

Tax Aggressiveness and Tax Dispute Exposure: Evidence from Brazil

Agressividade Tributária e Exposição ao Contencioso Tributário: Evidências do Brasil

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ABSTRACT

This study examines the association between tax aggressiveness and tax dispute exposure among Brazilian firms listed on B3 from 2017 to 2022. The sample comprises 233 non-financial companies across 27 industries, using data from Comdinheiro® and firms' explanatory notes. Tax dispute exposure is measured as tax provisions plus contingent tax liabilities scaled by total assets. Tax aggressiveness is proxied by abnormal book-tax differences (BTDA), the effective tax rate on profits (ETR), and the tax burden on value added (TTVA), assessed with 1-, 3-, and 5-year lags. Multiple linear regressions are estimated with standard controls (size, leverage, profitability, and operating performance). Results are consistent with higher dispute exposure among firms with greater BTDA and TTVA, while higher ETR associates with lower exposure in the short run. These associations should be interpreted as observational, given measurement limitations and potential endogeneity. From a policy and regulatory perspective, findings provide empirical grounding for discussions on tax simplification, cooperative compliance design, and mandatory disclosure of tax uncertainty—particularly relevant in the context of Brazil's ongoing tax reform and persistent administrative dispute backlogs.

Keywords: *tax aggressiveness; tax dispute exposure; tax provisions; BTDA; ETR; TTVA; tax reform; regulatory policy.*

RESUMO

Este estudo investiga a associação entre agressividade tributária e exposição a litígios tributários em companhias brasileiras listadas na B3 no período de 2017 a 2022. A amostra é composta

por 233 firmas não financeiras (27 setores), com dados do Comdinheiro® e das notas explicativas. A exposição a litígios é mensurada pela razão entre provisões tributárias e passivos contingentes tributários sobre o total de ativos. A agressividade tributária é aproximada por diferenças anormais entre lucro contábil e lucro fiscal (BTDA), taxa efetiva de tributos sobre o lucro (ETR) e carga tributária sobre o valor adicionado (TTVA), com defasagens de 1, 3 e 5 anos. Estimam-se regressões lineares múltiplas com controles usuais (tamanho, endividamento, rentabilidade e desempenho operacional). Os resultados indicam padrões consistentes com maior exposição a litígios em firmas com BTDA e TTVA elevadas, enquanto ETR mais alta tende a associar-se a menor exposição no curto prazo. As evidências são de natureza observacional, dadas limitações de mensuração e potencial endogeneidade. Do ponto de vista de políticas públicas e regulação, os resultados fornecem respaldo empírico para debates sobre simplificação tributária, modelagem de conformidade cooperativa e evidenciação de incerteza fiscal—aspectos centrais à reforma tributária brasileira em curso e ao persistente acúmulo de processos no contencioso administrativo federal.

Palavras-chave: *agressividade tributária; exposição a litígios; provisões tributárias; BTDA; ETR; TTVA; reforma tributária; política regulatória.*

1 INTRODUCTION

Tax aggressiveness and tax disputes are increasingly discussed at the intersection of economics, tax law, and corporate governance, particularly in jurisdictions where complexity and enforcement interact to heighten uncertainty for firms. In Brazil, the multiplicity of taxes, overlapping rules, and intensive administrative/judicial contestation create an environment in which corporate tax planning choices may be closely connected to the magnitude of disclosed dispute exposure.

Internationally, cooperative compliance initiatives have been proposed as a governance model to reduce friction between taxpayers and tax authorities by promoting transparency, early engagement, and more predictable dispute resolution (Andrés-Aucejo, 2018). In Brazil, however, legislative complexity and interpretive disputes have long contributed to recurring tax conflicts, with potential implications for institutional trust and the business environment. Recent initiatives—such as the Cooperative Tax Compliance Program (CONFIA)—aim to mitigate these tensions through enhanced dialogue and streamlined resolution mechanisms (Oliveira, 2022). However, their practical effectiveness and scalability remain debated.

The urgency of empirical research on tax disputes has been further amplified by Brazil's landmark structural reform of its tax system. Constitutional Amendment No. 132, enacted in December 2023, initiated the most comprehensive overhaul of Brazil's indirect taxation in decades, consolidating a fragmented array of federal, state, and municipal consumption taxes into a new dual value-added tax architecture (Martinez et al., 2023a). Under the reform, federal PIS/COFINS contributions are replaced by a Contribution on Goods and Services (CBS), while the state ICMS and municipal ISS are subsumed into a unified Tax on Goods and Services (IBS), alongside a new Selective Tax (IS) targeting goods deemed harmful. Although the reform primarily targets the consumption tax layer and its full implementation is projected through a transition period extending to 2033, it carries meaningful indirect implications for corporate tax planning and dispute dynamics. Firms that optimized their tax positions under the pre-reform regime now face new interpretive uncertainties and compliance costs during transition, and may be incentivized to reassess strategies that previously generated dispute

exposure. This structural shift makes empirical evidence on the aggressiveness–dispute relationship produced under the prior tax architecture especially valuable—both as a baseline for future comparisons and as input for the calibration of compliance and disclosure mechanisms within the reformed framework (Martinez et al., 2023a).

