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## Tax avoidance and tax disclosure: A study of Brazilian listed companies

*Agressividade fiscal e evidenciação tributária: Um estudo das companhias brasileiras de capital aberto*

*Fiscal agresividad y fiscal divulgación: Un estudio en empresas brasileñas que cotizan en bolsa*

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### ABSTRACT

This study analyzes the effect of tax avoidance on corporate transparency in Brazilian listed companies. The research was based on a sample of 256 non-financial companies listed in the Brazilian stock exchange (B3) from 2010 to 2018. A disclosure index was developed considering the BR GAAP (CPC 32), and tax avoidance measures (Effective Tax Rates – ETR, Cash Effective Tax Rate – CashETR, and Book-Tax-Differences – BTD) were used as explanatory variables in a panel. The findings revealed that tax avoidance has a negative influence in corporate transparency and that the industry and commerce sectors, company size, the level of leverage and profitability, have a positive influence in information disclosure. **Keywords:** tax avoidance; tax disclosure; brazilian companies; corporate transparency; information disclosure.

### RESUMO

O objetivo deste estudo consiste em analisar o efeito da agressividade fiscal sobre a transparência corporativa nas companhias brasileiras de capital aberto. A pesquisa partiu de uma amostra de 256 empresas não financeiras, listadas na B3 do período de 2010 a 2018. Foi desenvolvido um índice de disclosure a partir do CPC 32 para, então, proceder a um painel com as medidas de agressividade fiscal (Effective Tax Rates – ETR, Cash Effective Tax Rate – CashETR e Book-Tax-Differences – BTD) como variáveis explicativas. Os achados revelaram que agressividade fiscal influencia negativamente a transparência corporativa; e que os setores de indústria e comércio, o tamanho da companhia, o nível de alavancagem e a rentabilidade influenciam positivamente a divulgação informacional. **Palavras-chave:** agressividade fiscal; evidenciação tributária; empresas brasileiras; transparência corporativa; divulgação informacional.

### RESUMEN

El propósito de este estudio fue analizar el efecto de la agresividad fiscal sobre la transparencia empresarial en empresas brasileñas que cotizan en la bolsa. La investigación utilizó una muestra de 256 empresas no financieras listadas en B3 de 2010 a 2018. Se elaboró un índice de divulgación a partir de CPC 32 (BR GAAP) para luego estimar los efectos de agresividad fiscal (Effective Tax Rates – ETR, Cash Effective Tax Rate – CashETR y Book-Tax-Differences – BTD) como variables explicativas. Los hallazgos revelaron que la agresividad fiscal influye negativamente en la transparencia empresarial y que los sectores de la industria y comercio, el tamaño de la empresa, el nivel de apalancamiento y la rentabilidad influyen positivamente en la divulgación de información. **Palabras clave:** fiscal agresividad; fiscal divulgación; empresas brasileñas; transparencia empresarial; divulgación de información.

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## 1 INTRODUCTION

The increase in the flow of information at the end of the twentieth century due to globalization and the media's technological development has strongly influenced how businesses are improving their economic-financial performance. These phenomena provided economic, political, and social integration to the nations (Dyreg, Lindsey & Thornock, 2013), opening markets, expanding strategic possibilities and business competitiveness worldwide (Elali, 2009; Blaufus, Mohlmann & Schwabe, 2019). The intensification of market relations led firms to organizational restructuring processes as well as migrating to other economic contexts in order to facilitating tax planning activities and reducing the tax burden.

Scholes and Wolfson (1992) present a multidisciplinary approach regarding the three foundations, considered essential for efficient tax planning. For the authors, efficient tax planning considers all the parts that surround the process; all direct or indirect taxes; and all costs involved, explicit or implicit (Balakrishnan, Blouin & Guay, 2018). The literature shows extensive terminology when referring to tax planning, such as tax management, tax evasion, and tax avoidance. However, disregarding legal boundaries, it is possible to say that the definition of tax avoidance could be a corporate practice to reduce, postpone, or even eliminate the tax burden finds consensus among scholars (Dyreg, Hanlon & Maydew, 2008; Wang, 2010; Hanlon & Heitzman, 2010; Gomes, 2012; Vello & Martinez, 2014; France, 2018).

The literature suggests reasons that motivate companies to adopt tax avoidance measures, such as profit maximization (Mills, Erickson & Maydew, 1998; Santana, 2014; Blaufus et al., 2018), the increase in managers' remuneration (Rego & Wilson, 2012; Gaertner, 2014; Gul, Khedmati & Shams, 2018; Huang, Ying & Shen, 2018), and the search for more simplified tax systems. However, despite the advantages observed in reducing the tax burden, it is essential to analyze the costs (whether explicit or implicit) required to implement the process (Scholes, Wolfson, Erickson, Maydew & Shevlin, 2005). Explicit costs are expenses that are necessary to implement tax avoidance measures, such as labor, information systems, strategic coordination among business units, and auditing costs (Balakrishnan et al., 2018). On the other hand, implicit costs are reputational costs involving the firm, society as a whole, and tax authorities. They also encompass potential agency conflicts between managers and shareholders (Pierk, 2016).

For Taylor and Richardson (2014), reputational costs emerge from tax audit investigations of aggressive tax schemes or agreements, increasing the occurrence of corporate scandals that can reflect negatively on the firm's value. For Jackling and Johl (2009), agency costs arise when managers reduce the level of information disclosure to maximize their utility at the expense of other stakeholders. According to Balakrishnan et al. (2018), the complexities of

tax avoidance operations make disclosure a problem, which can lead to a series of other costs, such as the reduction of the firm's liquidity (Diamond & Verrecchia, 1991; Balakrishnan et al., 2018), the decrease when it comes to the volume of shares traded (Biddle & Hilary, 2006; Chen, Hu, Wang & Tang, 2014), and the increase when it comes to the risk for investors (Chen et al., 2014).

In the capital market, the concern with costs related to the companies' level of transparency has increased since the 2000s. With the enactment of the Sarbanes-Oxley Act (SOX), a law was approved after successive corporate scandals of fraudulent financial reporting in the United States (Brunozi, 2016). In Brazil, the debate on corporate transparency started in 1999, with the creation of the Brazilian Institute of Corporate Governance (IBGC). However, discussions intensified only after 2008, with the convergence of Brazilian accounting standards to the International Financial Reporting Standards (IFRS).

A challenge found in this research was the association between tax avoidance and corporate transparency, since previous studies have shown that organizations tend to have a lower level of disclosure when using aggressive tax avoidance practices (Desai & Dharmapala, 2009; Wang, 2010; Taylor & Richardson, 2014; Richardson, Wang & Zhang, 2016; Balakrishnan et al., 2018). Tax avoidance practices offer strategic advantages, but they may increase the organization's financial complexity. Therefore, when the firm fails to clearly communicate these practices with external parties, such as investors and analysts, it may face problems regarding the level of information disclosure (Balakrishnan et al., 2018).

One of the major concerns is that companies engaging in tax avoidance practices could be found guilty of tax evasion, which would result in future liabilities. In this case, managers seeking tax advantages in the present could cause losses to stakeholders in the future (Dyreg, Hanlon & Maydew, 2019), which results in increasing mistrust and the need to monitor managers' practices (Oats & Tuck, 2019). Therefore, there is an association between organizational transparency regarding tax choices and stakeholder trust (Oats & Tuck, 2019). Also, tax compliance increases when it comes to the adoption of tax disclosure standards (Gupta, Mills & Towery, 2014), whereas non-compliance tends to damage the company's reputation and attract the tax authorities' attention (Hope, Ma & Thomas, 2013). It is clear that, despite the benefits generated through the implementation of tax avoidance measures, companies have to consider the costs related to such practices and the risk of a reduction when it comes to information disclosures. Against this backdrop, this study aims to answer the question: **What is the effect of tax avoidance on corporate transparency related to taxes on the profit of listed Brazilian companies?** The research investigates this effect by observing firms listed in the Brazilian stock exchange (B3).

