# repec

ABRACICON
ACADEMIA BRASILEIRA
DE CIÊNCIAS CONTÁBEIS

This journal offers immediate, free access to its content from the internet through SEER system, therefore, scientific knowledge is freely available to the public, aimed at a democracy of knowledge.

REPeC uses the Journal Electronic Editing System (SEER) for management of the periodical.

The Electronic Editing System (SEER) was translated and adapted from the Open Journal Systems (OJS) by the Brazilian Institute of Information in Science and Technology (IBICT). This free software, developed by the British Columbia University from Canada, aims at assisting scientific journals editing in each stage of the process, from submission and consultants evaluation to online publication and its indexation.

Available online at: *http://www.repec.org.br*

© Abracicon – Academia Brasileira de Ciências Contábeis – 2023

# Editor's Word

Dear readers, here is the third issue of 2024. I want to congratulate the authors of the articles published and thank all authors who submitted their manuscripts but unfortunately did not have them approved.

The first article was written by Professor Bruno Meirelles Salotti, who kindly responded to my invitation and wrote about the conceptual and operational changes resulting from IFRS 18. Additionally, he presents ideas about potential research topics concerning such changes. I am immensely grateful to Professor Salotti for his unquestionable help to REPeC.

Antonio Gomes Machado, Jacqueline Cunha, Jorge Bispo, and Isabel Lourenço wrote the second article. It aimed to verify, within the scope of federal taxation, whether tax complexity and repetitive special installments are associated with an increased probability of tax noncompliance among companies listed on B3, a finding that was confirmed in their study. The results also showed that the low probability of being inspected, high inspection costs, the need for cash, and expected utility positively affect the probability of tax noncompliance in the companies in the sample.

The third article was written by Marconi Miranda, Luiz Abrantes, Antônio Brunozi Jr., and Marco Aurélio Marques Ferreira. It assesses the effects of tax incentive policies applied simultaneously to IPI, ICMS export, PIS, and Cofins on the budgetary balance of Brazilian municipalities. The results indicated that, in general, tax incentive policies did not favor municipal finances' fiscal balance.

Filipe Manarte Scaramussa and Patrícia Maria Bortolon wrote the fourth article, which aimed to analyze the relationship between institutional investors' presence in Brazilian companies' shareholding structures and their corporate governance practices. The findings obtained through GMM-Sys regression showed a positive relationship between the participation of pension funds and the CGI, contradicting Brazilian studies but aligning with the international literature. Their results also showed that companies with a shareholding base in which there are more institutional investors tend to adopt improved governance practices.

The fifth article, by Alison Meurer and Flaviano Costa, seeks to analyze the relationship between the level of the Impostor Phenomenon (IP) and cyberloafing on social networks during classes mediated by the Social Comparison Orientation (SCO) of students attending an Accounting Sciences undergraduate program. The results indicated significant differences based on the IP level for ability-based, opinion-based SCO, and cyberloafing. The relational model indicated that, although there are direct and significant relationships between the IP with SCO and cyberloafing, we cannot state that SCO mediates this relationship. This result indicates that the SCO drives the effects of IP on cyberloafing practiced during classes on social networks.

The sixth article, written by Kelly Cristina Mucio Marques, verified to what extent student motivation changed throughout the undergraduate Accountancy program and found that motivation changed over the program. A statistically significant decrease was detected in intrinsic motivation to know and achieve and extrinsic motivation of identification, while demotivation increased.

Hellen Karla de Araújo, Yahmany Abrahim, Robério de França, and Wenner Lopes Lucena wrote the seventh article, which analyzes the influence of Corporate Reputation (CR) as a moderating factor of Corporate Social Responsibility (CSR) on the tax aggressiveness of B3 companies. Their results showed a negative relationship between tax aggressiveness and CR; no statistical significance was found between tax aggressiveness and CSR. The relationship reverses when CR moderates CSR though. This finding is possibly explained by the Moral Licensing Theory, which states that companies would be granted moral credits (due to high levels of CR and CSR) and use them to adopt more aggressive practices.

As stated in its objectives, REPeC is not a publication solely linked to education but to several fields, such as finance, management, public policy, auditing, and taxes.

Without further ado, I thank all researchers who submitted their articles to REPeC and the always supportive referees. Congratulations to those who had their articles approved, as the demand is high, and the road to the final publication is arduous.

Thank you very much to the readers, and I hope you enjoy this new issue.


Academic greetings,

**Gerlando Lima, Ph.D.**
**Editor in Chief.**

# Academic motivation from the perspective of the Self-Determination Theory

**Claudio Marques**
https://orcid.org/0000-0001-5715-3014

**Kelly Cristina Mucio Marques**
https://orcid.org/0000-0002-8957-1090

**Lilian Moreira de Alvarenga Assolari**
https://orcid.org/0009-0008-9175-1972

## Abstract

**Objective:** To verify the extent to which students' motivation changes during an Accounting Sciences Undergraduate Program.

**Method:** Data were collected from 2016 to 2021 using the Academic Motivation Scale (AMS) based on the self-determination theory. The data were treated by frequency distribution, boxplot graphs, and the Wilcoxon matched pairs test. The sample included 583 participants, 163 of whom answered the scale in the first and fourth years, totaling 746 responses.

**Results:** The results showed that the students' motivation level changed during the program. A statistically significant decrease was found in the motivation level concerning intrinsic motivation to know and achievement and extrinsic motivation of identification, while demotivation increased.

**Contributions:** This study's contribution concerns the confirmation that the change in motivation levels was the same throughout the course, both for students who responded at the beginning and end of the course and for those who responded only at the beginning or end of the program. This study also highlights the factors that fluctuated, allowing coordinators and educators to make decisions/actions to improve critical aspects.

## 1. Introduction

One of the theoretical foundations that postulate the understanding of human motivation was developed by Deci and Ryan (1985), called the Self-Determination Theory. Supported by empirical data, this theory suggests that human motivation arises from satisfying three basic psychological needs: autonomy, competence, and relatedness (Ryan & Deci, 2000). The satisfaction of such needs may differ between individuals, but it is considered essential for healthy human development.

This theory is applied in several knowledge fields, and many studies test its theoretical assumptions specifically in the educational field. The emphasis is on the research instrument called the academic motivation scale (AMS), which has been validated in several studies (Vallerand, Blais, Briere, and Pelletier, 1989; Sobral, 2003).

Deci, Vallerand, Pelletier, and Ryan (1991) mention that the application of this theory in the educational field is mainly concerned with promoting students' interest in learning, the appreciation of education, and confidence in their abilities. They further describe that the desired results will be achieved only by students being intrinsically motivated and by internalizing values and regulatory processes.

The context mentioned by Deci *et al.* (1991) shows that if educational institutions are interested in encouraging students to get interested and appreciate education, they must pay attention and identify the academic motivation levels (how motivated students are) and motivational types (intrinsically or extrinsically) to include policies and procedures during programs to maintain or increase the students' motivation levels and help them develop intrinsic motivation.

More recently, Ryan and Deci (2020) confirmed the same context when reviewing empirical studies using the SDT, showing that when well internalized, both intrinsic and extrinsic motivation predict positive outcomes at various educational levels and cultural contexts.

Nonetheless, Reeve and Lee (2014), by assessing Korean high school students, and Gnambs and Hanfstingl (2016), assessing adolescents from 52 high schools in Austria, empirically analyzed the level of motivation longitudinally and found it oscillates over time. Scherrer and Preckel (2019) analyzed school life, mentioning that theoretical approaches and empirical research suggest a decline in motivation variables and students' self-esteem throughout their education. They conducted a meta-analysis of longitudinal studies addressing the topic, showing a decrease in students' motivation levels.

Several empirical studies conducted in Brazilian Accounting Sciences programs used AMS to assess motivation (Leal, Miranda & Carmo, 2013; Cunha, Nascimento & Durso, 2016; Borges, Miranda & Calheira, 2017; Pavão, Borges & Voese, 2020; Santos, Pavão & Borges, 2021). These studies adopted a cross-sectional approach and failed to verify whether motivation fluctuates throughout the program and how it happens. Cunha *et al.* (2016) investigated university dropout, and even though they performed a cross-sectional study, they argue that their empirical results indicate that students start the program motivated. However, the frustration experienced throughout the program demotivated them.

Based on the findings of Scherrer and Preckel (2019) about the importance of fluctuations in student motivation over time and the fact that this aspect is not well understood among Accounting students, this study seeks to answer the following question: **To what extent does the students' motivation change during the Accounting program, considering the motivational types recommended by SDT?**

It is important to verify the existence of fluctuations in the students' motivation throughout the program and identify the factors causing such fluctuations to devise actions to reverse or minimize this condition, considering that students are expected to feel motivated as they deepen their preparation as future professionals.

Data were collected from 583 individuals attending the first and fourth years of the Accounting undergraduate program from 2016 to 2021. They responded to the instrument Sobral (2003) proposed to assess academic motivation. Of these, 163 individuals answered the instrument when attending the first year and, later, in the fourth year.

A general analysis, without considering the year of the program the students were attending (first or fourth year), indicated a high level of motivation in virtually all intrinsic and extrinsic motivation types. The score related to demotivation presented a low level of agreement, i.e., the respondents did not consider themselves unmotivated towards the program.

On the other hand, when the students' trajectory during the program was assessed using the matched pairs test, the findings showed that their motivational levels decreased significantly. The mean scores concerning intrinsic motivation (to know and to achieve) and extrinsic identification dropped the most from one period to the next. At the same time, "demotivation" obtained the highest scores at the end of the program. Evidence was statistically significant at a 5% level.

These findings contribute to scientific knowledge by confirming that motivation decreased during the Accounting Sciences program, indicating the most affected factors. From an academic and social point of view, this study indicates that low motivation levels and high demotivation may affect the students' performance, having the potential to affect the careers of those who remain in this area of work.

The implications are that managers/coordinators and educators may pay attention to this behavior to enable the analysis/implementation of actions intended to adjust the level of motivation, especially in the most affected aspects. According to Ryan and Deci (2020), SDT applications in education focus on facilitating the satisfaction of the basic psychological needs of students and educators. Another implication of these results is that the factors that present problems have the potential to explain dropouts.

## 2. Self-Determination Theory (SDT)

The SDT, proposed by Deci and Ryan (1985) and Deci *et al.* (1991), differs from other motivational theories because it does not treat motivation dichotomously, i.e., extrinsic and intrinsic motivation, bringing in its essence the concept of autonomous and controlled motivation. According to Gagné and Deci (2005), autonomy means acting according to one's own will and making choices at the highest level of reflection. They mention intrinsic motivation as an example of autonomous motivation. On the other hand, controlled motivation presupposes a feeling of pressure directing one's action.

Deci and Ryan (2005) bring the concept of autonomous and controlled motivation and postulate that people's behavior can be characterized according to the degree of autonomy or control involved, i.e., different degrees of intrinsic and extrinsic motivation. Intrinsic motivation presupposes individuals choose to perform an action, and satisfaction derives from the action itself, regardless of external rewards. On the other hand, extrinsic motivation requires a certain instrumentality towards the result of a given action, requiring external rewards for an individual to obtain satisfaction for performing the action.

Autonomous and controlled motivation contrasts with the concept of demotivation, also mentioned in SDT, which presupposes a lack of motivation to act. From this perspective of intrinsic motivation, extrinsic motivation, and demotivation, Deci and Ryan (1985) proposed a classification that involved the construct of demotivation, intrinsic motivation, and extrinsic motivation, the latter being divided into four types (external, introjection, identified, and integrated), which they called self-determination continuum.

Later, Vallerand and Blais (1987) proposed the breakdown of intrinsic motivation into three types (to know, to achieve, and to experience stimulation). Based on these SDT concepts, Vallerand *et al.* (1989) built and validated an instrument to measure motivation in the educational context. However, such an instrument did not consider integrated extrinsic motivation, as the tests conducted to validate the instrument did not differentiate between the types of identified and integrated motivation.

According to Ryan and Deci (2020), among the three types of extrinsic motivation, external regulation is the one with the lowest level of autonomy, i.e., the individual's action is not spontaneous; rather, it is intended to obtain a particular reward or avoid punishment. On the other hand, identified regulation presents one of the highest levels of autonomy in the context of extrinsic motivations Even though the individual is focusing on external benefits, s/he acts spontaneously because the act is coherent with his/her values and objectives (Ryan & Deci, 2020).

Regarding intrinsic motivation, which comprises internal motivational aspects in which the individual does something out of interest and pleasure inherent to the action itself, Vallerand, Pelletier, Blais, Briere, Senécal & Vallières (1992) note that the motivation to experience stimulation involves doing something to experience stimulating sensations of a sensorial or aesthetic nature. Motivation for achievement comprises doing something for the pleasure and satisfaction of accomplishing or creating things. In contrast, motivation to know concerns doing something for the pleasure that comes from learning, exploring, or understanding.

Another factor analyzed in SDT is demotivation, which, according to Vallerand *et al.* (1992), occurs when the individual does not perceive a link between the results and actions, i.e., when they are neither intrinsically nor extrinsically motivated.

One of the central hypotheses of SDT in education is that more autonomous forms of motivation lead to increased student engagement, learning, and well-being and that basic psychological support from educators and parents facilitates this motivation, while the frustration resulting from being obliged to take a program weakens it (Ryan & Deci, 2020).

As previously mentioned, several studies were conducted in Brazilian Accounting Sciences programs that considered the SDT assumptions. Leal *et al.* (2013) investigated the motivation of 259 students attending any the periods of the Accounting program at a public university. They used exploratory factor analysis and identified seven factors that explained 61.09% of the data's total variability. Their results partially converged with those of previous studies, showing the existence of a very diverse motivation for learning among university students.

Cunha *et al.* (2016) investigated the reasons for the evasion of students from the first year of Accounting Sciences programs in public Higher Education Institutes (IES). The sample included 348 students who entered the programs in 2013 of six federal universities in Southeast Brazil. The results showed that students were significantly enthusiastic about the program when they entered college, even though there were signs that the choice of the program was not a well-guided process.

Borges *et al.* (2017) analyzed the relationships between academic performance and motivation among students attending the Accounting Sciences program at a Brazilian public university. They addressed a sample of 316 students from the second to tenth periods, and the regression analysis indicated significant relationships between motivation and academic achievement.

Pavão *et al.* (2020) verified intrinsic motivation, extrinsic motivation, demotivation, and perceived academic performance of Accounting Sciences students at a public university. The results from a sample of 168 respondents showed no statistically significant difference regarding perceived performance.

Santos *et al.* (2021) analyzed the motivational interests of Accounting Sciences students at a public university to enter and remain in the program. They addressed a sample of 168 students, and the results showed that the students were intrinsically and extrinsically motivated, with no high level of demotivation identified.

Note that these studies adopted a cross-sectional approach to collecting data. Such an approach does not allow for capturing fluctuations in the student's level of motivation throughout the program or the type of motivation that changes, especially when dealing with the same individual from the beginning to the end of the program, precisely what sets this study apart.

## 3. Methodological Procedures

Data were collected from the students attending the Accounting Sciences undergraduate program at a public state university in Paraná, Brazil.

The research instrument was the Academic Motivation Scale (AMS) developed by Vallerand *et al.* (1992) and adapted to Brazil by Sobral (2003); the Brazilian version is called the *Escala de Motivação Acadêmica (EMA)*. This scale enables measuring the types and levels of motivation toward educational tasks through 28 questions addressing seven motivational factors. Thus, the following question was asked to the students: Why do I come to the university? According to Hill (2013), this instrument is frequently used when evaluating the motivation of high school and college students.

This is a longitudinal study in which participants were encouraged to participate at more than one point in time during the program. Hence, the same individual was approached at the beginning and the end of the program. Data were collected from a sample of 583 individuals attending the program's first and fourth years, from 2016 to 2021. They answered the instrument Sobral (2003) proposed to assess academic motivation. Hence, the students attending the first year in 2016 answered the instrument again in 2019, those who answered it in 2017 answered a second time in 2020, and so on.

From this sample, 163 students answered the instrument in the first and fourth years, totaling 746 responses. The remaining students answered only in the first or the fourth year. The reasons include dropouts, failing a subject, delays, or absence of the data collection dates. Note that enrollment in the program at the institution under study is renewed annually rather than every six months. Additionally, the program typically lasts four years; hence, data were collected once every year.

Frequency distribution and percentages were used to describe the categorical variables, and the distributions of the variables were assessed using boxplot graphs. Note that the Shapiro-Wilk test indicated that the scores obtained for all the factors showed significant evidence of violation of normality. For this reason, non-parametric statistical techniques were used for inferential analyses.

The non-parametric Wilcoxon test was used to assess the difference in the factors' scores obtained at the two points in time for the students who answered the instrument in the first and fourth years and for those who answered only once (either in the first or fourth year). The Wilcoxon matched pairs test uses the ranks of ordered observations, being an ordinal level method.

D is defined as the difference of the variable measured between the first and second points in time. When ordering the absolute values of the calculated differences, except for differences equal to zero, a score R_i is assigned to each value, D_i, i=1, 2, ..., n. In case of a tie, the score is given by the average of the orders of repeated observations. Next, the sum of the R_i ranks is performed, multiplied by the sign of the difference. According to Sheskin (2003), the W statistic is given by the expression below:

$$W = \sum_{i=1}^{n} [sinal(D_i) \times R_i]$$

The significance level was set at 5% for all the tests. All analyses used the statistical environment R (R Development Core Team, 2016), version 3.6.2.

## 4. Presentation and Analysis of Results

This section is organized into two topics: (1) general analysis containing the descriptive statistics of the analyses of the total frequency distributions, i.e., including all respondents, regardless of the year attended, and the boxplot analysis; and (2) the matched pairs analysis concerning the 163 students who answered in the first and fourth years of the program and the matched pairs analysis with all respondents in the sample.

### 4.1 General Analysis

First, we present the frequency distribution of the participants' characteristics. Among the 746 responses, 62.06% of students were attending the first year and 37.94% were in the fourth year. Most were between 16 and 22 (76.54%), only 6.84% were 28 or older.

The minimum age was 16, and the maximum was 51, with an average of 20.89 years old and a coefficient of variation of 20.81%, indicating low variability around the mean. Regarding the region, more than half of the participants (56.57%) reported being originally from the same region/city/state where they attended the program, while 43.43% came from other locations.

Next, the frequency distribution was analyzed using a boxplot (Figure 1) of all the answers provided to the academic motivation scale adapted by Sobral (2003), ordered according to the subject. There are four questions for each factor, numbered as they appear in the questionnaire, represented by the four numbers on the far left.

The percentages located on the left of the graph (Figure 1) indicate the relative frequency of responses with low scores (1 to 3), the percentage of moderate scores (4) are in in the center, and the percentage of high scores (5 to 7) are on the right. Thus, the sum of the three percentages for each line is 100%. The letters represent groups (factors) of questions and correspond to demotivation (A), extrinsic motivation - external control (B), extrinsic motivation - Introjection (C), extrinsic motivation - Identification (D), intrinsic motivation - to experience stimulation (E), intrinsic motivation - for achievement (F) and intrinsic motivation - for knowledge (G).
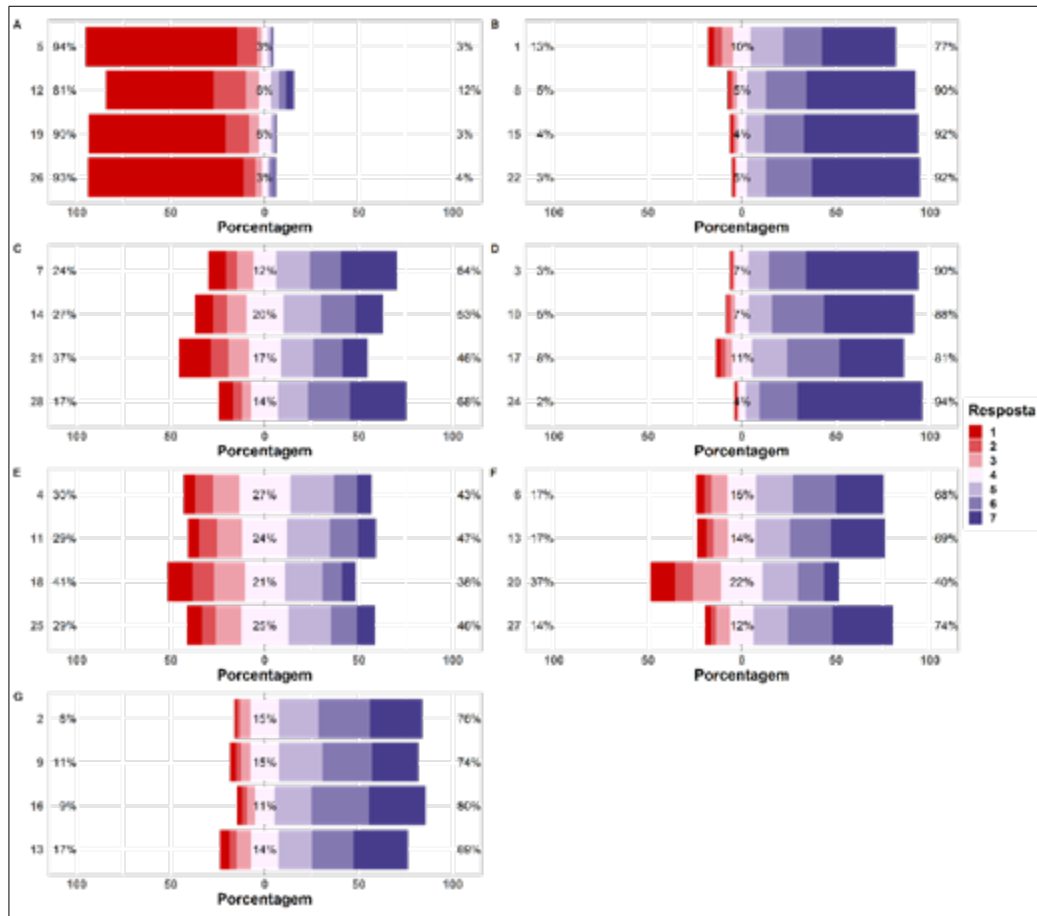
Source: Study's data.

**Figure 1.** Matched pairs distribution of the scores obtained by the 163 participants in the factors according to the year attended (first and fourth years)

Note that more scores are below 4 for most of the questions in block A, indicating a low level of demotivation, a result similar to what Leal *et al.* (2013) and Borges *et al.* (2017) found.

The opposite happens in B, D, F, and G topics, where most answers obtained scores greater than or equal to 4. These results indicate a higher motivational level for the factors: extrinsic motivation - external control (B), extrinsic motivation - Identification (D), intrinsic motivation - for achievement (F), and intrinsic motivation - for knowledge (G).

Furthermore, the distribution is more balanced for the other blocks (C and E), though still favoring responses that indicate greater correspondence with motivation. These results cannot be compared with previous studies due to the differences between the instrument scales and the analyses, which generally use factor analysis to group the factors, which does not allow for the factors to be analyzed separately.

Without considering the period of the program the students were attending (first or fourth year) the overall analysis showed that they had a higher motivational level in virtually all types of intrinsic and extrinsic motivation. On the other hand, the score related to demotivation presents a low level of agreement, i.e., the respondents did not consider themselves unmotivated toward the program.

One question was added to the instrument to verify the respondents' spontaneous perception regarding their motivation to remain in the program, called the degree of global motivation. Figure 2 shows that, on a scale from 0 to 10, approximately three-quarters of the individuals reported a satisfaction level between 8 and 10 (74.4%). Only 5.4% indicated a motivation level below 5 on this same scale. These scores show that few students were unmotivated or uninterested in the program and their chosen profession.

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 1, p. 306-319, Jul./Sep. 2024

312

Source: Study's data.

**Figure 2.** Distribution of frequencies to the answers provided to the question regarding global motivation to proceed with the Accounting Sciences Program

## 4.2 Matched Pair Analysis

The first analysis of this section refers to the two answers given by the 163 students who took part at two points in time (first and fourth years). Next, we present the results concerning the comparison between the scores of the factors according to the year attended.
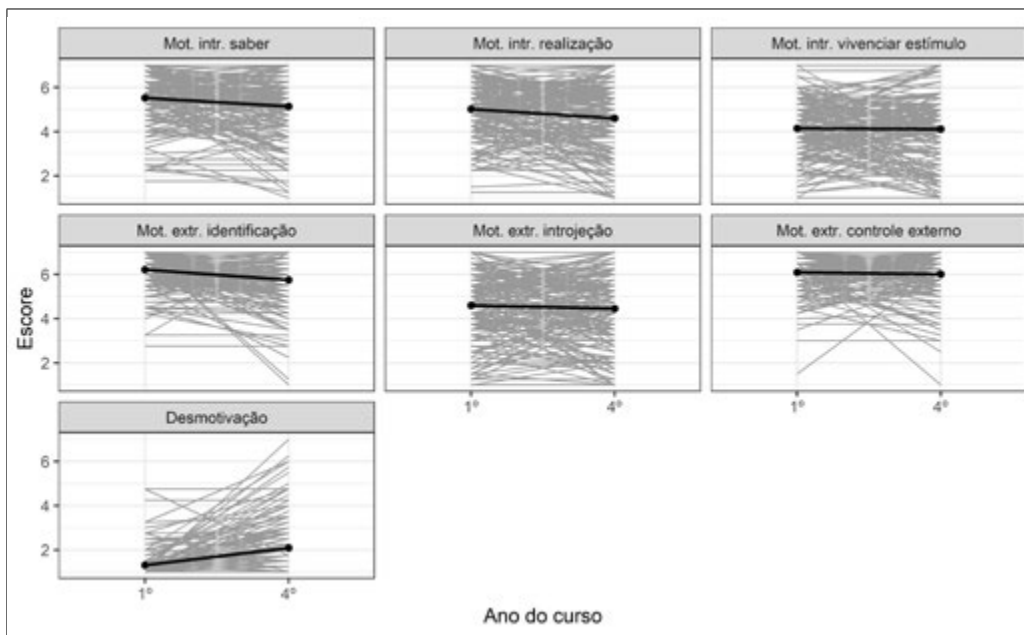


Source: Study's data.

**Figure 3.** Matched pairs distribution of the scores obtained by the 163 participants in the factors according to the year attended (first and fourth years)
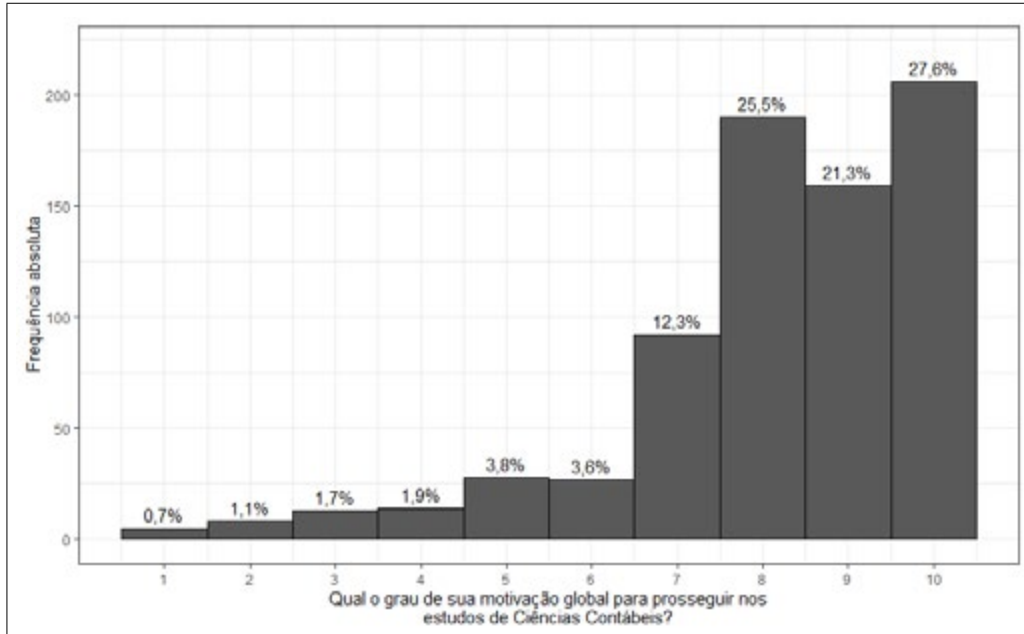
Figure 3 shows that, on average, the demotivation score tends to increase among the students between the first and last year of the program, while the motivation scores decrease slightly. In this sense, the intrinsic motivation to know and achieve and the extrinsic motivation of identification stand out, clearly showing the most significant drops in the average scores from one point to the next.

Table 1

**Matched pairs comparison of the scores concerning the motivation factors according to the year attended by the 163 participants (first and fourth years)**

| Factor | Year | Mean | SD | Median | Minimum | Maximum | p-value |
|---|---|---|---|---|---|---|---|
| Intrins. motivation to know | 1º | 5,53 | 1,18 | 5,75 | 1,75 | 7,00 | 0,001* |
| | 4º | 5,15 | 1,41 | 5,50 | 1,00 | 7,00 | |
| Intrins. motivation to achieve | 1º | 5,02 | 1,30 | 5,25 | 1,25 | 7,00 | 0,001* |
| | 4º | 4,60 | 1,56 | 5,00 | 1,00 | 7,00 | |
| Intrins. motivation to experience stimulation | 1º | 0,41 | 1,30 | 4,25 | 1,00 | 7,00 | 0,852 |
| | 4º | 4,12 | 1,49 | 4,25 | 1,00 | 7,00 | |
| Extrins. motivation of identification | 1º | 6,22 | 0,82 | 6,50 | 2,75 | 7,00 | <0,001* |
| | 4º | 5,75 | 1,16 | 6,00 | 1,00 | 7,00 | |
| Extrins. motivation introjection | 1º | 4,60 | 1,55 | 5,00 | 1,00 | 7,00 | 0,359 |
| | 4º | 4,46 | 0,16 | 4,75 | 1,00 | 7,00 | |
| Extrins. motivation external control | 1º | 0,61 | 0,91 | 6,25 | 1,50 | 7,00 | 0,411 |
| | 4º | 6,01 | 1,06 | 6,25 | 1,00 | 7,00 | |
| Demotivation | 1º | 1,31 | 0,66 | 1,00 | 1,00 | 4,75 | <0,001* |
| | 4º | 2,09 | 1,34 | 1,75 | 1,00 | 7,00 | |

Note: *p-value < 0.05.

Source: Study's data.

Table 1 shows no significant difference between the scores of the intrinsic motivation factors of experiencing stimuli and extrinsic motivation of introjection and external control (p-values equal to 0.852; 0.359 and 0.411, respectively) from the first to the fourth year of the program, according to the results of the Wilcoxon matched pairs test, considering 5% significance.

On the other hand, the other factors differed significantly between the two points in time; the motivation scores (mean and median) were higher for the first-year students than for the fourth-years. The opposite was verified for demotivation. The Wilcoxon test confirms the visual analysis in Figure 2 that the decrease in the intrinsic motivation scores of knowledge and achievement and the extrinsic motivation of identification significantly differed from the first to the fourth year.

A comparative analysis according to year was also conducted for the 746 answers provided by the 583 participants. The results of the Wilcoxon test concerning the comparison between the scores obtained in the factors according to the year (Table 2) show that the scores of the first-year and fourth-year students differed significantly for the intrinsic motivation factors of knowledge and achievement, extrinsic identification motivation, and demotivation (p-values equal to 0.004; 0.017; <0.001 and <0.001, respectively), at the 5% level of significance. In all cases, except for demotivation, the median score obtained by first-year students was higher than that of the fourth-year students.

Table 2

**Comparison of the scores concerning the motivation factors according to the year attended by the 583 participants**

| Factor | Year | Mean | SD | Median | Minimum | Maximum | p-value |
|---|---|---|---|---|---|---|---|
| Intrins. motivation to know | 1° | 5,59 | 1,14 | 5,75 | 1,25 | 7,00 | 0,004* |
| | 4° | 0,53 | 1,30 | 5,50 | 1,00 | 7,00 | |
| Intrins. motivation to achieve | 1° | 5,01 | 1,34 | 5,25 | 1,00 | 7,00 | 0,017* |
| | 4° | 4,76 | 1,42 | 5,00 | 1,00 | 7,00 | |
| Intrins. motivation to experience stimulation | 1° | 4,19 | 1,31 | 4,25 | 1,00 | 7,00 | 0,388 |
| | 4° | 4,07 | 1,39 | 4,25 | 1,00 | 7,00 | |
| Extrins. motivation of identification | 1° | 6,21 | 0,86 | 6,50 | 2,25 | 7,00 | <0,001* |
| | 4° | 5,85 | 1,05 | 6,00 | 1,00 | 7,00 | |
| Extrins. motivation introjection | 1° | 4,69 | 1,57 | 5,00 | 1,00 | 7,00 | 0,355 |
| | 4° | 0,46 | 1,56 | 5,00 | 1,00 | 7,00 | |
| Extrins. motivation external control | 1° | 6,10 | 0,99 | 6,25 | 1,50 | 7,00 | 0,153 |
| | 4° | 0,60 | 1,08 | 6,25 | 1,00 | 7,00 | |
| Demotivation | 1° | 1,41 | 0,74 | 1,00 | 1,00 | 5,00 | <0,001* |
| | | 1,97 | 1,27 | 1,50 | 1,00 | 7,00 | |

Note: *p-value < 0.05.

Source: Study's data.

No statistically significant differences were found between the years (p-values equal to 0.388, 0.355, and 0.153, respectively) for the other factors, i.e., intrinsic motivation to experience stimulation and extrinsic motivation for introjection and external control. The first and fourth-year students obtained the same median scores for the last two factors.

