Tax Litigation and Corporate Performance: Insights from Brazilian Listed Companies

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Abstract

This study investigates the impact of tax litigation on the performance of Brazilian companies listed on B3, Brazil's primary stock exchange. Brazil's complex tax environment, characterized by one of the highest tax burdens globally, poses significant challenges for businesses. This research addresses a critical gap in the literature by examining how tax litigation—quantified through provisions and contingent liabilities—affects key performance metrics, particularly Return on Assets (ROA). Utilizing a dynamic panel data approach through the Generalized Method of Moments (GMM), the study reveals that tax litigation significantly and negatively impacts corporate performance, especially in terms of ROA, underscoring the detrimental effects of ongoing tax disputes on operational efficiency. While the GMM model suggests a marginally significant positive impact of tax litigation on sales growth, this effect may be attributed to temporary tax advantages, potentially unsustainable in the long term. The findings have profound implications for corporate governance and tax strategy. Managers should prioritize robust litigation management and adopt proactive tax strategies to mitigate the adverse effects of tax disputes. Additionally, integrating tax strategies into broader corporate governance frameworks is essential for enhancing transparency and investor confidence. The study also highlights the critical role of macroeconomic factors, such as GDP growth, in shaping company performance. This research contributes to both academic literature and practical applications in corporate finance and taxation, offering valuable insights for market practitioners and policymakers. Future research should explore the nuanced relationships between tax litigation and various performance indicators, considering the dynamic and evolving nature of Brazil's regulatory and economic environment.

Keywords: Tax litigation; Corporate performance; Brazilian companies; Tax complexity; Generalized Method of Moments (GMM).

1. Introduction

Brazil's tax environment is notoriously complex, characterized by a relentless issuance of tax regulations at federal, state, and municipal levels. Between the promulgation of the Constitution in 1988 and September 2016, an average of 45 tax rules were enacted each working day, equating to nearly two tax rules per working hour (Amaral et al., 2016). This regulatory density contributes to Brazil having one of the highest tax burdens globally, significantly exceeding the averages of both Latin American and developed nations. In 2010, Brazil's tax burden was approximately 35% of its GDP, a figure that slightly decreased to 32.44% in 2023, reflecting a persistently heavy tax load over 13 years (Tesouro Nacional Transparente). This high tax burden has far-reaching consequences for companies, exacerbating their financial liabilities and complicating their ability to meet both primary and ancillary tax obligations (Martinez & Sonegheti, 2015).

The tax obligations of a company are of paramount importance in corporate management, directly influencing financial strategies and outcomes. High tax burdens can diminish returns on investment, reduce cash flow, and strain the effectiveness of corporate tax policies (Hanlon & Heitzman, 2010; Tang & Firth, 2011). One significant consequence of this heavy tax environment is the prevalence of tax litigation, which involves disputes between companies and tax authorities over the interpretation and application of tax laws. These disputes can arise from various issues, including non-compliance, assessments, fines, and disagreements over tax benefits and incentives (Martinez et al., 2024; Guerra & Guerra, 2022; Donelson, Glenn & Yust, 2021; Nasip & Sudarmaji, 2018).

Tax litigation poses substantial challenges for corporate finances and strategy, often leading to prolonged and unfavorable outcomes. The financial costs, penalties, and uncertainties associated with litigation can significantly impact a company's financial health, governance practices, and reputation. Furthermore, the conservative accounting practices necessitated by ongoing litigation can generate conflicts between taxpayers and authorities, particularly concerning the interpretation of tax provisions (Lopo Martinez et al., 2024; Nasip & Sudarmaji, 2018). Effective management of tax disputes is crucial to minimize these costs and avoid damaging a company's financial stability and stakeholder relationships.

Despite the critical importance of tax litigation, its impact on corporate performance, particularly within the Brazilian context, has been underexplored in academic literature. International studies have addressed these issues to a greater extent, with research by Dash and Raithatha (2017), Akonye et al. (2020), Arena, Wang, and Yang (2021), and others, offering valuable insights. However, a comprehensive understanding of how tax litigation affects the future performance of Brazilian companies remains limited.

