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EFFECTS OF TAX AGGRESSIVENESS AND TAX AVOIDANCE ON EARNINGS PERSISTENCE IN BRAZILIAN COMPANIES

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ABSTRACT

With the aim of analyzing the effects of tax aggressiveness and tax avoidance on earnings persistence, this study examined 286 nonfinancial listed Brazilian companies over the period from 2017 to 2021, totaling 1.217 firm year observations. Data were collected from the Refinitiv Eikon® database and from the notes to the financial statements, and were analyzed using linear regressions estimated by the Ordinary Least Squares (OLS) method. Tax avoidance was measured using Abnormal Book Tax Differences (ABTD). Two proxies were employed for tax aggressiveness: (i) the interaction between ABTD and tax risk, measured by the standard deviation of the current effective tax rate over the previous five years; and (ii) the annual change in the sum of tax provisions and contingent tax liabilities, scaled by total assets. The results indicate that tax aggressiveness reduces earnings persistence, an effect not observed for tax avoidance. This study contributes to the literature by examining tax aggressiveness, a construct that has been scarcely used in prior research, and by supporting the view that it is distinct from tax avoidance. The study also offers practical implications by demonstrating that tax strategies that reduce tax expense without increasing tax risk are preferable for managers and investors, as they allow for improvements in firm valuation models through the identification of companies that, due to lower levels of tax aggressiveness, tend to exhibit more persistent earnings.

Keywords: Tax aggressiveness. Tax avoidance. Tax risk. Earnings persistence.

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1 INTRODUCTION

The adoption of strategies and planning aimed at reducing corporate tax expenses has been regarded as beneficial to firms, insofar as they generate higher profits and cash flows, thereby increasing firm value (Hanlon & Heitzman, 2010; Wang et al., 2020). The international literature refers to this reduction in tax expense as tax avoidance, which has been the subject of extensive research in the accounting field, particularly with respect to its determinants and implications for the quality of accounting information (Tang & Firth, 2011), conditional conservatism (Martinez et al., 2022), the informational content of earnings (Santos et al., 2019), and value relevance (Drake et al., 2019), among others.

However, the diversity of managerial and accounting decisions that result in lower tax expenses means that a firm's tax position may lie at any point along a continuum ranging from a more conservative position, characterized by a high degree of certainty regarding the legality of the actions taken, to a more aggressive position, marked by a high degree of uncertainty regarding legality (Francis et al., 2022; Lietz, 2013; Lisowsky et al., 2013; Martinez, 2017). Between these two extremes lies a gray area whose gradation varies according to the perceived legality of the strategies adopted.

Part of the Brazilian literature translates tax avoidance as *agressividade tributária* or *agressividade fiscal* (Marchesi & Zanoteli, 2020; Marques et al., 2022; Martinez, 2017). This translation suggests that the term refers exclusively to extreme aggressive practices, located at the uncertain boundary between legality and illegality, pursued with the aim of maximizing tax expense reduction. However, not every activity that reduces tax expense can be classified as aggressive. For example, the use of sector specific tax incentives or investments in tax incentivized projects reduces the tax burden without necessarily attracting greater scrutiny from tax authorities.

The use of the term *agressividade tributária* has led to confusion with the concept of tax aggressiveness as adopted by part of the international literature to refer specifically to activities that entail higher risk (Blouin, 2014; Francis et al., 2022; Lisowsky et al., 2013). This strand of the literature argues that it is possible to identify and measure the adoption of strategies and planning that are effectively located at the most aggressive end of the continuum, in a manner distinct from traditional approaches to conceptualizing and measuring tax avoidance. This more aggressive subset of tax avoidance is referred to in this theoretical framework as tax aggressiveness (Blouin, 2014; Francis et al., 2022; Lietz, 2013; Lisowsky et al., 2013). In comparison with the continuum illustrated by Lietz (2013), the continuum proposed by Martinez (2017) translates tax avoidance as *planejamento tributário agressivo* and tax aggressiveness as *planejamento tributário abusivo*. It is based on this latter expression that this article proposes translating tax aggressiveness as *abusividade tributária*.

Accordingly, this subset of more aggressive tax positions, characterized by engagement in tax planning strategies that present a high likelihood of being challenged by tax authorities on the grounds of sham transactions, fraud against the law, abuse of form, or abuse of rights (Castro, 2010; Martinez, 2017), is referred to in this study as *abusividade tributária*, corresponding to the construct that the international literature labels tax aggressiveness. Despite the shortcomings of this translation, the term *agressividade tributária* is maintained in this study as the translation of the construct referred to as tax avoidance in the international literature, in order to facilitate comparison with prior Brazilian studies.

Among earnings quality proxies, earnings persistence is one of the most important, as it allows for the analysis of how the degree of earnings variability over time can yield more consistent results in firm valuation models (Dechow et al., 2010). Since earnings can be understood as the combination of two components, cash flows and accruals, earnings persistence is affected both by the firm's fundamental performance, reflected in cash flows, and by accounting decisions, which affect the magnitude of accruals. Firms with higher accruals tend to exhibit less persistent

earnings (Dechow & Ge, 2006). Recognizing that deferred income tax expenses constitute an accrual (Blaylock et al., 2012) makes it possible to link tax decisions to earnings persistence.

Previous studies have examined the effects of Book Tax Differences (BTD) on earnings persistence, indicating that BTD impair persistence (Hanlon, 2005). BTD are defined as the difference between book income and taxable income. However, the results of prior studies are primarily driven by temporary differences, since accruals arising from decisions related to deferred tax expense are not necessarily reversed in the following year but rather in subsequent periods, which reduces earnings persistence (Blaylock et al., 2012). Nevertheless, BTD may arise from three distinct situations: mere incongruence between accounting standards and tax legislation, earnings management, and tax avoidance (Tang & Firth, 2011).

In this context, although BTD are among the main metrics of tax avoidance (Santos et al., 2024), they also embed information reflecting simple mismatches between accounting and tax rules for income determination, as well as managerial actions aimed at manipulating accounting earnings. Consequently, prior studies (Hanlon, 2005; Martinez & Bassetti, 2016) may have captured effects of BTD on earnings persistence that do not necessarily stem from managers' intentional actions to reduce corporate tax expense. For this reason, this study proposes the use of a tax avoidance metric that seeks to minimize the influence of other situations that are not representative of tax avoidance, namely the abnormal component of BTD.