Tables 1 and 2 show similar results. The same factors presented statistical significance, showing a significant drop in the motivation factors internal motivation to know, achievement, and external identification motivation in the analysis with the 163 students and the total sample. Additionally, demotivation increased. Although a different analysis of the factors was performed, these results are similar to those found by Leal *et al.* (2013) regarding intrinsic motivation, identification, and demotivation.

This result contributes to scientific knowledge by confirming a change in students' motivational levels throughout the program and identifying which factors influence a decrease in motivation.

Regarding intrinsic motivation, which comprises internal motivational aspects, in which an individual does something for his/her interest and pleasure that are inherent to the action itself, it is clear that the students obtained lower scores in extrinsic factors, indicating that, even with a high degree of agreement regarding the questions of intrinsic factors, the participants were less intrinsically motivated.

Specifically regarding the intrinsic factor "experiencing stimuli," which comprises doing something to experience stimulating sensations, the scores' distribution was symmetrical, i.e., the responses were balanced between agreement, neutral, and disagreement. A potential explanation for such a result is that, considering the program's characteristics, Accounting students are not encouraged to experience stimulating sensations, whether sensorial or static.

The responses to the intrinsic motivational factors of knowledge and achievement showed a high degree of agreement, indicating that students have intrinsic motivations for completing the program. On the other hand, a significant difference was found in the comparison between first-year and fourth-year students, i.e., their respective motivations decreased significantly over the course of the program.

As for the drop in intrinsic motivation to know, the students at the end of the program (fourth year) no longer experienced the same pleasure in learning or understanding something as they did in the first year of the program. The drop in intrinsic motivation for achievement indicates that taking the program for the pleasure that comes from creating or accomplishing something is no longer the same as in the first year. For Ryan and Deci (2020), intrinsic motivation is linked to aspects of interest, pleasure, and satisfaction, having a perceived locus of internal causality, that is, part of the individual.

For Reeve, Hamm, and Nix (2003), the rise and fall of intrinsic motivation occurs as environmental and interpersonal variables support and interfere with people's experiences of self-determination and competence. Studies show that the benefits of intrinsic motivation are linked to engagement and high performance (Ryan & Deci, 2020). Therefore, a decrease in this type of motivation is of concern because it might reduce student performance, as the results of Borges *et al.* (2019) show.

Figures 1 and 3 and Tables 1 and 2 show that the scores concerning the factors "extrinsic motivation – identification, introjection, and external control" presented a high degree of agreement, indicating that the students were motivated to take the program because they decided to do so (identification), they pressured themselves to do so (introjection) or were pressured by others to do so (external control). These factors are more frequently linked to the individuals' external aspects; their motivation is linked to obtaining rewards or avoiding punishments.

A significant difference was found between first- and fourth-year students concerning external identification motivation, indicating that, for some reason, the decision to take the program in the fourth year is no longer as good as when one was in the program's first year. Ryan and Deci (2020) mention that the person consciously identifies or personally endorses the value of an activity in identification motivation and, therefore, experiences a relatively high degree of willingness to act. In this regard, recognition of the value of taking the program decreases over time in the sample.

Additionally, according to SDT, intrinsic and extrinsic identification motivation present the characteristic of autonomy; however, for Ryan and Deci (2020), intrinsic motivation is based on interest and pleasure, while identified motivation is based on a sense of value.

Therefore, the drop in motivation levels in these three factors shows a need for actions aimed at providing support for the promotion of autonomy, both focused on interest and value. This becomes even more important in light of the results of Borges *et al.* (2017), which show that both intrinsic and extrinsic identification motivation was positively related to performance.

When comparing the demotivation factor between the first- and fourth-year students, the fourth-year students are more frequently unmotivated than first-year students. This result presented a p-value < 0.001 at a 95% significance level.

For Ryan and Deci (2020), demotivation is common in classroom environments. It may result from a lack of competence to perform or a lack of value or interest, a strong negative predictor of engagement, learning, and well-being. The increase in demotivation is linked to the same points discussed previously, i.e., lack of interest (intrinsic motivation) and lack of value (extrinsic identification motivation). As Vallerand *et al.* (1992) pointed out, when experiencing demotivation, the individual is neither intrinsically nor extrinsically motivated.

This analysis suggests that the factors showing negative oscillation possibly explain dropout. This matter was not the subject of analysis in this study. However, it appears as a potential hypothesis for dropout during undergraduate studies, especially among those experiencing these factors more acutely during the program.

This study's contributions include the information that the students' behavior was the same regardless of whether the same individual responded to the scale at the beginning or at end of the program, or different individuals responded in isolation in the first or fourth year, confirming the same change in the same factors. An implication is that professors and program coordinators can check which factors are fluctuating during the program so that preventive actions are taken, even with the application of the cross-sectional scale using paired analysis.

## 5. Conclusion

The question guiding this study was, "To what extent does the motivation of students change during the Accounting Sciences undergraduate program concerning the motivational types recommended by the Self-Determination Theory?" Data were collected from a sample of 583 students attending the first and fourth years of the program from 2016 to 2021. The participants answered the instrument Sobral (2003) proposed to assess academic motivation, and 163 answered when attending the first and fourth years, totaling 746 responses.

Without considering the year the students attended (first or fourth year), a general analysis showed that they presented a high motivational level in virtually all types of intrinsic and extrinsic motivation. The score related to demotivation presented a low level of agreement, i.e., the respondents did not consider themselves unmotivated toward the program. This finding is aligned with what is expected of students in the program, i.e., their motivational level was high, and their level of demotivation was low.

On the other hand, when we assessed the students' trajectory during the program through matched pairs analysis, the results showed that the motivational level decreased, with three factors showing a statistically significant difference in the scores. At the same time, the "demotivation" construct presented higher scores, i.e., a higher level of demotivation, which was also statistically significant at the 5% level.

The matched pairs analysis, in which the students answered the questionnaire in the first and fourth years, comprises this study's primary research focus and differs from previous studies. It sought to verify whether the students would experience a change in their motivational level throughout the program. The findings show that although students identified themselves with a higher level of motivation toward the program, it decreased throughout the program.

The "demotivation" factor stands out as an important finding, as the level of demotivation increased significantly between the first and fourth years. These results were confirmed both for the students who answered the instrument at the beginning and end of the program and for those who responded only at the beginning or end of the program. This finding is important as it shows that the level of motivation decreases and the level of demotivation increases in all the classes analyzed when comparing first-year with fourth-year students.

Students attending a reputable undergraduate program are expected to be as motivated at the end of the program as they were at the beginning. However, this was not found in the results, considering that the students' motivation level in four of the eight constructs analyzed decreased significantly, even though such a level remained high.

These findings imply that when checking which factors fluctuate the most, indicating demotivation or a drop in motivation, managers/coordinators and educators may take corrective and preventive actions to encourage students to continue considering the program pleasurable and valuable up to the end. Note that extreme cases of decreased motivation and increased demotivation might affect students psychologically and their future professional careers.

Notably, there were reflections of security measures due to the COVID-19 pandemic in 2020 and 2021. No changes in motivation and demotivation were found in 2020 and 2021 compared to the years before the pandemic though.

Future studies might expand understanding of these fluctuations by analyzing factors that lead to such a drop in motivation. Another suggestion is to investigate the fluctuation of motivation in the academic trajectory, which may be explained by other variables, such as student performance, learning styles, teaching methodologies, etc. A question emerged during this study as to whether the oscillation found is inherent to the Accounting Sciences program or happens in any institution and how it impacts an accountant's career.

# References

Borges, S., M.; Miranda, G. J. & Calheira S. C. (2017). A teoria da autodeterminação aplicada na análise da motivação e do desempenho acadêmico discente do curso de ciências contábeis de uma instituição pública brasileira. Revista Contemporânea de Contabilidade, 14 (32), 89-107. http://dx.doi.org/10.5007/2175-8069.2017v14n32p89

Cunha, J. V. A.; Nascimento, E. M. & Durso, S. O. (2016). Razões e influências para a evasão universitária: um estudo com estudantes ingressantes nos cursos de ciências contábeis de instituições públicas federais da região sudeste. Advances in Scientific and Applied Accounting, 9 (2), 141 - 161. http://dx.doi.org/10.14392/asaa.2016090202

Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and selfdetermination in human behavior. New York: Plenum.

Deci, E.L. Vallerand, R.J., Pelletier, L.G. & Ryan, R.M. (1991). Motivation in education: the self-determination perspective. The Educational Psychologist 26, 325-346.https://doi.org/10.1080/00461520.1991.9653137

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, *26*, 331–362. https://doi.org/10.1002/job.322

Gnambs, T, & Hanfstingl, B. (2016). The decline of academic motivation during adolescence: an accelerated longitudinal cohort analysis on the effect of psychological need satisfaction. Educational Psychology, 36 (9), 1691–1705. http://dx.doi.org/10.1080/01443410.2015.1113236

Hill, A. P. (2013). Motivation and university experience in first-year university students: A self-determination theory perspective. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *13*, 244–254. https://doi.org/10.1016/j.jhlste.2012.07.001

Leal, E. A., Miranda, G. J., & Carmo, C. R. S. (2013). Teoria da Autodeterminação: uma Análise da Motivação dos Estudantes do Curso de Ciências Contábeis. *Revista de Contabilidade e Finanças*, *24*(62), 162–173. https://doi.org/10.1590/S1519-70772013000200007

Pavão, J. A.; Borges, I. M. T. & Voese, S. B. (2020). O que motiva os alunos e alunas do curso de ciências contábeis? um estudo sob a luz da teoria da autodeterminação. ConTexto, 20 (46), 45-54.

Reeve, J., Hamm D. & Nix, G. (2003). Testing Models of the Experience of Self-Determination in Intrinsic Motivation and the Conundrum of Choice. Journal of Educational Psychology, 95 (2), 375-392. https://doi.org/ 10.1037/0022-0663.95.2.375

Reeve, J. & Lee, W. (2014). Students' Classroom Engagement Produces Longitudinal Changes in Classroom Motivation. Journal of Educational Psychology, 106 (2), 527–540. https:doi.org/10.1037/a0034934

Ryan, R. M., & Deci, E. (2000). Selfdetermination theory and the facilitation of intrinsic motivation, social development, and wellbeing. American Psychologist, Washington, 55 (1), 68-78. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R. M. & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. Contemporary Educational Psychology, 61. https://doi.org/10.1016/j.cedpsych.2020.101860.

Santos, D., Pavão, J. A. & Borges, I. M. T. (2021). Motivação dos acadêmicos de ciências contábeis de uma universidade pública. SINERGIA, 25 (1), 37-48. https://doi.org/10.17648/2236-7608-v25n1-11315

Scherrer, V. & Preckel, F. (2019). Development of Motivational Variables and Self- Esteem During the School Career: A Meta- Analysis of Longitudinal Studies. Review of Educational Research, 89 (2), 211–258. https://doi.org/10.3102/0034654318819127

Sheskin, David. (2003). Handbook of Parametric and Nonparametric Statistical Procedures: Third Edition. Chapman & Hall/CRC.

Sobral, D. T. (2003). Motivação do aprendiz de medicina: uso da escala de motivação acadêmica. Psicologia: Teoria e Pesquisa, Brasília, 19 (1), 25-31.

Vallerand, R. J. & Blais, M. R. (1987). L'Echelle des Orientations Generales a la Causalite: Validation canadienne francaise du General Causality Orientations Scale. Canadian Journal of Behavioural Science, 19 (1)  https://doi.org/10.1037/h0079872

Vallerand, R. J., Blais, M. R., Briere, N. M., & Pelletier. (1989). Construction and validation of the echelle de motivation em Education (EME). Canadian Journal of Behavioral Sciences, Montreal, 3 (21), 323-349.  https://doi.org/10.1037/h0079855

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senécal, C. & Vallières, E. F. (1992). The academic motivation scale: a measure of intrinsic, extrinsic, and amotivation in education. Educational and Psychological Measurement, 1003-1017. https://doi.org/10.1177/0013164492052004025

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 1, p. 306-319, Jul./Sep. 2024

319

# Effect of tax incentives in IPI, ICMS export, PIS, and Cofins on the municipalities' current budget results

**Marconi Silva Miranda**
*http://orcid.org/0000-0001-8870-347X*

**Luiz Antônio Abrantes**
*https://orcid.org/0000-0002-4460-125Xr*

**Antônio Carlos Brunozi Júnior**
*https://orcid.org/0000-0001-9372-6246*

**Marco Aurelio Marques Ferreira**
*https://orcid.org/0000-0002-9538-1699*

## Abstract

**Objective:** To assess the effects of tax incentive policies applied to municipalities in IPI, ICMS export, PIS, and Cofins on the budgetary balance of Brazilian municipalities.

**Method:** The sample comprised 5,570 Brazilian municipalities, and secondary data were used. The timeframe was determined according to data availability, i.e., between 1999 and 2017. Econometric models were estimated in stages for panel data. Time series stationary was first tested to instrumentalize the models' estimation. Then, the consistency test of the series' Wu-Hausman estimators was applied to verify the existence of endogeneity between the dependent and explanatory variables.

**Results:** In general, tax incentive policies did not favor the fiscal balance of municipal finances.

**Contributions:** This study advances and innovates by analyzing the fiscal balance of Brazilian municipalities' public finances in a context where multiple tax exemption policies are adopted simultaneously. The implications for policymakers are that they are unaware of how susceptible municipalities are to political and fiscal maneuvers at higher levels of government.

**Keywords:** Tax incentives; Budget balance; Municipal finances.

## 1. Introduction

The federative pact, determined by the Brazilian Federal Constitution of 1988, weakened municipalities in matters related to the composition of their revenues, considering that municipal fiscal autonomy was not expanded.

In this context, most municipalities have depended almost exclusively on transfers between governments, including through participation funds and linked and voluntary transfers. These resources are instruments and measures that enable subnational entities to comply with the duties imposed by the Constitution (Domingues, 2007; Sediyama *et al.*, 2019).

Given municipalities' dependence on the tax system, decisions concerning changes or propositions of new tax policies influence these municipalities' budgets and, as a result, their public policies (Lima et al., 2018; Rodrigues & Silva, 2020; Wakim et al., 2018). When there is a drop in revenue and, consequently, in the level of transfers, such policies may negatively interfere with local socioeconomic development, contradicting the precepts of federalism cooperation in decreasing federative imbalance and social inequalities through transfer systems (Botelho & Abrantes, 2018;  Mendes *et al.*, 2018)..

In developing countries such as Brazil, using expansionary policies through tax incentives to promote macroeconomic stability, maintain employment and income levels, and ensure economic growth may go against the premises supporting a decentralized system. Chygryn *et al.* (2018), Melnyk *et al.* (2018), and Pimonenko (2017) note that this may occur because fiscal decentralization generally involves the transfer of a significant amount of budgetary resources to the subnational government level with the simultaneous expansion of its financial capabilities.

In this context, the Economic Theory of Fiscal Decentralization emerges as a theoretical framework to support understanding the phenomenon involving the national federative system concerning the autonomy of all levels of government, fiscal policies, resource transfers, tax powers, and the not-always-cooperative relationship between entities. In this theoretical context, the participation of the State in various sectors of the economy may interfere with the relationship of the vertical structure of the public sector since the central government is responsible for macroeconomic stabilization and income distribution (Baskaran *et al.*, 2016; Boadway & Cuff, 2017; Catarino & Abraham, 2018; Ewetan *et al.*, 2020; Vande, 2021)

In Brazil, tax incentives as an instrument of economic policy, resulting from exemptions, tax benefits, and special purposes, among other advantages, were applied to various taxes that make up the funds for transferring resources to Brazilian municipalities. However, the application of these incentives to taxes that affect consumption, such as incentive policies applied to the Tax on Industrialized Products (IPI), Value-added tax on Sales and certain Services  (ICMS export), the Social Integration Program (PIS), and the Contribution for Social Security Financing (Cofins), may cause a drop in revenue if the there is no growth in economic activity and compensation for the increase in the collection of income taxes.

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 2, p. 320-343, Jul./Sep. 2024

**321**

In this context, this study assumes that tax incentive policies increase negative externalities in public finances and affect the distribution of intergovernmental transfers to municipalities. Therefore, based on this premise and considering that tax policies are simultaneously implemented on IPI, ICMS exports, and PIS/Cofins, the following question is proposed: **What are the effects of tax incentive policies, considering their joint incidence on the multiplicity of taxes, on the public finances of Brazilian municipalities?**

Here, we consider that economic and structural contrasts may severely enhance such effects on municipalities. Brazilian municipalities' conditions and economic power are directly linked to the predominant economic sector and the regions to which they belong. Additionally, small municipalities in more economically vulnerable regions are supported almost solely by revenues from the government (Leroy *et al.*, 2017; Revorêdo *et al.*, 2021; Ribeiro, 2016). Thus, this study's general objective was to assess the effects of tax incentive policies concomitantly applied to IPI, ICMS export, PIS, and Cofins on the budgetary balance of Brazilian municipalities.

This study's relevance lies in the fact that international and Brazilian studies analyze the effects of tax incentive policies on the public finances of subnational entities, considering specific taxes and economic sectors in isolation (Abad *et al.*, 2020; Bergman *et al.*, 2016; Gross, 2021; Larch *et al.*, 2021; Peña, 2020; Pfeiffer *et al.*, 2021; Piergallini & Postigliola, 2020; Botelho & Abrantes, 2020; Fazoli *et al.*, 2018; Marostica & Petri, 2017).

Regarding the effects of tax incentive policies on the public finances of Brazilian subnational entities, Barbosa *et al.* (2020), Vieira, Oliveira, and Ávila (2021), Griebeler, Silva, and Allebrandt (2020) note that tax incentives positively influenced the finances of subnational entities, specifically municipalities, especially regarding their revenues, as they influenced the generation of new formal jobs and increased consumption of goods and services. However, Alves (2018), Meneghetti Neto (2017), and Correia and Neduziak (2019) found adverse effects that compromised the budgetary autonomy of states and municipalities, limiting investment capacity and expanding debts.

One of the reasons for these conflicting results may lie in the tax base used, considering that most studies analyzed isolated policies affecting (or resulting from) a single tax. These specific analyses may, to a certain extent, mask and bias the results of the effects of state interventions through the application of tax incentive policies on the public finances of subnational governments. Note that the effects of tax incentive policies on specific sectors, such as the IPI, which is levied on industrialized products, do not assess the impacts of this policy on economic sectors based on income or consumption behavior.

This study advances knowledge by verifying the concomitant incidence and implications of the effects of fiscal policy on the multiplicity of taxes on municipal public finances. Analyzing the effect of tax incentive policies that are simultaneously applied to IPI, ICMS exports, and PIS/Cofins on the fiscal balance of the public finances of Brazilian municipalities according to economic sectors and regions is a novel pursuit and an innovation in studies on fiscal policies. An investigation covering the industrial, services, and agricultural sectors enables the identification of these policies' macroeconomic effects on municipal finances according to the sector. Additionally, progress is achieved by analyzing the behavior of transfers from the Union and States to municipalities for different regions in a scenario where multiple tax exemption policies are adopted simultaneously.

This study's theoretical-empirical contributions include results showing that in general tax incentive policies did not favor the fiscal balance of the finances of municipalities in the South and Mid-West. Furthermore, the effects were negative for the balance of municipal public finances through the industrial and agricultural sectors and positive through the services sector.

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 2, p. 320-343, Jul./Sep. 2024

322

## 2. Fiscal Policy

Fiscal policies are considered one of the elements guiding discussions about public finances and the complex task of maintaining a balance between revenues and expenditures. In conceptual terms, the Classical Economic Theory provides, in the seminal study by Keynes (1936), the first assumptions for the use of fiscal policy as a way to boost the economy. Using fiscal policies in periods of instability to leverage investment and maintain economic activity increases the expectations of entrepreneurs, which may contribute to increasing investment and maintaining employment and income, an aspect particularly relevant to public finances (Keynes, 1996).

In his seminal study, Haavelmo (1945) opposes expansionary fiscal policies since employment can be maintained with a balanced budget financed by previously collected taxes. Barro (1974) argues that fiscal policies would be inefficient since people would expect tax increases to offset fiscal expenditures. Thus, these policies would have contractionary rather than expansionary effects.

In the fiscal policy context, the central government uses tax incentive policies to ensure the growth and maintenance of employment and income. These policies are important for assessing a country's investment environment and are favorable for attracting investors to specific economic sectors (Babajide *et al.*, 2014; Moolman & Zwan, 2016). However, Kraal (2019) argues that, in practice, tax incentives are not satisfactory, ineffective, and might negatively affect the tax base, besides being subject to abuse and corruption.

Specifically regarding public finances, the literature discusses the effects of tax incentive policies on the finances of subnational entities. Griebeler, Silva, and Allebrandt (2020) and Barbosa *et al.* (2020) state that tax incentives do not compromise a municipality's fiscal balance, as they promote revenue growth (Araújo, 2016). On the other hand, Makreshanska-Mladenovska and Petrevski (2020) consider that there is an association between tax incentive policies and budget deficit, in addition to "harming" federative autonomy. However, the dependence of local governments on intergovernmental transfers does not interfere with these governments' fiscal discipline.

In summary, the analyses in the literature regarding the effects of tax incentives on the balance of public finances diverge, as studies have shown that these effects may be related to factors such as federated entities' fiscal autonomy, revenue, budget deficit, and intergovernmental transfers. One of the reasons for such divergence may be related to the tax base analyzed since most of these studies analyzed tax incentives from the perspective of a single tax and through specific economic sectors, which may lead to inconclusive results about the effects of these policies on public finances (Bresser-Pereira & Nakano, 2020).

## 3. Public Finances under the aegis of the economic theory of Fiscal Decentralization

Within the complexity of the federal system that involves autonomy, tax powers, fiscal policies, and intergovernmental transfers, the Economic Theory of Fiscal Decentralization emerges as a theoretical framework to assist and support discussions concerning public finances, especially those of municipalities. The theoretical framework for fiscal decentralization is strengthened by the seminal studies of Hayek (1945), Samuelson (1954), Tiebout (1956), Musgrave (1959), and Oates (1972). They presented the concepts, fiscal functions, and fiscal control devices shared among the levels of government, all under the coordination of the central government.

In this context, the empirical literature discusses the effects of fiscal decentralization on public finances across a wide range of topics. International studies have analyzed these effects through the public budget, intergovernmental transfers, capital expenditures, revenues, and public spending (Bisaro *et al.*, 2020; Chiades *et al.*, 2019; Joanis, 2016; Kim, 2018; Smith & Revell, 2016)

Also noteworthy is the study by Jia, Ding, and Liu (2020), which describes that fiscal decentralization negatively interfered with the public finances of local governments in China by reducing these governments' tax execution. Makreshanska-Mladenovska and Petrevski (2020) found evidence of the association between decentralization and public finances through the budget deficit of 11 European countries.

Other empirical studies expanded the findings on the effects of fiscal decentralization on the public finances of subnational entities. Sovilla, López, and Sánchez (2018) argue that decentralization does not generate fiscal autonomy and is detrimental to public finances, as it causes local governments to become indebted. In turn, Masaki (2018) argues that fiscal decentralization increases the tax capacity of local governments, with higher revenue collection volumes.

Brazilian studies have addressed the implications of decentralization on public finances through fiscal stress, economic stability, primary healthcare, state capacity, intergovernmental transfers, fiscal responsibility law, and economic development, among others (Almeida, 2016; Botelho & Abrantes, 2020; Corcelli, 2021; Dantas Junior *et al.*, 2019; Luna *et al.*, 2017; Nishijima *et al.*, 2017; Suzart *et al.*, 2018)usando como medida de corrupção as irregularidades descritas nos relatórios das auditoriasdo programa de fiscalização dos municípios da Controladoria Geral da União. O artigo procura verificar se os resultados encontrados para a região Sudeste no período de 2004 a 2006 (Peixoto et al, 2012.

However, empirical studies that converge on the theme addressed here are very similar or tend to analyze the same taxes or objects. Araújo (2016) analyzed ICMS and verified that such policies had no short-term effect on the State of Goiás public finances. Cavalcante and Zanocch (2020) state that tax waivers increased considerably in 2020 and interfered with the public budget. Finally, Braatz and Rocha (2021) found that revenue losses due to tax incentive policies compromised the budget and public finances of the municipalities of Rio Grande do Sul.

Regarding tax incentives on IPI, some studies have shown that these policies were favorable for public finances, especially in municipal revenues   (Barbosa *et al.*, 2020; Vieira, Oliveira & Ávila, 2021), which, in addition to not causing a significant drop in revenue, did not cause budgetary imbalances that could compromise the implementation of public policies (Oliveira, Pinto & Rita, 2017).

The literature does not agree on the effects of fiscal decentralization on the finances of subnational entities. In this context, this study aimed to analyze the effects of tax incentive policies on IPI, ICMS exports, and PIS/Cofins on the public finances of Brazilian municipalities when implemented simultaneously. Potential losses in consumption due to exemptions in the industry sector, for example, are believed to be offset by increased revenue due to the maintenance of income and employment, especially in larger municipalities.

Furthermore, as Silva (2019) points out, under the pretext of promoting industry or economic activity, these policies may only spread clientelism and nepotism through subjective privileges in some regions of the country. Goularti (2019) argues that, depending on the Brazilian region, tax incentive policies may increase the concentration of wealth and worsen inequalities. Catão (2004) also explains that tax incentive policies have not helped the finances and development of municipalities, as is the case in the North and Northeast, which have not contributed to creating an economic activity or a prominent economic sector. Thus, we sought to analyze these effects for each of the five regions of Brazil separately. Hence, the first hypothesis is proposed:

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 2, p. 320-343, Jul./Sep. 2024

**324**

**H₁:** The joint effects of tax incentive policies tend to affect a municipality's balance of public finances depending on its geographic region.

Baião, Cunha, and Souza (2017) and Costa *et al.* (2012) consider that an analysis according to the region is relevant, as Brazil's continental dimensions and the territorial division under which it is organized, accentuate existing disparities, not only between municipalities, due to their size, but also due to the region in which they are located, including in public finances. Szajnbok (2019) and Vieira *et al.* (2019) also emphasize that the existence of regional disparities causes the public entity to adopt strategies to equalize the economic situation.

Furthermore, as Botelho and Abrantes (2020) note, the adoption of tax incentive policies has been encouraged, given the possibility of tax equity, administrative efficiency, and benefits for sectors not served by the State, to reduce regional disparities. It is also important to note that the characteristics of municipalities are closely related to the region in which they are located, which might affect their public finances. As Almeida (2016) points out, the North and Northeast, for example, have a lower concentration of municipalities, lower population density, and low economic development.

However, since exemptions occurred in different economic sectors, the effects of tax incentive policies on Brazilian municipalities' public finances were conducted separately through each of the three sectors – industry, services, and agriculture. Therefore, the second hypothesis is presented:

**H₂:** The joint effects of tax incentive policies affect the Brazilian municipalities' public finances fiscal balance, depending on the predominant economic sector benefited

Zolt (2015) considers the analysis by economic sector pertinent because governments grant tax incentives to selected groups of taxpayers or to specific sectors of the economy, claiming that this will mitigate market failures and deficient internal investment. As described by Sosvilla-Rivero and Rubio-Guerrero (2022), knowledge of the effects of fiscal policies according to each economic sector is important to establishing public policies such as tax exemptions.

Furthermore, according to Christelis *et al.* (2019) and Jordà and Taylor (2016), underestimating the short- and long-term effects of incentive policies may lead governments to establish unattainable fiscal targets for each economic sector, leading to slow growth, budget deficits, and consequent losses for the public finances of all the Federation's entities.

## 4. Method

The sample comprised 5,570 Brazilian municipalities. The timeframe was determined according to data availability, considering 1999 to 2017.

A proxy was used as the dependent variable to measure the fiscal balance of the Brazilian municipalities' public finances. This proxy was determined by the Fiscal Balance Quotient (FBQ), defined by Kohama (2015), as the division of the sum of total current revenue by total current expenses. For Akin, Bulut-Cevik, and Neyapti (2016), Kyriacou, Muinelo-Gallo, Roca-Sagalés (2017), Neyapti (2013) and Marconato, Parré and Coelho (2021), the revenue-to-expenditure ratio is one of the best ways to measure the fiscal balance of municipalities, since an investigation of the effects of fiscal policies on subnational public finances must address aspects involving these elements.

A dummy variable, tax exemption (*taxexem*), was used as the explanatory variable. It measures the simultaneous occurrence of tax incentive policies. Hence, a dummy was first assigned to represent the tax incentives corresponding to the IPI; 1 was assigned to the years in which tax incentives occurred in the IPI and zero otherwise. Likewise, two other dummies were created: one representing the tax incentives on the ICMS export and the other for the incentives on PIS/Cofins. In both cases, 1 was assigned to the years in which taxes were exempted and zero otherwise.

Next, the dummy representing the simultaneous occurrence of tax incentives was created based on the product of the dummy variables that individually captured the years in which the incentives for each tax occurred separately. One (1) was assigned for the years the policies were applied simultaneously, and zero otherwise. Jorge and Martins (2013) and Rumina, Balandina, and Bannova (2015) agree that the analysis of the effects of these policies is relevant as they may be inefficient and also affect aggregate demand through various channels, taxes, current expenditures, and transfers, public investments, expenses, and revenues, in addition to the multiplier effect on private consumption and investment.

Gross Value Added (GVA) was also used as an explanatory variable to measure economic activity in the three economic sectors: industry, services, and agriculture. Suri *et al.* (2011) and Todaro and Smith (2012) note that considering that GVA composes the GDP, it reflects the increase in a country's actual production, which is an important driver of economic growth due to the relationship between employment and the population's income. Due to this study's objectives, the GDP variation according to the economic sector (industry, agriculture, and services) was used to analyze the effects of tax exemptions.

Control variables were used to capture the effect of economic development, political issues, and fiscal management on the balance of public finances in Brazilian municipalities. For economic development, a proxy called employment (Emp), the ratio between the number of employment contracts and the number of terminated contracts in each of the three economic sectors separately, was used.

According to Aglietta (1979) and Todaro and Smith (2012), employment contract behavior is a good macroeconomic indicator because, in addition to reflecting economic growth, an increase in contract terminations significantly interferes with socioeconomic development. Albertini *et al.* (2021) and Challe (2020) note that the risk of contract termination, specifically in the industrial sector, influences fiscal policies, considering that workers increase savings and decrease consumption in adverse conditions, which may negatively affect public finances.

The influence of fiscal decentralization on municipal finances was measured using a dummy (Party), which sought to capture how political relations, i.e., the alternation of power between the municipal and federal levels of government, interfere in the balance of municipal finances. This dummy is represented by 1 when the party of the municipal mayor is the same as that of the President of the Republic and zero otherwise. Sakurai and Menezes-Filho (2011), Veloso and Bornhold (2016), Balaguer-Coll *et al.* (2015), Chortareas, Logothetis, and Papandreou (2016) state that such an analysis might reveal additional results on how political factors affect public finances and whether these factors interfere in budgetary matters.

The *Índice Firjan de Gestão Fiscal (IFGF)*[Firjan Fiscal Management Index] was a control variable focused on economic regulation. Silva *et al.* (2020) and Cruz and Afonso (2018) explain that the objective of the IFGF is to encourage a culture of administrative responsibility, promoting the improvement of municipal fiscal management, considering that the absence of regulation discourages accurate budgets. Excellence management is essential for quality budgetary results. Hence, the importance of the index in the modeling is given that it provides content beyond the dependent variable, involving autonomy, personnel expenses, investments, and liquidity. Additionally, the endogeneity test for this and the dependent variable was negative.

Temporal dummies (Ti; i = 1 to 5) were used each year, during which tax incentives co-occurred to capture whether factors other than tax incentives affected municipal finances. Dorn, Gäbler, and Rösel (2021) report that these dummies capture macroeconomic effects not observed in the model, such as the behavior of stock markets, exchange rates, and inflation, among others, which may eventually affect the public finances of subnational entities. Table 1 presents a description of the variables used.

Table 1
**Variables used in the models**

| Variables | Description | Source | Literature |
|---|---|---|---|
| FBQ | Fiscal Balance Quotient | – | Kohama (2015); Marconato, Parré e Coelho (2021); Neyapti (2013); Akin, Bulut-Cevik e Neyapti (2016), Kyriacou, Muinelo-Gallo, Roca-Sagalés (2017) |
| *GVAind* | Gross Value Added - Industry | IBGE | Suri *et al*. (2011); Todaro e Smith (2012) |
| *GVAserv* | Gross Value Added - Services | | |
| *GVAagro* | Gross Value Added - Agriculture | | |
| *Party* | *The Dummy for party alignment assumes 1 if the mayor's party is the same as the president of the Republic's and 0 otherwise* | TSE | Sakurai e Menezes-Filho (2011); Veloso e Bornhold (2016); Balaguer-Coll *et al*. (2015); Chortareas, Logothetis e Papandreou (2016) |
| *IFGF* | Firjan Fiscal Management Index | FIRJAN | Silva *et al.* (2020); Cruz e Afonso (2018) |
| *Empind* | Ratio between employment contracts and contract terminations in the industry sector | CAGED | Aglietta (1979); Todaro e Smith (2012); Albertini et al. (2021); Challe (2020) |
| *Empserv* | Ratio between employment contracts and contract terminations in the services sector | | |
| *Empagro* | Ratio between employment contracts and contract terminations in the agriculture sector | | |
| *taxexem* | *Dummy to indicate the simultaneous exemptions of IPI, ICMS export, and PIS/Cofins* | Portal de Legislação do Planalto | Jorge e Martins (2013); Rumina, Balandina e Bannova (2015) |
| $T_1 a T_5$ | *Temporal Dummies to capture factors other than tax incentive policies* | – | Mattos, Rocha e Toporcov (2013) Dorn, Gäbler e Röse;l (2021), |

* Monetary values were adjusted by the General Price Index (IGP-DI), from Getúlio Vargas Foundation – FGV, on 31/12/2017, in thousands of Reais and weighted by population (per capita).