The institutional dimension of tax disputes in Brazil is further shaped by the persistent accumulation of unresolved cases at the Conselho Administrativo de Recursos Fiscais (CARF), the principal body for administrative tax appeals at the federal level. Estimates from the Receita Federal do Brasil and the Procuradoria-Geral da Fazenda Nacional (PGFN) indicate that the total stock of contested federal tax assessments pending at the administrative level has persistently exceeded R\$1 trillion in recent years, placing Brazil among the jurisdictions globally with the highest ratios of administrative dispute stock to GDP. This backlog is not merely an administrative inefficiency; it has direct accounting implications, as long-pending cases must be classified and disclosed in financial statements as provisions or contingent liabilities under CPC 25 (equivalent to IAS 37), creating a structural feedback loop between institutional dispute dynamics and firms' financial reporting (Donelson et al., 2022; Martinez et al., 2023b). The dispute landscape was further reshaped in 2023, when Law No. 14,689 restored the taxpayer-favorable casting vote (*voto de qualidade pró-contribuinte*) in tied CARF decisions, potentially altering firms' incentive calculus between settlement and administrative contestation. Taken together, this institutional context underscores the relevance of understanding what firm-level tax behavior predicts levels of disclosed dispute exposure—precisely the question addressed in this study.

A third dimension linking this study to current debates concerns the quality and comparability of tax uncertainty disclosures in financial reporting. Internationally, the adoption of IFRIC 23 (effective January 2019) formalized guidance on how entities should reflect uncertainty in income tax treatments under IAS 12, prompting renewed empirical attention to how firms identify, measure, and disclose uncertain tax positions (De Simone et al., 2022). In the Brazilian context, disclosures of tax provisions and contingent tax liabilities in explanatory notes are required under CPC 32 (IAS 12) and CPC 25 (IAS 37), but prior research highlights substantial heterogeneity in disclosure quality, granularity, and comparability across firms (Alcântara et al., 2023; Martinez et al., 2023b). Recent literature increasingly frames tax uncertainty disclosure not only as a compliance matter but also as a governance signal relevant to investors and stakeholders assessing tax risk and corporate responsibility (Guenther et al., 2021; Slemrod, 2019). This emerging perspective connects tax disclosure to broader ESG transparency frameworks and underscores the informational value—and limitations—of accounting-based proxies for dispute exposure. By using disclosed provisions and contingent liabilities as the empirical measure of tax dispute exposure, the present study directly engages with this literature and contributes evidence on the informational content of mandatory tax disclosures in a jurisdiction characterized by systemic complexity and high dispute volume.

In the empirical literature, tax aggressiveness is commonly understood as a set of strategies intended to reduce tax burdens within (or near) the boundaries of the law, often relying on ambiguity, discretion, or planning opportunities. Prior studies suggest that more aggressive positions may be associated with greater dispute risk, particularly when enforcement is active and legal interpretation is contested (Wang et al., 2020; Khan & Nuryanah, 2023). Still, the relationship between tax aggressiveness and disputes is not mechanical: it may vary across tax bases, industry exposure, and firms' reporting and governance choices, making additional evidence from complex tax settings valuable.

Against this background, this study examines 233 non-financial firms listed on B3 from 2017 to 2022. It analyzes whether commonly used proxies for tax aggressiveness—abnormal

book–tax differences (BTDA), effective tax rates on profits (ETR), and the tax burden on value added (TTVA)—are associated with firms' tax dispute exposure, proxied by disclosed tax provisions and contingent tax liabilities scaled by total assets. Rather than claiming causal effects, the paper provides additional empirical associations in the Brazilian context using multivariate regressions with standard controls.

The study offers two focused contributions. First, it contrasts profit-based measures (BTDA/ETR) with a value-added-oriented measure (TTVA), enabling a comparison of how different tax bases relate to disclosed dispute exposure. Second, it examines whether these associations persist when aggressiveness proxies are evaluated with time lags, providing descriptive evidence on the temporal pattern of dispute exposure relative to tax positions.

The findings may be informative for policymakers interested in simplification and dispute reduction, regulators balancing enforcement and cooperative compliance, and firms managing tax uncertainty. However, the results should be interpreted cautiously, given measurement constraints (accounting-based proxies for disputes), potential endogeneity, and the limits of observational designs in this setting.

2 THEORETICAL FRAMEWORKS

2.1 Tax planning and tax dispute exposure

Tax collection is essential to fund public services and social welfare. At the firm level, however, tax burdens are often treated as economically relevant costs, motivating the search for planning strategies to improve cash flows and after-tax performance (Martinez, 2017; Wang et al., 2020). In this context, tax planning may range from routine compliance choices to more assertive positions that rely on interpreting complex rules and administrative practice.