This study is considered significant in Brazilian reality, considering the growth of the tax burden against domestic

firms observed in the past few years. According to data published by the Federal Revenue of Brazil (2018) in 2017, taxes reached approximately 32.4% of the Gross Domestic Product (GDP), encouraging taxpayers to implement activities to mitigate the tax effect on companies' operations (possibly resulting in low levels of transparency). The contribution of this research has to do with two aspects: the Brazilian academia and the capital market. As for academia, this is one of the first studies to consider, simultaneously, issues related to tax avoidance and corporate transparency. Thus, this research expands the literature on the link between tax management and the level of disclosure in emerging markets. In addition, in the capital market, the study has a potential contribution in bringing evidence about the transparency of companies listed in the Brazilian stock market and providing knowledge and measuring the level of effective tax avoidance of organizations.

However, the demand for transparency, usually in the form of a request for more information, may represent a challenge. This happens because information does not necessarily mean that the data available is easy to understand or that more information leads to behavioral change. Also, it is crucial to promote disclosure parsimoniously, with clarity, and precision, keeping in mind that excessive information can work as a smoke screen, covering up tax evasion practices (Oats & Tuck, 2019).

Thus, accounting disclosure cannot be too little or too much. In both cases, the disclosure will prevent the information from being complete to stakeholders. The standardization of corporate transparency practices forces a more visible disclosure of information when compared to the expectations of the average user of such data. Thus, stakeholders can distinguish important from irrelevant information, considering that these standards require the disclosure of relevant and reliable data (CPC 00 R2, 2019).

An analysis that potentially contributes to assess the effectiveness of the standard CPC 32/2009 itself in one that assumes that: high levels of tax avoidance are related to evasive practices; that managers are more likely to hide information on these practices (Hope, Ma & Thomas, 2013; Gupta et al., 2014); and that considers the Technical Pronouncement CPC 32/2009 as a proxy for Brazilian companies' tax disclosure. Such assessment is possible because: if the link between the variables portrayed in the mentioned standard is significant, not meeting such standard means covering up the firm's opportunism. Also, when considering the CPC 32/2009 as a proxy for tax disclosure, one unveils its relevance to the debate on governance since, as discussed by Oats and Tuck (2019), transparency without discernment or understanding may not be an effective regulatory tool.

## 2 THEORETICAL FRAMEWORK

### 2.1 Tax disclosure

Issues related to tax disclosure strategies and tax

avoidance have been increasingly debated by regulatory bodies worldwide, because of several fiscal policies created to react to major corporate scandals (Sikka, 2010). Debates on tax evasion, profit transfer, and tax havens have become an important issue on the agendas of the G20, the OECD, the European Commission, non-governmental organizations (NGOs), and governmental meetings at different instances. These agencies strive to prevent illegal tax avoidance practices and illegal strategies to minimize undue taxes employed by firms in many countries.

Another important milestone in the organizations' accounting and tax disclosure was the movement to align the norms in force in the various standards, such as, for example, BR GAAP – Brazil Generally Accepted Accounting Principles, International Financial Reporting Standards (IFRS), and US GAAP – the United States of America Generally Accepted Accounting Principles, culminating in the adoption of International Accounting Standards in several countries (Weffort & Carvalho, 2003). In Brazil, the convergence process gained prominence in 2005, with the publication of Resolution CFC 1.055/2005, which culminated in creating the Accounting Pronouncements Committee (Marques, 2016). The agency was created to study, prepare, translate, and adapt the technical pronouncements issued by the IASB to the Brazilian context. Although the CPC was instituted in 2005, only in 2010 Brazil fully adopted the IFRS standard. Thus, with the convergence to IFRS, Brazilian companies started to participate in a comparable and transparent global information system, which focuses on improving the quality of the statements reported to users and presenting benefits to organizations in the capital market, such as minimizing the cost of capital, the buy-sell spread, and analysts' forecasting errors (Ball, 2006).

The new Brazilian scenario influenced discussions on issues related to the recognition, measurement, and disclosure of the companies' fiscal aspects. For a long time, tax authorities were among the main users of accounting, and they had a strong influence on Brazilian standards, designed to target these authorities' needs and interests (Lomeu, Brunozi & Gomes, 2016). The recent accounting convergence by adopting international standards made accounting information more relevant to other users/stakeholders and resulted in more available information (Macedo, Machado & Machado, 2013).

Thus, as of 2008, with the convergence process, a new panorama was seen in terms of taxes. If, on one hand, accounting maintained its connection with the tax authorities through tax and accessory obligations, on the other hand, it distanced itself from the tax authorities when meeting the information needs of other users (Cassoto, 2017). This perspective was due to the institution, in 2009, of CPC 32 (taxes on profit), adapted from IAS 12, prepared to specify the criteria related to the recognition, measurement, and disclosure of tax information (Caldeira, Brunozi, Sant'anna & Leroy, 2019). CPC 32 promoted several changes in tax

disclosure in Brazilian companies, requiring a higher level of transparency of information related to taxes on profits. The standard was dedicated to specifying events subject to tax disclosure in a special section, covering items and sub-items from 79 to 85.

For users, it is interesting to institutionalize disclosure practices using a standard. It gives the reader the feeling that no important aspect have been or have not been disclosed (Wallacer & Nacer, 1995). This can be seen in the work of Souza, Kronbauer, Ott, and Collet (2009) when they identified that the tax information was poorly disclosed, without open dissemination or separated by taxes, with a result confirmed by Lopes (2008) when verifying that, in 2007, the disclosure index of the analyzed companies was less than 50% of what was required by IAS 12, which would be the international standard correlated with CPC 32.

In addition, the absence of regulation on information relevant to the market could result in losses for stakeholders. It would not allow them to distinguish the situation in the event of omission or when taxes on economic or financial operation did not apply, absent in the financial statements (Wallacer & Nacer, 1995). Thus, one cannot wait for an uncertain event to happen to assume obligations of recognition and disclosure of these past facts, because users would lose trust and would not be able to analyze the company's financial capacity (Magalhães & Ferreira, 2018).

## 2.2. Tax Avoidance

Tax avoidance refers to firms' practices to reduce, postpone, or eliminate tax expenses, whether legal or illegal (Gomes, 2012). For Martinez (2017, p. 108, our translation), "tax avoidance aims to reduce tax obligations by organizing business activities so that tax obligations are optimized to their minimum amount."

Scholes and Wolfson (1992) highlighted in their seminal studies that tax avoidance aims to reduce the tax burden and create value for the company, consequently increasing the shareholders' wealth. The authors adopted a microeconomic perspective in their book entitled "Taxes and Business Strategy: A Planning Approach," offering a framework that became a reference in the field. The work by Scholes and Wolfson (1992) was considered the revival of empirical research in tax accounting, stressing the need for researchers to expand the object of study, incorporating principles, theories, and evidence from other areas of knowledge. The authors considered a multidisciplinary nature, developing a framework that gained prominence internationally, revealing three essential themes for efficient tax planning: all parties, all taxes, and all costs. As for the theme of all parties, Calijuri (2009) clarifies that tax planning must consider all stakeholders in the transaction. This contractual conception expresses that a company willing to obtain a return on investments after taxes must analyze all parties of the contract at the time of contracting and in the future.

According to Gomes (2012), the theme of all taxes refers to every tax involved in investment decisions and decision-making. In other words, tax planning must consider the cash tax and implicit taxes, i.e., those paid indirectly in the form of lower return rates before taxes on investments favored with incentives. Finally, according to Santana (2014), the theme of all costs refers to identifying and recognizing every cost, implicit and explicit, for effective tax planning. It includes the tax burden and also costs related to tax planning practices, for example.

As one of the implicit costs, Scholes and Wolfson (1992) discussed agency problems arising from the implementation of efficient tax planning. For the authors, executives face a trade-off between the disclosure of financial reports and the strategies to reduce the tax burden. To attract investments, managers may report high levels of profitability to the capital market, simultaneously disclosing low income to tax authorities (Balakrishnan, Blouin & Guay, 2018).

Teixeira (2018) and Melo, Moraes, Souza, and Nascimento (2020) point out that taxes represent an important element of the firms' structure and deserve attention. However, the managers' decision-making to minimize tax expenses should not be carried out solely based on the legal-tax aspects. Scholes and Wolfson (1992) also emphasize that all the variables involved in tax planning, tax or non-tax, are essential for reducing tax costs.