Source: developed by the author.

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 2, p. 320-343, Jul./Sep. 2024

327

Thus, according to region, econometric models were estimated for panel data for each of the three economic sectors. The models were estimated in four stages, differentiated by the inclusion of variables, to ensure the consistency and robustness of the results. First, the effects of only the explanatory variables were estimated, and then the control variables were included in stages. Equation 1 presents the general form of the estimated model.

$$FIN_{it} = \alpha_{it} + \beta_1 \, lnGVAs_{it} + \beta_2 \, (taxrel \; x \; s)_{it} + \xi X_{kit} + e_{it} \qquad (1)$$

As shown in Table 1, $FIN_{it}$ represents the Fiscal Balance Quotient (FBQ); $taxexem$ and $GVAs_{it}$ are the explanatory variables; $X_{kit}$ is a vector of $k$ control variables; $\alpha_{it}$ is the intercept to be estimated; $e_{it}$ is the model's random error. $i$ refers to each of the Brazilian municipalities and $t$ represents each year considered in the model.

Note that the estimate of the effects of tax exemptions on the public finances of Brazilian municipalities is given by the sum of the coefficients of the variables $GVA_s$ and $taxexemxGVA_s$ since the $taxexemxGVA_s$ variable resulted from the product of GVA by the dummy corresponding to the tax exemption policies implemented simultaneously. Gujarati and Porter (2011) and Wooldridge (2011) describe that the estimate occurs by summing the coefficients; when two variables are multiplied, all observations are combined, thus the regression structure changes, modifying the intercept, the angular coefficient, or both. As the dummy variable represents different periods in time, we have a differential intercept and a differential angular coefficient in this type of regression.

Time series stationarity from 1999 to 2017 was tested using the unit root test for panel data to instrumentalize the models' estimation. The Fisher-type unit root test was chosen because it can be applied to balanced and unbalanced panels. Next, the Durbin-Wu-Hausman estimator consistency test was applied to verify the existence of endogeneity between the dependent and explanatory variables (Janot, Vandanjon & Gautier, 2016).

Finally, in addition to the logarithmization of the dependent and monetary variables, the data relating to the other variables in the model were Winsorized to obtain an even more robust data set.

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 2, p. 320-343, Jul./Sep. 2024

328

# 5. Results and discussions

## 5.1 Tax Incentive Policies and Public Finances of Brazilian Municipalities According to Economic Sector

Given the dependent and explanatory variables' stationarity and non-endogeneity, Table 2 presents the results of the effects of tax incentives applied simultaneously on IPI, ICMS export, and PIS/Cofins on the balance of municipal finances. Note that models 1, 2, and 3 are estimated to ensure the consistency and robustness of the estimates. Model 4 presents the results related to the variable of interest.

Thus, the first results concerning the explanatory variable indicate that the tax exemptions, when applied simultaneously to IPI, ICMS export, and PIS/Cofins, negatively affected the balance of municipal public finances through the industrial and agricultural sectors between 2009 and 2013. Regarding the service sector, the results showed that the effects of tax exemptions on the balance of municipal finances tend to be positive. Note that this estimate is obtained by summing the coefficients of the variables GVA and taxexemxGVA, as the taxexemxGVA variable resulted from the product of the dummy concerning tax exemptions by the GVA.

In general, the inferential result regarding the variable of interest violates the premises of the Economic Theory of Fiscal Decentralization, which, according to Musgrave (1959), gives the central government the condition to interfere in the economy to promote macroeconomic stability. The reason is that tax incentives implemented simultaneously on IPI, ICMS export, and PIS/Cofins may interfere with this entity's allocative condition and provide goods and services to its population by causing adverse effects on the balance of municipal finances. According to Bevilacqua, Buissa, and Morais (2017), these results reinforce the need to cautiously analyze and plan the use of tax incentives, which, despite being legal instruments, may compromise the fiscal balance of federated entities.

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 2, p. 320-343, Jul./Sep. 2024

329

Marconi Silva Miranda, Luiz Antônio Abrantes,
Antônio Carlos Brunozi Júnior and Marco Aurelio Marques Ferreira

Table 2

**Effects of tax incentives on IPI, ICMS export, and PIS/Cofins on the balance of public finances of Brazilian municipalities by economic sector**

| Variables | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| | | **Industrial Sector** | | |
| lnGVAind | - 0,0257* | - 0,0252* | - 0,0091* | - 0,0053* |
| *taxexemxGVAind* | 0,00000132* | 0,00000133* | 0,00000107* | 0,00000044* |
| Party | | 0,0623* | 0,0223* | 0,0283* |
| Emp ind | | | 0,0032* | 0,0015** |
| IFGF | | | 0,2712* | 0,1296* |
| T1 | | | | 0,0211* |
| T2 | | | | 0,0532* |
| T3 | | | | 0,0917* |
| T4 | | | | 0,0789* |
| T5 | | | | -0,1872* |
| No. of observations | 95.211 | 95.211 | 57.318 | 57.318 |
| F test | 0,0000* | 0,0148* | 0,0000* | 0,0000* |
| | | **Agricultural Sector** | | |
| lnGVAagro | - 0,0475* | - 0,0464* | - 0,0155* | - 0,0073* |
| *taxexemxGVAagro* | 0,00000161* | 0,00000165* | 0,00000143* | -0,00000073* |
| Party | | 0,0615* | 0,0226* | 0,0282* |
| Emp agro | | | 0,0022* | 0,0016** |
| IFGF | | | 0,2720* | 0,1294* |
| T1 | | | | 0,0253* |
| T2 | | | | 0,0584* |
| T3 | | | | 0,0973* |
| T4 | | | | 0,0836* |
| T5 | | | | -0,1842* |
| No. of observations | 95.155 | 95.155 | 57.293 | 57.293 |
| F test | 0,0000* | 0,0000* | 0,0000* | 0,0000* |
| | | **Service Sector** | | |
| lnGVAserv | - 0,0092* | - 0,0081* | 0,0196* | 0,0557* |
| *taxexemxGVAserv* | 0,00000146* | 0,00000148* | 0,00000193* | -0,00000057* |
| Party | | 0,0628* | 0,0230* | 0,0300* |
| Emp serv | | | 0,0016** | 0,0008*** |
| IFGF | | | 0,2631* | 0,1097* |
| T1 | | | | 0,0142* |
| T2 | | | | 0,0627* |
| T3 | | | | 0,1166* |
| T4 | | | | 0,0988* |
| T5 | | | | -0,1739* |
| No. of observations | 95.227 | 95.227 | 57.333 | 57.333 |
| F test | 0,0000* | 0,0000* | 0,0000* | 0,0000* |

* Significant at 5%; ** Significant at 10%; *** Non-significant. Tests: Durbin-Wu-Hausman was not significant. Standard errors were obtained considering fixed effects.

Source: Study's results.

Regarding the results obtained for the variable of interest, Matias Pereira (2017) considers that this happens because the application of mistaken fiscal policies adopted by the government after 2010, including tax incentives, contributed to the destructuring of public finances. Ribeiro (2019) and Bastos, Rodrigues, and Lara (2015) consider that one of the reasons for the adverse effects of tax incentives on public finances, especially after 2006, is that tax exemptions negatively impact the public budget. Lima and Machado (2018) also argue that tax exemptions do not enhance the value added by companies, which negatively impacts revenues and public finances.

These results reinforce this study's hypothesis that tax incentive policies depend on each other when applied simultaneously to several taxes. Additionally, they might negatively impact municipal public finances depending on the economic sector. This is consistent with the empirical findings of Ferreira Bruno, Moraes, and Oliveira (2021), Rocha, Tatsch, and Cário (2019), and Silva, Menezes Filho, and Komatsu (2016), which indicate the relevant growth of the services sector for the Brazilian economy perceived mainly in the number of total jobs generated in its various segments, in comparison with the industrial sector.

Note that the empirical studies by Vieira, Oliveira, and Ávila (2021), Barbosa *et al.* (2020), Oliveira, Pinto, and Rita (2017), and Lukic (2015) indicate that IPI exemptions were favorable for the balance of municipal public finances. This probably did not occur when multiple tax incentive policies were implemented simultaneously. By analyzing a single policy separately, these studies may have neglected that their effects on the balance of public finances depend on each other.

Furthermore, not considering that, during a period, IPI exemptions occurred simultaneously with exemptions on ICMS exports may bias the results. As Braatz and Rocha (2021), Silva and Gonçalves (2019), Cavalcante and Zanocchi (2020), and Davis and Biondini (2018) highlight, among all the tax exemptions, those on ICMS exports via the Kandir Law, were those with most significant adverse effect on the balance of municipal finances.

Therefore, a more comprehensive analysis of tax incentives implemented simultaneously on IPI, ICMS exports, and PIS/Cofins on the balance of municipal public finances, presented by the variable of interest, enables more consistent and robust results. The theory of fiscal decentralization corroborates this study's second hypothesis that the effects of multiple and dependent tax incentive policies on the fiscal balance of public finances of Brazilian municipalities vary depending on the recipient economic sector.

Additionally, a model was estimated using the Primary Budget Result (PBR) as a proxy to measure fiscal balance – the difference between primary revenues and expenditures – fiscal indicators traditionally published by public entities to further strengthen the analysis of the effects of tax incentives on municipal public finances. The estimated coefficients presented in Table 3 show that, in general, the results were similar to those found for the dependent variable FBQ, i.e., the variable of interest used to infer the effects of tax incentive policies, when applied simultaneously, harms municipal finances through the industrial and agricultural sectors. Again, the estimates are obtained by summing the estimated coefficients for lnGVA and taxexemxGVA.

Table 3

**Effects of tax incentives on IPI, ICMS export, and PIS/Cofins on the primary budget result of Brazilian municipalities according to economic sector**

| Variables | Estimated coefficients |
|---|---|
| **Industrial Sector** | |
| lnGVAind | - 25,1672* |
| *taxexemxGVAind* | 0,0145* |
| No. of observations | 57.318 |
| F test | 0,0000* |
| **Agricultural Sector** | |
| lnGVAind | - 73,9890* |
| *taxexemxGVAind* | 0,0045* |
| No. of observations | 57.318 |
| F test | 0,0000* |
| **Services Sector** | |
| lnGVAind | - 15,7912** |
| *taxexemxGVAind* | 0,0113* |
| No. of observations | 57.318 |
| F test | 0,0000* |

* Significant at 5%; ** Non-significant; Tests: Durbin-Wu-Hausman was not significant. OLS Estimators. Standard errors were obtained considering fixed effects.

Source: Study's results.

Regarding the control variables, the Party variable positively affected the municipalities' balance of public finances. The findings corroborate the results by Ansolabehere, and Snyder Jr. (2006) for the United States, Khemani (2007) for India, Solé-Ollé and Sorribas-Navarro (2008) for Spain, Gonschorek, Schulze, and Sjahrir (2018) for Indonesia, and Sakurai and Theodoro (2020) for Brazil indicate that one of the reasons for the positive effect of party alignment between the mayor and the President of the Republic on municipal public finances is the excessive volume of extra resources through voluntary transfers, which also indicates that the non-alternation of power in the period contributed to the municipalities' fiscal balance.

Estimates regarding the number of new employment contracts for the industrial and agricultural sectors positively affected the balance of municipal public finances. These results indicate that economic development, represented by the variable Employment, positively affected municipal finances. Füchter, Aparecida, and Vargas (2017) highlight that the number of employment contracts in the industry increases during periods of tax incentives, which indicates economic development, with positive effects on municipal finances.

The results concerning the IFGF indicated a positive effect on the balance of municipal finances. Căpraru, Georgescu, and Sprincean (2022) and Cruz and Afonso (2018) explain that adequate fiscal management is expected to have a positive effect on public finances, as it is related to planning, transparency, and control, elements that benefit the budget balance.

Regarding temporal variables, estimates indicate that, between 2009 and 2012, other factors not included in the model positively influenced municipal finances. Behera and Dash (2018), Casquete-Baidal and León-Cedeño and Delgado-Solís (2020), and Misra (2018) highlight that these factors include the behavior of stock markets, exchange rates, inflation, the price of a barrel of oil, money supply, trade balance, and price fluctuations, among others.

## 5.2 Effects of Tax Incentive Policies on Public Finances of Brazilian Municipalities According to Region

Table 4 presents the results of the estimates of the effects of tax incentive policies implemented simultaneously on IPI, ICMS export, and PIS/Cofins on the balance of public finances of Brazilian municipalities according to the estimated coefficients of the variable of interest according to region.

Adverse effects were found in the South's economic sectors and the Mid-West industrial and agricultural sectors. The results were generally positive for the Northeast, North, and Southeast.

The South's figures suggest that the federal government's tax incentive policies, which were implemented simultaneously and depended on each other, did not contribute to the balance of the municipalities' public finances. These estimates indicate that the federal government's use of tax incentive policies to promote economic stability did not favor the municipal finances in any economic activities in this region, whether concerning consumption or the maintenance of employment and income. Silva and Gonçalves (2019) and Bozzetto (2017) argue that this occurred due to the Union's failure to compensate for tax waivers, mainly in Paraná and Rio Grande do Sul.

Table 4

**Effects of the tax incentives on IPI, ICMS export, and PIS/Cofins on the balance of public finances of Brazilian municipalities according to region**

| Variables | Mid-west | Northeast | North | Southeast | South |
|---|---|---|---|---|---|
| | Industry Sector | | | | |
| lnGVAind | -0,0286* | -0,0018*** | 0.0139* | -0.0027*** | -0.0356* |
| taxexemxGVAind | 0,00000091** | 0,00000165* | 0.00000148* | 0.00000010* | 0.00000132** |
| Party | 0,0688* | -0,0214* | 0.0494* | 0.0140* | 0.0496* |
| Emp ind | 0,0158* | 0,0018* | -0.0011*** | 0.0064* | 0.0017*** |
| IFGF | 0,2542* | 0,1819* | 0.2326* | 0.3346* | 0.3250* |
| | Services Sector | | | | |
| lnGVAserv | -0,0073*** | 0,0265* | 0.0431* | 0.0299* | -0.0355* |
| taxexemxGVAserv | 0,00000357* | 0,00000268* | 0.00000184* | 0.00000160* | 0.00000152* |
| Party | 0,0673* | -0,0192* | -0.0510* | -0.0144* | 0.0487* |
| Emp serv | -0,0005*** | -0,0004*** | -0.0005*** | -0.0038** | 0.0096* |
| IFGF | 0,2517* | 0,1729* | 0.2247* | 0.3266* | 0.3172* |
| | Agriculture Sector | | | | |
| lnGVAagro | -0,0695* | 0,0257* | -0.0371* | -0.0043*** | -0.1071* |
| taxexemxGVAagro | 0,00000172* | 0,00000222* | 0.00000206** | 0.00000249* | 0.00000115* |
| Party | 0,0648* | -0,0220* | -0.0516* | 0.0138* | 0.0501* |
| Emp agro | -0,0114*** | 0,0021** | -0.0036** | 0.0036*** | 0.0011*** |
| IFGF | 0,2521* | 0,1823* | 0.2299* | 0.3375* | 0.3275* |
| nº de obs | 4.877 | 16.805 | 3.901 | 18.123 | 13.587 |
| Teste F | 0,0000* | 0,0000* | 0.0000* | 0.0000* | 0.0000* |

* Significant at 5%; ** Significant at 10%. *** Non-significant. Tests: *Durbin-Wu-Hausman* was not significant. OLS Estimators. Standard errors were obtained considering fixed effects.

Source: Study's results.

The negative results for the South and Mid-West suggest that regional elements are sensitive to this type of fiscal policy, suggesting that there are more complex issues, such as vulnerabilities, that the central government must assess when adopting tax incentives to promote economic stability. Perez *et al.* (2020) and Wanzinack and Signorelli (2014)criado com vistas à identificação de vulnerabilidades e minimização de problemas de seu entorno, contribuindo com o Desenvolvimento Regional. Com a recente política nacional de expansão do Ensino Superior Federal, foi viabilizada a criação do campus Litoral da Universidade Federal do Paraná (UFPR Litoral argue that these vulnerabilities may result from population growth mismatching economic growth, an unfavorable social context, poor health and education indicators, environmental fragilities, or territorial occupation without preserving the ecosystem.

Still, regarding the variable of interest, the positive results found for the Southeast in the services sector suggest that losses in industrial revenue might have been offset by other economic activities, considering the region's solid economic capacity. According to Teles (2016), this is due to the region's solid economic profile, with the largest GDP in the country.

However, when the variable of interest includes exemptions on several taxes – IPI, ICMS export, PIS/COFINS –applied simultaneously, the positive results for some regions and negative results for others may also indicate that, depending on the predominant economic sector, there may have been a compensatory movement in some regions; for example, through consumption, thus causing a positive effect on municipal public finances. Thus, according to the Economic Theory of Fiscal Decentralization, the results confirm this study's first hypothesis that the effects of multiple and dependent tax incentive policies on the fiscal balance of public finances of Brazilian municipalities vary, depending on the geographic region.

Regarding the control variables, the estimates for the Party variable were positive for municipal finances in all regions. These figures possibly reflect the importance of political relations between the mayor and the President of the Republic for municipal finances in all regions. Regarding employment contracts, the results indicate that the positive effect on the balance of municipal public finances is most prominent in the industrial sector, with emphasis on the Mid-West, Northeast, and Southeast.

Finally, the IFGF was positive for all economic sectors, regardless of the region. However, the empirical results of Miranda *et al.* (2018) state that, although the North and Southeast have the highest IFGF, the positive effects of sound fiscal management are more significant in the South and Southeast.

## 6. Final Considerations

The results suggest that tax exemption policies have not contributed to the balance of finances of Brazilian municipalities, encouraging a discussion about the recurrent use of tax incentive policies to promote economic stability. This is because different Brazilian governments seem to adopt populist measures to obtain approval and remain in power. Evidence that tax incentives have not contributed to the municipalities' fiscal balance suggests that these measures are often merely used for political purposes. In such a context, the central government should interrupt this vicious cycle of expansionist economic policies and adopt more responsible fiscal policies to promote economic stability and prevent harming the balance of public finances.

As for the implications of such results, tax incentives violate the theoretical premises of fiscal decentralization – greater efficiency in the provision of goods and services, optimization of the population's well-being, the possibility of a greater supply of public goods and services suited to regional preferences – which favors a decentralized system rather than a centralized one. There are two reasons: First, incentives might interfere with transfers and make it even more difficult for municipalities, which mainly depend on these resources to provide goods and services, thus affecting their allocative capacity. Second, there is no requirement for municipalities to provide any type of counterpart for these transfers.

The implications for public policymakers, who usually propose these fiscal policies from a top-down perspective, considering their economic effects from a macro-level perspective only, are that these results suggest that policymakers are unaware of municipalities' susceptibility to political and fiscal maneuvers at the government's higher levels.

Therefore, policymakers should establish mechanisms – besides those already provided by law, such as population proportionality – to link these resource transfers to municipalities' counterparts. In this context, some measures could be implemented: First, the creation, at the municipal level, of a standardized and detailed information system that enables the central government to monitor the provision of goods and services by municipalities to their populations. Second, an indexer should be created to refer to the allocation of goods and services provided by these municipalities to their populations and conditions for the receipt of transfers of resources from the central government to a quantitative measure established by this indexer. For example, these measures could help partially reduce the influence of political issues, such as party collusion and electoral corrals, for municipalities to obtain resources. Additionally, this indexer could function as a quantitative control of municipal allocative efficiency.

Another aspect concerns the application of tax exemption policies related to Brazil's regional disparities. These exemptions might further aggravate the existing social differences between Brazilian regions by favoring sectors that are in more developed regions, which makes it difficult for municipalities to provide services to their population, considering that this study's results indicate that exemptions did not contribute to the balance of municipal finances in two Brazilian regions.

The fact that the geographic analysis is restricted to regions, i.e., the states of the Federation were not analyzed separately, constitutes a limitation. Such an analysis would allow for identifying more specific regional characteristics of municipal finances. Given the results and limitations presented, future studies are suggested to analyze municipal spending on basic education and primary health care and identify clusters according to the hierarchical allocation capacity of these municipalities.

# References

Abad, N., Lloyd-Braga, T., & Modesto, L. (2020). The failure of stabilization policy: Balanced-budget fiscal rules in the presence of incompressible public expenditures. *Journal of Economic Dynamics and Control, 120*, 103996. https://doi.org/10.1016/J.JEDC.2020.103996

Aglietta, M. (1979). *A Theory of Capitalist Regulation: The US experience.* Verso.

Akin, Z., Bulut-Cevik, Z. B., & Neyapti, B. (2016). Does Fiscal Decentralization Promote Fiscal Discipline? *Emerging Markets Finance and Trade*, *52*(3), 690–705. https://doi.org/10.1080/154049 6X.2015.1012920

Albertini, J., Auray, S., Bouakez, H., & Eyquem, A. (2021). Taking off into the wind: Unemployment risk and state-Dependent government spending multipliers. *Journal of Monetary Economics*, *117*, 990–1007. https://doi.org/10.1016/J.JMONECO.2020.07.007

Almeida, R. N. (2016). Os efeitos das transferências intergovernamentais nas finanças públicas municipais brasileiras. *Revista Do Tribunal de Contas Do Estado de Minas Gerais*, *33*(4), 52–72.

Alves, R. D. A. V. (2018). Federalismo fiscal e distorções do modelo brasileiro. *Revista de Finanças Públicas, Tributação e Desenvolvimento*, *6*(6). https://doi.org/10.12957/rfptd.2018.29441

Ansolabehere, S., & Snyder Jr, J. (2006). Party control of state government and the distribution of public expenditures. *The Scandinavian Journal of Economics*, *108*(4), 547–569. https://doi.org/10.1111/j.1467-9442.2006.00470.x

Araújo, E. S. (2016). Avaliação dos Programas de Incentivos Fiscais do Estado de Goiás entre 2000 e 2013. *Revista Economia Ensaios*, *30*(2), 65–87. https://doi.org/10.14393/REE-V30N2A2016-3

Babajide, N. A., Ogunlade, C. A. B., & Oladimeji, S. T. D. (2014). Comparative Analysis of Upstream Petroleum Fiscal Systems of Three (3) Petroleum Exporting Countries: Indonesia, Nigeria and Malaysia. *International Journal of Sciences: Basic and Applied Research*, *15*(2), 99–115. http://gssrr.org/index.php?journal=JournalOfBasicAndApplied

Baião, A. L., Cunha, A. S. M. da, & Souza, F. S. R. N. de. (2017). Papel das transferências intergovernamentais na equalização fiscal dos municípios brasileiros. *Revista Do Serviço Público*, *68*(3), 583–610. https://doi.org/10.21874/rsp.v68i3.1406

Balaguer-Coll, M. T., Brun-Martos, M. I., Forte, A., & Tortosa-Ausina, E. (2015). Local governments' re-election and its determinants: New evidence based on a Bayesian approach. *European Journal of Political Economy*, *39*, 94–108. https://doi.org/10.1016/J.EJPOLECO.2015.04.004

Barbosa, L. T., Abrantes, L. A., Brunozi Júnior, A. C., & Almeida, F. M. de. (2020). Política de desoneração do IPI e sua implicação na arrecadação própria dos municípios brasileiros. *Advances in Scientific and Applied Accounting*, *13*(1), 143–164.

Barro, R. J. (1974). Are Government Bonds Net Wealth? *Journal of Political Economy*, *82*(6), 1095–1117. https://doi.org/10.1086/260266

Baskaran, T., Feld, L., & Schnellenbach, J. (2016). Fiscal federalism, decentralization, and economic growth: a meta-analysis. *Economic Inquiry*, *54*(3), 1445–1463.

Bastos, C. P., Rodrigues, R. de S., & Lara, F. M. (2015). As finanças públicas e o impacto fiscal entre 2003 e 2012: 10 anos de governo do Party dos Trabalhadores | Bastos . *Ensaios FEE*, *36*(2), 675–706. https://revistas.planejamento.rs.gov.br/index.php/ensaios/article/view/3406

Behera, D. K., & Dash, U. (2018). The impact of macroeconomic policies on the growth of public health expenditure: An empirical assessment from the Indian states. *Cogent Economics & Finance*, *6*(1). https://doi.org/10.1080/23322039.2018.1435443

Bergman, U. M., Hutchison, M. M., & Jensen, S. E. H. (2016). Promoting sustainable public finances in the European Union: The role of fiscal rules and government efficiency. *European Journal of Political Economy*, *44*, 1–19. https://doi.org/10.1016/J.EJPOLECO.2016.04.005

Bevilacqua, L., Buissa, L., & Morais, P. H. (2017). Incentivos de ICMS e Renúncia Fiscal no Regime de Recuperação Fiscal (RRF). *Revista Fórum de Direito Financeiro e Econômico*, *6*(11), 127–143.

Bisaro, A., de Bel, M., Hinkel, J., Kok, S., Stojanovic, T., & Ware, D. (2020). Multilevel governance of coastal flood risk reduction: A public finance perspective. *Environmental Science & Policy*, *112*, 203–212. https://doi.org/10.1016/J.ENVSCI.2020.05.018

Boadway, R., & Cuff, K. (2017). The impressive contribution of Canadian economists to fiscal federalism theory and policy. *Canadian Journal of Economics*, *50*(5), 1348–1380. https://doi.org/10.1111/CAJE.12301

Botelho, L. H. F., & Abrantes, L. A. (2018). Reflexões sobre as incidências tributárias no Brasil e suas relações com o desenvolvimento socioeconômico nacional. *Ciências Sociais Unisinos*, *54*(1), 126–133. https://doi.org/10.4013/csu.2018.54.1.12

Botelho, L. H. F., & Abrantes, L. A. (2020). Desoneração tributária como fator de desenvolvimento socioeconômico das regiões brasileiras. *DRd - Desenvolvimento Regional Em Debate*, *10*, 1258–1283. https://doi.org/10.24302/drd.v10i0.3145

Bozzetto, A. V. (2017). *Lei Kandir e as Finanças do estado do Rio Grande do Sul*. UFRGS - Universidade Federal do Rio Grande do Sul.

Braatz, J., & Rocha, M. M. da. (2021). Deliberações em nível federal e impactos sobre as finanças públicas do Rio Grande do Sul. *Revista de Economia*, *42*(78), 480–505. https://doi.org/10.5380/RE.V42I78.71837

Bresser-Pereira, L. C., & Nakano, Y. (2020). Crescimento Econômico com Poupança Externa? *Brazilian Journal of Political Economy*, *23*(2), 163–188. https://doi.org/10.1590/0101-31572004-0699

Căpraru, B., Georgescu, G., & Sprincean, N. (2022). Do independent fiscal institutions cause better fiscal outcomes in the European Union? *Economic Systems*, *46*(2), 100973. https://doi.org/10.1016/J.ECOSYS.2022.100973

Casquete-Baidal, N. E., León-Cedeño, P. U., & Delgado-Solís, H. P. (2020). Variables macroeconómicas que influyen en las finanzas públicas de Ecuador. *Revista Científica FIPCAEC* , *5*(18), 269–288. https://doi.org/10.23857/FIPCAEC.V5I18.212

Catão, M. A. V. (2004). *Regime jurídico dos incentivos fiscais.* (2º). Renovar.

Catarino, J. R., & Abraham, M. (2018). O federalismo fiscal no Brasil e na União Europeia. *Revista Estudos Institucionais*, *4*(1), 186–210. https://doi.org/10.21783/rei.v4i1.263

Cavalcante, D. L., & Zanocch, J. M. M. (2020). Reflexão necessária sobre os limites constitucionais das desonerações fiscais das exportações no Brasil. *Revista de Direito Administrativo*, *279*(1), 193–219.

Cavalcante, D. L., & Zanocchi, J. M. M. (2020). Reflexão necessária sobre os limites constitucionais das desonerações fiscais das exportações no Brasil. *Revista de Direito Administrativo*, *279*(1), 193–220. https://doi.org/10.12660/RDA.V279.2020.81389

Challe, E. (2020). Uninsured Unemployment Risk and Optimal Monetary Policy in a Zero-Liquidity Economy. *American Economic Journal: Macroeconomics*, *12*(2), 241–283. https://doi.org/10.1257/MAC.20180207

Chiades, P., Greco, L., Mengotto, V., Moretti, L., & Valbonesi, P. (2019). Fiscal consolidation by intergovernmental transfers cuts? The unpleasant effect on expenditure arrears. *Economic Modelling*, *77*, 266–275. https://doi.org/10.1016/J.ECONMOD.2018.09.008

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 2, p. 320-343, Jul./Sep. 2024

337

Chortareas, G., Logothetis, V., & Papandreou, A. A. (2016). Political budget cycles and reelection prospects in Greece's municipalities. *European Journal of Political Economy*, *43*(1), 1–13. https://doi.org/10.1016/J.EJPOLECO.2016.02.001

Christelis, D., Georgarakos, D., Jappelli, T., Pistaferri, L., & Van Rooij, M. (2019). Asymmetric Consumption Effects of Transitory Income Shocks. *The Economic Journal*, *129*(622), 2322–2341. https://doi.org/10.1093/EJ/UEZ013

Chygryn, O., Petrushenko, Y., Vysochyna, A., & Vorontsova, A. (2018). Assessment of Fiscal Decentralization Influence on Social and Economic Development. *Montenegrin Journal of Economics*, *14*(4), 69–084. https://doi.org/10.14254/1800-5845/2018.14-4.5

Corcelli, C. (2021). Gastos Tributários E Crescimento Econômico No Brasil Entre 2004 a 2015: Uma Avaliação Empírica. *Cadernos De Finanças Públicas*, *20*(3), 1–36. https://publicacoes.tesouro.gov.br/index.php/cadernos/article/view/100

Correia, F. M., & Neduziak, L. C. R. (2019). Reações fiscais e a dívida dos estados brasileiros: efeitos do federalismo fiscal e das regras orçamentárias. *Revista Econômica Do Nordeste*, *50*(4), 47–62. https://g20mais20.bnb.gov.br/revista/index.php/ren/article/view/948

Costa, C. C. de M., Ferreira, M. A. M., Braga, M. J., & Abrantes, L. A. (2012). Disparidades Inter-Regionais e Características dos Municípios do Estado de Minas Gerais. *Desenvolvimento Em Questão*, *10*(20), 52–88. https://doi.org/10.21527/2237-6453.2012.20.52-88

Cruz, C. F. da, & Afonso, L. E. (2018). Gestão fiscal e pilares da Lei de Responsabilidade Fiscal: evidências em grandes municípios. *Revista de Administração Pública*, *52*(1), 126–148. https://doi.org/10.1590/0034-7612165847

Dantas Junior, A. F., Diniz, J., & Lima, S. C. (2019). A Influência do Federalismo Fiscal Sobre o Estresse Fiscal dos Municípios Brasileiros. *Advances in Scientific & Applied Accounting*, *12*(3), 62–78. https://doi.org/10.14392/ASAA.2019120304

Davis, P. G., & Biondini, I. V. F. (2018). Endividamento público de Minas Gerais: histórico e recentes propostas de recuperação. *Cadernos Gestão Pública e Cidadania*, *23*(76), 413–435. https://doi.org/10.12660/CGPC.V23N76.75373

Domingues, J. M. (2007). Federalismo fiscal brasileiro. *Revista Nomos*, *26*(1), 137–143.

Dorn, F., Gäbler, S., & Rösel, F. (2021). Ineffective Fiscal Rules? The Effect of Public Sector Accounting Standards on Budgets, Efficiency, and Accountability. *Public Choice*, *186*(3), 387–412. https://ideas.repec.org/p/ces/ifowps/_312.html

Ewetan, O. O., Osabohien, R., Matthew, O. A., Babajide, A. A., & Urhie, E. (2020). Fiscal federalism and accountability in Nigeria: an ARDL approach. *Journal of Money Laundering Control*, *24*(2), 359–371. https://doi.org/10.1108/JMLC-05-2020-0046

Ferreira Bruno, R., Moraes, M. B., & Oliveira, E. A. A. Q. (2021). Evolução econômica do setor de serviços no estado de Rondônia: uma análise do período de 2009 a 2015. *Amazônia, Organizações e Sustentabilidade*, *10*(1), 64–80.

Füchter, M., Aparecida, T., & Vargas, V. (2017). Fundamentos da política industrial: a influência dos incentivos fiscais, físicos e econômicos na geração de emprego no município de Rio do Sul - SC (2005-2010). *Revista Catarinense de Economia*, *1*(1), 120–135. https://doi.org/10.54805/RCE.2527-1180.V1.N1.9

Gonschorek, G., Schulze, G., & Sjahrir, B. S. (2018). To the ones in need or the ones you need? The political economy of central discretionary grants– empirical evidence from Indonesia. *European Journal of Political Economy*, *54*, 240–260. https://www.sciencedirect.com/science/article/pii/S0176268018300260?casa_token=F0Zo7QqiyRkAAAAA:s-71usJyNSQAGUS28JGm5wmo1IObpY8a3W8UVPmxj3nc1tBuITnIHgYw7rft0y7ipP0OnX38SQ

Goularti, J. G. (2019). A política de incentivos fiscais em Santa Catarina: lobby político, poder econômico e desigualdades regionais. *Revista de Economia*, *40*(73), 275–304. https://doi.org/10.5380/RE.V40I73.67952

Griebeler, M. P. D., Silva, J. F. da, & Allebrandt, S. L. (2020). Análise da política de incentivos fiscais municipal. *DRd - Desenvolvimento Regional Em Debate*, *10*, 677–702. https://doi.org/10.24302/drd.v10i0.2863

Gross, T. (2021). Dynamic optimal fiscal policy in a transfer union. *Review of Economic Dynamics*, *42*, 194–238. https://doi.org/10.1016/J.RED.2020.10.010

Gujarati, D., & Porter, D. (2011). *Econometria Básica* (5o). AMGH.