Prior research indicates that firms may exploit regulatory complexity and gaps to manage their tax burden more efficiently, though such decisions require technical expertise to remain within legal boundaries and reduce the likelihood of disputes (Martinez, 2017; Wang, 2022). When tax rules are complex and enforcement relies on data cross-checking, discrepancies between firms' reporting and tax authorities' information can increase the probability of controversy and the need for professional advice in dispute resolution (Elitzur & Yaari, 2021; Ojala et al., 2023). In practice, disputes that cannot be settled informally may escalate, incur costs, create uncertainty, and require disclosures in financial statements (Donelson et al., 2022).

For this study, the key concept is not the number of disputes per se but tax dispute exposure as reflected in accounting disclosures (e.g., provisions and contingent tax liabilities). This framing aligns the empirical strategy with what is observable and comparable across firms using financial reporting information.

2.2 Tax aggressiveness and tax disputes

The literature often treats tax aggressiveness as a continuum of tax-reducing behavior that ranges from conservative planning to more assertive positions, depending on legal ambiguity, enforcement intensity, and firms' incentives (Hanlon & Heitzman, 2010). In jurisdictions with complex tax systems, the same planning decision may be perceived differently by taxpayers and authorities, making disputes more likely when aggressive positions are challenged.

In Brazil, discussions on tax planning emphasize both the incentives created by high tax burdens and the importance of legal compliance to avoid penalties and prolonged controversies (Martinez, 2017; Wang et al., 2020; Martinez et al., 2023b). Lack of clarity and information

asymmetries can also lead to errors and contested positions, reinforcing the role of specialized support to navigate rules and administrative interpretations (Martinez, 2017). The trade-off between tax benefits and dispute risk is therefore central: planning choices may reduce tax payments in the short run while increasing the likelihood of scrutiny and disagreement, particularly when documentation and reporting are weak (Mittone et al., 2021).

Empirical studies also examine how institutional design shapes compliance outcomes and the persistence of disputes, suggesting that tax governance mechanisms and credible enforcement may influence the aggressiveness–dispute relationship (Khan & Nuryanah, 2023; Cloyd & Spilker, 1999). Overall, these insights support the view that aggressive positions may be associated with greater dispute exposure, though the magnitude of the association can vary across tax bases and firm characteristics.

2.3 Expected association between tax aggressiveness and tax dispute exposure

Prior evidence suggests that more aggressive tax positions may be associated with increased tax risk and controversy, especially in settings where legal interpretation is contested and enforcement is active (Mittone et al., 2021; Donelson et al., 2022). Studies also highlight broader governance and economic implications of aggressive practices and dispute dynamics, particularly in developing economies (Rudyanto et al., 2023). In the Brazilian case, proposals to simplify rules and strengthen tax administration have been linked to reduced litigation and improved predictability (Martinez et al., 2023a; Martinez et al., 2023b).

This study focuses on three commonly used proxies for tax aggressiveness: abnormal book–tax differences (BTDA), effective tax rates on profits (ETR), and the tax burden on value added (TTVA). These proxies capture different dimensions of tax-reducing behavior and may relate differently to dispute exposure depending on the underlying tax base and disclosure practices.

Accordingly, and consistent with the above arguments, the study advances the following testable expectation:

H1: Tax aggressiveness proxies (BTDA, ETR, and TTVA) are associated with firms' tax dispute exposure (as captured by disclosed tax provisions and contingent tax liabilities scaled by total assets).

3 METHODOLOGY

This section describes the methodological approach used to examine associations between tax aggressiveness and tax dispute exposure among Brazilian listed firms. The study adopts a descriptive quantitative design and analyzes firm-year observations over the period 2017–2022.

3.1 Sample selection and data collection

The sample comprises 233 non-financial companies listed on B3, spanning 27 industries. Data were collected from the Comdinheiro® database and supplemented with information disclosed in firms' explanatory notes and financial statements. The dataset was organized at the firm-year level and analyzed using Stata®. The empirical strategy uses multiple regression models linking accounting-based proxies for tax aggressiveness to a disclosure-based proxy for tax dispute exposure, controlling for firm characteristics commonly used in the literature.

3.2 Econometric Model and Variables

Econometric model

To examine the study expectation (H1), we estimate the following baseline model, drawing on prior empirical specifications adapted to the Brazilian setting (Martinez et al., 2023b; Zhu et al., 2023):

$$\text{TaxLit}_{it} = \beta_0 + \beta_1 \cdot \text{TaxAgg}_{it} + \beta_2 \cdot \text{ROE}_{it} + \beta_3 \cdot \text{LEV}_{it} + \beta_4 \cdot \text{SIZE}_{it} + \beta_5 \cdot \text{EBIT}_{it} + \varepsilon_{it} \quad (1)$$

where TaxLit_{it} is the dependent variable (tax dispute exposure), TaxAgg_{it} represents one of the tax aggressiveness proxies (BTDA, ETR, or TTVA) measured contemporaneously or with lags (1, 3, and 5 years), and the remaining terms are control variables.

