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Tax aggressiveness: the role of political-economic uncertainty and the moderating effect of the credit market in Brazilian companies listed on B³

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Abstract

Objective: This study analyzes the tax aggressiveness of Brazilian publicly traded non-financial companies under conditions of political-economic uncertainty and examines the influence of the credit market.
Method: The study adopts a quantitative approach and analyzes a sample of 4,749 observations from 2011 to 2022. Political-economic uncertainty at the national level is measured using the Economic Policy Uncertainty (EPU) index and the Economic Uncertainty Indicator (IIE-BR) from the Brazilian Institute of Economics of the Getulio Vargas Foundation (Ibre/FGV). Tax aggressiveness is assessed using the Effective Tax Rate (ETR), Book-Tax Differences (BTD), tax burden calculated from DVA (CTRIB-DVA), Permanent BTD, and Differential ETR metrics. The credit market is measured using the indicator from the Quarterly Survey of Credit Conditions in Brazil. Regressions with robust standard errors are estimated using an unbalanced sample, with continuous variables winsorized at the 1st and 99th percentiles.
Results: The results indicate that companies are more likely to adopt aggressive tax practices in the face of increased political-economic uncertainty, and that credit supply moderates this relationship.
Contributions: The evidence provides insights for investors, tax authorities, and policymakers seeking to better understand corporate tax behavior in contexts of heightened political-economic uncertainty and its implications for the credit market, supporting the development of improved public policies.
Keywords: tax planning, tax aggressiveness, political-economic uncertainty, credit market.

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1 Introduction

Taxes play a central role in a country's economy and are a subject of interest for governments, companies, and scholars. The number of studies on taxation has increased significantly since the 1980s, covering topics such as tax planning, tax aggressiveness, along with their economic impact (Calijuri & Lopes, 2011; Shackelford & Shevlin, 2001). Although research has associated tax aggressiveness with other economic and financial phenomena, such as political-economic uncertainty (Nguyen & Nguyen, 2020; Shen, Hou, Peng, Xiong, & Zuo, 2021) and the credit market (Bordo, Duca, & Koch, 2016; Chi & Li, 2017; Kaviani, Kryzanowski, Maleki, & Savor, 2020), understanding of how political-economic uncertainty and credit conditions influence corporate tax aggressiveness is still limited, especially in emerging economies such as Brazil.

Tax aggressiveness concerns the adoption of strategies to minimize the tax burden, and ranges from legal tax avoidance to illicit evasion practices (Martinez, 2017). Factors such the market's reaction to stock prices (Hanlon & Slemrod, 2009), the composition of companies' Board of Directors (Lanis & Richardson, 2011), and financial constraints (Edwards, Schwab, & Shevlin, 2015) influence this variable. Recently, international studies have examined the relationship between political-economic uncertainty and tax aggressiveness, pointing to opposite directions: while some suggest that uncertainty encourages more aggressive tax practices as an alternative source of financing (Nguyen & Nguyen, 2020), others indicate that it can lead companies to adopt more conservative stances to avoid regulatory risks (Shen et al., 2021). This evidence suggests that tax practices depend on the political-economic environment in which companies operate, as well as the institutional environment (LaPorta, Lopez-de-Silanes, Shleifer, & Vishny, 1998), highlighting the complexity of the topic and the need for further investigation.

The credit market, in turn, is a crucial factor in corporate decision-making and might moderate the relationship between uncertainty and tax aggressiveness (Costa, 2004). The literature indicates that high political and economic uncertainty can negatively affect bank credit growth (Bordo et al., 2016), increase defaults (Chi & Li, 2017), and raise borrowing costs (Ashraf & Shen, 2019). Thus, companies facing credit constraints may be led to more aggressive tax strategies to preserve liquidity, while those with easier access to credit may have less incentive to resort to these practices.

Despite its relevance, the literature has not yet comprehensively explored this interaction in the Brazilian context – an environment marked by strong dependence on bank credit (Rodrigues et al., 2019) and high economic and political volatility (Ferreira et al., 2017). Brazil also has a complex and burdensome tax system, which encourages the use of tax planning strategies (Martinez & Silva, 2019). In this context, this study seeks to answer the following research question: How does political-economic uncertainty influence tax aggressiveness among Brazilian non-financial publicly traded companies, and how do credit conditions moderate this relationship?

This study aims to investigate the relationship between political-economic uncertainty and aggressiveness in tax planning, moderated by the volume of credit available in the market. Using a sample of 4,749 observations of publicly-held companies listed on B^3 between 2011 and 2022, the results indicate that periods of greater uncertainty are associated with higher levels of tax aggressiveness, and that restrictive credit conditions intensify this effect, while more accessible credit markets can mitigate it.

These findings have practical implications. Executives can benefit from better understanding the interactions between uncertainty and credit, adjusting their tax strategies in unstable scenarios. Likewise, policymakers can use this evidence to develop instruments that reduce the adverse impacts of uncertainty on corporate behavior. Furthermore, the use of the EPU-BR and the IIE-BR indices contributes to new approaches for assessing the level of tax aggressiveness of companies in Brazil, allowing for a more robust analysis of the relationships between political-economic uncertainty and the credit market.

2 Literature Review and Hypothesis Development

2.1. Hypothesis development

Political-economic uncertainty has been widely discussed in the literature, and several studies suggest that this factor impacts business decisions. Bloom (2014) defines uncertainty as sudden and unpredictable changes that affect both consumers and companies, directly influencing their decisions. According to Costa Filho (2014), uncertainty can lead to a reduction in asset prices and credit volume, creating a challenging environment for companies. In this scenario, research indicates that in periods of increased uncertainty, companies tend to adopt a more conservative stance, mainly due to increased financing costs and the difficulty in obtaining credit (Baker et al., 2016; Jens, 2017; Kelly, Pástor, & Veronesi, 2016; Pástor & Veronesi, 2012).

The 2008 global financial crisis contributed to increased political and economic uncertainty, as governments had to adopt fiscal, monetary, and regulatory policies to avoid economic recessions (Baker et al., 2016; Bloom, 2014; Shen et al., 2021). To measure this uncertainty, indices such as the Economic Policy Uncertainty Index (EPU), created by Baker et al. (2016), and the Economic Uncertainty Indicator – Brazil (IIE-BR), proposed by Ferreira et al. (2017), have been developed. These indices are based on economic news and reflect changes in the political and economic scenario, allowing researchers to assess the effects of uncertainty on the business environment.

In the context of corporate tax decisions, international studies present divergent approaches regarding the impact of political-economic uncertainty. Edwards et al. (2015) state that, in periods of financial constraints, companies may adopt more aggressive tax planning as a way to obtain less costly sources of financing. Nguyen & Nguyen (2020) reached a similar result, identifying a positive relationship between political-economic uncertainty and tax aggressiveness, demonstrating that companies tend to intensify aggressive tax strategies in these scenarios.

In contrast, Shen et al. (2021) suggest that in times of high uncertainty, firms become more cautious, avoiding tax practices that may increase the risk of inspection and penalties. Athira and Ramesh (2024) point out that economic policy uncertainty (EPU) leads firms to reduce their tax avoidance practices, due to increased concerns about agency costs and greater government surveillance in advanced economies. However, in emerging markets, EPU may encourage tax avoidance, as firms facing financial constraints and weak institutions, resort to evasion as a strategy to mitigate financial risks.