Haavelmo, T. (1945). Multiplier Effects of a Balanced Budget. *Econometrica*, *13*(4), 311. https://doi.org/10.2307/1906924

Hayek, F. A. (1945). The use of Knowledge in Society. *The American Economic Review*, *35*(4), 519–530.

Janot, A., Vandanjon, P. O., & Gautier, M. (2016). A revised Durbin-Wu-Hausman test for industrial robot identification. *Control Engineering Practice*, *48*, 52–62. https://doi.org/10.1016/J.CONENGPRAC.2015.12.017

Jia, J., Ding, S., & Liu, Y. (2020). Decentralization, incentives, and local tax enforcement. *Journal of Urban Economics*, *115*, 103225. https://doi.org/10.1016/j.jue.2019.103225

Joanis, M. (2016). The Politics of Checkbook Federalism: Can Electoral Considerations Affect Federal–Provincial Transfers? *Public Finance Review* , *46*(4), 665–691. https://doi.org/10.1177/1091142116679728

Jordà, Ò., & Taylor, A. (2016). The Time for Austerity: Estimating the Average Treatment Effect of Fiscal Policy. *The Economic Journal*, *126*(590), 219–255. https://doi.org/10.1111/ECOJ.12332

Jorge, C. T., & Martins, N. M. (2013). Política fiscal e a desaceleração da economia brasileira no governo Dilma ( 2010-2012 ). *Instituto de Economia UFRG. Texto Para Discussão 013*.

Keynes, J. M. (1996). *A Teoria Geral do Emprego, do Juro e da Moeda*. Nova Cultural Ltda.

Khemani, S. (2007). Party politics and fiscal discipline in a federation: Evidence from the states of India. *Journals.Sagepub.Com*, *40*(6), 691–712. https://doi.org/10.1177/0010414006290110

Kim, Y. (2018). Limits of fiscal federalism: How narratives of local government inefficiency facilitate scalar dumping in New York State. *Public Finance Review* , *51*(3), 636–653. https://doi.org/10.1177/0308518X18796511

Kohama, H. (2015). *Balanços Públicos: Teoria e Prática* (3o). Atlas.

Kraal, D. (2019). Petroleum industry tax incentives and energy policy implications: A comparison between Australia, Malaysia, Indonesia and Papua New Guinea. *Energy Policy*, *126*, 212–222. https://doi.org/10.1016/J.ENPOL.2018.11.011

Kyriacou, A. P., Muinelo-Gallo, L., & Roca-Sagalés, O. (2017). Regional inequalities, fiscal decentralization and government quality. *Regional Studies*, *51*(6), 945–957. https://doi.org/10.1080/00343404.2016.1150992

Larch, M., Orseau, E., & van der Wielen, W. (2021). Do EU fiscal rules support or hinder counter-cyclical fiscal policy? *Journal of International Money and Finance*, *112*, 102328. https://doi.org/10.1016/J.JIMONFIN.2020.102328

Leroy, R. S. D., Abrantes, L. A., Almeida, F. M. de, Ferreira, M. A. M., & Vieira, M. A. (2017). Estrutura Arrecadatória e Desenvolvimento Socioeconômico dos Municípios Mineiros. *Desenvolvimento Em Questão*, *15*(41), 164. https://doi.org/10.21527/2237-6453.2017.41.164-201

Lima, L. V. de A., & Machado, M. R. (2018). Incentivos fiscais e sua influência no valor adicionado produzido pelas empresas. *XII Congresso ANPCONT*.

Lima, V. G. M., Lima, R. J. V. S., & Oliveira, L. S. D. (2018). Esforço fiscal e transferência de recursos: os efeitos da recessão econômica na arrecadação dos municípios brasileiros. *Revista Estudo & Debate*, *25*(1), 155–169. https://doi.org/10.22410/ISSN.1983-036X.V25I1A2018.1510

Lukic, M. de S. R. (2015). Extrafiscalidade e Regulação da Economia: as mudanças tributárias nos Governos Lula e Dilma. *Seqüência*, *36*(71), 197–220. https://doi.org/10.5007/2177-7055.2015v36n71p197

Luna, T. B. de, Silva, W. G. e, & Silva Filho, L. A. da. (2017). Despesas municipais nordestinas: uma análise empírica a partir da Lei de Responsabilidade Fiscal (LRF). *Revista Econômica Do Nordeste*, *48*(2), 101–110. https://g20mais20.bnb.gov.br/revista/index.php/ren/article/view/284

Makreshanska-Mladenovska, S., & Petrevski, G. (2020). Decentralisation and fiscal performance in Central and Eastern Europe. *Post-Communist Economies*, *32*(8), 1–23. https://doi.org/10.1080/14631377.2020.1793609

Marconato, M., Parré, J. L., & Coelho, M. H. (2021). Financial dynamics of brazilian municipalities. *Revista de Administracao Publica*, *55*(2), 378–394. https://doi.org/10.1590/0034-761220200041

Masaki, T. (2018). The impact of intergovernmental transfers on local revenue generation in Sub-Saharan Africa: Evidence from Tanzania. *World Development*, *106*, 173–186. https://doi.org/10.1016/j.worlddev.2018.01.026

Matias Pereira, J. (2017). Avaliação dos efeitos da crise econômica-política-ética nas finanças públicas do Brasil. *Revista Ambiente Contábil*, *9*(2), 117–141. https://dialnet.unirioja.es/servlet/articulo?codigo=6060137

Mattos, E., Rocha, F., & Toporcov, P. (2013). Programas de incentivos fiscais são eficazes?: evidência a partir da avaliação do impacto do programa nota fiscal paulista sobre a arrecadação de ICMS. *Revista Brasileira de Economia*, *67*(1), 97–120. https://doi.org/10.1590/S0034-71402013000100005

Melnyk, L., Sineviciene, L., Lyulyov, O., Pimonenko, T., & Dehtyarova, I. (2018). Fiscal decentralization and macroeconomic stability: the experience of Ukraine's economy. *Problems and Perspectives in Management*, *16*(1), 105–114.

Mendes, W. de A., Ferreira, M. A. M., Abrantes, L. A., & Faria, E. R. de. (2018). A influência da capacidade econômica e da formação de receitas públicas no desenvolvimento humano. *Revista de Administração Pública*, *52*(5), 918–934. https://doi.org/10.1590/0034-761220170004

Meneghetti Neto, A. (2017). O desempenho das finanças públicas estaduais em 2016. *Indicadores Econômicos FEE*, *45*(1), 123–136.

Miranda, W. L. L. C. de, Araújo, R. J. R. de, Leite, Í. F., & Nobre, C. J. F. (2018). Avaliação da gestão fiscal nos estados brasileiros: análise no quinquênio 2011 a 2015. *Revista Mineira de Contabilidade*, *19*(1), 55–67. https://doi.org/10.21714/2446-9114RMC2018V19N1T05

Misra, P. (2018). An Investigation of the Macroeconomic Factors Affecting the Indian Stock Market. *Australasian Accounting, Business and Finance Journal*, *12*(2), 71–86. https://doi.org/10.14453/aabfj.v12i2.5

Moolman, A. M., & Zwan, P. van der. (2016). An Evaluation Of Income Tax Incentives Available To The South African Oil And Gas Industry. *International Business & Economics Research Journal (IBER)*, *15*(5), 227–240. https://doi.org/10.19030/IBER.V15I5.9781

Musgrave, R. A. (1959). *The Theory of Public Finance: A Study in Public Economy*. McGraw-Hill.

Neyapti, B. (2013). Fiscal Decentralization, Fiscal Rules and Fiscal Discipline. *Economics Letters* , *121*(3), 528–532. https://doi.org/10.2139/SSRN.2255902

Nishijima, M., Postali, F. A. S., & Rocha, F. F. (2017). Efeitos da descentralização da saúde básica no Brasil sobre o nível de corrupção em municípios investigados pelo governo central. *Nova Economia*, *27*(1), 117–141. https://doi.org/10.1590/0103-6351/2883

Oates, W. E. (1972). *Fiscal Federalism*. Harcourt Brace Jovanovich.

Oliveira, D. F. de, Pinto, I. M. B. S., & Rita, L. P. S. (2017). Avaliação da Desoneração do IPI e os Efeitos nas Finanças dos Municípios de Alagoas. *In: XX SEMEAD - Seminários Em Administração*.

Peña, W. (2020). Population Aging and Public Finances: Evidence from El Salvador. *The Journal of the Economics of Ageing*, *17*, 100260. https://doi.org/10.1016/J.JEOA.2020.100260

Perez, L. P., Rodrigues-Filho, S., Marengo, J. A., Santos, D., & Mikosz, L. (2020). Climate change and disasters: analysis of the Brazilian regional inequality. *Sustainability in Debate*, *11*(3), 260–296. https://doi.org/10.18472/SustDeb.v11n3.2020.33813

Pfeiffer, P., Roeger, W., & Vogel, L. (2021). Optimal fiscal policy with low interest rates for government debt. *Journal of Economic Dynamics and Control*, 104210. https://doi.org/10.1016/J.JEDC.2021.104210

Piergallini, A., & Postigliola, M. (2020). Evaluating the sustainability of Italian public finances. *The North American Journal of Economics and Finance*, *53*, 101180. https://doi.org/10.1016/J.NAJEF.2020.101180

Pimonenko, T. (2017). Efficiency of marketing communications in banks. *Business Ethics and Leadership*, *1*(2), 55–61.

Revorêdo, C. R. da S. C., Silva, M. C. da, Silva, J. D. G. da, & Libonati, J. J. (2021). . Fatores Explicativos da Eficácia da Despesa Orçamentária dos Municípios Brasileiros. *Revista de Globalización, Competitividad y Gobernabilidad*, *15*(1), 71–87.

Ribeiro, M. G. (2016). Estrutura social e desigualdade de renda: uma comparação entre os municípios metropolitanos e os não metropolitanos do Brasil entre 2000 e 2010. *Revista Brasileira de Estudos de População*, *33*(2), 237–256.

Ribeiro, M. M. (2019). Finanças públicas no Brasil: análise dos gastos públicos pela perspectiva da Administração Política . *Revista Brasileira de Administração Política*, *12*(1), 30–63. https://periodicos.ufba.br/index.php/rebap/article/view/47109

Rocha, C. S. C., Tatsch, A. L., & Cário, S. A. F. (2019). Mudança estrutural e seu impacto na produtividade: uma análise da ascensão do setor de serviços na economia brasileira. *Revista Economia Ensaios*, *33*, 26–45. https://doi.org/10.14393/REE-V33N0A2019-50413

Rodrigues, M., & Silva, D. C. C. (2020). Concentração e dependência das transferências constitucionais nos municípios do Pará. *Cadernos Gestão Pública e Cidadania*, *25*(80), 1–17. https://doi.org/10.12660/CGPC.V25N80.79256

Rumina, U. A., Balandina, A. S., & Bannova, K. A. (2015). Evaluating the Effectiveness of Tax Incentives in Order to Create a Modern Tax Mechanism Innovation Development. *Procedia - Social and Behavioral Sciences*, *166*, 156–160. https://doi.org/10.1016/j.sbspro.2014.12.502

Sakurai, S. N., & Menezes-Filho, N. (2011). Opportunistic and partisan election cycles in Brazil: new evidence at the municipal level. *Public Choice* , *148*(1), 233–247. https://doi.org/10.1007/S11127-010-9654-1

Sakurai, S. N., & Theodoro, M. I. A. (2020). On the relationship between political alignment and government transfers: triple differences evidence from a developing country. *Empirical Economics*, *58*(3), 1107–1141. https://doi.org/10.1007/S00181-018-1568-7

Samuelson, P. A. (1954). The Pure Theory of Public Expenditure. *The Review of Economics and Statistics*, *36*(4), 387–389.

Sediyama, G. A. S., Anjos, D. A. dos, & Felix, E. M. (2019). Transparência pública municipal: uma análise dos municípios mineiros que decretam calamidade financeira. *Gestão & Regionalidade*, *35*(104). https://doi.org/10.13037/gr.vol35n104.5045

Silva, C. M., Menezes Filho, N., & Komatsu, B. (2016). Uma Abordagem sobre o Setor de Serviços na Economia Brasileira. *Insper Policy Paper*, *19*.

Silva, L. R. F. da. (2019). Extrafiscalidade, incentivos fiscais: ausência de igualdade e justiça no desenvolvimento regional. *Revista Argumentum - Argumentum Journal of Law*, *10*, 227–244. http://ojs.unimar.br/index.php/revistaargumentum/article/view/1042

Silva, R. D. da, & Gonçalves, G. M. (2019). Exportações e o desenvolvimento regional: um balanço da Lei Kandir para o Rio de Janeiro, Paraná e Minas Gerais. *Semestre Económico*, *22*(50), 179–204. https://doi.org/10.22395/SEEC.V22N50A9

Silva, M. C., Souza, F. J. V. de, Martins, J. D. M., & Câmara, R. P. de B. (2020). Fatores explicativos da gestão fiscal em municípios brasileiros. *Revista Contemporânea de Contabilidade*, *17*(42), 26–37.

Smith, H. J. M., & Revell, K. D. (2016). Micro-Incentives and Municipal Behavior: Political Decentralization and Fiscal Federalism in Argentina and Mexico. *World Development*, *77*, 231–248. https://doi.org/10.1016/J.WORLDDEV.2015.08.018

Solé-Ollé, A., & Sorribas-Navarro, P. (2008). The effects of partisan alignment on the allocation of intergovernmental transfers. Differences-in-differences estimates for Spain. *Journal of Public Economics*, *92*(12), 2302–2319.

Sosvilla-Rivero, S., & Rubio-Guerrero, J. (2022). The economic effects of fiscal policy: Further evidence for Spain. *The Quarterly Review of Economics and Finance*, *86*, 305–313. https://doi.org/10.1016/J.QREF.2022.08.002

Sovilla, B., López, A. S., & Sánchez, E. M. (2018). Contradictions of Fiscal Decentralization in Mexico: The Case of Chiapas. *Gestión y Política Pública*, *27*(2), 397–429.

Suri, T., Boozer, M., Ranis, G., & Stewart, F. (2011). Paths to Success: The Relationship Between Human Development and Economic Growt. *World Development*, *39*(4), 506–522.

Suzart, A. S., Zuccolotto, R., & Rocha, D. G. (2018). Federalismo fiscal e as transferências intergovernamentais: um estudo exploratório com os municípios brasileiros. *Advances in Scientific and Applied Accounting*, *11*(1), 127–145. https://doi.org/10.14392/asaa.2018110107

Szajnbok, L. M. T. C. (2019). Desenvolvimento e redução das desigualdades regionais: análise sobre a efetividade dos incentivos fiscais federais nas áreas de atuação da SUDENE. *Revista Tributária e de Finanças Públicas*, *141*(27), 151–169. https://rtrib.abdt.org.br/index.php/rtfp/article/view/160

Teles, C. A. P. (2016). *Um estudo acerca das flutuações de arrecadação do ICMS dos estados brasileiros. Dissertação*. Universidade Federal do Ceará.

Tiebout, C. M. (1956). A Pure Theory of Local Expenditures. *The Journal of Political Economy*, *64*(5), 416–424.

Todaro, M. P., & Smith, S. C. (2012). *Economic Development* (12º). Pearson.

Vande, P. T. (2021). Fiscal federalism and the politics of revenue allocation in Nigeria. *Zamfara Journal of Politics and Development*, *2*(1), 19–19. https://zjpd.com.ng/index.php/zjpd/article/view/18

Veloso, G. de O., & Bornhold, S. D. (2016). Averiguação empírica de ciclos políticos nos municípios gaúchos, entre 1995 e 2008. *Ensaios FEE*, *36*(4), 1069–1096. http://200.198.145.164/index.php/ensaios/article/view/2617

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 2, p. 320-343, Jul./Sep. 2024

**342**

Viegas, T. de O. C., Conte Filho, C. G., & Carvalho, V. S. (2019). Crise fiscal no Rio Grande do Sul: uma investigação dos determinantes da dívida pública estadual no período recente. *Estudos Do CEPE*, *50*(50), 57–70. https://doi.org/10.17058/CEPE.V0I50.14212

Vieira, M. A., Abrantes, L. A., Almeida, F. M. de, & Anjos, D. A. dos. (2019). Implicações do Fundo de Participação dos Estados (FPE) na Redução das Desigualdades Regionais. *Contabilidade, Gestão e Governança*, *22*(1), 136–152. https://doi.org/10.21714/1984-3925_2019V22N1A8

VIEIRA, M. A., OLIVEIRA, D. A., & ÁVILA, L. A. C. (2021). Redução do IPI e os reflexos nas finanças públicas dos municípios de Minas Gerais. *Gestão & Regionalidade*, *37*(111), 215–231.

Wakim, E. A. M., Wakim, V. R., & Lima, J. E. (2018). Perfil de Arrecadação dos Municípios do Estado de Minas Gerais: análise antes e depois do advento da lei de responsabilidade fiscal. *Revista Contabilidade Vista & Revista*, *29*(3), 1–22.

Wanzinack, C., & Signorelli, M. C. (2014). Expansão do ensino superior federal e desenvolvimento regional: o caso da Universidade Federal do Paraná no litoral paranaense. *Revista Gestão Universitária Na América Latina - GUAL*, *7*(2), 286–307. https://doi.org/10.5007/1983-4535.2014V7N2P286

Wooldridge, J. M. (2011). *Introdução a Econometria – Uma Abordagem Moderna* (4ª). Cengage Learning.

Zolt, E. (2015). Tax Incentives: Protecting the tax base. In *Workshop on Tax Incentives and Base Protection* (Protecting, pp. 451–495). United Nations Handbook on Selected.

# Impostor Phenomenon, Social Comparison Orientation, and *Cyberloafing* During Classes Among Undergraduate Accounting Students

**Alison Martins Meurer**
*https://orcid.org/0000-0002-3704-933X*

**Flaviano Costa**
*http://orcid.org/0000-0002-4694-618X*

## Abstract

**Objective:** The impostor phenomenon (IP) is a psychological mechanism involving many factors and consequences. Due to its multiple consequences and interactions, it has gained prominence in the Brazilian and international literature. This study presents evidence of a potential relationship between social comparison and the use of social media. It analyzes the relationship between IP and *cyberloafing* on social media during classes, mediated by undergraduate accounting students' social comparison orientation (SCO). **Method:** This study surveyed 502 Accounting Sciences students, and ANOVA tests and structural equation modeling were performed. **Results and contributions:** Significant differences were found between the level of IP and *cyberloafing* and ability-based and opinion-based SCO. Nonetheless, the relational model did not confirm whether SCO moderates this relationship. Such a result indicates that SCO drives the effects of IP on *cyberloafing* practiced on social media during classes. One of this study's contributions concerns the importance of observing these variables within the scope of teaching policies and teaching methodologies.

**Keywords:** Impostor Phenomenon; Social Comparison Orientation; *Cyberloafing*; Accounting Students.

# 1. Introduction

The Impostor Phenomenon typifies people who consider themselves intellectual fraud and attribute their success to luck, chance, hard work, or knowing influential people, avoiding linking their success to talent and intelligence (Clance, 1985).

Cyberloafing in the university context is characterized by using the Internet and electronic devices for distraction (Baturay & Toker, 2015; Blanchard & Henle, 2008; Kim & Byrne, 2011; Yaşar & Yurdugül, 2013). Cyberloafing is conjectured to be maximized by behavioral patterns characteristic of the impostor cycle. The reasoning is that the Model of Compensatory Internet Use (CIUM) advocates that cyberloafing is a strategy to cope with and compensate for negative emotions generated by stressful situations (Kardefelt-Winther, 2014). Fassl *et al.* (2020) state that hard work and extreme dedication embodied in the impostor cycle lead to higher levels of stress, relating this behavior to the adoption of cyberloafing, which also embodies self-sabotage and postponement of commitments listed in the behavioral cycle of those who suffer from the Impostor Phenomenon (Fassl *et al.*, 2020; Ramm, 2019).

Studies suggest that the most common form of cyberloafing in the university context is accessing social networks such as Facebook, Instagram, Twitter, TikTok, and WhatsApp (Meurer & Costa, 2021; Müller *et al.*, 2020; Yaşar & Yurdugül, 2013). Furthermore, Ramm (2019) and Fassl *et al.* (2020) note that social networks are ideal for those with higher levels of IP to make social comparisons.

Social comparison is empirically based on Social Comparison Orientation (SCO), which concerns an innate need to compare oneself with the skills and opinions of others and obtain feedback on how to improve such characteristics (Fassl *et al.*, 2020; Gibbons & Buunk, 1999). Social comparison tends to be more intense among those with low self-esteem experiencing high-stress levels (Gibbons & Buunk, 1999). There is a concern that SCO is affected by more intense levels of IP and maximizes cyberloafing, considering that IP is suggested to precede low self-esteem and stress (Fassl *et al.*, 2020) and may lead to social comparison (Clance, 1985).

The Royal Society for Public Health (2017) warns that social comparison on social media might increase anxiety and feelings of social inadequacy. This is particularly relevant for accounting students, who are often characterized as introverted, less communicative, or apprehensive about communicating (Lima *et al.*, 2021; Roberts *et al.*, 2022). These characteristics encourage them to use social media to seek support and relationships in the offline world (Cramer, Song, & Drent, 2016; Meier, Esmatyar, & Sarpong, 2019).

In the professional context, Kuselias *et al.* (2021) show that obtaining and assessing auditing evidence is impaired when auditors view posts about other people's rewarding experiences. On the other hand, when such content refers to professional aspects, the quality of their work increases. These findings reinforce the topic's relevance beyond the university educational process, encompassing professional activity.

Still, in the organizational context, it is essential to consider that IP affects the behavior of organizational leaders, being more prevalent among those in managerial positions. Although one can address the work environment's contextual factors to minimize the effects of IP, such feelings are deeply rooted during the educational phase. Hence, considering that the current generation of Accounting students will become leaders or assist the leaders of organizations in the coming years, observing this process during their training might substantially contribute to minimizing IP (KH & Menon, 2022).

Despite evidence in the literature, there remains a latent gap in studies addressing impostor feelings through SCO. The information flow available on social networks is attractive for making social comparisons, and SCO is believed to mediate the relationship between IP and cyberloafing on social networks; evidence suggests this possibility (Lee, 2014; Vogel *et al.*, 2015; Vogel *et al.*, 2014). Therefore, this study aims to analyze the relationship between the Impostor Phenomenon and cyberloafing practiced on social networks during classes mediated by the Social Comparison Orientation of undergraduate students in the Accounting Science program.

This study aims to support a process of sensitizing students to use social media responsibly, as cyberloafing is linked to poor academic performance, student demotivation, and teacher frustration (Baturay & Toker, 2015). Scientific research contributes to mapping the variables linked to cyberloafing, as the literature indicates that unattractive classes with traditional methodologies are among the elements encouraging such behavior during classes (Alt, 2017; Meurer & Costa, 2021).

By investigating Accounting Science students, we seek to support the training process of professionals, considering that IP, SCO, and cyberloafing affect the performance of these professionals (Kuselias *et al.*, 2021; KH & Menon, 2022).

## 2. Development of Hypotheses and Research Model

In 1978, Dr. Pauline Rose Clance and Dr. Suzanne Ament Imes introduced the Impostor Phenomenon into the scientific literature. Clance and Imes dedicated half a decade to studying and observing a group of approximately 150 successful women with a high educational level in various fields who were academically recognized and professionally respected but held strong beliefs of intellectual incapacity. They did not personally experience a sense of success, manifesting feelings of impostorism and intellectual fraud.

Recently, studies have begun to observe different social groups in different environments and regions, contributing to popularizing the topic (e.g., Chassangre & Callahan, 2017; Houseknecht, Roman, Stolfi, & Borges, 2019; Meurer & Costa, 2020; Pulliam & Gonzalez, 2018). Although IP was coined in the 1970s, there has been an exponential growth in the number of academic investigations and popular literature since 2010 (Bravata *et al.*, 2020).

This growing body of research has contributed to discussing behavioral characteristics caused by impostor feelings. IP was introduced by Clance and Imes (1978) and Clance (1985) and summarized by Clance and O'Toole (1987). The behavioral and psychological patterns of impostors include overestimating the abilities of others and underestimating their own (Clance & O'Toole, 1987). Chayer and Bouffard (2010) indicate that this behavioral pattern is operationalized by mapping others' abilities and opinions, which leads individuals with impostor feelings to base self-assessment disconnected from reality but is also a means of reproducing and reinforcing impostor beliefs. Therefore, the overestimation of the abilities of others and the underestimation of one's own abilities are the main behavioral patterns of the IP that can be linked to SCO.

Festinger (1954) introduced social comparison by postulating that people have an innate drive to self-evaluate, comparing themselves to others. Next, when verifying that social comparison processes may differ in direction and frequency, Gibbons and Buunk (1999) proposed the concept of Social Comparison Orientation, which advocates that social comparison is when one compares himself/herself with others' skills or opinions. Skill-based SCO is concerned with comparing performance from a perspective of relative classification, in which the individual identifies whether he or she has superior, inferior, or equal skills to those of others. In opinion-based SCO, beliefs, thoughts, and values are compared, i.e., the individual analyzes, with a lens of consensual precision, whether he or she agrees or disagrees with what s/he observes (Liu, Elliot, & Li, 2020).

In the educational context, social comparison enables students to obtain feedback that helps them structure and define their aspirations and goals and evaluate their performance (Chayer & Bouffard, 2010). There is evidence that social comparison is adopted more frequently by those with higher stress levels and insecurity regarding their abilities and opinions (Chayer & Bouffard, 2010; Festinger, 1954). As IP implies an increase in the level of stress and insecurity, it is pertinent to propose that a greater tendency of individuals to experience impostor feelings at more intense levels induces the adoption of SCO-based behaviors (Fassl *et al*., 2020)which can cause distress and might result in poor mental health. A phenomenon that was shown to be linked to low self-esteem, higher stress levels, anxiety, and depression in university students is the impostor phenomenon. Impostorism is defined as a conviction to be unintelligent despite one's academic success and was found to be closely associated with psychological femininity in previous studies. Research has also shown that people who experience higher stress levels, self-doubts, and a low self-esteem tend to engage in social comparison processes more often. Therefore, the present study aimed to explore the relationship between gender typing and impostor feelings and to investigate a possible influence of social comparison orientation on the aforementioned association. For this purpose, 278 university students (73.7% women.

Furthermore, since Clance and Imes (1978) formulated the IP, social comparison has figured as a behavioral pattern adopted to compare oneself to peers, promoting one's feelings of inadequacy. Another piece of evidence indicating this relationship is that perfectionism, sometimes a behavior of people with impostor feelings (Clance, 1985), is consolidated from upward social comparisons (Ramm, 2019).

Chayer and Bouffard (2010), Ramm (2019), and Fassl *et al*. (2020) addressed the potential relationship between SCO and IP. Chayer and Bouffard (2010) examined the relationship between social comparison and impostor feelings among high school students. The results showed a positive relationship between impostor feelings and social comparison among boys. Ramm (2019) addressed Psychology undergraduate students and found that social comparisons through social media positively affect IP, considering that social media is a channel that facilitates upward social comparison, both of skills and opinions. Fassl *et al*. (2020) also found evidence among college students that SCO is related to IP.

An inverse relationship is hypothesized in this study, i.e., IP is an antecedent of SCO. Hence, social comparison is adopted as an empirical way to enable underestimating one's skills and overestimating others' skills to perpetuate impostor feelings. Considering that Buunk et al. (1990) state that the effects of social comparison may be associated with an individual's personality characteristics, the Theoretical Hypothesis 1 (HT1) is proposed: **Higher levels of Impostor Phenomenon positively affect the Social Comparison Orientation of Accounting Science students.**

Considering a world where technological devices and Internet access are widespread, there is evidence that social networks may be used for social representation and comparisons (Chou & Edge, 2012). Cyberloafing has been considered as an attitudinal approach that enables maximizing the frequency of social media use, as, in conceptual terms, cyberloafing is considered counterproductive (Akbulut, Dönmez, & Dursun, 2017), as it characterizes internet access for purposes unrelated to formally proposed activities, such as work or educational activities (Baturay & Toker, 2015).

Social networks comprise a continuous flow of information updated daily by different users and function as a feedback mechanism enabling the operationalization of social comparisons (Müller *et al.*, 2020). Appel *et al.* (2016) report that social comparison is ubiquitous on social networks, as there is a high availability of information, such as the number of friends, places people attend, photographs, and mini-resumes, among others. There is cross-sectional evidence that the frequency of social network use is positively affected by social comparison (Lee, 2014; Vogel *et al.*, 2015; Vogel, Rose, Roberts, & Eckles, 2014)an individual difference variable called social comparison orientation (SCO.

Lee (2014) found that the frequency of social comparison on Facebook is positively affected by SCO and that the frequency of negative feelings arising from social comparisons on Facebook is negatively associated with an individual's self-esteem. Similarly, Vogel *et al.* (2014) found that the frequency of Facebook use is positively related to upward and downward social comparisons, which, in turn, negatively affect self-esteem. Vogel *et al.* (2015) confirmed a positive influence of Social Comparison Orientation on Facebook usage patterns. These findings lead to a potential relationship between SCO and cyberloafing.

This study addresses the innate drive of SCO, which leads to more intense social media use, specifically during classes, as a form of cyberloafing. The Compensatory Internet Use Model supports this relationship since cyberloafing is affected by an individual's emotional and psychological state (Kardefelt-Winther, 2014), and this state is shaped by SCO (Smith, 2000). Based on the previous discussion, the second Theoretical Hypothesis 2 (HT2) is proposed: **Social Comparison Orientation positively affects cyberloafing practiced on social media by Accounting Science students during classes.**

IP occurs through cyclical behavior (impostor cycle), reinforcing these feelings with each new experience in which an individual's skills are tested. In the impostor cycle, people with impostor beliefs tend to adopt two strategies when faced with professional, academic, or personal challenges. The first strategy involves hard work, workaholic behaviors, and fierce dedication to completing tasks.

The second concerns procrastination and delaying the performance of tasks. Both strategies result in different ways of assimilating success when it is achieved. In the first case, the good results are attributed to hard work, while luck or chance explains success in the second case. However, both maximize the individuals' internal pressures when facing future challenges, as success is not considered innate but exogenous to an individual's skills (Chassangre & Callahan, 2017).

By procrastinating tasks and commitments, people with higher levels of IP end up engaging in self-sabotage in an attempt to protect their image from potential failures, considering that if the desired result is not achieved, they can attribute it to procrastination rather than functional or intellectual limitations (Clance, 1985; Ramm, 2019). One of the behaviors that may be adopted to procrastinate is cyberloafing on social networks due to their easy access and wide range of possibilities for distraction. On the other hand, those who dedicate themselves arduously to activities may also adopt cyberloafing to alleviate pressure and stress.

Another argument that reinforces this potential relationship is based on the fact that people with higher levels of impostor feelings have an intense need for social acceptance (Ferrari & Thompson, 2006). Thus, social networks are a field where social interactions can be maximized. Since one's image digitally shared on social networks can be altered and interpreted in different ways, as it is based on situational impression management (Nartgün *et al.*, 2017), individuals with more intense levels of impostorism may use these platforms more intensely, both to procrastinate and to perform impression management. Therefore, the third Theoretical Hypothesis 3 (HT3) states that: **The level of Impostor Phenomenon positively affects cyberloafing practiced on social networks by Accounting Science students during classes.**

Individuals with more intense levels of impostor feelings seek to balance feedback with their self-perception, often making dissonant comparisons of reality, which leads them to believe that they are not good enough. When these comparisons occur on social media, they may increase the use of this toolkit, as impostors may dedicate more time to editing the content posted on their social media profiles to fit into perceived social norms and perform impression management of their potential weaknesses (Ramm, 2019). Due to this relationship, social comparison is believed to mediate the relationship between the Impostor Phenomenon and cyberloafing; SCO may condition the attitudes and content shared on online platforms based on the innate impulse to contrast with how others act and think. Therefore, Theoretical Hypothesis 4 (HT4) proposes that: **The level of the Impostor Phenomenon of Accounting Science students is positively related to cyberloafing practiced on social networks during classes, mediated by Social Comparison Orientation.**

Based on the previous hypotheses, the relational theoretical model was tested in this study and is presented in Figure 1.
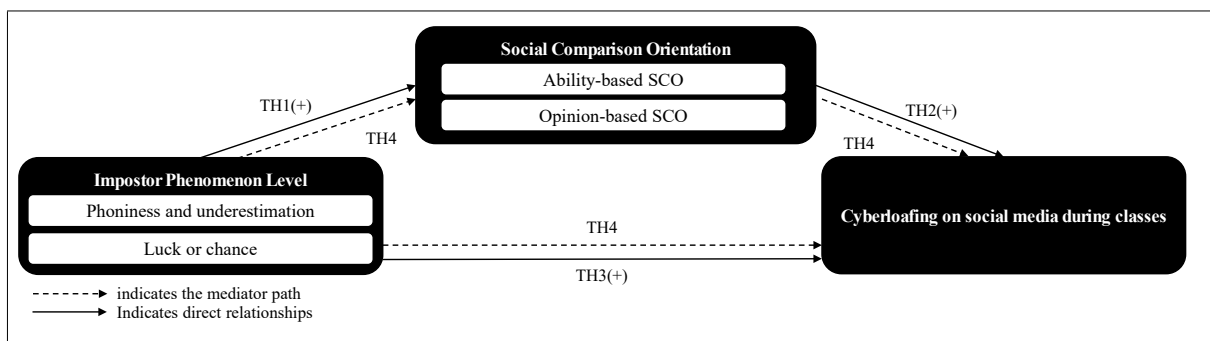


Source: developed by the authors (2022).

