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TAX LITIGATION AND AUDIT OPINION CHARACTERISTICS: EVIDENCE OF AUDITOR DILIGENCE IN HIGH TAX-RISK ENVIRONMENTS ON B3

LITÍGIOS TRIBUTÁRIOS E CARACTERÍSTICAS DO PARECER DE AUDITORIA: EVIDÊNCIAS DA DILIGÊNCIA DO AUDITOR EM AMBIENTES DE ALTO RISCO FISCAL NA B3

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ABSTRACT

Purpose: This study investigates how tax litigation affects the length, tone, clarity, and complexity of audit opinions for companies listed on Brazil's B3 exchange. Beyond characterizing these associations, the study examines how the observed adjustments in opinion attributes reduce informational asymmetry in high tax-risk environments, thereby supporting financial reporting transparency and stakeholder trust.

Design/methodology/approach: A fixed-effects panel analysis is applied to 233 firms (3,241 firm-year observations) over the period 2009–2023. Tax litigation is measured as the ratio of tax-related provisions and contingencies to total assets. Audit opinion attributes — length, tone, readability, and linguistic complexity — are quantified using textual analysis measures, and hypotheses are tested using OLS regression and quantile regression, controlling for firm size, profitability, leverage, governance quality, auditor type, and other engagement-level factors.

Findings: Multivariate analysis reveals that higher tax litigation is negatively associated with opinion length — firms with greater tax dispute exposure receive more concise audit reports. Simultaneously, these opinions exhibit significantly greater readability and higher linguistic complexity, indicating that auditors produce more focused and technically precise communications when clients face significant tax contingencies. The tone of audit opinions is not significantly associated with tax litigation, suggesting that auditors maintain an independent overall risk assessment regardless of a firm's fiscal dispute profile.

Originality: This study is the first to identify tax litigation as a significant determinant of audit opinion characteristics in the Brazilian context. It advances the literature by demonstrating that auditors exercise heightened procedural care and greater audit effort under high tax-risk conditions — adjusting the structure and language of their opinions in ways that reflect a more intensive and diligent engagement process, rather than a merely textual adaptation. The positive association between tax litigation and audit fees provides corroborating evidence that these communicative adjustments are the visible output of deeper audit scrutiny.

Practical implications: For audit committees, the findings support the development of more detailed and anticipatory explanatory notes on tax contingencies, mapping the nature, likelihood, and financial exposure of ongoing disputes with sufficient granularity to enable independent user assessment. For external auditors, the results highlight the importance of structuring Key Audit Matters (KAMs) with greater specificity for high-litigation clients — dedicating a distinct KAM to contingent tax liabilities, detailing the procedures applied, the assumptions evaluated, and the residual uncertainty. For regulators and standard-setters, the evidence supports developing explicit guidance requiring auditors to address the impact of material tax disputes on their procedures and conclusions, rather than relying on implicit textual signals to convey fiscal risk to market participants.

Keywords: Tax litigation. Audit opinions. Auditor diligence. Audit effort. Financial transparency.

RESUMO

Objetivo: Este estudo investiga como o litígio tributário afeta a extensão, o tom, a clareza e a complexidade dos pareceres de auditoria de empresas listadas na bolsa brasileira B3. Além de caracterizar essas associações, o estudo examina como os ajustes observados nos atributos dos pareceres reduzem a assimetria informacional em ambientes de alto risco fiscal, favorecendo, assim, a transparência dos relatórios financeiros e a confiança das partes interessadas.

Projeto/metodologia/abordagem: Aplica-se uma análise de dados em painel com efeitos fixos a 233 empresas (3.241 observações empresa-ano) no período de 2009 a 2023. O litígio tributário é mensurado pela razão entre provisões e contingências fiscais e o ativo total. Os atributos do parecer de auditoria — extensão, tom, legibilidade e complexidade linguística — são quantificados por meio de medidas de análise textual, e as hipóteses são testadas utilizando regressão de Mínimos Quadrados Ordinários (MQO) e regressão quantílica, controlando-se variáveis como porte da empresa, lucratividade, alavancagem, qualidade da governança, tipo de auditor e outros fatores relacionados ao trabalho de auditoria.

Resultados: A análise multivariada revela que um maior nível de litígio tributário está associado negativamente à extensão do parecer — empresas com maior exposição a disputas tributárias recebem relatórios de auditoria mais concisos. Simultaneamente, esses pareceres apresentam legibilidade significativamente maior e maior complexidade linguística, indicando que os auditores produzem comunicações mais focadas e tecnicamente precisas quando os clientes enfrentam contingências tributárias significativas. O tom dos pareceres de auditoria não apresenta associação significativa com o litígio tributário, sugerindo que os auditores mantêm uma avaliação de risco geral independente, independentemente do perfil de disputas fiscais da empresa.

Originalidade: Este estudo é o primeiro a identificar o litígio tributário como um determinante significativo das características dos pareceres de auditoria no contexto brasileiro. Ele contribui para a literatura ao demonstrar que os auditores empregam maior rigor procedimental e maior esforço de auditoria em condições de elevado risco tributário — ajustando a estrutura e a linguagem de seus pareceres de modo a refletir um processo de trabalho mais intenso e diligente, em vez de uma mera adaptação textual. A associação positiva entre litígio tributário e honorários de auditoria fornece evidências de que esses ajustes comunicativos são o resultado visível de um escrutínio de auditoria mais aprofundado.

Implicações práticas: Para os comitês de auditoria, os resultados embasam a elaboração de notas explicativas mais detalhadas e prospectivas sobre contingências tributárias, mapeando a natureza, a probabilidade e a exposição financeira de disputas em curso com granularidade suficiente para permitir uma avaliação independente por parte dos usuários. Para os auditores externos, os resultados destacam a importância de estruturar os Principais Assuntos de Auditoria (PAAs) com maior especificidade para clientes com alto volume de litígios — dedicando um PAA específico para passivos tributários contingentes e detalhando os procedimentos aplicados, as premissas avaliadas e a incerteza residual. Para reguladores e órgãos emissores de normas, as evidências sustentam a criação de orientações explícitas que exijam dos auditores a abordagem do impacto de disputas tributárias relevantes sobre seus procedimentos e conclusões, em vez de dependerem de sinais textuais implícitos para comunicar o risco fiscal aos participantes do mercado.

Palavras-chave: Litígio tributário. Pareceres de auditoria. Diligência do auditor. Esforço de auditoria. Transparência financeira.

1 INTRODUCTION

Tax litigation constitutes a significant source of financial and operational uncertainty for firms, with direct consequences for the quality of audit services and the reliability of financial reporting (Lopo Martinez et al., 2024; Backof et al., 2022). In Brazil, this challenge is particularly acute given the structural complexity of the national tax system, which the World Bank's Doing Business report (2020) identified as one of the most burdensome in the world in terms of compliance time and procedural demands, creating fertile ground for disputes between taxpayers and tax authorities (Baldivieso, 2022; Machado, 2021). Companies engaged in such disputes face elevated contingent liabilities and increased compliance costs that fundamentally alter the informational environment in which auditors operate—compelling adjustments not only in audit procedures but potentially in the very structure and language of audit opinions themselves (Constantino, 2021; Blanco et al., 2021).

This connection, while not immediately intuitive, becomes clear when one considers that the audit opinion functions not merely as a technical attestation but as a communicative act directed at investors, regulators, and creditors (Chantziaras et al., 2021; Backof et al., 2022). Tax contingencies are inherently uncertain in their outcome and magnitude, generating informational asymmetry that places auditors in a structurally more vulnerable position—where errors of omission carry substantial reputational and legal consequences (DeAngelo, 1981; Beatty, 1989). Faced with this dual exposure, auditors have incentives to adopt a more differentiated approach in high-litigation engagements, crafting opinions that are more precisely worded, technically detailed, and deliberately calibrated in tone, simultaneously protecting their own professional standing and alerting stakeholders to underlying fiscal risks (Blanco et al., 2021; Nguyen et al., 2023; Souza, 2023).