With that said, several authors analyzed which of the companies' attributes (variables) directly impact the level of tax avoidance. The following sub-section presents the development of this discussion and the main findings over the years, supporting the formulation of the research hypothesis.

## 2.3 Formulation of the research hypothesis

Scholes and Wolfson (1992) outlined the constructs on the implementation of efficient tax planning. They discuss tax and agency problems and the conflicts managers face when it comes to disclosing economic and financial reports and the implementation of measures to reduce the tax burden. Based on their work, several studies sought to investigate the implications of taxes on firms, considering the agency theory. In general, these studies claim that, on the one hand, tax planning can contribute to increase the companies' value, save tax costs, and reduce the risk of default and debt costs (Graham & Tucker, 2006; Lisowsky, 2010). On the other hand, measures to reduce the tax burden, when highly aggressive, increase the complexity of the firms' financial transactions to the extent that such complexities cannot be properly clarified through the communication with shareholders, creditors, and analysts. In turn, the lower level of transparency can cause agency problems (Desai & Dharmapala 2009; Sikka, 2010; Chen et al., 2014; Taylor & Richardson, 2014; Richardson et al., 2016).

Beladi, Chao, and Hu (2018) argue that the negative effects of tax avoidance outweigh the positive in many situations since informational opacity increases the risk of firms being inspected and punished by tax authorities. However, there are cases in which regulators cannot immediately identify the complex behavior of tax avoidance in firms, allowing managers to manipulate taxes and hide negative and doubtful information about tax strategies to reduce tax expenses (Balakrishnan et al., 2018). One example is the case of the defunct American company Enron, which showed significant growth in the late twentieth century, becoming the seventh-largest American organization and reaching the value of USD 68 billion in 2000, attracting new shareholders, who invested significant capital when impressed with the company's profits. In 2001, the communications industry suffered a series of losses on the stock exchange, and tax authorities started to analyze some companies carefully. The authorities' examination on Enron's transactions revealed that, for years, Enron had paid very few taxes when entering into partnerships via its branches abroad. Thus, the company had to amend its financial reports and disclosed losses of millions of dollars in October 2001, causing its share price to drop dramatically (Sikka, 2010).

As a result of Enron's corporate scandal, discussions in the capital markets and regulatory bodies related to tax avoidance and company transparency intensified. Aiming to offer a higher level of disclosure in financial reports, the US government enacted the Sarbanes-Oxley Act (SOX). Following the movement in the market, an increase in research on tax avoidance and executive's opportunistic behavior was observed in academia. In general, studies sought to show that economic information not disclosed to stakeholders means a reduction in the level of disclosure, resulting in information asymmetry. Studies were carried out in different parts of the world, in the US (Wang, 2010; Ylonen & Laine, 2015; Balakrishnan et al., 2018), in China (Chen et al., 2014; Richardson et al., 2016), and Australia (Taylor & Richardson, 2014), for example.

Throughout history, it is possible to observe that, before the corporate scandals and the discussions on tax avoidance and corporate transparency, research works on transparency levels in the 20th century were focused on managers. The studies showed that managers adopted more aggressive tax strategies to be able to raise their own remuneration. As a consequence, there was a decrease in the level of transparency related to the information disclosed to external users. The tax reform of the mid-1970s, in the US, enabled the emergence of new forms of compensation for executives, mainly based on accounting numbers. In this sense, the study conducted by Hite and Long (1982) found that the new scenario boosted tax manipulation practices, particularly in the elaboration of contracts of incentive and returns for managers. In line with previous research, Mehran (1995) and Austin, Gaver, and Gaver (1998) revealed that the level of returns obtained by the top managers influences

the implementation of tax measures in US companies. In this regard, when investigating the compensation of executive directors and business unit managers, Phillips (2003) found that managers change the level of tax avoidance adopted to achieve their goals. Similarly, when analyzing North American organizations, Desai and Dharmapala (2006) showed that managers' remuneration influences the increase in the level of tax avoidance in companies with low-quality corporate governance.

Particularly regarding the link between the level of tax avoidance and transparency in the US, Wang (2010) explored the link between tax management, corporate transparency, and the value of firms, suggesting that opportunistic agents seek to obscure tax policies in the market to hide income extraction. To reach this result, the author measured tax avoidance based on three proxies (ETR, CashETR, and BTD) and corporate transparency based on the OPACITY index and the company's turnover. The results obtained, considering the period from 1994 to 2001, revealed that the most transparent companies have low levels of information asymmetry and reflect high indicators of tax management. Among the findings, Wang (2010) highlights that, in most industries, executives work to reduce the tax burden in order to increase shareholder wealth.

Similarly, Balakrishnan et al. (2018) investigated whether tax-aggressive US companies were less transparent. The study considered data from 1990 to 2013 and found evidence that tax avoidance is associated with a lower level of corporate transparency. The authors measured aggression through the ETR and CashETR, and corporate transparency by calculating the bid-ask-spread of the analysis related to forecasting errors and analysts' dispersion. According to the study, companies adopt tax planning methods to minimize fiscal contingencies, but, in addition to the expected benefits, there are costs associated with the corporate reorganization process and costs of fines and agency. Given this context, the findings showed that tax avoidance is negatively associated with analysts forecasting errors, analysts' dispersion, and the bid-ask spread. In general, the results highlighted that companies with less corporate transparency have high levels of tax avoidance.

Stora Enso, a firm in the business of cellulose, was analyzed in a qualitative study by Ylonen and Laine (2015). The authors were interested in the organization's attitude toward transparency and social responsibility, as the company declared to the stock market. The authors examined the firm's corporate social responsibility (CSR) reports, financial statements, and articles on the company's financial operations for ten fiscal years (2002 to 2011). The findings revealed that the disclosures on taxes (tax planning, tax risks, and tax compliance) were completely omitted from the disclosed statements, suggesting apparent neglect of CSR commitments.

Due to economic growth in recent decades, political reforms, and the emergence of the private sector, Chinese

companies have also been the object of studies on tax avoidance and transparency of information. Chen et al. (2014) examined the link between the behavior of tax avoidance and agency costs in Chinese companies. The authors pointed out that, although tax planning generates positive returns for companies, it allows the manager's opportunistic behavior and, consequently, decreases the level of disclosure. The study analyzed 4,104 observations from the Shenzhen Stock Exchange from 2001 to 2009, measuring tax avoidance through BTM and ETR and the level of transparency, using a scale produced by the Shenzhen Stock Exchange (the scale is based on the listed firms' disclosure and classify them in four levels: excellent, good, acceptable, and unacceptable. The findings revealed that tax avoidance tends to reduce the firm's value and presents a negative relationship with the level of organizations' disclosure.

In another study to analyze the level of tax avoidance, shareholding concentration, and corporate transparency, Richardson et al. (2016) explored 207 companies listed on the Chinese stock market during the tax years 2005 to 2010. The research correlated the level of disclosure between minority and majority shareholders. The authors measured tax avoidance based on ETR and BTM and used cash flow and voting rights (squared voting rights, scaled by the cash flows) as proxies for ownership structure. The findings pointed out a positive association between tax planning and ownership concentration. Also, the results suggested that the controlling shareholder influences the formulation of companies' tax policies, increasing the likelihood of expropriation from minority investors.

The Australian market was also the focus of a study related to tax avoidance and the transparency of company information. Taylor and Richardson (2014) investigated the link between tax avoidance and financial reporting of 200 Australian companies from 2006 to 2010. The authors were interested in studying this relationship since the companies' tax avoidance may adversely affect their financial position, performance, liquidity, operating results, and level of disclosure. They measured the level of tax avoidance using the ETR and BTM, and estimated corporate transparency through a dummy to inform whether the company released reports on management performance and tax uncertainty. The findings showed that reporting uncertainty on the tax position and the level of tax avoidance are positively associated. The authors highlighted that the increase in the level of disclosure was due to the requirement of tax authorities, such as the Federal Revenue Service, for additional reports related to the financial position and the risk associated with tax policies faced by companies.

