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Perception of accounting sciences students about integrated reporting: knowledge, academic relevance, and impacts for the accounting profession

Characteristics of brazilian CEOs and results management

Regulation Games: who if benefit?

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Editor's Note

Dear Readers,

Number 3 of volume 25 of the 3rd quarter of 2024 of the Journal of Accounting of Minas Gerais closes the cycle of celebrations of its 25th year. In 2024, in addition to having adopted a new layout for its cover, Journal of Accounting Of Minas Gerais began publishing partial editions containing articles in Portuguese and English. In addition, the RMC achieved a Q2 classification as a result of the 2023 Journal Impact indicator released by SPELL® (Scientific Periodicals Electronic Library), which is maintained by Anpad (National Association of Graduate Studies and Research in Administration).

In this context, this edition of Journal of Accounting of Minas Gerais begins with the guest editorial developed by Professors Eliseu Martins and Eduardo da Silva Flores, which is entitled "The Relevance of Research in Accounting Applied to Professional Practice". The core of the editorial is to discuss the relevance in the development of applied research by accounting professionals as an opportunity and as a responsibility for the evolution of the field of knowledge.

The first study is entitled "The role of accounting in the evolution of behavioral research: exploring the relationship between investor sentiment, accounting sciences and social media", authored by Ludmila Zamboni de Sá Vasconcellos, Vinícius Mothé Maia, Marcelo Álvaro da Silva Macedo and Roberto Tommasetti. The study sought to explain relevant works that interrelate accounting information and social media with investor sentiment, identifying the paths traced - concepts, themes, authors - in the development of a common knowledge between these themes that have the potential to deepen and outline the accounting research agenda.

Then, the authors Josy Rodrigues da Silva Peixoto, Carlos Henrique Silva do Carmo and Lúcio de Sousa Machado present the article entitled "ESG and Fiscal Aggressiveness in Companies in the Differentiated Segments of Corporate Governance". This article aims to investigate the relationship between ESG performance indicators and fiscal aggressiveness of Brazilian companies that make up B3's differentiated governance listing segments.

Entitled "Determinants of corporate tax litigation in Brazilian companies: a multifactorial analysis", the next article is authored by Antônio Lopo Martinez and Julia Leite Coutinho. The objective of the research was to identify and analyze the main determinants of tax litigation in Brazilian publicly traded companies, focusing on internal factors such as indebtedness, size, growth, profitability, liquidity and business risk.

With the aim of analyzing the effect of the level of public transparency on the fiscal situation of the municipalities of Minas Gerais, in the period from 2017 to 2020, the authors Elizete Aparecida de Magalhães and Ediene Ramos Ferreira present the study entitled "Public transparency as a determinant of the fiscal situation of the municipalities of Minas Gerais".

The work "Perception of accounting students on integrated reporting: knowledge, academic relevance and impacts on the accounting profession" was developed by the authors Antônio Jorge Queiroz de Oliveira, Cíntia Vanessa Monteiro Germano Aquino, Clayton Robson Moreira da Silva and Joelma Leite Castelo. The objective was to analyze the perception of accounting students regarding Integrated Reporting, considering aspects related to knowledge, academic relevance and impacts on the accounting profession.

The next study is authored by Annandy Raquel Pereira da Silva, Atelmo Ferreira de Oliveira, Adilson de Lima Tavares and Kallyse Priscila Soares de Oliveira Freire, whose title is "Characteristics of Brazilian CEOs and Results Management". This aimed work to investigate the relationship between the specific characteristics and skills of Brazilian CEOs and Results Management, from 2016 to 2019, comprising non-financial companies listed on B3.

This issue presents the Case for Teaching "Regulation Games: Who Benefits?" whose authors are Clariovaldo Enias Tavares da Silva, Ana Claudia Santo Lima, Patrícia de Souza Costa and Lucimar Antônio Cabral de Ávila. The case for teaching discusses the regulation windfall tax from the perspective of the Theory of Regulation and the main dilemma of the case involves the controversies inherent to the enactment of regulation 2022/1854 of the Council of the European Union (CUE, 2022), initially adopted by Portugal for companies in the energy sector.

Thus, we would like to thank the authors for the vote of confidence, for submitting their research to the Journal of Accounting of Minas Gerais and believing in the quality of their evaluation process, and the evaluators for their dedication in carrying out useful work. We congratulate the authors who had their articles approved and the publication of their research in the Journal of Accounting of Minas Gerais. Research that contributes to the knowledge of the area of Accounting Sciences. We wish you all an excellent reading!

Prof. Nálbia de Araújo Santos, Ph.D.

SUMMARY

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ESG AND TAX AGGRESSIVENESS IN COMPANIES IN THE DIFFERENTIATED CORPORATE GOVERNANCE SEGMENTS

ESG E AGRESSIVIDADE FISCAL NAS EMPRESAS DOS SEGMENTOS DIFERENCIADOS DE GOVERNANÇA CORPORATIVA

ABSTRACT

Many profitable companies have *Effective Tax Rate*s below the legal rate, indicating the application of aggressive tax planning. On the other hand, involvement in environmental, social, and governance (ESG) issues tends to produce higher standards of ethical behavior and compliance with the regulations required of companies, including *compliance* with tax regulations. In this sense, this study aimed to investigate the relationship between ESG performance indicators and tax aggressiveness of Brazilian companies that make up B3's differentiated governance listing segments. The sample comprised 55 companies participating in Level 1, Level 2, and Novo Mercado from 2017 to 2021. The ESG metrics were collected from the Refinitiv® database, and the ETR (*Effective Tax Rate*) and ETR_DVA rate were considered as metrics of tax aggressiveness, the latter calculated based on the tax values reported in the Statement of Value Added (DVA). Regressions were performed with panel data, and the results confirmed the research hypothesis that ESG practices reduce the tax aggressiveness of companies based on the relationship between total ESG performance and ETR. However, a significant influence of ESG performance on tax aggressiveness cannot be inferred from the ETR_DVA metric, except for the environmental dimension of ESG. Additionally, considering the ESG governance dimension, there is no evidence that higher scores in the governance pillar influence tax aggressiveness practices.

Keywords: Tax aggressiveness. ESG. Corporate Governance.

RESUMO

Muitas empresas lucrativas apresentam taxas efetivas de tributos abaixo da taxa legal, indicando a aplicação de planejamentos tributários agressivos. Por outro lado, o envolvimento em questões ambientais, sociais e de governança (ESG) tende a produzir padrões mais elevados de comportamento ético e de *compliance* com os regulamentos exigidos para as empresas, incluindo o atendimento aos regulamentos tributários. Neste sentido, este estudo teve por objetivo investigar a relação entre os indicadores de desempenho ESG e a agressividade fiscal das empresas brasileiras que compõem os segmentos de listagem diferenciados de governança da B3. A amostra foi de 55 empresas participantes do Nível 1, Nível 2 e Novo Mercado, para os períodos de 2017 a 2021. As métricas para ESG foram coletadas na base de dados da Refinitiv® e foram consideradas como métricas de agressividade fiscal a taxa ETR (*Effective Tax Rate*) e a ETR_DVA, essa última calculada com base nos valores dos tributos informados na Demonstração do Valor Adicionado (DVA). Foram realizadas regressões com dados em painel, e os resultados confirmaram a hipótese da pesquisa de que as práticas ESG reduzem a agressividade fiscal das empresas, com base na relação entre o desempenho ESG total e a ETR. No entanto, não se pode inferir influência significativa do desempenho ESG sobre a agressividade fiscal pela métrica ETR_DVA, exceto pela dimensão ambiental de ESG. Adicionalmente, considerando a dimensão governança de ESG, não se encontra evidência de que maiores *scores* do pilar de governança influenciem as práticas de agressividade fiscal.

Palavras-chave: Agressividade fiscal. ESG. Governança Corporativa.

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1. INTRODUCTION

In the literature, the practice of tax planning can also be called tax aggressiveness, tax avoidance, and tax management, which is one of how the phenomenon in which companies try to reduce their taxes is known, taking advantage of legal concessions and exemptions that result in lower tax obligations (Martinez, 2017). The degree of tax aggressiveness is verified by the intensity and legality of tax reduction activities, which vary from perfectly legal to clearly illegal (Liets, 2013).

The impact of ESG issues, being E (environmental), S (social), and G (governance), on the tax aggressiveness of companies is increasingly discussed in research involving taxes (Hohn *et al*., 2021; Kovermann & Velte, 2021; Melo *et al*., 2020). Despite all the progress of research in this area, many contributions can be made to improve the understanding of how taxes impact corporate decisions, following changes in tax rules, and informing society about the behavior of companies, their real effects, and their macroeconomic implications (Hanlon & Heitzman, 2010).

The concern with the ESG issue is contained in the term Corporate Social Responsibility (CSR), which is often used as a synonym for corporate sustainability, corporate responsibility, and business ethics (Melo *et al*., 2020). The government's collection of taxes should contribute to meeting society's demands (Freitas *et al*., 2019). Therefore, Corporate Social Responsibility seeks to maximize results linked to a responsible attitude towards society (Hohn *et al*., 2021).

In this context, it is expected that companies committed to ESG practices bear their fiscal responsibilities and act with less tax aggressiveness (Lanis & Richardson, 2011). Martinez and Ramalho (2017) studied the Brazilian companies that make up the portfolio of the B3 Corporate Sustainability Index (ISE B3) and showed that companies that engage with sustainability tend to be less aggressive, avoiding tax risks and, therefore, less subject to tax liabilities.

The literature points to conflicting results for the relationship between tax aggressiveness and ESG performance indicators. In the literature review carried out internationally by Kovermann and Velte (2021), they observed that there is no stable association between ESG performance measured by ESG scores and a company's tax practices, indicating that companies with high ESG performance are often also aggressive in their tax planning.

On the other hand, Hohn *et al*. (2021) researched the joint effect of corporate governance and responsible behavior on the tax aggressiveness of Brazilian companies and concluded that the higher the level of corporate governance, the lower the level of tax aggressiveness; however, in the relationship between CSR and tax aggressiveness, the more socially responsible, the greater the tendency for tax aggressiveness, and finally, companies that have CSR practices and a high level of governance are less tax aggressive.

In this context, the following research problem arises: **What is the relationship between ESG sustainable performance indicators and the tax aggressiveness of Brazilian companies that make up B3's differentiated listing segments?** The objective of the present study is to investigate this relationship.

Previous research in the national environment used as metrics of concern with sustainability the fact of being part of the Corporate Sustainability Index (ISE B3) portfolio or even publishing Corporate Social Responsibility (CSR) statements (Freitas *et al*., 2019; Martinez & Ramalho, 2017). However, to measure the company's engagement with ESG issues, this research intends to use Refinitiv®'s ESG score. The ESG *score* is an overall company score based on self-reported information in the environmental, social, and corporate governance pillars, designed to transparently and objectively assess relative ESG performance, commitment, and effectiveness based on publicly available and auditable data.

The choice to investigate companies in B3's differentiated listing segments is justified by the fact that these companies adopt stricter governance rules that go beyond the obligations that companies have under the Brazilian Corporation Law (Brazil, 1976) and that aim to improve the evaluation of companies that are voluntarily listed in one of these segments (Brasil Bolsa Balcão [B3], 2023).

Additionally, this study is justified by using two metrics of aggressiveness, one of which is exclusively national in scope and the other adopted in Brazil and internationally, allowing the comparison of the results of the ESG relationship and aggressive fiscal planning from different metrics of aggressiveness and thus enriching the scope of studies on tax aggressiveness in Brazil. For emerging scenarios such as Brazil, the information on the amounts allocated to the government expressed in the Value Added Statement (DVA) proves to be an appropriate proxy for the total tax burden since it contains taxes on revenue in addition to taxes on profit (Martinez & Motta, 2020). Another *proxy* used in this study is the ETR (*Effective Tax Rate*), one of the *most used proxies* to indicate tax aggressiveness in the international literature, calculated by the ratio between tax expenses on income and accounting profit before taxes (Hanlon & Heitzman, 2010).

This study seeks to contribute to regulators, investors, and accounting professionals by presenting the tax behavior of companies with ESG practices. The results are expected to influence the improvement of companies' accounting and tax practices.

2. LITERATURE REVIEW

2.1. Corporate sustainability and ESG

The impact caused by companies on the environment and social well-being has been a growing concern of executives, investors, and society in general (Ferrell *et al*., 2016). According to Gillan *et al*. (2021), corporate actions in these aspects are called environmental, social, and governance (ESG) and Corporate Social Responsibility (CSR). According to the *Gov-*

ernance & Accountability Institute (G&A Institute) (2023), other terms are also widely used to describe companies' actions involving ESG, such as Corporate Sustainability, Corporate Citizenship, and ESG Strategies and Performance.

Companies characterized by good corporate governance promote efforts to help protect the environment, seek social equality, and improve community relations while seeking to maximize profits (Ferrell *et al*., 2016; Hohn *et al*., 2021). Society as a whole supports and encourages ESG practices that generate value for companies. Companies with socially responsible behavior establish a reputation that can help attract and retain more productive employees and loyal customers, consequently impacting the cost of capital and cash flow (Gillan *et al*., 2021; Hong & Liskovich, 2015).

Among the factors that can stimulate ESG investments, Borghesi *et al*. (2014) argue that adopting socially responsible behavior in business can help companies mitigate legal, political, and tax risks to the extent that ESG investments reduce the likelihood of being sued and/or regulated. In addition, Silva *et al*. (2022) found that companies that engage in sustainable practices and publish CSR reports improve the quality of the information provided, reduce information discrepancy, and, as a result, increase their market value.

In this sense, most companies take measures to highlight their investments in these activities, disclosing sustainability reports by the guidelines of the company that publishes them or by the standards for the implementation of sustainability reports already established, such as the *Global Reporting Initiative* (GRI) or the Integrated Report (IR) (Barbosa *et al*., 2023; Gillan *et al*., 2021; Kovermann & Velte, 2021). In addition, several organizations and stock exchanges worldwide have created indexes, *rankings*, and recommendations based on the economic, social, and environmental dimensions (Pessoa, 2019).

The increase in the number of investors who have directed financial resources to companies committed to ESG and who demand comparable and verifiable information led to the creation of the International Sustainability Standards Board (ISSB), according to the International Financial Reporting Standards Foundation (IFRS Foundation) (2023), with the aim of providing a global basis for sustainability-related disclosure standards. In Brazil, according to the Federal Accounting Council (CFC) (2023), the Brazilian Committee for Sustainable Pronouncements (CBPS) was created, which is responsible for studying, preparing and issuing technical documents on the disclosure of sustainability practices.

Refinitiv®'s ESG scores are designed to transparently and objectively measure ESG performance, commitment, and effectiveness based on company-reported data. This covers ten main themes, including emissions, product innovation, human rights, shareholders, etc. The methodology applied by Refinitiv® uses *industry benchmarking*, which is an essential factor considering that Borghesi *et al*. (2014) found that some industries, such as consumer goods and computer *hardware*, have above-average scores, and others, such as aircraft, oil, and natural gas, have below-average scores.

2.2. ESG and tax aggressiveness

Tax aggressiveness refers to activities favorable to reducing taxes and actions carried out to avoid or reduce the payment of taxes and obtain tax benefits (Hanlon & Heitzman, 2010). Other nomenclatures are used in the literature to refer to tax aggressiveness, such as tax planning, fiscal management, tax management (Gomes, 2012; Martinez, 2017), and tax avoidance (Fisher, 2014; Lietz, 2013).

The means used to avoid or reduce the payment of taxes can be lawful (tax avoidance) or not (tax evasion) (Freitas *et al*., 2019). Reducing taxes using legal means is known as tax avoidance; on the other hand, the use of illicit means is called tax evasion or tax *evasion* (Fisher, 2014). For Lietz (2013), these constructs differ in the degree of legal sustainability that the transactions represent, illustrating tax avoidance as a gray area between tax compliance and tax evasion.

Efficient tax planning needs to consider all parties involved in the process, including all taxes (direct and indirect), and consider explicit and implicit costs, even if uncertain (Scholes *et al*., 1992). Tax planning activities may include taking advantage of legal concessions and exemptions, the installment of taxes, the structuring of the company's operations and corporate reorganizations, involving shareholdings and corporate acts in order to reduce tax obligations to the lowest possible amount (Marinho & Machado, 2023; Martinez, 2017; Proner *et al*., 2021).

Tax aggressiveness can result in tax savings, maximization of profits, increased cash flow, reduction of debt costs, and higher compensation for executives (Mamede Junior *et al*., 2023; Moraes *et al*., 2021; Proner *et al*., 2021; Vello & Martinez, 2014). On the other hand, the costs caused by this practice may include implementation costs, agency costs, reputation costs, and any fines and tax penalties imposed by the tax administration (Lanis & Richardson, 2011; Moraes *et al*., 2021).

Tax aggressiveness increases the complexity of companies' financial transactions, which can result in agency problems caused by a lower level of transparency. (Lanis & Richardson, 2011; Moraes *et al*., 2021). Martinez (2017) points out that implementing activities aimed at tax savings at aggressive levels is subject to questioning by the tax authorities due to the possibility of ambiguity in applying an economic interpretation to tax facts.

Compliance with tax obligations by companies maintains a direct relationship with ESG issues since, through taxes, public goods are made available to society (Fisher, 2014). The literature establishes that when the company adopts ESG practices and the payment of taxes as ways to contribute to society, ESG, and tax aggressiveness result in a negative relationship (Hohn *et al*., 2021; López-González *et al*., 2021; Melo *et al*., 2020). On the other hand, when the two activities exhibit a positive relationship, it is evidence that companies are engaged in ESG practices with the objective of risk management (Mao, 2019; Zeng, 2019).

Melo *et al*. (2020) verified the impact of CSR on the tax aggressiveness of Brazilian publicly traded companies over eight years using variables that measure the performance of CSR in the environmental, social, and governance dimensions and in aggregate and the *Effective Tax Rate* (ETR). Melo *et al*. (2020) observed that, regardless of size, adopting more or better CSR practices results in lower tax aggressiveness for the companies in the sample.

In the study conducted by Du and Li (2023), the relationship between tax aggressiveness and CSR in emerging markets was explored using Refinitiv®'s combined ESG index. It also investigated how engaging in socially responsible practices affects financial performance and constraints on bank debt financing at the company level. The results indicated that tax aggressiveness negatively correlates with ESG performance and that companies that perform highly in CSR tend to have more robust financial performance and lower bank debt costs.

Freitas *et al*. (2019) investigated the relationship between corporate sustainability and tax avoidance using a sample of 93 companies that are part of B3's IBrX 100 in the period from 2015 to 2017, using as *proxies* of ESG practices the integration of the B3 Corporate Sustainability Index (ISE B3) and tax aggressiveness, the DVA Rate, which considers the relationship between the amount of tax paid and the total value added. The results indicated that socially responsible companies tend to have a higher tax rate concerning the value added to be distributed.

According to Hohn *et al*. (2021), corporate governance is based on principles of equity, transparency, and ethics, so companies with corporate governance are more attentive to compliance with laws and consistent accountability. The authors investigated the impact of CSR on the relationship between corporate governance and aggressiveness of publicly-held companies listed on B3. They concluded that companies with good corporate governance practices and responsible behavior tend not to enjoy probable tax benefits.

Others researches investigating the relationship between corporate sustainability, ESG, and tax aggressiveness in companies concluded that companies with strong ESG performance tend to have more aggressive tax behavior. Khan *et al*. (2022) investigated the relationship between corporate governance, tax aggressiveness, and CSR reporting in the emerging markets of Nigeria and Pakistan. They concluded that CSR is positively associated with tax aggressiveness in Nigeria and positive but not significant in the case of Pakistan.

Zeng (2019) examined the relationship between CSR and tax avoidance in companies from 35 countries, using ETR and BTD as aggressiveness metrics. He also observed how CSR and country-level governance affect tax avoidance, finding strong evidence that CSR is positively related to tax avoidance. However, in countries with weak governance, companies with higher CSR scores engage less in tax avoidance.

Thus, the following research hypothesis is established:

H 1: ESG practices reduce the tax aggressiveness of companies listed in B3's differentiated governance segments.

Given the above, companies with higher ESG scores are expected to pay their fair share of taxes and thus act with less tax aggressiveness (Lanis & Richardson, 2011). In this context, based on the theoretical framework and supported by the studies already carried out, this article deepens the understanding of the relationship between ESG performance and tax aggressiveness. However, it differs from the others because it intends to investigate this relationship in Brazilian companies in differentiated governance segments of B3, using the Refinitiv® ESG Score and ETR and ETR_DVA as aggressiveness metrics.

3. METHODOLOGICAL PROCEDURES

3.1. Selection of the population and sample

The survey population comprised 243 publicly traded companies listed in B3's differentiated corporate governance segments, with data collected over five years (2017 to 2021). Financial companies, which have specific characteristics of tax legislation and other operational peculiarities that make it impossible to compare with other sectors, were excluded (Moraes *et al*., 2021).

Additionally, in order to avoid bias in the estimation of the econometric models used, companies that had a negative net worth were eliminated (Degenhart *et al*., 2022; Melo *et al*., 2020), absence of data necessary for the operationalization of the variables established in the study, and companies that did not present ESG scores in the analyzed period (Degenhart *et al*., 2022).

Thus, a sample of 55 companies remained, composing a balanced panel with 275 observations (Freitas *et al*., 2019; Martinez & Ramalho, 2017). Table 1 presents the composition and selection of the research sample.

Table 1 - Sample composition

Sample	Quantity
Companies - Refinitiv® database	243
Exclusions	
Financial Sector	-22
Businesses with a lack of data	-164
Companies with negative net worth	-2
Final Number of Companies	55
Number of periods in years	5
Number of observations	275

3.2 Definition of dependent and independent variables

According to Hanlon and Heitzman (2010), the metrics for tax aggressiveness found in the literature employ estimates of taxable income or payment of taxes on income, which in Brazil correspond to the Corporate Income Tax (IRPJ) and the Social Contribution on Net Income (CSLL), whose combined legal rate is 34%.

The choice of ETR (*Effective Tax Rate*) as a metric for tax aggressiveness in this study is justified by its wide use in national and international tax studies (López-González *et al.*, 2019; Melo *et al.*, 2020). ETR is calculated by the ratio between the expense with IRPJ and CSLL and accounting profit before these taxes (LAIR) (Pessoa, 2019). Thus, according to the literature, it is interpreted that lower ETR values indicate aggressive tax planning, while higher ETR values indicate less tax aggressiveness (Christensen *et al.*, 2022; Xavier *et al.*, 2022).

However, in the face of a tax system that favors consumption taxes, ETR may not represent a fully adequate metric for tax aggressiveness (Martinez, 2017; Xavier *et al.*, 2022). For this reason, in addition to the ETR, this study also uses as a proxy for tax aggressiveness the ETR_DVA, a strictly national metric obtained by the ratio between the DVA tax burden (federal, state and municipal) and the total added value to be distributed.

The ETR_DVA can be considered a metric capable of establishing tax aggressiveness more comprehensively than the ETR, as it includes all taxes and not only taxes on income (Mamede Junior *et al.*, 2023; Martinez, 2017). It is interpreted that low ETR_DVA rates are associated with greater tax aggressiveness (Martinez & Motta, 2020).

Table 2 presents the dependent variables used as a proxy for tax aggressiveness in this study.

Table 2 - Dependent Variables

Variable	Operationalization	References	Source
ETR	Total expenditure of IRPJ and CSLL it /LAIR it	Hanlon e Heitzman (2010); Mamede Junior *et al.* (2023); Marinho e Machado (2023); Martinez (2017).	Refinitiv®
ETR_DVA	Tax Burden Total it / Valor Total Added it	Freitas *et. al.* (2019); Mamede Junior et al. (2023);	Pacote GetDFPData Perlin, Kirch e Vancin (2018)

In this work, we adopted the ESG rating by Refinitiv®, a private company that publishes ESG performance ratings worldwide. The company's disclosures are at the heart of the ESG scoring methodology, where unique materiality weights of each metric are assigned to each sector, industry, and country benchmark.

Refinitiv®'s ESG scoring methodology ranges from 0 to 100% and corresponds to the average of scores in 10 categories: in the environmental aspect, performance in matters related to resource use, greenhouse gas emissions, and innovation are observed; in the social sphere, the average indicates performance in matters related to the community, human rights, employees and product responsibility; finally, in the aspect of governance, performance in matters related to shareholders, risk management and CSR are observed (Refinitiv, 2022).

This study considered each ESG dimension (environmental, social, and governance) as an independent variable while also observing the aggregate impact of the three ESG dimensions. This allows an individualized assessment of each dimension on companies' tax behavior.

Table 3 describes the metrics used in the study as a proxy for ESG and the relationship that the coefficient of each variable is expected to assume with the model-dependent variable.

Table 3 - Independent Variables

Variable	Description	References	Source	Expected Signal
ESGT	It indicates the average of the company's performance in the three dimensions of ESG: environmental, social, and governance.	Degenhart *et al.* (2022); Honh *et al.* (2021); Melo *et al.* (2020).	Refinitiv®	(+)
ESGA	It indicates the average performance of the company in matters related to the use of resources, emissions and innovation.	Degenhart *et al.* (2022); Honh *et al.* (2021); Melo *et al.* (2020).	Refinitiv®	(+)
ESGS	Indicates the average performance of the company in matters related to employees, community, human rights and product responsibility.	Degenhart *et al.* (2022); Honh *et al.* (2021); Melo *et al.* (2020).	Refinitiv®	(+)
ESGG	It indicates the average performance of the company in matters related to management, shareholders and Corporate Social Responsibility (CSR).	Degenhart *et al.* (2022); Honh *et al.* (2021); Melo *et al.* (2020).	Refinitiv®	(+)

Understanding that other factors can influence companies' tax aggressiveness in addition to ESG scores, this study included control variables selected from other studies on the relationship between ESG and tax aggressiveness.

Several researchers have used company size (TAM) as an appropriate metric for studies related to tax aggressiveness since larger companies have greater scope for tax planning and adoption of accounting practices favorable to the reduction of ETR (Hohn *et al.*, 2021). Additionally, the variables intangible (INTAN), fixed assets (IMOB), and leverage (LEV) have been present in studies on the subject because these variables allow a reduction in the tax burden through the deductibility of interest, depreciation expenses, and amortization of intangibles (Freitas *et al.*, 2019; Melo *et al.*, 2020). Finally, the variable return on assets (ROA) was used to measure the financial performance of companies and its possible relationship with tax aggressiveness (Mamede Junior *et al.*, 2023; Melo *et al.*, 2020).