The central research question is therefore: How does tax litigation influence the size, tone, clarity, and complexity of audit opinions for companies listed on B3, and what are the implications of these characteristics for financial reporting transparency and stakeholder trust? While prior studies have examined determinants of audit opinion attributes such as firm size, governance quality, and auditor characteristics (Castro et al., 2015; Souza & Borba, 2022; Xue & O'Sullivan, 2023), the specific role of tax litigation remains underexplored—especially in Brazil. This study fills that gap.

Drawing on a panel of 233 B3-listed firms over 2009–2023 (3,241 firm-year observations) and accounting for regulatory milestones such as CVM Instruction 480 and CVM Resolution 80, the findings demonstrate that tax litigation is a significant determinant of audit reporting behavior, with auditors combining brevity, enhanced clarity, and technical depth in high tax-risk contexts. These results carry important implications for regulators, managers, and investors seeking to assess tax-related risks and promote sound corporate governance. From a theoretical standpoint, this research extends agency theory by positioning auditors as information intermediaries who actively manage asymmetry and reputational risk through their public communications (DeAngelo, 1981; Backof et al., 2022). Section 2 reviews the literature and develops the hypotheses, Section 3 details the methodology, Section 4 presents the results, and Section 5 concludes.

2 LITERATURE REVIEW

This section examines the theoretical foundations underlying the determinants of audit opinions to develop robust research hypotheses, with a particular focus on tax litigation and other factors relevant to the Brazilian context. Independent auditors' reports are essential in accounting, as they express auditors' assessments of financial statements and ensure information reliability (Backof et al., 2022). These opinions go beyond mere formality by supporting companies' financial integrity and influencing stakeholders' confidence, including that of investors and regulators (Deyganto, 2021; Moraes & Martinez, 2024). Recent studies highlight that the complexity of operations and the quality of corporate governance greatly shape audit opinions—factors that directly affect the market's perception of firm value (de Oliveira et al., 2022; Silva, 2022). Firms with robust governance generally produce transparent and easily understood financial statements, which facilitate auditors' work and yield more direct and objective opinions, thereby reinforcing transparency and compliance (Souza, 2023). Furthermore, evidence suggests that tax litigation is associated with observable differences in audit opinion characteristics (Lopo Martinez et al., 2024; Blanco et al., 2021). Companies involved in significant tax disputes tend to require more extensive and cautious audit procedures, as auditors must invest greater effort in evaluating the adequacy of management's estimates of contingent tax liabilities—a process that not only improves the fidelity of financial disclosures but also safeguards auditors' reputations against future scrutiny (Martinez, Moraes & Sarlo Neto, 2025; Pereira, 2023; Constantino, 2021). Emerging technologies also play an increasingly important role; tools such as advanced data analytics and artificial intelligence have transformed the auditing process, enabling auditors to detect inconsistencies and assess risks more efficiently, resulting in opinions that provide a comprehensive view of a company's financial position (Silva, 2022; Pereira, 2023; Deyganto, 2021; Moraes & Martinez, 2024).

Tax litigation in Brazil reflects the inherent complexity of the national tax system and the disputes between taxpayers and tax authorities. Lopo Martinez et al. (2024) note that such complexity influences business competition, as evidenced by the World Bank's Doing Business report (2020), which documents the protracted compliance processes faced by Brazilian companies. This intricate tax environment creates fertile ground for disputes—ranging from disagreements over tax obligations to divergent legal and constitutional interpretations (Silva, 2022). Habitual litigants, who benefit from institutional knowledge and connections, prolong tax battles and incur significant additional costs (Baldivieso, 2022; Machado, 2021). In this context, a detailed analysis of tax provisions and aggressive tax avoidance strategies becomes essential (Lopo Martinez et al., 2024). Despite these challenges, tax litigation can also be viewed as a mechanism to achieve greater legal certainty by clarifying ambiguous tax rules. The extensive resource demands and financial liabilities associated with litigation compel Brazilian companies to adopt sophisticated tax planning and risk management strategies, highlighting the need for a multidisciplinary approach that integrates legislative, accounting, and business strategy expertise. Moreover, tax litigation's complex impact on a company's capital structure—through heightened legal costs, increased contingent liabilities, and diverted resources—further underscores its multifaceted influence on financial decisions (Lopo Martinez et al., 2024; Scott & Chen, 2024; Kajola et al., 2022; Mitra & Hossain, 2007).

The determinants of the audit opinion extend beyond litigation and corporate governance to encompass the overall complexity of business operations and the scale of financial transactions. Audit opinions are central to ensuring the transparency, credibility, and trustworthiness of financial reporting (DeAngelo, 1981; Backof et al., 2022; Sağlar & Gizer, 2023), and their preparation is influenced by a multitude of factors. High-quality corporate governance improves the clarity and consistency of accounting information, enabling auditors to issue more concise and reliable opinions (Andrade & Fujino, 2023; Soyemi et al., 2021; Tania et al., 2023; Akinyomi & Joshua, 2022). Likewise, the operational complexity of firms—especially those operating in dynamic or international settings—necessitates more detailed audit reports to accurately reflect inherent risks across multiple jurisdictions (Cărăușu & Terinte, 2022; Castro et al., 2015; Saleh & Ragab, 2023). Moreover, a high volume of significant financial transactions, such as mergers and acquisitions, requires rigorous auditing to ensure proper disclosure (Castro et al., 2015; Ardianingsih & Setiawan, 2022; Xue & O'Sullivan, 2023). Finally, the adoption of new technologies, including data analytics and artificial intelligence, has modernized the auditing process, allowing for more efficient detection of inconsistencies and enhancing the overall accuracy of audit opinions, which in turn promotes market confidence (Pereira, 2023; Souza, 2023; Alander, 2023).

2.1 TAX LITIGATION AS A DETERMINANT OF AUDIT OPINIONS

Several studies examine the determinants of audit opinions, yet tax litigation remains a relatively new variable in this research, particularly in the Brazilian context. As noted by Lopo Martinez et al. (2024), the complexity and rigidity of the Brazilian tax system impose substantial compliance requirements and challenges in managing tax disputes (Nguyen et al., 2023; Moutinho et al., 2012). Despite previous investigations into factors shaping audit opinions, the specific influence of tax litigation on aspects such as opinion size, tone, clarity, and complexity remains underexplored. This study addresses this gap by examining how tax litigation is associated with audit opinion characteristics across companies from different sectors listed on B3.

To investigate this question, the following hypotheses are proposed:

H1: Higher levels of tax litigation are associated with shorter audit opinions, reflected in a negative relationship between tax disputes (LT) and opinion length (OpSize), as auditors exercise greater caution and procedural diligence under conditions of legal uncertainty, tending toward more focused and precise disclosures.

H2: Tax litigation is not significantly associated with the degree of emphasis auditors place on financial risks in their opinions (Tone), suggesting that auditors' overall risk assessment is not systematically altered by the presence of tax disputes alone.

H3: Greater tax litigation is associated with increased clarity in audit opinions, evidenced by a positive relationship between LT and the readability index (Flesch_Mod), as the additional diligence applied in high-litigation engagements encourages more direct and accessible communication of tax risks to stakeholders.

H4: Higher levels of tax litigation are associated with greater linguistic complexity in audit opinions, reflected in a positive relationship between LT and the complexity index (Fog_Mod), as the heightened audit effort in these engagements leads to the inclusion of more technical details, specialized terminology, and cautionary caveats.