Finally, these studies show a common strand in the literature. It is possible to observe that tax aggressive companies tend to report low levels of financial information to stock market players (Desai & Dharmapala, 2006; Wang, 2010; Taylor & Richardson, 2012; Balakrishnan et al., 2018). There is a resistance to disclosing information

caused by the firms' fear of having their tax strategies copied or imitated by other companies or managers (Kubick, Lynch, Mayberry & Omer, 2014). In addition, some executives provide external users reduced information to preserve their interests, thus enabling the emergence of informational asymmetries (Taylor & Richardson, 2014). Thus, the following hypothesis was formulated:

**H1: Tax avoidance negatively influences corporate transparency related to taxes on profits.**

### 3 METHODOLOGY

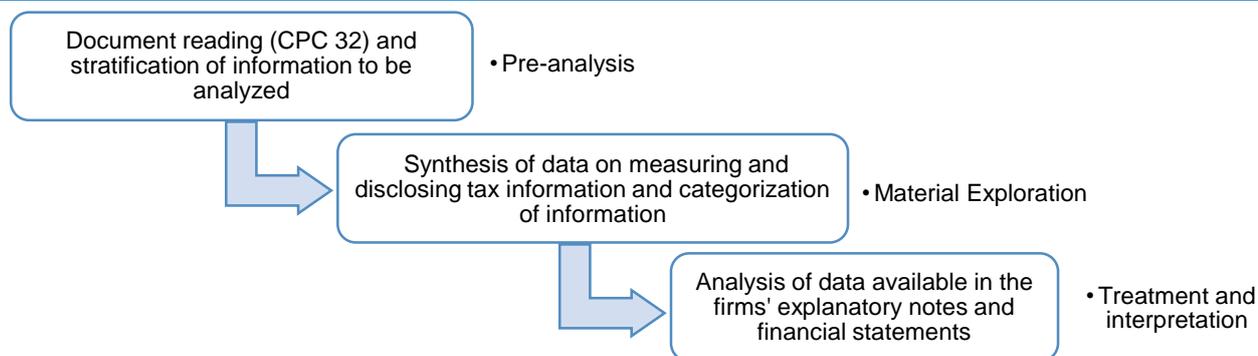
This is a bibliographic, documentary, and ex post facto research, adopting both qualitative and quantitative approaches. The first part, qualitative, consisted of content analysis of the CPC 32/2009, elaborating a checklist to guide the examination of the firms' financial statements and explanatory notes. This analysis was conducted to measure the Brazilian listed companies' corporate transparency. In a second moment, descriptive statistical analysis and econometric modeling were carried out, representing the quantitative part of the study.

The research considered all non-financial companies, regardless of the industry sector, listed on the Brazilian stock exchange B3 (*Brasil, Bolsa, Balcão*). Companies in the financial sector were not considered since they have specific attributes regarding tax legislation. Murcia (2009) points out particularities of some firms such as banks, insurance companies, and others in the financial sector that make it impossible to compare them with non-financial firms (sales and indebtedness levels, for example). To avoid bias in the estimation of the econometric models, all organizations that presented negative net equity (NE) and lack of data were eliminated from the study. Thus, the sample consisted of 256 listed companies. Data were collected from the databases: Economática, Thomson Reuters, FEA/USP's Finance and Risk Laboratory, and the company's explanatory notes and financial statements. For the estimates, outliers from the database were eliminated, with 2.5% of the observations at both ends being disregarded.

#### 3.1 Description of variables

##### 3.1.1 Description of dependent variable

The firms' corporate transparency was considered the dependent variable, measured based on qualitative research conducted in the technical pronouncement CPC 32 – Taxes on Profit. Content analysis was carried out on the document, gathering a list of information required by the pronouncement. The content analysis technique consists of three major stages: (i) pre-analysis, (ii) exploration of the material, and (iii) treatment, inference, and interpretation of data. In the pre-analysis, the material to be analyzed is organized and prepared to be explored, favoring the systematization of initial ideas (Bardin, 2011) (Figure 1).



**Figure 1** Content analysis steps  
Source: Adapted from Bardin (2011).

Initially, content analysis was conducted based on the technical pronouncement CPC 32/2009 and studies on the topic. Next, the information listed in the section “Disclosure” of the technical pronouncement (items and sub-items from 79 to 85) was delimited. Items 81 and 82 (related to taxation on dividends) were excluded from the analysis due to the fact that dividends are not taxed in Brazil (according to Law 9249/1995, dividends paid to investors are not subject to income tax regardless of whether the investor is an individual or a legal entity, domiciled in the country or abroad).

The next step was the creation of categories based on the topics addressed in each of the CPC 32's items. In this sense, information was grouped as proposed by Bardin (2011), aiming to simplify data collection and, through a checklist, implement a metric for information transparency composed of eight categories.

After the stratification of the information, the checklist helped ascertain the corporate transparency of Brazilian listed companies. When reviewing the empirical studies, it was noted that most authors do not make explicit segregation between the quantity and quality of information. It is generally assumed that the quantity of items reported by companies has implications for the quality of disclosure (Owusu-Ansah, 1998; Daske & Gebhart, 2006; Alencar, 2007; Murcia, 2009; Silva, Castro, Ponte & Domingos, 2019). Therefore, a binary metric was adopted to measure certain information. If the organization reported specific information, it would receive a score of 1; otherwise, a score of 0. Thus, to estimate the tax disclosure of each company, the division of the items disclosed by the total number of categories was calculated. It is worth mentioning that, for items subjected to investigation, if the company did not disclose certain information, the need for disclosure by other means such as the financial statements was verified, minimizing the negative effect on the possibility of the company not being obliged to disclose information because it did not have this operation at that time. Thus, when there was such a finding, the minimum amount (denominator) of information required was reduced in that event. Therefore, for this research, a company may receive a full score for

disclosure, according to the standards of CPC 32, if it had not incurred any operation as provided in the technical pronouncement, but had disclosed all other required information.

### 3.1.2 Description of independent variables

#### 3.1.2.1 Effective Tax Rate – ETR

According to the literature related to tax accounting, the effective tax rate (ETR) is often used to measure companies' tax avoidance (Siegfried, 1974; Stickney & McGee, 1982; Gupta & Newberr, 1997; Wang, 2010; Dyreng, Hanlon & Maydew, 2010; Ramalho & Martinez, 2014). As mentioned in several studies (Hanlon & Heitzman 2010; Gomes, 2012; Martinez & Martins, 2016; Bradshaw, Liao & Ma, 2018), ETR is estimated by dividing income tax (IR) and the social contribution on net profit (CSLL) for book profit before tax (LAIR).

According to Gomes (2012), the efficiency of ETR occurs because it is able to capture tax practices used by the company, such as accelerated depreciation, interest on equity and tax incentives. According to Shackelford and Shevlin (2001), effective tax management results in an ETR index lower than the nominal rate of taxes levied on profit, which, in Brazil, is 0.34.

Based on the theoretical foundations presented and the feasibility of measurement in the Brazilian scenario, ETR will be used in this research as one of the proxies to measure tax avoidance of Brazilian companies. Finally, the expectation is to identify a positive relationship between variable ETR and disclosure index, since the lower the ETR is, the greater the level of tax avoidance the company has.

#### 3.1.2.2 Cash Effective Tax Rate – CashETR

Several studies have used the Long Run Cash Effective Tax Rates – CashETR metric to measure the level of tax avoidance in companies. CashETR is defined as the effective rate in a given period, which is the sum of the taxes effectively disbursed in the period “n” divided by the sum of the PBT of the same period (Dyreng et al., 2008; Wang, 2010; Gomes, 2012; Gul, Khedmati & Shams, 2018; Bradshaw et al., 2018), seeking to identify the true value of

taxes on profit. Dyreng et al. (2008) report that two modifications are made in the calculation of the ETRs to measure the CashETR. The first is the measurement of the effective tax rates, carried out in the long term, which can be used for a period from 03 (three) to 10 (ten) years; and the second is the production of an effective tax rate, which reflects all tax expenses in the long run. Aligned with the research conducted by Teixeira (2018), the term used to calculate tax avoidance was three years, due to the limited use of data prior to 2010, imposed by the convergence of Brazilian accounting with the IFRS standard. Thus, the measurement of CashETR was performed using the formula shown in Table 1.