This study aims to fill this gap by analyzing the impact of tax litigation on the future performance of companies listed on B3, Brazil's main stock exchange. By examining the uncertainties, costs, and liabilities generated by tax disputes, this research seeks to provide empirical evidence on how these factors influence corporate outcomes. The findings are expected to offer significant contributions to both market practitioners and academic scholars. For the market, the study will propose practical strategies to manage litigation, enhance transparency, and bolster investor confidence. For academia, it will expand the existing literature on tax litigation, promoting interdisciplinary research and informing future policy development.

Ultimately, this research will not only benefit companies and investors but will also contribute to the broader economic and institutional development of Brazil. The study is structured into five sections: this introduction, a review of the theoretical framework, a discussion of the methodology, an analysis and discussion of the results, and concluding remarks.

2. Literature Review

2.1 Tax Litigation and Companies' Operating Performance

Tax litigation remains a pervasive and complex challenge within Brazil's judicial system, contributing to a substantial number of disputes between taxpayers and tax authorities. The lack of clarity in tax regulations often leads to these disputes, resulting in a significant overload of the judiciary (Almeida, 2018). The wear and tear, coupled with the costs associated with tax litigation, have a profound impact on companies' economic performance. Empirical studies have demonstrated that the time and resources spent dealing with tax assessments, fines, and lawsuits detract from other critical business activities essential for growth and operational efficiency (Dash & Raithatha, 2017; Guerra & Guerra, 2022; Klammer, 2022). This suggests that tax litigation can adversely affect a company's operating performance, necessitating robust management strategies to mitigate such risks.

Inefficiencies in tax administration not only hamper revenue collection but also limit the government’s ability to finance public services. The risk posed by contested tax litigation, often measured through contingent liabilities, has been found to negatively correlate with company performance. Firms with higher litigation risks may experience diminished accounting and market performance, reflecting the broader economic consequences of prolonged legal disputes (Leibfritz, Thornton & Bibbee, 1997). For instance, the inefficiencies of the Italian judicial system—characterized by protracted legal proceedings—reduce legal certainty, deter investment, and ultimately hinder economic growth.

In the context of India, the Income Tax Department (ITD) suffers significant revenue losses due to poor accountability, ineffective performance management, and a deficit of trust within the bureaucratic culture. These factors contribute to substandard fiscal assessments and an increase in frivolous appeals, further exacerbating tax-related disputes (Hulii, 2023). The

legal-economic performance (LEP) framework underscores the importance of understanding the interplay between legal structures and economic outcomes, highlighting how changes in legal frameworks can significantly influence economic performance (Klemmer).

Empirical evidence from China also illustrates that a higher tax burden negatively impacts economic activity, supporting the hypothesis that distortionary taxation diminishes economic performance (Man et al., 2011). Similarly, experiences from OECD countries reveal that higher labor taxes can suppress labor demand, necessitating increased labor market flexibility to mitigate the adverse effects on economic performance (Lorizio & Gurrieri, 2014). The threat of shareholder litigation can also influence companies' tax planning decisions, which in turn affects their operating performance. The contemporary tax planning model developed by Scholes and Wolfson (1992) expands beyond mere tax analysis to consider all costs and stakeholders, recognizing that a company's operational costs are integral to its overall performance. Reducing the risk of litigation can significantly impact corporate tax evasion practices, thereby enhancing operating performance (Arena, Wang & Yang, 2021).

Generally, companies embroiled in tax litigation tend to exhibit lower returns on assets and equity, indicating a negative relationship between tax litigation and operating performance. Waheed, Mahmood, and Wen (2022) argue that voluntary disclosure of tax disputes, along with institutional ownership, can mediate and moderate this relationship. Such transparency helps restore investor and creditor confidence, shielding the company from the negative impacts associated with litigation costs.