Tax litigation not only imposes significant financial and operational burdens on companies but also demands heightened procedural care from auditors, who must devote additional effort and diligence to assessing the impact of tax disputes on financial estimates and contingent liabilities (Constantino, 2021; Blanco et al., 2021). By identifying tax litigation as a key determinant of audit opinion characteristics, this study makes a theoretical contribution by demonstrating that the presence of significant tax disputes is associated with greater auditor diligence, reflected in the structure, language, and content of opinions, thereby enhancing rigor and transparency in contexts of elevated fiscal risk.

3 METHODOLOGY

This study adopts a descriptive, quantitative approach (Barros and Lehfeld, 2000, p.70), employing regression analysis and quantile regression techniques to test the hypotheses and examine relationships between variables using numerical data (Sağlar & Gizer, 2023). The regression analysis investigates the link between Opinion Size, Opinion Tone, the Flesch_Mod readability index, and the Fog_Mod complexity index and their determinants in a dataset of companies listed on the Brazilian stock exchange. The quantile approach allows a detailed exploration of how variables such as tax litigation, company size, asset structure, growth rate, profitability, business risk, current liquidity, indebtedness, corporate governance, the presence of reservations in the audit opinion, audits by Big Four firms, company age, audit fees, and auditor tenure influence Opinion Size (measured by number of characters), Opinion Tone (classified as positive, neutral, or negative), Flesch_Mod, and Fog_Mod (Scott & Chen, 2024). A comprehensive literature review (guided by Putri & Bergmans, 2021 and recent studies on audit opinion determinants – Nguyen et al., 2023; Xue & O'Sullivan, 2023; Tania et al., 2023) provided the theoretical framework for the statistical models used.

The sample comprises 233 companies listed on B3, selected based on market value from 2009 to 2023, yielding 3,241 observations as detailed in Table 1. Data were obtained primarily from the Brazilian Securities and Exchange Commission (CVM) website and the Comdinheiro platform. These secondary data, originally collected for purposes other than this research, were used despite inherent challenges (Hallak & Silva, 2012).

Table 1
Sample selection process of companies

Selection Criteria	Number of companies
Companies initially listed on B3	386
Exclusions (financial companies)	-34
Exclusions (lack of data on tax contingencies)	-56
Exclusions (incomplete data)	-63
Final Sample	**233**
Total Observations	**3,241**

The CVM reference forms provide detailed information on independent auditors' remuneration, outlining fees paid for audit services by category. Data collection focused on audit fees via documentary analysis of these reference forms (section 2 of the CVM form details amounts paid to auditors by service type); a continuous verification process ensured data consistency and reliability. Additionally, the Comdinheiro database offers key financial indicators (market value, equity, total assets, net income, non-current liabilities), from which essential variables were extracted. In total, data from 233 companies over 15 years (2009–2023) were collected and organized into panel format, enabling longitudinal tracking of each company's information as summarized in Table 2.

The collected data were analyzed using quantitative methods. Initially, the data were tabulated and organized in an electronic database using statistical software. Descriptive analyses—focusing on means, medians, and standard deviations as recommended by Deyganto (2021)—were conducted to assess basic data characteristics. Following this, correlation analyses examined relationships among the variables, and multiple linear regression models were applied to identify main factors associated with each dependent variable. All statistical tests used a 5% significance level, consistent with the methodology suggested by Whisenant et al. (2003), to ensure robust results.

Table 2
Sample composition by sector

Sub-sector	Company	Observations
Agribusiness	3	45
Water and Sanitation	4	60
Processed foods	11	165
Consumer Goods and Retail	13	143
Biofuels, Gas and Oil	10	150
Pulp, Paper and Wood	6	90
Trade	12	180
Construction and Real Estate	28	308
Energy and Basic Services	33	495
Holding	7	105
Industry	8	120
Industry - Machinery and Equipment	7	105
Industry - Construction Materials	2	30
Industry - Road Equipment	6	90
Computing	2	30
Metallurgy and Steel	11	154
Mining	2	30
Participation	1	15
Petrochemical	4	60
Health	14	154
Services	13	195
Educational Services	4	60
Fabrics, Clothing and Footwear	12	156
Information Technology	5	75
Transport	13	195
Household Utilities	2	31
Total	**233**	**3,241**

Source. B3

3.1 VARIABLE DEFINITIONS

This section presents definitions of the variables, most of which are derived from financial data obtained from the Comdinheiro database. To address the research hypotheses, the key variables used in the analysis are outlined in Table 3.

The selection of control variables was grounded in established theoretical and empirical literature on the determinants of audit opinion characteristics. Firm size (size) is included because larger companies tend to have more complex operations and greater public accountability, which directly affects the scope and depth of audit work (Castro et al., 2015; Xue & O'Sullivan, 2023). Asset structure (ast) is a proxy for operational tangibility and capital intensity, factors that influence both the difficulty of auditing and the level of disclosure required (Ardianingsih & Setiawan, 2022).

Table 3
Variables and definitions

Variable	Definition	Related Studies
OpSize	OpSize (Opinion Size): Length of the opinion measured by the number of characters, suggesting detail or complexity.	Moreira *et al.* 2016; Costa, Lins and Souza, 2019
Tone	Tone (Opinion Tone): The tone of the opinion, classified as positive, neutral or negative.	Chantziaras et al., 2021; Costa, Lins and Souza, 2019
Flesch_Mod	Flesch_Mod: Adjusted readability index, the higher, the clearer the text	Souza & Borba, 2022; Blanco et al., 2021
Fog_Mod	Fog_Mod: Adjusted complexity index, the higher it is, the harder it is to read	Souza & Borba, 2022; Blanco et al., 2021
TL	TL (Tax Litigation): Value of tax litigation, calculated as the sum of tax provision and contingent liability divided by total assets	Campello et al., 2010; Frank & Goyal, 2009; Bastos & Nakamura, 2009; Martinez *et al.*, 2024)
size	size (Firm Size): Size of the company, represented by total assets	Akinyomi & Joshua (2022); Palmrose (1986)
ast	ast (Asset Structure): Ratio of fixed assets and inventory to total assets, indicating the asset structure	Rajan & Zingales, 1995; Thies & Klock, 1992; Titman & Wessels, 1988; Brito & Lima, 2005
gth	gth (Growth): Growth rate, calculated by the change in net operating revenue	Moraes & Martinez (2014); Rauf et al. (2024)
prof	prof (Profitability): Profitability measured by ROA (net income over total assets)	de Sousa Silva et al., 2023; Damasceno and de Lorena Stanzani, 2024; Stüpp and Flach, 2023
brisk	brisk (Business Risk): Standard deviation of EBIT for the last five years divided by total assets, indicating business risk	Damodaran, 2004; Thies & Klock, 1992; Titman & Wessels, 1988; Myers, 1984; Bradley et al., 1984; Ferri & Jones, 1979; Brito & Lima, 2005);
cliq	cliq (Current Liquidity): Ratio of current assets to current liabilities	Bastos & Nakamura, 2009)
indbt	indbt (Indebtedness): Degree of financial leverage, measured by the ratio of total liabilities to total assets	Lopo Martinez et al., 2024; Pinheiro, 2024; Bastos & Nakamura, 2009; Martinez *et al.*, 2024);
cg	CG (Corporate Governance): Dummy with a value of 1 for companies listed in B3 governance segments, 0 for the others.	Moraes & Martinez (2014); Bortolon et al. (2013)
res	res (Reservation): Dummy with value 1 for audit opinions with reservations, 0 for the rest	Chantziaras et al., 2021; Pereira, 2023
big4	Dummy with value 1 for companies audited by a Big Four, 0 for the others	Beatty (1989); Lawal & Ibrahim (2022)
age	Represents the age of the company in absolute terms.	Larbi et al. (2024); Shakhatreh & Alsmadi (2021)
auditfees	Represents the remuneration paid to auditors	Simunic (1980); Vasconcelos et al. (2018)
tenure	Indicates the number of years the auditor has been involved in auditing the company.	Larbi et al. (2024); Malek & Saidin (2013); Fernandez *et al.* (2024)

Growth rate (gth) and profitability (prof) capture the financial trajectory of the firm, which prior research associates with changes in audit risk and the auditor's level of scrutiny (Moutinho et al., 2012; Kajola et al., 2022). Business risk (brisk), measured by earnings volatility, reflects the uncertainty inherent in a firm's operating environment—a well-established driver of audit effort and opinion conservatism (Whisenant et al., 2003). Current liquidity (cliq) and indebtedness (indbt) are included as indicators of financial health and leverage, both of which affect the auditor's assessment of going-concern risk and the adequacy of disclosures (Saleh & Ragab, 2023).