Dyreng et al. (2008) clarified that CashETR consider taxes actually paid, which includes taxes due, extraordinary payments, and compensation, becoming an adequate metric to estimate tax planning. Gomes (2012) highlights that a limitation in the calculation of the CashETR considers only payments related to tax, without considering deferred taxes due to tax distinctions, because what is sought is the identification of the true charge paid of taxes on profits. Similar to the interpretation of the effective tax rate, CashETR is considered efficient when companies are able to report low tax expenses. As for the ETR, the expectation is to find a negative relationship of the variable CashETR of the disclosure index.

### 3.1.2.3 Book-tax-differences - BTD

Book-tax-differences refer to the non-conformity between the accounting profit disclosed by the companies in the financial statements and the taxable result reported to regulatory bodies (Brunozi, 2016). The literature exposes that BTD encompasses temporary and permanent differences in its composition, arising from the misalignment of the financial accounting and tax accounting's rules (Desai & Dharmapala, 2006; Formigoni, Antunes & Paulo, 2009; Taylor & Richardson, 2012). Regarding the Brazilian capital market, Gomes (2012) points out that the divergences between accounting and tax laws are due to the determination of taxable and accounting profits being based on different laws.

Temporary BTD, according to Brunozi (2016), arise from the divergences related to the period of measurement between tax and accounting legislation. The fiscal standard establishes the period (t) for the recognition of a certain event; however, the accounting regulation guides the measurement in the period (t + 1), thus, indicating that, at some point, in the future, the existing difference will no longer be observed.

Permanent BTD result from differences in the treatment of a given event in the accounting and tax laws (Gomes, 2012). According to Formigoni et al. (2009), such divergences arise when revenue and/or expense are recognized in the accounts but do not have a tax effect. They are not considered in the tax scope. Finally, BTD can

arise due to the flexibility of the set of corporate rules since managers have greater discretionary power over accounting profit when compared to taxable income. Thus, due to the differences arising from accounting and tax laws, CPC 32 (2009) emphasizes the obligation for firms to make a reconciliation, in an explanatory note, between accounting profit and taxable profit to demonstrate all the factors that untie accounting profit from taxable profit. In summary, to measure BTD, it is necessary to divide the expenses with taxes on profit by 0.34 (percentage referring to the nominal income tax rate in Brazil) and, from this value, decrease the profit before taxes on the profit (Desai & Dharmapala, 2006; Formigoni et al., 2009; Taylor & Richardson, 2012).

Thus, it appears that the greater the difference between taxable and accounting profit, the greater the level of tax avoidance and, consequently, the lower the level of disclosure. Finally, a negative association between BTD and the level of disclosure is expected.

### 3.1.2.4 Description of control variables

The assessment of the influence of tax avoidance on corporate transparency was conducted using explanatory variables and other control variables as regressors. According to Rashid and Islam (2013), control variables allow us to identify the impact of factors external to the process that are able to influence the dependent variable.

Consistent with previous studies, control variables were included in the model: company size (Jackling & Johl, 2009; Tomar & Bino, 2012; Buallay, Hamdan & Zureigat, 2017; Pillai & Al-Malkawi, 2018; Balakrishnan et al., 2018); leverage (Jiraporn & Gleason, 2007; Nadarajah, Ali, Liu & Huang, 2018; Balakrishnan et al., 2018); profitability (Bharath, Pasquariello & Wu, 2009; Richardson, Wang & Zhang, 2016; Balakrishnan et al., 2018); Market-to-book (Richardson, Wang & Zhang, 2016; Balakrishnan et al., 2018; Beladi et. Al, 2018); sector (Richardson, Wang & Zhang, 2016; Buallay et al., 2017; Pillai & Al-Malkawi, 2018; Balakrishnan et al., 2018); and Level of Governance (Klann & Beuren, 2011; Silva & Pinheiro, 2015; Marques, 2016).

### 3.1.3 Econometric models

This study estimated three panel data' regressions to investigate the link between tax avoidance and transparency. It is possible to note that the dependent variable and the control variables are similar in all models. However, concerning the measure of tax avoidance, due to the collinearity existing between the metrics, it is necessary to estimate the regressions separately, as detailed in equation 1.

$$\begin{aligned}
 TRANSP_{i,t} = & \beta_0 + \beta_1 AVOIDAN_{i,t} + \beta_2 nSIZE_{i,t} \\
 & + \beta_3 LEV_{i,t} + \beta_4 hAGE_{i,t} + \beta_5 PERF_{i,t} + \\
 & \beta_6 MB_{i,t} + D1SECT_{i,t} + D2LEVELGOV_{i,t} + c_i + \varepsilon_{it}
 \end{aligned} \quad (1)$$

Where:

TRANSP: proxy for corporate transparency;

AVOIDAN: level of tax avoidance;

n|SIZE: natural logarithm of the organization's total assets;

n|AGE: measured by the natural logarithm of the firm's number of years;

LEV: refers to the extent of the company's debt;

PERF: proxy for performance – ROA;

MB: company's market-to-book;

SECT: dummy that takes value 1 when the company belongs to a specific sector and 0 otherwise;

LEVELGOV: dummy that takes value 1 when the company is in the B<sup>3</sup>'s segment *Novo Mercado* and 0 otherwise;

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ : estimated coefficients of the model's continuous variables;

$D_1, D_2$ : estimated coefficients of the model's dummy variables;

$\epsilon_i$ : unobserved heterogeneity that changes between units; constant over time;

$\epsilon_{it}$ : usual regression error term, differs between units and changes over time. It has zero mean, constant variance, not autocorrelated, and not correlated with the regressors;

$i$ : individual;

$t$ : time.

The size of the organization is often used as an explanatory variable when it comes to studies on disclosure. The literature reveals that the firm's size plays a crucial role in its disclosure policy, since the larger the companies, the greater the visibility is in society and regulatory obligations (Leuz & Verrecchia, 2000; Botosan & Plumlee, 2002; Balakrishnan et al., 2018). In addition, Klann and Beuren (2011) point out that the cost of producing information can be much higher in small companies, proportionally, when compared to large companies, which tend to obtain benefits from disclosure (such as reducing the cost of capital). Thus, a positive relationship between the level of disclosure and the size of the organization is expected.

Leverage is another control variable included in this study. According to the agency theory, agency costs vary according to the attributes of the firm, such as size, leverage, and ownership structure. Specifically, when there is a high degree of leverage, companies disclose more information aiming to satisfy the needs of stakeholders and to reduce their cost of capital, by decreasing investor uncertainty (Jiraporn & Gleason, 2007; Jiraporn, Kim, Kim & Kitsabunnarat, 2012; Nadarajah, Ali, Liu & Huang, 2018). Thus, a positive link between the level of disclosure and leverage is expected.

The company's profitability is an issue that attracts the attention of investors and market analysts. For Oliveira, Lucena, Pereira, and Câmara (2016) such attention contributes to mitigating information asymmetry, since managers want to attract more investments and, therefore, need to present relevant and transparent data to the capital market. Research has found that organizational

performance positively correlates with corporate transparency (Leuz & Verrecchia, 2000; Bharath, Pasquariello & Wu, 2009). The growth of the institutions was included in the model, considering that the more growth opportunities companies have, the more financial resources they will need to operate. They must report a higher level of information to be able to raise funds more easily (Klapper & Love, 2002). Therefore, a positive relationship between the level of disclosure and the growth of companies is expected.

Finally, the level of governance was included as a control variable. As highlighted by the Brazilian Securities and Exchange Commission (CVM, 2020), stakeholders verify the firms' results and performance through their financial information, observing whether the reported data reflects, in a reliable way, the reality of the organizations' transactions. To help investors differentiate companies according to the most modern and transparent practices of respect for shareholders, B<sup>3</sup> instituted the segment called *Novo Mercado*, and differentiated levels of corporate governance. Each level has different requirements, more severe than the requirements of the regular standards, and firms' adherence is voluntary (Marques, 2016). The *Novo Mercado* segment requires the highest levels of corporate governance and is considered the benchmark regarding transparency and respect for shareholders. Therefore, a positive relationship is expected between the level of disclosure and the companies in the *Novo Mercado* segment. For the estimation of the proposed models, the sample was separated into three sectors: industry, commerce, and services, according to the classification used by Thomson Reuters. The adoption of this classification is justified because using economic segments proposed by B<sup>3</sup>, it can be found multicollinearity problems in regressions that have expressive quantities of dummy variables.