Dependent Variable: tax dispute exposure (TaxLit)

The dependent variable TaxLit_{it} captures firms' tax dispute exposure based on accounting disclosures, proxied by the sum of tax provisions and contingent tax liabilities scaled by total assets. This proxy reflects the magnitude of disclosed tax-related uncertainties and potential outflows associated with tax controversies, rather than the number of lawsuits or administrative proceedings (Donelson et al., 2022):

$$\text{TaxLit}_{it} = \frac{(\text{Tax Provisions}_{it} + \text{Contingent Tax Liabilities}_{it})}{\text{Total Assets}_{it}} \quad (2)$$

Independent Variable: tax aggressiveness proxies (TaxAgg)

Abnormal book–tax differences (BTDA)

BTDA is used as an accounting-based proxy of tax aggressiveness. Following Martinez et al. (2023b), BTDA is obtained from the residual of an OLS model estimated for book–tax differences (BTD), in which part of the BTD is explained by accrual-related components and the unexplained portion is interpreted as abnormal (discretionary) variation associated with more aggressive tax-related reporting.

$$\text{BTD}_{it} = \alpha + \beta \cdot \text{TACC}_{it} + u_{it}, \text{ where } \text{BTDA}_{it} = u_{it}. \quad (3)$$

where TACC_{it} denotes total accruals and the residual term u_{it} represents BTDA (Martinez et al., 2023b).

Effective Tax Rate (ETR)

ETR captures the proportion of pre-tax income paid as corporate income taxes and is widely used to approximate tax burden outcomes that may reflect tax planning intensity (Wang et al., 2020; Alcântara et al., 2023; Martinez et al., 2023a):

$$\text{ETR}_{it} = (\text{IRPJ}_{it} + \text{CSLL}_{it}) / \text{LAIR}_{it}. \quad (4)$$

Tax Rate on Value Added (TTVA)

TTVA is particularly suited to measuring tax aggressiveness in the Brazilian context (MARTINEZ, 2017, 2019; ALCÂNTARA et al., 2023). This measure captures how various taxes—on both profits and revenues—contribute to the overall tax burden, thereby providing an integrated view of tax incidence. It is calculated as follows:

$$\text{TTVA}_{it} = \text{Taxes_in_DVA}_{it} / \text{TotalValueAdded_in_DVA}_{it}. \quad (5)$$

Together, BTDA, ETR, and TTVA provide complementary views of tax aggressiveness, capturing (i) discretionary book–tax differences, (ii) tax burden on profits, and (iii) tax burden relative to value added.

Control Variables

Following prior literature, the model includes control variables related to performance, leverage, and size, which may be associated with both tax planning opportunities and the scale of dispute exposure (Xavier et al., 2022; Bastos & Nakamura, 2009; Martinez et al., 2023b).

To enhance readability, variable definitions are summarized in Table 1.

Table 1
Variable Definitions and Expected Associations

Variable	Type	Definition (formula)	Expected association	References
TAXLIT	Dependent	$((\text{Tax Provisions} + \text{Contingent Tax Liabilities}) / \text{Total Assets})$	+	(Donelson et al., 2022)
BTDA	Independent	Abnormal book–tax differences (residual-based)	+	(Martinez et al., 2023b)
ETR	Independent	$((\text{IRPJ} + \text{CSLL}) / \text{LAIR})$ [or EBIT]	±	(Wang et al., 2020; Alcântara et al., 2023; Martinez et al., 2023a)
TTVA	Independent	Tax burden in DVA / Total value added	+	(Martinez, 2017, 2019; Alcântara et al., 2023)
ROE	Control	Return on equity	±	(Xavier et al., 2022)
LEV	Control	Total debt / Total assets	±	(Bastos & Nakamura, 2009)
SIZE	Control	$(\ln(\text{Total Assets}))$	±	(Martinez et al., 2023b)
EBIT	Control	Earnings Before Interest and Taxes	±	(Martinez et al., 2023b)

4 ANALYSES OF RESULTS

4.1 Descriptive Statistics

This section presents the descriptive statistics and the main empirical results. Table 2 summarizes the distribution of the dependent variable (TaxLit) and the key proxies for tax aggressiveness (BTDA, ETR, and TTVA), including lagged variants, as well as the control variables.

Table 2 indicates substantial dispersion in tax dispute exposure (TaxLit). While the median and interquartile range suggest that most firms report relatively low dispute exposure, the maximum value is considerably higher, indicating a small number of firm-year observations with very large, disclosed tax provisions and/or contingent tax liabilities. This pattern is consistent with a right-skewed distribution commonly observed in disclosure-based risk measures.