Corporate governance quality (cg) is controlled for because firms with stronger governance structures tend to produce more transparent and consistent financial statements, reducing the informational burden on auditors (Soyemi et al., 2021; Andrade & Fujino, 2023). The presence of modified opinions (res), Big Four auditor engagement (big4), company age (age), audit fees (auditfees), and auditor tenure (tenure) are also included, as each has been shown to influence the characteristics and quality of audit reporting in prior studies (DeAngelo, 1981; Hallak & Silva, 2012; Fernandez et al., 2024).

Collectively, these control variables allow the study to isolate the specific contribution of tax litigation to audit opinion characteristics while accounting for a broad set of firm-level and engagement-level factors.

The dependent variables are four important features of audit opinions, defined as follows:

- **Opinion Size (OpSize)** OpSize captures the auditor opinion length (number of characters), used as a proxy for the detail and complexity of the audit report:

OpSize = Total number of characters in the audit opinion (Equation 1)

Longer opinions may reflect more complex matters requiring extended discussion or additional disclosure.

- **Opinion Tone (Tone)** Tone captures the linguistic sentiment expressed in the auditor's opinion:

Tone = (Positive words - Negative words) / Total words (Equation 2)

Higher values indicate a more positive tone, while lower or negative values suggest a more cautious or critical assessment.

- **Flesch Reading Ease Score Modified (Flesch_Mod)** The Flesch_Mod index assesses the readability of the audit opinion (Equation 3). A higher score indicates greater readability (Souza & Borba, 2022), meaning the opinion is more easily comprehensible to stakeholders.:

$$flesch\_mod_{i,t} = ln\left(206.835 - \left(1.015\,\frac{words_{i,t}}{Phrases_{i,t}}\right) - \left(84.6\,\frac{complex\_words_{i,t}}{Words_{i,t}}\right)\right)$$

(Equation 3)

A higher score indicates better readability (Souza & Borba, 2022), meaning the opinion is easier to comprehend by stakeholders.

- **Gunning Fog Index Modified (Fog_Mod)** The Fog_Mod index evaluates the linguistic complexity of the audit opinion:

$$fog\_mod_{i,t} = -0.4\left(\frac{words_{i,t}}{phrases_{i,t}} + \frac{complex\_words_{i,t}}{phrases_{i,t}}\right)$$

(Equation 4)

Lower values indicate better readability, while higher values suggest a more technically demanding text, potentially due to specialized terminology or complex sentence structures (Souza & Borba, 2022). Together, these variables provide a comprehensive assessment of how auditors communicate their findings across different tax litigation contexts.

3.2 ECONOMETRIC MODEL

In order to test the hypotheses, a number of panel data models were estimated to see the different impacts of independent variables on four features of audit opinions, i.e. the Opinion Size (OpSize), Opinion Tone (Tone), Adjusted Readability Index (Flesch_Mod) and Adjusted Complexity Index (Fog_Mod). The general specification is as follows:

$$\text{Opinion characteristic}_{it} = \beta_0 + \beta_1.TL_{it} + \beta_2.size_{it} + \beta_3 \cdot ast_{it} + \beta_4.gth_{it} + \beta_5.prof_{it} + \beta_6 \cdot brisk_{it} + \beta_7 \cdot cliq_{it} + \beta_8 \cdot indbt_{it} + \beta_9.cg_{it} + \beta_{10} \cdot res_{it} + \beta_{11} \cdot big4_{it} + \beta_{12} \cdot age_{it} + \beta_{13} \cdot auditfees_{it} + \beta_{14} \cdot tenure_{it} + \varepsilon_{it} \quad \text{(Equation 5)}$$

where TL represents tax litigation and all other variables are defined in Section 3.1.

- **Model 1: Opinion Size (OpSize):** Examines factors associated with audit opinion length, including tax litigation (TL), company size, asset structure, growth rate, and profitability, among others.
- **Model 2: Opinion Tone (Tone):** Investigates whether the linguistic sentiment of the audit opinion is associated with tax litigation (TL), corporate governance (cg), and the presence of modified opinions.
- **Model 3: Adjusted Readability Index (Flesch_Mod):** Explores determinants of opinion clarity, with particular attention to firm size, asset structure, and corporate governance quality.
- **Model 4: Adjusted Complexity Index (Fog_Mod):** Examines how tax litigation (TL), growth rate, current liquidity, and corporate governance are associated with the technical complexity of audit opinions..

Estimation follows the Least Squares (LS) approach (Cărăușu & Terinte, 2022) at a 5% significance level, corresponding to a 95% confidence interval, as recommended by Whisenant et al. (2003). Statistical significance of tax litigation (TL) at $p < 0.05$ in any of the four models is interpreted as evidence consistent with the corresponding hypothesis. To determine the appropriate panel specification, a Hausman test (Wooldridge, 2010) was performed, yielding a chi-squared statistic of 3,395.61 (p-value = 2.2e-16), which rejects the consistency of the random effects estimator and confirms that fixed effects estimation is appropriate for obtaining robust and consistent estimates.

3.3 RESEARCH LIMITATIONS

A methodological limitation of this study warrants explicit acknowledgment. Among companies listed on B3, the predominant form of audit opinion is the unmodified (clean) opinion, with a relatively small proportion of reports containing reservations, emphasis of matter paragraphs, or other qualifications. As shown in Table V, only approximately 0.59% of the firm-year observations in the sample correspond to modified audit opinions (RES = 1). This distributional characteristic reduces the variability of the reservation dummy variable and may partially constrain its explanatory power within the regression models, particularly in Model 2 (Opinion Tone), where the presence of modifications is expected to be a relevant predictor. This pattern is not unique to the Brazilian context; similar limitations have been noted in studies using opinion type as a variable in markets where unmodified opinions predominate (Nguyen et al., 2023; Deyganto, 2021). Nevertheless, the use of continuous textual measures—such as OpSize, Tone, Flesch_Mod, and Fog_Mod—derived directly from the full body of audit opinion text mitigates this concern to a considerable extent, as these metrics capture meaningful variation in auditor communication even in the absence of formal qualifications. Future studies could complement this approach by incorporating more granular qualitative analyses of opinion content, or by focusing on sub-samples of firms where modified opinions are more prevalent, so as to better capture the full spectrum of auditor reporting behavior.

4 ANALYSIS OF RESULTS

This section presents the results of the study, starting with descriptive statistics, frequencies of key dummy variables, univariate analyses of means, and a multicollinearity assessment. Next, regression results are discussed (including robustness via quantile regression) to interpret how tax litigation influences audit opinion characteristics and the implications for various stakeholders.

4.1 RESULTS

4.1.1 Descriptive Statistics

The mean audit opinion length (OpSize) was about 11.7 thousand characters with a median of ~12.5 thousand, indicating that on average audit reports contain a moderate level of detail but with considerable variability across companies (standard deviation ~6.6 thousand characters). This variability may reflect differences in operational complexity or sector-specific disclosure requirements. The average Tone of audit opinions was slightly negative overall (mean Tone ≈ –69.5, median 3.71, in the Tone score units), suggesting that many reports contain cautious or negative language; however, the large standard deviation (724.2) indicates significant volatility in tone among companies, likely influenced by firm-specific issues or events. The readability measure (Flesch_Mod) had an average around 4.93 (on a modified scale), with relatively small variation, implying that most audit opinions are written at a fairly consistent readability level, albeit somewhat complex. The complexity index (Fog_Mod) averaged –13.5, with a range indicating that some opinions are considerably harder to read than others (more negative values denote higher complexity in the adjusted scale). For the independent variable of interest, Tax Litigation (TL) had a median value near 0.03 and a mean around 0.95, showing a highly skewed distribution – most companies have low tax litigation exposure, but a few have extremely high values. This distribution underscores the presence of companies facing extraordinary tax disputes.