However, although the relationship between temporary BTD and earnings persistence has already been investigated (Blaylock et al., 2012; Hanlon, 2005), there remains a gap in the literature regarding the effect of tax aggressiveness on earnings persistence. The study by Francis et al. (2022) is among the few that address tax aggressiveness, but without examining its relationship with earnings quality. Given the diversity of tax practices adopted by firms, it is relevant to specifically and separately identify the effects of tax avoidance and tax aggressiveness on earnings persistence, which constitutes the research gap explored in this study. Accordingly, the objective of this study was to analyze the effects of tax aggressiveness and tax avoidance on earnings persistence.

As the research setting, this study examined nonfinancial Brazilian publicly traded companies. Although Brazil is not a fully developed economy, it represents an interesting context for the study of corporate taxation, as it has the highest tax burden in Latin America and the Caribbean, at 33.3 percent, very close to the OECD average of 34.0 percent (Organisation for Economic Cooperation and Development [OECD], 2024). The weight of taxation in the Brazilian economy constitutes a strong incentive for tax avoidance and tax aggressiveness. Understanding how tax avoidance, tax aggressiveness, and earnings persistence interact in this context can assist firms in pursuing greater efficiency in tax management and may represent a potential source of competitive advantage.

The results confirm the expectation that, due to the riskier nature of tax aggressiveness, its effects on earnings persistence are more pronounced than those of tax avoidance. They also call into question prior studies that reported a negative and significant relationship between temporary BTD and earnings persistence, highlighting the possibility that this metric may not be appropriate at this level of analysis, particularly because such results are driven by temporary differences (Hanlon, 2005; Blaylock et al., 2012). In most cases, more aggressive tax planning strategies predominantly generate permanent differences between accounting income and taxable income (Castro, 2010), which explains why temporary BTD have more attenuated effects on earnings persistence.

This research contributes to the literature on corporate taxation and on the quality of accounting information by seeking to understand whether riskier tax strategies affect accounting information quality differently from less risky strategies. It reinforces the theoretical position of authors who argue that tax avoidance and tax aggressiveness are distinct constructs (Blouin, 2014; Francis et al., 2022; Lisowsky et al., 2013) and advances the understanding of the effects of

managers' tax decisions on the quality of accounting information. In this regard, this study differs from recent research that has examined the association between tax avoidance and earnings persistence (Lou et al., 2025; Xu, 2024), as it specifically investigates the construct of tax aggressiveness, whereas other studies focused solely on tax avoidance.

In addition to its theoretical contribution, this research also has important practical implications. It is relevant for shareholders, investors, and market analysts, as these external users of accounting information may use its findings to enhance firm valuation models by identifying companies that, due to lower levels of tax aggressiveness, tend to exhibit more persistent earnings.

2 ANTECEDENTS AND RESEARCH HYPOTHESES

Earnings can be decomposed into cash flows and accruals, with the accrual component being less persistent than the cash flow component (Sloan, 1996). According to Dechow and Ge (2006), the conservative nature of accounting tends to reduce current period earnings, since only part of investments is capitalized, while another part is recognized as an expense in the period. As a result, firms that are growing and acquiring assets to expand production and sales tend to report high positive accruals to offset the temporarily negative cash flows generated by investment activities. Conversely, firms undergoing a contraction of business lines tend to exhibit high negative accruals, arising, for example, from asset impairment (Dechow & Ge, 2006). Accruals thus act as a stabilizing factor, reducing earnings variability over time, which favors the presentation of more consistent results in investment valuation models.

Tax aggressiveness is a factor that may influence earnings persistence, as the tax risk associated with it can increase the variability of tax expenses, especially when a firm with a history of reporting low tax expenses is required to recognize taxes, penalties, and interest arising from tax assessments. As a rule, such recognition results from unfavorable judicial decisions that cause the probability of loss to shift from possible to probable (CPC, 2009). When a firm recognizes the expense arising from a tax assessment, it records an accrual that leads to an unexpected reduction in earnings in the recognition period, resulting in lower earnings persistence.

In addition to decisions rendered in a firm's own tax disputes, variability in the recognition of tax expenses may also stem from binding decisions issued by higher courts. A firm whose tax position is based on controversial interpretations may be required to revise its tax strategies as a result of decisions issued under the repetitive appeals system by the Superior Court of Justice, or decisions with recognized general repercussion issued by the Supreme Federal Court. Such revisions affect current and future tax expenses, as the firm may alter its strategy following the ruling of a higher court.

For example, firms that had final and unappealable court decisions exempting them from paying the Social Contribution on Net Profit were required to resume payment following the Supreme Federal Court decisions in Themes 881 and 885, which relativized the understanding of res judicata in tax matters. For these firms, the resumption of payment reduced net income in subsequent periods and impaired earnings persistence. In general terms, greater variability in the recognition of tax expenses, which arises, among other factors, from more aggressive tax strategies, is expected to weaken the ability of current earnings to explain future earnings.

Defining tax aggressiveness as a subset of tax avoidance (Francis et al., 2022) makes it important to more precisely delineate the latter construct. Hanlon and Heitzman (2010) define tax avoidance broadly, considering any activity that results in an explicit reduction in a firm's tax expense as tax avoidance, regardless of whether the firm's tax position lies closer to or farther from the most uncertain end of the continuum. As a consequence of this definition, the most commonly used metrics to measure tax avoidance make no qualitative distinction regarding the risk associated with the adopted tax strategy.

By contrast, several studies distinguish tax positions located at the most aggressive end of the spectrum. Such riskier positions face greater opposition from tax authorities, as they are based

on legal interpretations that are not yet consolidated and on weaker legal arguments (Francis et al., 2022; Lisowsky et al., 2013). Tax positions situated at the most aggressive end of the tax avoidance continuum characterize tax aggressiveness.