In Brazil, the magnitude of tax litigation and corporate finance disputes at the federal, state, and municipal levels is striking, representing 75% of GDP—vastly exceeding the OECD average of 0.28% (Dash & Raithatha, 2017; Insper Tax Center, 2020; Arena, Wang & Yang, 2021; Waheed, Mahmood & Wen, 2022). This underscores the critical need for effective management strategies to navigate the complexities of tax litigation and safeguard corporate performance.

2.2 Previous studies

While empirical research on the relationship between tax litigation and operational performance in Brazil remains limited, international studies have increasingly highlighted this connection across various contexts.

Chronologically, Dash and Raithata (2017) examined the impact of disputed tax litigation on company performance and stock return behavior, focusing on companies listed in India. By employing panel data regression and using contingent liabilities as a measure, their study identified a negative relationship between company performance measures and the risk of tax litigation. Additionally, their cross-sectional analysis revealed that higher litigation risk correlates with higher expected returns, suggesting that litigation may impose significant financial burdens on companies.

In Nigeria, Akyone, Okaro, and Okoye (2020) explored the effect of litigation infraction charges (LICs) on the financial performance of Deposit Money Banks (DMBs). Their findings demonstrated that both Legal Professional Charges (LPCs) and Court-Imposed Charges (CICs) significantly negatively impacted the return on equity (ROE) of these banks. This underscores the adverse financial consequences of litigation expenses on the performance of financial institutions.

Similarly, Arena, Wang, and Yang (2021) investigated the implications of shareholder litigation threats related to corporate tax evasion. Their study utilized the exogenous shock on litigation risk prompted by the 1999 decision of the United States Court of Appeals for the Ninth Circuit. The findings indicated that reducing shareholder litigation risk had a profound effect on corporate tax avoidance, illustrating how legal decisions can influence corporate behavior.

Further expanding on this theme, Waheed, Mahmood, and Wen (2022) analyzed how voluntary disclosure and institutional ownership mitigate the negative effects of tax litigation risk on company performance in China. Their results suggested that robust disclosure practices and institutional ownership increase investor confidence, thereby offering a protective effect against litigation risk.

Klemmer (2022) contributed to the discourse by examining the impact of tax litigation on corporate economic performance through the Legal-Economic Performance (LEP) framework. His analysis inferred that tax litigation could have far-reaching effects on the broader economy by influencing corporate financial decisions.

In a more recent study, Donelson et al. (2023) investigated the role of shareholder scrutiny in shaping corporate tax conduct, particularly concerning tax litigation. Their results revealed that companies embroiled in tax litigation tend to reduce their tax avoidance activities post-litigation. This behavioral shift was also observed among their industry peers, especially in sectors with higher tax avoidance tendencies.

Hulii (2023) provided insights into India's low-income tax rate by reviewing Supreme Court cases related to income tax assessments from 2015 to 2020. The study highlighted that the Indian Income Tax Department (ITD) loses more than two-thirds of its appeals, attributing this inefficiency to poor accountability and performance management within the tax system.

In the Brazilian context, Lopo et al. (2024) explored the relationship between tax litigation and corporate indebtedness. Their study found a positive correlation between tax litigation and higher levels of indebtedness among publicly traded companies in Brazil, suggesting that firms involved in frequent tax disputes are more likely to rely on debt financing.

The collective analysis of these studies reveals a complex and multifaceted relationship between tax litigation and corporate operational performance, demonstrating how legal disputes can shape financial outcomes across different international contexts.

3. Methodology

This study aims to evaluate the impact of tax litigation on the future performance of Brazilian non-financial companies listed on B3, focusing on data from 2017 to 2022. The analysis covers tax litigation from 2017 to 2022 and examines its influence on future performance indicators from 2018 to 2023.

Given the inherent endogeneity in performance analysis, the Generalized Method of Moments (GMM) dynamic panel model was employed to address the data complexities (Wooldridge, 2010). The GMM model is particularly suitable for this study as it includes lags and differences in regressors, which help mitigate the endogeneity problem often encountered in dynamic panels.

The GMM dynamic panel model offers two approaches: i) Difference GMM and ii) System GMM.