Regarding aggressiveness proxies, BTDA values are centered near zero and exhibit meaningful dispersion across firms and years, consistent with the interpretation of BTDA as an abnormal component of book–tax differences. ETR exhibits variation across observations and across lags, reflecting heterogeneity in tax outcomes and pre-tax profitability. TTVA remains comparatively stable across lags, suggesting that the value-added-based tax burden is more persistent over time than the profit-based proxies.

Overall, Table 2 highlights relevant heterogeneity across firms in both tax dispute exposure and tax aggressiveness proxies, motivating the multivariate analysis that follows.

Table 2.

Descriptive Statistics of the Variables

Variable	Obs.	Average	Standard deviation	Min	Max	P25	P50	P75
TAXLIT	1021	0,1504	0,4236	0,0002	3,6072	0,0173	0,0483	0,1282
BTDA	1008	0,0065	0,1001	-0,4354	0,3177	-0,0043	0,0189	0,0421
BTDA1	1008	-0,0002	0,0973	-0,4369	0,2345	-0,0067	0,0153	0,0375
BTDA3	1008	-0,0050	0,0859	-0,4035	0,1511	-0,0079	0,0106	0,0321
BTDA5	1008	-0,0060	0,0789	-0,3888	0,1345	-0,0078	0,0081	0,0290
ETR	811	0,2269	0,1714	0,0000	0,8657	0,1096	0,2198	0,3008
ETR1	811	0,2874	0,4213	0,0000	3,1293	0,0952	0,2272	0,3080
ETR3	811	0,3131	0,5147	0,0000	3,7893	0,1040	0,2266	0,3161
ETR5	817	0,3081	0,4286	0,0000	2,6275	0,1122	0,2303	0,3130
TTVA	1021	0,2786	0,2202	0,0000	1,0880	0,1333	0,2498	0,3744
TTVA1	1021	0,2782	0,2185	0,0000	1,0483	0,1309	0,2482	0,3785
TTVA3	1021	0,2694	0,2025	0,0000	0,8381	0,1344	0,2374	0,3691
TTVA5	1021	0,2677	0,2005	0,0000	0,8728	0,1288	0,2385	0,3591
ROE	1021	9,1068	3,4287	-1,5311	151,7844	0,0000	8,6388	18,7531
LEV	1021	0,7520	0,5104	0,1377	3,0830	0,4966	0,6511	0,7847
SIZE	1021	8,6068	1,7493	4,8707	12,7417	7,3251	8,5462	9,9171
EBIT	1021	1757,9	4553,9	-951,4	34231,8	38,8	388,5	1566,9

Source: Prepared by the authors based on research data.

Notes: Tax dispute exposure is a metric that measures the aggregate of provisions and contingent tax liabilities divided by the corporation's total assets. BTDA, ETR, and TTVA measure the research model's tax aggressiveness. At the same time, ROE, LEV, SIZE, and EBIT are the control variables that affect the relationship between tax dispute exposure and tax aggressiveness.

4.2 Correlation Matrix

Table 3 reports Pearson (upper triangle) and Spearman (lower triangle) correlations. These bivariate correlations provide an initial view of how the variables move together but should be interpreted cautiously because they do not account for other firm characteristics included in the regression models.

Two patterns are noteworthy. First, TaxLit is positively correlated with TTVA and its lags, indicating that a higher value-added tax burden is associated with higher disclosed dispute exposure in the bivariate setting. Second, TaxLit shows negative correlations with BTDA and some BTDA lags in the bivariate correlations. Correlations between TaxLit and ETR are mixed across specifications and lags.

Importantly, the correlation matrix is not intended to support causal interpretation and may differ from multivariate regression estimates when controls are added and when multiple proxies capture overlapping dimensions of tax outcomes and reporting. Therefore, the main interpretation of the study is based on the multivariate regressions reported in Tables 4–5.

Table 3.