The situation is even more complex in Brazil, where difficulties in interpreting tax legislation substantially increase the risk associated with more aggressive positions, and firms must deal with this risk over long periods. Definitive decisions regarding the legality of the acts performed are only reached at the end of judicial proceedings, many years after the taxable events occur. Notably, the average time to resolve tax disputes in Brazil is 13 years, considering both administrative and judicial stages (Plutarco, 2012). In addition, appeals against federal tax assessments have increasingly been decided under an approach that emphasizes substance over form, from an economic perspective, and based on criteria that consider abuse of law in assessing the validity of tax planning strategies (Martinez, 2017), further increasing the uncertainty associated with riskier tax positions.

Metrics such as the Effective Tax Rate and Book Tax Differences capture not only tax avoidance but also earnings management, as well as simple divergences between accounting standards and tax legislation in the determination of income (Ferreira et al., 2012; Morais & Macedo, 2021; Tang & Firth, 2011). Thus, although the literature documents a negative relationship between temporary Book Tax Differences and earnings persistence (Hanlon, 2005), it is difficult to ascertain whether this relationship is driven by tax avoidance, earnings management, or merely by differences between accounting and tax criteria for revenue and expense recognition.

Extending the study by Hanlon (2005), Blaylock et al. (2012) documented that large temporary Book Tax Differences arising from earnings management are associated with lower persistence of earnings and accruals. The authors also showed that large temporary Book Tax Differences provided incremental information for earnings persistence relative to the magnitude of accruals. By excluding permanent Book Tax Differences, the studies by Hanlon (2005) and Blaylock et al. (2012) examined only corporate strategies aimed at tax deferral, which are situated in the less aggressive portion of the continuum.

The literature recognizes that Book Tax Differences can be decomposed into two components. The first, referred to as normal Book Tax Differences, arises from divergences between accounting and tax criteria for determining income. The second, known as Abnormal Book Tax Differences or ABTD, reflects discretionary actions taken by managers with the intention of managing accounting income, taxable income, or both (Morais & Macedo, 2021; Tang & Firth, 2011). In order to eliminate the influence of mere regulatory misalignment, this study employs the ABTD measure proposed by Tang and Firth (2011) to capture tax avoidance. In their study, these authors documented that tax avoidance explained 27.8 percent of ABTD, whereas earnings management explained only 7.4 percent. The interaction between tax and accounting management explained an additional 3.2 percent of ABTD.

Thus, because ABTD is primarily explained by tax avoidance, its use in this study eliminates the influence of simple regulatory misalignment and minimizes the influence of earnings management, making it a more specific metric for capturing managerial decisions aimed at reducing taxes. Nevertheless, ABTD may still reflect tax strategies located at any point along the continuum, making it necessary to incorporate the notion of risk in order to focus on more aggressive tax planning strategies.

Consistent with the findings of Hanlon (2005) and Blaylock et al. (2012), more recent studies have also documented a negative relationship between tax avoidance and earnings persistence. Xu (2024) found that higher levels of tax avoidance are associated with lower earnings persistence. Similarly, Lou et al. (2025) concluded that conforming tax avoidance, defined as strategies that simultaneously reduce both accounting income and taxable income, is negatively associated with earnings persistence.

However, empirical evidence on the relationship between tax aggressiveness and earnings persistence remains limited, representing a gap in the literature. The construct of tax aggressiveness allows for the examination of the effects of more daring tax strategies, characterized by greater uncertainty regarding acceptance by tax authorities. The two measures of tax aggressiveness proposed and employed in this study incorporate the concept of tax risk. According to Blouin (2014), tax aggressiveness can only be defined by considering the risk associated with tax planning activities.

Despite the differences between tax avoidance and tax aggressiveness, both constructs may impair earnings persistence. In this regard, it is assumed that the uncertainty associated with aggressive tax positions reduces the ability of current earnings to explain future earnings, due to the probability that the firm will be required to recognize expenses related to tax assessments.

Accordingly, in line with prior studies, tax avoidance is expected to be negatively associated with earnings persistence (Blaylock et al., 2012; Hanlon, 2005). Similarly, tax aggressiveness is expected to be informative about the variability of tax expenses and, consequently, about earnings persistence. In light of this context, the following research hypotheses are proposed:

H1: Firms with high tax avoidance exhibit less persistent earnings than other firms.

H2: Firms with high tax aggressiveness *exhibit less persistent earnings than other firms.*

3 METHODOLOGICAL PROCEDURES

3.1 Population and Sample

The population of this study comprises nonfinancial companies listed on the Brazilian stock exchange, Brasil, Bolsa, Balcão (B3), over the period from 2017 to 2021. Financial institutions, such as banks and insurance companies, are subject to specific accounting regulations, which give rise to distinct incentives regarding the degree of tax avoidance. For this reason, they were excluded from the analysis. Observations lacking the information necessary to compute the key constructs of the study were also excluded when defining the sample.

The choice of a relatively short analysis period of five years was driven by the need for labor intensive manual data collection from the notes to the financial statements in order to construct one of the tax aggressiveness measures, which is not commonly used in studies on corporate taxation. Most of the data employed in the research were obtained from the Refinitiv Eikon® database, with the exception of data on contingent tax liabilities, which were manually collected through a detailed review of the notes to the financial statements available on the B3 website. The final unbalanced sample consists of 286 firms and 1.217 firm year observations.

3.2 Constructs

The definition of the variables used in the study is presented in Table 1. To measure tax aggressiveness, two proxies were employed. The first, AGGR1. is based on studies such as Blouin (2014), Hutchens and Rego (2015), and Drake et al. (2019), and is defined as the interaction between ABTD and tax risk, measured by the standard deviation of the current effective tax rate over the previous five years. The second metric adopted to measure tax aggressiveness, AGGR2. is based on contingent tax liabilities, as detailed below.

