional independent error terms of u_{qj} present a mean of zero and a variance of $\pi^2/3$" (Fávero & Belfiore, 2017, p. 926).

For Level 2 of the multilevel logistic model, we used the subsector classification of the [B][3] stock exchange, which encompasses 36 economic subsectors to decrease the sample's disequilibrium.

Openly traded Brazilian firms have the option of not reporting tax profits and fiscal losses in explanatory notes. For this reason, we have adopted an extrapolation procedure to estimate BTDs (Costa, 2012). Book profits are equivalent to profits before income tax (PBIT), while tax profits (TP) encompass expenses with current income tax expenses (CITE) and social contributions on net profits (SCNP). The result of CITE plus SCNP is divided by the maximum rate of 34%, as permitted by Brazilian tax legislation (Costa, 2012). As delineated in Equation 3, the difference between PBIT and TP constitutes BTDs.

$$BTD_{it} = \frac{PBIT_{it} - TP_{it}}{TA_{it}} \quad (3)$$

In which:

BTD_{it} = Total differences between book profit and tax profit for company *i* in year *t*.

$PBIT_{it}$ = Profits before income tax for company *i* in year *t*.

TP_{it} = Current income tax expenses plus social contribution on net profits of company *i* in year *t*, divided by the maximum tax rate of 34%.

TA_{it} = Total assets of company *i* in year *t*.

In terms of the discretionary component reflected in ABTDs, it was estimated using the model proposed by Tang (2005) and Tang & Firth (2011). The model was adapted to the context of Brazilian legislation by Brunozi et al. (2018, 2019) and Sant'Anna & Brunozi (2019). This model covers differences between book and tax profits, prioritizing those which have the lowest possibility of managerial manipulation (Tang, 2005). Therefore, the total residuals of the regression model comprise the discretionary component reflected in ABTDs.

The econometric model employed to generate ABTD is presented in Equation 4.

$$BTD_{it} = \alpha_i + \beta_1 EQUIV_{it} + \beta_2 \Delta REV_{it} + \beta_3 PROP_{it} + \beta_4 INT_{it} + \beta_5 LTI_{it} + \beta_6 FLD_{it} + \varepsilon_i \quad (4)$$

In which:

BTD_{it} = Total differences between the book and tax profits of company *i* in year *t* (Equation 3).

$EQUIV_{it}$ = Result of the patrimonial equivalent of company *i* in year *t*.

ΔREV_{it} = Variation in net revenues of company *i* from year *t – 1* to year *t*, scaled by total assets.

$PROP_{it}$ = Balance of the property assets of company *i* in year *t*, scaled by total assets.

INT_{it} = Remaining balance of deferred and intangible assets of company *i* in year *t*, scaled by total assets.

LTI_{it} = (A) Net patrimony of company *i* in year *t – 1* multiplied by the Long-Term Interest Rate (LTIR) accumulated by year *t*. (B) Fifty percent of the net profits of company *i* in year *t*. If the result of (A) is less than (B), consider (A); if the result of (A) is greater than (B), consider (B).

FLD_{it} = Fiscal loss dummy binary variable which is equal to 1 if the provisions for income taxes and social contributions are positive; if they are not, it assumes a value of 0.

εi = Residuals of the regression which is used to estimate ABTD as an independent variable in binary logistic models.

In terms of NBTD, it is calculated by subtracting ABTD from BTD (Tang & Firth, 2011). The algebraic formulation used to calculate non-discretionary BTD is presented in Equation 5.

$$NBTD_{it} = BTD_{it} - ABTD_{it} \quad (5)$$

The panel data technique was adopted to estimate the discretionary component reflected by ABTD, as can be seen in Equation 4. To accomplish this, we analyzed various regression methods to develop econometric models that consider the mentioned variables. The methods employed were pooled effects, fixed effects, and random effects. In the pooled method, all of the database's observations are pooled and a single constant is estimated. In this manner, the cross-sectional aspects of the data are ignored. In the fixed effects method, the data that is constant over time tends to be receive less attention and cross-sectional variations are more relevant. In the random effects method, the regression's error term is independent of all of the data and the selected time interval.

This makes it possible to estimate the mean intercept based on all of the individual intercepts for the model variables (Gujarati & Porter, 2011; Wooldrige, 2012). Adopting a level of significance of $p < 0.05$, the Chow test, and the Breusch-Pagan and Hausman Lagrange Multiplier tests were employed to indicate the type of regression best suited to handle the characteristics of the data (Gujarati & Porter, 2011).

The data for the econometric model of Equation 4 was submitted to the Breusch-Pagan test as well as the Variance Inflation Factor (VIF) test. The results of the Breusch-Pagan test indicated that the variances of the errors are equal and that the regression model coefficients can be estimated based on clustered robust standard errors (Fávero & Belfiore, 2017). If the result of the VIF test has a value above 10, this indicates the presence of multicollinearity, and the elimination of variables should be considered (Gujarati & Porter, 2011). This study adopts $p < 0.05$ to detect problems of heteroskedasticity and a VIF > 10 to identify problems of multicollinearity to ensure the robustness of the results (Gujarati & Porter, 2011; Wooldrige, 2012).

To identify outliers in the research data, we analyzed its dispersion and asymmetry using scalar variables. Then we performed a winsorization of 1% utilizing the Stata 13® software (Ávila et al., 2017).

How to cite this paper

Pontes, G. A., Lemes, S., Silva, J. R. M., & Costa, P. S. (2023). *Book-tax differences* anormal e a não conformidade na divulgação do EBITDA. *Revista de Contabilidade e Organizações*, 17:e213704. DOI: http://dx.doi.org/10.11606/issn.1982-6486. rco.2023.213704