The application of GMM requires the verification of specific statistical tests to ensure the model's robustness (Roodman, 2009). This study applies the Arellano and Bond test to detect first and second-order autocorrelation in the residuals. The null hypothesis of this test asserts that there is no autocorrelation in the residuals, with the expectation of finding negative first-order autocorrelation and no second-order autocorrelation.

To validate the instruments used in the GMM model, both the Sargan and Hansen tests are conducted. These tests check the null hypothesis that the instruments are valid. While the Hansen test is generally more robust, any discrepancies between the two tests should defer to the results of the Sargan test (Roodman, 2009).

The DIF-Hansen test is used to compare the two GMM models, where its null hypothesis supports the viability of the System GMM approach (Wooldridge, 2010). Additionally, the Wald test is employed to assess the overall fit of the proposed model, testing the null hypothesis that the model parameters are insignificant (Roodman, 2009).

The study uses the following GMM model to estimate the parameters and address the research question:

$$PERF_{i,t}=\sum_{}^{k} \alpha_i PERF_{i,t-1}+\beta_1 TL_{i,t}+ \beta_2 SIZE_{i,t}+\beta_3 IND_{i,t}+\beta_3 LIQ_{i,t}+\beta_5 GOV_{i,t}+\beta_6 GDP_{i,t} +\epsilon_{i,t} \quad (1)$$

Where:

- Future Performance (Dependent Variable -PERF)
  - Return on assets (ROA)
  - Return on equity (ROE)
  - Sales growth (SG)

Regressors

- Tax Litigation (TL)
  - Amount of tax provisions (+) Amount of contingent tax liabilities, scaled by total assets.

- Other variables
  - Company size (log of total assets) (SIZE)
  - Indebtedness (total debt/total assets) (IND)
  - Liquidity (current assets/current liabilities) (LIQ)
  - Corporate governance (dummy) (GOV)
  - Macroeconomic momentum (GDP)

$\varepsilon_{i,t}$: Error term of the proposed model

Table 1 shows the specifications of each variable and the basis of the literature.

Table 1 – Dependent, Independent and Control variables

Dependent variable	**Formula**	**Specification**	**Authors**
ROA	(Net Profit/Total Assets)	Used as a metric to assess the financial performance of listed companies.	Waheed, Mahmood & Wen, 2022; Arena, Wang & Yang 2021; Akyone, Okaro and Okoye 2020, Dash & Raithatha 2017.
ROE	(Net Profit/Equity)	To analyze how disputed tax litigation can impact the profitability and operational efficiency of the companies studied.	Waheed, Mahmood & Wen, 2022; Arena, Wang & Yang 2021; Akyone, Okaro and Okoye 2020, Dash & Raithatha 2017.
SG	(Op.Liq.t Revenue - Revenue Op.Liq.t-1)/Revenue Op.Liq.t-1	It can influence companies' financial performance and stock returns.	Dash & Raithatha 2017; Lopo Martinez et al. 2024.
Independent variable	**Expected Sign**	**Specification**	**Authors**
Tax Litigation - TL	+	(TaxProv.+Contingencies)/ Total assets.	Dash & Raithatha 2017; Waheed, Mahmood & Wen, 2022; Donelson, et al. 2023; Martinez et al. 2024.
Control Variables	**Expected Sign**	**Specification**	**Authors**
SIZE	- / +	Ln (Total assets)	Martinez & Sonegheti 2015; Dash & Raithatha 2017; Waheed, Mahmood & Wen, 2022; Lopo Martinez et al. 2024, Bastos & Nakamura 2009; Medeiros & Daher, 2008.

IND	-	(Current liabilities + Non-current liabilities) / Total assets	Rajan & Zingales, 1995, Brito et al., 2007 Namura et al., 2007, Bastos & Nakamura, 2009; Medeiros & Daher, 2008; Campos & Nakamura, 2015; Dash & Raithatha 2017; Arena, Wang & Yang 2021; Martinez et al.2024.
CG	?	Dummy 1 for New Market companies and 0 otherwise	Martinez & Sonegheti 2015; Arena, Wang & Yang 2021; Waheed, Mahmood & Wen, 2022.
GDP	+	The higher the GDP, the lower the risk of tax litigation.	