Table 4 summarizes the control variables, operationalization, source of data collection, some authors who used the variables, and the expected signs based on the results of previous studies.

Table 4 - Control variables used and associations expected in the study

Variable	Operationalization	Description	Source	Expected Signal
Size (TAM)	Natural Logarithm of Total Asset	Freitas et. al. (2019); Hohn *et al.* (2021); Marinho e Machado (2023); Martinez (2017); Melo *et al.* (2020).	Refinitiv®	(-)
Intangibilidade (INTAN)	Intangible Assets / Total Assets	Freitas *et. al.* (2019); Hohn *et al.* (2021); Martinez, (2017); Melo *et al.* (2020).	Refinitiv®	(-)
Immobilization (IMOB)	Fixed Assets/ Total Assets	Freitas et. al. (2019); Hohn *et al.* (2021); Martinez (2017); Melo *et al.* (2020).	Refinitiv®	(-)
Leverage (LEV)	(Current Liabilities + Non-Current Liabilities) / Total Assets	Freitas *et. al.* (2019); Hohn *et al.* (2021); Marinho e Machado (2023); Martinez (2017).	Refinitiv®	(-)
Return on Assets (ROA)	Net Income/Total Assets	Hohn et al. (2021); Mamede Junior *et al.* (2023); Marinho e Machado (2023); Martinez (2017); Melo *et al.* (2020).	Refinitiv®	(+/-)

3.3. Data processing

The variables were analyzed in Excel, and the econometric regressions were generated using the Stata® software, version 14.0. Descriptive statistics, Spearman's correlation, and regression estimation were performed using data in a balanced panel. However, given variables with different levels and to avoid the loss of observations of the sample due to outliers, the data were *winsorized* to the significance level of 5% (Degenhart *et al.*, 2022; Mamede Junior *et al.*, 2023; Mao, 2019). In addition, tests were carried out to verify the model's assumptions regarding data normality, homoscedasticity, and absence of multicollinearity (Fávero & Belfiore, 2022).

First, the *Shapiro-Francia* test was applied to verify whether the models had a normal distribution of the residues. Next, to test the absence of multicollinearity, the Variance Inflation Factor (VIF) test of the explanatory variables was performed at a significance level of 5%; and finally, the Breusch-Pagan test was applied to verify the heteroscedasticity of the data (Fávero & Belfiore, 2022). The result of the tests implied the rejection of null hypotheses (p-values less than 0.05), i.e., the residuals do not follow a normal distribution and present heteroscedasticity problems, which led to a regression estimate with robust standard errors, clustered by the company (Fávero & Belfiore, 2022).

In order to test the relationship between tax aggressiveness, measured by the ETR and ETR_DVA metrics, and ESG scores in a grouped manner and in the individual dimensions, environmental (A), social (S), and governance (G), 8 (eight) different models were estimated, according to the following equations.

$$\mathrm{ETR}_{it} = \beta_0 + \beta_1 \mathrm{ESGT}_{it} + \beta_2 TAM_{it} + \beta_3 \mathrm{INTAN}_{it} + \beta_4 IMOB_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (1)$$

$$\mathrm{ETR}_{it} = \beta_0 + \beta_1 \mathrm{ESGA}_{it} + \beta_2 TAM_{it} + \beta_3 \mathrm{INTAN}_{it} + \beta_4 IMOB_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (2)$$

$$\mathrm{ETR}_{it} = \beta_0 + \beta_1 \mathrm{ESGS}_{it} + \beta_2 TAM_{it} + \beta_3 \mathrm{INTAN}_{it} + \beta_4 IMOB_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (3)$$

$$\mathrm{ETR}_{it} = \beta_0 + \beta_1 \mathrm{ESGG}_{it} + \beta_2 TAM_{it} + \beta_3 \mathrm{INTAN}_{it} + \beta_4 IMOB_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (4)$$

$$\mathrm{ETR\_DVA}_{it} = \beta_0 + \beta_1 \mathrm{ESGT}_{it} + \beta_2 TAM_{it} + \beta_3 \mathrm{INTAN}_{it} + \beta_4 IMOB_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (5)$$

$$\mathrm{ETR\_DVA}_{it} = \beta_0 + \beta_1 \mathrm{ESGA}_{it} + \beta_2 TAM_{it} + \beta_3 \mathrm{INTAN}_{it} + \beta_4 IMOB_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (6)$$

$$\mathrm{ETR\_DVA}_{it} = \beta_0 + \beta_1 \mathrm{ESGS}_{it} + \beta_2 TAM_{it} + \beta_3 \mathrm{INTAN}_{it} + \beta_4 IMOB_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (7)$$

$$\mathrm{ETR\_DVA}_{it} = \beta_0 + \beta_1 \mathrm{ESGG}_{it} + \beta_2 TAM_{it} + \beta_3 \mathrm{INTAN}_{it} + \beta_4 IMOB_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (8)$$

Where:
i: corresponds to the company in the sample – from 1 to 55;
T: corresponds to the year under review – from 2017 to 2021.
β_0: d denotes the intercept of the model;
βn: slope of the nth explanatory variable;
ETR: *Effective Tax Rate*;
ETR_DVA: rate based on the amount of taxes distributed in the DVA;
ESGT: joint ESG dimension Score, considering environmental, social, and governance aspects;
ESGA: environmental dimension of ESG Score;
ESGS: social dimension of ESG Score;
ESGG: ESG corporate governance dimension Score;
SIZE: size;
INTAN: intangibilidade;
IMOB: capital intensity;
LEV: leverage;
ROA: financial performance;
Eit: idiosyncratic error, which varies randomly for all companies and periods.

Following the procedures for determining which panel data model is most suitable for the analyzed sample (*Pooled Ordinary Least Squares*, Fixed or Random Effects), the *Chow, LM, Breusch-Pagan*, and *Hausman tests were performed* (Fávero & Belfiore, 2022).

4. ANALYSIS OF THE RESULTS

Table 5 presents the descriptive statistics of the sample.

Table 5 - Descriptive Statistics

Variable	Number of observations	Average	Median	Standard deviation	Minimal	Maximum
ETR	275	0,2210268	0,2198280	0,2404908	-0,2318093	0,9191524
ETR_DVA	275	0,2774047	0,2529694	0,1762670	0,0061982	0,6690070
ESGT	275	55,8093400	59,6042600	19,0812400	16,5118200	84,2885300
ESGA	275	52,5003600	57,9139800	25,9485800	1,3089800	88,7695300
ESGS	275	57,6768700	60,2247500	21,7609500	12,4182400	90,1034700
ESGG	275	57,1410000	61,1668300	20,0114200	17,5146300	87,5121500
TAM	275	23,8160400	23,8415200	1,0230010	22,0450200	25,9104600
INTAM	275	0,0930701	0,0532720	0,1173707	0,0016364	0,4812203
IMOB	275	0,2310365	0,1829229	0,2024870	0,0027098	0,6536577
LEV	275	0,6333717	0,6551303	0,1641906	0,3169923	0,9150233
ROA	275	0,0476544	0,0455392	0,0481023	-0,0425219	0,1528230

It is observed that the average ETR is 22.10%, a percentage below the tax burden of 34% of Corporate Income Tax (IRPJ) and Social Contribution on Net Income (CSLL), which is an indication of the presence of tax aggressiveness in the companies in the sample. (Xavier *et al.*, 2022).

The latest study on the Brazilian tax burden released by the Federal Revenue Service of Brazil (RFB, 2021) shows that Brazil's total tax burden corresponds to about 32.95% of the Gross Domestic Product (GDP). Thus, the average of the ETR_DVA (27.74%), corresponding to a value below the Brazilian tax burden, may indicate tax planning of companies in all taxes since the metric ETR_DVA includes, in addition to taxes on profit, taxes on revenue, which represent the most significant slice of the national tax burden (Mamede Junior *et al.*, 2023).

Regarding ESG scores, it is observed that the social dimension has the highest average (57.67%), indicating that social inclusion actions, diversity incentive policies, and practices to promote equity are probably among the leading business actions of Brazilian companies in alignment with ESG guidelines (Pacto Global Rede Brasil & Stilingue, 2021).

When observing the breadth of the ESG variables in their dimensions, it is possible to notice that although the companies in the sample are engaging in ESG-related activities, the minimum scores in the environmental (ESGA = 1.30), social (ESG = 12.41) and governance (ESGG = 17.51) dimensions, indicate that companies have an opportunity and possibility to explore further their involvement with ESG issues (Pacto Global & Stilingue, 2021).

Tables 6 and 7 present the estimates for the eight models used in this study. In all models, the dependent variables represent the level of tax aggressiveness, measured through ETR and ETR_DVA, of Brazilian companies in B3's differentiated corporate governance segments.

Table 6 - Results of regressions considering different ESG dimensions with ETR

Independent variables	Model 1 ESGT	Model 2 ESGA	Model 3 ESGS	Model 4 ESGG
ESG	0,0019628** (0,0009912)	0,0022592*** (0,000744)	0,001459* (0,0008458)	-0,0006754 (0,0008752)
TAM	0,0143067 (0,0187581)	0,0045846 (0,0186615)	0,0181202 (0,0185196)	0,0316767* (0,0186654)
INTAM	0,3429012** (0,1503384)	0,3400643** (0,1449216)	0,333478** (0,1564674)	0,3284565* (0,183113)
IMOB	-0,1310204 (0,081874)	-0,1324012 (0,084753)	-0,1233601 (0,0798007)	-0,0901748 (0,0830499)

Independent variables	**Model 1 ESGT**	**Model 2 ESGA**	**Model 3 ESGS**	**Model 4 ESGG**
LEV	0,242564 (0,1255441)	0,0043801 (0,1281775)	0,0264925 (0,124127)	0,0629618 (0,1213759)
ROA	-0,747905* (0,4085342)	-0,8306166** (0,4007814)	-0,7429357* (0,4098239)	-0,6803021* (0,4105533)
Constant	-0,2106103 (0,3899307)	-0,0289804 (0,397249)	-0,2785854 (0,3910226)	-0,5119861 (0,3967869)
Number of observations	275	275	275	275
Number of groups	55	55	55	55
VIF Test	1,38	1,39	1,36	1,30
Chow Test	p>F=0,0007	p>F=0,0011	p>F=0,0010	p>F=0,0007
Breusch-Pagan Test	p>chibar2=0,0010	p>chibar2=0,0017	p>chibar2=0,0014	p>chibar2=0,0009
Hausman Test	p>chi2=0,4749	p>chi2=0,4290	p>chi2=0,4704	p>chi2=0,4208

Note: The values for the coefficients are presented, and below, in parentheses, are the standard errors. Statistical significance is indicated by *10%, **5%, ***1%.

The results reveal that the Total ESG Score (ESGT) has a positive and significant influence on ETR at the level of 5%, indicating that the higher the ESG score, the higher the ETR, i.e., the lower the tax aggressiveness of companies. This result converges with other studies suggesting that companies with better ESG performance tend to be less aggressive in their tax planning (Du & Li, 2023; Honh *et al*., 2021; Melo *et al*., 2020). On the other hand, Pessoa (2019) examined the relationship between the three dimensions of ESG and ETR and found no significant influence of ESG on tax aggressiveness.

Corroborating the result that indicated a positive relationship between the environmental (ESGA) and social (ESGS) dimensions of ESG with REE, López-González *et al*. (2019) researched the effect of sustainable ESG practices on tax aggressiveness, covering an international sample of 6,442 observations from 2006 to 2014 and concluded that companies with higher ESG performance in the environmental and social aspects have lower tax-saving practices. However, this relationship is lower in family businesses.

A study by Laguir *et al*. (2015) examined the influence of ESG scores in their different dimensions (environmental, social, and governance) on the tax aggressiveness measured by ETR. They found a significant and positive relationship only with the social dimension of ESG, concluding that a company's tax aggressiveness depends on the nature of the ESG activities it develops.

Table 7 - Results of regressions considering different ESG dimensions with ETR-DVA

Independent Variables	**Model 5 ESGT**	**Model 6 ESGA**	**Model 7 ESGS**	**Model 8 ESGG**
ESG	-0,0002647	0,0010457**	-0,0003795	-0,0009369
	(0,0007251)	(0,0004161)	(0,0004494)	(0,0006352)
TAM	0,0194015	0,011485	0,0202079	0,0332706**
	(0,0213823)	(0,0158963)	(0,0212772)	(0,0163473)
INTAM	0,3085112	0,3819869***	0,3134563	0,3364461***
	(0,1961709)	(0,1380405)	(0,2009445)	(0,1291579)
IMOB	0,1169487	-0,0010732	0,1181665	0,0033269
	(0,1049562)	(0,0689896)	(0,1035462)	(0,0673139)

Independent Variables	Model 5 ESGT	Model 6 ESGA	Model 7 ESGS	Model 8 ESGG
LEV	-0,273481**	-0,186222*	-0,2676728**	-0,1785617*
	(0,1257638)	(0,1095047)	(0,1245152)	(0,1045664)
ROA	-0,1735515	-0,1657305	-0,1790591	-0,1371335
	(0,1170096)	(0,1112263)	(0,1172572)	(0,1071102)
Constant	-0,0441353	0,395174	-0,0603852	-0,3738811
	(0,4579292)	(0,346225)	(0,4637684)	(0,3405937)
Number of Observations	275	275	275	275
Number of Groups	55	55	55	55
VIF Test	1,38	1,39	1,36	1,3
Chow Test	p>F=0,0000	p>F=0,0000	p>F=0,0000	p>F=0,0000
Breusch-Pagan Test	p>chibar2=0,0000	p>chibar2=0,0000	p>chibar2=0,0000	p>chibar2=0,0000
Hausman Test	p>chi2=0,0114	p>chi2=0,0753	p>chi2=0,0048	p>chi2=0,0732

Note: The values for the coefficients are presented, and below, in parentheses, are the standard errors. Statistical significance is indicated by *10%, **5%, ***1%.

The environmental dimension (ESGA) of ESG demonstrates the companies' performance in managing greenhouse gas emissions, environmental degradation, and product innovation. This dimension is concerned with maintaining a vision of integrity before all stakeholders (Melo *et al.*, 2020). The results demonstrate a positive relationship between the environmental dimension (ESGA) and ETR_DVA, suggesting that more significant involvement in environmental protection actions would imply less tax aggressiveness (López-González *et al.*, 2019).

A survey conducted by the Pacto Global Rede Brasil e Stilingue (2021) showed that discussions on the ESG topic in Brazil grew more than sevenfold in 2020 and revealed that among public opinion, the primary desires are for actions that solve environmental issues, for example, about the situation in the Amazon rainforest. In this context, the results of this research demonstrate that companies with good performance in issues involving the environment, such as support for measures to preserve the Amazon rainforest, control of water and air pollution, soil damage, and good resource management, tend not to avoid paying taxes (Sari & Tjen, 2017).

On the other hand, Pessoa (2019) analyzed the effects of CSR dimensions, with scores assigned by CSRHub®, on the effective rate based on the value added of the DVA of 83 companies listed on B3, finding a negative relationship in the environmental dimension, which implies that the higher the environmental score, the greater the tax aggressiveness of companies. The disagreement with the results can be justified by the composition of the sample analyzed and the ESG scores used, which, in the case of this survey, were assigned by Refinitiv®.

Huseynov and Klamm (2012) argue that heterogeneous results may indicate that the relationship is affected by other variables and that the impact of one ESG variable may differ depending on the strengths and concerns of another ESG variable (Kovermann & Velte, 2021). Huseynov and Klamm (2012) suggest that the quality of corporate governance (including compensation, leadership, and transparency) can affect the relationship between ESG performance in each dimension and tax avoidance.

It is important to note that the relationship between the corporate governance dimension of ESG (ESGG) and tax aggressiveness (ETR and ETR_DVA) was not significant. From this result, it is inferred that the companies in the sample, because they have an implemented corporate governance structure that accredits them to compose the differentiated listing segment of B3, have the potential to balance tax aggressiveness and profitability in a way that the risks do not outweigh the benefits (Proner *et al.*, 2021). This result is similar to that of Potin *et al.* (2016), who did not find significant relationships between corporate governance and tax aggressiveness.

As evidenced in Table 8, the results demonstrate that the different dimensions of ESG have different effects on tax aggressiveness (Laguir *et al.*, 2015).

Table 8 - Summary ESG impact and its dimensions on tax aggressiveness

ESG Dimension	ETR	ETR_DVA
ESGT	Positive influence	Absence of influence
ESGA	Positive influence	Positive influence
ESG	Positive influence	Absence of influence
ESGG	Absence of influence	Absence of influence

The result of the regressions does not allow us to reject the hypothesis of this study that ESG practices reduce the tax aggressiveness of companies listed in the differentiated governance segments of B3, considering that there was a positive influence of total ESG (ESGT), environmental (ESGA) and social (ESGS) on the ETR metric. As for ETR_DVA, only the environmental dimension (ESGA) showed a significant relationship, and it is not possible to determine the influence of the other ESG dimensions on the tax aggressiveness measured by the ETR-DVA.

Other variables were included in the empirical analysis of this study, considering that factors other than ESG performance can influence aggressive tax planning (Moraes *et al*., 2021). However, size (TAM) was significant only with the governance dimension (ESGG), similar to the study by Gomes (2012) that did not find significance in the size variable, although it was contrary to what was expected and recommended in the studies carried out by Honh *et al*. (2021) and Melo *et al*. (2020).

Fixed assets (IMOB) were not significant in any of the eight models for the analyzed sample, corroborating Martinez and Ramalho (2017). However, the intangible variable (INTAN) showed a positive and significant relationship with REE, consistent with Melo *et al*. (2020). The results of the two variables diverge from what was recommended by Hohn *et al*. (2021) and Laguir *et al*. (2015), that companies with higher fixed and intangible values have a lower basis for calculating taxable income and consequently greater tax aggressiveness.

Financial leverage (LEV) was negatively related to ETR_DVA in line with expectations since the increase in indebtedness (deductible interest) is associated with lower tax rates (Melo *et al*., 2020; Zeng, 2019) and in agreement with the findings of Pessoa (2019), who used the Brazilian metric based on DVA.

The financial performance indicator (ROA) showed a negative relationship with ETR, suggesting that companies with higher profitability are more involved in aggressive tax planning (Mamede Junior *et al*., 2023; Zeng, 2019). This result is consistent with the findings of Laguir *et al*. (2015) and Marinho and Machado (2023) since the rates are progressive according to income. On the other hand, it is divergent from what Melo *et al*. (2020) found.

In summary, it was evidenced that companies with higher levels of corporate governance, as they are part of the differentiated listing segments of B3, which have higher ESG performance in all dimensions, generally have effective tax management, evidencing greater transparency about tax collection and practices, while minimizing risks, for example, related to theses or other controversial tax issues.

In addition, this research showed that companies with higher performance in environmental preservation practices have less tax aggressiveness since the environmental dimension exerted a significant influence at the level of 1% on ETR and 5% on ETR_DVA. On the other hand, it may indicate that companies with activities that exert more significant impacts on the environment, and therefore, that engage in activities to reduce the effects caused, may also have an aggravated tax burden, with effective rates and higher tax burdens. Regarding ESG performance in the social sphere, the findings indicate that the social performance of corporations has a negative impact on tax aggressiveness. The existing literature can explain this since taxes make up a portion of the income that governments use to promote the social well-being of the population.

Regarding the non-significant results observed in the corporate governance dimension with ETR and ETR_DVA, it is possible to infer that a more robust governance structure signals a reduction in the deviation of managerial conduct, which mitigates the probability of aggressive tax practices.

5. FINAL CONSIDERATIONS

Companies have been encouraged to be fully involved in environmental, social, and governance (ESG) issues, both by investors and other stakeholders, which tends to produce higher standards of ethical behavior and compliance with the regulations required of companies, including compliance with tax regulations (Christensen *et al*., 2022; Ferrell *et al*., 2016).

The objective of the present study was to investigate the relationship between ESG sustainable performance indicators and tax aggressiveness of Brazilian companies that make up B3's differentiated listing segments. To carry out the study, ETR and ETR_DVA rates were used as *proxies* of tax aggressiveness, and for ESG, Refinitiv® scores were used and applied to a sample of 55 companies.

The results of the regression analyses between ESG and the tax aggressiveness metrics contributed to the non-rejection of the hypothesis of this research, that ESG practices reduce the tax aggressiveness of companies listed in the differentiated governance segments of B3, since the results found indicated a negative influence of the total ESG (ESGT) and environmental (ESGA) and social (ESGS) dimensions on tax aggressiveness, measured by the ETR. However, as for the ETR_DVA, no significant influence could be inferred, except from the environmental dimension (ESGA).

It is noteworthy that considering the total ESG (ESGT) scores, the results pointed to a positive relationship with ETR, which indicates a negative relationship with tax aggressiveness, considering that the higher the ETR rate, the lower the tax aggressiveness. This result is in line with what is expected according to general ESG conventions: Companies with good ESG performance tend to comply with their tax responsibilities by acting with less tax aggressiveness (Lanis & Richardson, 2011).

Another highlight was the positive relationship found between the environmental dimension (ESGA) and the ETR_DVA metric, suggesting that companies with higher scores on environmental issues, such as support for measures to reduce negative impacts on the Amazon rainforest, good performance in resource management, and product innovations, are less fiscally aggressive (Sari & Tjen, 2017).

In contrast to the literature on the research subject, no significant relationship was established between the variables fixed assets (IMOB) and size (TAM) except in the governance dimension and the metrics for aggressiveness used. However, the variable return on assets (ROA) was negatively associated with ETR. In contrast, the intangible variable (INTAN) showed a positive relationship with both ETR and ETR_DVA in the environmental (ESGA) and governance (ESGG) dimensions. On the other hand, leverage (LEV) showed a negative relationship only with ETR-DVA. It should be noted that results different from those expected may occur due to the composition of the sample and the measurement of the variables used (Davis *et al.*, 2016).

Although a positive relationship is expected between the ESG dimensions individually, there was no significant influence of the governance dimension on tax aggressiveness, which can be attributed to the fact that companies that invest in governance structures seek to balance tax savings and maximizing shareholder value (Proner *et al.*, 2021).

This study contributes to the literature by presenting how sustainable ESG performance impacts the tax aggressiveness of companies in the listing segments that have differentiated corporate governance rules (Novo Mercado and Level 1 and Level 2), pointing out that companies with higher levels of governance and high ESG performance have less tax aggressiveness when this relationship is observed through their effective rates of taxes on profit (ETR). These findings can contribute in a practical way to managers, investors, and financial analysts, directing their attention to companies that adhere to high standards of ethical conduct associated with the adoption of ESG practices and managing their taxes in a responsible and balanced way.

The descriptive statistics of the ESG performance of the companies in the sample demonstrate that there is still ample opportunity for companies to improve their ESG agenda with actions related to the environment, social, and governance. In this sense, the results of this research can help regulatory entities by addressing issues that impact the taxes collected, signaling the need for incentives through government programs and policies that support ESG sustainability practices.

As limitations of the study, the limited number of companies that disclose ESG scores and possible deficiencies in the metrics used are pointed out. For future studies, it is suggested the use of other metrics for tax aggressiveness, such as Cash_ETR (*Effective Tax Rate* by cash flow), which uses in its numerator the taxes on the result actually paid, preventing its value from being altered by the values of deferred taxes and making a direct relationship with the effect of taxes on the cash flow of companies (Hanlon & Heitzman, 2010).

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DETERMINANTS OF CORPORATE TAX LITIGATION IN BRAZILIAN COMPANIES: A MULTIFACTORIAL ANALYSIS

DETERMINANTES DA LITIGIOSIDADE TRIBUTÁRIA CORPORATIVA EM EMPRESAS BRASILEIRAS: UMA ANÁLISE MULTIFATORIAL

The article is original and has not been presented at any previous event.

Abstract
This study identifies and analyzes the main determinants of tax litigation in Brazilian publicly traded companies, focusing on internal factors such as indebtedness, size, growth, profitability, liquidity, and business risk. The sample consisted of 233 non-financial companies listed on the B3 (Brazilian stock exchange), examined from 2017 to 2022. Tax litigation was measured as the sum of tax provisions and tax contingent liabilities divided by total assets. Fixed effects regression results indicate that indebtedness is positively associated with tax litigation, supporting the hypothesis that more indebted companies tend to face more tax disputes. Conversely, firm size showed a significant negative relationship with tax litigation, suggesting that larger firms have more robust governance systems that mitigate tax conflicts. Additionally, companies experiencing growth and with higher liquidity demonstrated lower propensity for tax litigation. These findings offer practical implications for managers in formulating strategies for fiscal risk management and capital structure, as well as contributing to the debate on policies aimed at simplifying the tax system and reducing conflicts between taxpayers and the tax authorities.

Keywords: Tax litigation; determinants of tax litigation; corporate governance; corporate indebtedness; Brazilian companies.

RESUMO
Este estudo tem como objetivo identificar e analisar os principais determinantes da litigiosidade tributária em empresas brasileiras de capital aberto, focalizando fatores internos como endividamento, tamanho, crescimento, rentabilidade, liquidez e risco do negócio. A amostra compreende 233 empresas não financeiras listadas na B3, examinadas no período de 2017 a 2022. A litigiosidade tributária foi mensurada pela soma das provisões fiscais e dos passivos contingentes fiscais, dividido pelo ativo total. Os resultados das regressões com efeitos fixos indicam que o endividamento está positivamente associado à litigiosidade tributária, corroborando a hipótese de que empresas mais endividadas tendem a enfrentar mais litígios fiscais. Por outro lado, o tamanho da empresa apresentou relação negativa significativa com a litigiosidade, sugerindo que empresas maiores possuem sistemas de governança mais robustos que mitigam conflitos fiscais. Adicionalmente, empresas em crescimento e com maior liquidez demonstraram menor propensão a litígios tributários. Esses achados oferecem implicações práticas para gestores na elaboração de estratégias de gestão de riscos fiscais e estrutura de capital, além de contribuirem para o debate sobre políticas voltadas à simplificação do sistema tributário e à redução de conflitos entre contribuintes e o Fisco.