Wooldridge (2002) reports that the correct use of the panel data approach allows studying several companies over time. In addition, the panel data models are feasible for studies where it is necessary to better understand the dynamics of the proposed model's adjustment, since it is possible to control heterogeneity and the reduction of collinearity between regressors (Baltagi, 2005).

The parameters in the panel data methodology of the estimated model can be obtained from three different approaches: Pooled, Fixed Effects, and Random Effects. The difference between these approaches lies in how each of them treats the unobserved heterogeneity. Thus, to determine the most appropriate model, three tests are performed: Chow test, Breusch-Pagan test, and Hausman test.

However, the models were estimated based on the systemic generalized method of moment (GMM-Sys), considering the research's objective and empirical evidences on studies related to information transparency, since the GMM-sys enables robust analyses. The literature

points out that studies related to disclosure may present endogeneity problems, leading to the use of dynamic panel-data analysis (Chen, Chung & Liao, 2007; Barros, Boubaker & Hamrouni, 2013; Alhazaimeh, Palaniappan & Almsafir, 2014). The econometric literature presents the instrumental variable models and the GMM as methodologies capable of treating endogeneity, which leads to a model of dynamic panel data.

In the presence of endogeneity problems, the assumption of strict exogeneity required by the pooled, fixed effect, and random effect approaches is broken. For Wooldridge (2002), endogeneity problems can occur due to the following factors: (i) omission of variables; (ii) measurement errors resulting from the sampling process; and (iii) simultaneity, which refers to cases in which the variables can be considered dependent and independent. Regarding the dynamic panel, Roodman (2009) explains that, in the literature, there are two possible approaches: GMM in differences and systemic GMM (GMM-Sys). The difference between them is based on the number of instruments used by each one. GMM-Sys presents a more robust approach than GMM when it comes to differences. The robustness offered by GMM-Sys is based on expanding

the number of instruments used compared to GMM in Differences.

The adjustment of the proposed model, considering parameter estimations using a dynamic panel, is based on the verification of the approach's premises so that the correct estimation of the parameters using the GMM approach requires the stationarity of the proposed model's regressors. The Phillips-Perron test is conducted to verify stationarity, presenting the existence of a unit root (non-stationarity of the analyzed series) as a null hypothesis. Another assumption for using the GMM approach is the existence of negative and significant autocorrelation among the residuals of the proposed model. However, it is expected that there will be no second-order autocorrelation between errors. The autocorrelation test is performed using the Arellano and Bond test, which presents the lack of autocorrelation as a null hypothesis. The verification of the GMM instruments' validity is done through the Sargan and Hansen test. Finally, the viability of using GMM in differences or GMM-Sys is made through the Dif-Hansen test, which shows the viability of GMM-Sys (Wooldridge, 2002) as a null hypothesis.

**Table 1**  
Variables of the models

Variables	Proxies	Construct	References	Expected outcome
Dependent	TRANSP	-	CPC 32.	-
Independent of interest (AVOIDANCE)	ETR	$\frac{Expense. IR \text{ and } CSLL}{PBT}$	Wang (2010); Gaertner (2014); Taylor and Richardson (2016); Balakrishnan, Blouin, and Guay (2018); Bradshaw, Liao, and Ma (2018); Armstrong, Glaeser, and Kepler (2019).	(+)
	BTD/AT	$\frac{PBT - \left(\frac{IR \text{ and } CSLL}{0,34}\right)}{Total \text{ asset}}$	Tang (2005); Wang (2010); Taylor and Richardson (2012); Richardson, Wang, and Zhang (2016); Brunozi, Kronbauer, Martinez, and Alves (2018).	(-)
	CashETR	$\frac{Paid \text{ IR and } CSLL}{PBT}$	Dyreg, Hanlon, and Maydew (2008); Wang (2010); Armstrong, Blouin, and Larcker (2012); Balakrishnan, Blouin, and Guay (2018); Armstrong, Glaeser, and Kepler (2019).	(-)
Control	Size (nSIZE)	<i>NI Asset</i>	Jackling and Johl (2009); Tomar and Bino (2012); Buallay, Hamdan, and Zureigat (2017); Pillai and Al-Malkawi (2018).	(+/-)
	Age (nAGE)	<i>NI Age</i>	Maama, Akande, and Doorasamy (2020); Albitar (2015); Afonso (2016).	(+)
	Leverage (LEV)	$\frac{Company \text{ and } Funding}{Total \text{ asset}}$	Jiraporn, Kim, Kim, and Kitsabunnarat (2012); Nadarajah, Ali, Liu, and Huang (2018); Balakrishnan, Blouin, and Guay (2018).	(+)
	Performance (PERF)	$\frac{Net \text{ profit}}{Total \text{ asset}}$	Bharath, Pasquariello, and Wu (2009); Richardson, Wang, and Zhang (2016); Balakrishnan, Blouin, and Guay (2018).	(+)
	Market-to-book	$\frac{Market \text{ value}}{Net \text{ equity value}}$	Richardson, Wang, and Zhang (2016); Balakrishnan, Blouin, and Guay (2018); Beladi, Chao, and Hu (2018).	(+)
	Sector (SECT)	Dummy (1- specific sector; 0- other)	Buallay, Hamdan, and Zureigat (2017); Pillai and Al-Malkawi (2018).	(+/-)
	Level of governance	Dummy (1- Novo Mercado segment; 0- other)	Fernandes and Martinez (2013); Lopes (2015); Marques (2016).	(+)

Source: Elaborated by the authors.

### 3.2 Research limitations

Some limitations were identified concerning the variables of interest, in this research. Regarding the dependent variable TRANSP, two points need to be clarified. First, it refers to the calculation of the tax only on profit (in Brazil, IR and CSLL), making it impossible for the results obtained in this study to be interpreted beyond that portion of tax. Therefore, the findings here do not apply to tax avoidance practices related to different taxes. Second, the measurement of disclosure is limited only to what CPC 32 institutionalizes as necessary regarding tax disclosure. Thus, the study presents a partial version, restricted to the scope of this standard. It is also necessary to highlight that companies have frequently used other communication channels (Galdino Sá, Silva & Gomes, 2020) to disclose information. Therefore, measuring transparency using only the information required by the CPC 32 limits the analysis, since other potentially relevant information, provided by companies (mainly voluntary), are disregarded.

Regarding the variables of tax avoidance (ETR, BTD/AT, and CashETR), it is important to highlight that they capture the tax choices related to IR and CSLL. Thus, any

discretion that companies adopt for other taxes do not measure these effects. In addition, tax choices that may indirectly influence taxes (even those on income, for example, postponement of revenues) do not have their effect captured by those proxies.

## 4 DATA ANALYSIS

### 4.1 Sample description, descriptive statistics, and averages tests

Table 2 shows that, practically every year of the period studied in this research, firms published around 90% of the information required by CPC 32. This indicates that the companies in the sample were concerned with adapting their tax disclosures to the international standard, which aims to make the financial statements more transparent and comparable, meet users' needs, and contribute to assessing the equity situation of companies. In addition, it is possible to see that, over the years, companies have shown greater adherence to the standard, considering that disclosure has increased consistently.

**Table 2**  
Transparency index

Years	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Index - Transparency</b>	0.8942	0.8993	0.9031	0.9019	0.9010	0.9058	0.9106	0.9099	0.9066

Source: Elaborated by the authors.

As for the companies' sectors, the sample was formed by firms in the industry, service, and commerce sectors (Table 3). It is observed that, in all the years analyzed, the sector with the greatest representativeness was service, followed by industry and commerce. In order to

assess the link between the level of disclosure of firms and the sector in which they operate, we introduce the values of descriptive transparency statistics, broken down by sectors of activity.

**Table 3**  
Corporate transparency per sector

Industry							
Variable	N	Minimum	Maximum	Median	Mean	Standard deviation	CV
<b>Index - Transparency</b>	706	0.45	1.00	0.91	0.90	0.10	11%
Service							
Variable	N	Minimum	Maximum	Median	Mean	Standard deviation	CV
<b>Index - Transparency</b>	992	0.18	1.00	0.91	0.90	0.11	13%
Commerce							
Variable	N	Minimum	Maximum	Median	Mean	Standard deviation	CV
<b>Index - Transparency</b>	196	0.64	1.00	0.95	0.93	0.07	8%

Source: Elaborated by the authors.