Benkraiem, Gaaya, Lakhal, and Kilic (2024) investigated the relationship between access to finance and corporate tax evasion in companies from 37 countries. The authors showed that companies with limited access to finance tend to more frequently engage in tax evasion practices, suggesting that managers may rely on cash flows generated by tax-saving activities to finance investments. They also observed that the relationship between financial constraints and tax evasion intensifies in the presence of high economic policy uncertainty (EPU) in countries with high levels of public debt and low investor protection.

In Brazil, studies on periods of crisis and economic uncertainty have yielded mixed results. Damascena et al. (2018) observed that crises increase fiscal aggressiveness, whereas Marques, Zucolotto, Acerbe, and Zanoteli (2022) found no association between economic uncertainty and fiscal aggressiveness. From the perspective of political-economic uncertainty, the results are expected to align with those of studies conducted in the United States by Nguyen and Nguyen (2020) and contrast with the findings reported in China by Shen et al. (2021), given Brazil's institutional and legal differences (La Porta et al., 1998).

Thus, the following hypothesis is formulated:

H1: Political-economic uncertainty is positively associated with tax aggressiveness among companies in the Brazilian market.

In addition to the relationship between political-economic uncertainty and tax aggressiveness, this study is expanded to assess how the credit market influences this dynamic, leading to the development of hypotheses H2 and H3.

The credit market exerts significant influence on business operations, especially in contexts of political and economic uncertainty, directly affecting the level of tax aggressiveness adopted by companies. In Brazil, credit available to the private sector is relatively restricted compared to that in more developed economies, such as Chile (Costa, 2004). During periods of uncertainty, banks tend to adopt a more conservative stance, prioritizing safer investments, such as government bonds, and requiring stricter guarantees, which increases the cost of credit for companies. Other studies, such as those by Barraza and Civelli (2020), indicate that political and economic uncertainty significantly affects the supply of credit to companies, making access to financing even more restricted. Schwarz and Dalmácio (2021) analyzed the relationship between political uncertainty and corporate leverage in Brazil, suggesting that such impact may vary according to the level of access to credit and the institutional context.

The literature also suggests that the relationship between tax aggressiveness and the credit market is complex. Hasan, Hoi, Wu, and Zhang (2014) argue that more aggressive tax strategies adopted by companies affect their credit conditions. However, these companies can accumulate cash reserves by reducing their tax burden, thereby lowering the risk of default and improving their financing conditions. This balance between risk and liquidity is a key factor in understanding the moderating role of the credit market in the relationship between political-economic uncertainty and tax aggressiveness.

In view of this scenario, the following hypothesis is formulated:

H2: The supply of credit is negatively related to tax aggressiveness.

Considering hypotheses H1 and H2, hypothesis H3 is presented, which investigates the moderating effect of credit available in the market in times of greater or lesser political-economic uncertainty and its impact on tax aggressiveness. This relationship becomes relevant given the evidence that uncertainty directly affects the supply of credit, making it more restricted and costly for companies.

Bordo et al. (2016) found that rising political and economic uncertainty slows bank credit growth. Chi and Li (2017) showed that greater EPU leads to higher default rates, reducing lending due to increased risk. Hu and Gong (2019), analyzing data from banks in 19 major economies, found that EPU weakens bank loan growth, with larger banks being more affected. Ashraf and Shen (2019) reported that greater variability in EPU raises average interest rates on bank loans by 21.84 points because of heightened default risk. Nguyen, Le, and Su (2020), studying 22 banking systems between 2001 and 2015, found that EPU's negative impact on credit supply is stronger in highly liquid or profitable banking systems and weaker in well-capitalized or riskier systems.

Given this scenario, this study examines whether Brazilian publicly held companies become more or less tax aggressive in response to rising political and economic uncertainty, using the EPU-BR and IIE-BR indices as measures of uncertainty. It also analyzes whether credit conditions, specifically credit supply, moderate this relationship by either dampening or intensifying the impact of uncertainty on tax aggressiveness. Thus, the third hypothesis is defined as follows:

H3: Credit availability moderates the effects of political-economic uncertainty on tax aggressiveness.

3 Methodology

3.1 Sampling and data collection

The sample for this study comprises publicly traded Brazilian companies listed on B3, covering the period from 2011 to 2022. The period was selected because of Brazil's mandatory adoption of the International Financial Reporting Standards (IFRS).

This study adopted exclusion criteria proposed by Nguyen and Nguyen (2020) and Martinez and Silva (2018) to compose the sample: (i) companies in the financial sector, due to their regulatory and accounting specificities; (ii) companies with losses before taxes (LAIR) and gross value added; (iii) companies with ETR and CTRIB-DVA < 0 or > 1; and (iv) companies missing important data, as detailed in Table 1. The final sample comprised 254 companies, totaling 4,749 observations.

Financial and accounting data were collected quarterly using the COMDINHEIRO® system. The EPU-BR and IIE-BR indices, which measure political and economic uncertainty in Brazil, were obtained from the websites of the Economic Policy Uncertainty Index (Baker et al., 2016) and the Brazilian Institute of Economics of the Getulio Vargas Foundation (Ibre/FGV), respectively. Data on credit conditions were collected from the Central Bank of Brazil (Bacen) website.

The sample is unbalanced and for this reason, regression using the Ordinary Least Squares method with grouped cross-sections was applied. Robust standard errors were used to correct for heteroscedasticity, and the variables were winsorized at the 1st and 99th percentiles to mitigate the effects of outliers.

3.2 Measurement of variables

3.2.1 Tax Aggressiveness

Table 1 presents the definition of the variables that measure tax aggressiveness based on the literature reviewed:

Table 1
***P*Tax aggressiveness proxies**

Metrics	Calculation	Interpretation
BTD	$\frac{\text{LAIR} - (\text{Income tax}/0.34)}{\text{AT}}$	The **higher** the BTD, the more aggressive the company is.
BTDP	BTD - BTDT	The **higher** the BTDP, the more aggressive the company is.
ETR	$\frac{\text{Income tax}}{\text{LAIR}}$	The **lower** the ETR, the more aggressive the company is.
DIFETR	0,34 - ETR	The **higher** the DIFETR, the more aggressive the company is.
CTRIBT DVA	$\frac{\text{C. Trib. (DVA)}}{\text{Gross value added}}$	The **lower** the CTRIB-DVA, the more aggressive the company is.

Notes: the variable Income tax is recorded as an expense and appears with a negative value in some cases in the COMDINHEIRO database. Therefore, the values were multiplied by -1.

Source: adapted from Chiachio and Martinez (2019); Damascena et al. (2018); Marques et al. (2022).

3.2.2 Political-economic uncertainty in Brazil

Schwarz (2020) explains that political uncertainty is difficult to measure, but web-scraping techniques have facilitated the development of metrics such as the Economic Policy Uncertainty (EPU) Index, created by Baker et al. (2016). This index, designed for the American economic context, is based on the frequency of articles in the ten main US newspapers containing words such as "economic" or "economy" and "uncertain" or "uncertainty," as well as relevant policy terms such as "congress," "deficit," "Federal Reserve," "legislation," "regulation," and "White House." This indicator considers the following components: (i) the percentage of news related to political uncertainty in major newspapers, monthly, since 1985; (ii) provisions of the federal tax code set to expire in the current calendar year or in the next ten years (Nguyen & Nguyen, 2020); and (iii) the dispersion of economic forecasts of the consumer price index and government purchases of goods and services.