Pearson and Spearman Correlation Matrix

Variables	TaxLit	BTDA	BTDA1	BTDA3	BTDA5	ETR	ETR1	ETR3	ETR5	TTVA	TTVA1	TTVA3	TTVA5	ROE	LEV	SIZE	EBIT
TaxLit	1	-0,070**	-0,049	-0,058*	-0,066*	0,057	-0,015	-0,071**	-0,085**	0,183***	0,161***	0,161***	0,164***	-0,036	0,206***	0,176***	0,132***
BTDA	-0,226***	1	0,654***	0,583***	0,534***	-0,168***	-0,024	0,009	0,003	-0,013	0,0024	-0,000	-0,013	0,408***	-0,365***	0,122***	0,345***
BTDA1	-0,248***	0,646***	1	0,805***	0,714***	-0,066*	-0,075**	0,001	0,006	0,073**	-0,001	0,011	0,017	0,300***	-0,369***	0,168***	0,329***
BTDA3	-0,340***	0,580***	0,831***	1	0,893***	-0,016	-0,044	-0,003	0,020	0,089**	0,049	0,021	0,034	0,265***	-0,382***	0,215***	0,362***
BTDA5	-0,361***	0,554***	0,719***	0,907***	1	-0,012	-0,004	0,048	0,076**	0,077**	0,041	0,023	0,025	0,239***	-0,375***	0,216***	0,347***
ETR	-0,125***	0,069**	-0,000	0,012	0,007	1	0,433***	0,331***	0,294***	0,232***	0,208***	0,176***	0,166***	-0,087**	0,042	0,158***	0,193***
ETR1	-0,034	0,029	0,048	0,038	0,024	0,144***	1	0,661***	0,539***	0,210***	0,246***	0,211***	0,198***	0,046	-0,012	0,205***	0,240***
ETR3	-0,019	0,031	0,068*	0,068*	0,049	0,097***	0,510***	1	0,807***	0,168***	0,228***	0,214***	0,212***	0,128***	0,005	0,111***	0,177***
ETR5	0,003	0,027	0,057	0,095***	0,103***	0,087**	0,383***	0,749***	1	0,114***	0,167***	0,169***	0,172***	0,059	0,023	0,076**	0,122***
TTVA	0,179***	0,042	0,161***	0,099***	0,033	0,114***	0,100**	0,033	0,013	1	0,802***	0,708***	0,631***	0,244***	-0,039	0,118***	0,1575***
TTVA1	0,182***	0,039	-0,008	0,004	-0,048	0,113***	0,084**	0,043	0,027	0,735***	1	0,842***	0,757***	0,226***	-0,017	0,127***	0,152***
TTVA3	0,138***	0,007	0,007	0,000	-0,029	0,118***	0,078**	0,053	0,040	0,625***	0,814***	1	0,913***	0,177***	0,008	0,080**	0,099***
TTVA5	0,155***	0,017	0,019	0,010	-0,041	0,114***	0,065*	0,064*	0,052	0,501***	0,676***	0,857***	1	0,153***	0,031	0,064*	0,093***
ROE	0,062*	0,125***	0,103***	0,099***	0,077**	-0,053	-0,025	0,068*	-0,007	0,012	0,018	0,045	0,042	1	-0,024	0,139***	0,311***
LEV	0,480***	-0,578***	-0,620***	-0,703***	-0,729***	-0,083**	-0,041	0,011	0,000	-0,046	0,023	0,027	0,060*	0,019	1	0,118***	-0,042
SIZE	-0,115***	0,175***	0,183***	0,229***	0,241***	0,086**	0,040	-0,034	-0,050	0,118***	0,113***	0,091***	0,081**	0,101***	-0,142***	1	0,828***
EBIT	-0,007	0,170***	0,137***	0,128***	0,120***	0,060*	-0,014	-0,103***	-0,144***	0,103***	0,103***	0,090**	0,099***	0,187***	-0,082**	0,564***	1

Source: Prepared by the authors.

Note 1: Correlations between variables in white and gray areas using Pearson's and Spearman's coefficients, respectively.

Note 2: TaxLit is the sum of tax provisions and contingent tax liabilities divided by the corporation's total assets; BTDA (Abnormal Book Tax Differences) is a proxy that uses the residual resulting from an ordinary least squares (OLS) regression; ETR (Effective Tax Rate) is the sum of IRPJ and CSLL divided by pre-tax income; TTVA (Tax Burden on Value Added) is calculated by dividing total taxes in the DVA by total value added to be distributed; BTDA, ETR, and TTVA serve as proxies for tax aggressiveness; ROE (Return on Equity) measures profitability relative to shareholders' equity; LEV (leverage) is measured by dividing total debt by total assets; SIZE proxies firm size using the natural logarithm of total assets; EBIT (Earnings Before Interest and Taxes) is a measure of operating profitability. ROE, LEV, SIZE, and EBIT serve as control variables for the relationship between tax dispute exposure and tax aggressiveness. Correlations with an asterisk (*) are significant at the 10% level, correlations with two asterisks (**) are significant at the 5% level, and correlations with three asterisks (***) are significant at the 1% level.

4.3 Regression Results

Table 4 presents regression estimates where TaxLit is regressed on BTDA (current and lagged variants) and control variables. Across specifications, the coefficient on BTDA (and on its lags) is positive and statistically significant, indicating that higher abnormal book–tax differences are conditionally associated with higher tax dispute exposure after controlling for firm characteristics.

The control variables also exhibit systematic associations with TaxLit. Leverage (LEV) is consistently positive and significant, indicating that more leveraged firms tend to report higher dispute exposure. Firm size (SIZE) is negative and significant in these specifications. ROE and EBIT are statistically significant in Table 4, although their economic interpretation should be approached with caution, given scaling choices and potential sensitivity to extreme observations.

Taken together, Table 4 provides evidence that the BTDA proxy is positively related to disclosed dispute exposure in the multivariate setting. This result should be interpreted as an additional empirical association, particularly because BTDA is an indirect proxy and the dependent variable is based on accounting disclosures of provisions and contingent liabilities.