4. Analysis of Results

4.1. Descriptive statistics of the varia

Table 2 shows the descriptive statistics of the variables analyzed in the study.

Table 2 – Descriptive statistics

STATISTICS	TL	SIZE	SG	ROA	ROE	IND	GDP (%)
Median	0,0400	8,3515	7,6950	4,6400	7,9500	0,6200	2,5500
Average	0,1290	8,3710	7,5464	3,1499	12,2482	0,7063	2,5967
Standard deviation	0,3140	1,8592	2,1320	11,7980	27,6672	0,4898	1,8824
Minimum	0,0000	3,2128	1,0152	-47,4100	-89,8200	0,1550	0,0200
Maximum	2,2300	12,9224	12,2478	30,7950	154,3300	3,2950	4,8000
Cof. variation	243,47%	22,21%	28,25%	374,56%	225,89%	69,34%	72,49%
Obs.	900	900	898	900	899	900	900

Table 2 reveals marked variability in the average sample values for litigation, ROA, ROE, IND, and GDP variables. These findings indicate sample heterogeneity, likely due to the different sizes of the companies in the sample. Moreover, the macroeconomic environment, as evidenced by percentage GDP, shows instability determined by GDP variability relative to average values over the analyzed period.

A detailed analysis of Tax Litigation (TL) shows a median of 0.0400 and an average of 0.1290. The high variability is evidenced by the standard deviation of 0.3140 and the coefficient of variation of 243.47%. This indicates that while tax litigation is low on average, there's wide dispersion between companies, with some facing significant tax litigation while others have little or none. SIZE, representing company size in terms of assets, shows a concentrated distribution with a median of 8.3515 and an average of 8.3710. The standard deviation of 1.8592 and coefficient of variation of 22.21% indicate that, although there's some variability in company sizes, most fall within a relatively narrow range. The results suggest that the analyzed dataset doesn't contain a significant presence of very small or extremely large companies in terms of assets; the distribution of asset sizes is more homogeneous.

Sales growth (SG) has a median of 7.6950 and an average of 7.5464. With a standard deviation of 2.1320 and coefficient of variation of 28.25%, there's moderate dispersion in this variable, suggesting that sales growth varies considerably between companies. ROA shows a median of 4.6400 and an average of 3.1499, indicating that, at the median, companies obtain a positive return on their assets. However, the standard deviation of 11.7980 and coefficient of variation of 374.56% show high variability, with some companies facing significant negative returns and others enjoying high returns.

The ROE variable shows a median of 7.9500 and an average of 12.2482. The high variability, reflected by the standard deviation of 27.6672 and coefficient of variation of 225.89%, suggests that while some companies generate substantial returns on equity, others face considerable difficulties. The indebtedness variable (IND) has a median of 0.6200 and an average of 0.7063. With a standard deviation of 0.4898 and coefficient of variation of 69.34%, the data shows significant variation in debt levels between companies. Some companies have considerably higher debt levels than others.

GDP growth, an important macroeconomic indicator, has a median of 2.5500 and an average of 2.5967. The standard deviation of 1.8824 and coefficient of variation of 72.49% indicate considerable variability in economic growth, reflecting possible economic fluctuations during the study period. Furthermore, the variation in GDP growth suggests that macroeconomic factors significantly impact company performance. According to Insper's Tax Center, tax disputes in Brazil represent 75% of GDP, much higher than the OECD average of 0.28%.

High tax litigation in some companies may reflect challenges in complying with tax regulations or aggressive tax planning strategies. This factor can significantly impact companies' profitability and operating costs (Waheed, Mahmood & Wen, 2022).

4.2 Pearson's Correlation Analysis

The correlation matrix in Table 3 provides a comprehensive overview of the linear relationships among key variables, reflecting both the strength and direction of these associations. This analysis is instrumental in identifying significant patterns and interconnections, which enhance our understanding of the economic and financial dynamics that influence business performance.