However, for application in other countries, including Brazil, Baker et al. (2016) used only the news coverage component of the American index. Thus, the Economic Policy Uncertainty Index for Brazil (EPU-BR) is based on news from *Folha de S.Paulo*, since 1991, that contains the terms in Portuguese "*econômico*" [economic] *or "economia,"* [economy] *"incerto"* [uncertain] *or "incerteza,"* [uncertainty] and relevant terms *such as "regulação,"* [regulation]*"déficit,"* [*deficit*] *"orçamento,* [budget]*" "imposto,"* [tax] *"Banco Central,"* [Central Bank] *"Alvorada,"*[Official presidential residence]*"Planalto,"* [Official presidential office]*"Congresso,"* [Congress] *"Senado,"* [Senate] *"Câmara dos Deputados,"*[Chamber of Deputies]*"legislação,"* [legislation] *"lei,"*[law] and *"tarifa."* [tariff].

In addition to the EPU, this study will also use the Economic Uncertainty Indicator (IIE-BR), developed by Ferreira et al. (2017) and published monthly by the Brazilian Institute of Economics of the Getulio Vargas Foundation (Ibre/FGV). The IIE-BR is broader in its search for news, as it is constructed from news published in the country's main newspapers, combining information on expectations and stock market volatility (Ferreira et al., 2017).

Ferreira et al. (2017) divided the IIE-BR into three measures that estimate uncertainty: (1) IIE-BR Media (80% of the index), based on the frequency of news from six national newspapers (*Valor Econômico, Folha de São Paulo, Correio Braziliense, Estadão, O Globo,* and *Zero Hora*) containing the equivalent terms in Portuguese "economy," "uncertainty," "instability," and "crisis"; (2) IIE-BR Expectation, based on information generated by the Central Bank on market expectation series; and (3) IIE-BR Market, estimated from the variability of the Brazilian stock market.

To test the influence of these variables on tax aggressiveness, this study used the quarterly average of the two monthly indicators, as proposed by Souza, Batista, and Cunha (2022), in line with the literature on the subject, as shown in Table 2.

Table 2
Political-Economic Uncertainty Proxies

Equation	Interpretation
$mUncertainty = In\left(\sum_{m=1}^{3} EPU\text{-}BR_{m/3}\right)$ and $In\left(\sum_{m=1}^{3} IIE\text{-}BR_{m/3}\right)$	Calculation of the average of the monthly EPU-BR and IIE-BR indicators throughout each quarter.

Source: Souza et al., 2022

3.2.3 Credit market in Brazil

Following the trend of other countries, the Central Bank of Brazil (Bacen), through its Department of Studies and Research (Depep), created indicators to measure the perception of economic agents regarding the credit market in terms of supply and demand, using the Quarterly Survey of Credit Conditions in Brazil. These indicators present the trend of the Brazilian credit market (*Pesquisa Trimestral de Condições de Crédito in Brasil*). The questionnaires are designed for four distinct segments: two for legal entities and two for individuals. For legal entities, the focus of this study, the segments are divided into large companies and micro, small, and medium-sized companies (Annibal & Koyama, 2011).

This study uses information on the behavior of large companies regarding the supply of credit, as a greater volume of credit supply in times of uncertainty is expected to affect tax decisions.

3.3 Presentation of the regression model

To test hypotheses H1, H2 and H3, the following econometric model was formulated to estimate the association between the variables:

$$AgrTrib_{it} = \beta_0 + \beta_1 Incerteza_{it} + \beta_2\ Mercado\ de\ Crédito + \beta_3 Incerteza * Mercado\ de\ Crédito_{it} + VC_{it} + \varepsilon_{it}$$

Where:

***AgrTrib*$_{it}$:** Tax aggressiveness of the i^{th} company in period *t*, using the variables shown in Table 2;
***Uncertainty*$_{it}$:** Political-economic uncertainty proxies in period *t*;
***Credit Market*$_{it}$:** credit market proxies;
***VC*$_{it}$:** Control variables defined in Table 3.

Table 3 presents the control variables and the expected signs for each variable in this study.

Table 3
Control Variables

Abbreviation	Description	Expected relations		Formula	Authors
		BTD	ETR		
ESTOQ	Inventory	(+)	(-)	Inventory / Total Assets	França and Monte (2020)
CAIXA	Cash	(-)	(-)	Availability / Total Assets	Hanlon, Maydew and Saavedra (2017) Martinez and Salles (2018)
TAM	Size	(+)	(-)	Natural Logarithm of Total Assets	Hanlon et al. (2017) and Zimmerman (1983)
MTB	*Market-to-Book*	(-)	(+)	Market Value / Net worth	Chen, Chen, Cheng and Shevlin (2010)
END	Debt	(+)	(-)	Total Liabilities / Total Assets	Damascena et al. (2018) Marques et al. (2022) Silva (2017)
ROA	Return on Assets	(-)	(+)	Operating Profit / Total Assets	Chiachio e Martinez (2019) Marques et al. (2022) Martinez and Salles (2018)

Source: developed by the authors.

Based on the econometric model presented, tests were performed to verify whether the sample met the assumptions of the ordinary least squares method. The assumption of normality of the residuals was relaxed due to the sample size and the central limit theorem. Next, heteroscedasticity was tested at a 5% significance level, and the regressions were estimated with robust standard errors and controls for sector fixed effects. The dependent and control variables were winsorized at the 1st and 99th percentiles to reduce the influence of outliers. Finally, all regressions were tested for potential multicollinearity issues (Variance Inflation Factor — VIF), and no problems were detected.

4 Analysis and Discussion of Results

Table 4 presents the descriptive statistics of the variables used in the econometric model:

Table 4
Descriptive statistics of dependent, independent, and control variables

Variables	Obs.	Mean	DP	Minimum	Maximum
BTD	4.749	0.030	0.037	-0.032	0.18
BTDP	4.749	0.038	0.046	-0.047	0.209
ETR	4.749	0.242	0.132	0.012	0.756
DIFETR	4.749	0.098	0.132	-0.416	0.328
CTRIB-DVA	4.749	0.335	0.179	0.048	0.809
ESTOQ	4.749	0.103	0.124	0	0.498
CAIXA	4.749	0.141	0.1	0.004	0.501
TAM	4.749	15.455	1.567	11.366	19.55
MTB	4.749	2.309	2.021	-0.149	10.491
END	4.749	0.286	0.169	0	0.731
ROA	4.749	0.102	0.062	-0.001	0.349
EPU-BR	4.749	5.236	0.356	4.547	6.131
IIE-BR	4.749	4.727	0.147	4.466	5.255
Observed credit supply	4.749	-0.299	0.364	-1.17	0.41

Notes: all variables were winsorized between 1% and 99%. SD – Standard Deviation. BTD – Book-Tax Differences; BTDP – Permanent Book-Tax Differences; ETR – Effective Tax Rate; DIFETR – ETR Differential; CTRIBT – Tax Burden calculated from DVA; ESTOQ – Inventory; TAM – Size; MTB – Market-to-book; END – Indebtedness; ROA – Return on Assets. Independent variables were not winsorized. EPU-BR – Economic Policy Uncertainty (EPU) for Brazil; IIE-BR – Economic Uncertainty Indicator of the Brazilian Institute of Economics of the Getulio Foundation (Ibre/FGV).