As a key consistency note, the sign of the BTDA in Table 4 may differ from that in Table 3. This is possible when controls are included and when the relationship is affected by distributional features and correlated firm characteristics (e.g., leverage and size). The regressions, therefore, provide the primary basis for interpretation in this study.

Table 4

Multiple Linear Regression – BTDA

Variable	TaxLit (1)	TaxLit (2)	TaxLit (3)	TaxLit (4)
<i>BTDA</i>	0,6182***	-	-	-
<i>BTDA1</i>	-	0,8292***	-	-
<i>BTDA3</i>	-	-	0,8203***	-
<i>BTDA5</i>	-	-	-	0,5366***
ROE	-0,0010***	-0,0010***	-0,0010***	-0,0010***
<i>SIZE</i>	-0,0237***	-0,0266***	-0,0287***	-0,0274***
LEV	0,3992***	0,4282***	0,4318***	0,3990***
EBIT	8.44e-06***	8.97e-06***	9.89e-06***	9.96e-06***
CONST.	0,4384**	0,0509**	0,0676**	0,0791**
Obs.	1008	1008	1008	1008
F-value	51,16***	53,71***	50,72***	47,69***
R ² Adj	0,1994	0,2074	0,1980	0,1882
VIF	1,34	1,40	1,56	1,64

Source: Prepared by the authors.

Note: Models (1)–(4) use the tax aggressiveness proxy measured in t , $t-1$, $t-3$, and $t-5$, respectively. The dependent variable (TaxLit) is tax dispute exposure in year t . Significance at 1% (***), 5% (**), and 10% (*). Non-significant variables have p-values greater than 10%.

4.4 Additional regressions (ETR and TTVA)

ETR models (Table 5).

Table 5 evaluates ETR (current and lags) as the tax aggressiveness proxy. The current-year ETR coefficient is negative and statistically significant, consistent with the interpretation that higher effective tax rates (i.e., less tax-reducing outcomes) are associated with lower dispute exposure in the short run. For lagged ETR measures, the coefficients are weaker and

become statistically insignificant at longer lags, indicating that the ETR–TaxLit association is not robust over time in this sample.

Table 5

Multiple Linear Regression – ETR

Variable	TaxLit (1)	TaxLit (2)	TaxLit (3)	TaxLit (4)
<i>ETR</i>	-0,2123***	-	-	-
<i>ETR1</i>	-	0,0642*	-	-
<i>ETR3</i>	-	-	0,0234	-
<i>ETR5</i>	-	-	-	0,0269
ROE	-0,0119***	-0,0010**	-0,0000	-0,0010*
<i>SIZE</i>	-0,0243***	-0,0271***	-0,0226**	-0,0183*
LEV	0,4111***	0,3798***	0,3560***	0,3045***
EBIT	9.55e-06***	9.96e-06***	8.00e-06**	6.77e-06*
CONST.	0,1104**	0,0875*	0,0752*	0,0797*
Obs.	807	806	807	813
F-value	52,38***	41,02***	30,33***	22,76***
R ² Adj	0,2417	0,1991	0,1539	0,1182
VIF	1,21	1,21	1,20	1,19

Source: Prepared by the authors.

Note: Models (1)–(4) use the tax aggressiveness proxy measured in t, t-1, t-3, and t-5, respectively. The dependent variable (TaxLit) is tax dispute exposure in year t. Significance at 1% (***), 5% (**), and 10% (*). Non-significant variables have p-values greater than 10%.

Note 2: Significance at 1% (***), 5% (**), and 10% (*). Non-significant variables had p-values greater than 10%.

TTVA models (Table 6).

Table 6 reports a consistently positive and statistically significant association between TTVA (current and lags) and TaxLit. Because TTVA captures the tax burden relative to value added, a positive coefficient indicates that firm-years with a higher value-added tax burden tend to report higher dispute exposure. This result does not necessarily imply “more aggressiveness”; rather, it suggests that the value-added tax environment and/or exposure to the tax burden may co-move with the scale of disclosed disputes, potentially reflecting sectoral tax incidence, tax base composition, and enforcement/disclosure dynamics.

Overall, Tables 5 and 6 provide complementary evidence across proxies. While profit-based outcomes (ETR) show a short-run negative association with dispute exposure, value-added-based burden (TTVA) is positively associated with dispute exposure and appears more persistent across lags. These patterns underscore the need to interpret each proxy in light of its economic meaning and the Brazilian institutional context, while maintaining a cautious, non-causal framing.