**Figure 2.** Relational Theoretical Model

The mediation hypothesis test is analyzed considering the conditions proposed by Baron and Kenny (1986). The first condition requires that variations in the independent variable levels are responsible for variations in the presumed mediating variable (HT1). The second condition states that variations in the presumed mediating variable are responsible for variations in the dependent variable (HT2). When testing the mediating path, a previously existing relationship between the independent variable and the dependent variable (HT3) ceases to be significant or is reduced to zero. Meanwhile, the relationships of the first two conditions remain significant. If this occurs, one might state the existence of total mediation, if it is not reduced to zero, there will be partial mediation (HT4).

# 3. Methodological Path

## 3.1 Data Collection and Participants

The study population comprises Brazilian students enrolled in Accounting programs in the brick-and-mortar modality registered with the Ministry of Education (MEC) in 2021. The 1,639 programs have 227,302 authorized vacancies. This figure approximates the population, as the authorized vacancies do not represent the number of students actually enrolled in institutions. Data were collected using the Survey Monkey® platform in October and November 2021. Invitations were sent to the programs' coordinators, and 850 responses were obtained; incomplete responses or responses from individuals not attending the program of interest were discarded (n excluded = 348). Therefore, the final sample comprised 502 valid responses.

### 3.2 Instruments

The instruments used to collect data include a) the Iowa-Netherlands Comparison Orientation Measure (INCOM) scale (Gibbons & Buunk, 1999), which measured Social Comparison Orientation. INCOM was adapted and culturally validated for the Brazilian context following the protocol by Borsa *et al.* (2012): 1) the instrument was translated from the source language to the target language, and a reconciled version was obtained. Five translators participated in this stage, two of whom were native English speakers, fluent in Portuguese; 2) nine judges expert in the field of Psychology, affiliated with graduate programs in different regions of Brazil, experienced with the development, validation, and evaluation of research instruments assessed the reconciled version; 3) the Brazilian version was also assessed by its target audience through individual interviews together with six Accounting students; 4) back translation; 5) the adapted scale was then sent to the original author (Professor Rick Gibbons); 6) a pilot study was applied to nine students; and finally, 7) its factor structure (psychometric validation) was assessed.

Eleven statements comprise the INCOM and compare the skill-oriented (items 1 to 6) and opinion-oriented comparisons (items 7 to 11); items 5 and 11 are reversed. An example of statements: "If I want to learn more about something, I try to find out what other people think about it." The Structural Equation Modeling technique showed that item 11, "I never consider my situation in life relative to that of other people," needed to be excluded due to its low external loading (<0.40). A CFA individually performed without this item enabled the application of the SEM and presented improvements in the factor indicators: 0.505 to 0.832 and satisfactory adjustment indices ($\chi$2 (df) = 53.24 (34) - p-value = 0.019; $\chi$2/df = 1.57; CFI = 0.995; TLI = 0.993; NFI = 0.986; IFI = 0.995; GFI = 0.994; SRMR = 0.041; RMSEA (90%CI) = 0.034 [0.014 – 0.050]; Factor covariance = 0.45 - p-value < 0.001) (Hair Jr, Black, Babin, Anderson, & Tatham, 2009; Kline, 2005; Marôco, 2014).

*Cyberloafing on social networks* was measured considering the sharing dimension of the scale proposed by Akbulut *et al.* (2016), composed of 9 items. This scale was also culturally adapted and validated following the protocol by Borsa *et al.* (2012), following the same steps previously described and applied to INCOM. Considering only the cyberloafing statements, the CFA indicated factor loadings ranging from 0.552 to 0.890. The adjustment indices were satisfactory and indicated $\chi^2$ (df) = 90.566 (27) - p-value < 0.001; $\chi^2$/df = 3.35; CFI = 0.981; TLI = 0.974; NFI = 0.973; IFI = 0.981; GFI = 0.989; SRMR = 0.076; RMSEA (90%CI) = 0.069 [0.053 – 0.084] (Hair Jr. *et al.*, 2009; Kline, 2005; Marôco, 2014). One example of statement would be: "I look at my friends' posts on social media."

*Impostor Phenomenon*: The Clance Impostor Phenomenon Scale (CIPS) developed by Clance (1985) and validated by French *et al.* (2008) and Meurer and Costa (2020b) was used. Initially, the scale comprised 20 statements. French *et al.* (2008) and Meurer and Costa (2020) found the need to exclude items 1, 2, 19, and 20 because they presented low factor loadings. Hence, the final version remained with 16 items rated on a 5-point numerical scale. The IP is divided into two factors: "Fake and Discount." The model fit indices were satisfactory: ($\chi^2$(df) = 124.185 (103) - p-value < 0.001; $\chi^2$/df = 1.20; CFI = 0.998; TLI = 0.998; NFI = 0.989; IFI = 0.998; GFI = 0.993; SRMR = 0.043; RMSEA (90% CI) = 0.020 [0.000 – 0.033]) (Hair Jr *et al.*, 2009; Kline, 2005; Marôco, 2014). The following exemplifies the statements: "I avoid evaluations if possible and have a dread of others evaluating me."

*Ethical concerns*: This study is part of a doctoral completion project registered with the Institutional Review Board CEP/SD at the institution where the authors are affiliated under No. 42700921.8.0000. A free and informed consent form was available to the participants ensuring the confidentially of their identifies and information provided, and the freedom to withdraw at any time.

*Methodological concerns*: The guidelines proposed by Chang et al. (2010) were adopted to minimize the common method bias derived from the collection of self-reported data, with dependent and independent variables being simultaneously collected in a cross-sectional design. Hence, the questionnaire blocks were not presented in the order of the relationships tested to prevent the relationships of the structural model became evident. The Harman test was also performed to estimate an exploratory factor analysis (EFA), which indicated the absence of multicollinearity between the items (Hair *et al.*, 2014).

The analysis of a potential non-response bias by those respondents who completed the questionnaire at the end of data collection was performed by dividing the sample between the first 251 (group 1) and the last 251 (group 2) responses, and a t-test of differences was applied between the groups. Af Wåhlberg and Poom (2015) state that the respondents who completed the study last tend to resemble non-respondents, supporting the importance of mapping potential differences in these groups' response patterns.

These treatments indicate that potential methodological biases are minimized, as no significant differences were found between the two groups (p-value > 0.05).

## 3.2 Data analysis techniques

The Robust Diagonally Weighted Least Squares (RDWLS) method was used to adapt the CFA to categorical data derived from measurement using a Likert scale.

Structural Equation Modeling included Partial Least Squares Path Modeling (PLS-PM). SEM enables the modeling of latent variable relationships and the estimation of complex models for non-normal data (Henseler, Ringle, & Sarstedt, 2015). The minimum sample estimate was calculated with the aid of G*Power 3.1.9.2® with the parameters Effect size $f^2 = 0.15$, a significance level of 5% (α error probability = 0.05), Power (1-β error probability) = 0.95, and Numbers of predictors = 4 indicating a minimum number of 129 respondents to enable the use of SEM.

ANOVA-One Way was performed to verify potential differences in the SCO facets and cyberloafing at the different IP levels. IP levels were determined according to the scores obtained in the CIPS: a score of 16 to 32 points refers to "Few IP experiences," from 33 to 48, "Moderate IP experiences," a score of 49 to 64 points is classified as "Frequent IP experiences," and from 65 to 80 "Intense IP experiences."

To overcome the non-normality of data identified in the Kolmogorov-Smirnov test and a lack of homogeneity of variances verified in the Levene test, the simple bootstrapping method with 1,000 resamplings, with a 95% bias-corrected and accelerated confidence interval (BCa) was used. Welch's correction and post-hoc evaluation using the Games-Howell technique were needed to overcome the heterogeneity of variance. Group Comparison Approaches based on the bootstrap t-test were applied (Sanchez, 2013) to consider the Impostor Phenomenon levels in the sample in a broad analysis of potential differences at the level of the causal network, at the structural level, at the measurement level, and the level of latent variables.

# 4. Results

## 4.1 Descriptive Analysis

In this study, 325 (64.74%) participants reported being women, and 177 (35.26%) reported being men. The respondents were 24.84 on average (Median = 22; Standard deviation = 7.46), with a minimum of 17 and a maximum of 62 years; 187 (37.25%) students were attending the program's first year; 101 (20.12%) were attending the second year; 90 (17.93%) the third year; 84 (16.73%) in the fourth year; and 40 (7.97%) students were attending the fifth year; five years is the program's total duration in some institutions. Regarding the location of the respondents' educational institutions, 237 (47.21%) students were enrolled at a Higher Education Institution (HEI) located in the South, 94 (18.73%) in the Northeast, 73 (14.54%) in the Midwest, 59 (11.75%) in the Southeast, and 39 (7.73%) were in the North. Regarding the type of HEI, 378 (75.30%) were enrolled in public educational institutions, followed by 123 (24.50%) from private educational institutions and one (0.20%) from a community institution.

WhatsApp is the social network most frequently used (n = 257; 51.20%), followed by Instagram (n = 179; 35.66%), Twitter (n = 22; 4.38%), Facebook (n = 15; 2.99%), Tik Tok (n = 9; 1.79%), Telegram (n = 6; 1.19%), LinkedIn (n = 5; 1%), and others (n = 9; 1.79%), such as YouTube, Discord, Twitch, and WeVerse. Only WhatsApp (98.80%), Instagram (87.85%), and Facebook (63.94%) are accessed by more than 50% of survey participants.

Additionally, the largest number (191; 38.05%) of respondents manifested moderate impostor feelings; followed by 153 respondents (30.48%), classified under frequent IP experiences. Individuals reporting few impostor feelings comprised 113 participants (22.51%). Finally, 45 respondents (8.96%) reported intense IP experiences. Such scores were higher than those found by Matos (2014).

## 4.2 Multivariate analysis and hypothesis testing

The SEM assessment consists of analyzing the measurement and structural models. The measurement model's analysis indicators, shown in Table 1, assess the internal consistency and independence of the latent variables through convergent validity and discriminant validity.

Table 1

**Measurement model – Convergent validity and discriminant validity indicators**

| Variables and indicators | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Convergent validity | | | | | |
| Composite Reliability | 0,928 | 0,899 | 0,844 | 0,820 | 0,900 |
| Average var. extracted (AVE) | 0,503 | 0,748 | 0,474 | 0,536 | 0,502 |
| Discriminant validity - Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT) | | | | | |
| 1. IP – Fake and Discount | *0,709* | 0,601 | 0,573 | 0,174 | 0,130 |
| 2. IP – Luck or chance | 0,524 | *0,865* | 0,334 | 0,131 | 0,194 |
| 3. Skill-based SCO | 0,508 | 0,278 | *0,689* | 0,446 | 0,222 |
| 4. Opinion-based SCO | 0,133 | 0,074 | 0,335 | *0,732* | 0,288 |
| *5. CL – Cyberloafing* | 0,118 | 0,175 | 0,207 | 0,234 | *0,708* |
| Standardized root mean square residuals (SRMR) | | | | | 0,062 |

Note: n = 502; 1the matrix's lower portion presents a correlation between the constructs.

Source: developed by the authors (2021).

Convergent validity verifies whether the statements can cluster and measure the latent variable (Sanchez, 2013). AVE indicates how much of the items' variation was considered in the formation of the latent variable, with values above 0.50 being recommended and above 0.40 being accepted (Hair Jr. *et al.*, 2014). Except for the skills dimension (AVE = 0.474), all other variables scored above 0.50. Composite reliability assessed the items' internal consistency and met the desired parameter above 0.70 for all latent variables (Sanchez, 2013).

The discriminant analysis enables mapping the distinction between the variables, indicating how much each variable differs empirically from the others (Hair Jr. *et al.*, 2014). The Fornell-Larcker criterion was analyzed; the square root of the construct's AVE must be greater than the correlations with the other latent variables, which was met. Finally, it was verified that the Heterotrait-Monotrait Ratio (HTMT) was adequate since all values found were below 0.85. (Henseler *et al.*, 2015).

The structural model inherent to the relationship between the latent variables was examined based on this study's theoretical construction. Table 2 presents the effects obtained by bootstrapping with 5,000 resamplings and the original effects, standard error, t-statistics, and p-value of the verified relationships added to the variance explained by the relationships ($R^2$), the effect size ($f^2$) and the redundancy (Mean_Redundancy – Q). In this initial model, called the general model, the potential specificities of the relationships from the level of the Impostor Phenomenon were not verified. The direct model and the mediating model are presented in order to analyze the conditions of Baron and Kenny (1986).

Table 2
**Structural Model**

| H | Paths | Mean.Boot (Original) | p-value | $R^2$ | $f^2$ | Hypothesis decision |
|---|---|---|---|---|---|---|
| | Mediating model (set) | | | | | |
| HT1 | IP – Luck or chance → SCO - Opinions | 0,005 (0,006) | 0,922 | 1,80% | 0,000 | Suporte parcial |
| | **IP – Fake and Discount → SCO - Opinions** | **0,135 (0,129)** | **0,028** | | **0,012** | |
| | IP – Luck or chance → SCO - Skills | 0,017 (0,017) | 0,701 | 25,80% | 0,000 | |
| | **IP – Fake and Discount → SCO – Skills.** | **0,505 (0,499)** | **0,000** | | **0,243** | |
| HT2 | *SCO – Skills → Cyberloafing* | **0,130 (0,128)** | **0,024** | 9,10% | **0,012** | Suportada |
| | *SCO – Opinions → Cyberloafing* | **0,195 (0,186)** | **0,000** | | **0,034** | |
| HT3 | *IP – Fake and Discount → Cyberloafing* | -0,053 (-0,052) | 0,409 | | 0,002 | Suporte parcial |
| | *IP – Luck or chance → Cyberloafing* | **0,154 (0,153)** | **0,004** | | 0,019 | |
| | Direct model (isolated) | | | | | |
| HT4 | *IP – Fake and Discount → Cyberloafing* | 0,092 (0,071) | 0,294 | 3,90% | 0,004 | Suporte parcial |
| | *IP – Luck or chance → Cyberloafing* | **0,153 (0,151)** | **0,005** | | **0,017** | |

Source: developed by the authors (2021).

Figure 2 presents the relationships identified and tested.
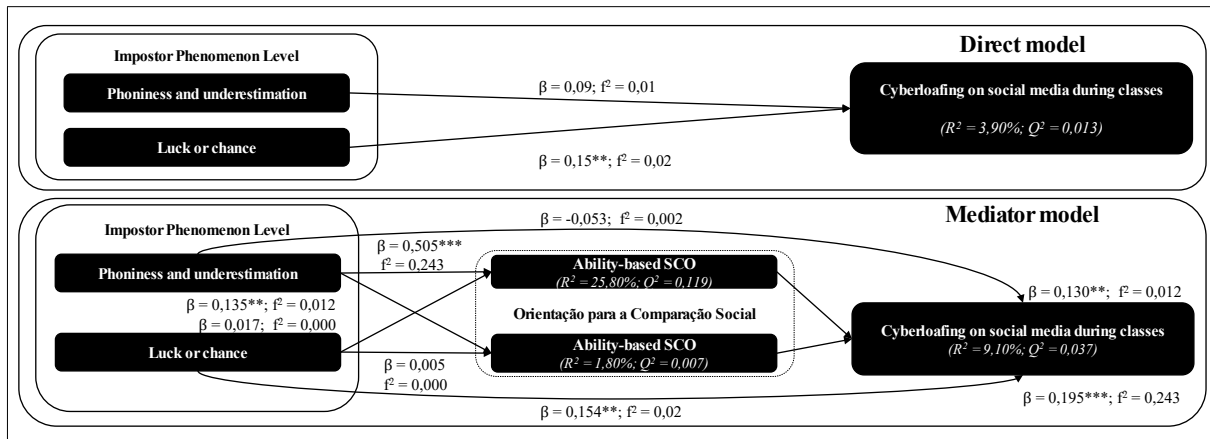


Note: H = Hypothesis; *** significance at 1%; ** significance at 5%.

Source: developed by the authors (2022).

**Figure 2.** Representation of the structural models

The structural relationships of the mediating model indicate that the IP fake and discount dimension can positively affect the skills comparison ($\beta = 0.505$; p-value = 0.000) and opinions comparison ($\beta = 0.135$; p-value = 0.028) facets. No significant effects were identified on the SCO factors regarding the luck or chance dimension. Thus, hypothesis HT1 was partially supported.

The theoretical arguments discussed by Clance (1985) and the theoretical and empirical evidence presented by Chayer and Bouffard (2010) echo the effects found here. Students with higher levels of IP, especially in the dimension of fake and discount, are more likely to compare skills and opinions, with the first relationship being more intense. Low self-esteem and comparison bias in terms of underestimating one's own skills are consistent with a scenario that encourages social comparisons. Festinger (1954) argues that low self-esteem, stress, and insecurity regarding one's own skills are notable in those who frequently make social comparisons. Such characteristics are also found among individuals who experience impostor feelings, explaining the relationships identified here (Chayer & Bouffard, 2010).

The fact that luck or chance does not significantly affect the SCO facets is possibly explained from a behavioral perspective, in which the insecurity arising from fake and discount feelings produces consequences in the way individuals evaluate themselves in comparison to others, in particular, defining as a parameter to compare with people they judge to be better than themselves (Festinger, 1954).

Hypothesis HT2 was supported by the positive effects of dimensions skill-based SCO ($\beta = 0.130$; p-value = 0.024) and opinion-based SCO ($\beta = 0.195$; p-value = 0.000) on cyberloafing practiced by students on social networks during classes.

Creating content, interacting with friends and followers, and reading updates in stories and feeds, among countless other actions, means that social networks offer a continuous flow of information that can be accessed at any time and used as objects of comparison by those with higher SCO levels. Thus, the relationships proposed by this study's second hypothesis were supported.

These results add evidence to the study by Lee (2014), Vogel *et al.* (2014), and Vogel *et al.* (2015), which indicated that SCO positively affects the use of social networks. In theoretical terms, the practice of cyberloafing on social networks during classes being encouraged by SCO confirms Festinger's (1954) propositions about the innate drive and a search for varied channels to seek information and practice SCO. The Theory of Compensatory Use of the Internet also supports this notion, considering that SCO may lead to negative feelings, causing escapist behavior in the search for well-being via social networks. Theoretical knowledge also advances by indicating the point of intersection between Kardefelt-Winther's Theory of Compensatory Use of the Internet (2014) and Festinger's Theory of the Social Comparison Process (1954) considering that 1) SCO leads to a search for interpersonal information and 2) social networks are spaces that can initially alleviate negative emotions. These theories propose these assumptions, corroborating this study.

This study's third hypothesis (HT3) was partially supported, as the luck or chance dimension positively and significantly affected cyberloafing practiced on social networks during classes ($\beta = 0.130$; p-value = 0.024). As detailed by Clance (1985) and expanded upon by Chassangre and Callahan (2017), people who experience IP are trapped in a behavioral cycle of extreme work and procrastination.

From this cycle's perspective, practicing cyberloafing on social networks during classes might be adopted as self-sabotage to perpetuate impostor feelings. At the macro level, people with higher IP levels have an inherent need for social acceptance (Ferrari & Thompson, 2006), and social networks appear as a strategy to meet such needs, including during classes.

The assessment of HT4 was guided by the conditions established by Baron and Kenny (1986). The first condition of a positive relationship between the independent variable and the presumed mediating variable was met for the paths IP – Fake and Discount → opinion-based SCO ($\beta = 0.135$; p-value = 0.028) and IP – Fake and discount → Skill-based SCO ($\beta = 0.505$; p-value = 0.000). The second condition is that the presumed mediating variable affects the dependent variable; in this case, the paths Skill-based SCO → Cyberloafing ($\beta = 0.130$; p-value = 0.024) and Opinion-based SCO → Cyberloafing ($\beta = 0.195$; p-value = 0.000) met this condition. The third condition states that in the model with a mediating path, the effect of the independent variable on the dependent variable will be reduced or zeroed, with the relationships of the first two conditions remaining significant. In this case, although there is a significant relationship in the path IP – Luck or chance → Cyberloafing ($\beta = 0.153$; p-value = 0.005), mediation is not supported since there is a slight increase in the effect of this relationship in the mediating model ($\beta = 0.154$; p-value = 0.004), and no significance in the relationship between IP – Luck or chance with the SCO facets.

In this sense, the direct relationship between IP and cyberloafing partially supports HT4 but does not confirm the mediating effect of SCO in this relationship. Note that the indirect path between Impostor Phenomenon → Social Comparison Orientation → Cyberloafing practiced on social networks during classes presents different significant relationships and increases the percentage of the variance of the dependent variable explained by the independent variables since there is an increase in $R^2$ from 3.90% to 9.10%.

Therefore, the results indicate that SCO is not a condition that can minimize the direct effects of the relationship between IP and cyberloafing practiced on social networks during classes but a condition that maximizes the explanatory power of the relationship between IP and cyberloafing. Considering that SCO is part of the same relational chain, its ability to relate to such variables cannot be ignored. IP and SCO act together and positively affect cyberloafing practiced during classes; hence, they should be observed together.

The normality of data was tested using the Kolmogorov-Smirnov and Shapiro-Wilk tests (p-value < 0.050) to verify differences between SCO and cyberloafing based on IP levels, and the absence of homogeneity of variances was confirmed for cyberloafing (Levene = 3.368; p-value < 0.050). The One-way ANOVA with Welch's Correction indicated the existence of differences in the mean of skill-based SCO (F = 38.080; p-value < 0.000), opinion-based SCO (F = 4.960; p-value < 0.003), and cyberloafing (F = 3.364; p-value < 0.020). Next, Group Comparison Approaches were used to verify potential differences between the relationships tested based on the groupings according to the level of the Impostor Phenomenon. When isolating these groupings, the $R^2$ determination coefficients did not differ.

Overall, although the relationships presented numerical differences, the interaction of IP → SCO → Cyberloafing is similar between groups, implying a more consistent general model for analysis purposes.

## 5. Implications, Limitations, and Future Directions

In advancing theoretical discussions, the results shed light on the specificities of the relationships tested here. Fake and Discount feelings concerning one's abilities lead to skill-based and opinion-based SCO. These findings are supported by the precepts outlined by Clance (1985), which can be combined with those advocated by Festinger (1954), in which people insecure about their abilities tend to compare themselves and, at times, overestimate the abilities of others and underestimate their abilities, competences and, in this case, opinions as well.

Accounting students with higher SCO levels tend to practice cyberloafing on social networks during classes. Although other social environments were not the focus of this study, these results show that cyberloafing might be performed to seek information and make social comparisons. Additionally, the insecurities caused by IP drive the orientation towards social comparison, which is one of the contributions of this study.

The IP luck or chance dimension positively affects cyberloafing on social networks during classes. Accounting students participating in the study who attribute their success to luck or chance are more likely to engage in task procrastination, which explains the practice of cyberloafing on social networks during classes as a way to operationalize their impostorism cycle.

These findings imply some practical implications. Managing cyberloafing during classes is difficult because of the easy access to technological devices and the Internet. The context in which this study was conducted intensified such a scenario because remote education was adopted during the COVID-19 pandemic to circumvent social isolation. Nonetheless, educational institutions and students must be warned about the potential adverse consequences of cyberloafing.

Cyberloafing harms the learning process and causes students to experience psychological overload and academic disengagement; hence, the importance of identifying variables that precede it. HEIs, teachers, and people close to students are suggested to promote psychological monitoring, share experiences, and sensitize students about the conscious use of social networks and the dangers of excessive social comparison. Including these guidelines in political-pedagogical plans is an opportunity to emphasize the relevance of this topic in the structural channels of Accounting Science programs and guide support groups to observe these elements among students.

Therefore, promoting discussion groups with professionals specialized in the subject, providing easy and accessible psychological support, such as online services, encouraging research on the subject, and using social media aligned with teaching methodologies are opportunities for implementing practical actions in the university context.

A non-probabilistic sample of students attending undergraduate Accounting Sciences programs was addressed here, which prevents the generalization of results. The study's cross-sectional nature also implies limitations, as it reflects the state of individuals at the time of data collection. Additionally, data were collected during the pandemic, hindering access to respondents and configuring an unmanageable limitation, as the sample does not represent the entire population. Future studies are suggested to investigate the effects of cyberloafing on student well-being and conduct surveys on policies regarding the use of technological devices during classes and channels where students can receive psychological support.

Collecting evidence via discussion groups and investigations about coping strategies to deal with cyberloafing during classes and analyzing the relationship between cyberloafing in the academic environment and other behavioral constructs can support advancement in the topic. Another possibility for future studies is to address the role of sociodemographic variables in this process.

## 6. Conclusion

The use of technological devices is ubiquitous and has become common during classes, including for distraction purposes. This study showed that this behavior is not isolated and is driven by psychological aspects, such as the Impostor Phenomenon, especially in its luck or chance dimension, and Social Comparison Orientation. By indicating that cyberloafing on social networks during classes configures escapism behavior and that SCO is associated with it, there is an opportunity to devise strategies to circumvent this behavior based on its antecedent variables and promote a more beneficial teaching-learning process. This study contributes at the national level by encouraging the still incipient study of cyberloafing in the university environment and at the international level by positioning the Impostor Phenomenon as a critical factor that affects SCO and cyberloafing practiced during classes.

## References

af Wåhlberg, A. E., & Poom, L. (2015). An Empirical Test of Nonresponse Bias in Internet Surveys. *Basic and Applied Social Psychology*, *37*(6), 336–347.

Akbulut, Y., Dönmez, O., & Dursun, Ö. Ö. (2017). Cyberloafing and social desirability bias among students and employees. *Computers in Human Behavior*, *72*, 87–95.

Akbulut, Y., Dursun, Ö. Ö., Dönmez, O., & Şahin, Y. L. (2016). In search of a measure to investigate cyberloafing in educational settings. *Computers in Human Behavior*, *55*, 616–625.

Alt, D. (2017). Students' social media engagement and fear of missing out (FoMO) in a diverse classroom. *Journal of Computing in Higher Education, 29*, 388-410.

Appel, H., Gerlach, A. L., & Crusius, J. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology*, *9*(June), 44–49.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182.

Baturay, M. H., & Toker, S. (2015). An investigation of the impact of demographics on cyberloafing from an educational setting angle. *Computers in Human Behavior*, *50*, 358–366.

Blanchard, A. L., & Henle, C. A. (2008). Correlates of different forms of cyberloafing: The role of norms and external locus of control. *Computers in Human Behavior*, *24*(3), 1067–1084.

Borsa, J. C., Damásio, B. F., & Bandeira, D. R. (2012). Cross-Cultural Adaptation and Validation of Psychological Instruments : Adaptação e Validação de Instrumentos Psicológicos entre Culturas : Algumas Considerações Adaptación y Validación de Instrumentos Psicológicos entre Culturas : Algunas Consideraciones. *Paidéia*, *22*(53), 423–432.

Bravata, D. M., Watts, S. A., Keefer, A. L., Madhusudhan, D. K., Taylor, K. T., Clark, D. M., … Hagg, H. K. (2020). Prevalence, Predictors, and Treatment of Impostor Syndrome: a Systematic Review. *Journal of General Internal Medicine*, *35*(4), 1252–1275.

Buunk, B. P., Collins, R. L., Taylor, S. E., VanYperen, N. W., & Dakof, G. A. (1990). The Affective Consequences of Social Comparison: Either Direction Has Its Ups and Downs. *Journal of Personality and Social Psychology*, *59*(6), 1238–1249.

Chang, S. J., Van Witteloostuijn, A., & Eden, L. (2010). From the Editors: Common method variance in international business research. *Journal of International Business Studies*, *41*(2), 178–184.

Chassangre, K., & Callahan, S. (2017). « J'ai réussi, j'ai de la chance… je serai démasqué » : revue de littérature du syndrome de l'imposteur. *Pratiques Psychologiques*, *23*(2), 97–110.

Chayer, M. H., & Bouffard, T. (2010). Relations between impostor feelings and upward and downward identification and contrast among 10- To 12-year-old students. *European Journal of Psychology of Education*, *25*(1), 125–140.

Chou, H. T. G., & Edge, N. (2012). "They are happier and having better lives than I am": The impact of using facebook on perceptions of others' lives. *Cyberpsychology, Behavior, and Social Networking*, *15*(2), 117–121. https://doi.org/10.1089/cyber.2011.0324

Clance, P. R. (1985). *The impostor phenomenon: Overcoming the fear that haunts your success*. Atlanta, GA: Peachtree.

Clance, P. R., & Imes, S. A. (1978). The imposter phenomenon in high achieving women: Dynamics and therapeutic intervention. *Psychotherapy: Theory, Research & Practice*, *15*(3), 241–247.

Clance, P. R., & O'Toole, M. A. (1987). The Imposter Phenomenon. *Women & Therapy*, *6*(3), 51–64.

Cramer, E. M., Song, H., & Drent, A. M. (2016). Social comparison on Facebook: Motivation, affective consequences, self-esteem, and Facebook fatigue. *Computers in Human Behavior*, *64*, 739–746.

Fassl, F., Yanagida, T., & Kollmayer, M. (2020). Impostors Dare to Compare: Associations Between the Impostor Phenomenon, Gender Typing, and Social Comparison Orientation in University Students. *Frontiers in Psychology*, *11*(June), 1–10. https://doi.org/10.3389/fpsyg.2020.01225

Ferrari, J. R., & Thompson, T. (2006). Impostor fears: Links with self-presentational concerns and self-handicapping behaviours. *Personality and Individual Differences*, *40*(2), 341–352.

Festinger, L. (1954). *Festinger,L. (1954) "A Theory of Social Comparison Processes".pdf. 7*(2), 117–140.

French, B. F., Ullrich-French, S. C., & Follman, D. (2008). The psychometric properties of the Clance Impostor Scale. *Personality and Individual Differences*, *44*(5), 1270–1278.

Gibbons, F. X., & Buunk, B. P. (1999). Individual differences in social, comparison: development and validation of a measure of comparison orientation. *Journal of Personality and Social Psychology*, *76*(1), 129–142.

KH, A., & Menon, P. (2022). Impostor syndrome: An integrative framework of its antecedents, consequences and moderating factors on sustainable leader behaviors. Eur*opean Journal of Training and Development, 46*(9), 847-860.

Hair, J. F. J., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2014). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). In *Long Range Planning* (Vol. 46).

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 3, p. 344-360, Jul./Sep. 2024

358

Hair Jr, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2009). *Análise multivariada de dados*. Porto Alegre: Bookman.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135.

Houseknecht, V. E., Roman, B., Stolfi, A., & Borges, N. J. (2019). A Longitudinal Assessment of Professional Identity, Wellness, Imposter Phenomenon, and Calling to Medicine Among Medical Students. *Medical Science Educator*, 493–497.

Kardefelt-Winther, D. (2014). A conceptual and methodological critique of internet addiction research: Towards a model of compensatory internet use. *Computers in Human Behavior*, *31*(1), 351–354.

Kim, S. J., & Byrne, S. (2011). Conceptualizing personal web usage in work contexts: A preliminary framework. *Computers in Human Behavior*, *27*(6), 2271–2283.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford Press.

Kuselias, S., Lauck, J. R., & Williams, S. (2021). Social Media Content and Social Comparisons: An Experimental Examination of their Effect on Audit Quality. *AUDITING: A Journal of Practice & Theory, 40*(1), 55–72. https://doi.org/https://doi.org/10.2308/AJPT-18-154

Lee, S. Y. (2014). How do people compare themselves with others on social network sites?: The case of Facebook. *Computers in Human Behavior*, *32*, 253–260.

Lima, J. P. R., Vendramin, E. de O. & Miranda, C de S. (2021). Quem tem medo de se comunicar? Análise da apreensão na comunicação de estudantes de Ciências Contábeis. *Sociedade, Contabilidade e Gestão, 16*(1), 105-120. https://doi.org/10.21446/scg_ufrj.v0i0.30366

Liu, Z., Elliot, A. J., & Li, Y. (2020). Social comparison orientation and trait competitiveness: Their interrelation and utility in predicting overall and domain-specific risk-taking. *Personality and Individual Differences*, (October), 110451.

Marôco, J. (2014). *Análise de Equações Estruturais - Fundamentos Teóricos, Software e Aplicações* (2ª). Pêro Pinheiro: ReportNumber.

Matos, P. A. V. C. de. (2014). *Síndrome do Impostor e Auto-Eficácia de Minorias Sociais: Alunos de Contabilidade e Administração* (Dissertação - Programa de Pós-Graduação em Contabilidade - Universidade de São Paulo).

Meier, J.-H., Esmatyar, W., & Sarpong, C. (2019). Business partner vs. bean counter. Do the personality traits of accounting students meet contemporary business requirements? *Zeszyty Teoretyczne Rachunkowości*, *2019*(104 (160)), 51–60.

Meurer, A. M., & Costa, F. (2020). Behold the best and worst of me: The impostor phenomenon and academic behavior in the business area. *Revista Contabilidade e Financas*, *31*(83), 348–363.