Palavras-chave: Litigiosidade tributária; determinantes da litigiosidade; governança corporativa; endividamento empresarial; empresas brasileiras.

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1. INTRODUCTION

Tax litigation, both legal and administrative, is a highly relevant topic in Brazil. The complex Brazilian tax system, characterized by extensive and detailed legislation, significantly impacts corporate actions, influencing the firms' competitiveness and development (Santi, 2021; Torres, 2012). As a result, many companies pursue tax planning strategies, balancing potential tax savings against the risk of penalties arising from divergent interpretations of tax legislation (Martinez, 2017; Hanlon & Heitzman, 2010).

Alarming data highlight the scale of this issue: litigation across the three levels of the Brazilian government accounts for approximately 75% of GDP, totaling BRL 5.44 trillion (Insper, 2019). At the federal level, this figure reaches 15.9% of GDP, far exceeding the average for OECD countries and Latin America (World Bank, 2020). This high level of litigation creates uncertainty and risks for companies, requiring an in-depth understanding of its determinants and impacts on corporate financial health (Barreto, 2020; Coelho, 2020).

The current literature identifies a gap in studying the factors influencing tax litigation in Brazil. While recent research focuses on tax aggressiveness and its effects on companies' capital structures (Dyreng, Hanlon, & Maydew, 2019; Hanlon & Heitzman, 2010; Martinez, 2017), there is a shortage of studies directly investigating the determinants of corporate tax litigation in the Brazilian context. Understanding these factors is crucial for firms to develop effective tax and risk management strategies, and it also contributes to public policy formulation aimed at simplifying and enhancing the transparency of the tax system (Mickiewicz, Rebmann, & Sauka, 2019; Soeiro & Wanderley, 2019).

This study aims to identify and analyze the main determinants of tax litigation in publicly traded Brazilian companies, focusing on internal factors such as debt, size, growth, profitability, liquidity, and business risk. The objective is to understand how these elements influence companies' propensity to engage in tax litigation, taking into account the regulatory environment and prevailing market practices.

The significance of this research lies in addressing the gap in the literature concerning the factors driving Brazilian companies to engage in tax disputes. Moreover, by shedding light on organizations' tax challenges, this study offers valuable insights for managers, investors, researchers, and public policymakers. With a better understanding of the determinants of tax litigation, companies can enhance their governance and risk management practices, while regulators can implement initiatives to reduce conflicts and foster a more stable and attractive business environment (Barreto, 2020; Santi, 2021).

This paper analyzes a sample of non-financial companies listed on the Brazilian Stock Exchange B3 (Brasil, Bolsa, Balcão), from 2017 to 2022. A quantitative approach is employed, using econometric models to examine the relationship between tax litigation and the selected variables. Litigation metrics are constructed from a combination of accounting provisions and tax contingencies, identified in the companies' balance sheets and explanatory notes, weighted by total assets.

The results of this research are expected to contribute to the literature by identifying the internal factors associated with higher levels of tax litigation. Consequently, managers can adopt preventive measures and more effective tax management strategies, while public policymakers can focus efforts on areas requiring greater attention, promoting tax system simplification and reducing tax conflicts (Insper, 2019; World Bank, 2020).

The paper is structured as follows: Section 2 presents the theoretical framework, discussing the concepts of tax litigation, its implications, and previous studies on its determinants. Section 3 outlines the methodology, detailing the sample, variables, and econometric models applied. Section 4 analyzes the results, comparing them with existing literature. Finally, Section 5 provides the conclusions, practical implications, and suggestions for future research.

2. THEORETICAL FRAMEWORK

2.1 Tax Litigation in Brazil

The complexity of the Brazilian tax system is widely recognized as a major obstacle to corporate competitiveness and business development (Barreto, 2020; Coelho, 2020). According to the World Bank's "Doing Business 2020" report, which evaluates the business environment in 190 economies, Brazil ranked 124th globally, highlighting structural challenges for business activities (World Bank, 2020). One critical aspect noted is the time spent by companies on tax compliance: in Brazil, the average is 1,501 hours per year, compared to 317 hours in Latin America and the Caribbean, and 159 hours in high-income OECD countries (World Bank, 2020).

This situation arises from the complex structure of the Brazilian tax system, characterized by extensive and intricate legislation and numerous ancillary obligations (Barreto, 2020). The complexity creates room for different legal interpretations, often leading to legal and administrative disputes between taxpayers and tax authorities (Coelho, 2020). These disagreements frequently result in tax assessments, fines, and penalties, imposing financial burdens on companies and consuming significant human resources in efforts to resolve these conflicts (Santi, 2021; Torres, 2012).

Therefore, tax litigation constitutes risk and uncertainty for the Brazilian business sector. Beyond the direct costs of tax disputes, companies face insecurity about future outcomes and the financial impacts involved (Santi, 2021). This uncertainty can influence strategic decisions, investment plans, and stakeholder relationships, ultimately affecting business performance and long-term sustainability (Torres, 2012).

Understanding the impact of tax litigation on companies and the broader economy is crucial for developing solutions to reduce conflicts and foster a more stable and attractive business environment for both domestic and international investors (World Bank, 2020). Identifying the factors that lead companies into tax litigation can inform public policy aimed at simplifying the tax system and enhancing the business environment (Insper, 2019).

2.2 Tax litigation and its accounting

This study defines tax litigation, from an accounting perspective, as the sum of tax provisions and contingent tax liabilities recognized by companies. According to Technical Pronouncement CPC 32 (2009), tax provisions and contingent liabilities arise from ongoing disputes with tax authorities or legislative changes announced after the financial reporting period.

Technical Pronouncement CPC 25 (2006) outlines the criteria for recognizing and measuring provisions and contingent liabilities. A provision is defined as a liability of uncertain timing or amount and is recognized when three conditions are met: (i) the existence of a present obligation resulting from a past event; (ii) the likelihood of an outflow of resources to settle the obligation; and (iii) the ability to reliably estimate the obligation's value (CPC 25, 2006).

On the other hand, contingent liability refers to a potential obligation arising from past events, which will only be confirmed by the occurrence or non-occurrence of one or more uncertain future events beyond the entity's control (CPC 25, 2006). Unlike provisions, contingent liabilities are not recognized in the balance sheet but are disclosed in the explanatory notes, providing information on the nature, estimated value, and probability of future disbursement (CPC 25, 2006).

The accurate classification and disclosure of tax disputes are crucial for financial statement transparency and for the proper risk assessment by investors and other stakeholders (Hanlon & Heitzman, 2010). Additionally, these disclosures reflect the companies' tax management and corporate governance policies (Dunbar et al., 2010).

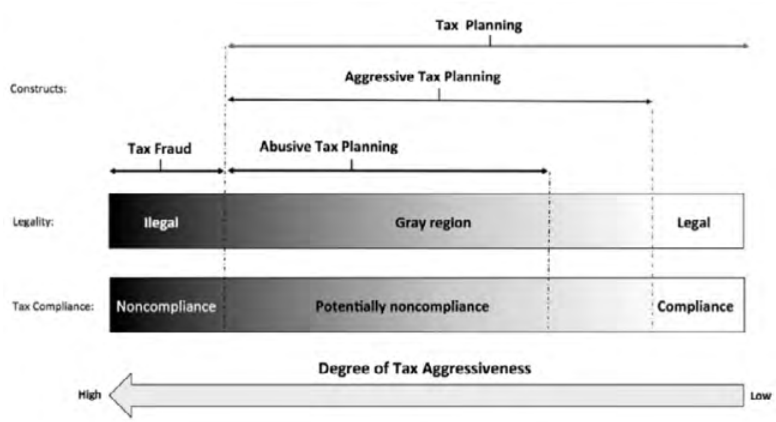
2.3 Tax Planning and Tax Aggressiveness

Tax disputes are intrinsically linked to companies' tax planning practices, especially when they involve aggressive strategies. Tax planning encompasses all strategies used by companies to minimize their tax burden, which may include legal (tax avoidance) or illegal (tax evasion) practices (Hanlon & Heitzman, 2010).

However, the literature on tax accounting lacks a standardized definition for concepts like "tax avoidance" or "tax aggressiveness" (Dyreng, Hanlon, & Maydew, 2019; Hanlon & Heitzman, 2010). This ambiguity extends to administrative regulations, blurring the lines between acceptable and unacceptable practices in the eyes of tax authorities (Martinez, 2017; Schoueri & Galendi Júnior, 2017).

Martinez (2017), adapting Lietz's (2013) framework, proposes a classification of tax planning practices along a continuum, ranging from fully lawful strategies to illicit tax evasion practices. Figure 1 illustrates this classification:

Figure 1: Scale of Tax Planning and Tax Aggressiveness



Source: Adapted from Martinez (2017).

Figure 1 shows that:

- Tax Avoidance: Refers to the legitimate use of loopholes or opportunities in legislation to reduce the tax burden without breaking the law.
- Aggressive Tax Planning: Consists of strategies that are not explicitly illegal but are deemed contrary to the spirit of the legislation and may be contested by tax authorities.
- Tax Evasion: Illegal practices that directly violate the legislation, such as the omission of income or the false declaration of expenses.

Legal and administrative disputes, leading to provisions and contingent tax liabilities, may stem from both legal and illegal practices. In cases of aggressive tax planning, companies may face disputes over the interpretation of tax rules, the application of tax rates, or the recognition of certain tax benefits (Martinez, 2017). Adopting such practices increases a company's exposure to tax risks and the likelihood of incurring penalties (Dyreng, Hanlon, & Maydew, 2019).

2.4 Determinants of Tax Litigation

Identifying the factors influencing companies' propensity to engage in tax litigation is crucial for understanding corporate behavior regarding tax risk. International studies have examined several determinants, including financial, operational, and governance characteristics (Hanlon & Heitzman, 2010; Dyreng, Hanlon, & Maydew, 2019).

Indebtedness: Companies with high debt levels may face pressure to reduce costs, including their tax burden, which can increase the likelihood of adopting aggressive tax strategies that lead to litigation (Martinez, 2017). Therefore, a positive relationship between debt and tax litigation is expected.

Hypothesis 1 (H1): *Company debt is positively related to tax litigation.*

Company Size: Larger companies tend to have more robust corporate governance systems and resources to invest in tax compliance, thus avoiding risky practices that lead to litigation (Hanlon & Heitzman, 2010). On the other hand, large companies may also have more incentives and resources to explore complex tax strategies. However, the expectation of a negative relationship prevails in the literature.

Hypothesis 2 (H2): *Company size is negatively related to tax litigation.*

Firm Growth: Fast-growing firms may prioritize maintaining a positive reputation and attracting investment, avoiding tax conflicts that could compromise their image (Mickiewicz, Rebmann, & Sauka, 2019). Thus, growth may be associated with lower litigation.

Hypothesis 3 (H3): *Firm growth is negatively related to tax litigation.*

Profitability: The relationship between profitability and tax litigation is ambiguous. Profitable firms may choose conservative tax strategies to preserve their reputation and avoid risks. Alternatively, they may seek to maximize profits through aggressive tax practices.

Hypothesis 4 (H4): *Firm profitability influences tax litigation, which may be positive or negative.*

Liquidity: Firms with greater liquidity have the resources to meet their tax obligations, reducing the need to engage in tax disputes (Dunbar et al., 2010). Thus, a negative relationship between liquidity and litigation is expected.

Hypothesis 5 (H5): *Firm liquidity is negatively related to tax litigation.*

Business Risk: Firms operating in higher-risk sectors may face greater volatility in earnings and cash flows, encouraging the adoption of aggressive tax practices to offset uncertainties (Hanlon & Heitzman, 2010). This may lead to greater litigation.

Hypothesis 6 (H6): *Business risk is positively related to tax litigation.*

The hypotheses formulated direct the research to identify how Brazilian firms' financial and operational characteristics influence their propensity to engage in tax litigation.

2.5 Institutional Theories and Organizational Legitimacy

The institutional perspective provides a theoretical framework for understanding how companies respond to pressures from the regulatory and social environment (Soeiro & Wanderley, 2019). According to this approach, organizations seek to legitimize their actions to stakeholders by conforming to institutional norms and expectations. In the tax context, compliance or the adoption of aggressive tax practices can be influenced by factors such as organizational culture, market pressures, and perceptions of the efficiency of tax institutions (Mickiewicz, Rebmann, & Sauka, 2019).

Organizational legitimacy reflects society's acceptance of a company's practices and is crucial for business sustainability (Soeiro & Wanderley, 2019). Companies involved in tax litigation may face challenges to their legitimacy, affecting their reputation and relationships with investors, customers, and regulatory bodies.

The next section outlines the study's methodology, describing the sample, variables, and econometric models used to test the proposed hypotheses.

3. METHODOLOGY

3.1 Sample, data collection, and description of variables

This study adopts a quantitative approach to investigate the determinants of tax litigation in publicly traded Brazilian companies. The sample consists of 233 companies from 27 non-financial sectors listed on B3 (Brasil, Bolsa, Balcão) as of March 31, 2023. These companies were selected due to their representativeness in the national economic context and the public availability of their financial and accounting information, ensuring transparency and replicability of the research.

Financial institutions were excluded due to their unique regulatory and operational characteristics, which could introduce biases in the results and hinder comparisons with companies from other sectors (Hanlon & Heitzman, 2010; Martinez, 2017). Additionally, financial companies have specific balance sheet structures and accounting standards that are not directly comparable to those of non-financial companies.

Companies that did not provide complete data for the analyzed period (2017 to 2022) or did not specify the nature of provisions and contingent tax liabilities in their explanatory notes and reference forms were also excluded. This filtering ensured data consistency and quality.

Table 1 - Sample selection

Selection Criteria	Companies	Total observations
Companies listed on B3	386	2.316
Financial companies	-34	-204
Companies without information on tax contingencies or without specifying the nature of provisions and contingent liabilities	-56	-336
Absence of other data in the period under analysis	-63	-378
Final observations	233	1.398

Source: Research data, 2023.

The period from 2017 to 2022 was chosen to ensure the timeliness of the information and the availability of the necessary financial data. It is acknowledged that part of this period was affected by the COVID-19 pandemic, which may have influenced the financial results of the companies and, potentially, their levels of tax litigation. Although this impact can be considered a limitation of the study, the data analysis is expected to provide relevant insights into the recent dynamics of tax litigation in Brazil.

The financial data were collected from the accounting statements available in the Comdinheiro® database. Information regarding provisions and contingent tax liabilities was manually extracted from the explanatory notes of the companies' financial statements, ensuring accuracy and reliability in constructing the dependent variable. Data processing and analysis were performed using Stata® statistical software.

To minimize the influence of extreme values (outliers) and ensure the robustness of the analyses, the winsorization technique was applied to the continuous variables at the 1% level at each end of the distribution, as established in the financial literature (Hanlon & Heitzman, 2010; Wooldridge, 2010).

3.2 Econometric model and variables

To test the proposed hypotheses and identify the determinants of tax litigation, the following econometric model was estimated:

$$\begin{aligned} Tax\ litigation_{i,t} &= \beta_0 + \beta_1 Indebtedness_{i,t} + \beta_2 Size_{i,t} + \beta_3 Profitability_{i,t} \\ &+ \beta_4 Growth_{i,t} + \beta_5 Liquidity_{i,t} + \beta_6 Asset\ Structure_{i,t} + \beta_7 Risk \\ &+ \varepsilon_{i,t} \end{aligned} \quad (1)$$

Where:
Tax Litigation $_{i,t}$: Level of tax litigation of company *i* in year *t*.
β_0: Model's intercept.
β_1 to β_7: Coefficients of the independent variables.
$\varepsilon_{i,t}$: Random error term.

Dependent Variable

Tax litigation is the dependent Variable. It is operationalized as the sum of tax provisions and contingent tax liabilities divided by the company's total assets. This measure allows us to assess the company's relative exposure to tax litigation concerning its size, following established accounting practices (CPC 25, 2006; CPC 32, 2009; Martinez, 2017).

Table 2 - Dependent Variables

Dependent Variable	Specification
Tax Litigation	$\frac{(Tax\ Provision_{\ t} + Contingent\ tax\ liabilities_{\ t})}{Total\ Assets_{\ t}}$
Tax Litigation – Tax Provision	$\frac{(Tax\ provision_{\ t})}{Total\ Assets_{\ t}}$
Tax Litigation – Contingent Tax Liabilities	$\frac{(Contingent\ tax\ liabilities)}{Total\ Assets_{\ t}}$

Table 3 - Independent Variables

Independent variables	**Expected relationship**	**Specification**
Size	+	$\ln TotalAssets_t$
Asset structure or tangibility	-	$\frac{(Fixed\ Assets_{\ t} + Stock_{\ t})}{Total\ \ Assets_t}$
Growth	-	$\frac{\left(Net\ op.income._t - Net\ op\ income._{t-1}\right)}{Net\ op\ income._{t-1}}$
Profitability	-	$\frac{Net\ Income_t}{Total\ Assets_{t-1}}$

Independent variables	Expected relationship	Specification
Risk	-	$\frac{\sigma\ of\ 5\ year\ EBIT}{Total\ Assets_t}$
Current liquidity	-	$\frac{Current\ Assets_t}{Current\ Liabilities_t}$

Source: Elaborated by the authors

- Indebtedness: Represents the company's financial leverage. More indebted companies may adopt aggressive tax strategies to reduce costs, which can increase the likelihood of litigation (Martinez, 2017).
- Size: Measured by the natural logarithm of total assets. Larger companies typically have more robust governance structures, potentially reducing their propensity for litigation (Hanlon & Heitzman, 2010)
- Profitability: Defined as the ratio of net income to total assets from the previous period. The relationship with litigation may be ambiguous, as discussed in the hypotheses (Mickiewicz et al., 2019).
- Growth: Reflects the percentage change in net operating revenue. Growing companies may avoid litigation to protect their reputation (Mickiewicz et al., 2019
- Current Liquidity: Measures the company's ability to pay short-term obligations. Greater liquidity may reduce the need for involvement in tax litigation (Dunbar et al., 2010).
- Asset Structure: A control variable representing the tangibility of assets, which influences financing and risk decisions.
- Companies with higher risk may be more inclined to adopt aggressive tax practices (Hanlon & Heitzman, 2010).

Justification of the Statistical Techniques Used

Different statistical techniques were used to analyze the data and test the hypotheses. They were justified by the nature of the variables and the objective of the study:

- Panel Data Models with Fixed Effects: Employed to capture temporal and inter-company variations, controlling for unobserved and constant characteristics that may influence tax litigation (Wooldridge, 2010). This approach isolates the effect of the independent variables on the dependent variable, enhancing the robustness of the results.
- Binary Logistic Regression (Logit): Applied to identify the determinants of companies with high and low levels of tax litigation. Companies were classified into quartiles, with those in the upper quartile considered to have high litigation and those in the lower quartile considered to have low litigation. This technique is well-suited for modeling binary dependent variables and allows for the analysis of the probability of a company belonging to a specific group based on the explanatory variables (Hosmer, Lemeshow & Sturdivant, 2013).
- Quantile Regression: Used to examine the effect of independent variables at different points in the distribution of tax litigation (Koenker & Bassett, 1978). This method is appropriate when the impact of the determinants may differ across companies with low, medium, or high levels of litigation, offering a more nuanced analysis of the phenomenon.

Treatment of Potential Problems

- Multicollinearity: Assessed using the Variance Inflation Factor (VIF). VIF values lower than 10 indicated the absence of significant multicollinearity between the independent variables (Gujarati & Porter, 2011).
- Heteroscedasticity: Tested using the Breusch-Pagan/Cook-Weisberg test. When identified, robust corrections were applied to the standard errors to ensure the validity of the statistical inferences.
- Serial Autocorrelation: Considered in panel models, especially in temporal data. Standard errors clustered per company were used to correct for possible correlations between the residuals over time (Wooldridge, 2010).
- Endogeneity: Recognizing that some independent variables may be endogenous, additional analyses and specification tests (such as the Hausman test) were performed to verify the consistency of the estimators. However, limitations in data and adequate instruments prevented the application of instrumental variables models. The results should be interpreted with caution and future research should examine this issue in depth.

Regarding the research protocol, all stages of the research were systematically documented to allow other researchers to replicate the study. Details on data collection, construction of variables, statistical procedures, and codes used in Stata® are available upon request from the authors, respecting ethical and confidentiality standards.

The methodology adopted seeks to respond to the central objective of identifying and analyzing the determinants of tax litigation in listed Brazilian companies. By combining different statistical techniques and controlling for possible biases, the results are expected to be robust and contribute to understanding the phenomenon, providing support for managers, investors, and policymakers.

4. RESULTS AND DISCUSSION

In this section, we present and discuss the results obtained from the analysis of the determinants of tax litigation among Brazilian publicly traded companies. The descriptive statistics of the variables used are presented first, followed by the correlation analysis. Next, the results of the linear regressions and robustness tests are provided, with an interpretation of the findings in light of the hypotheses formulated, as well as a comparison with the existing literature.

4.1 Descriptive Statistics

Table 4 presents the descriptive statistics of the variables of interest used in the study.

Table 4 - Descriptive statistics

Variable	Obs	Average	Standard Deviation	Minimum	Maximum
Tax Litigation	1,398	0.149	0.433	0	3.308
Litigation – Tax Provision	1,398	0.011	0.030	0	0.228
Litigation – Contingent Tax Liabilities	1,398	0.136	0.421	0	3.267
Indebtedness	1,398	0.766	0.626	0.103	4.231
Size (BRL million)	1,398	15003.11	30795.94	23.24	208110.6
Profitability	1,398	0.035	0.128	-0.442	0.434
Growth	1,398	0.165	0.404	-0.834	2.393
Liquidity	1,398	1.939	1.988	0.026	15.384
Asset Structure	1,398	0.333	0.235	0	0.864
Business Risk	1,398	0.065	0.106	0.005	0.795

The average tax litigation is 0.149, with a standard deviation of 0.433, indicating significant variation between firms. The maximum value of 3.308 suggests that some firms have very high levels of litigation relative to their total assets. The decomposition of litigation shows that the average tax provision is 0.011, while the average tax contingent liability is 0.136, indicating that most of the litigation is represented by tax contingencies that are not recognized in the balance sheet but are disclosed in the explanatory notes.

The average indebtedness of companies is 76.6%, with a variation between 10.3% and 423.1%, suggesting that some companies are highly leveraged. Firm size, measured by total assets, varies widely, reflecting the diversity of the sample, which includes everything from smaller companies to large corporations. The average profitability is 3.5%, with some companies showing losses (negative profitability). The average revenue growth is 16.5%, but there is considerable dispersion, indicating different stages of development for the companies.

These statistics provide an initial view of the profile of the companies analyzed and the variability of the data, which are important aspects for interpreting the subsequent results.

4.2 Correlation Matrix

Table 5 presents the Pearson correlation matrix between the study variables.

Table 5 - Pearson Correlation Matriz

	1	2	3	4	5	6	7	8
1. Tax litigation	1.000	1.000						
2. Indebtedness	0.400***	1.000						
3. Size	-0.104***	-0.241***	1.000					
4. Profitability	-0.188***	-0.428***	0.108***	1.000				
5. Growth	-0.069***	-0.056***	0.003	0.192***	1.000			
6. Liquidity	-0.157***	-0.306***	-0.170***	0.177***	0.018	1.000		
7. Asset Structure	0.018***	0.063	-0.092***	-0.056***	0.035***	-0.087***	1.000	
8. Business risk	0.194***	0.503***	-0.343***	-0.130***	-0.009	-0.001	-0.045	1.000

*** p<0.01. ** p<0.05. * p<0.1.

The correlation matrix reveals remarkable relationships:

- **Tax Litigation and Indebtedness:** Positive and significant correlation (0.400***), indicating that more indebted companies tend to have higher levels of tax litigation. This finding aligns with **Hypothesis 1 (H1)**, which proposes a positive relationship between indebtedness and litigation.
- **Tax Litigation and Size:** Negative and significant correlation (-0.104***), suggesting that larger companies tend to have lower tax litigation, supporting **Hypothesis 2 (H2)**.
- **Tax Litigation and Profitability:** Negative and significant correlation (-0.188***), indicating that more profitable companies may be less prone to tax litigation. This result will be explored later, given the ambiguity predicted in **Hypothesis 4 (H4)**.
- **Tax Litigation and Current Liquidity:** Negative and significant correlation (-0.157***), consistent with **Hypothesis 5 (H5)**, which suggests that companies with greater liquidity have less litigation.
- **Tax Litigation and Business Risk:** Positive and significant correlation (0.194***), indicating that companies with greater risk tend to have greater litigation, in line with **Hypothesis 6 (H6)**.

The correlations between the independent variables are also relevant. For example, there is a strong negative correlation between indebtedness and profitability (-0.428***) and a strong positive correlation between indebtedness and business risk (0.503***). These relationships indicate the need to pay attention to potential multicollinearity problems, which will be addressed in the diagnostic tests of the regression models.

4.3 Linear Regression Analysis

To test the proposed hypotheses and identify the determinants of tax litigation, linear regression models were estimated with panel data, including fixed and pooled effects. **Table 6** presents the results.

Table 6 - Results of Linear Regressions – Fixed and Pooled Effects

	Fixed Effect	Pooled Effect
	Tax Litigation	Tax Litigation
Indebtedness	0.222**	0.243***
Size	-0.062***	-0.020***
Profitability	0.154	-0.060
Growth	-0.019**	-0.056**
Liquidity	0.001	-0.016***
Asset Structure	0.036	-0.025
Business risk	0.131	-0.095

	Fixed Effect	Pooled Effect
	Tax Litigation	**Tax Litigation**
Constant	0.435**	0.069
R-Squared Within	0.247	0.242
Observations	1,398	1,398
Groups	233	233

*p < 0,1 **p < 0,05 ***p < 0,01

The results indicate that:

- **Indebtedness:** In both models, the indebtedness coefficient is positive and significant (0.222** in the fixed effects model and 0.243*** in the pooled model), supporting **Hypothesis H1**. This suggests that more financially leveraged companies have greater tax litigation. One possible interpretation is that these companies seek to reduce costs, including the tax burden, through strategies that may increase the likelihood of tax litigation (Martinez, 2017).
- **Size:** The size coefficient is negative and significant in both models (-0.062*** and -0.020***), supporting **Hypothesis H2**. Larger companies tend to have less tax litigation, possibly due to more structured governance systems and greater investment in tax compliance (Hanlon & Heitzman, 2010).
- **Growth:** This variable presents negative and significant coefficients (-0.019** and -0.056**), indicating that growing firms are less likely to engage in tax disputes, which aligns with **Hypothesis H3**. This may reflect a concern of these companies in maintaining a good reputation and attracting investors (Mickiewicz et al., 2019).
- **Current Liquidity:** Current liquidity has a negative and significant coefficient (-0.016***) in the pooled model, supporting **Hypothesis H5**. Companies with greater liquidity appear to have less need to engage in tax disputes, as they have resources to meet their obligations.
- **Profitability:** In the fixed effects model, profitability is not statistically significant, and in the pooled model, the coefficient is negative but not significant. This result reflects the ambiguity predicted in **Hypothesis H4**, suggesting that the relationship between profitability and litigation may depend on other factors not captured by the model.
- **Business Risk and Asset Structure:** They did not present significant coefficients in any of the models, which may indicate that these factors are not direct determinants of tax litigation in the sample analyzed or that their influence is indirect or conditioned by other variables.