Among control variables, firm size (total assets) indicates a moderate asset base on average, with substantial dispersion across firms. Asset structure (ast) has a median of 0.341, meaning fixed assets and inventory make up about 34% of total assets for a typical firm, with the third quartile at approximately 51%. Growth rates (gth) vary substantially across the interquartile range (–1.2% to +23.2%), reflecting diverse growth trajectories and economic conditions for the sampled firms. Profitability (prof, ROA) has an interquartile range from –0.35 to 7.50 (mean ~2.39), showing that while many firms are profitable, some experienced losses. Business risk (brisk) measured by EBIT volatility has a median of 0.021 and a mean of 1.080, indicating that a few firms have extremely volatile earnings. Current liquidity (cliq) medians around 1.50 (mean ~2.17), with a mean above the median, indicating that some firms maintain substantially higher liquidity ratios. The indebtedness ratio (indbt) has a median of 0.592, with an interquartile range from 0.46 to 0.74. Overall, the descriptive statistics highlight considerable heterogeneity in firm characteristics across the sample.

A total of 3,241 firm-year observations were analyzed using the models described. *Table 4* displays the descriptive statistics of the variables included in the study.

Table 4
Descriptive statistics of variables

Variables	1st Quartile	Median	Average	3rd Quartile	Standard Deviation
Opsize	5.445	12.522	11.656	16.790	6.555
Tone	2.396	3.714	-69.536	4.813	724.230
Flesch_Mod	4.876	4.961	4.934	5.000	0.113
Fog_Mod	-15.823	-13.102	-13.784	-11.169	4.133
TL	0.003	0.027	0.950	0.098	6.537
Size	1,187	4,014	20,905	14,240	71,282
ast	0.102	0.341	0.335	0.507	0.2539
gth	-1.154	10.202	13.841	23.238	40.143
prof	-0.349	3.858	2.389	7.498	48.662
brisk	0.010	0.021	1.080	0.045	57.979
cliq	1.041	1.498	2.174	2.227	4.123
indbt	0.458	0.592	7.351	0.735	97.513
age	16.905	42.388	42.910	63.243	28.057
auditfees	256	574	1,865	1,320	5,621
tenure	1.000	3.000	2.961	4.000	2.831

Source. Where: **Opsize** measures opinion length in characters, reflecting the level of detail or complexity; **Tone** classifies opinion tone as positive, neutral, or negative; **Flesch_Mod** is an adjusted readability index (higher values indicate clearer text), while **Fog_Mod** is an adjusted complexity index (higher values indicate lower readability). Independent variables include: **TL** (tax litigation), calculated as tax provisions plus contingent liabilities over total assets; **size** (firm size), measured by total assets; **ast** (asset structure), the ratio of fixed assets and inventory to total assets; **gth** (growth), the change in net operating revenue; **prof** (profitability), measured by return on assets (ROA); **brisk** (business risk), standard deviation of EBIT over five years divided by total assets; **cliq** (liquidity), current assets over current liabilities; **indbt** (indebtedness), total liabilities over total assets; **cg** (corporate governance), a dummy for firms in B3 governance segments; **res** (reservation), a dummy for qualified opinions; **big4**, a dummy for Big Four auditors; **age** (firm age), years since founding; **auditfees**, audit service payments; and **tenure**, the auditor's relationship length in years..

4.1.2 Frequencies of Dummy Variables

We examine three key dummy variables: corporate governance listing (CG), modified audit opinions (RES), and Big Four auditor (BIG4). In this sample, only 13.67% of the firm-year observations correspond to companies that adopted enhanced corporate governance practices (CG = 1). About 0.59% of audit reports contained a modification or reservation (RES = 1), indicating an issue or exception noted by the auditor. Additionally, approximately 68.84% of observations involved audits conducted by a Big Four firm (BIG4 = 1). These frequencies (see Table 5) provide insight into the distribution of these categorical factors in the sample.

Table 5
Frequencies of key categorical variables

Variables	Category	Frequency	Percentage (%)
CG	0	2,798	86.33
	1	443	13.67
RES	0	3,222	99.41
	1	19	0.59
BIG4	0	1,010	31.16
	1	2,231	68.84

Where: **CG (Corporate Governance)**: Dummy with value 1 for companies listed in B3 governance segments, 0 for the others**; RES (Reservation):** Dummy with value 1 for audit opinions with caveats, 0 for the others; **BIG4 (Big Four Audit Firms)**: Dummy with value 1 for companies audited by a Big Four, , 0 for the others.

The relatively low proportion of firms in premium governance segments suggests that many companies in the sample do not adhere to higher governance standards, which could influence audit outcomes and trust. The fact that fewer than 1% of audit opinions are modified indicates that formal qualifications remain exceptional in this market. Big Four auditors cover roughly two-thirds of the engagements, implying that the majority of companies are audited by large international firms, which may have implications for audit quality and opinion characteristics.

4.1.3 Univariate Analysis of Differences of Means

The univariate analysis examines how audit opinion characteristics vary across different levels of tax litigation, revealing important patterns in the relationship between tax risk and auditor reporting behavior. Table 6 presents the means of dependent variables across tax litigation quartiles, with companies sorted from lowest (Q1) to highest (Q4) litigation exposure.

Table 6
Univariate difference of means test across tax litigation quartiles (see supplementary file)

Variables	Q1 (25%)	Q2 (50%)	Q3 (75%)	Q4 (100%)	Q4-Q1 Difference	Sign
Tax Litigation	0.0037	0.0276	0.0986	121.5744	121.5707	***
OpSize (average)	10.700	11.865	12.048	12.021	1.321	**
Tone (average)	-57.3684	-95.1918	-40.8163	-84.8607	-27.4923	*
Flesch_Mod (average)	4.9555	4.9220	4.9177	4.9410	-0.0145	n.s.
Fog_Mod (average)	-12.9514	-14.3035	-14.3751	-13.5123	-0.5609	*

Where: Tax Litigation: Sum of tax provision and contingent liability divided by total assets; OpSize: Opinion length in characters, indicating detail/complexity; Tone: Opinion sentiment (positive, neutral, negative); Flesch_Mod: Adjusted readability index where higher values indicate clearer text; Fog_Mod: Adjusted complexity index where higher values indicate more difficult reading. Note: ***, **, * indicate statistical significance at 1%, 5%, and 10% levels respectively using Welch's *t-test; n.s. indicates not significant.*

A striking observation from the univariate results is the dramatic increase in average tax litigation values from Q3 (≈0.099) to Q4 (≈121.574), representing an exponential jump that indicates a highly skewed distribution—i.e., a small subset of companies face extraordinarily high tax disputes. This extreme right-tail distribution suggests the presence of companies with significant tax compliance challenges or aggressive tax strategies.

The analysis reveals several important patterns in how audit opinion characteristics vary with tax litigation exposure. **Opinion Size (OpSize)** shows a general increase from Q1 to Q3, followed by a slight decrease in Q4. The mean opinion length in the lowest litigation quartile (Q1) is about 10.70 thousand characters, rising to ~12.05 thousand in Q3, then slightly dropping to 12.02 thousand in Q4. The difference between Q1 and Q4 (about +1.321 thousand characters) is statistically significant ($p < 0.05$), indicating that firms with very high tax litigation tend to have longer audit opinions than those with minimal tax litigation.