Meurer, A. M., & Costa, F. (2022). Compartilhar, curtir, navegar e não estudar! Cyberloafing de estudantes de Ciências Contábeis. *Revista Contabilidade & Finanças*, *33*(90), 1–16. https://doi.org/10.1590/1808-057x20221581.en

Müller, S. M., Wegmann, E., Stolze, D., & Brand, M. (2020). Maximizing social outcomes? Social zapping and fear of missing out mediate the effects of maximization and procrastination on problematic social networks use. *Computers in Human Behavior*, *107*, 106296.

Nartgün, Ş. S., Ekinci, S., Limon, İ., & Tükel, H. (2017). Teachers' Views on Cyberloafing and Impression Management. *Journal of Education and Practiceducation and Practice*, *8*(3), 28–36.

Pulliam, N., & Gonzalez, C. E. (2018). Success or Fraud? Exploring the Impacts of the Impostor Phenomenon Among High Achieving Racial/Ethnic Minority and First-Generation College Students. *Journal of Access, Retention, and Inclusion in Higher Education*, *1*, 33–45.

Ramm, E. R. (2019). Compare with care: The impact of social media on predictors of impostor feelings. California State University.

Roberts, M., Shah, N. S., Mali, D., Arquero, J. L., Joyce, J., & Hassall, T. (2022). The use and measurement of communication self-efficacy techniques in a UK undergraduate accounting course. *Accounting Education, 23*(6), 1-29.

Royal Society for Public Health. (2017). Social media and young people' s mental health and wellbeing. *Royal Society for Public Health,* (May), 32. Retrieved from https://www.rsph.org.uk/static/uploaded/d125b27c-0b62-41c5-a2c0155a8887cd01.pdf

Sanchez, G. (2013). *PLS path modeling with R*. Retrieved from http://www.gastonsanchez.com/PLS Path Modeling with R.pdf%0Ai

Smith, R. H. (2000). Assimilative and Contrastive Emotional Reactions to Upward and Downward Social Comparisons. In *Handbook of Social Comparison* (pp. 173–200).

Vogel, E. A., Rose, J. P., Okdie, B. M., Eckles, K., & Franz, B. (2015). Who compares and despairs? The effect of social comparison orientation on social media use and its outcomes. *Personality and Individual Differences*, *86*, 249–256.

Vogel, E. A., Rose, J. P., Roberts, L. R., & Eckles, K. (2014). *Social comparison, social media, and self-esteem.: DISCOVER. 3*(4), 206–222.

Yaşar, S., & Yurdugül, H. (2013). The Investigation of Relation Between Cyberloafing Activities and Cyberloafing Behaviors in Higher Education. *Procedia - Social and Behavioral Sciences*, *83*, 600–604.

# The impact of tax complexity and installment payments on tax noncompliance in Brazil: a study on federal taxation related to IRPJ, CSLL, PIS/Pasep, and Cofins

**Antônio Paulo Machado Gomes**
https://orcid.org/0000-0001-8919-1605

**Jacqueline Veneroso Alves da Cunha**
https://orcid.org/0000-0003-2522-3035

**Jorge de Souza Bispo**
https://orcid.org/0000-0002-1845-2473

**Isabel Maria Estima da Costa Lourenço**
https://orcid.org/0000-0003-4338-6778

## Abstract

**Objective:** To verify within the scope of federal taxation whether tax complexity and repetitive special installment payments are associated with an increased probability of tax noncompliance among companies listed on B3.

**Method:** A panel logit model was developed to estimate the probability of a company being non-compliant based on the independent variables tax complexity, special installment payments, probability of inspection, inspection costs, Selic rate, and expected utility, which are controlled by current liquidity, EBITDA, and company size.

**Results:** This study identified that tax complexity and repetitive special installment payments increase the probability of tax noncompliance among companies listed on B3. The results also showed that low inspection probability, the high costs of inspection, the need for cash, and expected utility positively affect the probability of tax noncompliance among the companies in the sample. These results indicate that Brazil should decrease its unnecessary tax complexity.

**Contributions:** Understanding the determinants and consequences of tax noncompliance in Brazil is relevant to better manage scarce inspection resources, and guide efficient public policies to generate employment and income for the population. Thus, this study contributes to society as a whole by highlighting the need for a tax reform to reduce unnecessary tax complexity and facilitate the understanding of tax legislation.

**Keywords:** Tax noncompliance; Tax planning; Tax aggressiveness; Tax complexity; Special installments.

# 1. Introduction

Tax noncompliance is considered a tax law violation, which Laffer *et al.* (2011) classify as voluntary and involuntary. In its voluntary form, taxpayers seek to avoid or decrease tax liabilities through tax avoidance or evasion. In its involuntary form, taxpayers are unable to correctly calculate their taxes and tax base due to the complexity of the law.

However, regardless of whether tax noncompliance is voluntary or involuntary, it harms the tax system by decreasing the government's tax revenue forecasting and, consequently, harming society, as it restricts investments in health, education, security, infrastructure, and others. Therefore, studying the factors that lead to tax noncompliance is relevant for a fair and efficient tax system that prevents loopholes that enable dishonest taxpayers to avoid paying taxes and prevent honest taxpayers from miscalculating their taxes.

International studies link tax complexity to tax noncompliance (Andreoni *et al.*, 1998; Graetz *et al.*, 1986; Richardson, 2006) based on two concepts: (i) tax complexity enables taxpayers to identify opportunities for not paying taxes (voluntary noncompliance), and (ii) tax complexity prevents taxpayers from correctly calculating their taxes and tax base (involuntary noncompliance).

Furthermore, tax noncompliance is associated with special installment plans (Tax Amnesty), which, according to Torgler (2003), represent tax benefits granted by governments to delinquent taxpayers, such as decreased fines and interests, forgiving tax crimes, and granting extended deadlines for the payment of taxes due. Special installment plans encourage tax noncompliance, as such plans decrease the present value of taxes, benefiting delinquent taxpayers and punishing compliant taxpayers, encouraging taxpayers not to collect their taxes timely, leading to a vicious cycle (Paes, 2014).

Nonetheless, most of the evidence in these studies was collected in the United States and developed countries, and little has been investigated in developing countries. Furthermore, few empirical studies jointly analyze tax complexity and special installment plans as determinants of tax noncompliance. According to Jacob (2018), understanding the determinants and consequences of tax noncompliance in a developing country with highly complex tax laws is relevant for allocating scarce enforcement resources.

Therefore, this study aims to fill in this gap. Its general objective is to verify whether, within the scope of federal taxation, tax complexity, and repetitive special installments are associated with an increased likelihood of tax noncompliance among companies listed on B3. Hence, this study aimed to identify which companies listed on B3 presented tax demands to the Federal Administrative Council of Tax Appeals (Carf), such as Corporate Income Tax (IRPJ), Social Contribution on Net Profits (CSLL), Social Integration Program (PIS), and Contribution for Social Security Financing (Cofins).

We propose a proxy to identify tax complexity based on the propositions of the Office of Tax Simplification (OTS, 2015) of the United Kingdom, i.e., using two leading indicators of tax complexity, quantity, and changes in tax legislation. Finally, we identified which companies listed on B3 adhered to the special federal installments from 2010 to 2018.

This study in the accounting field of a tax and fiscal nature is expected to contribute to debates on public policies linked to tax laws and, consequently, to the so-expected and necessary tax reform. It will also shed light on the behavior of Brazilian taxpayers when dealing with such complex tax legislation and the possibility of enjoying the benefit of special installments.

## 2. Theoretical Framework

### 2.1 Tax authorities and taxpayers: bets and strategies

Allingham and Sandmo (1972) explain that the decision to declare taxes or not is made under uncertainty, as not correctly collecting taxes does not result in an immediate penalty. Therefore, taxpayers can choose between two plays: collecting and not collecting taxes.

As noted by Allingham and Sandmo (1972), if not investigated, taxpayers are better off in the second strategy; however, if caught, not paying taxes is the worst option. The authors' logic is that taxpayers profit when they do not fully pay taxes and are not audited. On the other hand, if audited and fined, they pay more than just the tax. Graetz *et al.* (1986) consider that discussions concerning tax must consider law enforcement gains, as enforcement agencies interact in a formal model of legal compliance. The inspection strategies available include inspecting a taxpayer or not. Note that some taxpayers will always be audited. However, since tax authorities face numerous restrictions, some taxpayers will never be audited. But the truth is that tax surveillance has benefits. Therefore, the gains arising from surveillance and the taxpayers' gains must be considered in the tax noncompliance game. The Game Theory explains the tax relationship between taxpayers and the State, as both play a non-cooperative game with asymmetric information.

Tax evasion problems are based on information asymmetry between taxpayers and the State since the tax bases (e.g., revenue, profit, etc.) are generally not directly identifiable by the State; these are taxpayers' private information. In other words, the State generally cannot directly see the taxpayers' taxable base and, therefore, does not know the actual value of their taxes. Additionally, identifying the actual tax calculation base is even more challenging in Brazil due to the complexity of its tax system.

Considering rational agents (taxpayers and the State), both seek to increase their expected return. Hence, taxpayers try to pay the lowest tax possible, using the tax opportunities the system provides (Scholes *et al.*, 2005) or even taking risks and evading taxes (Slemrod & Yitzhaki, 2002). On the other hand, tax authorities try to collect the highest amount of taxes possible to cover not only their demands but also the evasion of some taxpayers (Scholes *et al.*, 2005; Slemrod & Yitzhaki, 2002).

### 2.2 Tax noncompliance

Tax noncompliance concerns voluntary or involuntary noncompliance with tax laws (Laffer *et al.*, 2011). According to Andreoni *et al.* (1998), tax compliance can be considered from different perspectives, such as a problem of public finance, law enforcement, organizational design, labor supply, ethics, or a combination of all these.

Hence, this study considers an economic perspective in which taxpayers' behavior results from a rational calculation and careful assessment of tax noncompliance costs and benefits. Therefore, tax noncompliance is addressed here according to the approach used by Allingham and Sandmo (1972) and expanded by Graetz *et al.* (1986), i.e., a dynamic game in which the tax system complexity and the various special installments encourage tax noncompliance.

Richardson (2006) notes that several studies have sought to identify the main determinants of tax noncompliance; fourteen key variables were found. These variables are categorized into four groups: (i) demographic (age and sex); (ii) proxies of tax noncompliance opportunity (education, income level, source of income and occupation, inspection probability, fines, and tax rates); (iii) attitudinal (ethics, perception of fairness of the tax system and peer influence); and (iv) structural (complexity of the tax system, contact with tax authorities, sanctions and probability of detection and tax rates).

Thus, the literature highlights several factors that interfere in taxpayers' tax (non)compliance.

This study adopted the line of research on tax noncompliance because even taxpayers who want to pay their taxes correctly are subject to fines (confirmed by CARF) due to the complexity of the tax system in Brazil. At the same time, such complexity enables taxpayers to avoid or decrease their tax liabilities, such as by using simulated internal goodwill or business combinations such as "sham marriage". Therefore, this study seeks to identify Tax Avoidance among companies listed on B3 and show that tax complexity and special installments are instruments for tax noncompliance in Brazil.

## 2.3 Tax complexity and tax noncompliance

The OTS (2015) formally established tax complexity as the difficulty taxpayers experience in understanding tax laws and applying them to determine how much the taxes are due. Complexity arises from changes in tax legislation, the number of laws in the tax system, their regulation, and the level of comprehensibility (OTS, 2015). Ulph (2015) reports that complexity is not a term well defined or precise term in the economic analysis of taxes. According to Ulph (2015) understanding, tax complexity is a broad term encompassing the laws' lack of transparency and ambiguities. The author mentioned earlier clarifies that complexity arises from the tax system, considering it includes many taxes with different triggering events, calculation bases, and rates. Additionally, the system presents specific tax application situations.

Scholes *et al.* (2005) clarify that tax systems result from various socioeconomic forces, and taxes are designed to (i) finance public projects (national defense, legislative, judiciary, others); (ii) redistribute wealth (tax more heavily those who, presumably, can pay more and tax less heavily those who can pay less); and (iii) promote various economic activities. According to Budak and James (2018), these objectives explain tax complexity, considering that taxes are designed to achieve fiscal and non-fiscal objectives. However, to achieve these objectives, governments make concessions that increase costs for taxpayers and tax authorities, promoting a cycle that must be constantly reviewed to remove unnecessary complexity. Therefore, understanding the inevitable consequence that any tax system has a certain degree of complexity is crucial, considering that such complexity results from the need to achieve specific objectives, such as increasing revenue, redistributing income, and doing so in the least distorted way possible (Ulph, 2015).

Complexity means that laws (i) are sometimes unclear, (ii) sometimes are clear, but taxpayers are unaware of such laws, and (iii) sometimes are clear, but the administration effectively ignores a specific transaction activity. Therefore, the complexity lies in interpreting rules and their application (Batrancea, Nichita & Batrancea, 2013). Hence, even tax consultants and financial experts find it challenging to understand tax rules, let alone ordinary taxpayers (Alm, 2012).

Several studies (Batrancea, Nichita & Batrancea, 2013; Budak & James, 2018; Laffer *et al.*, 2011; Richardson, 2006) associate tax complexity with tax noncompliance, with the underlying idea being that complexity leads to indecision that taxpayers can use to avoid paying taxes or lead them to miscalculations.

In this sense, Beck and Jung (1989) studied the effects of tax complexity on American taxpayers' decisions on whether to declare their total income. They note that tax complexity has consequences for tax authorities and taxpayers when applying tax laws. Therefore, even with the risk of fines, taxpayers may not report their tax bases correctly. In this sense, Slemrod and Yitzhaki (2002) studied American tax evasion. They found that taxpayers might adopt tax planning when faced with tax changes in a complex tax environment that may affect their consumption basket to avoid decreasing their consumption. Therefore, tax complexity may encourage taxpayers not to comply with taxes to ensure their consumption basket.

Thus, tax complexity might also affect the results of tax audits and the behavior of taxpayers when dealing with such audits. Scotchmer and Slemrod (1989) report that, given tax evasion in the USA, increasing randomness in tax audits would increase reported revenue and profits. However, even random tax audits would not dissuade taxpayers from underreporting income and taxable profits, giving the possibility of questioning the results of tax audits. In this sense, Cronshaw and Alm (1995) show that even if taxpayers were unaware of the US government's tax audit policies, they would be encouraged not to fully report their income because tax complexity enables them to challenge infraction notices. Thus, the authors above conclude that increasing tax complexity is counterproductive, as this would affect the positive results of tax audits.

Follmann (2001) verified income tax evasion among natural persons in Brazil and found that the system's complexity facilitates tax noncompliance, given that the tax system is composed of laws and regulations that are difficult to apply and with several opportunities for tax noncompliance. Rezende (2015) also identified that Brazil has several incentives for tax noncompliance, such as cyclical programs for the installment payment of tax debts, under financial conditions that are more favorable than the opportunity costs, and this fact is reflected in the increased volume of provisions and contingent tax liabilities recorded and reported in companies' explanatory notes. Gomes, Cunha, Francisco, and Lara (2023) showed, in their Theoretical Model to discuss Tax Evasion based on Game Theory, that tax complexity is the great catalyst for the tax aggressiveness of Brazilian companies.

Therefore, these various studies (Beck & Jung, 1989; Scotchmer & Slemrod, 1989; Cronshaw & Alm, 1995; Aghion & Tirole, 1997; Slemrod & Yitzhaki, 2002; Follmann, 2001; Rezende, 2015; Gomes *et al.*, 2023) associate tax complexity with tax noncompliance, showing that it leads to uncertainty on how to apply and interpret tax laws. Therefore, tax complexity incurs high costs for taxpayers and economic losses, discourages tax compliance, promotes tax noncompliance, and imposes uncertainty in future decision returns.

Tax complexity in the Brazilian context results from a vast number of tax laws, which are frequently changed, besides ancillary obligations, leading to a significant increase in tax burden and tax disputes, representing a considerable percentage of Brazilian GDP. Hence, (voluntary or involuntary) noncompliance is common given such a complex situation and the constant changes in legislation.

In short, tax complexity in Brazil creates a challenging scenario for companies and taxpayers, increasing operating costs, promoting litigation, and encouraging strategies to avoid paying taxes.

Therefore, based on the previous discussion, the first hypothesis is proposed:

**H₁**: Tax complexity is associated with more significant tax non-compliance among companies listed on B3.

## 2.4 Special installments and tax non-compliance

Baer and Le Borgne (2008) define Tax Amnesty as a limited-time offer the government gives to a specific group of taxpayers to pay their delinquent taxes from the previous tax period(s) in exchange for reduced interest and fines and the non-application of criminal law. According to Mikesell and Ross (2012), these temporary programs allow taxpayers in debt with the government to voluntarily pay their due taxes without being subject to sanctions that failure to pay on time usually entails. Typically, if these taxes were collected through tax enforcement actions, delinquent taxpayers would have to pay them late with fines and interest on the unpaid amount and would also be subject to criminal prosecution (Mikesell and Ross, 2012). Therefore, by participating in the special installment plan, delinquent taxpayers can avoid punitive and criminal economic consequences while benefiting from the government.

According to Paes (2014), research shows that special installment plans encourage tax noncompliance because they decrease the present value of taxpayers' taxes, encouraging them not to pay on time. According to Torgler (2003) and Andreoni *et al.* (1998), a special installment plan affects taxpayers' tax morale, leaving room for dishonest taxpayers not to pay their taxes on time by financing themselves with government resources. Furthermore, it may make honest taxpayers feel outraged and discouraged from honoring their tax commitments on time, as they see that their dishonest competitors benefit from tax subsidies.

Hasseldine (1998) analyzed 43 special installment programs in 35 U.S. states between 1982 and 1997 and found that the largest amount collected did not exceed 2.6% of total tax revenue. However, a 0.008% decrease in revenue was found in the granting states after these programs were implemented, suggesting a decline in tax compliance after the installment programs.

Mikesell (1986) reports that 25 American states have implemented or authorized special installment plans with different structures and policies to decrease fines since 1981. However, the conclusion is that these programs have not generated significant revenue increases; instead, they encourage tax noncompliance.

Studies by Alm (1991), Crane and Nourzad (1990), Das-Gupta, Lahiri and Mookherjee (1995), Paes (2014), Morais *et al.* (2011) and others indicate that special installment payments decrease tax compliance, with high rates of unpaid installment debts.

Ross and Buckwalter (2013) suggest that these programs alter the taxpayers' perception regarding the detection of noncompliance, increasing tax aggressiveness after their implementation. Luitel and Sobel (2007) found evidence that the repeated implementation of these installment plans decreases tax revenue.

Bayer *et al.* (2015) developed a theoretical model and showed that special installment offers are influenced by government debts and taxpayers' expectations about future programs.

Shevlin, Thornock, and Williams (2017) found that repeated installment payments alter taxpayers' perceptions of detection, leading to more significant tax noncompliance. Morais *et al.* (2011), Cavalcante (2010), and Paes (2014) also identified adverse impacts of special installment payments on tax collection in Brazil. Gomes *et al.* (2023) also demonstrated in the Tax Noncompliance Game that special installment payments decrease the present value of taxes, encouraging taxpayers to be tax aggressive in collecting unpaid taxes under the benefits of special installment payments.

In short, the studies show that special tax installments do not increase tax revenue but encourage tax noncompliance, create perceived injustices, and change taxpayer behavior, harming the government's tax collection efficiency. Thus, the second hypothesis proposes that:

**H$_2$**: Special installments are associated with more significant tax non-compliance among companies listed on B3.

## 3. Method

### 3.1 Study's Sample

This study's intentional sample comprised 449 publicly held companies listed on B3 between 2010 and 2018. However, in view of outliers, we followed what Fávero and Belfiore (2015) proposed and excluded 26 companies (234 observations). Therefore, 423 publicly held companies listed on B3 (3,807 observations) remained in the analysis.

The timeframe chosen here is because publicly traded Brazilian companies were required to adopt the new accounting standard in 2010. The Brazilian Secretariat of the Federal Revenue (RFB) established a new inspection parameter with the publication of RFB Ordinance No. 11,211 in 2007, which established the focus of RFB inspection based on the economic-tax potential of legal entities. Thus, the focus of the Brazilian Secretariat of the Federal Revenue from that ordinance onwards was supervising large taxpayers. Furthermore, during this period, 6 (six) laws were published granting special conditions for tax regularization (special installments): Laws No. 12,863 from 2013, No. 12,973 from 2014, No. 12,996 from 2014, and No. 13,043 from 2014 reopening the term for payment of tax debts in installments by Law No. 11,941 from 2009 (*Refis da Crise*). In 2017, Provisional Measure No. 766 of 2017 was published in the Tax Regularization Program (PRT), and the same year, Law No. 13,496 from 2017, with the Special Tax Regularization Program (PERT).

Table 1 shows the sample according to sector, following the guidelines established by the RFB to describe inspection processes.

Table 1

**Sample according to sectors from 2010 and 2018**

| Sector | Total | % |
|---|---|---|
| Commerce | 24 | 5,67% |
| Civil Construction | 28 | 6,62% |
| Industry | 119 | 28,13% |
| Service provisions | 35 | 8,27% |
| Communication. energy and water | 76 | 17,97% |
| Financial services | 59 | 13,95% |
| Holding companies | 31 | 7,33% |
| Transportation and related services | 33 | 7,80% |
| Other sectors | 18 | 4,26% |
| TOTAL | 423 | 100.00% |

Source: developed by the authors.

Table 1 shows that this study considers all sectors, including the financial sector. The Industry sector is the most representative, followed by the communication, energy, and water oligopolies and financial services.

A sensitivity test was performed by removing the financial sector companies from the sample and comparing the results to those presented here, which showed no statistically significant differences.

## 3.2 Variable description and construction

The dependent variable, Tax Noncompliance (TNC), was based on the analysis of CARF judgments. The data collected to develop this variable started by identifying the National Registry of Legal Entities (CNPJ) of the companies in the sample, and the CARF website was consulted to verify the companies' tax demands. Content analysis was performed on the summaries of the companies' decisions regarding IRPJ, CSLL, PIS, and COFINS to classify the companies as non-compliant (1) or compliant (0). Hence, the content analysis steps suggested by Martins and Theóphilo (2009) were followed: (i) pre-analysis, including the collection and organization of decisions; (ii) analytical description by choosing the analysis units; and (iii) classification according to inferential interpretation.

In this context, a decision was classified as unfavorable (1) to the taxpayer if the summary contained the following terms: *Deny the request for voluntary appeal, Grant the appeal ex officio,* or *Deny the voluntary appeal.* Favorable decisions (0) to the taxpayer were based on the summary containing the following terms: *Cancel the entry, Grant the voluntary appeal,* or *Partially grant the voluntary appeal.* All decisions analyzed here concern taxes subject to the study IRPJ, CSLL, PIS, and Cofins, published between 2010 and 2018, whose assessments concerned the year analyzed.

The independent variable Tax Complexity (Complx) is an index *[COMPLX = [( $Z^1$ + $\S^1$) / 2]* of the tax complexity of federal legislation faced by Brazilian companies, considering the two main indicators of tax complexity of the OTS (2015) work: quantity and changes in tax legislation. The data source for constructing this index was Decree No. 9,580 of 2018 (Income Tax Regulation) and IN RFB No. 1,911 of 2019 (Regulations of PIS and Cofins Contributions) obtained through the Planalto and RFB websites, respectively. The percentage between specific legislation and total legislation ($Z^1$) was identified by dividing the number of characters without spaces in the legislation of the tax modality collected by the company (actual, presumed, non-cumulative, and cumulative profit) by the total number of characters without spaces in the respective tax (IRPJ, CSLL, PIS and Cofins). The variable Changes in Tax Legislation ($\S^1$) was based on the changes implemented to the laws composing Decree No. 9,580 of 2018, and Laws No. 9,701 from 1998, No. 9,718 from 1998, MP No. 2,158 from 2001, Law No. 10,637 from 2002, and Law No. 10,833 of 2003, which were retrieved from the Planalto website.

The variable Installments (I) was obtained from the explanatory notes of the companies listed on B3 published in the study period. A search was performed in the explanatory notes to identify, through the reference words Installment, Refis, PRT, and PERT, whether the company had adhered to any installment plan; the number of times the company had adhered to such plans was summed up.

The independent variable inspection probability (P%) considered the annual inspection plan – RFB (2018). Revenues were obtained from the Economática database, and inspection procedures were retrieved from the RFB website in the inspection item of the Annual Inspection Plan. Thus, each company's net operating revenue was identified and the companies were classified according to the RFB's economic sectors, as reported in their Annual Inspection Plan. Thus, the net operating revenue of the economic sector was identified in addition to the number of tax procedures per sector to calculate the inspection probability proxy. Since the publication of the Allingham and Sandmo (1972) model, the inspection probability has been considered a controller of intentional tax noncompliance, as the more significant the inspection probability, the lower the intentional tax noncompliance should be. Therefore, verifying whether the inspection probability perceived by companies affects their decision to comply with tax noncompliance is vital.

The RFB Annual Inspection Plan focuses on large taxpayers with high tax collection power. Hence, the proxy follows this reasoning, i.e., the companies with the highest revenues in their sectors and the highest number of tax procedures are the most likely to be inspected.

The projected Selic variable was obtained from the Focus report published by the Brazilian Central Bank in the Aggregate Median – Selic Target Rate – end of period (% p.a.) for the year prior to the one studied. Therefore, all Focus reports from the last day of the year between 2010 and 2018 were downloaded to identify the Selic variable. It is important to highlight that the Selic increases tax debt, inhibiting tax noncompliance. Therefore, the model seeks to verify this relationship.

The Inspection Cost variable is the ratio between the amount due in federal taxes declared in the DVA (TDVA) and the result of dividing the total cost of the RFB in the year by the number of tax procedures performed in that year, according to the Annual Inspection Plan. According to the model developed by Gomes (2020), the inspection of a taxpayer would only be feasible if the returns from such inspection, through the recovery of taxes, plus fines and interest, were more significant than the cost of the inspection. Therefore, if the inspection cost were more significant than the taxpayer's tax collection potential, it would not be worth the inspection, which may influence a taxpayer's decision to comply or not comply. Therefore, this relationship was verified in the model.

The RFB's total cost is published on the transparency portal, where there is a link to *Revenues* and *Expenses,* where citizens can click on public expenses to consult according to the executing agency/ entity. The Brazilian Secretariat of the Federal Revenue was chosen for this study. It also enables citizens to choose the period they want to search, which in this study's case was between 2010 and 2018. This search generated an Excel file with four columns: the amount committed, the amount settled, the amount paid, and the amount remaining to be paid and paid; only the amounts paid were considered actual RFB expenses.

The number of tax auditors and procedures were obtained from the RFB website under the link *Open Data, Results, Inspection, Files,* and *Images*, where the Annual Inspection Plan is published every year since 2006.

The Expected Utility variable had its parameters identified in the explanatory notes of the companies listed on B3 and the Económatica database. It assesses the cost-benefit of noncompliance by comparing the expected return on noncompliance (WACC) to the tax payment for noncompliance reduced by the average tax benefits of the special installments (*Refis da Crise*, PRT, and PERT). This variable aimed to identify whether the financial cost-benefit of non-payment of a tax is related to tax noncompliance, that is, whether it is feasible for the companies in the sample to decide for tax aggressiveness, in other words, for the decision of tax noncompliance. Does this positive or negative return influence the tax noncompliance of the companies analyzed? Therefore, this variable seeks to verify this relationship.

The Big4 variable was collected at the Finance and Risk Laboratory of FEA/USP at https://www. tatianaalbanez.com/riskfinlab. Finally, the control variables—leverage, to control the companies' debt; ADR, to control the type of rules to which the companies were subject for trading on the stock exchange; Current and Dry liquidity, to control the need for cash; and Ebitda and ROE, to control the companies' profitability—were collected on the Económatica website.

Figure 1 presents an overview of the variables addressed here, along with descriptions, formulas, expected signs, literature, and the source of data.

| Variable | Proxy description | Formula | Signal | Literature | Source |
|---|---|---|---|---|---|
| Tax noncompliance (TNC) – Dependent variable | Dummy assumes 1 for those companies with adverse decisions in Carf concerning – IRPJ, CSLL, PIS, and Cofins in the year analyzed and 0 for those companies with favorable decisions for the same taxes or with no issues being judged in Carf in the year analyzed. | Dummy | | Hanlon and Heitzman, 2010. | CARF website:: *http://carf.fazenda.gov. br/sincon/public/pages/ ConsultarJurisprudencia/ consultarJurisprudencia Carf.jsf* |
| Complexity (Compx) – Independent variable | The index was calculated by adding (i) the percentage difference between specific legislation and total legislation ($Z^1$) and (ii) the percentage change in tax legislation ($\S^1$) and dividing the result by 2. | $COMPLX = [(Z^1 + \S^1) / 2]$ | + | OTS, 2015 | Planalto website: *http://www4.planalto.gov. br/legislacao/* |
| | $Z_1$ is the tax legislation for calculating the company's tax in year t; $L_{Tx}$ is the number of characters without spaces in the legislation regarding the tax collected by the company in year t; Lt is the total number of characters without spaces in the tax in year t | $Z^1 = \dfrac{L_{Tx}}{L_t}$ | | | |
| | $\S^1$ is the number of changes in tax legislation; s is the number of changes in tax legislation for the tax due between 2010 and 2018; s is the total tax legislation for the tax in question between its institution and the year 2018. | $\S^1 = \dfrac{\delta}{\mathfrak{s}}$ | | | |
| Installments PIN (I) – Independent variable | P is the proxy for the installments made by the company; x is the number of installments accepted by the company. | $P = \dfrac{x}{3}$ | + | Paes, 2014. | Explanatory notes of the financial statements of companies listed on B3. |
| Inter - Independent variable | Interaction between the complexity variables (complx) and special installments (I). | $Inter = COMPLX$ | + | OTS, 2015; Paes, 2014. | Study's data |
| Inspection probability (P%) - Independent variable | P% is the inspection probability of the company in the year; $R_{it}$ is the total gross revenue of the company in the year; Tt is the total gross revenue of all companies in the economic sector of the company studied in the year; Et is the number of companies in the economic sector listed on B3; $PF_t$ is the number of tax procedures carried out by the RFB for the economic sector of the company studied in the year. | $P\% = \dfrac{R_{it}}{T_t} x \dfrac{E_t}{PF_t}$ | - | Allingham and Sandmo, 1972. | The companies' revenue was obtained through Economática and the inspection procedures on the RFB website under the inspection link. |

| Variable | Proxy description | Formula | Signal | Literature | Source |
|---|---|---|---|---|---|
| Selic (Selic) - Independent variable | The projected Selic rate obtained in the Focus report published by the Central Bank is shown in the Aggregate Median—Selic Target Rate—end of period (% p.a.) table. | Selic | - | Allingham e Sandmo, 1972. | Focus Bacen Bulletin |
| Inspection costs (custos) - Independent variable | Costs are the amount due in federal taxes declared in the DVA (TDVA) divided by the result of the division between the RFB's total cost in the year and the tax procedures carried out by the RFB in that year, in accordance with the annual inspection plan. | $Costs = \dfrac{TDVA_{it}}{\left[\dfrac{TotalCost}{procedures}\right]_t}$ | + | Bertolucci and Nascimento, 2006. | Economática; Transparence Portal; RFB. |
| Expected utility (EU) – Inspection costs | Difference between the company's WACC update (δ) for 60 months, minus the fine (m) plus the Selic interest (ρ) for 60 months, reduced by the average of the tax benefits of the special installments studied (y). | $E[U] = U\left\{[(1+\delta)^{60}] - 1\right\} - \{[(m + \sum_1^{60}\rho) * (1-y)]$ | + | Allingham and Sandmo, 1972. | The Brazilian companies' WACC was obtained from the Assaf Neto Institute website.. |
| Leverage – Control variable | Short and long-term debt. | $Leverage = \dfrac{Total\ Liabilities_{it}}{Total\ Assets_{it-1}}$ | + | Martinez and Martins, 2016 | Economática. |
| Size (Size) – Control variable | Natural logarithm of the asset. | $Log(asset_{it})$ | - | Zimmerman, 1983. | Economática. |
| Big4- Control variable | Dummy assumes 1 for those companies audited by one of the 4 major auditing companies (KPMG, EY, Delloite and PWC) and 0 otherwise. | $Dummy$ | - | Martinez, 2017. | Laboratório de Finanças e Risco da FEA/USP. |
| ADR – Control variable | Dummy assumes value 1 for companies with shares traded on the New York Stock Exchange and value 0 otherwise. | $Dummy$ | - | Teixeira, 2018. | Economática. |
| Restriction – Control variable | The current and dry liquidity index, as well as the company's EBITDA. | Liquidity and Ebitda | + | Teixeira, 2018. | Economática. |
| ROE – Control variable | The company's return on equity ratio. | $ROE = \dfrac{LL_{it}}{PL_{it-1}}$ | + | Martinez, 2017. | Economática. |

Source: developed by the authors.