The metrics adopted in this study to measure tax aggressiveness during the period analyzed resulted in the following averages: BTD: 3%, BTDP: 3.8%, ETR: 24.2%, DIFETR: 9.8%, and CTRIBT: 33.5%.

The ETR variable indicates that the average effective taxation of Brazilian companies in the sample is 24.2% on accounting profit, below the nominal rate of 34%, suggesting more aggressive tax planning. For DIFETR, values greater than zero indicate greater tax aggressiveness, and the sample average of 9.8% suggests this interpretation.

The analysis of the tax burden based on the DVA shows that, in addition to income tax and social contribution on profits, other taxes, including state and municipal taxes, contribute to the overall tax burden of companies. The average tax burden was 33.5%, with taxes such as IPTU and ICMS accounting for 9.3% on average.

The political-economic uncertainty indicators EPU-BR and IIE-BR recorded means of 5.236 and 4.727, respectively, during the 2011–2022 period.

Figure 1 presents the historical series of political-economic uncertainty variables and credit supply in Brazil. It shows that periods of macroeconomic shocks and internal instability are marked by financial deleveraging and a reduction in credit supply.

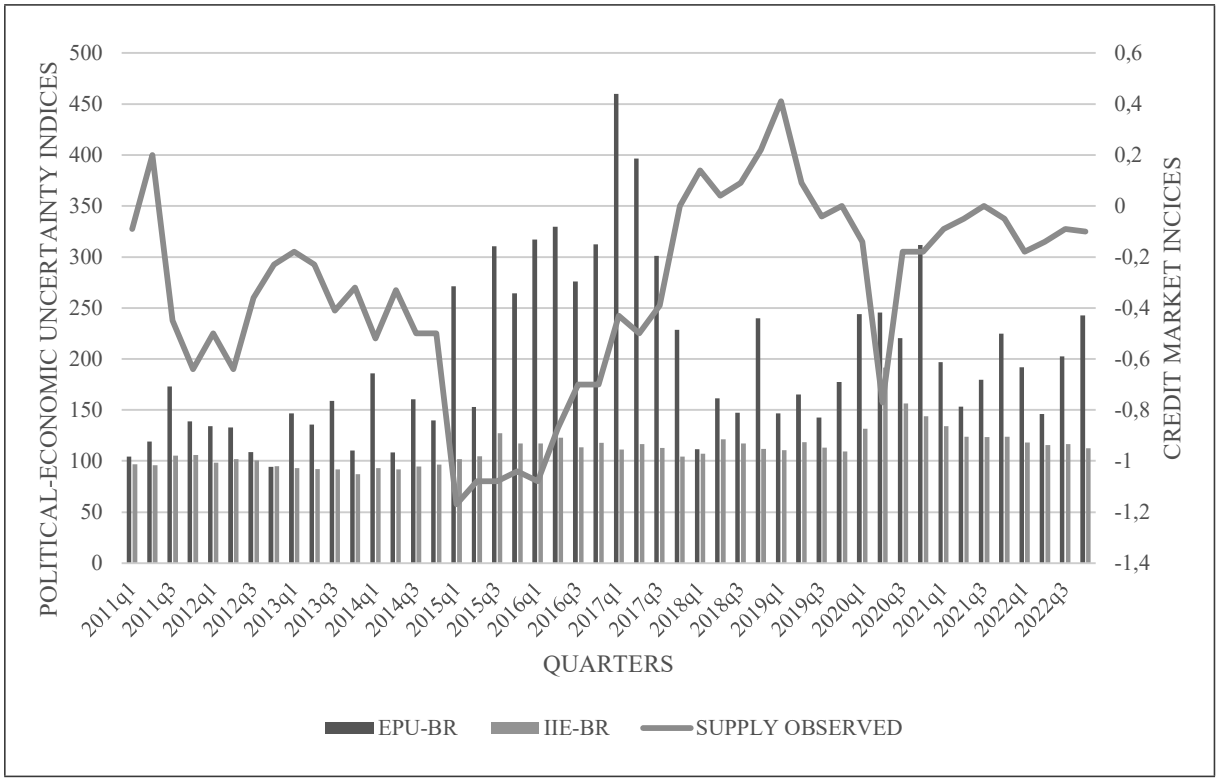

Figure 1. Political-Economic Uncertainty Indices vs. Credit Market Indicators

Figure 1 shows that, starting in the third quarter of 2017, credit supply to large companies increased. In 2020, despite the impacts of the COVID-19 pandemic, government actions and banking measures implemented to reduce the cost of credit helped mitigate the effects of uncertainty.

To preserve the conciseness of the text, the table with the correlation matrix is omitted here, but is available at *https://doi.org/10.5281/zenodo.15750710.* The main correlations are discussed below. The EPU-BR index and the ETR are negatively correlated (-0.029*), suggesting that in contexts of greater economic uncertainty, companies tend to have a lower effective tax rate, which may indicate a more frequent adoption of tax planning strategies to mitigate risks. The positive correlation between the EPU-BR and DIFETR (0.029*) reinforces this idea.

In the case of the IIE-BR, its positive and significant correlation with BTD (0.040*), BTDP (0.043*), and DIFETR (0.042*) reinforces the notion that an institutional environment with greater uncertainty is associated with a larger divergence between accounting profit and taxable profit, possibly through temporary or permanent earnings manipulation strategies. At the same time, the negative correlation with the ETR (-0.042*) suggests a possible reduction in the effective tax burden in this scenario, consistent with greater tax aggressiveness.

Regarding the credit supply variable, a significant correlation with the aggressiveness indicators is also observed: positive with BTD, BTDP, and DIFETR, and negative with ETR.

4.1 Results of the regression model

Table 5 presents the results of the estimated econometric models that analyze the relationship between political-economic uncertainty (EPU-BR), credit supply (OF. CRED.), and tax aggressiveness, measured by the variables ETR, BTD, and CTrib-DVA.

In column 1 (Model A), the political-economic uncertainty index (EPU-BR) shows a negative and statistically significant coefficient (-0.0113; $p < 0.05$) for the dependent variable ETR, indicating that higher levels of uncertainty are associated with a lower ETR, that is, with greater tax aggressiveness. This result is consistent with Hypothesis H1 and the findings of Nguyen and Nguyen (2020) and Damascena et al. (2018), reinforcing the idea that in scenarios of greater uncertainty, companies tend to intensify tax strategies to minimize their tax burden.

This evidence has implications for the corporate and regulatory environment. For companies, political and economic uncertainty may drive more aggressive tax decisions, increasing their exposure to tax and regulatory risks. For creditors, the result suggests that companies facing high uncertainty may adopt riskier tax strategies, potentially affecting their financial stability and ability to meet obligations. Therefore, in periods of greater uncertainty, financial institutions may need to strengthen their risk assessment criteria by considering the companies' tax stance.