Diagnostic Tests and Model Selection

Diagnostic tests were performed to verify the adequacy of the estimated models. **Table 7** shows the results.

Table 7 - Diagnostic Tests and Model Selection

Robustness tests	Statistics	P-Value	Result
Multicollinearity	Average VIF = 1.18	-	There is no significant multicollinearity between variables
Variable omission (Ramsey RESET test)	F(3,1162) = 1.02	0.382	There is no evidence of omission of relevant variables
Heteroscedasticity	Breusch Pagan Test	<5%	There is no heteroscedasticity

Source: Elaborated by the authors

The Hausman test was applied to choose between fixed and random effects models. The result ($\chi^2 = 29.87$; $p < 0.001$) indicated that the fixed effects model is preferable. Therefore, the fixed effects model is considered more appropriate for the analysis, as it controls for unobserved and unchangeable characteristics of companies that may affect tax litigation.

4.4 Additional Robustness Tests

Additional tests were performed using binary logistic regression and quantile regression in order to verify the robustness of the results and explore possible non-linearities,

4.4.1 Binary Logistic Regression

Companies were classified into quartiles of tax litigation, and logistic regressions were estimated to identify the determinants of companies in the upper quartile (high litigation) and in the lower quartile (low litigation). Table 8 presents the results.

The proposed models are as follows:

$$\begin{aligned} High\ Tax\ Litigation_{i,t} &= \beta_0 + \beta_1 Indebtedeness_{\,i,t} + \beta_2 Size_{\,i,t} + \beta_3 Profitability_{i,t} \\ &+ \beta_4 Growth_{\,i,t} + \beta_5 Liquidity_{\,i,t} + \beta_6 Asset\ Structure_{i,t} + \beta_7 Risk + \varepsilon_{i,t} \end{aligned}$$

$$\begin{aligned} Low\ Tax\ Litigation_{i,t} &= \beta_0 + \beta_1 Indebtedeness_{\,i,t} + \beta_2 Size_{\,i,t} + \beta_3 Profitability_{i,t} \\ &+ \beta_4 Growth_{\,i,t} + \beta_5 Liquidity_{\,i,t} + \beta_6 Asset\ Structure_{i,t} + \beta_7 Risk + \varepsilon_{i,t} \end{aligned}$$

Where:
"High litigation" is the highest quartile in terms of litigation, assigning the value 1, and zero to the others; and
"Low litigation" is the lowest quartile, assigning the value 1, and zero to the others.

Table 8 - Results of Binary Logistic Regressions

Variables	Low tax litigation	High tax litigation
Indebtedness	-0.044	0.496***
Size	-0.400***	0.292***
Profitability	-0.348	-1.097*
Growth	0.293*	-0.253
Liquidity	0.156***	-0.335***
Asset Structure	-0.432	-0.124
Business risk	-2.827**	2.068***
Constant	2.027***	-3.363***
Observations	1,398	1,398
Groups	233	233

*p < 0.1 **p < 0.05 ***p < 0.001

Source: Elaborated by the authors

The results in Table 8 offer insights into the determinants of firms with high and low tax litigation through binary regressions.

- **Indebtedness**: This is a significant factor for companies with high litigation (positive coefficient of 0.496***), reinforcing the influence of indebtedness on the propensity for tax litigation.
- **Size**: This presents opposite coefficients in both groups, negative and significant for companies with low litigation (-0.400***) and positive and significant for companies with high litigation (0.292***). This suggests that larger companies with high litigation are more prone to litigation, possibly due to greater exposure and complexity of operations.
- **Liquidity**: Positive and significant for companies with low litigation and negative and significant for companies with high litigation, indicating that liquidity acts as a protective factor, as proposed in Hypothesis H5.

- **Business Risk**: Negative and significant for companies with low litigation and positive and significant for companies with high litigation, reinforcing the idea that risk is associated with greater litigation.

4.4.2 Quantile Regression

Quantile regression allows us to analyze the impact of independent variables at different points in the distribution of tax litigation. The results for the 25th, 50th (median), and 75th percentiles are presented in Table 9.

Table 9 - Results of Quantile Regressions

Group	Variable	25th Percentile	Median	75th Percentile
Tax litigation	Indebtedness	0.003	0.033***	0.218***
	Size	0.004***	0.009***	0.009
	Profitability	0.003	-0.002	-0.162
	Growth	-0.001	-0.006	-0.011
	Liquidity	-0.001	-0.0002	0.003
	Asset Structure	0.004	0.005	0.001
	Business risk	0.048***	0.109***	0.235*
	Constant	-0.025***	-0.060***	-0.099***
	R^2	0.014	0.031	0.089

Source: Elaborated by the authors

At the 25th percentile of tax litigation, we observe that firm size has a positive effect (0.004***), as does business risk, with a coefficient of 0.048***. This indicates that for firms in the bottom quartile of litigation, an increase in size and business risk is associated with an increase in litigation.

The median shows that indebtedness and business risk play significant roles, with coefficients of 0.033*** and 0.109***, respectively. Firm size continues to have a positive effect, albeit smaller (0.009***). This suggests that an increase in debt and business risk is strongly correlated with an increase in tax litigation for the average firm.

At the 75th percentile – firms with the highest levels of litigation – indebtedness has a significantly positive coefficient of 0.218***, reinforcing the idea that debt is a key determinant of litigation in firms with high levels of litigation. Interestingly, the coefficient for business risk is also positive and significant (0.235*), but its magnitude is more moderate compared to the median.

In summary, the quantile regression results highlight that indebtedness, firm size, and risk are consistent determinants of tax litigation at different points in its distribution. However, the influence of these variables varies as we move from the bottom to the top of the litigation distribution.

4.4.3 Analysis of the Tax Litigation Components

To better understand the nature of litigation, separate regressions were performed for the components of tax provisions and contingent tax liabilities. Tables 10 and 11 present the results.

Table 10 - Regression for Tax Provision

Variables	Fixed effect	Pooled
Indebtedness	0.029***	0.016***
Size	-0.006***	0.000
Profitability	-0.004**	-0.005
Growth	-0.001	-0.003*
Liquidity	0.0002	-0.001**
Structue of assets	-0.017*	-0.006
Business risk	-0.006	0.007

Variables	Fixed effect	Pooled
Constant	0.043**	0.003
Observations	1,398	1,398
Groups	233	233

*p < 0.1 **p < 0.05 ***p < 0.001

Source: Elaborated by the authors

The results show that indebtedness positively affects the level of tax provisions. This outcome suggests that more indebted firms anticipate potential tax losses and set aside larger provisions. Firm size is negatively associated with provisions in the fixed effects model, suggesting that larger firms can better manage their tax obligations.

Table 11 - Regression for Contingent Tax Liabilities

Variables	Fixed effects	Pooled
Indebtedness	0.191**	0.226***
Size	-0.057***	-0.020***
Profitability	0.185	-0.039
Growth	-0.017*	-0.050*
Liquidity	0.002	-0.015***
Asset Structure	0.066	-0.017
Business risk	0.110	-0.125
Constant	0.401**	0.066
Observations	1,398	1,398
Groups	233	233

*p < 0.1 **p < 0.05 ***p < 0.001

Source: Elaborated by the authors

The results confirm that indebtedness is positively related to contingent tax liabilities, indicating greater exposure to unprovisioned tax litigation. Firm size shows a significant negative relationship, reinforcing that larger companies better manage their tax risks.

4.5 Discussion of results

The findings largely corroborate the hypotheses formulated and align with the existing literature. **Hypothesis H1**, which proposed a positive relationship between indebtedness and tax litigation, was confirmed. The regressions indicated that companies with higher indebtedness levels tend to have higher levels of tax litigation. This result suggests that leveraged companies may feel greater pressure to reduce costs, including the tax burden, which may lead them to adopt riskier tax strategies and, consequently, increase the propensity for tax litigation (Martinez, 2017; Hanlon & Heitzman, 2010).

Hypothesis H2, which predicted a negative relationship between company size and tax litigation, was also supported by the results. Larger companies showed a lower propensity to engage in tax litigation, which can be attributed to more robust corporate governance systems, greater investment in tax compliance, and a heightened concern with maintaining reputation before investors and the market (Hanlon & Heitzman, 2010; Soeiro & Wanderley, 2019).

The negative relationship observed between company growth and tax litigation confirms **Hypothesis H3**. Expanding companies may avoid tax conflicts to preserve a positive image and attract new investments (Mickiewicz, Rebmann & Sauka, 2019). Furthermore, **Hypothesis H5** was corroborated by the inverse relationship between current liquidity and litigation, indicating that companies with greater financial capacity to meet their tax obligations have less need to engage in disputes with the tax authorities (Dunbar et al., 2010).

However, **Hypothesis H4**, regarding the influence of profitability on tax litigation, was not consistently confirmed. This reflects the ambiguity in the literature, where profitable companies can either avoid litigation to preserve their reputation or seek to maximize profits through more aggressive tax practices (Hanlon & Heitzman, 2010).

Business risk was relevant in some analyses, suggesting that companies with greater operational volatility may be more exposed to tax litigation. However, its effects were inconsistent across all regressions, indicating that other factors may moderate this relationship.

The results show the importance of financial and structural characteristics in determining tax litigation. These findings emphasize the need for aligned financial and tax management, highlighting the role of corporate governance in mitigating tax risks.

Limitations

Despite efforts to ensure the robustness of the results, the study has some limitations. The possible presence of endogeneity in the relationships analyzed could not be completely eliminated due to the difficulty in identifying appropriate instrumental variables. This may affect the causal interpretation of the results. Future research may use advanced methods, such as instrumental variable models and dynamic panels, to address this issue.

In addition, the analysis period included years affected by the **COVID-19 pandemic**, which may have influenced companies' financial and tax behavior. Future studies could isolate the effects of the pandemic or extend the period investigated to verify the persistence of the findings.

Another limitation refers to the focus on companies listed on B3. Although these companies are representative and provide reliable data, the results may not be generalizable to private or smaller companies. Sectoral and regional factors were also not explored in depth, opening up opportunities for future research considering these variables.

5 CONCLUSIONS AND IMPLICATIONS

This study investigated the determinants of tax litigation in Brazilian publicly traded companies, using financial and corporate metrics to understand which factors influence the propensity to engage in tax disputes. The results provide relevant insights into how companies' internal characteristics are associated with tax litigation, contributing to the literature and offering significant practical implications.

A key finding was the positive and significant association between debt and tax litigation, suggesting that highly leveraged companies are more prone to tax conflicts. This indicates the need for such companies to review their tax and risk management strategies to mitigate potential disputes. On the other hand, the negative relationship between company size and litigation confirms that larger companies tend to have fewer tax disputes, possibly due to more solid governance systems and greater investment in tax compliance.

Additionally, companies with greater growth and liquidity demonstrated a lower propensity for tax litigation, suggesting that robust financial health and expansion-oriented strategies can reduce conflicts with tax authorities. The relationship between profitability and litigation was inconclusive, reflecting the literature's ambiguity. While business risk was relevant in some analyses, it was not consistent enough to confirm its direct influence.

The findings have important implications for managers and professionals in the accounting and tax areas. Understanding that debt is associated with higher levels of tax litigation can guide decisions on capital structure and strategies to mitigate tax risks. Smaller companies may benefit from investing in governance and tax compliance, following the example of larger companies, to reduce exposure to litigation. In addition, integrating considerations of tax litigation into strategic planning can help companies avoid costly conflicts and preserve their reputation.

Future research could deepen the analysis of the determinants of tax litigation, considering qualitative aspects such as corporate governance practices, organizational culture, and management profile. Sectoral investigations or international comparisons may reveal specific nuances and identify universal factors. Furthermore, advanced econometric methods that address endogeneity may allow for more robust causal inferences.

In conclusion, this study contributes to understanding the factors influencing tax litigation in publicly traded Brazilian companies. By highlighting the relationship between financial and corporate characteristics and the propensity for tax litigation, it provides valuable support for business management and the formulation of public policies aimed at simplifying the tax system and reducing conflicts between taxpayers and tax authorities. Understanding the determinants of tax litigation is essential to promoting a more stable and predictable business environment, benefiting both companies and the economy as a whole.

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PERCEPTION OF ACCOUNTING SCIENCES STUDENTS ABOUT INTEGRATED REPORTING: KNOWLEDGE, ACADEMIC RELEVANCE, AND IMPACTS FOR THE ACCOUNTING PROFESSION

PERCEPÇÃO DOS DISCENTES DE CIÊNCIAS CONTÁBEIS SOBRE RELATO INTEGRADO: CONHECIMENTO, RELEVÂNCIA ACADÊMICA E IMPACTOS PARA A PROFISSÃO CONTÁBIL

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ABSTRACT
The objective of this study was to analyze accounting students' perceptions of Integrated Reporting, considering aspects related to knowledge, academic relevance and impact on the accounting profession. The quantitative research involved 317 students from two public institutions in Ceará, using questionnaires to explore three dimensions: knowledge about Integrated Reporting, its academic relevance and professional impact. The data were analyzed using descriptive statistics and exploratory factor analysis. The results show that students perceive a gap in their knowledge about the structure, concepts and purposes of Integrated Reporting, but recognize the significant importance of academia in its implementation. Despite the lack of knowledge, they value Integrated Reporting as a relevant subject for their training and see it as beneficial for the accounting profession and essential for future professional competitiveness. It is therefore concluded that it is the role of higher education institutions to promote reflection on Integrated Reporting in their curricula, given the relevance of the topic to the current organizational context. The lack of knowledge of Integrated Reporting identified in the research constitutes a competitive disadvantage in the job market and limits the professional scope of graduates. It is therefore suggested that teaching projects be updated to include contemporary guidelines with a focus on sustainability, such as Integrated Reporting.

Keywords: Integrated Reporting. Students. Accounting Sciences. Sustainability.

RESUMO
Este estudo tem como objetivo analisar a percepção dos estudantes de Ciências Contábeis a respeito do Relato Integrado, considerando aspectos direcionados ao conhecimento, relevância acadêmica e influxos para a profissão contábil. A pesquisa, de abordagem quantitativa, envolveu 317 estudantes de duas instituições públicas do Ceará, utilizando questionários para explorar três dimensões: conhecimento sobre Relato Integrado, sua relevância acadêmica e influxos profissionais. Os dados foram analisados por meio de Estatística Descritiva e Análise Fatorial Exploratória. Os resultados mostram que os estudantes percebem uma lacuna em seu conhecimento sobre a estrutura, conceitos e propósitos do Relato Integrado, mas reconhecem a importância significativa da academia na sua implementação. Apesar da falta de conhecimento, eles valorizam o Relato Integrado como um assunto relevante para a sua formação, visto como benéfico para a profissão contábil e essencial para a competitividade profissional futura. Assim, conclui-se que é papel das instituições de ensino superior promover a reflexão sobre o Relato Integrado nas suas estruturas *curricula*res, tendo em vista a relevância do tema para o atual contexto organizacional. A ausência do conhecimento sobre o Relato Integrado, que foi verificada na pesquisa, configura desvantagem competitiva perante o mercado de trabalho, limitando o escopo de atuação profissional dos estudantes egressos. Desse modo, sugere-se a atualização dos projetos pedagógicos, de modo a incluir pautas contemporâneas com foco na sustentabilidade, como é o caso do Relato Integrado.

***Palavras-chave*:** Relato Integrado. Estudantes. Ciências Contábeis. Sustentabilidade.

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1 INTRODUCTION

Accounting has been part of human evolution since the dawn of civilization. Since antiquity, even in a rudimentary way, people have used accounting reasoning to control their assets, since at that time it was necessary to count large herds and the control was done through simple records of objects such as stones and sticks (Lopes & Buriola, 2019). Later, when people began to organize themselves in cities and with the development of trade, accounting also advanced until it was structured as a science (Agostini & Carvalho, 2012).

In this sense, over the years, accounting has continued to change according to the needs of its users, becoming an essential tool in the decision-making process inside and outside companies (Alves & Arima, 2006). It should be noted that decision-making in a company is a survival factor, since one wrong decision can jeopardize the entire future of the entity (Almeida, 2018). The information provided by accounting is a reliable source that shows the equity position and financial performance of the entity, thus supporting the correct analysis for more assertive decisions (Soares et al., 2019).

It should also be noted that companies are part of a chain that includes customers, suppliers and investors (Nicolau & Simaens, 2007), so the results obtained affect all users who have different interests in the financial health of the company (CPC, 2019). Currently, in addition to financial information, users are also interested in the non-financial situation of the entity (Teixeira et al., 2021). This need for information is increasingly present, which is why another format for its presentation has emerged: **Integrated Reporting (IR)**.

The combination of financial and non-financial reports provides greater transparency and a more complete view of the entity (Sargaço et al., 2021). From the same perspective, the United Nations (UN, 2012) argues that the statements should not only deal with financial resources, as it is necessary to understand the company's impact on society, whether positive or negative. Therefore, IR represents a new revolution in the way corporate information should be prepared and disclosed (Carvalho & Kassai, 2014). It is argued that accounting professionals who prepare financial information need more holistic training, as they will be key players in this new evolution (Maria et al., 2022).

Thus, it is understood that academia also represents one of the fundamental factors for the effective consolidation of IR in the country, given that higher education institutions (HEIs) are responsible for training students and future professionals who will act directly in this process (Santos et al., 2021). In this context, it is considered relevant to investigate and answer the following research question: What are the perceptions of accounting students regarding IR? Therefore, the objective of this research is to analyze accounting students' perceptions of IR, considering aspects related to knowledge, academic relevance and impact on the accounting profession.

The research is justified by the fact that IR represents a new revolution in the accounting profession (Kassai et al., 2019). In addition, there is little research that addresses IR in relation to the perceptions of accounting students, which is relevant considering that they will be future professionals in the field, that is, key players in this process (Owen, 2013). In fact, it is understood that this academic demand is capable of broadening the discussion on the topic, as it is believed to be a recent issue. In addition, it is hoped that this research will encourage readers to reflect on and contribute to the effective implementation of IR in Brazil, since, according to Marçal et al. (2022), the preparation of IR enables the creation of value and, therefore, leads to a more positive view of the company in society.

2 THEORETICAL FRAMEWORK

2.1 Integrated Reporting

The interest in disclosing non-financial information began more than 20 years ago. The sustainability report of the Global Reporting Initiative (GRI) had already appeared in 1999, with the aim of disclosing the social and environmental information of a company, but its objective was not yet to show financial and non-financial information together (Campos et al., 2013; Rabelo & Silva, 2021; Maria et al., 2022). Therefore, there was a need for a way of disclosing information that would make it possible to compare financial and non-financial information, identify the relationship between them, and thus avoid certain inconsistencies that could previously have been hidden (Teixeira et al., 2021).

In this sense, the International Integrated Reporting Council (IIRC, 2014), which is a global coalition of regulators, investors, companies, standard setters, representatives of the accounting profession and non-governmental organizations (NGOs), created IR in 2013. For the IIRC (2014), the integrated report is a concise document that promotes communication by the organization about its strategy, governance, performance and opportunities in the external environment, leading to value creation in the short, medium, and long term.

It is clear that IR does not establish performance indicators, methods and disclosure of specific issues, since its purpose is not to be a new report, but to generate integration and alignment of information between the reports that already exist (Freitas & Freire, 2017). Therefore, IR is not simply a collection of reports, but a concise view of the company's strategy, governance and value generation in the face of externalities over time (Carvalho & Kassai, 2014). The authors also point out that while the balance sheet represents a "photograph" of the company in a given period, IR becomes a "video." Thus, the main objective of IR is to explain to financial capital providers how the organization creates value over time (IIRC, 2014).

The development of IR is based on integrated thinking (Bevilaqua et al., 2021). The IIRC (2014) defines integrated thinking as the importance that an organization attaches to the relationships between its various operational and functional units, as well as the capital it uses or influences. Thus, through IR, the company's integrated thinking is communicated to stakeholders to promote value creation in the short, medium, and long term, as information is expressed more clearly and concisely (IIRC, 2014).

According to Sanches et al. (2020), in order to prepare IR, it is necessary to make changes in the company's information behavior in order to comply with what it proposes. In this way, IR aims to promote more efficient communication through the intercommunication of strategy with governance, performance and the company's prospects in the context of its external environment, with the aim of reaching new investors (Leocádio, 2017).

In this regard, the IR structure should reveal six types of capital in the company: financial, manufactured, intellectual, human, social and relational, and natural (IIRC, 2014). Accordingly, it becomes possible for the users to evaluate how the organizational management of the company deals with its capital (Santos, 2021). Similarly, IR is prepared based on seven principles: 1) consistency and comparability, 2) reliability and completeness, 3) strategic focus and future orientation, 4) connectivity of information, 5) relationship with stakeholders, 6) materiality, and 7) conciseness (IIRC, 2014).

Moreover, in addition to prioritizing clear and relevant information, IR has stakeholder relations as one of its fundamental principles (Correa, 2016). Considering that stakeholders need a more concise and less extensive reporting model, it is important that IR is prepared in a way that compiles the essential information, that is, a single report that serves as a support for understanding all the connections that exist within an organization (Pereira, 2016).

Regarding the adoption of IR in a global context, more than 100 companies from different countries are part of the pilot project proposed by the IIRC to test, develop and discuss experiences in its application (Barros et al., 2018). According to Abreu et al. (2016), in South Africa, the only country where the adoption of IR is already mandatory, benefits have been observed, such as increased engagement of executive directors and other board members.

In Brazil, the preparation of IR is already required by law in the public sector, and there are technical guidelines for its preparation in the private sector (Zaro, 2021). In fact, there is a growing adoption of IR by Brazilian companies, which consequently affects the need to adapt the professionals who work on the preparation of IR, the accounting professionals (Mantovani et al., 2017).

2.2 The Role of Academia in Consolidating Integrated Reporting

It should be noted that it is the role of educational institutions to develop and improve the critical thinking of academics (Sanches et al., 2021). Gehlen et al. (2021) found that students with access to sustainability knowledge, such as IR, have a greater chance of standing out in the marketplace. The authors also point out that companies are seeking a more transparent relationship with stakeholders and that there is a need for a skilled workforce to prepare and publish sustainability reports, making it relevant to discuss these issues in educational institutions.

In this context, HEIs have a relevant contribution to make to the subject of IR and should promote the dissemination and discussion of knowledge, as well as the role of developing research that promotes closer contact between academics and market professionals, given that professionals graduating from such institutions will work in the labor market (Santos et al., 2021). The authors also add that academia must reinvent itself and go deeper into the subject of IR with academics, in order to avoid the one-sided view of the financial aspect, since financial reports already provide this.

In fact, the accounting curriculum has traditionally focused on the transactional level and not on the tactical or strategic level of the business, since traditional reports have the purpose of recognizing, measuring, and valuing assets, liabilities, income and expenses (short-term metrics), while IR has a greater focus on the long-term, more sustainable vision in the business and the ability to influence and be influenced by the environment (Owen, 2013). In this way, the author shows that the adoption of IR has implications for the training of accountants, as it needs to be more holistic and the topics in the curriculum should address a more strategic focus, include more forward-looking decision-making functions or support the decision-making process.

In a complementary way, Perego et al. (2016) pointed out that academics can make a significant contribution to the development of IR, but that HEIs are not providing sufficient training for their students, so there is need for educational programs to train them. The authors also highlight the importance of involving academics in the development of IR, which would help to explain the "transformative function" of this tool in a theoretical way.

Ciasca et al. (2019) studied the scientific production of IR in national journals and congresses in the fields of management, accounting and sustainability and found that the subject is still quite recent and little explored in academic research. The authors also highlighted the need to advance in the formulation of knowledge about IR, emphasizing that the inclusion of the subject in curricula will have an impact on the graduation cycle of thousands of students. Therefore, by disseminating this knowledge, Brazilian HEIs will train good professionals capable of dealing with current sustainability problems and carrying out transformations in order to preserve future generations (Ciasca et al., 2019).

2.3 Impact of Integrated Reporting on the Accounting Profession

According to Molter (2022), the development of IR represents not only an important advance in the way information is disseminated, but also a revolution in the accounting profession. In order to comply with what is proposed by IR, it is necessary to go beyond a change in the structure of the report; what is needed is a method that conveys the integrated management practices of the company and the decision-making processes that affect the resources it uses (Zaro, 2015).

In this context, Kassai et al. (2019) argue that IR is interesting for accounting professionals because they are professionals who already have experience in preparing information that helps in the decision-making process, that is, they play an important role in the implementation of IR. From this perspective, the interest of the accounting profession in the development of IR is clear, considering that more than 50% of the board of directors of the IIRC, which is responsible for the creation of IR, is composed of accounting organizations and professionals (Santos et al., 2021).

Freitas and Freire (2017) investigated the degree of compliance of the Social and Environmental Report of the Federal Accounting Council (CFC) with the conceptual framework of IR. They found that the social and environmental balance sheets published by the CFC were significantly aligned with the model proposed by the IIRC. Freitas and Freire (2017) also point out that this is relevant because the CFC represents the highest body of the Brazilian accounting profession, both nationally and internationally, and is considered a model for other organizations.