Table 1
Definition of Variables

Variable / Definition		Formula	Authors
EARN	Earnings scaled by total assets	$\frac{EBIT}{Total\ Assets_{it}}$	Blaylock et al. (2012)
ABTD	Abnormal Book Tax Differences	As specified in Equations (1) and (2)	Tang and Firth (2011)
HIGH_ABTD	High tax avoidance	$\begin{cases} 1, if\ the\ observation\ belongs\ to\ the\ top\ quintile\ of\ \ ABTD \\ 0, otherwise \end{cases}$	Tang and Firth (2011), Hanlon (2005) and Blaylock (2012)
AGGR1	Tax aggressiveness, based on ABTD and tax risk	As specified in Equations (1), (2), (3) and (4)	Tang e Firth (2011), Blouin (2014), Hutchens and Rego (2015) and Drake et al. (2019)
HIGH_AGGR1	High tax aggressiveness, based on AGGR1	$\begin{cases} 1, if\ the\ observation\ belongs\ to\ the\ top\ quintile\ of\ AGGR1 \\ 0, otherwise \end{cases}$	Tang e Firth (2011), Blouin (2014), Hutchens and Rego (2015), Drake et al. (2019), Hanlon (2005) and Blaylock (2012)
AGGR2	Tax aggressiveness, based on the annual change in contingent tax liabilities	$\frac{(Prov_{it} + CL_{it}) - (Prov_{i,t-1} + CL_{it-1})}{Total\ Assets\ _{it}}$	Hutchens and Rego (2015), Lee et al. (2015) and Dyreng et al. (2019)
HIGH_AGGR2	High tax aggressiveness, based on AGGR2	$\begin{cases} 1, \quad if\ the\ observation\ belongs\ to\ the\ top\ \ quintile\ of\ AGGR2 \\ 0, \quad otherwise \end{cases}$	Hutchens and Rego (2015), Lee et al. (2015), Dyreng et al. (2019), Hanlon (2005) and Blaylock (2012)
ROA	Return on assets	$\frac{Operating\ income_{it}}{Total\ Assets_{i,t-1}}$	Chen et al. (2010) and Armstrong et al. (2012)
SIZE	Firm size	$\ln(Total\ Assets_{it})$	Chen et al. (2010) and Armstrong et al. (2012)
LEV	Leverage	$\frac{Long\ term\ debt_{it}}{Total\ Assets_{i,t-1}}$	Armstrong et al. (2012)

Note. Prov: tax provisions; CL: contingent tax liabilities, as disclosed in the notes to the financial statements; EBIT: earnings before income taxes.
Source: Authors' own elaboration.

With regard to ABTD, which is used to measure tax avoidance and to compute the first proxy for tax aggressiveness, it should be noted that, according to Tang and Firth (2011), it corresponds to the residual from the regression of BTD on a set of items that generate only expected differences between accounting income and taxable income, that is, differences arising solely from the mismatch between accounting standards and tax legislation, as specified in Equation (1).

$$BTD = \beta_0 + \beta_1 \Delta INV + \beta_2 \Delta REV + \beta_3 NOL + \beta_4 TLU + \varepsilon \quad (1)$$

Following Tang and Firth (2011), in Equation (1) BTD is computed as specified in Equation (2). ΔINV represents the change in investments, calculated as the sum of property, plant, and equipment and intangible assets from year t−1 to year t, scaled by total assets. ΔREV denotes the change in net revenue from year t−1 to year t, scaled by total assets. NOL (net operating losses) refers to the recognition of a tax loss in the period, scaled by total assets. Because tax losses are

not directly observable, accounting losses are used as a proxy, in line with Morais and Macedo (2021), and when the firm reports a profit in the period, this variable assumes a value of zero. TLU corresponds to the amount of accumulated tax losses used for offsetting in the current tax period, scaled by total assets, with the negative change in deferred tax assets from year t−1 to year t used as a proxy. ε represents the regression residual. ABTD corresponds to the error term ε.

In line with Tang and Firth (2011), the regression in Equation (1) was estimated separately for each year and industry. The BTD used in the regression was computed as specified in Equation (2), in which EBIT corresponds to earnings before income taxes and 0.34 represents the combined statutory tax rate of corporate income tax and the Social Contribution on Net Profit.

$$BTD = (EBIT - Income\ tax\ expense/0.34)/Total\ assets \quad (2)$$

Although ABTD has the advantage of not capturing differences arising solely from mismatches between accounting standards and tax legislation, it is still considered a measure of tax avoidance, as it does not allow for the identification of the risk associated with the adopted tax strategies. Accordingly, the first metric used to capture tax aggressivenessis based on the interaction between ABTD and tax risk, whose proxy relies on the variability of the effective tax rate, since such variability reflects the uncertainty associated with a firm's tax position.

Following Blouin (2014), Hutchens and Rego (2015), and Drake et al. (2019), tax risk (TR) is defined as the standard deviation of the current effective tax rate over the previous five years, as specified in Equation (3). The current effective tax rate is calculated as the ratio of current income tax and Social Contribution on Net Profit expense to earnings before taxes (EBIT). Due to the difficulties in interpreting negative effective tax rates and values greater than one, the current effective tax rate was bounded between zero and one, in line with the aforementioned literature.

$$TR = StandDesv(CETR_t + CETR_{t-1} + CETR_{t-2} + CETR_{t-3} + CETR_{t-4}) \quad (3)$$

Tax aggressivenessis characterized by tax positions that are simultaneously aggressive and uncertain, typically grounded in tax planning strategies that are legally questionable. Accordingly, it is assumed that the greater the risk associated with a given observation, the higher its level of aggressiveness. Thus, tax aggressivenesswas measured as the product of ABTD and tax risk, as specified in Equation (4).

$$AGGR1 = ABTD * TR \quad (4)$$

The second metric of tax aggressivenessis based on studies such as Blouin (2014), Dyreng et al. (2019), and Francis et al. (2022), which examine Unrecognized Tax Benefits (UTBs) as defined under FIN (Financial Interpretation) No. 48, issued by the Financial Accounting Standards Board. UTBs represent provisions for tax litigation recognized and disclosed by U.S. firms after evaluating their tax positions at the time of preparing their financial statements (Lee et al., 2015). According to FIN 48, a firm should recognize, as a reduction in tax expense, the tax benefit arising from a given transaction only if it assesses that the likelihood of the benefit being sustained upon examination exceeds 50 percent. Amounts not recognized as tax benefits must also be recognized, but not as a reduction in tax expense; instead, they are recorded as a provision, more specifically as a deferred tax liability, referred to as a UTB. According to Lisowsky et al. (2013), UTBs arise from transactions subject to uncertainty, making them suitable for capturing the level of tax aggressiveness.