Still in column 1 (Model A), the EPU-BR did not show statistical significance in the models with BTD and CTrib-DVA, suggesting that these proxies capture different dimensions of tax aggressiveness that are less sensitive to economic uncertainty. This reinforces the complexity of the phenomenon and the importance of using complementary metrics in the analysis.

In column 2 (Model B), the results show that credit supply (OF. CRED.) had a positive and significant coefficient for BTD (0.0038; $p < 0.01$) and a negative and significant coefficient for ETR (-0.0097; $p < 0.10$). These findings indicate that an increase in credit availability is associated with greater tax aggressiveness, as evidenced by the increase in BTD and the decrease in ETR.

The relationship between credit and tax aggressiveness suggests that greater liquidity through credit encourages more aggressive tax practices, aimed at tax optimization to reduce costs and increase financial efficiency. For creditors, this highlights the importance of evaluating tax practices, as more aggressive companies may face greater tax and regulatory risks, potentially affecting their payment capacity (Hasan et al., 2014).

In column 3 (Model C), where the effects of EPU-BR and OF. CRED. are analyzed together, the results reinforce the patterns previously identified: credit supply remains significant for ETR and BTD, demonstrating the robustness of the relationship between credit and tax aggressiveness.

In column 4 (Model D), the effects of the interaction between EPU-BR and credit supply (EPU-BR * OF. CRED.) were tested to verify possible moderating effects. However, the results did not show statistical significance for any of the dependent variables (ETR, BTD, and CTrib-DVA), not corroborating Hypothesis H2. The lack of significance in the interaction suggests that credit supply does not exert a relevant moderating effect on the relationship between political-economic uncertainty and tax aggressiveness.

This finding indicates that variations in available credit do not significantly impact tax decisions in contexts of greater uncertainty. This evidence may reflect the predominance of other factors, such as corporate governance or cost structure, in determining the level of tax planning. Additionally, it is possible that the granting of credit is not directly conditioned on companies' tax stance, which reinforces the need for future research on the interactions between credit, uncertainty, and corporate tax behavior.

In addition to these main variables, the results for the control variables reveal additional factors that influence tax aggressiveness. Companies with higher inventory (ESTQ), cash (CAIXA), and return on assets (ROA) showed higher BTD, indicating a more aggressive stance in tax planning. For ETR, ESTQ and ROA were negatively associated, reinforcing that more profitable companies with higher inventory volumes tend to reduce their tax burden (Chen et al., 2010).

The cash variable (CAIXA) showed a positive and significant coefficient for BTD, suggesting that companies with greater liquidity may assume higher tax risk, possibly because they have more financial flexibility to manage potential tax liabilities (Hanlon et al., 2017). Indebtedness (END) had a negative relationship with ETR, corroborating the literature that associates the use of debt with a reduction in the tax burden through the deductibility of financial charges (Frank, Lynch, and Rego, 2009). Company size (TAM) was also identified as a factor associated with tax aggressiveness, confirming that larger companies have greater organizational capacity to engage in tax planning (Rego, 2003).

Thus, the results indicate that corporate tax aggressiveness is influenced both by macroeconomic factors, such as political-economic uncertainty and credit supply, and by the companies' own operational and financial characteristics.

Table 5

Results of Regressions EPU-BR

	BTD				ETR				CTrib-DVA			
	Model A	Model B	Model C	Model D	Model A	Model B	Model C	Model D	Model A	Model B	Model C	Model D
EPU-BR	0.0021		0.0037***	0.0032	**-0.0113****		**-0.0159*****	**-0.0174****	-0.0081		**-0.0105***	-0.0099
	(0.0013)		(0.0014)	(0.0021)	(0.0054)		(0.0057)	(0.0087)	(0.0061)		(0.0063)	(0.0103)
OF. CRED.		**0.0038*****	**0.005*****	0.0124		**-0.0097***	**-0.0145*****	0.0054		-0.0042	-0.0074	-0.0146
		(0.0012)	(0.0012)	(0.0209)		(0.0053)	(0.0055)	(0.0898)		(0.0061)	(0.0064)	(0.1071)
EPU-BR* OF. CRED.				-0.0014				-0.0037				0.0013
				(0.0039)				(0.0169)				(0.0201)
ESTOQ	0.0487***	0.0489***	0.0488***	0.0489***	-0.1625***	-0.1632***	-0.1628***	-0.1627***	0.0706***	0.0702***	0.0705***	0.0704***
	(0.0046)	(0.0046)	(0.0046)	(0.0046)	(0.0202)	(0.0202)	(0.0202)	(0.0202)	(0.0186)	(0.0186)	(0.0186)	(0.0186)
CAIXA	**0.0265*****	**0.0271*****	**0.0259*****	**0.026*****	-0.0279	-0.0315	-0.0264	-0.0263	**-0.0989*****	-0.1014***	-0.0981***	-0.0981***
	(0.0062)	(0.0061)	(0.0062)	(0.0062)	(0.0214)	(0.0213)	(0.0215)	(0.0214)	(0.026)	(0.026)	(0.026)	(0.026)
TAM	0.0002	0.0002	0.0001	0.0001	-0.0008	-0.0007	-0.0004	-0.0004	**-0.0142*****	**-0.0142*****	**-0.014*****	**-0.014*****
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)
MTB	**-0.0006***	**-0.0007****	**-0.0006****	**-0.0006****	0.0001	0.0002	0.0002	0.0002	**0.0063*****	**0.0064*****	**0.0063*****	**0.0063*****
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
END	-0.0502***	-0.0498***	-0.0493***	-0.0493***	0.1002***	0.0993***	0.0976***	0.0976***	-0.0978***	-0.098***	-0.0992***	-0.0992***
	(0.0032)	(0.0033)	(0.0033)	(0.0033)	(0.0135)	(0.0136)	(0.0136)	(0.0136)	(0.0139)	(0.0139)	(0.014)	(0.014)
ROA	0.2554***	0.254***	0.2544***	0.2545***	-0.1824***	-0.1777***	-0.1796***	-0.1793***	-0.191***	-0.1883***	-0.1895***	-0.1896***
	(0.0134)	(0.0134)	(0.0134)	(0.0134)	(0.0348)	(0.0348)	(0.0348)	(0.0349)	(0.0435)	(0.0435)	(0.0436)	(0.0436)
cons	-0.01	0.0031	-0.0148	-0.0119	0.3556***	0.2931***	0.3695***	0.3772***	0.5484***	0.5053***	0.5555***	0.5528***
	(0.0091)	(0.0071)	(0.0091)	(0.012)	(0.036)	(0.0255)	(0.0357)	(0.0493)	(0.041)	(0.0271)	(0.0411)	(0.0594)
Obs.	4749	4749	4749	4749	4749	4749	4749	4749	4749	4749	4749	4749
Adjusted R^2	0.2937	0.2947	0.2957	0.2955	0.0805	0.0803	0.0817	0.0815	0.3254	0.3253	0.3255	0.3254
YEAR	no	no	no	no	no	no	no	no	no	no	no	no
SECTOR	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note: Significance at the 1% (***), 5% (**) and 10% (*) levels. Non-significant variables obtained a p-value greater than 10%.