It is clear that in Brazil, until 2019, there was no accounting standard that addressed IR. In November 2020, the Technical Guidance of the Accounting Pronouncements Committee (CPC) on IR was approved, as well as Resolution No. 14 of the Brazilian Securities and Exchange Commission (CVM) and General Technical Communication (CTG) No. 09 of the CFC. As of January 1, 2021, Brazilian listed companies have been required to take the IR guidelines into account when preparing their information (Carvalho, 2021).

Thus, Technical Guideline CPC 09 aims to establish guiding principles and content elements that regulate the general content of IR, as well as addressing fundamental concepts (CPC, 2022). With regard to the public sector, Law 13,303/2016 states that one of the transparency requirements for public companies and mixed capital companies is the annual publication of an integrated or sustainability report (Brasil, 2016).

These regulations have emerged in the Brazilian legislative sphere with the aim of promoting the use of IR (Cunha, 2022), which favors more opportunities for accounting professionals. Thus, this new approach leads to a greater appreciation of accounting professionals, who are generally seen as those who only favor compliance with tax and labor obligations within the company (Moreira et al., 2013).

Therefore, for IR to be implemented effectively, accounting professionals must also be trained to work on the preparation of this information. Maria et al. (2022) point out that one of the gaps in the implementation of IR in Brazil is the need for human capital with the necessary skills, knowledge, abilities and attitudes, in line with the new values of organizations required by the IR methodology.

2.4 Studies on Integrated Reporting

Senaratne et al. (2022) investigated the institutional pressures and responses to the introduction of integrated reports in accounting curricula in Sri Lankan universities. As a result, the authors found that normative pressure is the dominant force for the introduction of IR in the undergraduate curricula of all the academies in the country and further demonstrated that when there is uncertainty surrounding educational reforms in emerging areas, as is the case with IR, universities demand models to emulate. The authors concluded that all the isomorphic pressures have influenced the country's universities to include the subject in their curricula to varying degrees, and that it is necessary to carry out a comprehensive review of curricula and course offerings in order to meet the expectations of the different groups and stakeholders.

In line with this idea, Anojan (2019) studied the perceptions of accounting experts on the implementation of IR in Sri Lanka. The results showed that it is not an easy task to transform traditional reports into integrated reports, but the Sri Lankan accounting experts confirmed that there are more opportunities and benefits than challenges and disadvantages in the implementation of IR in the country. The author concludes that professional bodies, universities and other relevant public and private institutions should try to provide adequate training to create awareness and knowledge on the subject.

Ibiamke and Ajekwe (2020) examined IR and the implications for the accounting curriculum in Nigeria. They highlighted that Nigerian institutions have not updated their curricula to reflect current thinking on IR and to ensure a pool of future accountants to sustain IR efforts. The authors concluded that as the use of IR becomes commonplace, it highlights the need to review professional and university accounting curricula to comply with the proposed protocols/principles.

Rodrigues and Morais (2021) conducted research on how to challenge university students to work on integrated reports and integrated report assurance. The results showed that the most appropriate methodology for teaching sustainability and IR is experiential learning through challenges. According to the authors, when a situation is new and uncertain, the key to education is the ability to make people think rather than just do. They concluded that universities need to pay attention to the changes brought about by IR in order to adequately prepare their students and increase their chances of a better future and better jobs.

Complementing this, Kamp-Roelands (2013) reviewed the development and implications of IR for the accounting curriculum. The idea was emphasized that if professionals are to fulfill their future role as changemakers, education must play a key role and IR, in its broadest sense, must be part of the accounting curriculum. The author concludes that accountants are not currently sufficiently qualified to produce this report and highlights the need for discussions about the relevance of the profession today and how accounting can create and sustain value in the long term.

3 METHODOLOGICAL PROCEDURES

This study takes a quantitative and descriptive approach, using a survey questionnaire. The population of this research is made up of accounting students from two public and state HEIs in Ceará. The total population in the study was 845 students enrolled at the time the questionnaire was applied, which took place in April and May 2023, in person, in the classroom, with the authorization of the teachers. A total of 330 questionnaires were collected, but 13 had to be discarded because they were not fully completed. The sample therefore ended up with 317 valid responses, corresponding to 37.5% of the population. The questionnaire was anonymous and voluntary.

The questionnaire consisted of two parts. In the first, there were questions about the respondent's profile, such as age, gender, semester, gross family income, institution where they graduated from high school, work in the accounting field, and ethnicity. In the second part of the questionnaire, the respondents were asked to indicate their level of agreement with the statements on a five-point Likert scale: 1, strongly disagree; 2, disagree; 3, neither agree nor disagree; 4, agree; and 5, strongly agree.

Table 1 shows the statements used in the second part of the questionnaire.

Chart 1 - Statements about Perceptions of Integrated Reporting

Category	Description
Knowledge of IR	KNOW1. I know about the basic structure of Integrated Reporting.
	KNOW2. I understand the concept of integrated thinking.
	KNOW3. I understand the types of capital present in the Integrated Reporting structure.
	KNOW4. I understand the purpose of Integrated Reporting.
Academic Relevance	ACR1. I think it is important to understand Integrated Reporting during the undergraduate course.
	ACR2. I believe that the topic of Integrated Reporting should be covered during the undergraduate course.
	ACR3. I think it would be important to have a specific subject on Integrated Reporting during the undergraduate course.
	ACR4. I think it would be important to have study groups on Integrated Reporting during the course.
	ACR5. I believe it is essential for higher education institutions to promote discussions and events on the subject of Integrated Reporting.
Impacts on the Accounting Profession	IMP1. I believe that Integrated Reporting could be a revolution in accounting reports and corporate communication systems.
	IMP2. Knowledge of Integrated Reporting can be useful for new job opportunities.
	IMP3. I understand that the accounting professional plays an important role in the preparation of Integrated Reporting.
	IMP4. I believe that the adoption of Integrated Reporting by companies could lead to a greater appreciation of accounting professionals.
	IMP5. I think that knowledge of Integrated Reporting is relevant to professional education that is geared to current market needs.

Source: Prepared by the author based on the theoretical framework and the study by Kassai et al. (2019).

As can be seen in Table 1, three statements were adapted from the study of Kassai et al. (2019), while the others were prepared with the support of the theoretical framework. It should be noted that before responding to the statements related to the categories of academic relevance and impact on the accounting profession, the concept of IR was presented in accordance with Technical Guideline CPC 09.

Once collected, the data were tabulated in Microsoft Excel© spreadsheets. To analyze the data, the profile of the respondents showed the frequency and percentage of responses. Subsequently, an exploratory factor analysis (EFA) was conducted to assess the consistency of the proposed scale by examining communality, factor loadings, and the Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity tests. Based on the results of the EFA, it was observed that the factor loadings of all the items were greater than 0.5, a value considered adequate (Hair Jr. et al., 2009). With regard to the KMO test, values below 0.5 are considered unacceptable; from 0.5 to 0.7 are acceptable; from 0.7 to 0.8 are good; from 0.8 to 0.9 are excellent; and above 0.9 are excellent (Hutcheson & Sofroniou, 1999). Bartlett's sphericity test must be statistically significant. These tests are essential for assessing the quality of the scale used and are indispensable for proceeding with the EFA (Pestana & Gageiro, 2008). In addition, the EFA made it possible to identify the grouping of items by dimension. Once the dimensions were extracted, the reliability of the items in each dimension was checked using Cronbach's alpha. According to George and Mallery (2003), Cronbach's alpha values above 0.5 are considered acceptable. However, values above 0.7 are desirable (Hair Jr. et al., 2009). Jamovi software was used for the statistical analysis of the data.

The responses were then organized into percentages of agreement, disagreement, or indifference. The following method was used to determine whether the students agreed with a given statement:

a) a negative perception was assigned for the responses strongly disagree (1), disagree (2), and indifferent (3); and
b) a positive perception was assigned for the responses agree (4) and strongly agree (5).

4 DATA DESCRIPTION AND ANALYSIS

The data description and analysis section is divided into five parts. The first part deals with the description of the variables related to the profile of the sample, while the second part deals with the analysis of the Cronbach's alpha coefficient. This is followed by an analysis of the knowledge of IR, the perception of the role of academia in the implementation of IR and the impact of IR on the accounting profession.

4.1 Description of the Profile of the Respondents

Table 1 shows the frequencies and percentages of the variables gender, age group, ethnicity, family income, high school institution, course completion, shift, current job, and work in the field that characterize the profile of the respondents.

Table 1 - Profile of the Respondents

Category	Classification	Frequency	Percentage
Gender	Men	154	49%
	Women	162	51%
	Non-Binary	1	0%
Age group	17 to 20 years old	120	38%
	21 to 25 years old	159	50%
	26 to 30 years old	21	7%
	Over 31 years old	17	5%
Ethnicity	Black	26	8%
	Brown	185	58%
	White	100	32%
	Indigenous	0	0%
	Yellow	6	2%
Family income	Up to one minimum wage	68	21%
	1 to 2 minimum wages	104	33%
	3 to 4 minimum wages	100	32%
	4 to 5 minimum wages	22	7%
	More than 5 minimum wages	23	7%
High school institution	Public	246	78%
	Private	71	22%

Category	Classification	Frequency	Percentage
Semester	1st semester	47	15%
	2nd semester	43	14%
	3rd semester	36	11%
	4th semester	25	8%
	5th semester	11	3%
	6th semester	37	12%
	7th semester	47	15%
	8th semester	71	22%
Shift	Day	70	22%
	Evening	247	78%
Currently working	Yes, in accounting	117	37%
	Yes, but in another field	109	34%
	No, just studying	91	29%
Work in the field	Yes	164	52%
	No	153	48%

Source: Research data (2023).

Table 1 shows that women make up the majority of the population surveyed (51%). The predominant age group is students aged between 21 and 25 years old (50%), with young people making up the largest proportion. In terms of ethnicity, the majority of the respondents identified themselves as brown (58%). Regarding family income, 33% of the students have an income of between one and two minimum wages.

Of those surveyed, 78% completed high school at a public institution. With regard to course completion, there is a balanced distribution, with 52% of the students studying between the 5th and 8th semester, that is, they have completed more than 50% of the course.

In the shift category, 78% of the respondents said that they study in the evenings. In addition, only 29% of the respondents do not work and, of those who do (226 respondents), 52% work in their field of study. Similarly, 52% reported that they have worked or are currently working in accounting.

It is clear, then, that the profile of the respondents is made up of women who are considered young, of brown ethnicity, with a family income of between one and two minimum wages, who attended high school at a public institution, who are in their final semesters of the course, who study at night, who are currently working in the accounting field and who have worked in the field before.

4.2 Scale Consistency and Validity

In order to assess the consistency of the scale and verify the grouping of the items, the EFA method was used, analyzing the factor loadings and the results of the KMO and Bartlett's sphericity tests, with varimax rotation. Based on the EFA results, it was found that all 14 items had factor loadings greater than 0.5. In addition, the KMO test showed a value of 0.896, while Bartlett's sphericity test showed statistical significance at the 1% level (p-value < 0.01), indicating an adequate correlation among the items and ensuring the viability of the EFA. The results showed that the 14 items were grouped into two factors that explained 60.4% of the total variance of the constructs.

Originally, it was expected that the scale would yield three factors (i.e., knowledge of IR, academic relevance, and impact on the accounting profession), but the EFA revealed the subdivision of the items into only two factors, which were named: (i) academic and professional relevance of IR; and (ii) knowledge of IR. The full results of the EFA are presented in Table 2.

Table 2 - Exploratory Factor Analysis

Knowledge of IR	Factor 1	Factor 2	Cronbach's α
KNOW1.	0.0712	0.8919	0.942
KNOW2.	0.0898	0.8714	
KNOW3.	0.0521	0.8881	
KNOW4.	0.1062	0.9182	
Academic and Professional Relevance of IR			
ACR1.	0.6546	0.1172	0.912
ACR2.	0.7334	0.0255	
ACR3.	0.5838	0.1104	
ACR4.	0.7084	0.0343	
ACR5.	0.7628	-0.0097	
IMP1.	0.7462	0.0801	
IMP2.	0.7262	0.0518	
IMP3.	0.7405	0.1342	
IMP4.	0.7627	0.1342	
IMP5.	0.7504	0.0888	

Note: Total respondents = 317.

Source: Research data (2023).

Table 2 shows that the first factor brings together the statements related to the academic and professional relevance of IR, while the second factor deals with the students' perceptions of their knowledge of IR. After the EFA, Cronbach's alpha was calculated for the constructs under analysis: academic and professional relevance of IR ($\alpha = 0.912$) and knowledge of IR ($\alpha = 0.942$). These results indicate the internal consistency of the items that make up the constructs studied, as all the values obtained exceeded the threshold of 0.7, which is considered good (Hair Jr. et al., 2009). According to Landis and Koch (1977), values above 0.81 indicate a high degree of reliability. Therefore, it is important to note that all the dimensions examined had Cronbach's alpha coefficients above 0.9.

4.3 Perceived Knowledge of Integrated Reporting

Table 3 shows the percentage of agreement, disagreement and indifference as well as the perception of each statement related to knowledge about IR.

Table 3 - Perceived Knowledge of Integrated Reporting

Statements	Agree (%)	Disagree (%)	Indifferent (%)	Perception
KNOW1. I know about the basic structure of Integrated Reporting.	22	55	23	Negative
KNOW2. I understand the concept of integrated thinking.	26	47	27	Negative
KNOW3. I understand the types of capital present in the Integrated Reporting structure	19	56	25	Negative
KNOW4. I understand the purpose of Integrated Reporting	26	51	23	Negative

Source: Research data (2023).

After applying the mode, as shown in Table 3, it can be seen that none of the statements about knowledge of IR were perceived positively by the students. Analyzing the percentage of agreement, it can be seen that the majority of students disagree with the statements related to knowledge of IR. It is worth noting that the statement about understanding the types of capital present in the IR structure (CON3) had the highest percentage of disagreement (56%). Thus, these results show that the students believe that they do not have knowledge of the structure, concepts and purpose of IR.

These findings are similar to the study by Kassai et al. (2019), who found that students showed unsatisfactory results prior to experiencing the subject of IR and sustainability, indicating a lack of knowledge on the subject. Similarly, the findings are also in line with the research by Perego et al. (2016), where the authors found that although academics have the potential to contribute significantly to the development of IR through education, HEIs are not providing enough education, making it necessary for them to demand additional educational programs to meet this need.

It is noteworthy that this gap regarding the lack of human capital with the skills, knowledge and abilities required by IR is pointed out by Maria et al. (2022) as one of the obstacles to the effective implementation of IR in Brazil. In addition, Gehlen et al. (2021) found that students who have the opportunity to access such knowledge are more likely to stand out in the job market. Therefore, this lack of knowledge about IR is likely to be a competitive disadvantage for these students. It should be added that this challenge is not an exclusive phenomenon among students, as in Anojan's (2019) study, the author found that accounting professionals face difficulties in implementing this type of report.

An alternative to overcome this challenge, according to Rodrigues and Morais (2021), is the application of a teaching methodology based on experiential learning, which stimulates students' critical and reflective capacities through practical experiences. It is also important for educational institutions to update and adapt their curricula to include this content, providing up-to-date and contextualized training so that future professionals have the necessary skills and abilities to prepare an integrated report (Kamp-Roelands, 2013; Ibiamke & Ajekwe, 2020).

4.4 Perceptions of the Academic and Professional Relevance of Integrated Reporting

Table 4 shows the analysis of agreement regarding the academic and professional relevance of IR.

Table 4 - Perceptions of the Academic and Professional Relevance of IR

Statements	Agree (%)	Disagree (%)	Indifferent (%)	Perception
ACR1. I think it is important to understand Integrated Reporting during the undergraduate course.	85	4	11	Positive
ACR2. I believe that the topic of Integrated Reporting should be covered during the undergraduate course.	90	2	8	Positive
ACR3. I think it would be important to have a specific subject on Integrated Reporting during the undergraduate course.	58	13	29	Positive
ACR4. I think it would be important to have study groups on Integrated Reporting during the course.	65	8	27	Positive
ACR5. I believe it is essential for higher education institutions to promote discussions and events on the subject of Integrated Reporting.	76	4	20	Positive
IMP1. I believe that Integrated Reporting could be a revolution in accounting reports and corporate communication systems.	72	5	23	Positive
IMP2. Knowledge of Integrated Reporting can be useful for new job opportunities.	84	3	13	Positive
IMP3. I understand that the accounting professional plays an important role in the preparation of Integrated Reporting.	79	4	17	Positive
IMP4. I believe that the adoption of Integrated Reporting by companies could lead to a greater appreciation of accounting professionals.	79	3	18	Positive
IMP5. I think that knowledge of Integrated Reporting is relevant to professional education that is geared to current market needs.	84	3	13	Positive

Source: Research data (2023).

Table 4 shows that all the statements have a positive perception, indicating that the respondents agree on the relevance of academia in the implementation of IR, as well as its importance for the accounting profession. The statement with the highest level of agreement (90%) is the one on the topic of IR, which should be covered during the undergraduate course (ACR2), reinforcing the importance of updating accounting curricula to include this subject (Kamp-Roelands, 2013; Ibiamke & Ajekwe, 2020). This result, when compared to the findings in Table 3, shows that although the students think they have no knowledge of IR, they believe the subject is relevant and should be covered during the undergraduate course. Similarly, 85% recognize the relevance of studying this subject during their undergraduate studies.

Table 4 also shows that 76% of the students agree that it is essential for HEIs to promote discussions and events on IR (ACR5). In addition, 65% of the respondents agree that it would be more relevant to understand the subject through study groups during the course (ACR4) and 58% suggest that it is relevant to have a specific subject on IR in the undergraduate course (ACR3). In this regard, Santos et al. (2021) point out that academia has an important role to play in consolidating IR in the accounting environment and should contribute to discussing and deepening the subject with professionals through the dissemination of knowledge. Owen (2013) also advocates the need to align accounting curricula with the principles of IR, by reviewing and incorporating the subject in line with these principles.

It can be seen that 84% of the respondents agree with the idea that knowledge of IR is useful for new professional opportunities (IMP2). Another statement with a higher level of agreement (84%) was the relevance of IR knowledge for professional training geared to current market needs (IMP5). Thus, the respondents believe that IR is a current issue and that it is relevant to understand this topic in order to better meet the needs of the market in which they will work or are already working. This result is in line with the perspective of Gehlen et al. (2021) and Kassai et al. (2019), who argue that IR has caused changes in corporate disclosures and has affected the demands on accounting professionals. These new demands require specific qualifications from professionals, making those who have had or are seeking training related to the preparation of these reports more competitive in the market context.

The majority of the students (79%) also agree that accounting professionals play an important role in the preparation of integrated reports (IMP3) and that the adoption of IR by companies can help to increase the value of accounting professionals (IMP4). Similarly, 72% of the students believe that IR can be a revolution in accounting reports and corporate communication systems (IMP1). It can be seen, in hoc sensu, that the students' perception is in line with the findings on this topic. Mantovani et al. (2017) argue that with the increasing adoption of IR by Brazilian companies, there is a need to adapt the accounting professionals involved in the preparation of this report. In line with this, Senaratne et al. (2022) highlight the argument that institutional pressures lead educational institutions to react in order to update and modernize their teaching programs, introducing the topic of IR in accounting curricula, resulting in attractive courses capable of meeting the expectations of different groups and stakeholders.

5 CONCLUDING REMARKS

The purpose of this research was to analyze accounting students' perceptions of IR, considering aspects related to knowledge, academic relevance, and impact on the accounting profession. It was found that the students felt that they had no knowledge of the structure, concepts and purpose of IR. In addition, it was found that the students believe that academia has a relevant contribution to make to the implementation of IR. Thus, it was possible to verify that although the students consider themselves to have no knowledge of IR, they understand it as a relevant topic that should be addressed during their undergraduate studies as it provides positive inputs to the accounting profession, which represents a gap between knowledge and perceived relevance.

The importance of IR in academia is discussed as a tool for training more competitive professionals. Given the inseparable tripod of teaching-research-extension, some considerations are in order. As far as teaching is concerned, it is the role of HEIs to promote reflection on IR in their curricular structures, given the relevance of the subject to the current organizational context, as well as to promote pedagogical practices mediated by problem-based and project-based teaching methodologies. With regard to research, it is suggested that the requirements to be developed for IR use new approaches that provide opportunities for reflection and discussion on this learning and its impact on the professional environment. It should also be pointed out that the "curricularization" of extension can promote experiential learning through the experience of empirical practices in organizational environments where students are able to understand, reflect and propose interventions on the subject in a real context.

As far as the implications of the study for the professional environment are concerned, the lack of knowledge about IR constitutes a competitive disadvantage in the world of work and limits the scope of professional activities of graduates. It is therefore suggested that teaching projects be updated to include contemporary guidelines with a focus on sustainability, as is the case with IR. As a theoretical-methodological contribution, we highlight the development of the scale used in the survey, which demonstrated consistency and validity. As a managerial contribution, the scale can help university managers in the process of reformulating pedagogical projects, as well as guiding teaching practice in the development of didactic-pedagogical strategies focused on teaching IR.

Limitations include the fact that this demand was applied only to public HEIs and only to face-to-face courses. For future research, we suggest analyzing and comparing the responses of students from HEIs with different modalities (i.e., face-to-face and distance learning) and from HEIs of different types (i.e., public and private), as well as using other statistical tests to see if there are socio-demographic profile variables associated with students' perceptions of IR.

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CHARACTERISTICS OF BRAZILIAN CEOS AND RESULTS MANAGEMENT

CARACTERÍSTICAS DOS CEOS BRASILEIROS E GERENCIAMENTO DE RESULTADOS

ABSTRACT
This study explores the relationship between the specific characteristics and competencies of Brazilian CEOs and earnings management, focusing on the period from 2016 to 2019, with an emphasis on non-financial companies listed on B3. A sample of 194 firms was analyzed using a multiple regression model with unbalanced panel data. Earnings management was assessed using the model proposed by Pae (2005). Descriptive statistics show that the average age of CEOs is 53.63 years, with an average tenure of approximately two years. Additionally, 44.90% of the CEOs in the sample hold both the CEO and chairperson roles. The average annual compensation for Brazilian CEOs was R$ 3,248,286.00. Econometric analysis revealed that three variables – duality of roles, CEO age, and CEO participation in board meetings – were statistically significant, supporting hypotheses H2, H3, and H7. However, no significant statistical relationships were found for the variables of compensation, gender, educational background, tenure, and familial CEO status. This research contributes to the understanding of how CEO characteristics and managerial skills impact corporate outcomes, particularly in the context of earnings management. The findings offer valuable insights for organizations, encouraging reflection on the alignment between CEO profiles and corporate strategies, and for financial analysts, who can use these results to better interpret accounting information. Moreover, the study makes a theoretical contribution to the emerging literature on this topic within the national context.

Keywords: CEO Characteristics; Earnings Management; Corporate Governance; Duality of Roles; Upper Echelons Theory; Panel Data Analysis.

RESUMO
Este trabalho investigou a relação entre as características e habilidades específicas dos CEOs brasileiros e o gerenciamento de resultados, a partir de um lapso temporal de 2016 a 2019, compreendendo as companhias não financeiras listadas na B3. Foi utilizada uma amostra com 194 empresas e realizada uma regressão múltipla com dados em painel desbalanceado. O gerenciamento foi capturado a partir do modelo de Pae (2005). A análise descritiva das variáveis demonstra uma média de idade dos CEOs de 53,63 anos, mandato médio de aproximadamente dois anos e CEOs que acumulam a função de diretor e presidente do conselho, representando 44,90% da amostra. A remuneração média dos CEOS brasileiros foi de R$ 3.248.286,00. Com relação aos resultados econométricos, verificou-se que três variáveis apresentaram significância estatística: dualidade, idade e participação nas reuniões do Conselho de Administração, aceitando as hipóteses H2, H3 e H7, entretanto, as variáveis remuneração, gênero, área de formação, tempo de mandato e CEO familiar não apresentaram significância estatística. Este estudo contribui para ampliar o entendimento acerca de como as características e habilidades específicas dos gestores podem impactar os resultados das empresas. Os achados oferecem potenciais benefícios tanto para as organizações, ao incentivar uma reflexão sobre o alinhamento entre os perfis dos CEOs contratados e as estratégias empresariais, como também para os analistas financeiros, que poderão utilizar esses resultados para enriquecer sua compreensão da informação contábil. Além disso, contribui teoricamente para a literatura incipiente sobre a temática em contexto nacional.

Palavras-chave: Características de CEO; *Chief Executive Officer*, Qualidade da Informação Contábil; Perfil de CEO; Teoria do Alto Escalão.

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1. INTRODUCTION

The Chief Executive Officer (CEO) is held accountable for the performance of the corporation and is vested with authority over the decision-making processes (Chou & Chan, 2018). As top executives, CEOs have the capacity to influence other members of the executive team and play a pivotal role in determining the company's strategic direction. This position often provides the CEO with the ability to negotiate more favorable compensation and an extended tenure. As Sprenger et al. (2017) observe, a company's financial performance serves as a key indicator of its success, directly influencing the benefits managers receive, particularly since bonuses are frequently tied to performance outcomes. This dynamic may encourage the CEO to engage in earnings management practices (Putra & Setiawan, 2024). According to Bouaziz et al. (2020), the CEO's personal characteristics and experiences can impact both their decision-making processes and the overall outcomes for the organization.

Putra and Setiawan (2024) propose that the traits of the CEO may be pivotal in elucidating the phenomenon of earnings management, given that the CEO has incentives to influence the company's results. The Upper Echelons Theory (UET) posits that managerial decisions reflect the cognitive foundations and values of executives, emphasizing characteristics such as age, education, financial standing, and experience, which can impact decision-making processes (Hambrick & Mason, 1984). In accordance with this theory, CEOs can exert influence over the creation of value, strategic choices, and financial reporting decisions within the company, due to their specific characteristics and skills. Hambrick and Mason (1984) emphasize that top executives affect strategic decision-making and organizational performance, and their decisions may sometimes conflict with the interests of shareholders, as discussed in Agency Theory (Jensen & Meckling, 1976). These conflicts, coupled with the executive's discretion in decision-making, may prompt the CEO to manage earnings for personal gain, rather than upholding the interests of investors (Sprenger et al., 2017).