Because they constitute a type of tax contingency, UTBs are analogous to the provisions addressed by International Accounting Standard IAS 37, which is applied in Brazil through CPC 25 (CPC, 2009). IAS 37 establishes that a provision may be recognized only when it is probable

that an outflow of resources will be required to settle the obligation and when a reliable estimate of the obligation can be made. Otherwise, the provision should not be recognized, and if the outflow of resources is considered possible, that is, not merely remote, the obligation must be disclosed as a contingent liability in the notes to the financial statements.

IAS 37 uses the expression "more likely than not" to define the concept of "probable," which is equivalent to the reference in FIN 48 to a probability exceeding 50 percent. However, there is a fundamental difference between the manner in which U.S. firms apply FIN 48 and the practice of Brazilian firms in applying IAS 37. As noted by Lee et al. (2015) and Lisowsky et al. (2013), U.S. firms recognize UTBs prior to any action taken by tax authorities.

In Brazil, by contrast, the common practice is for firms to assess and recognize tax provisions and contingent tax liabilities only after being assessed by tax authorities, thereby reflecting only situations in which a tax dispute actually exists. Only at that point does management exercise judgment and decide whether to recognize the amount as a liability or merely disclose the contingency in the notes to the financial statements. Notwithstanding this difference, this study proposes that the amount of tax contingencies disclosed either as provisions or as contingent liabilities be used as a proxy for tax aggressiveness. However, this proxy may be subject to detection bias, since tax aggressiveness activities that are not detected by tax authorities will not be reflected in the contingencies.

Accordingly, following Dyreng et al. (2019), the second metric for tax aggressivenesswas defined as the annual change in the sum of tax provisions and contingent tax liabilities, scaled by total assets, referred to as AGGR2. and calculated as presented in Table 1. In computing this variable, tax provisions and contingent tax liabilities related to taxes at the federal, state, and municipal levels were considered, making the metric more comprehensive.

Because contingent tax liabilities are disclosed only in the notes to the financial statements, which requires a substantial amount of manual data collection, AGGR2 was calculated only for nonfinancial firms included in the Brazil 100 Index (IBrX 100). This restriction reduced the sample size to 303 observations for the model in which AGGR2 is used. The IBrX 100 represents a theoretical portfolio composed of the 100 most liquid and representative assets in the Brazilian stock market (B3, n.d.). Limiting the analysis of AGGR2 to firms with higher trading volume does not impair the generalizability of the results, particularly given that they are corroborated by the alternative tax aggressivenessmeasure, which relies on a larger sample.

As control variables, profitability (ROA), firm size (SIZE), and leverage (LEV) were included (Armstrong et al., 2012; Chen et al., 2010; Wang et al., 2020). These three constructs are associated with greater incentives and opportunities for tax management, that is, higher tax avoidance, making their inclusion in the regression models important.

3.3 Statistical Model

The regression model employed in this study was adapted from Hanlon (2005) and Blaylock et al. (2012), who analyzed the effect of large positive and negative Book Tax Differences on earnings persistence. The adaptation consisted of replacing the variables that indicated large Book Tax Differences with variables capturing high tax aggressiveness, as specified in Equation (5). For comparative purposes between tax avoidance and tax aggressiveness, and in order to test the first research hypothesis, an additional model was also estimated in which the tax aggressivenessmeasure was replaced by ABTD.

$$\begin{aligned} EARN_{i,t+1} = {} & \beta_0 + \beta_1 EARN_{it} + \beta_2 HIGH\_AGGR(AVOID)_{it} \\ & + \beta_3 EARN_{it} * HIGH\_AGGR(AVOID)_{it} + \beta_4 ROA_{it} + \beta_5 SIZE_{it} \\ & + \beta_6 LEV_{ii} + \sum Year\ fixed\ effects + \sum Industry\ fixed\ effects \\ & + \varepsilon_{it} \end{aligned} \quad (5)$$

In Equation (5), EARN represents earnings scaled by total assets. HIGH_AGGR(AVOID) denotes high tax aggressivenessor high tax avoidance, alternating across the models through the variables HIGH_AGGR1 (aggressiveness), HIGH_AGGR2 (aggressiveness), and HIGH_ABTD (avoidance). Accordingly, Equation (5) yielded three distinct models, depending on the tax aggressivenessor tax avoidance metric employed.

Accordingly, Model 1 employed HIGH_AGGR1. as defined in Table 1. and aimed to analyze the relationship between earnings persistence and tax aggressiveness measured as ABTD multiplied by tax risk. Model 2 employed HIGH_AGGR2. as defined in Table 1. and aimed to analyze the relationship between earnings persistence and tax aggressiveness measured by the annual change in tax contingencies. Finally, Model 3 employed HIGH_ABTD, as defined in Table 1. and aimed to analyze the relationship between earnings persistence and tax avoidance.

All regressions were estimated using dichotomous variables that identify observations with higher levels of tax aggressivenessor tax avoidance, defined as those in the highest quintile. The models were estimated using the Ordinary Least Squares method, with year and industry fixed effects. Controlling for fixed effects provides incremental explanatory power and strengthens the robustness of the results for the variables of interest, as the estimated effects cannot be attributed to specific characteristics associated with a given year or economic sector.

In models in which the assumption of homoscedasticity of the residuals was not satisfied, as indicated by the White Test, the regressions were estimated using robust standard errors clustered at the firm level. Additional tests for multicollinearity and residual autocorrelation were conducted in order to validate the model results. Multicollinearity was assessed using the Variance Inflation Factor test, with VIF values below five indicating the absence of multicollinearity concerns. Residual autocorrelation was examined using the Durbin-Watson Test.

4 RESULTS

Initially, Table 2 presents the descriptive statistics of the sample. All continuous variables in the study were winsorized at the 1 percent and 99 percent levels.

Table 2
Descriptive statistics

Variable	Mean	SD	Min	Q1	Median	Q3	Max
$EARN_{it+1}$	0.0601	0.0965	-0.3019	0.0166	0.0573	0.1029	0.3429
$EARN_{it}$	0.0615	0.0907	-0.2896	0.0199	0.0584	0.1001	0.3644
$AGGR1_{it}$	-0.0011	0.0104	-0.0327	-0.0031	-0.0003	0.0011	0.0337
$AGGR2_{it}$	0.0086	0.0214	-0.0248	0.0000	0.0015	0.0107	0.0992
$ABTD_{it}$	-0.0004	0.0492	-0.0956	-0.0279	-0.0064	0.0183	0.1827
ROA_{it}	0.1045	0.1070	-0.2034	0.0504	0.0925	0.1446	0.5209
$SIZE_{it}$	21.919	1.829	17,333	20.661	21.985	23,160	25.926
LEV_{it}	0.2284	0.1727	0.0000	0.0904	0.2101	0.3335	0.7447

Note. N = 1,217, except for the variable AGGR2, for which N = 303. SD denotes standard deviation; Min denotes minimum values; Q1 denotes the first quartile; Q3 denotes the third quartile; Max denotes maximum values.
Source: Research data.