Table 6 analyzes the results for the dependent variables of tax aggressiveness in interaction with political-economic uncertainty (IIE-BR) and observed credit supply. In column 1 (Model A), the positive coefficient of IIE-BR for BTD (0.0106*) and the negative coefficient for ETR (-0.0376*) suggest that, in periods of greater uncertainty, companies increase their tax aggressiveness. This behavior may be associated with the need to preserve liquidity and offset economic risks, in line with H1 and in contrast to studies that used the EPU in China (Shen et al., 2021).

In column 2 (Model B), credit supply is significantly related to BTD (0.0038*, $p < 0.01$) and ETR (-0.0097*, $p < 0.10$), indicating that greater access to credit is associated with more aggressive tax strategies. This finding contradicts H2 and suggests that firms accessing more credit may assume greater tax risks, possibly in response to return on capital requirements or higher financing costs (Hasan et al., 2014).

In column 4 (Model D), a significant moderating effect between uncertainty and credit supply on tax aggressiveness is observed (IIE-BR*OF.CRED. = -0.0879, $p < 0.05$), confirming H3. The negative coefficient of the interaction between uncertainty (IIE-BR) and credit supply suggests a linear conditional effect, in which the impact of uncertainty on the ETR (an inverse indicator of tax aggressiveness) becomes more negative as credit supply increases. Thus, greater credit supply intensifies the effect of uncertainty on tax aggressiveness, leading to larger reductions in the ETR.

As illustrated in Figure 2, this moderation can be seen in the slope of the lines: at low credit levels, uncertainty has a positive impact on the ETR (less aggressiveness), while at high credit levels, the impact is negative (more aggressiveness). It is worth noting that the analysis does not identify an inflection point (maximum or minimum) though, indicating that the relationship is conditional but linear.

These findings have important implications for companies and creditors. For companies, greater uncertainty appears to be a driving factor for more aggressive tax decisions, especially when credit is available, which can increase regulatory and reputational risks. For creditors, it is essential to consider not only the financial structure of companies but also the broader economic scenario: in periods of high uncertainty, companies with easy access to credit may be more likely to adopt aggressive tax practices, increasing the risk of default or greater regulatory exposure.

Finally, future research could deepen the analysis by identifying critical points in the interaction between credit and uncertainty, as well as by exploring other mechanisms that influence corporate tax decisions.

Table 6

Results of Regressions with IIE-BR

	BTD			ETR			CTrib-DVA			
	Model A	Model B	Model C	Model D	Model A	Model B	Mod .C	Model D	Model A	Model B	Model C	Model D
IIE-BR	0.0106***		0.0102***	0.0164***	-0.0376***		**-0.0366*** **	**-0.0748*** **	0.0165		0.017	0.0152
	(0.003)		(0.003)	(0.0054)	(0.0125)		(0.0125)	(0.0223)	(0.0149)		(0.0149)	(0.0273)
		0.0038* **	**0.0036*** **	-0.0648		-0.0097*	-0.009*	0.4083**		-0.0042	-0.0046	0.015
OF. CRED.		(0.0012)	(0.0012)	(0.0485)		(0.0053)	(0.0053)	(0.2057)		(0.0061)	(0.0061)	(0.2506)
IIE-BR* OF.CRED.				0.0144				-0.0879**				-0.0041
				(0.0102)				(0.0433)				(0.0528)
ESTQ	0.0481***	0.0489***	0.0482***	0.048***	-0.1604***	-0.1632***	-0.1607***	-0.1595***	0.0692***	0.0702***	0.0691***	0.0691***
	(0.0046)	(0.0046)	(0.0046)	(0.0046)	(0.0201)	(0.0202)	(0.0201)	(0.0201)	(0.0186)	(0.0186)	(0.0186)	(0.0186)
CAIXA	**0.025*** **	**0.0271*** **	**0.0251*** **	**0.0248*** **	-0.0239	-0.0315	-0.024	-0.0222	-0.1048***	-0.1014***	-0.1049***	-0.1048***
	(0.0063)	(0.0061)	(0.0063)	(0.0063)	(0.0215)	(0.0213)	(0.0215)	(0.0215)	(0.0262)	(0.026)	(0.0262)	(0.0263)
TAM	0.0001	0.0002	0.0001	0	-0.0005	-0.0007	-0.0003	-0.0002	**-0.0145*** **	**-0.0142*** **	**-0.0144*** **	**-0.0144*** **
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0018)	(0.0018)
MTB	**-0.0007** **	**-0.0007** **	**-0.0007** **	**-0.0007** **	0.0003	0.0002	0.0004	0.0003	**0.0063*** **	**0.0064*** **	**0.0063*** **	**0.0063*** **
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
END	-0.0498***	-0.0498***	-0.0492***	-0.0492***	0.0989***	0.0993***	0.0975***	0.0971***	-0.0964***	-0.098***	-0.0971***	-0.0972***
	(0.0033)	(0.0033)	(0.0033)	(0.0033)	(0.0135)	(0.0136)	(0.0136)	(0.0136)	(0.014)	(0.0139)	(0.014)	(0.014)
ROA	0.256***	0.254***	0.255***	0.2544***	-0.1838***	-0.1777***	-0.1814***	-0.1778***	-0.1878***	-0.1883***	-0.1866***	-0.1864***
	(0.0133)	(0.0134)	(0.0133)	(0.0133)	(0.0347)	(0.0348)	(0.0348)	(0.0349)	(0.0435)	(0.0435)	(0.0436)	(0.0436)
constant	-0.0474***	0.0031	-0.0431***	-0.0725***	0.4698***	0.2931***	0.4593***	0.6386***	0.4333***	0.5053***	0.4279***	0.4363***
	(0.0142)	(0.0071)	(0.0142)	(0.0254)	(0.0602)	(0.0255)	(0.0609)	(0.1052)	(0.0724)	(0.0271)	(0.0731)	(0.13)
Obs.	4749	4749	4749	4749	4749	4749	4749	4749	4749	4749	4749	4749
Adjusted R^2	0.295	0.2947	0.2961	0.2962	0.0813	0.0803	0.0817	0.0822	0.3254	0.3253	0.3253	0.3252
YEAR	no	no	no	no	no	no	no	no	no	no	no	no
SECTOR	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note: Significance at the 1% (***), 5% (**) and 10% (*) levels. Non-significant variables obtained a p-value greater than 10%.