Table 3: Pearson correlation of variables

Variables	TL	TAM	CV	ROA	ROE	END	GDP
TL	1.000						
TAM	-0.0383 (0.5092)	1.000					
CV	-0.0281 (0.6283)	0.8898 (0.000***)	1.000				
ROA	-0.4299 (0.000***)	0.2288 (0.0001***)	0.2544 (0.000***)	1.000			

ROE	0.1689 (0.0033)	0.1124 (0.0518*)	0.0509 (0.3795)	-0.0060 (0.9170)	1.000		
END	0.3534 (0.000***)	-0.1559 (0.0068)	-0.1431 (0.0131**)	-0.5261 (0.000***)	-0.0120 (0.8361)	1.000	
GDP	-0.0334 (0.5648)	-0.0275 (0.6348)	-0.0306 (0.5979)	-0.0212 (0.7150)	0.0325 (0.5746)	-0.0052 (0.9282)	1.000

Note: The numbers in parentheses represent the p-values. The asterisks indicate the level of significance: *** (0.001), ** (0.01), * (0.05).

Table 3 highlights the negative correlation between TL (Tax Litigation) and ROA (Return on Assets), with a coefficient of -0.4299, significant at the 1% level. This indicates that higher levels of tax litigation are associated with lower operating performance, reinforcing the notion that tax litigation can adversely affect a company's operational efficiency. This finding is consistent with prior research, such as Dash and Raithatha (2017), who reported that prolonged tax disputes negatively impact financial health.

Additionally, TL shows a positive correlation with IND (Indebtedness), with a coefficient of 0.3534, significant at the 1% level. This suggests that companies embroiled in more tax litigation tend to have higher levels of indebtedness, possibly due to the financial strains imposed by legal disputes. This aligns with findings from Lopo Martinez et al. (2024), who also observed a link between tax litigation and increased indebtedness in Brazilian companies.

The SIZE variable exhibits a strong positive correlation with SG (Sales Growth), with a coefficient of 0.8898, significant at the 1% level. This relationship implies that larger companies tend to experience higher sales growth. Furthermore, SIZE is positively correlated with ROA (0.2288, significant at 1%), indicating that well-managed assets contribute to better operational performance. These findings are consistent with earlier studies (Nakamura, 2009; Medeiros & Daher, 2008), which highlighted the importance of efficient asset management in maintaining financial stability amidst tax-related challenges.

A negative correlation is observed between IND and ROA (-0.5261), significant at the 1% level, suggesting that higher indebtedness negatively impacts return on assets. This supports traditional financial theory, where excessive leverage increases financial costs, thereby reducing profitability (Brito et al., 2007; Nakamura et al., 2007).

Interestingly, IND also shows a negative correlation with SG (-0.1431, significant at 5%), implying that higher indebtedness may hinder sales growth. This complex relationship suggests that companies seeking to expand might face challenges in securing external financing if their debt levels are already high (Lopo Martinez et al., 2024).

Finally, the positive correlation between ROA and SG (0.2544, significant at the 1% level) suggests that better operational performance is associated with higher sales growth, aligning with literature that indicates robust legal and financial management practices are crucial for sustaining economic growth (Leibfritz, Thornton & Bibbee, 1997).

4.3 Estimated Econometric Models

The GMM models estimated for the performance variables—net income, ROA, and ROE—are presented below. The validity of these models is confirmed through several statistical tests. The Wald test indicates the overall significance of the model parameters, confirming the models' appropriateness. The AR1 and AR2 tests reveal significant first-order negative autocorrelation of the residuals, while confirming the absence of second-order autocorrelation, which is crucial for the reliability of the GMM estimations.

The Hansen test supports the validity of the instruments used in the models, ensuring that they are not over-identified. Additionally, the Dif-Hansen test verifies the suitability of the systemic GMM approach, demonstrating that the assumptions underlying the GMM method are met.