From Table 2, it can be observed that the proxy for tax aggressivenessbased on the annual change in contingent tax liabilities (AGGR2) exhibits a positive mean and a first quartile equal to zero, indicating that approximately 75 percent of the observations experienced an increase in contingent tax liabilities from one year to the next. The third quartile of AGGR2, with a value of 0.0107, indicates that more than 25 percent of the observations recorded an annual increase in tax provisions and contingent tax liabilities exceeding 1 percent of total assets.

Compared with AGGR1, AGGR2 exhibits lower variability, as its coefficient of variation (not tabulated) is 2.48, whereas AGGR1 presents a coefficient of variation (not tabulated) of −9.45. This difference can be explained, in part, by the greater homogeneity of the sample composed solely of firms included in the IBrX 100 index. On the other hand, this finding may indicate that the variability of the effective tax rate, which is used to compute tax risk and is a component of AGGR1, has limited impact on the recognition of contingent tax liabilities.

Table 3 presents the Pearson correlation matrix for the dependent and independent variables.

Table 3

Pearson correlation matrix

Variables	$EARN_{i,t+1}$	$EARN_{it}$	$AGG1_{it}$	$AGGR2_{it}$	$ABTD_{it}$
$EARN_{i,t+1}$	1				
$EARN_{it}$	0.56** (1.217)	1			
$AGGR1_{it}$	0.12** (1.217)	0.16* (1.217)	1		
$AGGR2_{it}$	0.06 (303)	-0.04 (303)	0.05 (303)	1	
$ABTD_{it}$	0.12** (1.217)	0.23** (1.217)	0.71** (1.217)	0.06 (303)	1

Note. * and ** indicate statistical significance at the 5 percent and 1 percent levels, respectively. The number of observations for each correlation is reported in parentheses.
Source: Research data.

The values reported in Table 3 indicate a strong correlation between current period earnings and earnings in the subsequent period, suggesting a reasonable degree of earnings persistence. In addition, both current period earnings and subsequent period earnings are correlated with the measures of tax avoidance and tax aggressiveness, with the latter showing significance only when measured by AGGR1. However, although statistically significant, these correlations are considered weak. The proxy that measures tax aggressiveness based on the annual change in tax provisions and contingent tax liabilities (AGGR2) did not exhibit correlation with any other variable in the study, possibly due to the reduced sample size. A high correlation between AGGR1 and ABTD is also observed, which is explained by the construction of the AGGR1 variable itself, as it is defined as the product of ABTD and tax risk, as specified in Equation (4).

Overall, the univariate and bivariate analyses present preliminary results that are consistent with the phenomena under investigation and with the expected relationships among the variables. However, only multivariate analysis is capable of providing robust and consistent results suitable for addressing the research objective. Accordingly, Table 4 presents the results of the multivariate linear regressions for the three estimated models.

Table 4

Relationship between tax aggressiveness, tax avoidance, and earnings persistence

Dependent Variable: $EARN_{i,t+1}$	*Model 1* *AGGR1*	*Model 2* *AGGR2*	*Model 3* *ABTD*
Constant	0.0041 (0.10)	0.0247 (0.26)	0.0043 (0.10)
$EARN_{it}$	0.4759*** (4,79)	0.7372*** (7,20)	0.4351*** (3,93)
$HIGH\_AGGR1_{it}$	0.0065 (0.77)		
$EARN_{it}$* $HIGH\_AGGR1_{it}$	-0.1718* (-1.93)		
$HIGH\_AGGR2_{it}$		0.0142 (1.28)	
$EARN_{it}$* $HIGH\_AGGR2_{it}$		-0.1766* (-1.69)	
$HIGH\_ABTD_{it}$			0.0026 (0.30)
$EARN_{it}$* $HIGH\_ABTD_{it}$			-0.0706 (-0.98)
ROA_{it}	0.1129 (1.64)	-0.1459* (-1.90)	0.1212 (1.65)
$SIZE_{it}$	-0.0002 (-0.09)	-0.0018 (-0.45)	0.0000 (0.01)
LEV_{it}	-0.1028*** (-4,73)	-0.0649** (-2.32)	-0.1035*** (-4,52)

Robust standard errors	Yes	No	Yes
Year and industry fixed effects	Yes	Yes	Yes
F statistic	26,38***	10.84***	24,72***
Adjusted R^2	34.37%	38.24%	33.84%
Maximum VIF	4.79	4.43	4.72
DW	1.63	1.74	1.63
N	1.217	303	1.217

Note. **t** statistics are reported in parentheses. Robust standard errors were employed for Models 1 and 3, as their residuals exhibited heteroskedasticity according to the White Test; when robust standard errors were used, they were clustered at the firm level. **R^2** represents the coefficient of determination. **VIF** denotes the Variance Inflation Factor. **DW** denotes the Durbin-Watson statistic. **N** represents the number of firm year observations. To mitigate the influence of outliers, all continuous variables were winsorized at the 1 percent and 99 percent levels. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
Source: Research data.

Initially, it is observed that the three models exhibit adequate overall significance, as indicated by the F statistic. The adjusted R^2 is around 25 percent for the models with the larger sample (Models 1 and 3) and approximately 10 percent for the model with the smaller sample (Model 2). These values are satisfactory, as they are consistent with those typically reported in studies in the applied social sciences. The models also present a maximum VIF of 4.79, indicating the absence of multicollinearity among the explanatory variables, and a Durbin-Watson statistic of approximately 1.7, suggesting that the regressions do not suffer from serial autocorrelation of the residuals.