The segregation of the data description per sector shows that the transparency index presents, in all the sectors that were analyzed, low deviations around the average. This finding suggests that the companies maintain their performance regarding transparency close to the average value for the index. In general, commercial

companies have a higher level of disclosure when compared to other sectors. In addition, it seems that there is no difference in firms in the industry and service sectors' level of disclosure, since the average values were 0.90. An average test was carried out to corroborate the inference made and confirming these statements.

The Doornik-Hansen test was adopted to estimate normality and guide the choice of the subsequent tests. The test resulted in no data normality ( $p\text{-value} > 0.000$ ), which means the data was non-parametric. Therefore, the test to detect significant statistical differences between the groups was the Wilcoxon-Mann-Whitney.

The test did not identify statistically significant differences for the transparency index when segregating the industry and the other two sectors (Table 4). As for the companies in the commerce and service sectors, the

Wilcoxon-Mann-Whitney test detected a significant association between the averages of companies in these specific sectors and the other firms. In addition, the test findings reveal that firms in the commerce sector have a higher level of disclosure than those in the industry and service sectors.

Table 5 presents the descriptive statistics for the variables of tax avoidance, considering each proxy and taking into account the main attributes of the calculated measures.

**Table 4**  
Wilcoxon-Mann-Whitney test – Transparency

Industry		Services		Commerce	
Variable	Transparency	Variable	Transparency	Variable	Transparency
Z statistic	0.489	Z statistic	1.964**	Z statistic	3.998***
P-value	(0.6248)	P-value	(0.0495)	P-value	(0.0001)

Note: Statistical significance is indicated by \*10%; \*\*5%; \*\*\*1%.  
Source: Elaborated by the authors.

**Table 5**  
Tax avoidance

General						
Variables	Minimum	Maximum	Median	Mean	Standard deviation	CV
CashETR	0.0000	2.2832	0.0587	0.1465	0.2404	164%
ETR	0.0025	2.0637	0.2475	0.2853	0.2580	90%
BTD/AT	-0.2199	0.3410	0.0608	0.0683	0.1015	148%

Source: Elaborated by the authors.

Regarding the proxies of tax avoidance (Cash ETR, ETR, and BTD), unlike the findings regarding the level of corporate transparency, there is a high variation concerning the metrics' average values. The results suggest that the avoidance practices may be linked to characteristics of the firms' sector, since the regulatory environment in which they operate may enable the implementation of measures to reduce, postpone, or eliminate tax expenses.

When it comes to the variable CashETR, companies have an average of 14.65%, indicating the possibility that firms are taking advantage of the benefits arising from tax planning, since the nominal tax rate in Brazilian companies is 34%. Cases of companies that remained three, five, and even seven consecutive years without paying taxes were observed. Regarding ETR and in the interpretation of CashETR, Brazilian companies seem to engage in tax avoidance since they pay, on average, a lower effective rate (28.53%) when compared to the nominal tax rate defined in the legislation.

#### 4.2 Inferential statistics

This section shows three regressions, estimated through the GMM-Sys. For comparability purposes, the models were also estimated using pooled and random effects, considering that the explanatory variable *company's sector* did not vary in the analyzed period. Therefore, the models generated by fixed effects may not be able to identify

the impact of the regressors that do not change, over time, in the models' dependent variable (Wooldridge, 2002).

Thus, for the validation of the GMM-Sys models, to verify whether the series of regressors that integrate the models are stationary, the Fisher test for panel data was performed, based on the Phillips-Perron unit root tests. Subsequently, the Arellano and Bond autocorrelation test was performed, applied to verify the autocorrelation in the error term, with the results showing, in the three models, the existence of negative first-order autocorrelation.

The Hansen test guided the analysis to validate the exogeneity assumptions of the instruments used in the dynamic panel modeling. In all the proposed models, the validity of the instruments must be observed. Thus, to verify the feasibility of using the GMM-Sys approach instead of GMM in differences, the Dif-Hansen test was performed, highlighting the preference for measuring models through the GMM-Sys. Finally, to assess the global significance of the GMM model, the Wald test showed global significance for all models.

Table 6 presents the data shown in the generated models. As pointed out in the methodology, the findings suggest that the regressions differ only when it comes to the proxy for tax avoidance (ETR, CashETR) used in each model.

It was possible to observe that companies in the commerce and service sectors positively correlate with the

level of disclosure. This result may be connected to levels of information disclosure and contributes to reduce normative and regulatory requirements, which leads to high informational asymmetry.

**Table 6**  
Estimations

Variables	ETR			CashETR			BTD		
	Pooled	Random Effects	GMM	Pooled	Random Effects	GMM	Pooled	Random Effects	GMM
Avoidance	0.0093*	0.0008	0.0018	-0.0005***	-0.0002**	-0.0002***	-0.0047*	-0.0032	0.0023
	(0.0051)	(0.0026)	(0.0066)	(0.0001)	(0.0001)	(0.0000)	(0.0270)	(0.0167)	(0.0369)
Industry	0.0148**	0.0124	-0.0063	0.0127**	0.0063	0.0202**	-0.0135**	-0.0093	0.0014
	(0.0048)	(0.0012)	(0.0105)	(0.0054)	(0.0132)	(0.0102)	(0.0048)	(0.0123)	(0.0117)
Commerce	0.0289***	0.0357*	0.0351	0.0327***	0.02966	0.0275**	0.0146**	0.0243	0.0535**
	(0.0074)	(0.0194)	(0.0235)	(0.0086)	(0.0208)	(0.0140)	(0.0074)	(0.0200)	(0.0216)
nlAge	0.0082***	0.0075*	-0.0006	0.0093***	0.0123**	0.0011	0.0088***	0.0091**	0.0001
	(0.0027)	(0.0045)	(0.0039)	(0.0034)	(0.0060)	(0.0249)	(0.0027)	(0.0045)	(0.0037)
nlAsset	0.0264***	0.0199***	0.0072***	0.0261***	0.0179***	0.0047**	0.0273***	0.0207***	0.0052**
	(0.0012)	(0.0022)	(0.0026)	(0.0013)	(0.0027)	(0.0024)	(0.0012)	(0.0022)	(0.0023)
Leverage	0.0000**	0.0000***	0.0000***	0.0000	0.0000	3.38e-06	0.0000	0.0000	-1.09e-6
	(8.47e-06)	(4.26e-06)	(3.50e-06)	(0.0000)	(0.0000)	(7.33e-06)	(0.0000)	(0.0000)	(8.07e-06)
ROA	0.0358**	0.0053	0.0360*	0.0758	0.0301*	0.0414*	0.0261	0.0039	0.0302*
	(0.0012)	(0.0088)	(0.0232)	(0.0258)	(0.0106)	(0.3364)	(0.0168)	(0.0107)	(0.0177)
Market-to-book	-0.0004	0.0004**	-0.0003	-0.0002	-0.0000	-0.0016	-0.0001	-0.0001	0.0000
	(0.0003)	(0.0002)	(0.0005)	(0.000)	(0.0002)	(0.0001)	(0.0004)	(0.0002)	(0.0002)
Level of governance	0.0081*	0.0131	-0.0036	0.0016	0.0092	0.0004	0.0096*	(0.0146)	-0.0031
	(0.0047)	(0.0118)	(0.0052)	(0.0053)	(0.0126)	(0.0050)	(0.0047)	(0.0119)	(0.0051)
_cons	0.4658***	0.5628***	0.2451***	0.4720***	0.5845***	0.2211***	0.4679***	0.5551***	0.2273***
	(0.0209)	(0.0352)	(0.0609)	(0.0243)	(0.0447)	(0.0513)	(0.0211)	(0.0361)	(0.0585)
<b>Tests/Validation</b>									
Dependent Var. (lagged)	-	-	0.6147***	-	-	0.6637***	-	-	0.6564***
	-	-	(0.0682)	-	-	(0.0547)	-	-	(0.0590)
Observations	1844	1844	1524	1320	1320	1071	1892	1892	1597
Number of groups	-	255	239	-	230	218	-	256	241
Instruments	-	-	247	-	-	142	-	-	226
VIF	1.15	1.15	-	1.18	1.18	-	1.24	1.24	-
Breusch e Pagan	3027.8***	-	1651.2***	-	3189.3***	-			
Wooldridge (autoc)	-	43.77***	-	-	22.55***	-	-	52.40***	-
LR (heter)	-	1068.8***	-	-	1871.1***	-	-	1090.2***	-
Arellano-Bond (1)	-	-	-5.59***	-	-	-4.51***	-	-	-5.55***
Arellano-Bond (2)	-	-	-0.34	-	-	1.41	-	-	0.66
Sargan	-	-	372.56***	-	-	190.62***	-	-	281.59***
Hansen	-	-	206.05	-	-	144.343	-	-	219.14
Diff-in-Hansen	-	-	0.05	-	-	2.49	-	-	0.52
Wald	-	-	259.10***	-	-	884.42***	-	-	242.42***

Note: Statistical significance is indicated by \*10%; \*\*5%; \*\*\*1%.