**Figure 1.** Variables' description and expected signs

### 3.3 Statistical Model

The estimation technique was the panel logit model, which allows for estimating the probability of an event to occur and identifying the independent variables that contribute to its prediction (Mingoti, 2010). The model is described in Equation 1:

$$
\begin{aligned}
ln&\left(\frac{prob(Y_{it} = 1)}{prob(Y_{it} = 0)}\right) \\
&= \beta_0 + \beta_1 COMPLX_{it} + \beta_2 P_{it} + \beta_3 Inter_{it} + \beta_4 P\%_{it} + \beta_5 Selic_{it} \\
&\quad + \beta_6 Costs_{it} + \beta_7 EU_{it} + \beta_8 Debts_{it} + \beta_9 Size_{it} + \beta_{10} Big4_{it} \\
&\quad + \beta_{11} ADR_{it} + \beta_{12} Liquidity_{it} + \beta_{13} Ebtida_{it} + \beta_{14} ROE_{it} + e_{1t}
\end{aligned}
\tag{1}
$$

Where ln is the natural logarithm; $P(=1)$ is the probability of the company being non-compliant in year $t$; P(=0) is the probability of the company being compliant in year $t$; $COMPLX_{it}$ is the complexity of company $i$ at time $t$; $P_{it}$ is the special installment plan of company $i$ at time $t$; $Inter_{it}$ is the interaction variable between complexity and installments of company $i$ at time $t$; P $P\%_{it}$ is the probability of company $i$ being inspected at time $t$; $Selic_{it}$ is the projected Selic rate of company $i$ at time $t$; $Costs_{it}$ are the inspection costs of company $i$ at time $t$; $EU_{it}$ is the expected utility of company $i$ at time $t$; $Debts_{it}$ is the leverage of company $i$ at time $t$; T $Size_{it}$ is the natural logarithm of the total assets of company $i$ at time $t$; $Big4_{it}$ is the dummy for the auditing firm of company $i$ at time $t$; $ADR_{it}$ is the dummy if the company has shares traded on the New York Stock Exchange $i$ at time $t$; $Liquidity_{it}$ is the current and dry liquidity of company $i$ at time $t$; $Ebitda_{it}$ is the Ebitda of company $i$ at time $t$; $ROE_{it}$ is the ROE of company $i$ at time $t$; and ε, is the error term that follows a normal distribution, with zero mean and constant variance.

All the variables are related to the decision for tax noncompliance. Inspection probability may either encourage or discourage noncompliance: the greater the probability of inspection, the lower noncompliance should be. Likewise, the Selic rate corrects the infraction notice in the event of an inspection. On the other hand, very high inspection costs would make inspection unfeasible. However, if the cost-benefit of tax noncompliance is greater than the payment of the infraction notice after reductions enabled by a special installment plan, it would encourage tax noncompliance. Debts can be a catalyst for a company to opt for noncompliance and finance itself by not paying taxes, in addition to a lack of liquidity or a desire to increase its cash flow potential or return on investment. On the other hand, strong audits or developed markets can inhibit the decision for noncompliance. Therefore, all variables in the model may increase or decrease the probability of a company's decision to opt for noncompliance. Hence, these variables were used to identify the ones with the most relevant relationship with tax noncompliance.

# 4. Results and Analysis

## 4.1 Descriptive analyses

The 423 companies addressed here are distributed across almost all Brazilian states, with the Southeast concentrating most of them, with 75% of the total sample (319), followed by the South with 14% (61).

Tables 2 and 3 present the variables' descriptive statistics separated into two sets, non-compliant (1) and compliant (0).

Table 2

**Variables' descriptive statistics concerning non-compliant companies**

| Variable | Observations | Mean | Standard-deviation | Minimum | Maximum | Mann-Whitney Test |
|----------|-------------|------|--------------------|---------|---------|-------------------|
| Complx | 1131 | 0.8275862 | 0.3779068 | 0 | 1 | -13.848*** |
| Parcl | 1131 | 0.557763 | 0.4079999 | 0 | 1 | -40.331*** |
| Intc | 1131 | 0.2669761 | 0.2293744 | 0 | 0.65 | -39.653*** |
| Probl | 1131 | 0.3265252 | 0.3828644 | 0 | 1 | -16.031*** |
| Selic | 1131 | 101.409 | 2.732.954 | 6.75 | 15.38 | 2.321*** |
| Eu | 1131 | 1.027.339 | 0.6368274 | 0 | 1.74 | -11.690*** |
| Alav | 1131 | 3097259 | 118688 | -1361 | 3545.1 | -10.659*** |
| Tam | 1131 | 6.377.984 | 112.622 | 0 | 9.18 | -17.631*** |
| Big4 | 1131 | 0.6374889 | 0.4809379 | 0 | 1 | -10.052*** |
| Adr | 1131 | 0.0769231 | 0.2665872 | 0 | 1 | -5.037*** |
| Corrente | 1131 | 2206985 | 5004035 | 0 | 99.2 | -3.939*** |
| Ebitda | 1131 | 119720.5 | 3865838  -2 | 21736.2 | 1.30e+08 | -9.620*** |
| Roe | 1131 | 9.321.839 | 3.024.007 | -195.7 | 273 | -10.060*** |

*** significant at 1% in the Mann-Whitney test.
Independent variables
Complx = complexity of the company's tax legislation
Parcl = number of times the company adhered to installment plans
Intc = interaction between complexity and numbers of installment plans
Probl = inspection probability
Selic = Selic projection
Eu = company's expected utility
Alav = leverage
Size = natural logarithm of the company's assets
Big4 = companies audited by one of the Big4 (or not)
Adr = companies w/ shares traded on the New York Stock Exchange (or not)
Current = company's current liquidity
Ebtida = company's Ebtida
Roe = company's return on equity index

Source: developed by the authors.

Table 3

**Variables' descriptive statistics concerning compliant companies**

| Variable | Observations | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Complx | 2676 | 0.5956652 | 0.4908546 | 0 | 1 |
| Parcl | 2676 | 0.05108 | 0.1610103 | 0 | 1 |
| Intc | 2676 | 0.0242526 | 0.0831349 | 0 | 0.65 |
| Probl | 2676 | 0.1646263 | 0.2696348 | 0 | 1 |
| Selic | 2676 | 1.037.673 | 2.740.594 | 6.75 | 15.38 |
| Eu | 2676 | 0.6293386 | 0.7222555 | 0 | 1.74 |
| Alav | 2676 | 1109361 | 3836519 | -3046.2 | 15110.6 |
| Tam | 2676 | 5.188.457 | 2.130.145 | 0 | 9.18 |
| Big4 | 2676 | 0.4592676 | 0.4984312 | 0 | 1 |
| Adr | 2676 | 0.0381166 | 0.1915135 | 0 | 1 |
| Corrente | 2676 | 2670056 | 2463023 | 0 | 7622.2 |
| Ebitda | 2676 | 102844.6 | -4.359.092 | 5300000 | 2.00e+08 |
| Roe | 2676 | -0.3599402 | 7.609.846 | -1352.9 | 990.3 |

Independent variables
Complx = complexity of the company's tax legislation
Parcl = number of times the company adhered to an installment plan
Intc = interaction between complexity and numbers of installment plans
Probl = inspection probability
Selic = Selic projection
Eu = company's expected utility
Alav = leverage
Size = natural logarithm of the company's assets
Big4 = companies audited by one of the Big4 (or not)
Adr = companies w/ shares traded on the New York Stock Exchange (or not)
Current = company's current liquidity
Ebtida = company's Ebtida
Roe = company's return on equity index

Source: developed by the authors.

The comparison between Table 2 and Table 3 shows that non-compliant companies present higher means for Complx, Parcl, Intc, Probl, Costs, EU, Size, Ebitda, and ROE. This piece of information shows that non-compliant companies have greater tax complexity and have more frequently adhered to special installments than compliant companies. Consequently, the combination of these two variables is reflected in the Inter (Interaction) variable, showing that the mean Interaction of the non-compliant companies almost doubles that of compliant companies.

Furthermore, the inspection probability of non-compliant companies is more than twice that of their compliant counterparts. Additionally, the inspection cost for non-compliant companies is lower than that of compliant companies. Therefore, inspecting non-compliant companies would be more beneficial than inspecting compliant companies, considering that the cost-benefit of the former is close to 1 (0.8974519). This means that the return on inspection will exceed its costs, and tax authorities will be better off if inspecting non-compliant companies.

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 4, p. 361-383, Jul./Sep. 2024

375

The expected utility of non-compliant companies is more than twice that of compliant companies, showing that for these companies, noncompliance was worthwhile. The current liquidity of non-compliant companies is lower than that of compliant ones. Additionally, non-compliant companies have higher mean leverage, and higher EBITDA and ROE than compliant companies. Regarding the Big4 and ADR variables, non-compliant companies are more frequently audited by large audit firms than their compliant counterparts. They also have more companies with more shares traded on the New York Stock Exchange. Finally, Table 2 shows statistically significant differences between non-compliant and compliant companies for each variable highlighted. The significance shown by the Mann-Whitney test confirms the differences indicated by the previously described data.

## 4.2 Estimation of the proposed model

Table 4 summarizes the results regarding the estimations of the analysis models. According to Fávero and Belfiore (2015), the stepwise procedure should be adopted to remove all variables that are not statistically significant at the 10% level to have a more robust model. Hence, after adopting these procedures, the following variables were excluded from the model (Debt, Big4, ADR, Dry Liquidity, and ROE), as they were not statistically significant.

Table 4

**Results of the estimates of the models of corporate tax noncompliance**

| Variables | Marginal Effect | *Pooled* | Random | Fixed |
|---|---|---|---|---|
| Complx | 0.0249921*** | 1.252654*** | 1.61224*** | 1.609868*** |
| | | 0.392682 | 0.507668 | 0.508305 |
| Parcl | 0.0096016** | 0.481252*** | 1.037931** | 1.017952** |
| | | 0.156012 | 0.445673 | 0.445489 |
| Intc | 0.0201711** | 0.964774*** | 0.9634*** | 0.955911*** |
| | | 0.287413 | 0.287916 | 0.288317 |
| Probl | 0.0228834*** | 1.146958*** | 1.15069*** | 1.181851*** |
| | | 0.181291 | 0.186063 | 0.186739 |
| Selic | -0.0015605*** | -0.07822*** | -0.08171*** | (omitted) |
| | | 0.022736 | 0.027749 | |
| Custos | 0.0017723* | 0.088833* | 0.083778* | 0.07938* |
| | | 0.048447 | 0.048602 | 0.048758 |
| Eu | 0.054033*** | 2.708241*** | 2.688234*** | 2.723273*** |
| | | 0.259233 | 0.265211 | 0.271112 |
| Corrente | 0.0055535* | 0.278353* | 0.520956*** | 0.52927*** |
| | | 0.150102 | 0.19608 | 0.196322 |
| Ebtida | 0.001199** | 0.060095** | 0.061689** | 0.063303** |
| | | 0.026393 | 0.027738 | 0.027726 |
| Tam | 0.0071791*** | 0.359832*** | 0.328584*** | 0.325673*** |
| | | 0.061325 | 0.066286 | 0.066034 |
| _cons | | -8.00104*** | -7.94805*** | |
| | | 0.611027 | 0.675548 | |
| Number of observations | | 3804 | 3804 | 3804 |
| Number of groups | | | 9 | 9 |
| McFadden R2 | 0.2756 | | | |
| Sensitivity (cutoff 0.1) | 86.03% | | | |
| Specificity (cutoff 0.1) | 69.52% | | | |
| Model goodness of fit | 71.16% | | | |
| area under the ROC curve | 0.8643 | | | |
| Likelihood-ratio test | 0.202 | 0.6251 | | |
| Hosmer-Lemeshow Test | 0.2527 | | | |
| lnsig2u | -413.736 | | | |
| Sigma_u | 0.126352 | | | |
| Rho | 0.004829 | | | |

\*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%
Dependent variable: 1 = non-compliant; 0 = compliant
Independent variables
Complx = complexity of the company's tax legislation
Parcl = number of times the company adhered to an installment plan
Intc = interaction between complexity and numbers of installment plans
Probl = inspection probability
Selic = Selic projection
Costs= inspection costs
Eu = company's expected utility
Alav = leverage
Size = natural logarithm of the company's assets
Big4 = companies audited by one of the Big4 (or not)
Adr = companies w/ shares traded on the New York Stock Exchange (or not)

Source: developed by the authors.

Table 4 shows that all model variables are statistically significant and present the expected signs. Thus, the complexity of the legislation and repetitive special installments were expected to encourage tax noncompliance among the companies in the sample, as tax complexity gives opportunities for companies to avoid and/or postpone paying their taxes. Special installments decrease the present value of taxes, encouraging payment to be postponed to benefit from special installments. The combination of these two variables creates the perfect environment for tax noncompliance, considering that the complexity of tax legislation hinders the payment of taxes, even when there is a violation notice, because companies may still challenge such a notice of violation within the tax administrative process. Hence, companies postpone the payment of taxes until a special installment plan is available in the future, resulting in a vicious cycle within society.

Furthermore, even though there is a high inspection probability and Selic increases the tax debt, given the tax complexity that enables companies to defend non-payment, the prospect of being able to collect unpaid taxes under the benefits of a special installment plan encourages tax noncompliance as the return of noncompliance in the future is higher than the payment of taxes.

High inspection costs mean that few companies are eligible for inspection, which decreases the feeling of punishment and, together with other variables, encourages tax noncompliance.

Thus, from a financial point of view, the return on tax non-payment is positive; hence, tax noncompliance becomes feasible, considering that the projection is for a positive return, and complexity and installments facilitate the decision for noncompliance.

The Size variable (Size) presented a positive sign, while, according to the literature (Graham *et al.*, 2014; Zimmerman, 1983), a negative sign was expected. However, considering that the study sample comprises large companies only, which bear political costs at similar levels, we infer that there is a bias in the sample since all the companies are large, so the positive sign is not surprising.

Furthermore, due to the characteristics of the Brazilian context, in which there is high tax complexity and specific inspections of large taxpayers, in which the infraction notices deal in most cases with the interpretation of complex Brazilian tax legislation, taxpayers have one perception of the legislation and inspection agencies hold a different one. However, both views are supported by legislation; see internal premium, Complementary Law No. 160 of 2017, and in other cases, the political costs of companies would not increase. Therefore, it would not become a variable that would reduce noncompliance.

Note that the proposed model presented goodness of fit for predicting tax non-compliance, as it correctly classified 71.16% of the companies.

Regarding non-compliant companies, the accuracy rate was 86.03%, while for compliant companies, the accuracy rate was 69.52%. The ROC curve of 86.43% shows the model's goodness of fit and corroborates this understanding. Additionally, the model showed a mean probability of 2% of companies becoming tax non-compliant in the period. However, the probability of tax non-compliance increases to 28%, given the high tax complexity and the possibility of companies adhering to special installment plans.

These results indicate that the sample companies in highly complex environments exposed to repeated special installment plans are more likely to become non-compliant than companies not exposed to these elements. The reason is that tax complexity has a positive effect of 2.5% on tax noncompliance, meaning that the emergence of complex tax laws within an already complex tax system increases the probability of a company becoming non-compliant. Likewise, special installment plans have a marginal effect of 0.0096016, indicating that a one-unit variation in special installment plans causes a positive variation of 1%, doubling the chances of the companies addressed here becoming tax non-compliant. In other words, repetitive special installment plans lead taxpayers to opt for tax noncompliance, knowing that they can collect their taxes under the law's benefits.

According to Ross (2013), special installment payments alter taxpayers' perceptions of the likelihood of detection, leading to greater tax aggressiveness. Furthermore, the author above found evidence that tax aggressiveness increases incrementally with each additional repetition of a special installment payment, suggesting that repeated special installment payments have increasingly negative implications for tax collection. Paes (2012) also found that the expectation of future tax installment payments in Brazil affects taxpayers' propensity to pay their current taxes.

Therefore, this study's results align with scientific research on special installments. Additionally, the expected utility for the Brazilian companies in the sample was found to be positive in most cases. The marginal effect identified for this variable was 0.054033, and its estimator (2.708241) shows that an increase in expected utility increases by 15 times the chances of a company in the sample becoming non-compliant.

The high cost of inspections, combined with the low probability of their occurrence, considerably increases the probability of tax noncompliance. Few companies are eligible for inspection due to the high costs of inspections in Brazil; hence, there is a low probability of a company being inspected, leading companies to opt for tax noncompliance, expecting they will not be inspected.

Additionally, the model showed that the need for cash positively affects the probability of tax noncompliance among the companies addressed here. The cost arising from increases in the Selic rate inhibits tax noncompliance. However, a decrease in the Selic rate has an extra effect of 1.08% on noncompliance than the effect of an increase in the Selic rate on tax compliance. Therefore, the results did not allow us to reject the research hypotheses that tax complexity and special installments positively affect the probability of tax noncompliance among the Brazilian companies listed on B3 addressed in this study.

These findings are consistent with those of Richardson (2006) who studied the determinants of tax noncompliance in 48 countries. The author showed that tax complexity is one of the main factors leading to tax noncompliance. Likewise, there is evidence from Nugent (2013), who found that tax complexity is related to tax noncompliance among American taxpayers.

The results linked to special installments are consistent with those of Paes (2014), who also studied special installments in Brazil and found that such installments negatively influence tax compliance. Therefore, tax collection under special installments is always lower than what would be obtained otherwise.

Furthermore, Paes (2014) also found that the expectation of future tax installments affects the taxpayer's propensity to pay taxes in the present, which is also aligned with this study's results. Likewise, Shevlin *et al.* (2017) verified how American companies perceive special installments, especially those headquartered in states that repeatedly grant special installments. They found that companies become increasingly tax aggressive after repeated special installments, corroborating this study's results.

## 5. Final Considerations

This study's general objective was to verify whether tax complexity and repetitive special installments within the scope of federal taxation are associated with an increased probability of tax noncompliance among companies listed on B3. Therefore, a panel logit model was developed to empirically verify whether tax complexity, special installments, inspection probability, inspection costs, the expected utility of tax noncompliance, current liquidity, EBITDA, and company size increased the probability of the companies in the sample becoming tax non-compliant.

The results lead to the conclusion that the complexity of Brazilian taxes and repeated installment plans positively affect companies' tax noncompliance. The model presented a good prediction of noncompliance among the companies in the sample; the ROC curve was 86.43%, and the percentage of correct answers was 71.16%, with 86.03% indicating noncompliance and 69.52% indicating compliance. Regarding the other variables, the low inspection probability and high inspection costs, the need for cash, the Selic rate, and the expected utility positively affected the probability of tax noncompliance.

Thus, these results are aligned with those presented by several similar studies that verified tax complexity and special installments in the United States. Although Brazil and the United States present different economic contexts, tax complexity appears to be one of the factors generating tax noncompliance in these countries.

To our knowledge, this is the first Brazilian accounting study to examine tax noncompliance by proposing proxies to measure the companies' tax complexity in addition to special installments, inspection probability, the costs of inspection, expected utility of tax noncompliance, verifying the impact of these on tax noncompliance.

More than two decades have passed since the literature review by Andreoni *et al.* (1998) was published. They found that tax complexity and installments are associated with tax noncompliance, and this study's results corroborate their findings. This study is expected to contribute to the literature on tax aggressiveness and tax planning of Brazilian companies, considering that no other studies on tax aggressiveness have sought to understand what instruments companies use to perform tax planning and aggressiveness (Martinez, 2017).

This study found an association between the independent and dependent variables of tax noncompliance. The findings suggest that the legislation is complex for all companies; however, exploring ambiguities and omissions is the essence of tax planning. Hence, the more complex the legislation, the more opportunities for tax planning and noncompliance. Additionally, the complexity of Brazilian tax legislation allows companies to challenge and question infraction notices, which prevents the immediate payment of such notices. In addition to the expectation of repetitive special installments, taxpayers may design scenarios in which they align tax complexity with future tax payments under the tax benefits of special installments, encouraging tax noncompliance.

Moreover, a vulnerable environment can affect taxpayers' morale, leaving room for dishonest taxpayers not to collect taxes on time by financing themselves with government resources. Therefore, honest taxpayers may feel outraged and unmotivated to honor their tax commitments on time because they see their dishonest competitors benefiting from tax subsidies. Therefore, this study suggests a perception that special installment plans might not be fair to society.

This study contributes to the discussion on the need to establish an independent body to identify unnecessary tax complexity in Brazil, along the lines currently developed by the Office of Tax Simplification (OTS) in the United Kingdom.

One limitation of this study is that its findings cannot be generalized to other groups of companies, as the sample was non-probabilistic; hence, the analyses' results only apply to the companies in the sample. Another limitation of this and other studies involving tax noncompliance is that tax noncompliance is not fully captured because it continues to be performed until it is unveiled. Therefore, we cannot state that the statistical model performed here captured the companies' tax noncompliance in its totality.

These limitations indicate possibilities for further field research, including demographic variables (age, gender, etc.), cash flow metrics, and tax aggressiveness proxies in the model. Additionally, a suggestion is to expand the model to a sample of limited companies and estimate the variables using other models to verify the accuracy of the results. One variant would be to verify whether Carf's decisions influence the decision to publish special installments.

## References

Aghion, P., & Tirole, J. (1997). Formal and real authority in organizations. Journal of political economy, 105(1), 1-29. doi: https://doi.org/10.1086/262063

Allingham, M. G., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Taxation: critical perspectives on the world economy*, *3*(1), 323-338.

Alm, J. (1991). A perspective on the experimental analysis of taxpayer reporting. The Accounting Review, 66(3), 577-593. Recuperado de http://www.jstor.org/stable/247810

Alm, J. (2012). Measuring, explaining, and controlling tax evasion: lessons from theory, experiments, and field studies. *International tax and public finance*, *19*, 54-77.

Andreoni, J., Erard, B., & Feinstein, J. (1998). Tax compliance. *Journal of economic literature*, *36*(2), 818-860.

Baer, K., & Le Borgne, E. (2008). *Tax amnesties: Theory, trends, and some alternatives.* International Monetary Fund.

Batrancea, L. M., Nichita, R. A., & Batrancea, I. (2013). Understanding the determinants of tax compliance behavior as a prerequisite for increasing public levies. *The USV Annals of Economics and Public Administration*, v. 12, n.1 (15), 201-210.

Bayer, R. C., Oberhofer, H., & Winner, H. (2015). The occurrence of tax amnesties: Theory and evidence. Journal of Public Economics, 125, 70-82. doi: https://doi.org/10.1016/j.jpubeco.2015.02.006

Beck, P. J., & Jung, W. O. (1989). Taxpayers' reporting decisions and auditing under information asymmetry. The Accounting Review, 64(3), 468-487. Recuperado de http://www.jstor.org/stable/247600

Bertolucci, A. V., & Nascimento, D. T. D. (2006). O custo de arrecadação de tributos federais. *Revista Contabilidade & Finanças*, *17*, 36-50. https://doi.org/10.1590/S1519-70772006000400004.

Budak, T., & James, S. (2018). The level of tax complexity: A comparative analysis between the UK and Turkey based on the OTS Index. *Int'l Tax J.*, *44*, 23.

Cavalcante, R. (2010). Estudo Exploratório Acerca da Influência do Parcelamento de Débitos sobre a Arrecadação Tributária da União. Monografia Especialização em orçamento Público, Instituto Serzedello Corrêa – ISC/TCU.

Crane, S. E., & Nourzad, F. (1990). Tax rates and tax evasion: evidence from California amnesty data. National Tax Journal, 43(2)189-199. Recuperado de http://www.jstor.org/stable/41788836

Cronshaw, M. B., & Alm, J. (1995). Tax compliance with two-sided uncertainty. Public Finance Quarterly, 23(2), 139-166. doi: https://doi.org/10.1177/109114219502300202

Das-Gupta, A., Lahiri, R., & Mookherjee, D. (1995). Income tax compliance in India: An empirical analysis. World Development, 23(12), 2051-2064. doi: https://doi.org/10.1016/0305-750X(95)00098-W

Di Mauro, L. S., Pluchino, A., & Biondo, A. E. (2018). A Game of Tax Evasion: evidences from an agent-based model. Disponível em https://arxiv.org/pdf/1809.08146.pdf. Acesso em: 27 set. 2019.

Fávero, L., & Belfiore, P. (2015). *Análise de dados: técnicas multivariadas exploratórias com SPSS e STATA*. Elsevier Brasil.

Follmann, C. A. S. (2001). Dissertação de mestrado, Universidade de São Paulo, São Paulo, SP, Brasil.

Graetz, M. J., Reinganum, J. F., & Wilde, L. L. (1986). The tax compliance game: Toward an interactive theory of law enforcement. *The Journal of Law, Economics, and Organization*, *2*(1), 1-32. https://doi.org/10.1093/oxfordjournals.jleo.a036900

Graham, J. R., Hanlon, M., Shevlin, T., & Shroff, N. (2014). Incentives for tax planning and avoidance: Evidence from the field. *The Accounting Review*, *89*(3), 991-1023. https://doi.org/10.2308/accr-50678

Gomes, APM, Cunha, JVAD, Francisco, JRDS, & Lara, FTDR (2023). Modelo teórico para discussão da desobediência tributária a partir da teoria dos jogos. BBR. Revista Brasileira de Negócios, 20, 281-300.

Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, *50*(2-3), 127-178. https://doi.org/10.1016/j.jacceco.2010.09.002

Hasseldine, J. (1998). Tax amnesties: An international review. Bulletin for International Fiscal Documentation, 52, 303-310.

Jacob, M. (2018). Uma nota sobre a pesquisa tributária. *Revista Contabilidade & Finanças*, *29*, 339-342. https://doi.org/10.1590/1808-057x201890280

Laffer, A. B., Winegarden, W. H., & Childs, J. (2011). The economic burden caused by tax code complexity. *The Laffer Center for Supply-Side Economics*, 1-24.

Luitel, H. S., & Sobel, R. S. (2007). The revenue mpacto f repeated tax amnesties. Public budgeting & finance, 27(3), 19-38. Doi: https://doi.org/10.1111/j.1540-5850.2007.00881.x

Martinez, A. L., & Martins, V. A. M. (2016). Alavancagem financeira e agressividade fiscal no Brasil. *Revista de Contabilidade da UFBA*, *10*(3), 4-22. https://doi.org/10.9771/rc-ufba.v10i3.18383

Martinez, A. L. (2017). Agressividade tributária: um survey da literatura. *Revista de Educação e Pesquisa em Contabilidade*, *11*, 106-124. : http://dx.doi.org/10.17524/repec.v11i0.1724

Martins, G. D. A., & Theóphilo, C. R. (2009). Metodologia da investigação cientifica. *São Paulo: Atlas*, 143-164.

Mikesell, J. L. (1986). Amnesties for state tax evaders: The nature of and response to recent programs. National Tax Journal, 39(4), 507-525. Recuperado de http://www.jstor.org/stable/41788630

Mikesell, J. L., & Ross, J. M. (2012). Fast money? The contribution of state tax amnesties to public revenue systems. *National Tax Journal*, *65*(3), 529-562. https://doi.org/10.17310/ntj.2012.3.02

Mingoti, S. A. (2010). Análise de dados através de métodos estatística multivariada: uma abordagem aplicada. Editora UFMG.

Morais, C., Macedo, L., & Borges, R. (2011). O Resultado Arrecadatório do REFIS, do PAES e do PAEX e seu Impacto na Sensação de Risco Subjetivo pelos Devedores. Monografia do Curso de Administração Tributária da Escola de Administração Fazendária–ESAF.

Nugent, D. A. (2013). Legislating morality: The effects of tax law complexity on taxpayers' attitudes. *Journal of Applied Business Research (JABR)*, *29*(5), 1479-1494. https://doi.org/10.19030/jabr.v29i5.8029

Office of Tax Simplification (OTS). (2015). Complexity Index. Disponível em https://www.gov.uk/government/publications/office-of-tax-simplification-complexity-index. Acesso em: 26 set.2019.

Paes, N. L. (2014). Os efeitos dos parcelamentos sobre a arrecadação tributária. *Estudos Econômicos (São Paulo)*, *44*, 323-350. https://doi.org/10.1590/S0101-41612014000200004

Receita Federal do Brasil (RFB). (2018). Plano Anual da Fiscalização 2018. Disponível em http://receita.economia.gov.br/dados/resultados/fiscalizacao/arquivos-e-imagens/2018_02_14-plano-anual-de-fiscalizacao-2018-versao-publicacao_c.pdf . Acesso em: 02 ago. 2019.

Rezende, A. J. (2015). Avaliação do impacto dos incentivos fiscais sobre os retornos e as políticas de investimento e financiamento das empresas. 2015. Tese de doutorado, Universidade de São Paulo, Ribeirão Preto, SP, Brasil.

Richardson, G. (2006). Determinants of tax evasion: A cross-country investigation. *Journal of international Accounting, Auditing and taxation*, *15*(2), 150-169. https://doi.org/10.1016/j.intaccaudtax.2006.08.005

Ross, J. M., & Buckwalter, N. D. (2013). Strategic tax planning for state tax amnesties: Evidence from eligibility period restrictions. Public Finance Review, 41(3), 275-301. doi: https://doi.org/10.1177/1091142112461687

Scholes, M. S., Wolfson, M. A., Erickson, M., Maydew, E., & Shevlin, T. (2005). *Taxes and Business Strategy: A Planning Approach.* Upper Saddle River, New Jersey: Prentice-Hall.

Scotchmer, S., & Slemrod, J. (1989). Randomness in tax enforcement. Journal of public economics, 38(1), 17-32. doi: https://doi.org/10.1016/0047-2727(89)90009-1

Shevlin, T., Thornock, J., & Williams, B. (2017). An examination of firms' responses to tax forgiveness. *Review of Accounting Studies*, *22*, 577-607.

Slemrod, J., & Yitzhaki, S. (2002). Tax avoidance, evasion, and administration. In *Handbook of Public Economics,* Elsevier, 3, 1423-1470.

Teixeira, D. P. (2018). A influência das restrições financeiras na gestão tributária das empresas brasileiras. Dissertação (Mestrado em Ciências Contábeis) – Faculdade de Ciências Econômicas, Universidade Federal de Minas Gerais, Minas Gerais.

Torgler, B. (2003). Tax morale in transition countries. *Post-communist economies*, *15*(3), 357-381. https://doi.org/10.1080/1463137032000139052

Ulph, D. T. (2015). *Measuring tax complexity*. Kluwer Law International.

Zimmerman, J. L. (1983). Taxes and firm size. *Journal of Accounting and Economics*, 5, 119-149.

# Corporate Governance: Do Institutional Investors Matter to Brazilian Companies?

**Filipe Manarte Scaramussa**
https://orcid.org/0000-0001-5127-5985

**Patricia Maria Bortolon**
https://orcid.org/0000-0001-8087-3837

## Abstract

**Objective:** This study analyzed the relationship between having institutional investors in Brazilian companies' shareholding structures and their corporate governance practices.

**Method:** The sample included 118 companies between 2010 and 2020, totaling 1,298 company-year observations. The Corporate Governance Practices Index (CGI) was used to measure the quality of corporate governance of the sampled companies. The number of institutional investors in the companies' shareholding structures was verified, and those with relevant holdings were individually classified.

**Results:** The results from the GMM-Sys regression show a positive relationship between pension fund participation and the CGI score, contradicting the results of Brazilian studies but aligning with those of international literature. These results also show that companies whose shareholding base has considerable participation of institutional investors tend to present improved governance practices.

**Contributions:** This study's findings detail the relationship between institutional investors and the corporate governance practices of the companies they invest in, allowing a better understanding of how corporate governance and institutional investors' participation in the Brazilian market have progressed over the last decade.

**Keywords:** Corporate governance; Institutional investors; GMM-Sys; Governance index.

# 1. Introduction

This paper analyzes the relationship between the shareholding of different types of institutional investors and the corporate governance practices of Brazilian companies listed on B[3].

According to the IBGC (2015), corporate governance is a set of structures by which companies are managed and monitored, which plays a central role in managing relationships between partners, the board of directors, the executive board, supervisory and control bodies, and remaining stakeholders. Silveira *et al.* (2003) note that corporate governance can be considered a set of incentive and control mechanisms used to mitigate agency conflicts, as proposed by Jensen and Meckling (1976). Chen *et al.* (2012) corroborate this notion by showing evidence that adopting best corporate governance practices leads to decreased company agency problems.

A functional and well-structured corporate governance system may positively affect a company's financial and economic performance (IFC, 2018), preserving and maximizing its long-term economic and social value (Zaman *et al.*, 2022). Several studies report evidence that minority shareholders benefit from improved governance practices, and a positive relationship is found between governance and firm value (Gompers *et al.*, 2003; Brown & Caylor, 2006; Aggarwal *et al.*, 2009; Ararat *et al.*, 2017; Latif *et al.*, 2017).

In turn, institutional investors play a crucial role in the development of a robust and sustainable capital market, constituting one of the most influential groups within the capital markets of most countries (OECD, 2019; Fonseca *et al.*, 2020) due to a considerable increase in the volume of resources managed and the degree of participation of institutional investors in the ownership of companies seen in recent years (Dasgupta *et al.*, 2021). Such a context enables this group of investors to impact the decisions of the companies they invest in (Lou *et al.*, 2020).

The increase in the number of institutional investors in companies' shareholding structures in recent years indicates that these investors can influence the corporate governance of the companies in which they invest (Lewellen & Lewellen, 2022). Hence, institutional investors are usually considered critical for the development of corporate governance practices of companies in the capital market (Gillan & Starks, 2003; Bushee *et al.*, 2014).

The Brazilian literature on the relationship between institutional investors and corporate governance shows inconclusive or insufficient results. Some studies investigated only a specific type of institutional investors, such as pension funds (Punsuvo *et al.*, 2007; de Oliveira *et al.*, 2012; De Souza Lima, 2013), while others used a comprehensive index to measure corporate governance practices (Melo, 2017; Vasconcelos & Martins, 2020).

Furthermore, no studies were found on the relationship between the number of institutional investors in the shareholder structure and their corporate governance practices of companies in the Brazilian market. Therefore, there is a need to investigate the relationship between the different types of institutional investors operating in the Brazilian market and the development of corporate governance practices of the companies in their portfolios.