The results reported in Table 4 indicate that current period earnings help explain earnings in the subsequent period, as the coefficients on $EARN_{it}$ are positive and statistically significant in all three models. This result is particularly noteworthy for Model 2, in which the coefficient on $EARN_{it}$ remains statistically significant despite the reduced sample size.

In addition, Model 2 exhibits greater earnings persistence than Models 1 and 3, since the coefficient on $EARN_{it}$ in Model 2 is larger than in the other two models. According to Dechow et al. (2010), higher coefficients on $EARN_{it}$ imply greater earnings persistence. This finding suggests that firms included in the IBrX 100 index exhibit higher earnings quality than other firms listed on B3, which may be associated with their higher trading volumes. The high liquidity of IBrX 100 stocks leads to greater scrutiny by investors, analysts, and regulators, thereby increasing incentives for these firms to provide higher quality accounting information.

IBrX 100 firms exhibit greater earnings persistence even for observations characterized by higher levels of tax aggressiveness. Comparing Models 1 and 2, both present very similar coefficients for the interaction term EARN × HIGH_AGGR, such that, for observations with higher aggressiveness, the resulting coefficient (EARN + EARN × HIGH_AGGR) remains significantly higher in Model 2 than in Model 1. Although the measures of tax aggressiveness differ between Models 1 and 2, it can be stated that the earnings persistence of firms included in the IBrX 100 is proportionally less affected by tax aggressiveness than that of other firms listed on B3.

The influence of tax aggressiveness on earnings persistence should be assessed through the coefficient of the interaction term EARN × HIGH_AGGR in Models 1 and 2. Similarly, the effect of tax avoidance on earnings persistence should be evaluated based on the coefficient of the interaction term EARN × HIGH_ABTD in Model 3. Based on Table 4, the results show that the coefficients of EARN × HIGH_AGGR1 (Model 1) and EARN × HIGH_AGGR2 (Model 2) are negative and statistically significant, indicating that tax aggressiveness reduces earnings persistence.

By contrast, the coefficient of EARN × HIGH_ABTD in Model 3 is not statistically significant, suggesting that tax avoidance, as measured by ABTD, does not affect earnings

persistence. Taken together, the results reported in Table 4 demonstrate that high levels of tax aggressiveness reduce earnings persistence, whereas high levels of tax avoidance do not exhibit this effect. This allows for the rejection of hypothesis H1 and the nonrejection of hypothesis H2.

With respect to tax aggressiveness, the results are consistent with the view that riskier tax strategies may impair earnings predictability and the accuracy of firm valuation models. This occurs because the risk associated with such strategies increases earnings variability, as earnings are more likely to be unexpectedly reduced by the recognition of tax assessments. This finding is robust to the use of two distinct measures of tax aggressiveness.

The results of Model 2 are particularly relevant, as they confirm the findings of Model 1 for a substantially smaller sample and demonstrate that, similar to UTBs, tax provisions and contingent tax liabilities can be used as proxies for tax aggressiveness. The amounts assessed by tax authorities represent the materialization of the risk associated with the adopted tax strategy. Although such assessments may ultimately be canceled at the end of administrative or judicial proceedings, their existence reveals that the tax planning strategies adopted were not accepted by tax authorities. Being subject to a tax assessment indicates that the tax planning was grounded in dubious legal interpretations and debatable legal arguments, which are precisely the elements that define tax aggressiveness (Francis et al., 2022; Lisowsky et al., 2013).

It should be noted that regressions (not tabulated) performed using a tax aggressiveness metric based solely on tax provisions, excluding contingent liabilities, did not yield statistically significant results, further reinforcing the informational value of contingent tax liabilities. Another factor supporting the relevance of Model 2 is that the AGGR2 metric captures not only income tax and CSLL provisions and contingencies. By incorporating tax contingencies related to all levels of government, including other federal taxes as well as state and municipal taxes such as ICMS and ISS, AGGR2 provides a more comprehensive view of a firm's tax position, which is not achieved when using metrics designed to capture only income based taxes.

Regarding tax avoidance, the results reported in Table 4 do not replicate the findings of Hanlon (2005) and Blaylock et al. (2012), who documented a negative relationship between large BTDs and earnings persistence. This outcome suggests that the results of earlier studies primarily reflect the effects of mechanical differences between accounting income and taxable income, largely arising from divergences between accounting standards and tax legislation. The use of Abnormal Book Tax Differences excludes the influence of such divergences, although it may still incorporate elements of earnings management (Morais & Macedo, 2021; Tang & Firth, 2011). The absence of a relationship between high ABTDs and earnings persistence is consistent with the view that the nature of the adopted tax strategies is critical for assessing their effects on the quality of accounting information. Only the riskiest tax strategies, located at the most aggressive end of the tax avoidance continuum (Lietz, 2013; Martinez, 2017), negatively affect earnings persistence, which explains the lack of significance for ABTD.

The results of Model 3 suggest that the findings of Hanlon (2005) and Blaylock et al. (2012) are primarily driven by divergences between accounting and tax rules. Indeed, Hanlon (2005) attributed the negative relationship between temporary BTDs and earnings persistence to the fact that deferred tax expense does not necessarily reverse in the year following its recognition. An example is accelerated tax depreciation, which generates temporary differences that are reversed as the asset is depreciated under accounting standards over multiple periods. By excluding normal differences between accounting and taxable income, understood as those arising from differing regulatory frameworks, ABTD becomes more suitable for capturing only deliberate managerial actions aimed at manipulating either accounting income or taxable income.

Overall, the results suggest that risk is a fundamental element in the analysis of firms' tax positions. By explicitly considering the risk associated with adopted tax strategies, tax aggressiveness emerges as a more appropriate construct for explaining the effects of managerial decisions on the quality of accounting information. Moreover, the commonly used tax avoidance

metrics in the literature, which are generally based on the broad definition proposed by Hanlon and Heitzman (2010) and disregard the risk associated with tax planning strategies, appear to affect accounting information quality due to factors other than tax avoidance itself, which helps explain the findings reported by Hanlon (2005) and Blaylock et al. (2012).

5 CONCLUSION

This study advances research on tax avoidance by focusing on the most aggressive subset of the construct, whose specificity allows it to be addressed as a distinct construct, referred to as tax aggressiveness, which explicitly incorporates the risk associated with tax planning strategies (Blouin, 2014; Francis et al., 2022; Lisowsky et al., 2013). With the objective of analyzing the effects of tax aggressiveness and tax avoidance on earnings persistence, the study examined a sample of 286 nonfinancial Brazilian firms listed on B3 over a five-year period.