Accounting researchers have devoted significant attention to concerns regarding accounting manipulation and the transparency of financial reporting, particularly in light of the global economic and financial crises that have unfolded in recent years. These events have fostered a climate of skepticism among markets, investors, and the general public about the reliability of financial statements. It is widely acknowledged that financial statements serve as the primary means through which investors, employees, and society at large assess a company's financial health. Bouaziz et al. (2020) highlight that the CEO is ultimately responsible for the accuracy of the information presented in financial statements, and this responsibility may increase the potential for earnings management. Furthermore, they observe that the relationship between CEO behavior and earnings management remains a key issue that warrants further investigation.

Healy and Wahlen (1999) argue that managers are motivated to engage in earnings management for a multitude of reasons, though the primary objectives should be maximizing the company's value and enhancing its financial quality. Earnings management refers to the accounting choices made by managers to alter financial reports in ways that do not fully reflect the company's actual performance. It is important to clarify that this does not constitute fraud, as such decisions are made within legal limits and may involve the manipulation of accruals, which are earnings not yet reflected in current cash flows (Bergstresser & Philippon, 2006), as well as the alteration of operational decisions, which can affect the company's routine operations (Roychowdhury, 2006).

International studies have explored the relationship between CEO characteristics and earnings management, considering factors such as age, tenure, duality, compensation, gender, overconfidence, education, postgraduate qualifications, experience, nationality, board meeting participation, the number of positions held in other companies, turnover, ownership, and family ties (Ali & Zhang, 2015; Ameila & Eriandani, 2021; Ashafoke et al., 2021; Alqatamin et al., 2017; Bouaziz et al., 2020; Cella et al., 2014; Chou & Chan, 2018; Gulzar & Wang, 2011; Isidro & Gonçalves, 2011; Musa et al., 2023; Oussii & Klibi, 2023; Putra & Setiawan, 2024; Qawasmeh & Azzam, 2020; Yang, 2010).

With this in mind, and with the goal of contributing to the existing literature on earnings management within the Brazilian context by examining it in conjunction with the specific characteristics and skills of CEOs, this research aims to provide users of accounting information with a more nuanced understanding of the relationship between these variables. The research question is as follows: **What is the relationship between the characteristics and specific skills of Brazilian CEOs and earnings management?** Our primary objective is to investigate the relationship between the characteristics and specific skills of Brazilian CEOs and earnings management.

This research question addresses a topic that has been extensively discussed in international literature but requires further exploration in Brazil. Accordingly, the objective of this study is to provide novel insights into the potential influence of specific CEO traits and skills on earnings management practices. While numerous international studies have been conducted in developed countries with robust stock markets, this research stands out by focusing on Brazilian firms, which may produce unique findings. Additionally, the study highlights the relevance of the Upper Echelons Theory (UET), which emphasizes the significance of CEO characteristics in shaping strategic and financial decision-making within organizations. As such, UET is a central framework for interpreting the results of this study (Corrêa et al., 2024).

Furthermore, this study is justified by the critical role that management plays in enhancing the quality of accounting information and the impact of the CEO on the reliability of financial reporting. The findings will be of value to companies, as they provide insights into the characteristics of CEOs that align with organizational strategies and can inform the selection of new executives. These insights will also benefit financial analysts, enabling them to assess the quality and timeliness of accounting data with greater accuracy, taking into account the impact of CEO profiles on earnings management.

2. THEORETICAL FRAMEWORK

This chapter provides a comprehensive overview of the theoretical concepts underpinning this study, structured into two main sections. The first section adresses the Agency Theory, the Accounting Choice Theory, and Earnings Management, with a particular focus on the separation between ownership and control within organizations and the alignment mechanisms between managers and shareholders. Furthermore, it examines accounting decisions and methods of earnings management, clarifying how these influence financial reporting and overall corporate performance.

The second section explores the Upper Echelons Theory and the relationship between CEO characteristics and earnings management. It analyzes how demographic and professional attributes of CEOs, such as age, gender, duality of roles, education, and tenure, affect earnings management. Furthermore, it examines the participation of CEOs in board meetings and the influence of familial ties on managerial practices.

2.1 The Agency Theory, the Accounting Choice Theory, and Earnings Management

In the business context, the separation between ownership and control has been a topic of considerable debate due to its impact on corporate performance. Discussions on organizational structure, considering this separation, were initiated by Berle and Means (1932), who introduced the idea of a property structure distinguishing between owner and manager. Jensen and Meckling (1976) emphasize that the agency relationship is outlined by a contract, in which the principal (shareholder) grants authority to the agent (manager) to act on their behalf. Both parties are expected to seek to maximize the utility of the firm; however, as Fama and Jensen (1983) highlight, this delegation often leads to agency conflicts.

As defined by Jensen and Meckling (1976) and Fama and Jensen (1983), the agency theory outlines the control mechanisms and incentives that are designed to align the interests of the managers and the shareholders, thereby mitigating information asymmetry between stakeholders and fostering managerial efficiency. Recent research, such as Bouaziz et al. (2020), underscores that information asymmetry within this framework often results in managerial decisions that disproportionately benefit managers, sometimes at the expense of other stakeholders.

It is also important to consider the accounting choices that are made by managers when selecting specific accounting methods in preference to others. As posited by Fields et al. (2001), these choices encompass any decision aimed at influencing accounting outcomes, including not only financial statements but also accounting-related information, such as regulatory and tax matters. These choices are intrinsic to the flexibility of accounting standards, which involve not only managers but also other stakeholders. They are influenced by a range of factors, including contractual, economic, and institutional considerations. In this context, earnings management can be defined as the accounting choices made by managers to modify financial reports and present information that deviates from the actual reality. Healy and Wahlen (1999) define it as the use of judgment by managers in financial reporting to manipulate accounting information for opportunistic purposes, with the intention of drawing attention from users of accounting information.

It is important to note that earnings management is not regarded as a form of financial fraud, as it operates within the confines of established accounting standards. While managers adhere to these standards when preparing financial statements, they are frequently compelled to make decisions based on judgment to select the option that most accurately reflects the entity's circumstances. However, this discretion can be misused to present a view of financial performance that does not accurately reflect economic reality (Sprenger et al., 2017).

Earnings management strategies can be categorized into two forms: management through accruals and management through operational decisions (Healy & Wahlen, 1999). To detect earnings management, researchers frequently employ the use of accruals, which represent the discrepancies between cash receipts or disbursements and the recognition of revenue or expenses (Healy & Wahlen, 1999). These outcomes are not reflected in current cash flows, with a significant portion of managerial discretion being embedded in them (Bergstresser & Philippon, 2006). It is important to note that accrual-based management typically occurs between the fiscal year-end and the publication of the financial statements (ex post).

Martinez (2008) notes that there is no inherent problem with the recognition of accruals, as their purpose is to measure profit in its economic sense, effectively reflecting an increase in the entity's wealth. The challenge arises when the manager, exercising discretion, adjusts the accruals to modify profit. Accruals are categorized into discretionary and non-discretionary (Martinez, 2008). Discretionary accruals are associated with the manipulation of accounting information, whereas non-discretionary accruals are inherent to the company's operations and are not subject to alteration through accounting choices made to benefit any party.

2.2 The Upper Echelons Theory (UET), CEO Characteristics, and Earnings Management (EM)

When examining top management, the focus often shifts to the CEO. According to Chou and Chan (2018), CEOs are not only responsible for corporate performance and wield decision-making authority, but also use their position to increase their compensation and secure their tenure. Ashafoke et al. (2021) highlight that these leaders base their decisions on their personal experiences, values, and other human factors. The Upper Echelons Theory (UET), as proposed by Hambrick and Mason (1984), suggests that the organization reflects the characteristics of its CEO, thereby influencing the strategic choices made. In accordance with this theory, Bouaziz et al. (2020) posit that the characteristics and experiences of the CEO significantly affect organizational decisions and outcomes. Moreover, Hambrick (2007) posits that, in addition to values and cognitive foundations, ethical and moral considerations also play a pivotal role in shaping business decisions.

The Upper Echelons Theory (UET) is examined by scholars from two perspectives. The first is the decision-making of executives, which is influenced by their personal interpretation of strategic situations. The second is the interpretation itself, which is seen as a reflection of the executives' experiences, values, and personalities. Identifying direct psychological traits is a challenging endeavor; thus, demographic characteristics such as age, gender, tenure, and education are often employed as proxies to infer these psychological aspects. As observed by Hambrick and Mason (1984), while research tends to concentrate on discernible attributes such as age and experience to predict managerial conduct and organizational efficacy, this methodology is constrained in its capacity to elucidate the underlying psychological characteristics of those occupying senior positions. The CEO plays a pivotal role in the preparation of a company's financial reports (Bouaziz et al., 2020). The available evidence indicates that CEO characteristics, including financial experience, compensation, and gender, play a significant role in the preparation of high-quality financial reports (Musa et al., 2023). Additionally, research suggests that CEO attributes can mitigate earnings management practices, thereby enhancing their capacity to safeguard the company's resources (Chou & Chan, 2018).

In this context, executive compensation policy is a crucial element for the success of the company. Sun (2014) highlights that managers may adjust the company's earnings to increase their compensation, especially when it is primarily based on reported earnings. Following the Agency Theory framework, which assumes the presence of conflicts of interest between managers and shareholders (Jensen & Meckling, 1976), higher compensation helps mitigate agency problems. Thus, this study, like that of Musa et al. (2023), assumes that CEO compensation contracts can help align their interests with those of the owners, thereby reducing earnings management. This suggests a significant negative relationship between CEO compensation and the propensity for earnings management. This formulation leads to the first research hypothesis.

H1: CEOs with higher compensation are less inclined to engage in earnings management.

A further potential source of conflicts of interest between ownership and management is the CEO's duality of roles. This limits the effective oversight of their decisions by the Board of Directors (BoD) and enables the CEO to act in accordance with personal interests. This duality arises when the CEO assumes both the role of chief executive officer and chairman of the board of directors (Fama & Jensen, 1983). In accordance with the tenets of agency theory, the existence of a duality of roles serves to reinforce the authority of the CEO, thereby reducing the efficacy of the monitoring functions of the Board of Directors (Chou & Chan, 2018; Gulzar & Wang, 2011). In the Brazilian stock market, a distinction is made between senior management, which is responsible for the operational management of the company, and the BoD, which is tasked with the protection of the interests of shareholders (Garcia et al., 2022). The same individual may simultaneously serve as both the CEO and the chairman of the BoD, which reflects the structural power of this administrator (Adams et al., 2005). Such circumstances have the potential to engender feelings of unease among investors. In accordance with Jensen and Meckling's (1976) agency theory, such managers may exploit their position to make decisions that are self-serving. Baker et al. (2018) corroborated the findings of their study, which indicated that the prevalence of earnings management is higher in companies with a CEO who serves in a dual capacity. In accordance with the tenets of the agency theory, it is anticipated that the phenomenon of CEO duality will exhibit a pronounced positive correlation with the prevalence of earnings management. This leads to the formulation of the second research hypothesis:

H2: CEOs with duality of roles are more inclined to engage in earnings management.

Huang et al. (2012) highlight that the CEO's age is related to the quality of financial reports. They suggest that older leaders tend to be more ethical and risk-averse than their younger counterparts, thereby reducing the likelihood of unethical behavior. As CEOs age, they are more likely to adopt ethical and conservative behaviors, leading to less engagement in earnings management, which results in higher-quality financial reports. Cornett et al. (2008) argue that the association between older CEOs and lower levels of discretionary accruals can be attributed to the fact that newly appointed CEOs, with less experience, have a greater incentive to engage in manipulative practices. In line with the literature suggesting that managers become more ethical over time, the third research hypothesis posits a significant negative relationship between these variables:

H3: Older CEOs are less inclined to engage in earnings management.

Gender significantly influences individual behaviors, with men and women often adopting distinct approaches when performing identical tasks (Putra & Setiawan, 2024). Ashafoke et al. (2021) emphasize that ethical differences between genders have been extensively studied, revealing that men and women differ in their values and interests concerning unethical conduct in business settings. Men are generally more focused on potential gains and personal success, which may lead them to breach rules to achieve corporate objectives. Conversely, women tend to prioritize harmonious relationships, demonstrate a stronger inclination to assist others, and exhibit greater sociability, rendering them less prone to unethical behavior.

Setyaningrum et al. (2019), in their study on Indonesian firms, analyzed the influence of female CEOs on earnings management. Their findings indicated a negative relationship between the presence of female CEOs and earnings management, suggesting that female leadership may mitigate manipulative practices within organizations. Drawing from these findings and the preceding arguments, it is hypothesized that male CEOs are more inclined to engage in earnings management, reflecting a significant positive relationship. Accordingly, the fourth research hypothesis is formulated as follows:

H4: Male CEOs are more inclined to engage in earnings management.

CEOs in senior executive positions frequently utilize their expertise to influence earnings management practices (Putra & Setiawan, 2024). Isidro and Gonçalves (2011) underscore that this attribute is a critical factor considered by boards of directors when selecting an executive to lead an organization. Typically, individuals with the requisite knowledge, skills, and experience to maximize shareholder value are appointed, with CEOs possessing a background in business being regarded as particularly well-qualified for such roles (Isidro & Gonçalves, 2011). The Upper Echelons Theory (UET) posits that CEOs with financial specialization are well-acquainted with the intricacies of report quality (Oussii & Klibi, 2023). This perspective aligns with the findings of Qawasmeh and Azzam (2020), who observed that CEOs often leverage their financial expertise to achieve specific profit targets rather than prioritizing shareholder wealth maximization. In this regard, a CEO is considered to have a business-oriented educational background if they hold qualifications in fields such as Business Administration, Accounting, or Economics (Garcia et al., 2022). Thus, drawing from the literature, a significant positive association is expected between a CEO's educational background in business and their propensity to engage in earnings management, due to their advanced familiarity with accounting and financial practices. Accordingly, the fifth research hypothesis is formulated as follows:

H5: CEOs with a background in business are more inclined to engage in earnings management.

The CEO's tenure refers to the period during which an individual holds the position of CEO within a company, also reflecting their accumulated experience within that organization (Putra & Setiawan, 2024). Empirical evidence suggests that earnings management is more prevalent during the initial years of a CEO's tenure, progressively diminishing overtime. Ali and Zhang (2015) examined the incentives for CEOs to engage in earnings management during their tenure, finding that CEOs, particularly in the early years of their service, used earnings management to inflate profits. Similarly, Cella et al. (2014) observed that the levels of earnings management gradually decrease as CEOs advance in their tenure. Considering this evidence, a positive relationship is expected between tenure and earnings management during the initial years, while this relationship is anticipated to become negative over time. Thus, the sixth research hypothesis is proposed as follows:

H6: CEOs in the early years of their tenure are more inclined to engage in earnings management.

A relevant yet underexplored aspect in Brazilian research is the participation of CEOs in Board of Directors (BoD) meetings. In international literature, initial studies focused on the frequency of board meetings. Davidson and DaDalt (2003) found that boards that meet more frequently are more likely to reduce the level of earnings management. However, this research shifts the focus from the frequency of meetings to the influence of CEO participation in these meetings. In this regard, Sukeecheep et al. (2013) conducted a study investigating this relationship through a dummy variable, assigning a value of 1 when the CEO participated in at least 75% of BoD meetings, and 0 otherwise. Based on this perspective, it is expected that CEO participation in BoD meetings has a significant negative relationship with earnings management. Thus, the following research hypothesis is proposed:

H7: CEOs who participate in BoD meetings are less inclined to engage in earnings management.

The context of family businesses highlights the role of the CEO's familial ties to the company's founder or family, reflecting a strong sense of responsibility for ensuring the firm's continuity for future generations. This connection often results in more effective oversight, including rigorous monitoring of financial reports (Putra & Setiawan, 2024). Prencipe et al. (2008) argue that family CEOs tend to prioritize the company's long-term performance and survival, investing in enduring assets such as reputation and social capital. These CEOs focus on maintaining trust with the controlling family, reinforcing their commitment to advancing the family's interests beyond their own. As a result, family CEOs are less motivated by short-term gains and less inclined toward earnings management (Yang, 2010). Yang further emphasizes that the incentives for such practices differ between family and non-family CEOs, with non-family CEOs being more likely to engage in earnings management. Accordingly, it is hypothesized that family-linked CEOs are less likely to participate in earnings management, indicating a significant negative relationship. This forms the basis for the eighth and final research hypothesis:

H8: CEOs with familial ties to the company are less inclined to engage in earnings management.

3. METHODOLOGICAL PROCEDURES

In this study, the adopted methodology is structured into three main stages. First, the process of sample definition and data collection will be described, highlighting the inclusion and exclusion criteria for the participating companies. Next, the specification of the model used to estimate discretionary accruals, which serve as a proxy for earnings management, will be presented. Finally, the independent and control variables used in the econometric model will be detailed, with their selection justified based on the literature, along with a description of the regression technique applied for data analysis.

3.1 Sample Definition and Data Collection

The study's population comprised companies listed on the Brasil, Bolsa, Balcão [B3] stock exchange from 2016 to 2019. The starting year, 2016, was chosen because the variable "CEO participation in board meetings," which has not yet been extensively explored in the Brazilian context, became available in the Reference Form (RF) only from that year onward. The end year, 2019, was selected to exclude the economic and financial impacts of the COVID-19 pandemic, which began in 2020, as the pandemic lies outside the scope of this study.

The population included companies active in the Economatica® database as of November 18, 2021, totaling 413 listed firms. However, 143 companies in the finance, insurance, and holding sectors were excluded due to their unique regulatory frameworks. Additionally, 76 companies lacking the necessary data to calculate discretionary accruals were removed, resulting in a final sample of 194 firms. Data for the independent variables were collected from the RF, while data for the dependent variable and control variables were sourced from the Economatica® database.

3.2 Specification of the Model for Estimating Discretionary Accruals

Research on accrual-based earnings management uses discretionary accruals as a proxy for earnings management practices. The models in the literature aim to isolate the discretionary accruals embedded in the earnings of a given period. For this study, we adopt the model proposed by Pae (2005), which enhances the predictive power of the Jones and Modified Jones Models by incorporating variables representing operational cash flow and the natural reversal of prior-period accruals. Discretionary accruals are obtained from the residuals of the model, as shown in Equation (1):

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1 \frac{1}{A_{it-1}} + \beta_1 \frac{\Delta REV_{it}}{A_{it-1}} + \beta_2 \frac{PPE_{it}}{A_{it-1}} + \beta_3 \frac{CFO_{it}}{A_{it-1}} + \beta_4 \frac{CFO_{it-1}}{A_{it-1}} + \beta_5 \frac{TA_{it-1}}{A_{it-1}} + \varepsilon_{it} \quad (1)$$

Where: *TAit*: Total accruals of firm *i* in period t; *Ait-1*: Total assets of firm *i* at the end of period *t-1*; *ΔREVit*: Change in net revenue from the end of period *t-1* to the end of period *t*; *PPEit*: Total property, plant, and equipment; *CFOit*: Operating Cash Flow; *CFOit-1*: operating cash flow of firm *i* at the end of period *t-1*; *TAit-1*: Total accruals of firm *i* at the end of period *t-1*; *α1, β1, β2, β3, β4, β5*: Parameters e εit: residuals representing discretionary accruals.

3.3 Research Variables and Econometric Model Definition

Table 1 outlines the variables analyzed in this study, specifying their respective metrics, data sources, expected signs, and underlying theoretical frameworks. It is essential to highlight that all non-binary variables were winsorized at the 1% level to ensure comparability of the data. Winsorization, as defined by Lev and Sunder (1979), is a technique employed to mitigate the influence of outliers by systematically substituting extreme values with the nearest non-extreme values, determined by the percentiles of the sample distribution. This approach helps maintain the integrity of the dataset without excluding potentially informative data points (Barnes, 2010; Hoaglin et al., 1983).

Table 1 – Research Variables

Variable	Metrics	Expected Sign	Theoretical Foundation
Earnings Management (EM)	*Discretionary Accruals*	N/A	Baker et al. (2018); Bouaziz et al. (2020); Qawasmeh e Azzam (2020).
Compensation (COMP)	Highest individual director compensation / Net Income	(-)	Baker et al. (2018); Bouaziz et al. (2020); Chou and Chan (2018); Musa et al. (2023).
Duality of roles (DUAL)	Dummy variable, 1 if CEO holds both CEO and Chairman of the Board positions, 0 otherwise	(+)	Baker et al. (2018); Bouaziz et al. (2020); Chou and Chan (2018); Oussii e Klibi (2023).

Variable	Metrics	Expected Sign	Theoretical Foundation
Age (AGE)	CEO age in years	(-)	Ali e Zhang (2015); Bouaziz et al. (2020); Chou and Chan (2018); Putra e Setiawan, (2024).
Gender (GEN)	Dummy variable, 1 if CEO is male, 0 otherwise	(+)	Ameila e Eriandani (2021); Bouaziz et al. (2020); Putra and Setiawan, (2024); Setyaningrum et al. (2019).
Business Education (EDU)	Dummy variable, 1 if CEO has a business-related education (Business Administration, Accounting, or Economics), 0 otherwise	(+)	Baker et al. (2018); Chou and Chan (2018); Sprenger et al. (2017).
Tenure (TEN)	Number of years CEO has held position at the firm	(-)	Ali e Zhang (2015); Chou and Chan (2018); Qawasmeh e Azzam (2020).
CEO Participation in Board Meetings (MEET)	Dummy variable, 1 if CEO participates in board meetings, 0 otherwise	(-)	Chou and Chan (2018); Sukeecheep et al. (2013).
Family CEO (FAM)	Dummy variable, 1 if CEO is a family member, 0 otherwise	(-)	Putra and Setiawan, (2024); Yang (2010).
Firm size (SIZE)	Ln of Total Assets	(-)	Chou and Chan (2018); Bouaziz et al. (2020); Oussii and Klibi (2023); Putra and Setiawan, (2024); Qawasmeh and Azzam (2020); Musa et al. (2023).
Return on Invested Capital (ROIC)	NOPAT / Total Capital Invested	(-)	Barker (1999); Demirakos et al. (2004).
Leverage (LEV)	Long-Term Debt / Total Assets	(+)	Ali and Zhang (2015); Chou and Chan (2018); Putra and Setiawan, (2024); Musa et al. (2023);Qawasmeh and Azzam (2020).
Firm Age (FIRM_AGE)	Number of years since firm establishment	(-)	Ameila and Eriandani (2021); Bouaziz et al. (2020); Musa et al. (2023); Qawasmeh and Azzam (2020).
Big Four (BIG)	Dummy variable, 1 if the firm is audited by a Big Four firm, 0 otherwise (Big Four: Deloitte, PricewaterhouseCoopers, Ernst & Young, KPMG)	(-)	Chou and Chan (2018); Huang et al. (2012); Oussii and Klibi (2023); Putra and Setiawan, (2024); Silva et al. (2014).
Corporate Governance (GOV)	Dummy variable, 1 if the firm is listed at a differentiated corporate governance level (Level 1, Level 2, or Novo Mercado), 0 otherwise	(-)	Mazzioni et al. (2015); Piccoli et al. (2014).

Note: Prepared by the authors (2022).

As highlighted in the table, this research will also include some control variables to neutralize effects that might impact on the analysis, since, according to the literature, CEO characteristics are not the only determinants for earnings management. After collecting all the variables, a multiple regression with unbalanced panel data was used. The following equation (2) outlines the present regression model:

$$EM = \alpha_0 + a_1COMP + a_2DUAL + a_3AGE + a_4GEN + a_5EDU + a_6TEN + a_7MEET + a_8FAM + a_9SIZE + a_{10}ROIC + a_{11}LEV + a_{12}FIRM\_AGE + a_{13}BIG + a_{14}GOV \quad (2)$$

Where:

EM = Earnings Management; *COMP* = CEO Compensation; *DUAL* = CEO Duality of roles; *AGE* = CEO Age; *GEN* = CEO Gender; *EDU* = CEO Education; *TEN* = CEO Tenure; *MEET* = CEO Attendance at Board Meetings; *FAM* = Family CEO; *SIZE* = Company Size; *ROIC* = Return on Invested Capital; *LEV* = Leverage; *FIRM_AGE* = Firm Age; *BIG* = Big Four Auditors; *GOV* = Corporate Governance.

This model aims to analyze the relationship between the variables and earnings management, evaluating their significance – both positive and negative. By doing so, it is possible to more precisely assess how specific characteristics and skills of Brazilian CEOs influence earnings management, providing a deeper understanding of the impact of these factors.

4. RESULTS

This section presents the analysis of the data collected and the discussion of the main findings of the research. The study aims to understand how specific CEO characteristics influence earnings management in Brazilian companies. The analysis was conducted in two stages: (i) descriptive statistics of the variables, summarizing the collected data and highlighting key trends observed among the companies and CEOs studied; and (ii) multiple regression analysis, which examines the impact of explanatory variables on earnings management, testing the hypotheses derived from existing literature. Both the descriptive and econometric analyses are detailed considering findings from prior research, offering a critical perspective on the role of CEOs and the influence of their attributes on earnings management practices.

4.1 Descriptive Statistics

The descriptive statistics section provides an overview of the main characteristics of the variables analyzed, laying the groundwork for understanding data behavior prior to applying more advanced analyses. At this stage, key statistical parameters of the variables used in the study are presented, including mean, standard deviation, minimum, and maximum values. These indicators are essential for identifying patterns, trends, and data dispersion, offering a preliminary analysis of the context in which Brazilian CEOs operate and the traits that may influence earnings management. Descriptive analysis is pivotal for grasping the data distribution and setting the stage for subsequent inferential analyses, which will investigate the relationship between these variables and earnings management (EM), the dependent variable in this study.

Table 2 - Descriptive Statistics of Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
EM	0,034	0,131	-0,000	0,790
COMP	29,238	142,604	-385,516	799,585
DUAL	0,449	0,497	0	1
AGE	53,628	10,022	31	88
GEN	0,978	0,144	0	1
EDU	0,341	0,474	0	1
TEN	2,352	1,248	1	6
MEET	0,291	0,454	0	1
FAM	0,538	0,499	0	1
SIZE	14,606	1,850	10,498	18,504
ROIC	4,960	11,699	-43,633	36,388
LEV	0,785	0,695	0,102	4,588
FIRM_SIZE	48,402	28,595	7	129
BIG	0,721	0,448	0	1
GOV	0,660	0,473	0	1

Note: Prepared by the authors (2022).