This finding partially **contradicts Hypothesis H1**, which predicted shorter opinions with increased litigation, instead suggesting that auditors may provide more detailed disclosures when tax risk is extremely high.**Opinion Tone (Tone)** exhibits substantial volatility across quartiles. Notably, Q2 and Q4 have the most negative average tone (approximately –95.19 and –84.86, respectively), whereas Q1 and Q3 are less negative. Companies in the highest tax litigation quartile (Q4) display significantly more negative tone than those in Q1 ($p < 0.10$), indicating that auditors adopt more conservative language for firms with substantial tax disputes. This **contradicts Hypothesis H2**, suggesting that, contrary to expectation, tax litigation does influence the sentiment of audit opinions.

Meanwhile, **Readability (Flesch_Mod)** remains fairly consistent across quartiles (around 4.92–4.95), with no significant difference between Q1 and Q4. This stability implies that auditors maintain similar levels of clarity regardless of tax litigation exposure, neither supporting nor contradicting **Hypothesis H3** at the univariate level.

Complexity (Fog_Mod) follows a U-shaped pattern: opinions become more complex (less negative Fog_Mod values) in Q4 compared to Q3. The difference between Q1 and Q4 in Fog_Mod is statistically significant ($p < 0.10$), supporting **Hypothesis H4** that higher tax litigation is associated with more technical and complex audit opinions.

Taken together, these univariate findings demonstrate that tax litigation substantially influences auditor reporting behavior. Companies facing the highest litigation levels receive audit opinions that are longer, more negative in tone, and more complex. This pattern suggests that auditors respond strategically to extreme tax risk—providing more comprehensive disclosure while adopting cautious language and technical complexity that may serve to protect both stakeholders and the auditors themselves from potential legal exposure.

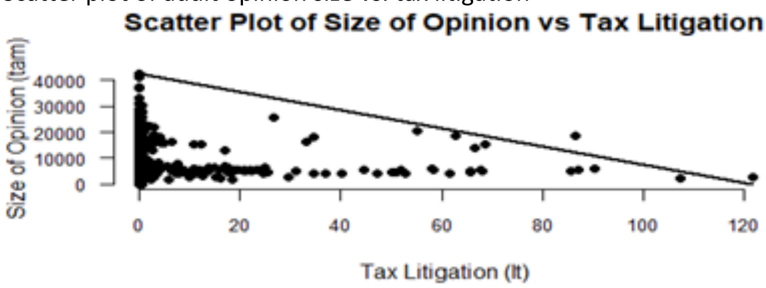
4.1.4 Scatter Plot Analysis

Figure 1 presents a scatter plot examining the relationship between audit opinion size (OpSize) and tax litigation (TL), revealing a negative trend as indicated by the downward-sloping regression line. This visualization initially appears to support Hypothesis H1, which predicted that increased tax litigation would be associated with more concise audit opinions.

The negative slope in the scatter plot confirms that as companies face higher levels of tax litigation, auditors often issue shorter, more focused opinions. This counterintuitive pattern may reflect a strategic response by auditors: when auditing companies with significant tax risk, they might use more precise and carefully crafted language—potentially to minimize their own legal exposure—while still fulfilling disclosure obligations. Interestingly, this negative bivariate relationship contrasts with the earlier univariate result (Table 6) where the highest quartile of litigation had longer opinions. The discrepancy likely stems from the influence of outliers and the highly skewed distribution of the tax litigation variable, highlighting the need for more robust multivariate analysis (such as the regression and quantile regression) to reconcile these findings.

Overall, the scatter plot analysis reinforces the complex nature of auditors' responses to tax risk. At moderate levels of litigation, auditors might shorten reports (prioritizing precision over length), but at extreme levels, other factors may intervene (leading to longer reports as seen in Q4). These findings underscore the importance of examining both the direct relationship between variables and how this relationship may change across different ranges of the data.

Figure 1
Scatter plot of audit opinion size vs. tax litigation



4.1.5 Correlation Analysis and Multicollinearity Assessment

We conducted a correlation analysis and multicollinearity diagnostics to investigate interrelationships among the variables and assess model robustness. Given the non-normal distribution of some financial data (confirmed by Shapiro-Wilk tests), we calculated both Pearson and Spearman correlation coefficients, focusing on Spearman's rank correlations due to their resilience to outliers and non-normality. The correlation analysis revealed several economically significant relationships that enhance understanding of audit opinion characteristics in the context of tax litigation. The strongest correlation (Spearman $\rho \approx 0.98$) is between Flesch_Mod and Fog_Mod, indicating that these readability metrics move almost in tandem. This near-perfect association suggests that both measures capture highly related aspects of linguistic complexity in audit opinions; researchers could use either interchangeably when assessing opinion clarity.

Audit fees show a substantial positive correlation with total assets (Spearman $\rho \approx 0.57$), confirming the established relationship between company size and audit costs. This aligns with standard audit pricing models where larger, more complex entities require more extensive testing and specialized expertise, leading to higher fees. Similarly, tax litigation has a modest but significant positive correlation with audit fees ($\rho \approx 0.19$), suggesting that heightened tax risk translates to more intensive audit scrutiny and consequently higher fees – supporting our theoretical framework that ties tax disputes to more rigorous (and costly) audit procedures. Company age correlates positively with asset structure ($\rho \approx 0.22$), reflecting that older firms tend to accumulate more fixed assets over time. Interestingly, age has a negative correlation with audit fees ($\rho \approx -0.16$), implying that mature companies with established processes might require less extensive audit work despite their size, possibly due to more sophisticated internal controls and financial reporting systems. Additionally, there is a notable negative correlation between liquidity and indebtedness ($\rho \approx -0.50$), highlighting the trade-off between maintaining liquid assets and leveraging debt financing: companies with stronger self-financing capabilities typically carry lower debt, reducing financial risk exposure.

Our multicollinearity assessment indicates no concerning levels of correlation among the independent variables. All Variance Inflation Factors (VIFs) are well below 2 (far under common thresholds like 5 or 10). Company size has the highest VIF (~1.27) and audit fees ~1.26, both well within acceptable limits. Importantly, tax litigation (VIF ≈ 1.01) is almost completely independent of other predictors, ensuring reliable coefficient estimation for this key variable. The absence of multicollinearity issues strengthens confidence in the regression results, allowing clearer interpretation of each variable's distinct contribution to audit opinion characteristics in the Brazilian market context.

Table 7

Correlation matrix of independent variables

	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	OpSize		-0.162	-0.435	-0.428	0.046	0.085	-0.062	-0.025	-0.104	0.283	-0.087	0.175	0.038	0.151	0.029
(2)	Tone	0.179		-0.054	-0.053	0.023	0.063	0.100	0.029	0.119	-0.125	0.043	-0.035	0.011	0.072	-0.023
(3)	Flesch_Mod	-0.337	-0.016		0.980	-0.036	-0.207	0.082	-0.085	-0.208	-0.086	-0.071	0.060	0.009	-0.256	-0.087
(4)	Fog_Mod	-0.349	-0.006	0.965		-0.034	-0.212	0.088	-0.075	-0.187	-0.083	-0.047	0.047	0.008	-0.245	-0.072
(5)	TL	-0.062	0.010	0.058	0.059		0.055	0.009	-0.019	0.015	0.000	-0.159	0.088	0.166	0.186	0.025
(6)	size	0.068	-0.055	-0.095	-0.098	-0.018		-0.224	0.065	0.076	-0.252	-0.036	0.054	-0.101	0.573	0.065
(7)	ast	-0.084	0.021	0.046	0.065	-0.021	0.026		0.001	-0.121	-0.004	0.019	0.100	0.224	0.015	-0.000
(8)	gth	-0.030	0.004	-0.063	-0.052	-0.009	-0.000	0.013		0.160	-0.158	0.016	-0.003	-0.123	0.073	0.012
(9)	prof	-0.015	-0.001	-0.048	-0.046	-0.000	0.012	-0.044	0.029		-0.139	0.288	-0.381	0.047	0.015	0.016
(10)	brisk	0.045	0.001	0.012	0.008	-0.001	-0.004	-0.022	0.005	0.002		-0.031	0.142	0.078	-0.143	-0.024
(11)	cliq	-0.061	0.008	0.026	0.038	-0.020	0.059	-0.091	-0.006	0.021	0.003		-0.498	-0.025	-0.027	0.019
(12)	indbt	-0.000	0.007	-0.023	-0.023	-0.007	-0.011	-0.023	-0.003	0.004	-0.002	-0.018		0.082	0.090	-0.000
(13)	age	0.045	0.067	-0.002	0.008	-0.031	0.070	0.212	-0.094	0.028	0.009	0.004	0.029		-0.157	-0.042
(14)	auditfees	0.074	-0.093	-0.073	-0.073	-0.019	0.432	0.055	0.000	0.005	-0.005	-0.042	-0.020	0.026		0.160
(15)	tenure	0.032	-0.008	-0.050	-0.042	0.005	0.009	-0.013	0.017	-0.010	0.006	-0.021	0.002	-0.057	0.047	