By documenting the absence of an effect of high ABTD on earnings persistence, this research advances prior studies by showing that their findings were driven primarily by nonconformities between accounting and tax rules, rather than by deliberate managerial actions to manage taxable and/or book income. To the extent that ABTD captures managerial opportunism while excluding mere regulatory misalignment, the results indicate that such opportunism affects earnings persistence only when managers engage in tax planning strategies that are considered riskier.

In this regard, the findings indicate that high tax aggressiveness negatively affects the ability of current earnings to explain future earnings, demonstrating that the uncertainties inherent in more daring tax planning strategies impair the quality of accounting information. This result is robust to the use of two distinct measures of tax aggressiveness.

Riskier tax planning strategies are characterized by practices of questionable legality, often located at the narrow boundary between tax avoidance and tax evasion (Lietz, 2013; Martinez, 2017). The substantial tax savings they generate increase uncertainty, as interpretations adopted by tax authorities may give rise to tax assessments that, when recognized by firms in accordance with accounting standards (CPC, 2009), reduce earnings and impair persistence. The results of this study show that this effect does not occur when it is used a tax avoidance metric, which does not distinguish higher risk tax practices.

Based on these findings, the study offers important practical implications by suggesting that tax strategies that reduce tax expense without increasing tax risk, that is, strategies associated with low tax aggressiveness, are preferable for managers and investors for two main reasons. First, they attract less scrutiny from tax authorities, which reduces costs related to penalties and interest, as well as those associated with defending potential tax assessments in administrative and judicial proceedings. For managers, the challenge lies in identifying tax strategies that achieve the optimal level of corporate tax reduction given the level of risk acceptable to investors.

Second, such strategies do not impair earnings persistence, allowing investors and analysts to obtain more consistent results in their valuation models. By analyzing tax provisions and contingent tax liabilities, investors and analysts can identify firms that, due to lower levels of tax aggressiveness, tend to exhibit more persistent earnings.

For example, consider a firm that structures its operations to conduct intragroup sales to subsidiaries subject to more favorable tax regimes, such as presumed profit taxation, or that benefit from tax incentives. Another firm undertakes a merger with a subsidiary and recognizes goodwill arising from expected future profitability, which is then amortized for tax purposes. The second firm exhibits a more aggressive tax position, as it is riskier and involves issues that are among the most closely scrutinized by tax authorities (Receita Federal do Brasil [RFB], 2021). In this case, the scrutiny applied by tax authorities indicates that the second firm's tax position is based on interpretations that are not yet consolidated and on weaker legal arguments (Francis et al., 2022; Lisowsky et al., 2013).

In this example, the firm adopting the first practice exhibits lower tax aggressiveness and, consequently, more persistent earnings, leading investors to value it more favorably. The second firm, due to higher tax aggressiveness, tends to present less persistent earnings, generating cash flows with greater uncertainty and impairing their use in discounted cash flow valuation models.

This research also provides relevant practical implications for tax authorities and for the capital market regulator, the Brazilian Securities Commission. For tax authorities, the study proposes new proxies for measuring tax aggressiveness, enabling their use in identifying firms with higher levels of aggressiveness that may be selected for audit. For the Brazilian Securities Commission, the study shows that tax contingencies, as proxies for tax aggressiveness, influence earnings persistence and therefore warrant increased attention. In this context, firms that provide limited disclosure regarding tax contingencies in the notes to the financial statements may become subject to greater regulatory scrutiny.

Despite the conceptual and methodological care adopted, this study is not without limitations. The first limitation arises from the fact that ABTD captures both earnings management and tax avoidance. This issue is common in studies on tax aviodance, and few studies attempt to measure these two phenomena independently, each with its own limitations.

The second limitation concerns the detection bias associated with the tax aggressiveness proxy based on tax provisions and contingent liabilities, as these elements depend on aggressive tax planning strategies having been detected and assessed by tax authorities. Nevertheless, the results of the model using contingencies were confirmed by the model using ABTD combined with tax risk, which mitigates this limitation and supports the use of contingencies in measuring tax aggressiveness.

Another limitation relates to the sample size of the model that uses tax provisions and contingent tax liabilities as proxies for tax aggressiveness. Again, this limitation was mitigated by the confirmation of results using the model based on ABTD combined with tax risk. The relatively short analysis period of five years also represents a limitation. Although a longer period would be desirable, this approach is consistent with prior studies on the topic, such as Hanlon (2005), which examined a seven-year period from 1994 to 2000, and Martinez and Bassetti (2016), which also analyzed a five-year period from 2009 to 2013.

Finally, data lag may also be considered a limitation, as the last year analyzed was 2021, which was the most recent year available at the time of data collection. However, no subsequent events are identified that would be expected to alter the relationships examined, which mitigates this limitation. Moreover, the study relies on more recent data than earlier research on earnings persistence and tax avoidance. The most recent study identified, Martinez and Bassetti (2016), used data only up to 2013.

Despite these limitations, the study demonstrates the feasibility of analyzing the effects of aggressive tax practices separately from other forms of tax avoidance, in line with the strand of the literature that views tax aggressiveness as a construct distinct from tax avoidance (Blouin, 2014; Francis et al., 2022; Lietz, 2013; Lisowsky et al., 2013). It is hoped that future studies will build upon and refine the measures developed here, identifying specific determinants and consequences of tax aggressiveness, with the potential to advance accounting research in the field of taxation.

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CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding this submitted work.

DATA AVAILABILITY

The dataset supporting the findings of this study is available from the authors upon reasonable request.

AUTHOR CONTRIBUTIONS

Roles	1st author	2nd author	3rd author	4th author
Conceptualization	♦	♦		
Data Curation	♦	♦		
Formal Analysis	♦	♦	♦	
Funding Acquisition				♦
Investigation	♦	♦	♦	
Methodology	♦	♦		
Project Administration	♦			
Resources	♦	♦		
Software	♦			
Supervision				♦
Validation			♦	
Visualization	♦			
Writing – Original Draft	♦	♦		
Writing – Review and Editing			♦	♦