Table 6

Multiple Linear Regression – TTVA

Variable	TaxLit (1)	TaxLit (2)	TaxLit (3)	TaxLit (4)
<i>TTVA</i>	0,2743***	-	-	-
<i>TTVA1</i>	-	0,2320***	-	-
<i>TTVA3</i>	-	-	0,2183***	-
<i>TTVA5</i>	-	-	-	0,2616***
ROE	-0,0000	-0,0010	-0,0010	-0,0010
<i>SIZE</i>	-0,0294***	-0,0295***	-0,0289***	-0,0286***
LEV	0,3666***	0,3649***	0,3640***	0,3591***

EBIT	7.80e-06**	7.95e-06**	8.05e-06**	7.54e-06**
CONST.	0,064**	0,0784**	0,0804*	0,0708*
Obs.	1015	1015	1015	1015
F-value	51,55***	49,92***	49,15***	49,85***
R ² Adj	0,1995	0,1943	0,1919	0,1941
VIF	1,21	1,21	1,21	1,21

Source: Prepared by the authors.

Note: Models (1)–(4) use the tax aggressiveness proxy measured in t , $t-1$, $t-3$, and $t-5$, respectively. The dependent variable (TaxLit) is tax dispute exposure in year t . Significance at 1% (***), 5% (**), and 10% (*). Non-significant variables have p-values greater than 10%.

5 DISCUSSION AND IMPLICATIONS FOR THEORY AND PRACTICE

The discussion is organized around three sets of results: (i) the value-added-based tax burden proxy (TTVA), (ii) profit-based proxies commonly used in tax aggressiveness research (BTDA and ETR), and (iii) the role of firm characteristics captured by the control variables.

First, results for TTVA suggest that a higher tax burden relative to value added is consistently associated with higher tax dispute exposure. This pattern aligns with the idea that firms facing heavier tax incidence—covering taxes reflected in the value-added statement—may face greater uncertainty and a higher likelihood of disputes, whether due to tax base complexity, compliance challenges, or enforcement intensity (Alcântara et al., 2023). From a policy perspective, these findings are consistent with calls for simplification and greater predictability in tax rules, which may reduce interpretive conflicts and the costs of dispute management.

Second, profit-based proxies show a more nuanced association with dispute exposure. BTDA-based models indicate that higher abnormal book–tax differences are positively associated with dispute exposure in the multivariate setting. This result is consistent with the view that discretionary or abnormal components of book–tax differences may co-move with tax risk and controversy, particularly in settings where legal interpretation and enforcement are salient (Hanlon & Heitzman, 2010). ETR results indicate a negative short-run association between current effective tax rates and dispute exposure, whereas lagged ETR specifications are weaker and less stable over time. Taken together, the evidence suggests that different proxies capture distinct dimensions of tax outcomes and reporting and should therefore be interpreted in light of their conceptual meaning and measurement constraints.

Third, firm characteristics help explain heterogeneity in dispute exposure. Leverage (LEV) is consistently positive, which may reflect that more leveraged firms face greater exposure to scrutiny and tax-related uncertainty. Size (SIZE) is statistically significant in several models, while ROE and operating performance indicators vary across specifications. These patterns underscore that dispute exposure is likely shaped by multiple firm attributes beyond tax proxies, reinforcing the value of multivariate controls in interpreting the associations reported here.

Overall, the study provides additional empirical evidence on how accounting-based tax proxies relate to a disclosure-based measure of tax dispute exposure among Brazilian listed firms. The findings should be interpreted as associations, not causal effects, given the observational design and the use of proxies that may be sensitive to reporting practices and extreme observations.

6 FINAL CONSIDERATIONS

This study examined whether tax aggressiveness proxies (BTDA, ETR, and TTVA) are associated with tax dispute exposure among firms listed on B3 from 2017 to 2022. Using an accounting-disclosure-based proxy for dispute exposure—tax provisions and contingent tax liabilities scaled by total assets—the analysis documents three main patterns: (i) a robust positive association between TTVA and dispute exposure, (ii) a positive association between BTDA and dispute exposure in multivariate regressions, and (iii) a negative association between current ETR and dispute exposure that weakens with longer lags. These results are broadly consistent with the literature, which emphasizes that complex tax environments, enforcement, and interpretive ambiguity may be related to tax risk and controversy (Hanlon & Heitzman, 2010; Lenz, 2020).

From a practical standpoint, the evidence supports the view that reducing ambiguity and compliance friction—through clearer rules, more predictable interpretation, and improved dispute-resolution mechanisms—may help mitigate exposure to disputes. For firms, the results underscore the importance of monitoring tax risk and ensuring robust documentation and disclosure practices, particularly when tax outcomes deviate substantially from expected patterns. For accounting and tax professionals, the study highlights the importance of integrating tax planning with governance and risk management, while recognizing that the proxies used here capture only part of the broader dispute process.

This study has limitations that warrant caution. First, the dependent variable is an accounting-based proxy that reflects disclosed provisions and contingencies, not the number of proceedings or their legal merits. Second, the analysis is restricted to listed firms and may not generalize to private entities. Third, the observational design does not support causal claims and may be affected by unobserved heterogeneity, measurement error, and sensitivity to extreme observations. Future research could extend this evidence by using alternative dispute measures (e.g., case counts from disclosures or administrative/judicial datasets), exploring sectoral heterogeneity, and comparing settings with different enforcement and disclosure regimes.

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