Source: Elaborated by the authors.

The results show that the size of the organization, measured through the natural logarithm of the asset, positively influences the level of companies' disclosure. It is also possible to associate the finding with the visibility of large companies, since they tend to disclose more information, aiming to attract more capital from third parties, as well as meeting their regulatory obligations (Leuz & Verrecchia, 2000; Botosan & Plumle, 2002; Balakrishnan et al., 2018).

The finding corroborates the research, by Owusu-

Ansah (1998), carried out in Zimbabwe; by Gao, Heravi, and Xiao (2005), in Hong Kong; in the Swiss market, by Raffournier (1995); and in the US, by Balakrishnan et al. (2018).

As expected, the results show that leverage positively influences the companies' level of disclosure. As evidenced in the agency theory, the relationship between the firms' shareholders (principal) and the managers (agents) is an example of an agency relationship, and, when there is no maximization of the interests of the (main) investors, agency

costs may arise (Jensen & Meckling, 1976). In this context, it appears that agency costs would be high for companies with high levels of leverage, and informational reporting could contribute to minimizing such costs, thereby attracting third-party capital.

About organizational performance, measured through the ROA, a positive association is observed when it comes to the level of transparency of the firms. A possible justification lies in the fact that, increasingly, companies are being pressured to demonstrate high and attractive performance to increase the level of stakeholder investment. The result confirms the expected relationship in this study and corroborates the research that evidenced the positive influence of organizational performance on corporate transparency (Leuz & Verrecchia, 2000; Bharath et al., 2009).

As for the tax avoidance, measured through CashETR, the result found in the regression does not confirm the research hypothesis when revealing that firms with high tax avoidance tend to present high levels of disclosure. The verified relationship is not consistent with the literature (Desai & Dharmapala 2009; Chen et al., 2014; Balakrishnan et al., 2018). In general, previous research has reported that firms engage in forms of tax planning to

minimize tax contingencies. However, in addition to the expected benefits for firms, such as reducing, postponing, or even eliminating tax expense, there are costs associated with the corporate reorganization process, fines, and agency costs (Lisowsky, Robinson & Schmidt, 2013; Balakrishnan et al., 2018).

Considering the observed relationship, the Brazilian scenario shows that companies may consider complex tax avoidance, which causes problems in the disclosure of information. In this sense, such companies tend to raise the level of corporate transparency, aiming to relieve the concern of external investors when it comes to the hidden costs of the agencies associated with tax avoidance.

Finally, adopting a more robust model allowed us to conclude that the companies' transparency gap from the previous year indicates that the behavior of past transparency positively influences current transparency.

It is noteworthy that, when adopting a more robust model to deal with the problem of endogeneity, there is an increase in the value of standard errors, leading to the non-significance of some parameters. These results are summarized in Table 7.

**Table 7**

Summary of results and estimations

Variable	Transparency		
	Expectation (positive/negative)	Observed (positive/negative)	Significant models
Tax avoidance	-	-	CashETR
Sector (commerce)	+/-	+	Btd/at and CashETR
Sector (industry)	+/-	+	CashETR
Size	+	+	Btd/at, ETR, and CashETR
Leverage	+	+	ETR
Profitability	+	+	ETR, CashETR
Lagged transparency	+	+	Btd/at, ETR, and CashETR
Constant		+	Btd/at, ETR, and CashETR

Source: Elaborated by the authors.

## 5 FINAL CONSIDERATIONS

This research analyzed the influence of tax avoidance on corporate transparency related to taxes on profits. The study was based on data from 256 companies of different economic sectors, listed on the Brazilian stock exchange B<sup>3</sup>, from 2010 to 2018, identifying the level of information transparency by year and by sector.

A checklist was prepared to ascertain the level of disclosure of Brazilian firms, consisting of eight categories and 22 items, based on the section "Disclosure" of the technical pronouncement CPC 32/2009 (which guides the process of tax recognition, measurement, and disclosure, and its effects on companies' financial operations). When examining the firms' financial statements from 2010 to 2018

based on the items in the checklist, the study found an average level of disclosure of 90.36%.

Two regressions were generated, adopting the same dependent and control variables and differentiated by the independent variable tax avoidance. Regarding the association between tax avoidance and corporate transparency, it appears that only the model that contains the independent variable tax avoidance (measured using CashETR) presented a statistically significant negative relationship. It can be inferred that, since tax avoidance is complex and allows the emergence of disclosure problems, firms willing to gain the investors' trust and attract investments tend to increase the level of transparency regarding economic and financial information.

Particularly regarding the measurement of CashETR,

it is important to note that, in general, Brazilian companies do not disregard the use of activities that lead to tax economy. The average value of CashETR was 13.16%, 20.67% and 14% for firms in the industry, service, and commerce sectors, respectively, which are lower percentages than the Brazilian nominal tax rate (34%). The firms' explanatory notes suggest that the high level of avoidance is related to the strategies used to reduce taxable income. Some firms counted on tax benefits for participation in governmental projects developed by the Superintendence of Development of the Northeast and Superintendence of the Manaus Free Trade Zone (SUFRAMA). These benefits allowed a 75% tax reduction, including additional non-refundable tax credit, for ten years. Finally, in general, the companies enjoy tax benefits when distributing results to their shareholders via interest on equity. In this type of remuneration, the payments to shareholders are considered an expense to be deducted when calculating the income, which reduces the amount used as a reference to establish the income tax (IRPJ) and the social contribution on net profit (CSLL), therefore, resulting in tax economy.

Another factor that contributes to the high level of tax avoidance observed may be the number of companies that did not present tax payments on profit in the period analyzed. The data showed that over a period of three, five, and seven consecutive years, 85, 55, and 26 firms, respectively, did not pay taxes on profits. In addition, when it comes to the negative relationship between avoidance and transparency, it was found that characteristics, such as size, leverage, being in the sectors of commerce and services, and profitability, positively influence the companies' level of disclosure. In addition, when adopting a more robust model, it was evident that the corporate transparency of the previous year positively influences the current transparency.

The inferences made in this study sought to contribute to the literature related to the level of disclosure and tax avoidance, by investigating an insufficient explored relationship at a national level. In addition, this research is relevant when analyzing the extent to which Brazilian non-financial firms comply with the requirements of regulatory bodies regarding the recognition, measurement, and disclosure of taxes on profits. This information is useful for those who are responsible for establishing the standards and who are concerned with the quality of accounting information.

The study limitations include restrictions regarding its population and sample size, since the sample is characterized as intentional and non-probabilistic; the inferences can only be made to companies that encompassed the study. Therefore, it is not possible to generalize the findings to other companies. Another limitation refers to the measurement of the level of corporate governance. We decided to use the B<sup>3</sup>'s *Novo Mercado* segment because it presents organizational disclosure as its

core and demonstrates a high level of concern regarding shareholders, compared to the other segments in the Brazilian stock exchange. Therefore, future research could expand the sample and use other measures to study tax avoidance and corporate transparency, considering that the disclosure index in this study only analyzed information related to tax recognition, measurement, and disclosure on profits. Another suggestion is to examine the difference in disclosure between corporate governance levels, as well as including other determinants, mentioned in the literature, that impact corporate transparency (such as the number of analysts and the internationalization of firms, which were not obtained in this study due to data accessibility).

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