Table 4: Estimation Results of GMM Models for Performance Variables (SG, ROA, and ROE)

Panel a) Estimated GMM Models

	SG		**ROA**		**ROE**	
REGRESSORS	**COEF**	**P-VALUE**	**COEF**	**P-VALUE**	**COEF**	**P-VALUE**
GAP	***0,9517****	***0,0000***	***0.8782****	***0,0000***	***0,3962****	***0,0000***
TL	***0,5632****	***0,0760***	13.35392	0,3730	-2,8524	0,6990
SIZE	***0,2524****	***0,0030***	***2.5368****	***0,0570***	0,5565	0,8090
IND	-0,1524	0,4790	12.1428	0,2390	***10,0615****	***0,0910***
CG	-0,0312	0,6860	0.2176	0,9140	-0,3262	0,8820
GDP	***0,0270****	***0,0050***	***1.2247****	***0,0000***	***0,8590****	***0,0150***
Constant	***-1,6393****	***0,0450***	***-37.3373****	***0,0320***	-8,8049	0,6710
Panel b) Validation statistics for the proposed models						
Wald	***70987,10****		***260,55****		***260,55****	
AR1	**-2,44***		**-2,72***		**-2,92***	
AR2	-0,56		1,16		-1,52	
Sargan	5,81		4,11		52,74	
Hansen	5,37		1,59		11,19	
Dif-Hansen	0,03		0,54		0,48	

Notes: AR (1) and AR (2) tests verify the existence of first- and second-order autocorrelation among error terms. The Sargan and Hansen tests examine the exogeneity of the instruments, while the Dif-Hansen test assesses the validity of the systemic GMM approach. The statistical significance of the tests is represented as follows: *10%; **5%; ***1%.

An examination of Table 4 confirms that the GMM dynamic panel model is well-suited for estimating the parameters of the proposed models. This is evident from the significance of the lags of the dependent variables, which play a crucial role in dynamic modeling.

The analysis shows that the key variable of interest—tax litigation—has a positive and marginally significant effect on SG (p-value = 0.0760), suggesting that companies with higher tax litigation may still manage to increase their revenues. However, tax litigation does not have

a statistically significant impact on ROA or ROE, indicating that the influence of tax disputes on broader measures of company performance, such as profitability, may be more complex or less direct.

The control variables offer additional insights. Total assets (SIZE) have a positive and significant effect on both SG and ROA, underscoring the importance of asset management in driving company performance. Indebtedness shows a marginally significant positive impact on ROE (p-value = 0.0910), indicating that leverage may contribute to equity returns, albeit with some risks involved. GDP growth also has a positive and significant effect across all performance variables, particularly on ROA and ROE, highlighting the macroeconomic environment's influence on company success.

Our GMM model results reveal a complex relationship between tax litigation and company performance in the Brazilian context. While we didn't find a significant direct impact of tax litigation on ROA and ROE, contrary to some prior studies (Dash & Raithatha, 2017; Guerra & Guerra, 2022; Klammer, 2022; Martinez et al., 2024), our descriptive statistics and Pearson's correlation analysis suggest a more nuanced interaction. Interestingly, we observed a positive and marginally significant effect of tax litigation on Sales Growth (SG), indicating that companies facing tax disputes may still manage to increase their revenues, possibly through aggressive market strategies or by leveraging their market position.

4.4 Discussion of Result

The study's findings offer several key insights into the dynamics of company performance in Brazil's complex tax environment. The consistent positive impact of total assets on both Sales Growth and ROA underscores the advantages larger companies may have in navigating tax complexities, possibly due to better resources and expertise. Additionally, we observed a marginally significant positive impact of indebtedness on ROE, suggesting that companies may be effectively using leverage to enhance shareholder returns, albeit with inherent risks in a high tax litigation environment. The significant positive effect of GDP growth across all performance variables further highlights the critical role of the broader economic environment in shaping company performance.