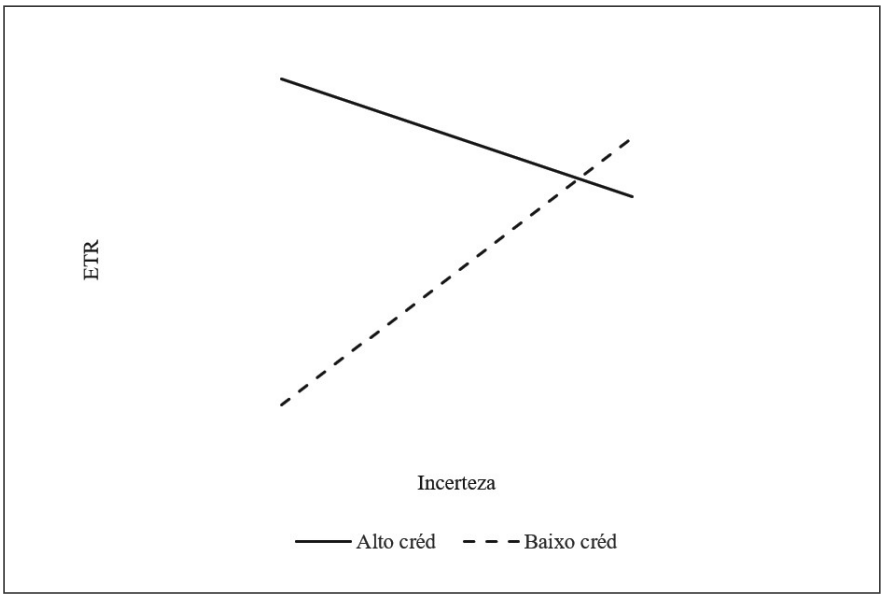

Figure 2. Result of the moderation between uncertainty (IIE-BR) and credit supply in relation to tax aggressiveness (ETR), considering 2 standard deviations above or below the mean of the variables.

4.2 Robustness Analysis

In the models in which EPU-BR is used as an explanatory variable (Table 7), the results partially confirm the hypothesis that greater uncertainty is associated with greater tax aggressiveness. For the BTDP variable, EPU-BR shows a positive and statistically significant coefficient in Model C (0.0043; $p < 0.01$), although it is not significant in Model A (0.0023) or Model D (0.0017). Credit supply is also positively associated with tax aggressiveness, with coefficients of 0.005 ($p < 0.01$) and 0.0063 ($p < 0.01$) in Model B and Model C, respectively. However, the interaction term between EPU-BR and credit supply in Model D (–0.0068; $p > 0.10$) is not significant, which does not support the presence of a moderating effect.

Similar results are observed when using DIFETR as the dependent variable. EPU-BR shows positive and statistically significant coefficients in Model A (0.0112; $p < 0.05$), Model B (0.0156; $p < 0.01$), and Model C (0.0171; $p < 0.10$), once again indicating that periods of greater uncertainty are associated with more aggressive tax behavior. Credit supply is also significant in Model B (0.0091; $p < 0.10$) and Model C (0.0139; $p < 0.05$), but the interaction term in Model D (0.0038; $p > 0.10$) does not reach statistical significance, reinforcing the absence of moderation.

On the other hand, when using IIE-BR as a proxy for uncertainty, the results are even more consistent and provide evidence of moderation by credit supply. In the models with BTDP, IIE-BR shows positive and significant coefficients in Model A (0.0153; $p < 0.01$), Model C (0.0148; $p < 0.01$), and Model D (0.0245; $p < 0.01$). Credit supply is also significant in Model B (0.005; $p < 0.01$) and Model C (0.0047; $p < 0.01$). The interaction term between IIE-BR and credit in Model D presents a positive coefficient (0.0225; $p < 0.10$), suggesting that credit supply amplifies the impact of uncertainty on tax aggressiveness.

In the specification with DIFETR, the results remain consistent. IIE-BR is significantly associated with tax aggressiveness in Model A (0.0377; $p < 0.01$), Model C (0.0367; $p < 0.01$), and Model D (0.0779; $p < 0.01$). Credit supply, although positive in Model B (0.0091; $p < 0.10$), presents a negative and statistically significant coefficient in Model D (–0.4414; $p < 0.05$). However, the interaction term IIE-BR *vs.* credit supply in Model D has a coefficient of 0.0947 ($p < 0.05$), indicating that in environments with greater credit availability, the effect of uncertainty on tax aggressiveness intensifies.

In general, the robustness results reinforce the conclusion that economic and political uncertainty directly influences the tax aggressiveness of Brazilian companies. Additionally, the findings with the IIE-BR indicate that credit supply can intensify this effect, suggesting that the credit environment should be considered an important element in analyzing the tax behavior of the Brazilian publicly held companies included in this study's sample.

Table 7
Robustness Test Statistics with EPU-BR

Variables	BTDP				DIFETR			
	Model A	Model B	Model C	Model D	Model A	Model B	Model C	Model D
EPU-BR	0.0023		**0.0043*** **	0.0017	**0.0112** **		0.0156***	0.0171*
	(0.0015)		(0.0016)	(0.0025)	(0.0056)		(0.0059)	(0.009)
OF. CRED.		0.005***	0.0063***	0.0427*		0.0091*	0.0139**	-0.0067
		(0.0015)	(0.0015)	(0.0256)		(0.0055)	(0.0058)	(0.0934)
EPU-BR*OF. CRED.				-0.0068				0.0038
				(0.0048)				(0.0175)
ESTQ	0.0381***	0.0383***	0.0382***	0.0384***	0.1634***	0.1641***	0.1637***	0.1636***
	(0.0045)	(0.0045)	(0.0045)	(0.0045)	(0.0212)	(0.0212)	(0.0212)	(0.0212)
CAIXA	0.028***	0.0288***	**0.0274*** **	**0.0275*** **	0.0304	0.0339	0.0289	0.0288
	(0.0074)	(0.0074)	(0.0074)	(0.0074)	(0.0222)	(0.0221)	(0.0223)	(0.0222)
TAM	0	-0.0001	-0.0002	-0.0002	0.0006	0.0006	0.0002	0.0002
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0018)	(0.0018)	(0.0018)	(0.0018)
MTB	**-0.0032*** **	**-0.0032*** **	**-0.0032*** **	**-0.0032*** **	0	-0.0002	-0.0001	-0.0001
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
END	-0.0385***	-0.0378***	-0.0374***	-0.0373***	-0.1033***	-0.1025***	-0.1008***	-0.1008***
	(0.0037)	(0.0037)	(0.0037)	(0.0037)	(0.0142)	(0.0143)	(0.0143)	(0.0143)
ROA	0.4212***	0.4195***	0.42***	0.4205***	0.1934***	0.1888***	0.1906***	0.1904***
	(0.0146)	(0.0146)	(0.0146)	(0.0146)	(0.0359)	(0.036)	(0.036)	(0.0361)
_constant	-0.022**	-0.0074	-0.0281***	-0.0141	-0.0156	0.0462*	-0.0289	-0.0368
	(0.0105)	(0.0083)	(0.0105)	(0.0144)	(0.0375)	(0.027)	(0.0371)	(0.0513)
Obs.	4749	4749	4749	4749	4749	4749	4749	4749
Adjusted R^2	0.355	0.3562	0.3571	0.3572	0.077	0.0768	0.078	0.0779
YEAR	no	no	no	no	no	no	no	no
SECTOR	yes	yes	yes	yes	yes	yes	yes	yes

Note: Significance at the 1% (***), 5% (**) and 10% (*) levels. Non-significant variables obtained a p-value greater than 10%.