In terms of earnings management (EM), the average observed was 0.03. A study conducted by Putra and Setiawan (2024) on manufacturing firms listed on the Indonesian Stock Exchange from 2015 to 2021 reported an average EM of −0.01, with a range between 1.00 and 5.00. In Nigeria, the mean, minimum, and maximum values for EM were 0.934, −0.273, and 1.638, respectively (Musa et al., 2023). Regarding CEO compensation, the descriptive statistics do not support direct inferences, as the minimum, mean, and maximum values do not represent the actual compensation. This is because the metric used was the ratio of CEO compensation to the company's net income, deemed appropriate given the impact of earnings management on net income, as highlighted by Sprenger et al. (2017). A separate analysis exclusively for this variable revealed that the average CEO compensation in Brazil is approximately BRL 3,248,286. In Nigeria, CEO compensation averaged NGN 8.596 million, with minimum and maximum values of NGN 7.039 million and NGN 10.696 million, respectively (Musa et al., 2023).

For CEO duality of roles, the average was 0.45, within a range of 0 to 1. In Tunisia, 55% of CEOs held dual roles as company executives and board committee members (Oussii & Klibi, 2023). Regarding age, Brazilian CEOs averaged 53 years, ranging from 31 to 88, as shown in Table 2. Comparatively, average CEO ages were 52 years in Jordan (Qawasmeh & Azzam, 2020), 51 years in Jordan (Alqatamin et al., 2017), 53 years in Portugal (Isidro & Gonçalves, 2011), 54 years in France (Bouaziz et al., 2020), and 55 years in Indonesia (Putra & Setiawan, 2024).

Concerning gender, the average was 0.97 on a 0-to-1 scale, indicating that nearly all CEOs in the sample were male. In Indonesia, only 6% of CEOs were women (Putra & Setiawan, 2024), while in Nigeria, the proportion of female CEOs was 29.5% (Musa et al., 2023). Regarding business education, the mean was 0.34.CEO tenure averaged two years, ranging from one to six years, as evidenced in Table 2. In a sample of 744 companies, Ameila and Eriandani (2021) reported a tenure of up to 49 years for a CEO, though the majority had shorter tenures, with 87 companies having CEOs for only one year. In Jordan, Qawasmeh and Azzam (2020) found an average tenure of 3.5 years, while Bouaziz et al. (2020) reported an average of eight years. In Indonesia, CEO tenure averaged 10.65 years, ranging from 0 to 47 years (Putra & Setiawan, 2024).

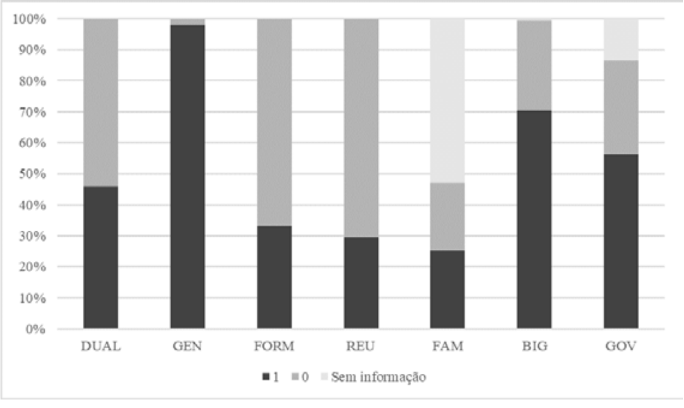
The average participation rate of CEOs in board meetings was 0.29. For family CEOs, the average was 0.53, with a range of 0 to 1. In Indonesia, the average was 0.45 (Putra & Setiawan, 2024), while in Tunisia, family CEOs accounted for 23.78% of the sample (Oussii & Klibi, 2023), suggesting stronger family ties in the Brazilian context. The average firm size in Brazil was 14.60, similar to the findings of Sprenger et al. (2017), who reported a mean of 14.08. In Nigeria, the mean firm size was 16.27 (Musa et al., 2023), while in Tunisia, it was 18.44 (Oussii & Klibi, 2023). The average return on invested capital (ROIC) was 4.96, indicating firms' profitability. Leverage averaged 0.78, while in Jordan, leverage was 0.33 (Qawasmeh & Azzam, 2020) and 0.29 (Alqatamin et al., 2017). In Indonesia, leverage averaged 0.58 (Putra & Setiawan, 2024), and in Nigeria, it was 0.56 (Musa et al., 2023).

The average age of Brazilian companies is 48 years, with some being as young as seven years and others as old as 129 years. Comparatively, Bouaziz et al. (2020) reported an average company age of 51 years in France. In Jordan, the average age is significantly lower at 21.6 years (Qawasmeh & Azzam, 2020), while in Nigeria, companies are notably younger, with an average age of just three years (Musa et al., 2023).

For companies audited by Big Four firms, an average of 0.72 is observed, indicating that more than half of the sampled companies are audited by these firms. In Indonesia, this average was 0.41 (Putra & Setiawan, 2024), and in Tunisia, it was 0.63 (Oussii & Klibi, 2023). Regarding corporate governance, an average of 0.66 was found for companies listed under the differentiated levels (N1, N2, and NM) of governance on the B3 stock exchange.

For variables such as duality, gender, business education, board meeting attendance (%), family CEOs, Big Four auditing, and corporate governance, the descriptive statistics provide an overview. However, their detailed analysis is presented graphically in Figure 1, as these variables are measured using dummy variables.

Figure 1 – Analysis of Dummy Variables

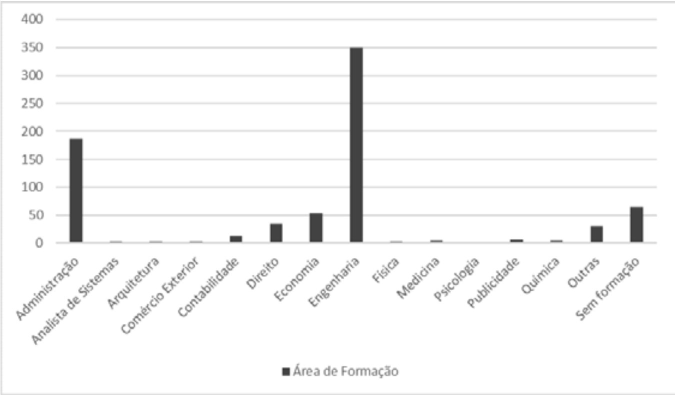


Note: Prepared by the authors (2022).

In Brazil, 45.92% of CEOs simultaneously hold the roles of director and chairperson of the Board of Directors (BoD), while 54.08% serve only as directors. Comparatively, Isidro and Gonçalves (2011) reported that 37% of Portuguese CEOs hold both positions, and Bouaziz et al. (2020) found a similar trend with 53.64% of French CEOs assuming both roles. Regarding gender, a significant 97.89% of CEOs in the Brazilian sample are male, with only 2.11% being female. This aligns with global patterns, as noted by Alqatamin et al. (2017), where 95% of CEOs were male, and Ameila and Eriandani (2021), who observed that only 8.2% of CEOs in their total sample were female.

In the variable 'CEO participation in board meetings', only 29.34% of CEOs participate in meetings, possibly because 45.92% also hold the position of chairman of the board. Regarding CEO Familiarity, 26.44% have a family connection with the company, while 22.63% have no familial ties, and 50.93% of companies did not disclose this information. For the Big Four and Corporate Governance variables, 73.42% of companies are audited by one of the Big Four, indicating concern with the reliability of the information, and 58.55% are in differentiated levels of Corporate Governance, which highlights the effort to reduce agency conflicts and information asymmetry. Regarding the CEO's education, only 33.28% of CEOs have a background in business-related fields, which contrasts with the 84% found in Portugal (Isidro & Gonçalves, 2011). This situation raises questions about the experience of these managers in areas outside of business studies, emphasizing the importance of business knowledge for leadership. Figure 2 provides a more detailed analysis of the educational backgrounds of Brazilian CEOs.

Figure 2 - CEO's Educational Background.



Note: Prepared by the authors (2022).

According to Figure 2, the most common educational background among Brazilian CEOs is engineering, with 349 professionals, indicating a strong preference for technical and strategic skills. Business administration ranks second, with 187 CEOs, emphasizing the importance of corporate management expertise. Economists come in third, with 53 CEOs, reflecting the relevance of economic analysis for leadership roles. Legal and accounting professionals account for 34 and 13 CEOs, respectively, illustrating that while less common, these fields also play a significant role in corporate leadership. Other academic backgrounds are represented as shown in the graph, demonstrating the diversity of profiles among Brazilian CEOs.

4.2 Regression Analysis Results

This section presents the findings of the econometric model developed to test the hypotheses regarding the specific characteristics and skills of CEOs in earnings management. To refine the estimator definition in panel data, assumption tests were conducted as detailed in Table 4. Three procedures were applied: (i) the Shapiro-Wilk residual normality test revealed a p-value of 0.00000, indicating that the residuals do not follow a normal distribution. This indicates that the findings are sample-specific and should not be generalized to companies beyond the scope of this study. The Breusch-Pagan heteroskedasticity test indicated p-values of 0.0000, evidencing variance issues, as shown in Table 4. To address these problems, the regression model was adjusted with robust standard errors, an approach recommended by Fávero and Belfiore (2017) for addressing such issues. Additionally, the VIF test was conducted to evaluate the presence of multicollinearity, with a mean value of 1.57. This value suggests no multicollinearity in the model, according to the definition by Fávero and Belfiore (2017), who consider values below 4.00 to indicate the absence of multicollinearity.

Using the Pae (2005) model, discretionary accruals were estimated for each company in the sample during each year studied. These accruals represent earnings management, and the values obtained constitute the dependent variable in the regression analysis. The results pertain to 194 Brazilian companies over the period from 2016 to 2019, forming an unbalanced panel with 252 observations

Table 4 - Regression Model of the EM Variable and Explanatory Variables

Variable	Coefficient	Standard Error	z	p-value
COMP	0,000	0,000	1,03	0,305
DUAL	0,081	0,036	2,25	0,025**
AGE	-0,002	0,000	-2,12	0,034**
GEN	0,004	0,019	0,24	0,811
EDU	-0,017	0,016	-1,07	0,283
TEN	0,006	0,006	1,05	0,292
MEET	-0,088	0,036	-2,42	0,015**
FAM	0,023	0,017	1,34	0,180
SIZE	0,015	0,006	2,29	0,022**
ROIC	-0,000	0,000	-0,29	0,773
LEV	-0,069	0,031	-2,21	0,027**
FIRM_AGE	0,000	0,000	0,31	0,759
BIG	-0,010	0,021	-0,51	0,609
GOV	-0,020	0,024	-0,83	0,404
Constant	-0,058	0,094	-0,62	0,535

Note: *, **, and *** indicate statistical significance at 1%, 5%, and 10%, respectively.

Prepared by the authors (2022).

Regarding the results presented by this regression, significant findings were identified for three variables of relevance: duality of roles, CEO's age, and participation in board meetings, confirming hypotheses H2, H3, and H7. On the other hand, variables such as compensation, tenure, gender, education, and CEO familiarity did not exhibit statistical significance, leading to the rejection of hypotheses H1, H4, H5, H6, and H8. Among the control variables, firm size and leverage were significant, while ROIC, firm age, Big Four, and corporate governance were not.

The CEO compensation variable did not demonstrate statistical significance, indicating that it does not influence earnings management practices among the Brazilian companies analyzed over this four-year period. These findings contrast with the results of the national study by Sprenger et al. (2017) and international research, such as Baker et al. (2018) and Sun (2014), which suggested a significant relationship. However, similar outcomes were observed by Chou and Chan (2018) and Bouaziz et al. (2020), who also found no connection between CEO compensation and earnings management. This suggests that compensation plans might not effectively align the interests of agents and principals, thereby challenging the core assumptions of Agency Theory.

The variable duality of roles was found to be significant and positive, aligning with the results reported in the international literature (Baker et al., 2018; Bouaziz et al., 2020; Chou & Chan, 2018; Gulzar & Wang, 2011; Isidro & Gonçalves, 2011). This suggests that CEOs who hold both the CEO and Chairman roles are more inclined to engage in earnings management. The presence of duality enhances the power of top management, providing them with greater leverage to manage earnings in a way that reports positive profits and sustains recent performance (Oussii & Klibi, 2023). This finding supports the Agency Theory's assumption that CEOs may act opportunistically in such circumstances (Oussii & Klibi, 2023).

For the variable CEO age, a significant relationship was found, corroborating both national and international literature, such as the study by Sprenger et al. (2017), which identified the significance of CEO age in earnings management. This leads to the inference that CEO age impacts accounting manipulation. The CEO gender variable, however, was not significant, as also found by Sprenger et al. (2017). This aligns with international findings (Ameila & Eriandani, 2021; Chou & Chan, 2018), confirming the absence of gender influence on earnings management in Brazilian companies. According to Alqatamin et al. (2017), the lack of a significant relationship may simply be due to the extremely small number of female CEOs in the sample, which could have influenced the results, considering that only 2.11% of the CEOs studied were women.

No relationship was found between CEO education in business and earnings management, which is consistent with both national and international findings (Isidro & Gonçalves, 2011; Sprenger et al., 2017). This suggests that having a business-related degree does not influence the management practices of the company (Bouaziz et al., 2020). Furthermore, the expected negative and significant relationship with the CEO's tenure was not validated, contrary to the findings of several international studies (Bouaziz et al., 2020; Chou & Chan, 2018; Qawasmeh & Azzam, 2020). However, a recent study in Indonesia also found no significant relationship (Putra & Setiawan, 2024), indicating that a CEO's tenure may not impact earnings management practices.

Regarding the family CEO variable, no significant relationship was found, contrary to the hypothesis. This suggests that whether the CEO is a family member or not does not impact the level of earnings management practiced by the Brazilian companies in this study. On the other hand, participation in board meetings variable – one of the most important in this research, as it constrained the start of the sample period to 2016 – was found to be significant. The results indicate that when CEOs participate in these meetings, earnings management tends to decrease. This can be attributed to the expectation that increased board oversight and more thorough discussions of internal matters during these meetings may address potential issues related to information manipulation.

Regarding the control variables, firm size was found to be significant, with a positive coefficient, which contradicts findings from both national and international studies (Ameila & Eriandani, 2021; Bouaziz et al., 2020; Sprenger et al., 2017). In this study, larger firms were associated with more pronounced earnings management. The ROIC variable, on the other hand, did not show statistical significance. Similarly, the firm age did not present a significant relationship, in line with expectations based on the literature, such as Bouaziz et al. (2020). Furthermore, neither Big Four audit nor corporate governance were significant, suggesting that auditing by a Big Four firm and adherence to advanced corporate governance practices do not significantly influence earnings management. This is consistent with the findings of Oussii and Klibi (2023), who concluded that audit quality does not have a significant impact on earnings management practices.

The results presented in this section reveal a notable shift in the research landscape, especially given that most of the variables analyzed – such as CEO compensation, gender, education, tenure, and familiarity – did not show statistical significance. These findings challenge central assumptions of both the Upper Echelons Theory (UES), which posits that individual characteristics of executives directly influence organizational decisions, and Agency Theory, which underscores the importance of aligning the interests of managers and shareholders to optimize firm performance. Therefore, the findings underscore the necessity to reassess the influence of these variables on earnings management, suggesting a broader reflection on other factors that may have a greater impact on managerial behavior.

5. CONCLUSION

This study investigated the relationship between the specific characteristics and skills of Brazilian CEOs and Earnings Management over the period from 2016 to 2019. A sample of 194 companies was used, and a multiple regression with an unbalanced panel was conducted. Brazilian CEOs have an average annual compensation of R$3,248,286.00, an average age of 53 years, and an average tenure of approximately two years. Brazilian companies have an average size of 14.60, an average ROIC of 4.96, and an average leverage of 0.78, with an average age of 48 years. Among dummy variables, 45.92% of CEOs hold both the position of CEO and Chairman of the Board (Board), 97.89% are male, only 29.34% participate in Board meetings, and 26.44% have familial ties with the company. Additionally, 73.42% of companies are audited by Big Four firms, and 58.55% adhere to one of the differentiated levels of governance. Regarding education, only 33.28% of CEOs hold a degree in business-related fields such as Business Administration, Accounting, or Economics.

In the regression analysis, the variables of duality of roles, CEO age, and participation in Board meetings were significant, validating hypotheses H2, H3, and H7. CEO compensation did not influence earnings management in the Brazilian companies studied during the analyzed period, contradicting the Agency Theory, which suggests that bonus plans and compensation align the interests between principals and agents. Duality was found to be significant and positive, suggesting that CEOs who hold both positions are more likely to engage in earnings management, which limits the board's ability to monitor the CEO, thereby exacerbating agency problems. Age was significant, indicating that older CEOs are more likely to manage earnings. Participation in board meetings showed a negative significance, indicating that such involvement reduces the levels of earnings management. The variables of gender, tenure, educational background, and family relations of the CEO were not significant. Among the control variables, firm size was positively significant, indicating that larger companies are engaging in more earnings management; leverage was also significant, while ROIC showed no relevance. The age of the company, as well as the Big Four and governance variables, did not demonstrate significant relationships.

The study suggests a shift in the profile of CEOs, as most variables showed no significance, questioning the assumptions of the Upper Echelons Theory (UET). The sample and the four-year period should be noted as limitations. Future research could incorporate variables such as prior professional experiences of CEOs and their nationality, using different metrics for compensation, governance, and audit measurements. The high proportion of companies audited by Big Four firms (73.42%) and included in differentiated governance levels (58.55%) reinforces the relevance of these factors, suggesting that they may influence earnings management in ways not captured by the metrics employed in this study.

Several limitations should be considered when interpreting the results. First, the analysis period was limited to the years 2016 to 2019, excluding any potential impacts of the COVID-19 pandemic on earnings management practices in companies. Furthermore, the sample encompassed 194 companies listed on the B3, which may not fully capture the behavior of Brazilian companies in other sectors or periods. Although relevant, the variables analyzed may not account for other significant factors, such as CEOs' international experience or their psychological characteristics, which could influence earnings management in ways not yet explored in the literature. Future research should explore the influence of psychological characteristics of managers on earnings management and consider extending the temporal scope to post-pandemic in order to examine whether this period caused any changes in the profile of Brazilian CEOs and their influence on earnings management practices.

In summary, this study offers new perspectives on the relationship between the characteristics of Brazilian CEOs and earnings management, highlighting variables such as duality of roles, CEO age, and participation in board meetings as determining factors. While some traditional hypotheses of Agency Theory and Upper Echelons Theory were not validated, the results contribute to a better understanding of corporate governance practices in Brazil. Future research that expands the temporal scope and incorporates new variables could provide broader and more robust insights into the role of CEOs in managing earnings in Brazilian companies.

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TEACHING CASE

REGULATION GAMES: WHO IF BENEFIT?

JOGOS DE REGULAÇÃO: QUEM SE BENEFICIA?

SUMMARY

This case to teaching discuss the regulation windfall tax under the perspective from the Regulation Theory. The dilemma of the case involves the inherent controversies the enactment of Regulation 2022/1854 of the Council of the European Union (CUE, 2022), initially adopted by Portugal for companies in the energy sector. Specifically, the case addresses the perspective of entrepreneurs and investors, affected by the regulation, who seek to do lobbying node purpose of defend your interests together to the block from the European Union. The case for teaching enables undergraduate and postgraduate students in Accounting, Administration, Economics, International Relations and Law discuss the various aspects of Regulatory Theory, such as: public interest, interest groups and capture. In addition, it provides students with the opportunity to discuss the contradictory aspects involving the concept of lobbying .

Words key: Theory from the Regulation; Windfall tax ; Lobbying .

ABSTRACT

This teaching case discusses windfall tax regulation from the perspective of Regulation Theory. The dilemma of the case involves the controversies inherent to the promulgation of regulation 2022/1854 of the Council of the European Union (CUE, 2022), initially adopted by Portugal for companies in the energy sector. Specifically, the case deals with the perspective of businesspeople and investors, affected by the regulation, who seek to lobby in order to defend their interests with the European Union bloc. The teaching case allows undergraduate and postgraduate students in Accounting, Administration, Economics, International Relations and Law to discuss the various aspects of Regulation Theory, such as: public interest, interest groups and capture. Furthermore, it provides students with the possibility of discussing the contradictory aspects surrounding the concept of lobbying.

Keywords : Regulation Theory; Windfall rate; Lobbying.

RESUMO

Este caso para ensino discute o regulamento *windfall tax* sob a perspectiva da Teoria da Regulação. O dilema do caso envolve as polêmicas inerentes à promulgação do regulamento 2022/1854 do Conselho da União Europeia (CUE, 2022), adotado inicialmente por Portugal para as empresas do setor energético. Especificamente, o caso trata da perspectiva de empresários e investidores, afetados pelo regulamento, que buscam fazer *lobbying* no intuito de defenderem seus interesses junto ao bloco da União Europeia. O caso para ensino possibilita aos estudantes de graduação e pós-graduação em Ciências Contábeis, Administração, Economia, Relações Internacionais e Direito discutirem as várias vertentes da Teoria da Regulação como, por exemplo: interesse público, grupos de interesse e captura. Além disso, proporciona aos estudantes a possibilidade de discussão dos aspectos contraditórios envolvendo o conceito de *lobbying*.

Palavras chave: Teoria da Regulação; *Windfall tax*; *Lobbying*.

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1. CASE FOR TEACHING

1.1 The regulation of energy sector in the European Union

In September 2022, the European Union (EU) Energy Ministers reached a political agreement in Brussels to adopt a regulation called the *windfall tax* (WT) on profits from oil and gas extraction in the United Kingdom (Wright, 2022). This tax represents an emergency government intervention, considering that energy operators have made extraordinary unexpected profits in recent months, without operating costs increasing, due to the end of Covid-19 restrictions and the invasion of Ukraine by Russia (Wright, 2022). Specifically, this intervention aims to mitigate high electricity prices, mandatorily reduce electricity consumption, limit the revenues of infra-marginal electricity producers, and encourage a solidarity contribution from producers of fuels fossils and support to the what face difficulties with the high price of energy (CUE, 2022).

Regulation WT 2022/1854 of the Council of the European Union provides for a mandatory 5% reduction in electricity consumption during so-called peak hours, allowing Member States flexibility in setting the schedules in what intend apply this cut (CUE, 2022). Furthermore, this regulation foresees that Member States collect a solidarity contribution by applying a minimum rate of 33% on the profits of electricity operators when these exceed 20% of the average of the last four years (CUE, 2022). The revenues from this contribution will be used to provide support financial support to end electricity customers, such as families, small and medium-sized enterprises and energy-intensive sectors, seeking mitigate you effects of rising electricity prices (CUE, 2022).

In situations where a Member State's dependence on net imports is equal to or greater than 100%, it should celebrate, until 1st of December of 2022, one agreement destined the appropriately share surplus revenues with the exporting Member State (CUE, 2022).

Within this context, several European countries have implemented or announced that they will implement the *windfall tax* , adopting different models and covering different sectors of activity. For example, the United Kingdom has chosen to apply the tax on extraordinary or unexpected profits only to the oil and gas extraction sector, but has anticipated an extension to the energy sector (Ferreira, 2024). Hungary will apply this tax to several sectors of activity (energy, telecommunications, retail trade and airlines), providing different regimes for each sector (Ferreira, 2024). The term of validity of this contribution, in most countries, expires between 2023 and 2025.

It is worth noting that Germany, France, Austria, Ireland and Belgium did not immediately move forward with taxes on extraordinary or unexpected profits (Ferreira, 2024).

1.2 The Portuguese context

Portugal has approved the European Commission's proposal to the creation of the *windfall tax* and called it the Temporary Solidarity Contribution (CTS). This contribution will be at least 33% on the unexpected profits of electricity operators and the food retail sector, in line with that decided at European level (Pimenta, 2022; Crisóstomo, 2022). This measure will come into force in 2022 and will last for two years. The Portuguese government expects to collect between 50 and 100 million euros per year with this contribution (Pimenta, 2022; Crisóstomo, 2022). "The new tax aims to redistribute these excess profits in an inflationary context [...], there must be social justice", said Nuno Félix, head of tax affairs at the Portuguese Ministry of Finance to Parliament before the vote (Gonçaves, 2022, p. 1).

The profit of Galp, a Portuguese oil company that explores and produces oil and natural gas, refines and distributes petroleum products, distributes and sells natural gas, generates and commercializes electricity , rose 86% in the first nine months of 2022, but the company said this was essentially due to its production in Brazil and Angola and the rise in the price of crude oil (Galp, 2022; Gonçalves, 2022). Portugal's second-largest retailer, Jerónimo Martins, reported a 29% increase in net profit from January to September of that year (Gonçalves, 2022). Meanwhile, consumer prices in Portugal rose 9.9% in November, slowing slightly from 10.1% the previous month, which was the highest in three decades (Gonçalves, 2022).

Gonçalo Lobo Xavier, general director of the Portuguese Association of Distribution Companies (APED), said it was unfair apply a contribution to the sector what both collaborate to to decrease the impacts of inflation, not specifically due to financial losses, but due to the damage caused to the image of companies (Sapage & Martins, 2022). He also added that some EU member countries discussed the issue and decided not to implement this regulation (for example, Germany and France), on the other hand, this initiative gained strength in Portugal (Sapage & Martins, 2022).

When if discuss the increase of the retail prices , must be reflect that there is an increase in prices in production (agricultural or otherwise), in transportation costs and in other production factors, such as packaging, energy, logistics or in the industry itself (Sapage & Martins, 2022). In this sense, if the entire distribution chain is contaminated by the increase in the price of inputs, it is natural that the final price to the consumer will also increase (Sapage & Martins, 2022). When considering these factors, Gonçalo points out that there will only be truly extraordinary profits if there is an increase in revenue and margin in an extraordinary way (Sapage & Martins, 2022).

The director of APED also highlighted that there was confusion on the part of the Portuguese government when talking about extraordinary profits and extraordinary results (Sapage & Martins, 2022). According to him, you data of

2019 concerning to the margins EBITDA of business retailer, node in the case of hypermarkets, it was between 4% and 5%. These values are much lower in other sectors, as and the case of energetic. Goncalo he did criticism to the Portuguese government for the method of calculating the contribution, since the CTS will be calculated under the average of the last four exercises. Like this being, if the result from 2022 has up to a ceiling of 20% above this average, the contribution will be applied to this amount (Sapage & Martins, 2022).