These findings have important implications for business practices and policy considerations. Companies should prioritize robust tax risk management strategies, as tax litigation may create hidden costs or risks that could materialize in the longer term. Smaller firms, in particular, may need to bolster their resources or seek external expertise to level the playing field with larger companies in handling tax complexities. While strategic use of leverage can benefit companies, this should be carefully balanced against potential risks, especially given the complex tax environment. Stakeholders should adopt a more comprehensive approach when assessing the impact of tax litigation, considering multiple performance indicators and contextual factors rather than relying on single metrics. From a

policy perspective, policymakers should strive for a balanced approach to tax enforcement that ensures robust collection without hampering business growth and overall economic development.

In conclusion, our study reveals a complex interplay of factors in the relationship between tax litigation and company performance. This complexity calls for nuanced, context-aware approaches to both corporate tax strategy and public policy in Brazil's challenging tax environment. Future research could further explore the mechanisms through which tax litigation impacts different aspects of company performance and investigate potential moderating factors in this relationship.

5. Final Considerations

According to the OECD, Brazil has the highest tax burden in Latin America, with taxation accounting for 32.44% of GDP in 2023. This significant level of taxation has profound implications for companies, compelling managers to focus intensively on their corporate tax strategies and the broader fiscal policies of their institutions (Hanlon & Heitzman, 2010).

To navigate this high tax burden, companies often engage in tax avoidance and tax litigation. The latter arises due to differing interpretations of tax legislation, non-compliance, assessments, fines, and legal disputes (Guerra & Guerra, 2022). However, as tax litigation is frequently prolonged and/or unfavorable, it often results in additional costs and financial penalties, which can adversely affect a company's operating performance (Lopo Martinez et al., 2024; Guerra & Guerra, 2022).

This study investigated the impact of tax litigation on the future performance of Brazilian companies listed on B3, with a focus on how provisions and contingent liabilities influence this performance. Using a robust empirical approach through the Generalized Method of Moments (GMM) to address endogeneity issues, the study found that tax litigation, as measured by provisions and contingent liabilities, significantly and negatively affects companies' operating performance, particularly Return on Assets (ROA).

Although the GMM model indicated that tax litigation has a positive and significant impact on net revenue, it did not demonstrate a significant effect on ROA and ROE. This suggests a complex and multifaceted relationship between tax litigation and various measures of business performance. Furthermore, Pearson's correlation analysis revealed a significant association between tax litigation and negative variations in operating performance, particularly as measured by ROA. Companies with higher levels of tax litigation tend to encounter more financial difficulties and are more reliant on external financing, as evidenced by the positive correlation between litigation and indebtedness. Moreover, the variability in GDP growth underscores the substantial impact that macroeconomic factors have on company performance.

While this study provides valuable insights into the impact of tax litigation on the performance of Brazilian companies listed on B3, several limitations must be acknowledged. First, the analysis is based on data from non-financial companies, which may limit the

generalizability of the findings to other sectors, such as finance, where the dynamics of tax litigation might differ significantly.

Second, the research utilized data from a specific period (2017 to 2022), which may not fully capture the effects of recent or future changes in Brazilian tax legislation or shifts in the global economy. The ongoing evolution of the regulatory and economic environment could significantly influence the relationship between tax litigation and business performance, and these dynamic effects were not addressed in this study.

Additionally, the proxy used to measure tax litigation—provisions and contingent liabilities—may not fully capture all qualitative and quantitative aspects of tax disputes, such as the estimated duration of proceedings, the complexity of cases, or their reputational impact. Future research could benefit from integrating more detailed and qualitative data to develop a more comprehensive understanding of the phenomenon.

Importantly, while tax litigation appears to have a positive effect on sales growth in the short term, this may be driven by temporary tax advantages gained from disputes over taxes levied on revenue. These effects may not be sustainable in the long term, as the resolution of litigation could lead to financial penalties or adjustments that negate these short-term gains.

Therefore, effective management of tax litigation is crucial for improving the financial and operational stability of companies, enhancing transparency, and building investor confidence. This, in turn, can contribute positively to Brazil's economic and institutional development. Future research should delve deeper into the nuances of this relationship, exploring other moderating and mediating factors that could influence the impact of tax litigation on business performance.

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