Table 8

Robustness Test Statistics with IIE-BR

Variáveis	BTDP				DIFETR			
	Model A	Model B	Model C	Model D	Model A	Model B	Model C	Model D
IIE-BR	0.0153***		0.0148***	0.0245***	0.0377***		0.0367***	0.0779***
	(0.0037)		(0.0037)	(0.0067)	(0.0128)		(0.0129)	(0.0228)
OF. CRED.		0.005***	0.0047***	-0.1019*		**0.0091***	0.0084	**-0.4414****
		(0.0015)	(0.0015)	(0.061)		(0.0055)	(0.0055)	(0.212)
IIE-BR*OF. CRED.				0.0225*				0.0947**
				(0.0129)				(0.0447)
ESTQ	0.0371***	0.0383***	0.0373***	0.037***	0.1613***	0.1641***	0.1616***	0.1603***
	(0.0045)	(0.0045)	(0.0045)	(0.0045)	(0.0211)	(0.0212)	(0.0211)	(0.0211)
CAIXA	**0.0257*****	**0.0288*****	**0.0257*****	**0.0253*****	0.0263	0.0339	0.0264	0.0245
	(0.0075)	(0.0074)	(0.0075)	(0.0075)	(0.0223)	(0.0221)	(0.0223)	(0.0223)
TAM	-0.0001	-0.0001	-0.0002	-0.0003	0.0004	0.0006	0.0002	0.0001
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0018)	(0.0018)	(0.0018)	(0.0018)
MTB	-0.0032***	-0.0032***	-0.0033***	-0.0033***	-0.0002	-0.0002	-0.0003	-0.0002
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
END	-0.0378***	-0.0378***	-0.0371***	-0.037***	-0.1019***	-0.1025***	-0.1006***	-0.1002***
	(0.0037)	(0.0037)	(0.0037)	(0.0037)	(0.0142)	(0.0143)	(0.0143)	(0.0143)
ROA	0.4222***	0.4195***	0.421***	0.4201***	0.1947***	0.1888***	0.1924***	0.1886***
_cons	-0.08***	-0.0074	-0.0745***	-0.1203***	-0.1304**	0.0462*	-0.1206*	-0.3139***
	(0.0174)	(0.0083)	(0.0174)	(0.0314)	(0.062)	(0.027)	(0.0629)	(0.1076)
Obs.	4749	4749	4749	4749	4749	4749	4749	4749
Adjusted R^2	0.357	0.3562	0.3583	0.3585	0.0778	0.0768	0.0781	0.0787
YEAR	no	no	no	no	no	no	no	no
SECTOR	yes	yes	yes	yes	yes	yes	yes	yes

Note: Significance at the 1% (***), 5% (**) and 10% (*) levels. Non-significant variables obtained a p-value greater than 10%.

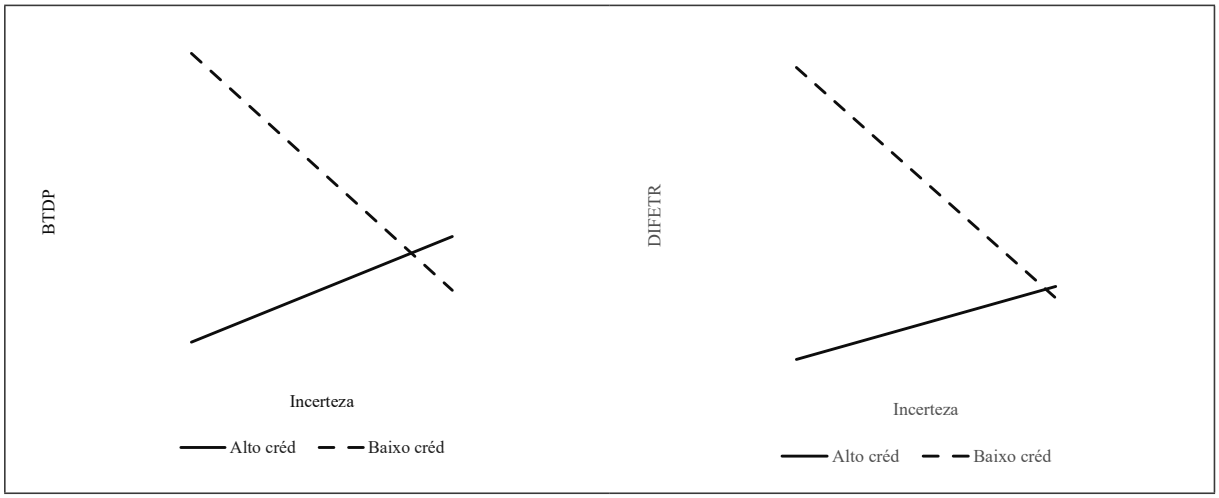

Figure 3. Result of the moderation between uncertainty (IIE-BR) and credit supply in relation to tax aggressiveness (BTD and DIFETR), considering 2 standard deviations above or below the mean of the variables.

5 Final Considerations

This study investigated whether Brazilian publicly held companies adopt a more aggressive tax stance in scenarios of political and economic uncertainty, as measured by the EPU-BR and IIE-BR indices. It also analyzed whether greater credit availability contributes to reducing tax aggressiveness and whether it moderates the relationship between uncertainty and tax behavior. The results indicate that incentives through credit provision can mitigate market risk perception in times of greater uncertainty and, consequently, lead companies to adopt a less aggressive tax stance by increasing the availability of internal and external resources to finance operations.

The empirical evidence supports Hypothesis H1, revealing a positive and statistically significant association between political-economic uncertainty and tax aggressiveness, in line with the findings of Nguyen and Nguyen (2020). On the other hand, when analyzing the effect of credit supply in isolation, the results reject Hypothesis H2, indicating that an increase in credit supply is associated with greater tax aggressiveness. One possible explanation for this finding is the high cost of credit in Brazil, which can financially penalize companies and, consequently, make aggressive tax planning a more advantageous cost-benefit alternative, as suggested by Hasan et al. (2014).

The results of the interaction analyses indicate that credit supply plays a significant moderating role in the relationship between political-economic uncertainty and tax aggressiveness when uncertainty is measured by the IIE-BR index. Specifically, in contexts of high uncertainty, a greater volume of available credit intensifies companies' aggressive tax behavior, reducing the ETR and increasing metrics such as BTDP and DIFETR. This moderation, however, is linear and conditional, with no empirical evidence of an inflection point. In other words, increased uncertainty is associated with greater tax aggressiveness, and this effect is amplified as credit availability increases. These findings suggest that the combination of high uncertainty and greater market liquidity might encourage more aggressive tax practices, reinforcing the need for regulators and financial institutions to pay greater attention when assessing tax risks in periods of macroeconomic instability.

These results contribute to a better understanding of the tax behavior of publicly traded companies in uncertain economic environments, providing relevant insights for investors, tax authorities, and policymakers. For investors, the findings offer insights into firms' conduct in times of uncertainty and increased credit availability. For tax authorities, the results help anticipate tax-planning patterns based on the macroeconomic environment. For policymakers, the findings highlight the importance of calibrating credit policy in line with levels of uncertainty to avoid distortions in corporate tax incentives.

This study presents limitations. For instance, the proxies used to measure tax aggressiveness and political-economic uncertainty may not fully capture all the nuances of the phenomenon. In addition, the sample is restricted to publicly traded companies and to the period after the adoption of IFRS in Brazil, which limits the generalization of results. Future research could expand the analysis to periods of greater institutional instability and, if possible, examine whether privately held companies exhibit similar behaviors.

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