Spearman

Pearson

4.2 DISCUSSION

The results presented in Tables 8 and 9 reveal a consistent and theoretically meaningful pattern: tax litigation is a significant determinant of audit opinion characteristics for companies listed on B3, shaping not only the length of reports but also their readability and linguistic complexity. The discussion that follows interprets these findings in light of the theoretical framework developed in Section 2, emphasizing their practical and institutional implications rather than their purely statistical dimensions.

Table 8
OLS regression results (see supplementary file)

	OpSize	**Tone**	**Flesch_Mod**	**Fog_Mod**
C	11.833***	-85.001**	4.970***	-12.818***
TL	-85.881***	1.551	0.001***	0.055***
size	0.004**	-0.000	-0.000***	-0.000***
ast	-2.718***	33.574	0.020**	1.063***
gth	-3.775	0.234	-0.000***	-0.004**
prof	-2.884	-0.018	-0.000**	-0.003**
brisk	4.917**	-0.006	0.000	0.000
cliq	-115***	1.036	0.000*	0.045**
indbt	-0.345	0.036	-0.000	-0.001
gc	53.478	-64.587*	-0.019***	-0.774***
res	5.252***	77.928	-0.106***	-3.526***
big4	29.984	-64.546**	-0.037***	-1.229***
age	15.207***	1.629***	-0.000**	-0.004*
auditfees	0.061***	-0.010***	-0.000	-0.000
tenure	71.850*	0.896	-0.001**	-0.040*
R-Squared	0.038	0.017	0.060	0.057
Adjusted R-squared	0.034	0.013	0.056	0.053
Standard error	6.441	719.498	0.110	4.021
F-Statistic	9.303	4.054	14.733	14.009
Observations	3,241	3,241	3,241	3,241

***, ** and * indicate statistical significance at 1%, 5% and 10%

Source. Where: OpSize measures audit opinion length in characters indicating detail level; Tone classifies opinion tone as positive, neutral, or negative; Flesch_Mod and Fog_Mod assess readability (higher is clearer) and complexity (higher is more difficult); TL calculates tax litigation value relative to assets; size represents total assets; ast shows fixed asset and inventory proportion; gth tracks revenue growth rate; prof measures profitability via ROA; brisk indicates business volatility through EBIT standard deviation; cliq represents the current assets to liabilities ratio; indbt measures financial leverage; while dummy variables cg, res, and big4 indicate governance segment listing, audit opinion caveats, and Big Four auditor usage respectively; age shows company lifetime in years; auditfees represents payment for audit services; and tenure measures the duration of auditor-company relationship in years.

Table 9
Quantile regression results

Variables	OpSize			Tone			Flesch_Mod			Fog_Mod		
	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3
C	5.691***	11.645***	17.958***	1.764***	3.151***	4.171***	4.929	4.973***	5.011***	-14.671***	-12.621***	-11.028***
TL	-21.725***	-139.631***	-122.327***	0.009**	0.000	-0.005	0.001***	0.000***	0.000***	0.064***	0.041***	0.026***
size	-0.000	0.004	-0.001	0.000	0.000	0.000**	-0.000	-0.000**	-0.000	-0.000	-0.000***	-0.000
ast	-435.6	-5.474***	-2.455***	1.273***	0.718***	1.013***	0.016*	0.027***	0.022***	0.689**	1.365***	1.436***
gth	1.370	-5.702**	-8.041**	0.000	0.000	0.002**	-0.000	-0.000	0.000*	-0.008*	-0.001	0.002**
prof	-7.148***	-1.260	-1.261*	0.002***	0.001***	0.001***	-0.000	-0.000	-0.000	-0.020	-0.002	-0.000
brisk	6.953***	4.667***	3.409***	0.000**	-0.000**	-0.000***	0.000***	0.000**	0.000	0.000***	0.000	-0.000
cliq	-16.236	-170.563***	-127.550*	0.008***	-0.012	-0.015	0.000***	0.000**	0.000	0.024***	0.058***	0.033
indbt	-0.814*	1.175	-0.706	0.000	0.000	-0.000	-0.000**	-0.000	-0.000**	-0.001	-0.002**	-0.000**
gc	-107.832	430.002	620.211*	0.231	0.078	0.076	-0.018*	-0.009*	-0.000	-1.060***	-0.627**	-0.218
res	8.829***	4.179***	1.949*	0.742***	0.402	1.352***	-0.079***	-0.131***	-0.126***	-2.867***	-3.661***	-3.661***
big4	-73.383	1.493**	-740.126**	0.727***	0.353***	0.547***	-0.058***	-0.025***	-0.022***	-1.260***	-1.168***	-0.804***
age	2.775	28.009***	-5.007	-0.004**	0.001	0.001	-0.000	-0.000	-0.000*	-0.003	-0.001	-0.002
auditfees	0.031	0.116	0.246***	-0.000	-0.000**	-0.000***	-0.000***	-0.000	0.000	-0.000	-0.000	0.000
tenure	-24.404	168.842	81.216	-0.052	-0.003	-0.041	0.000	-0.000***	-0.001***	0.020**	-0.006	-0.025***
Pseudo R-squared	0.010	0.037	0.030	0.000	0.000	0.000	0.055	0.028	0.029	0.045	0.031	0.028
Adjusted R-squared	0.006	0.033	0.026	-0.004	-0.004	-0.003	0.051	0.024	0.025	0.040	0.027	0.024
Standard error	8.930	6.586	8.255	729.392	729.505	729.631	0.128	0.114	0.128	4.572	4.086	4.787
Prob(Quasi-LR stat)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	3,241	3,241	3,241	3,241	3,241	3,241	3,241	3,241	3,241	3,241	3,241	3,241

***, ** and * indicate statistical significance at 1%, 5% and 10%

Hypothesis H1 posited a negative association between tax litigation and opinion length. The multivariate evidence confirms this relationship: firms facing higher levels of tax disputes tend to receive shorter audit opinions. From a theoretical standpoint, this finding is consistent with the notion that auditors, when confronted with significant legal and fiscal uncertainty, exercise greater communicative caution—opting for precision and focus over exhaustive elaboration (DeAngelo, 1981; Blanco et al., 2021). Rather than expanding the opinion to discuss every dimension of a contested tax position, auditors may deliberately restrict the scope of their written disclosure to avoid creating legally binding statements in an inherently uncertain terrain. This behavior aligns with agency theory: auditors act as reputational gatekeepers who calibrate their public communications to minimize exposure while fulfilling their disclosure obligations (Beatty, 1989).