Goncalo warned what the initiative of government this penalizing one set of companies put one situation what no he was created put they and what, in the true, the government only I wanted find one goat expiatory (Sapage & Martins, 2022). He also added that this is not a positive speech for the country, for the economic environment, to to the companies or to you consumers, then these they are accustomed to seeing companies in the energy sector as their allies (Sapage & Martins, 2022). In view of this, it is worth reflecting on whether there was capture of the regulator when it is observed that some countries implemented the tax only for the energy sector and others for several sectors.

1.3 Impacts on the European Union

In December 2022, the company Galp issued a note to the Securities Market Commission (CMVM), informing its shareholders and other users that the new contribution could potentially impact the company's expenses by up to 100 million euros in the 2022 fiscal year (Rodrigues, 2022).

To the companies oil companies Exxon Mobile, in set with other oil and gas sector organizations, accused Brussels of exceeding its legal authority, calling the measure of counter-productive (Wright, 2022). In one of the objections presented to the Court General from the European Union, based in Luxembourg, Exxon stated that the measure it is a repression that would discourage investment. Casey Norton, spokesperson from the Exxon, declared the agency of Reuters news that investments made in Europe depend on how attractive and competitive globally she is (Wright, 2022). In addition from that, in a meeting with investors, the director financial from the Exxon estimated what the tax from the European Union would cost to the group more of 2 billions of dollars (Wright, 2022).

THE Shell communicated, in March of 2022, what plans invest of 20 the 25 billions of pounds over the next 10 years into Britain's energy infrastructure, including oil and gas, energy wind *offshore* , loading of vehicles electric and hydrogen (Bousso, 2022). However, in November of that same year, the president of Shell in the United United, David Bunch, he said in the conference annual from the Confederation from the British Industry in Birmingham, which requires reassessing projects on a case-by-case basis because as there is more taxation, there is less income available to make investments (Bousso, 2022).

French oil company Total Energies announced in December 2022 that it would reduce in 100 millions of pounds your investment planned to 2023 node Sea North Sea windfall tax extension (BBC News, 2022). BP has also said it will examine the impact of the UK oil and gas windfall tax before making any new North Sea investment plans (Mainwaring, 2022).

The UK government, which introduced the windfall profits tax in May 2022, has extended the tax until March 2029 because, according to Chancellor Jeremy Hunt, the continuation of the war in Ukraine would increase windfall profits for energy companies (BBC News, 2024). The government has said that the windfall tax will end if oil and gas prices fall below a certain level for six months (BBC News, 2024).

On the other hand, Portugal announced that the CTS will not be extended until 2024 (Soares, 2023). As a result, Repsol CEO Josu Jon Imaz reported that the oil company plans to move future industrial projects to Portugal in order to avoid paying the tax on excessive profits in force in Spain (Silva, 2023). Repsol has already announced an investment of 657 million euros to build two new factories and expand the Spanish company's industrial complex in the city of Sines in Portugal (Silva, 2023). This project will create more than a thousand jobs and is considered the largest industrial investment made in Portugal in the last 10 years (Silva, 2023).

Doubts remain regarding the effectiveness of the tax on extraordinary profits (Nicolay, 2023) . Due to business, economic and political pressures, some countries are evaluating the feasibility of adopting this tax or extending it (Ferreira, 2024). This is even the case in non-EU countries, such as Brazil. The Brazilian government wants to implement a kind of Brazilian *windfall tax* , based on an existing tax, but on a permanent basis, whenever there is an increase in the international price of a barrel of oil (Fafá, 2022).

The dilemma regarding the tax on extraordinary profits involves, above all, the following questions: is this tax constitutional? What is the government's role in regulation? To what extent does the market regulate itself? Do the benefits of this tax outweigh the costs? Were Regulation WT 2022/1854 of the Council of the European Union and the decision to implement this tax by some countries based on the theory of public interest or on the intention of favoring some interest group (theories of competition between interest groups and capture theory)?

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2. NOTES OF TEACHING

2.1 Objectives of teaching

- This case to teaching he has put objective:
- help students understand the assumptions of Regulatory Theory, especially those related to interest groups, public interest and capture;
- reflect on the social and economic impacts of a new regulation;
- promote the relationship between theory and business practice;
- assist students in developing critical thinking, judgment and decision making.

2.2 Sources and methods of collect

The information for the construction of this teaching case is real and was collected in *websites* (referenced) node text) what spread news on the creation from the *windfall tax* . *It is worth noting that a comparison was made of several published news items with a view to* to bring bigger veracity on the creation and regulation of sector energetic in the European Union .

2.3 Disciplines suggested to the use of Case

The case was designed to assist teachers of disciplines that deal with regulatory aspects in undergraduate and postgraduate courses in Accounting, Administration, Economics, International Relations and Law. Using this case, it is possible to understand the assumptions intrinsic to the Theory of Regulation and visualize them in practice, mainly highlighting the role of the government and interest groups in the face of a new regulation.

2.4 Instructions to application of Case

It is suggested to use Problem -*Based Learning* (PBL) or Mock Jury to apply this case for teaching. The case can be applied in the following disciplines: Accounting Theory; Corporate Accounting and other related disciplines.

In the PBL methodology option, in the first meeting, ask students to read the case, identify the dilemma and answer the proposed questions individually. In the second meeting, gather the students into groups and ask them to discuss the activities carried out individually and reach a consensus. Then, the students present the solutions to the proposed questions, justifying their answers and promoting debate.

To use the Mock Jury, in the first meeting, the teacher should also ask the students to read the case, identify the dilemma and answer the proposed questions individually. In the second meeting, the teacher distributes the papers to the students and gives them time to prepare. The teacher can choose one of these groups of papers to apply the Jury methodology:

1st option: one group of students assumes the role of supporters of the regulation and the other of opponents (representing the Chamber of Deputies). In this model of the Chamber of Deputies, it is assumed that the definition of taxes is made by the government, but their approval for implementation is carried out by the deputies or by the assembly of popular representation.

2nd option: some students take on the role of business representatives, others of members of the Portuguese government and others of the Securities Market Commission (CMVM).

After defining the roles, the teacher should encourage the students to defend the interests of the group they are representing. To start the discussion, the representative of the Chamber of Deputies (president) should announce the topic to be discussed. Then, he asks the government representative to present the proposal for the new contribution (rate, calculation methods, validity period, etc.). Then, the business representative presents his arguments on the impact of the new contribution on the business sector. After his intervention, the discussion is opened to the deputies (those who support the regulation and those who oppose it).

The teacher should guide students to direct discussions and their arguments, observing the assumptions that support the Theory of Regulation, such as interest groups, capture, public interest and *lobbying* . After the arguments and counter-arguments of the students representing the deputies, the president of the chamber can open a five-minute break, allowing the representatives of the businessmen to interact with the deputies. This moment aims to verify whether *lobbying* works and whether capture can occur through various forms, such as bribery, donations or other political influences.

After the break, the voting session begins. Three voting options can be established: approve, reject or approve with adjustments (including, for example, reducing the value of the rates and the period of validity of the contribution). The result of the vote is then announced, informing the plenary session's decision on the regulation of the new contribution.

To close the class, the teacher can invite students to comment on what they learned from applying the case and conclude with their considerations.

2.5 Questions for discussion

1) Assess whether the decision of some countries to implement Regulation 2022/1854 of the Council of the European Union is based on the assumptions of public interest, interest groups and/or capture, aspects of the Theory of Regulation. Observe the choices made by the countries that voluntarily adopted the regulation (incidence, rate, term, etc.). Justify your answer.
2) What are the possible costs and benefits of implementing a *windfall tax* in EU member countries? Analyze, in particular, the case of Portugal and identify the costs and benefits for companies, for standard setters and regulators and for society. Justify your answer.
3) Consider that the Portuguese Government is rethinking the decision to suspend the CTS for 2024 after verifying a drop in tax revenue. In order to receive suggestions from various interest groups, the Government of that country opened a draft for discussion. Any Portuguese citizen or interest group can make suggestions for improving the rule on the aforementioned tax. Therefore, consider that you are CEO (*Chief Executive Officer) Executive Officer*) of a Portuguese company in the energy sector. You and other businesspeople in this sector have met to formulate a proposal to the government with suggestions for the possible return of the CTS. Present this proposal.
4) Argue whether the proposal presented in the previous question is based on the theory of public interest or interest groups. And whether it involves aspects of the theory of capture and *lobbying* .

2.6 Analysis of the questions

Regulation has been the subject of study by legal theorists, economists and other experts for several decades (Cardoso et al., 2009). Several theories have been formulated to explain and predict the regulation and deregulation of markets, as well as to describe their origin, development and decline, and they can be descriptive, prescriptive or a combination of both (Cardoso et al., 2009). Among these various theories, Cardoso et al. (2009) highlight five: public interest theory, capture theory, economic theory of regulation (also called theory of competition between interest groups), three-dimensional theory of law and Habermas' theory.

The Public Interest Theory assumes that regulation emerged as a beneficial consequence of the State's need to correct market failures (Baird, 2016). According to Baldwin and Cave (2011), the market, without control, will not produce behaviors or results aligned with the public interest. The authors also add that, in some sectors, there may be an absence of an effective market, such as when families cannot breathe clean air or have peace of mind in their localities.

Capture Theory assumes that regulation is created for the benefit of regulated entities and that, therefore, regulators are somehow captured by the industries they regulate, becoming subservient to the interests of these industries (Carmo et al., 2018). In this context, the driving force behind regulation would not be the public interest, but rather the business interest in gaining gains from state intervention (Baird, 2016). To capture the regulator, stakeholders tend to use lobbying mechanisms *to* influence the regulatory body in drafting the standard, seeking a regulation that meets their interests from the beginning (Santos & Santos, 2014).

The Theory of Competition between Interest Groups views regulatory developments as products of relationships between different groups and between these groups and the State (Baldwin & Cave, 2011). Regulation, according to this theory, is not guided by the public interest, but by competition for power, used to increase the welfare of the most influential pressure groups (Becker, 1983).

The Three-Dimensional Theory of Law, developed by Reale, seeks to understand the elaboration of legal norms and, based on this, considers regulation as a social construction that arises from the dialectical dynamics between fact, value and norm (Cardoso et al., 2009). In short, it can be said that the norm is produced by a body endowed with normative power that interprets the facts in light of the values shared by society (value intentions), according to what is understood by "public interest" (Cardoso et al., 2009).

Habermas' approach is similar to the theory developed by Reale, with regulation being a social construction and external to accounting, and can be formalized by accounting standards, and by social regulation based on accounting logic (Cardoso et al., 2009).

Baldwin and Cave (2011) emphasize that the reasons for regulating may differ from theoretical justifications. Governments may regulate for various reasons, such as the influence of the economically powerful, the interests of the regulated sector, or the pursuit of reelection, presenting these actions as in the public interest (Baldwin & Cave, 2011). Therefore, several theories in different fields of knowledge seek to explain the regulatory phenomenon, based on the interaction between public and private actors, which can be explored to understand the case in question. It is noteworthy that the issues proposed for discussion in this case involve aspects of three theories: public interest, capture, and competition between interest groups. The three-dimensional theory of law and Habermas are not the subject of discussion in this teaching case.

Another relevant aspect is that the proposed approaches to the issues proposed in this case for teaching are not intended to be complete. In other words, the proposals provide a selection of authors who discuss issues that can foster interesting debates in the classroom, since the issues can be discussed from various theoretical perspectives. In addition, the case presents a selection of real facts. Because of this, the authors encourage those who use this case to enhance the class discussion by adding facts to the context of the case (or changing the facts presented in the case) to extend the discussion, analyzing how these new or changed facts affect the likely conclusions on a given issue. The authors believe that such enriched discussions are likely to further develop students' ability to bridge theory and practice and make judgments about Regulation Theory.

1) **Assess whether the decision of some countries to implement Regulation 2022/1854 of the Council of the European Union is based on the assumptions of public interest, interest groups and/or capture, aspects of the Theory of Regulation. Observe the choices made by the countries that voluntarily adopted the regulation (incidence, rate, term, etc.). Justify your answer.**

The Public Interest Theory suggests that regulation is a response to public demand for correction of market failures (Campos, 2008). It is assumed what the regulator consider, from the better form, you interests from the society (Carmo et al., 2018), seeking to do everything possible to maximize social well-being, this and, to achieve the first better result from the production of information (Scott, 2015). Furthermore, regulation is seen as a trade-off between its costs and benefits (Scott, 2015). It aims to remedy market failures by providing an efficient allocation of resources for the benefit of social well-being, redistribution of wealth and plumbing of resources to the implement of interest public (Birth, 2015).

In turn, Interest Group Theory suggests that individuals form coalitions or groups constituents to protect and promote your interests *lobbying* the regulator for varying amounts and types of regulation (Scott, 2015). In this context, regulation is seen as a good that maximizes the individual interests of specific groups, susceptible to appropriation in a market (Nascimento, 2015).

Lobbying represents the defense of interests before members of the public authorities who *can* make political decisions (Mancuso & Gozetto, 2011). Lodi (1986) says that lobbying is morally neutral and he can serve both to the good as to the bad, seen what is dismissed of ideology, although it is one powerful driver of interests and ideologies. Leaving this idea, can be to perceive what the good and the bad are characteristics attached to the individuals, no properly the one process or object.

Capture Theory emphasizes that the regulator can be captured by the sector to promote its interests, allowing for a regulator that is totally subservient and intended to passively serve the interests of those being regulated (Carmo et al., 2018). This is because its basic essence was that the coercive power of the State could be used to award significant benefits to specific individuals or groups, maximizing individual interests, with public coercion being the primary object of the economic demand for regulation (Posner, 1974). consider the scenario presented node case, you ministers from the European Union stated that the purpose of creating the tax was focused on maximizing the interest public (CUE, 2022). Based on this perspective, the student can conclude that the regulation is based on the assumptions of the Public Interest Theory, since the agreement had the purpose of reducing high electricity prices, supporting those who face difficulties with high energy prices.

However, at the same time that the government intends to bring benefits to the population, it creates a regulation at the expense of companies in the electricity sector. If the Public Interest Regulation Theory considers the interests of society, how can a regulation be created that impacts one sector and relieves pressure on another? Why choose to impose a tax only on the electricity sector? When reflecting on these questions, the student may conclude that the creation of the *windfall tax* is being based on the premises of the Interest Group Regulation Theory, since it is not in line with the interests of society as a whole, but only serves a portion of the population and directly impacts a specific sector, in addition to not providing further explanations for not imposing the same tax on other sectors as influential as the electricity sector.

In addition from that, the idea of maximization of interest public of the governments from the The EU may have greater consequences than the collection of taxes, such as a reduction in future investments in the electricity sector, and the exit of companies impacted by the windfall tax from the European bloc or from countries that adopted the measure. The case brings as an example the French oil company Total Energies, which announced at the end of 2022 a reduction of 100 million pounds from its investment for 2023 in the North Sea, as a result of the extension of the unexpected tax (BBC News, 2022).

When if treats from the perspective of the countries members from the European Union, It is also noted that the regulation was discussed in some countries, but the new initiative was not followed up (Sapage & Martins, 2022). Voluntary adoption of the regulation may also lead to a shift in energy investments between you own countries from the EU, already what companies what act in a country what adopted the rate may migrate to a country that has refused to implement the regulation (see the case of Repsol, Silva, 2023).

Another aspect that can be discussed is that each country was free to define the rate, the term of validity of the tax and the sector in which the tax is levied. In addition, the countries that implemented the tax are free to decide on the extension of the validity of this tax. Examples (Ferreira, 2024):

- Italy: set a 25% rate on extraordinary profits of companies in the sectors of production, sale and resale of electricity, methane gas, natural gas and petroleum products, in force until April 2022. After this period, this country increased the rate to 35% and extended the validity until July 2023.
- Hungary: the tax applies to extraordinary profits from various sectors of activity, including oil and energy, but also to telecommunications, banking, retail and airlines, with different regimes for each sector. The banking sector would pay a rate of 10% in 2022 and 8% in 2023. The telecommunications and retail sectors would be subject to special progressive rates of up to 7% and 4.1%, respectively. Airlines would also have to pay a tax for each passenger.
- Romania: applied the tax only to the energy sector, consisting of an 80% rate applicable to profits considered excessive, also by reference to the price per MWh. This tax is expected to remain in force until 31 March 2023.
- United Kingdom: has chosen to apply the tax on extraordinary profits only to the oil and gas extraction sector, but is considering extending it to the energy sector. It has already extended the validity of this tax until the end of 2028 and has considered increasing the tax rate from 25% to 35%.
- Germany, France, Austria, Ireland and Belgium: decided not to immediately implement the tax on extraordinary profits.
- Portugal: establishes a 33% tax on extraordinary profits of companies in the energy and food retail sectors, effective in 2022 and 2023. For 2024, some extraordinary contributions remain in place, such as those on the energy, pharmaceutical and banking sectors. However, the *windfall* tax was not extended to 2024.

Considering the context of each country, students can reflect on the influence of *lobbying* on each country's choices for the incidence and percentage of the tax. Was the *lobbying* carried out with the interests of certain sectors or business groups in mind? Or could the *lobbying* have been carried out with the public interest in mind? Were the governments that decided not to extend the validity of the tax captured by certain interest groups or did they do so with the public interest in mind? These are useful reflections that students can make. It is important to note that there is no single answer, since the full context of the decisions made by governments (and their intentions) is not public knowledge. Therefore, students need to analyze these questions by making assumptions, which favors their judgment skills.

Regulation, by nature, implies a redistribution of income, then generates costs to some groups and benefits to others (Fields, 2008). Campos (2008, p. 295) also points out that "the loss of social well-being caused by regulatory measures is a limitation to inefficient regulatory policies". For end, Baldwin and Cave (1999) clarify that it is very difficult to identify the public interest, since regulation generally takes place in the midst of a conflict between different conceptions about the public interest.

2) **What are the possible costs and benefits of implementing a *windfall tax* in EU member countries? Analyze, in particular, the case of Portugal and identify the costs and benefits for companies, for standard setters and regulators and for society. Justify your answer.**

THE creation and validity of any regulation involves costs and benefits to companies, society and the standardizer. The Portuguese government and other countries interested in implementing regulation WT 2022/1854 need to consider all the costs and benefits for different agents, since the development of a regulatory policy, based on the assumptions of the Public Interest Theory, is of interest to both those who operate in the market and the end consumer. If these aspects are ignored, the standard may seem useful for decision-making, but society would be in a worse situation because the costs of producing information were not taken into account (Scott, 2015).

In this context, regulated companies face costs that go beyond the costs taxes by standard, as costs of systems and of trainings, of production and also of disclosure of new information mandatory (Scott, 2015). Furthermore, if you regulated have interest in influencing the regulator, they will have to face negotiation costs, *lobbying* organization costs and political donations (Scott, 2015).

Regulated companies certainly know their production costs better, levels of effort to reduce your costs and the operation of market in which they operate when compared to the regulator's knowledge. This is one of the first aspects that must be considered by the Portuguese government, in the implementation of new regulation. As seen node case, can be infer two specific moments that indicate costs that Portuguese companies will incur when implementing the *windfall tax* , as indicated below:

- Gonçalo criticized the Portuguese government for the way the contribution will be calculated, since the CTS rate will be calculated based on the average of the last four financial years. Therefore, if the 2022 result has up to a ceiling of 20% above this average, the contribution will be applied to this amount.
- In December 2022, the company Galp issued a note to the Securities Market Commission (CMVM), informing its shareholders and others users what the new contribution may potentially impact the company's expenses by up to 100 million euros in fiscal year 2022.

You benefits arising from of regulation from the *windfall to* to the companies are publishing more information that will bring security to investors and costs of capital more low, seen what the enterprise what will pay more rate also is the one that maintains a higher average profit.

Regarding the benefits to society resulting from the new regulation, there is greater regulation of rates and price limits (Scott, 2015) for electricity. However, regulation WT 2022/1854 may also influence the price of fuel, which would consequently have a direct impact on several sectors that depend on this product. As a result, the entire distribution chain is contaminated by the increase in the price of inputs; it is natural that the final price to the consumer will also increase, since society is the one who absorbs the cost.

The costs for regulators occur due to information asymmetry and the difficulties of empirically verifying the success of these policies, the regulator or standardizer face big cost of creation of organs of definition of standards, information collection and monitoring (Nascimento 2015). Furthermore, the standard setter, that is, the Portuguese government, faces costs when seeking consensus so that investors, managers and interested parties, even if they do not like the regulation, can legitimize it.

You benefits to the regulators from the *windfall tax in addition* of to bring more information for the market, reducing the asymmetry informational between companies and Investors also take part in the state's return both in maintaining its operating structure and in offering the population improvements in various aspects, for example, in health, education, leisure, culture, among others.

3) **Consider that the Portuguese government is rethinking the decision to suspend the CTS for 2024 after noticing a drop in tax revenue. In order to receive suggestions from various interest groups, the government of that country opened a draft for discussion. Any Portuguese citizen or interest group can make suggestions for improving the regulation on the aforementioned tax. Therefore, consider that you are the CEO (*Chief Executive Officer*) of a Portuguese company in the energy sector. You and the other businesspeople in this sector met to formulate a proposal to the government with suggestions for the possible return of the CTS. Present this proposal.**

Entrepreneurs can analyze the effectiveness of the CTS in the period of validity from 2022 to 2023 (see, for example, Ferreira, 2024, Soares, 2023) to prepare the proposal that may involve several aspects, such as:

- **Reduction in the rate percentage**: from this perspective, shareholders may argue that a 33% contribution rate would lead the electricity sector to a generalized collapse, since companies did not expect an emergency contribution of this content and yet more with one percentage high. You liabilities of companies could be significantly impacted, especially in the short term. In this sense, companies could resort to reducing investments and also laying off employees in order to cut costs. To the to present the commitment of the companies in function from the new rate, *lobbying* could be directed towards reducing the *windfall percentage* .

- **Change in the validity of the rate:** as presented in the case, the rate entered in force node year of 2022, valid until 2023. THE group of interest he can argue that companies were not prepared to comply with the new regulation, given what the agreement of the ministers from the EU he was done in September of 2022. They can also emphasize that the time granted by the government was insufficient for companies to adapt to the new regulation, both in terms of preparation from the information us demonstratives as the insertion of this new rate us systems of information of the companies. Like this being, to the entities could reinforce the need to give companies a new deadline to prepare for the return of the CTS in view of the difficulties inherent in the adjustments that companies will have to undergo again with the rate. In addition, companies can request the validity only for a specific period or until they reach a certain amount of tax collection by the government.
- **Changes in the form of calculation**: the way the rate was calculated involved going back four years tax authorities , although it came into force in 2022. Thus, a percentage of 33% was charged on you profits what surpassed 20% from the average of the last four years. When collecting fees taking into account previous years, the interest group can justify that in the last two years companies have experienced difficult times, in view of the Covid-19 pandemic that has had consequences negatives to the economic worldwide and he brought losses the all sectors, including the electricity sector. Given this fact, companies can pressure for a change in the way the calculation is performed and also in the percentage that exceeds the average profits.
- **Repeal of the regulation**: finally, the proposal may also bring about the repeal complete of all the regulation, that is, businesspeople can position themselves against the return of the CTS (see, for example, Fernandes, 2022). To that, the group of interests can pressure the regulator to reduce investments in energy companies and the possibility of these companies leaving for other countries. In addition, the economy of country what adopted the *windfall tax* he can will suffer considerably, since companies in the electricity sector will have to increase to the your rates outside of time of peak to compensate the reduction of 5% during peak hours. Therefore, companies that depend on electricity continuously to produce their products will have an increase in their expenses, consequently, there will be an increase in the final product for the consumer.

Please note that there are several possible directions for the proposal. Thus, there is no “correct” answer. The teacher can encourage students to seek information on the effectiveness of the windfall tax *in* Portugal and in other countries that have implemented it, as well as research justifications from countries that have not adopted this tax.

4) **Argue whether the proposal presented in the previous question is based on the theory of public interest or interest groups. And whether it involves aspects of the theory of capture and *lobbying* .**

Capture theory emphasizes that the regulator can be captured by the sector to promote its interests, allowing for a regulator that is totally subservient and intended to passively serve the interests of those being regulated (Carmo et al., 2018). This is because its basic essence was that the coercive power of the State could be used to award significant benefits to specific individuals or groups, maximizing individual interests, with public coercion being the primary object of the economic demand for regulation (Posner, 1974).

Lodi (1986) says that the *lobbying* is morally neutral and he can serve both to the good as to the bad, seen what is dismissed of ideology, although it is one powerful driver of interests and ideologies. Leaving this idea, can be to perceive what the good and the bad are characteristics attached to the individuals, no properly the one process or object. Thus, *lobbying* can occur when a group pressures the legislator with proposals based on the public interest or when they focus only on individual interests. When the legislator decides on a rule that is aligned with the *lobbying* done by an interest group, but the *lobbying* of this group is based on the public interest, the legislator has not been captured by this interest group. In this case, the legislator is also deciding according to the assumptions of the Public Interest Theory (even if *lobbying* by interest groups occurs). On the other hand, when the legislator implements a rule in response to the pressure (*lobbying*) of interest groups focused only on individual objectives, capture is characterized.

So if the group of businessmen you are interested only us personal and individual benefits arising from of the changes in the *windfall tax* regulation , *the lobby* will be aligned with the Theory from the Agency, given what predomina one conception of human being individualistic and maximizer of usefulness (Jensen & Meckling, 1976). Consequently, you managers, investors, businessmen, perform *lobbying to* try to influence the organ standardizer (Saints & Saints, 2014) in the attempt of get advantages together to regulators.

Case the capture of regulator not occur, there is possibility of what the group of businessmen is aligned with the Theory of Public Interest. Businessmen can make a proposal that considers both the interests of companies in the energy sector and the economic and social interests of the country, aiming at the collective good. It is noted that by acting in this way, the interest group is under the conception of the *Stewardship Theory* what advocates one model of to be human collectivist what understand greater utility in the collective good than in the individual good (Donaldson & Davis, 1991)

The teacher can encourage students to analyze the grounds they used to formulate the proposal in the previous question. Again, there is no single answer or even a “correct” answer to the question. The purpose of this question is for students to reflect on ethical issues in the establishment of public and private policies.

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