It is important, however, to reconcile this finding with the descriptive evidence from the univariate analysis, which showed that companies in the highest litigation quartile (Q4) actually received *longer* opinions on average. This apparent contradiction is best understood as a non-linear phenomenon driven by the materiality of risk. At moderate levels of litigation—which characterize the vast majority of firms in the sample—auditors tend toward conciseness, as the disputes in question, while present, may not rise to the threshold of requiring exhaustive narrative treatment. At extreme levels of litigation, however, as observed among the outlier firms in Q4, the sheer magnitude and materiality of the contingent liabilities become impossible to address briefly. In these cases, the auditor's duty of diligence and the reputational stakes involved compel a more comprehensive treatment: the risk is so significant that brevity itself would constitute an inadequate response (Constantino, 2021; Lopo Martinez et al., 2024). This non-linearity underscores a broader principle in auditing: communicative behavior is not uniform across the risk spectrum, but adapts to the materiality and visibility of the issues at hand.

Hypothesis H2 proposed that tax litigation would not be significantly associated with the overall tone of audit opinions. The evidence supports this expectation: auditors appear to maintain a consistent evaluative stance toward a firm's general financial condition regardless of its tax dispute profile. This finding suggests that auditors compartmentalize tax risk, treating it as a domain-specific concern rather than allowing it to color their broader assessment of the entity's financial health. From a practical standpoint, this is reassuring for investors: the presence of tax litigation does not appear to systematically induce auditors to adopt a more negative overall posture toward the firm, which could otherwise amplify market uncertainty beyond what the tax issues themselves warrant (Backof et al., 2022).

Hypothesis H3 predicted that higher tax litigation would be associated with greater clarity in audit opinions, and the evidence confirms this. This finding may seem counterintuitive at first—why would a more complex tax environment produce more readable reports?—but it becomes coherent when viewed through the lens of auditor diligence and stakeholder communication. When significant tax disputes are present, auditors have a heightened responsibility to ensure that the users of financial statements genuinely understand the nature and implications of the contingencies involved (Chantziaras et al., 2021; Souza, 2023). Clarity, in this context, is not a simplification of the content but a deliberate communicative choice: auditors write more directly and accessibly precisely because the stakes of misunderstanding are higher.

Hypothesis H4 predicted greater linguistic complexity under high litigation, and this too is confirmed. The co-existence of greater clarity (H3) and greater complexity (H4) in the same set of opinions is not contradictory—it reflects a sophisticated balancing act. Auditors appear to structure their language so that the central messages remain accessible to a broad audience of stakeholders, while simultaneously incorporating the technical terminology, caveats, and qualifications necessary to adequately represent the intricacies of the tax disputes involved (Nguyen et al., 2023). This dual approach serves both a transparency function—ensuring that non-specialist readers can grasp the key risks—and a protective function, providing the technical specificity that shields auditors from allegations of insufficient disclosure.

Beyond the four main hypotheses, the results for control variables offer additional insights consistent with established theory. Larger firms tend to receive shorter and slightly less readable opinions, likely reflecting the more standardized nature of reporting for well-known, institutionally monitored entities with robust internal controls. The presence of modified opinions is predictably associated with more negative tone and greater complexity—a finding that validates the construct validity of the tone and complexity measures used. Big Four auditors, while not producing notably longer opinions, tend to exhibit more conservative language and greater technical depth, reflecting their heightened reputational sensitivity and more rigorous methodological standards (DeAngelo, 1981; Fernandez et al., 2024). Older firms, by contrast, tend to receive longer and slightly more neutral opinions, possibly reflecting the accumulated auditor familiarity and the established reporting histories that characterize mature companies.

A particularly theoretically significant finding emerges from the correlation between tax litigation and audit fees ($\rho \approx 0.19$). Although audit fees were not among the primary variables of interest, their positive association with tax litigation provides important corroborating evidence for the study's central argument. If auditors were merely adjusting the wording of their opinions in response to tax disputes—a purely textual adaptation—one would not necessarily expect a corresponding increase in fees. The fact that higher litigation is associated with higher remuneration suggests that auditors are investing materially greater effort in these engagements: conducting more extensive testing of tax provisions, dedicating additional resources to the evaluation of contingent liabilities, and assuming a heightened level of professional responsibility over the financial statements (Whisenant et al., 2003; Hallak & Silva, 2012). In this sense, audit fees function as a moderating signal: they indicate that the differences observed in opinion characteristics are not merely cosmetic adjustments, but the visible output of a deeper and more demanding audit process. This interpretation aligns with the view that auditors in high tax-risk engagements operate under greater scrutiny and accountability, and that their compensation reflects the additional burden of that responsibility (Lopo Martinez et al., 2024; Kajola et al., 2022).

Taken together, these findings paint a nuanced and theoretically coherent picture of auditor behavior under tax risk. Rather than following a single, uniform reporting script, auditors appear to calibrate their communicative choices—length, tone, clarity, and complexity—in response to the specific nature and intensity of the fiscal risks they encounter. This adaptive behavior reflects the dual mandate of the audit function: to provide transparent and accessible information to stakeholders, and to protect the auditor's own professional and legal standing in an uncertain environment. For regulators and standard-setters, these results suggest that audit reporting is already performing part of the informational function that disclosure standards seek to achieve—though further guidance on how tax-related risks should be explicitly communicated in audit opinions could help standardize and deepen this practice across the Brazilian market.

5 CONCLUSION

This study analyzes the relationship between tax litigation and the characteristics of audit opinions for Brazilian corporations listed on B3 from 2009 through 2023. Using a fixed-effects panel model covering 3,241 observations across 233 companies, the findings demonstrate that higher tax litigation is associated with shorter, clearer, and more technically complex opinions. At moderate litigation levels, auditors opt for conciseness to avoid legal exposure in uncertain terrain; at extreme levels, the materiality of contingent liabilities compels more comprehensive treatment. In both cases, tax litigation emerges as a significant and previously underexplored determinant of audit reporting behavior.

Transparency, Trust, and Informational Asymmetry. The observed pattern directly serves the transparency and trust objectives stated in this study's research question. When auditors produce shorter but technically denser opinions for high-litigation firms, they perform an implicit signaling function: conciseness directs the reader's attention to what matters most, while technical complexity signals that the issues require specialized scrutiny. Together, these features reduce informational asymmetry by alerting sophisticated users—analysts, investors, and regulators—to significant fiscal risk, even in the absence of a formal modified opinion. In the Brazilian context, where clean opinions predominate, this structural and linguistic signaling constitutes a meaningful secondary layer of disclosure that sustains stakeholder trust through demonstrated auditor diligence (DeAngelo, 1981; Backof et al., 2022).

Practical Implications. For audit committees, the findings suggest developing more detailed and anticipatory explanatory notes on tax contingencies in financial statements, mapping the nature, probability, and financial impact of ongoing disputes with sufficient granularity to allow independent user assessment. For external auditors, the results support structuring Key Audit Matters (KAMs) with greater specificity for high-litigation clients—dedicating a distinct KAM to contingent tax liabilities that details the procedures applied, key assumptions evaluated, and residual uncertainty, thereby transforming an implicit signal into an explicit and structured disclosure. For policymakers, the evidence supports requiring auditors to explicitly address the impact of material tax disputes on their procedures and conclusions, rather than leaving this communication to emerge indirectly through textual characteristics.

Theoretical Contributions. This study extends agency theory by demonstrating that auditors manage informational asymmetry not only through their formal conclusions but through the structure and language of their communications. The positive association between tax litigation and audit fees further supports this view, indicating that opinion adjustments reflect a more intensive audit process rather than a merely textual adaptation—contributing to a richer understanding of audit quality in emerging markets.

Future Research. Promising avenues include investigating sector-specific auditor responses to tax risk, examining the content of KAMs related to tax contingencies, and exploring how digital transformation in tax administration may reshape the relationship between litigation exposure and audit reporting behavior across different regulatory contexts.

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