Therefore, this study has four specific objectives: i) to identify the companies' main characteristics of corporate governance using the Corporate Governance Practices Index (CGI), composed of 20 objective questions; ii) to observe the total number of institutional investors in the shareholder structure of the study companies for each year between 2010 and 2020; iii) to identify the institutional investors with relevant participation among the study companies' five largest direct shareholders for each year of the period analyzed, and classify the shareholders according to criteria suggested by the literature (i.e., legal definition, whether they are Brazilian or international, and nature of capital); and finally, iv) to quantitatively verify the relationship between the various types of institutional investors and the corporate governance practices of Brazilian companies, mainly using the GMM-Sys regression method, to answer the research question.

This study's results are expected to contribute to the Brazilian market's participants and regulators by providing a more accurate perception of risk and a better understanding of the relationship between institutional investors and the corporate governance practices of the companies in which they invest and, consequently, have a greater capacity to monitor these companies.

Furthermore, this study contributes to the literature by presenting how corporate governance practices measured by the CGI evolved in the Brazilian market in the last decade and showing that the number of institutional investors in the shareholder structure is potentially relevant to explain the ICG score. Finally, pension funds showed a positive and robust relationship with good governance practices, contradicting the results of Brazilian studies but aligned with international literature.

## 2. Theoretical Framework and Hypothesis Development

### 2.1 Corporate Governances

Agency Theory defines the agency relationship as a contract in which the owner (principal) delegates decision-making authority to a third party (agent), allowing the agent to act as a manager to meet the principal's interests. However, assuming both actors maximize value, there is reason to believe their interests will not always converge. Hence, agency conflicts emerge from differences in the interests of the principal and the agent when the latter uses his/her authority to make decisions contrary to the principal's interests (Jensen & Meckling, 1976).

Agency conflicts occur between shareholders and managers in capital markets in which prevail dispersed shareholding structures. However, in markets with a highly concentrated shareholding structure, agency conflicts occur between the majority shareholders, which have the ability and incentive to expropriate other investors, and minority shareholders (La Porta *et al.*, 2000; Aldrighi & Mazzer Neto, 2005).

Hence, corporate governance plays a central role in this context. Silveira *et al.* (2003) define it as a set of incentive and control mechanisms to minimize agency problems. Punsuvo *et al.* (2007) consider corporate governance a system of external and internal controls to balance and mitigate conflicts of interest generated by the separation between ownership and management. Shleifer & Vishny (1997) note that corporate governance can be considered a set of practices adopted by the companies' capital providers to ensure they obtain their investments' expected returns.

Following this line of thought, adopting good corporate governance practices can maximize value generation for stakeholders by mitigating the occurrence and effects of conflicts of interest intrinsic to companies. Several international studies found evidence that minority shareholders and other stakeholders benefit from improved governance and also show a positive relationship between governance and firm value (Gompers *et al.*, 2003; Aggarwal *et al.*, 2009; Latif *et al.*, 2017).

Thus, researchers in finance have developed and used indexes to measure companies' corporate governance practices. Both Brazilian (A. L. Carvalhal & Leal, 2005; Punsuvo *et al.*, 2007; Leal *et al.*, 2015; Maranho *et al.*, 2020) and international(Gompers *et al.*, 2003; Black *et al.*, 2012; Arora & Bodhanwala, 2018) studies have used the approach of selecting indicators or questions considered the most relevant to represent the companies' corporate governance practices.

One of the primary corporate governance indexes used in Brazilian literature is the CGI, which Carvalhal & Leal (2005) developed and Leal *et al.* (2015) updated. CGI has been adopted by studies analyzing the relationship between Brazilian companies' corporate governance practices and aspects such as firm performance and value (A. L. Carvalhal & Leal, 2005; Leal *et al.*, 2015), accounting information quality (Gabriel, 2011), private equity fund activism (A. Carvalhal & Souza, 2014), financial constraint (Silva *et al.*, 2019), and degree of institutional investors' involvement (Maranho *et al.*, 2020), among others.

CGI is based on objective responses that can be obtained from public information provided by publicly traded Brazilian companies in reference form. The index's current version comprises 20 questions subdivided into four dimensions: disclosure, composition, and functioning of the board of directors, ethics, conflicts of interest, and shareholder rights. The index's score is obtained by summing the points assigned to each item. This study will use CGI to measure corporate governance practices and examine how these practices relate to the different types of institutional investors in the companies' ownership structures.

## 2.2 Institutional Investors

Regarding the corporate governance mechanisms presented by publicly traded companies, the shareholders, as owners and through their voting power, are one of the leading groups with the ability to promote improvements in the companies' practices (Gillan & Starks, 2000, 2003; Lewellen & Lewellen, 2022). Institutional investors stand out among the different types of shareholders and are defined as legal institutions that manage monetary values from a large number of individuals (OECD, 2014; Bebchuk *et al.*, 2017).

Institutional investors have a large volume of resources under their management and, consequently, can acquire relevant shares in the companies they invest, being able to exercise internal control through voting or external control through trading their shares in the market (Gillan & Starks, 2003; Crane *et al.*, 2016). Institutional investors exert significant influence in the capital markets of most countries since their ownership share in developed and developing markets has increased dramatically over the last two decades (Lou *et al.*, 2020; Dasgupta *et al.*, 2021).

The same occurs in the Brazilian market, where approximately half of the companies listed in 2012 had at least one institutional investor with a relevant share, holding more than 5% of the voting capital or 10% of the total capital (OECD, 2013). The study developed by Fonseca *et al.* (2020) identified that 165 of the 269 (61%) companies analyzed between 2011 and 2016 had institutional investors among their primary shareholders.

Since this group of institutions manages a large volume of financial resources and has a more effective capacity to monitor companies than individual minority shareholders (Ferreira & Matos, 2008; Aggarwal *et al.*, 2011; Maranho *et al.*, 2020; Dasgupta *et al.*, 2021), companies with a higher number of institutional investors in their shareholder structure are more likely to present good corporate governance practices.

The reasoning behind this assumption is that the size of the shareholder base is relevant for a publicly traded company, as companies with a larger shareholder base tend to be more closely monitored by the market (Amihud *et al.*, 1999; Chia *et al.*, 2020). Thus, companies with more institutional investors in their shareholder base might be pressured to adopt good corporate governance practices to mitigate agency conflicts and costs based on an adequate governance structure (A. di M. da Silveira, 2004). Based on the previous discussion, the following research hypothesis is proposed:

$H_1$: The number of institutional investors in a company's shareholder structure positively affects corporate governance practices measured by the CGI

However, it is worth highlighting that institutional investors are not a homogeneous group. Studies conducted in different markets and contexts indicate that institutional investors differ significantly in terms of the size and objectives of their holdings, as well as in terms of monitoring efforts and the type of relationship established with the management and stakeholders of the company in which they invest (Ferreira & Matos, 2008; Isaksson & Çelik, 2014; Katan & Mat Nor, 2015; Fonseca *et al.*, 2020; Kałdoński *et al.*, 2020; Pathan *et al.*, 2021).

In the Brazilian context, Fonseca *et al.* (2020) investigated the degree of heterogeneity among institutional investors operating in the Brazilian market based on their main characteristics and investment profiles. The results indicate four distinct groups of institutional investors and confirm that other elements besides the company's legal type must be verified to categorize institutional investors, such as whether they are private or state-owned, of national or foreign origin, and also the relationship established with the managers of the invested company.

Chen *et al.* (2007), Katan & Mat Nor (2015), and Borochin & Yang (2017) found evidence that different legal types of institutional investors have different, and even opposite, impacts on a company's corporate governance mechanisms.

International studies indicate that pension funds can improve the corporate governance practices of invested companies, considering that they have an independent relationship with the companies and are oriented towards stable, long-term investments (Gillan & Starks, 2007; Ferreira & Matos, 2008).

However, studies conducted in the Brazilian market found opposing evidence (Punsuvo et al., 2007; De Souza Lima, 2013), where the companies' governance practices were negatively impacted by having large pension funds as shareholders or even found a statistically insignificant relationship (de Oliveira *et al.*, 2012). Such results are possibly explained by differences between the Brazilian and American markets and the intrinsic characteristics of the specific pension funds analyzed (Previ, Petros, and Funcef), which had a close relationship with the Government.

Considering that the methodology adopted here is similar to that used in the international studies, as it does not specifically choose which pension funds to study but analyzes all funds that meet this study's criteria, the following research hypothesis is proposed:

**H$_{2A}$:** The participation of pension funds in a company's shareholding structure positively affects corporate governance practices measured by the CGI.

Regarding investment funds, some authors found evidence that this type of institutional investor positively relates to changes in the invested companies' corporate governance (Chen *et al.*, 2007; Isaksson & Çelik, 2014).

Similarly, Gomtsian (2019) studied how large asset managers behave and vote at company meetings in the United Kingdom. The results suggest that large asset managers, including index fund managers (described as passive investors), have tried to promote improvements in the corporate governance practices of the companies in their portfolios. Thus, the following research hypothesis is proposed:

**H$_{2B}$:** The participation of investment funds in a company's shareholding structure positively affects corporate governance practices measured by the CGI.

Furthermore, the literature indicates that institutional investors linked to financial institutions (banks and insurance companies) are more likely to have a close relationship with the management of the companies in which they invest due to the potential existence of relevant commercial ties between them (Gillan & Starks, 2003; Ferreira & Matos, 2008; Z. Chen *et al.*, 2019).

Thus, the quality of monitoring of this type of institutional investor tends to be worse, even leading the corporate governance structure adopted by the companies in their portfolios to deteriorate when they are fully aligned with the controlling block of the companies. In this line of thought, the following research hypothesis is proposed:

**H$_{2C}$:** The participation of funds managed by financial institutions in a company's shareholding structure negatively affects corporate governance practices measured by the CGI.

In addition to the legal type, another important point is whether the institution is national or international. Ferreira & Matos (2008) note in their study that international and independent institutional investors effectively monitor management and increase shareholder value, while others do not. Aggarwal *et al.* (2011) analyzed institutional investors by classifying them according to their country of origin and the legal tradition of protecting shareholder rights. The results suggest that international investors are more effective in monitoring companies than domestic investors.

Analyzing the markets of nine East Asian countries, Lou *et al.* (2020) found that institutional investors positively correlate with abnormal returns over long time horizons (over three years), with this effect being strongly driven by foreign institutions than domestic ones. The authors argue that their results suggest that international institutional investors can monitor effectively and improve the quality of decisions made by the management of the invested companies. Thus, the following research hypothesis is proposed:

**H$_3$:** The participation of foreign institutional investors in a company's shareholding structure positively affects corporate governance practices measured by the CGI.

The nature of the capital invested is another aspect studied in the literature that can impact how these institutions relate to the companies in which they invest. Chen *et al.* (2017) analyzed the relationship between ownership by different types of institutional investors and the allocation of capital at the firm level after privatization processes in 64 countries. Their results suggest that the presence of institutional investors linked to the government is significantly related to the decreased efficiency of companies' investments, while international investors increased this efficiency.

In the Brazilian market, state-owned institutional investors have been the subject of some studies, which generally do not find conclusive evidence that their presence as shareholders positively impacts the performance and corporate governance practices of the companies in which they invest (de Oliveira *et al.*, 2012; Sonza & Granzotto, 2018; Duarte & Leal, 2021). The study developed by Fonseca *et al.* (2020) in the Brazilian market between 2011 and 2016 concluded that whether an institution is private or state-owned strongly influenced its investment profile. Based on this, the following research hypothesis is proposed:

**H$_4$:** The participation of Brazilian state-owned institutional investors in a company's shareholding structure negatively affects corporate governance practices measured by the CGI.

## 3. Methodology

### 3.1 Data Collection

The shareholdings and economic and financial data required for this study were collected in the Comdinheiro database. The information required to classify institutional investors was collected from the Brazilian Securities and Exchange Commission's (CVM) website, the institutions' websites, and from the Comdinheiro database. The data required to construct the CGI were collected from Comdinheiro, reference forms, financial statements, and bylaws of the companies analyzed.

The number of institutional investors in the companies' shareholding structure in the final sample was collected from item 15.3 of the reference form. The number addressed corresponds to the number of institutional investors, which are shareholders, according to the last active reference form for each year analyzed.

### 3.2 Sampling

The study population comprises publicly traded companies traded in the Traditional, Level 1, Level 2, and Novo Mercado segments of the B3 stock exchange, selected in the period from 2010 to 2020. The study period begins in 2010 because much of the information required to complete the index measuring corporate governance practices was collected from reference forms, which began to be compulsorily published from 2010 onwards.

In order to observe variations in institutional investors' shareholdings, only companies that went public in 2010 or earlier and maintained shares in trading for the entire period analyzed were selected for the sample; hence, the initial sample consisted of 279 companies. However, to meet this study's objectives, the companies must have at least one institutional investor among the five largest shareholders in at least three years between 2010 and 2020; 140 companies met this criterion.

The reason for adopting these two criteria is that the companies' corporate governance practices and control structures usually do not vary much from year to year (Bortolon, 2013; Leal *et al.,* 2015; Maranho *et al.*, 2020). Thus, observing the same companies for a more extended period is essential to observe companies' corporate governance practices and their relationship with the presence of different institutional investors in their shareholder structure.

Finally, companies whose institutional investors had a shareholding of 0% or presented missing data for most of the variables used during the period analyzed were excluded from the sample. Thus, the final sample comprises 118 companies, totaling 1,298 company-year pairs.

## 3.3. Institutional Investors Classification

Regarding the identification of institutional investors, the same method used by Nieiro & Bortolon (2020) was adopted here. For a shareholder to be classified as an institutional investor, it must be a legal entity managing financial resources from third parties, able to invest high volumes of capital, and representing a large number of people, as noted by OECD (2014) and Bebchuk *et al.* (2017).

Table 1 presents the classifications adopted. Institutional investors were classified into investment funds, pension funds, or funds managed by financial institutions (banks and insurance companies), considered the classic legal types of institutional investors, and concentrated most third-party resources managed by institutions (Isaksson & Çelik, 2014).

Additionally, only institutional investors among the 5 largest shareholders of the sample companies were classified and analyzed. This decision considered that Brazilian publicly traded companies are only required to disclose the percentage holdings of shareholders who hold more than 5% of the common shares or 10% of the total shares. The configuration of the five largest shareholders is expected to capture most of the institutional investors with disclosed shareholdings, given the predominance of concentrated ownership structures in Brazilian companies traded on the stock exchange (Valadares & Leal, 2000; Okimura *et al.*, 2007; Sternberg *et al.*, 2011; Caixe & Krauter, 2013; Bezerra *et al.*, 2015).

Table 1

**Classification of Institutional Investors**

| Pension Funds | |
| --- | --- |
| Type | Acronym |
| National Private Pension Fund | FPPN |
| International Pension Fund | FPE |
| State-Owned Pension Fund | FPGOV |
| **Investment Funds** | |
| Type | Acronym |
| National Private Investment Fund | FIPN |
| International Investment Fund | FIE |
| State-Owned Investment Fund | FIGOV |
| **Fundos Geridos por Instituições Financeiras** | |
| Type | Acronym |
| Fund Managed by a National Private Financial Institution | IFPN |
| Fund Managed by an International Private Financial Institution | IFE |
| Fund Managed by a State-Owned Financial Institution | IFGOV |

Source: Nieiro & Bortolon (2020).

## 3.4 Variables and econometric model

The econometric model (1), represented by the equation below, was developed to perform empirical tests of the research hypotheses:

$$CGI_{i,t} = \beta_0 + \beta_1 lnQII_{i,t} + \beta_2 PercentFP_{i,t} + \beta_3 PercentFI_{i,t} + \beta_4 PercentFIF_{i,t} + \beta_5 dEST_{i,t} + \beta_6 dPUB_{i,t} + \Sigma_1^c * \beta_c * VControle_{i,t} + \varepsilon_{i,t} \qquad (1)$$

The dependent variable $GCI_{i,t}$ corresponds to the CGI. This index was developed by Carvalhal da Silva & Leal (2005) and updated by Leal et al. (2015). Its score is based on objective responses (secondary data) provided to 20 questions, addressing aspects such as transparency, composition of the board of directors, ownership and control structure, protection of shareholders' rights, and information disclosure. Thus, the index score is the sum of the positive responses obtained for a given company.

Table 2 presents information on the independent variables, detailing what each one measures, which research hypothesis it answers, and what the expected sign for its coefficient is, according to the theoretical framework and the hypothesis development. The variables that represent the percentage shareholdings of institutional investors were included because they potentially represent the degree of their involvement with the invested companies (Ferreira & Matos, 2008; Aggarwal *et al.*, 2011; Maranho *et al.*, 2020).

Table 2

**Independent Variables Description**

| Variables | Description | Hypothesis | Expected sign | Literature |
|---|---|---|---|---|
| lnQII$_{i,t}$ | Natural logarithm of the number of institutional investors | H$_1$ | + | (Gillan & Starks, 2007; Borochin & Yang, 2017; Lou *et al*., 2020) |
| PercentFP$_{i,t}$ | Percentage share of Pension Funds in company i in year t | H$_{2A}$ | - | (Punsuvo *et al*., 2007; de Oliveira *et al*., 2012; De Souza Lima,2013) |
| PercentFI$_{i,t}$ | Percentage share of Investment Funds in company i in year t | H$_{2B}$ | + | (X. Chen *et al*., 2007; Isaksson & Çelik, 2014; Gomtsian, 2019) |
| PercentFIF$_{i,t}$ | Percentage share of Funds Managed by Financial Institutions in company i in year t | H$_{2C}$ | - | (Gillan & Starks, 2003; Ferreira & Matos, 2008; Z. Chen *et al*., 2019) |
| dEST$_{i,t}$ | Dummy indicating the presence of institutional investors of international origin | H$_3$ | + | (Ferreira & Matos, 2008; Aggarwal *et al*., 2011; Maranho *et al*., 2020) |
| dPUB$_{i,t}$ | Dummy indicating the presence of state-owned institutional investors | H$_4$ | – | (R. Chen *et al*., 2017; Fonseca *et al*., 2020; Duarte & Leal, 2021) |

Source: developed by the author.

Furthermore, a set of control variables similar to those adopted in the studies by Aggarwal *et al.* (2011), Barros *et al.* (2015), and Maranho *et al.* (2020) was used here to mitigate the effect of endogeneity resulting from the omission of variables simultaneously correlated with the regressors and the dependent variable.

Thus, the econometric model (1) included control variables representing the performance, size, leverage degree, control structure, listing segment, and risk of the companies in the sample. Data concerning December 31 of each year were considered in the construction of the control variables. Table 3 presents information on the descriptions of the control variables and their calculation formulas.

Like the other economic and financial data, the CAPM Beta variable was collected from the Comdinheiro platform. A considerable number of missing data was found in the companies when we attempted to use the 60-month Beta. Of 1,298 possible company-year observations, only 544 (42%) were obtained for the 60-month Beta. A similar challenge was found when attempting to construct the variable manually. Hence, we used the 36-month Beta and obtained 988 company-year observations out of the potential 1,298 (76%). Thus, the model's results with and without the CAPM Beta variable are presented because its inclusion significantly reduces the sample size available despite being a relevant control variable.

Table 3
**Control Variables Description**

| Variable | Description | Formula |
|---|---|---|
| $ROA_{i,t}$ | Return on Assets | $\dfrac{Operational\ Profit_{i,t}}{Total\ Asset_{i,t}}$ |
| $Q_{i,t}$ | Tobin's Q | $\dfrac{\left(Total\ Asset_{i,t} - Net\ Worth_{i,t} + Market\ Value_{i,t}\right)}{Total\ Asset_{i,t}}$ |
| $TAM_{i,t}$ | *Size Proxy* | $\ln\left(Total\ Asset_{i,t}\right)$ |
| $END_{i,t}$ | Leverage degree | $\dfrac{Gross\ Debt_{i,t}}{Total\ Asset_{i,t}}$ |
| $MTB_{i,t}$ | *Market-to-book* | $\dfrac{Market\ Value_{i,t}}{Net\ Worth_{i,t}}$ |
| $CONT_{i,t}$ | Controller | *Dummy* that is assigned 1 if the company has one controlling shareholder or a controlling block of shareholders |
| $NM_{i,t}$ | Novo Mercado | *Dummy* that is assigned 1 if the company is listed on Novo Mercado |
| $Beta_{i,t}$ | CAPM Beta (36m) | *CAPM $\beta$ ofthe last 36 months* |

Source: developed by the author.

## 3.5 Regression method (GMM-Sys)

The presence of endogenous regressors in econometric models causes estimators to become inconsistent, resulting in inadequate inferences (Roberts & Whited, 2013). Endogeneity arising from the omitted variables problem, which is commonly addressed by including a large set of control variables in the model, is not the only form of endogeneity that affects research in finance (Barros *et al.*, 2020).

A problem researchers often ignore, which is present in corporate governance variables, is dynamic endogeneity. Dynamic endogeneity occurs when shocks that affect the dependent variable also affect the regressors in subsequent periods. In this case, lagged dependent variables must be included as explanatory variables (Wintoki *et al.*, 2012).

Based on the previous discussion, the main regression method used in this study was GMM-Sys. This method was proposed by Blundell & Bond (1998) for the estimation of dynamic models, using lags of the model's endogenous variables, which are not correlated with the error term, as instruments. To ensure the estimators' consistency, GMM-Sys assumes less restrictive assumptions, yielding more robust results than fixed effects and random effects methods traditionally used by research in the field (Wintoki *et al.*, 2012; Barros *et al.*, 2020).

The first step to applying GMM-Sys is to define how many lags of the dependent variable (CGI) should be included in the model as explanatory variables. Considering that Maranho *et al.* (2020) used one lag of the CGI as an explanatory variable in their GMM-Sys model, the maintained assumption was that one lag of the CGI would be sufficient to fully capture the existing dynamic effect. The validity of this assumption using the same methodology as Wintoki *et al.* (2012), estimating an OLS (ordinary least squares) model with the CGI being explained by its first four lags, including the model's control variables (1).

Initially, the regression was estimated with the first four lags of the CGI, with the first lag showing statistical significance but not the others. Next, according to the methodology described by Wintoki *et al.* (2012), the first two lags were excluded from the regression, and only the third and fourth lags were kept. In this case, only the third lag showed statistical significance. The conclusion is that although older lags include relevant information, the first lag is already sufficient to capture the dynamic aspect present in CGI.

Therefore, the regression method using GMM-Sys presents the first CGI lag as an explanatory variable, with the other lags being used as instruments.

## 4. Data Analysis and Results

### 4.1 Descriptive Statistics

The dependent variable analyzed in this study, CGI, was calculated for each year between 2010 and 2020 to verify changes in the corporate governance practices of the companies in the sample. Table 4 presents the descriptive statistics for the CGI and its dimensions over the period analyzed.

The companies' corporate governance practices improved in the period, with the CGI score rising from a mean of 12.58 and a median of 13.00 in 2010 to a mean 14.56 and a median of 15.00 in 2020. This finding aligns with studies using the same index in the Brazilian market and finding a similar progression in the companies' CGI scores (Leal *et al.,* 2015; Maranho *et al.*, 2020).

Note that EDP Brasil (ENBR3) and Natura (NTCO3) presented the highest scores in the period analyzed, being the only companies to obtain a score of 19.00 out of 20.00 points on the CGI. On the other hand, Biomm (BIOM3) and Grazziotin (CGRA3) were the negative highlights, presenting the lowest score of the companies in the sample, 6.00 out of 20.00 points in the CGI.

When observing the scores of the four dimensions that compose the CGI, companies performed better in the dimension related to the composition and functioning of the board of directors. For most of the period analyzed, the companies obtained a mean score of 4.50 and a median of 5.00 out of the 5.00 possible points.

In contrast, the ethics and conflict of interest dimension presented the lowest total score. The companies obtained a mean score between 1.79 and 2.10 and a median of 2.00 out of the 4.00 points possible in this dimension over the period. Furthermore, this was the only dimension in which some companies scored zero.

Thus, the conclusion is that this study's specific objective i was met. The objective was to identify the main characteristics of companies' corporate governance measured by an index widely used in national literature.

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 5, p. 384-406, Jul./Sep. 2024

395

Table 4
**CGI Descriptive Statistics**

| Variáveis | | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Disclosure Dimension (0 to 6 points) | Mean | 3,46 | 3,52 | 3,64 | 3,69 | 3,76 | 3,81 | 3,94 | 3,98 | 4,12 | 4,25 | 4,37 |
| | Median | 3,50 | 3,50 | 3,50 | 3,50 | 3,50 | 3,50 | 3,50 | 3,50 | 4,00 | 4,25 | 4,50 |
| | Standard deviation | 1,10 | 1,09 | 1,10 | 1,11 | 1,13 | 1,20 | 1,20 | 1,22 | 1,19 | 1,25 | 1,25 |
| | Minimum | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 |
| | Maximum | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 |
| Composition and Functioning of the Council Dimension (0 to 5 points) | Mean | 4,17 | 4,25 | 4,34 | 4,45 | 4,47 | 4,49 | 4,47 | 4,51 | 4,46 | 4,51 | 4,55 |
| | Median | 4,00 | 4,50 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 |
| | Standard deviation | 0,97 | 0,89 | 0,84 | 0,78 | 0,77 | 0,79 | 0,81 | 0,77 | 0,81 | 0,80 | 0,78 |
| | Minimum | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 1,00 | 2,00 | 2,00 | 2,00 | 2,00 |
| | Maximum | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 |
| Ethical and Conflict of Interest Dimension (0 to 4 points) | Mean | 1,79 | 1,84 | 1,89 | 1,94 | 1,94 | 1,97 | 2,00 | 2,06 | 2,08 | 2,09 | 2,10 |
| | Median | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 |
| | Standard deviation | 1,04 | 1,01 | 1,04 | 1,02 | 1,02 | 1,01 | 1,00 | 0,98 | 1,00 | 1,02 | 1,01 |
| | Minimum | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| | Maximum | 4,00 | 4,00 | 4,00 | 4,00 | 4,00 | 4,00 | 4,00 | 4,00 | 4,00 | 4,00 | 4,00 |
| Shareholders' Rights Dimension (0 to 5 points) | Mean | 3,16 | 3,18 | 3,20 | 3,28 | 3,28 | 3,28 | 3,29 | 3,44 | 3,54 | 3,50 | 3,53 |
| | Median | 3,00 | 3,00 | 3,00 | 3,00 | 3,00 | 3,00 | 3,00 | 3,50 | 4,00 | 3,50 | 3,50 |
| | Standard deviation | 1,03 | 1,03 | 1,02 | 0,92 | 0,89 | 0,87 | 0,89 | 0,87 | 0,85 | 0,86 | 0,90 |
| | Minimum | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 2,00 | 2,00 | 1,00 |
| | Maximum | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 |
| CGI Score (0 to 20 points) | **Mean** | **12,58** | **12,79** | **13,07** | **13,36** | **13,45** | **13,56** | **13,69** | **13,99** | **14,20** | **14,36** | **14,56** |
| | **Median** | **13,00** | **13,00** | **13,50** | **13,50** | **14,00** | **14,00** | **14,00** | **14,50** | **14,50** | **14,50** | **15,00** |
| | **Standard deviation** | **2,29** | **2,38** | **2,31** | **2,27** | **2,24** | **2,36** | **2,44** | **2,42** | **2,45** | **2,42** | **2,43** |
| | **Minimum** | **7,00** | **6,00** | **6,00** | **7,00** | **7,00** | **7,00** | **6,00** | **7,00** | **7,00** | **7,00** | **7,00** |
| | **Maximum** | **18,50** | **18,50** | **18,50** | **18,50** | **18,00** | **19,00** | **19,00** | **19,00** | **19,00** | **19,00** | **19,00** |

Source: developed by the authors.

Table 5 presents the descriptive statistics for the independent and control variables. The mean values of the shares of the different types of institutional investors reported in Table 5 considered in their calculation the company-year pairs without the presence of these investors, that is, those that had a share equal to 0%.

Following this criterion, the average values of the variables representing the participation of Pension Funds, Investment Funds, and Funds Managed by Financial Institutions, were 0.031, 0.088, and 0.012 respectively. However, the average shareholding of Pension Funds present in the sample companies disregarding the company-year pairs without participation of institutional investors is 15.84%, that of Investment Funds is 14.32%, and that of Funds Managed by Financial Institutions is 13.68%.

Table 5

**Descriptive statistics of independent and control variables**

| Variables | Observations | Mean | Median | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|---|---|
| lnQII | 1298 | 4,775 | 5,316 | 2,179 | 0,000 | 13,729 |
| PercentFP | 1298 | 0,031 | 0,000 | 0,080 | 0,000 | 0,574 |
| PercentFI | 1298 | 0,088 | 0,051 | 0,122 | 0,000 | 0,860 |
| PercentFIF | 1298 | 0,012 | 0,000 | 0,054 | 0,000 | 0,457 |
| dEST | 1298 | 0,355 | 0,000 | 0,479 | 0,000 | 1,000 |
| dPUB | 1298 | 0,297 | 0,000 | 0,457 | 0,000 | 1,000 |
| ROA | 1298 | 0,045 | 0,054 | 0,116 | -1,421 | 0,629 |
| Q | 1298 | 1,450 | 1,143 | 0,981 | 0,350 | 13,644 |
| TAM | 1298 | 8,558 | 8,495 | 1,851 | 1,591 | 14,342 |
| END | 1298 | 0,315 | 0,313 | 0,211 | 0,000 | 1,996 |
| MTB | 1298 | 2,056 | 1,259 | 5,476 | -12,634 | 15,922 |
| CONT | 1298 | 0,586 | 1,000 | 0,493 | 0,000 | 1,000 |
| NM | 1298 | 0,581 | 1,000 | 0,494 | 0,000 | 1,000 |
| BETA | 988 | 0,692 | 0,660 | 0,410 | 0,182 | 1,919 |

lnQII – Natural logarithm of the institutional investors in the companies' shareholder structure; PercentFP – percentage share of institutional investors classified as Pension Fund; PercentFI - percentage share of institutional investors classified as Investment Fund; PercentFIF – percentage share of institutional investors classified as Fund Managed by Financial Institution; dEST - dummy indicating the presence of international institutional investors; dPUB - dummy indicating the presence of state-owned institutional investors; ROA – Return on Assets; Q – Tobin's Q; TAM –natural logarithm of total assets; END – leverage degree; MTB – market-to-book; CONT – dummy indicating the presence of a controlling shareholder or block of shareholders; NM – dummy indicating listing on the Novo Mercado; BETA – 36-month CAPM beta.

Source: developed by the author.

Another point of interest concerns the dummies that capture the presence of international and state-owned investors. A total of 35.50% of the company-year pairs had at least one international institutional investor among the five largest shareholders. At the same time, at least one state-owned institutional investor was identified in 29.70% of the 1,298 company-year pairs.

Furthermore, the average number of institutional investors within the companies' shareholder structure ranged from 368 to 474, with the lowest number in 2016 and the highest in 2020. Hence, this study met its objective ii: identify the total number of institutional investors in the companies' shareholder structure for each year between 2010 and 2020.

Table 6 provides information on the number of each type of institutional investor identified among the companies' five largest shareholders in each year of the period analyzed. The companies may have more than one type of institutional investor among their five largest shareholders in the same year.

Thus, objective iii was also met: identify institutional investors with relevant participation among the companies' five largest direct shareholders for each year of the study period and classify them into different types according to criteria provided in the literature.

Table 6

**Number of observations of each type of institutional investor in the study companies according to year**

| Type | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FPPN | 2 | 2 | 1 | 2 | 3 | 4 | 5 | 4 | 5 | 5 | 7 |
| FPE | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 |
| FPGOV | 13 | 13 | 15 | 18 | 24 | 30 | 30 | 30 | 27 | 25 | 26 |
| **Total Pension Funds** | **18** | **18** | **19** | **23** | **30** | **36** | **38** | **37** | **34** | **32** | **35** |
| FIPN | 44 | 43 | 45 | 53 | 44 | 35 | 27 | 33 | 30 | 20 | 18 |
| FIE | 41 | 45 | 61 | 64 | 66 | 69 | 60 | 53 | 54 | 53 | 42 |
| FIGOV | 14 | 14 | 16 | 18 | 17 | 17 | 19 | 23 | 22 | 23 | 21 |
| **Total Investment Funds** | **99** | **102** | **122** | **135** | **127** | **121** | **106** | **109** | **106** | **96** | **81** |
| IFPN | 1 | 2 | 2 | 4 | 3 | 5 | 4 | 4 | 2 | 2 | 4 |
| IFE | 4 | 3 | 4 | 5 | 10 | 6 | 8 | 12 | 9 | 13 | 7 |
| IFGOV | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 2 | 1 | 0 | 2 |
| **Total Funds Managed by Financial Institutions** | 9 | 9 | 10 | 13 | 18 | 16 | 16 | 18 | 12 | 15 | 13 |

FPPN - ational Private Pension; FPE – International Pension Fund; FPGOV – State-Owned Pension Fund; FIPN – National Private Investment Fund; FIE – International Investment Fund; FIGOV – State-Owned Investment Fund; IFPN – Fund Managed by National Private Financial Institution; IFE – Fund Managed by International Financial Institution; IFGOV – Fund Managed by State-Owned Financial Institution.

Source: developed by the author.

## 4.2 Regression Analysis Model

As discussed in the methodology, GMM-Sys was the primary regression method adopted due to its robustness in analyzing variables addressed in this study. However, for comparison purposes and to present complementary information, this section presents the results of model (1) using the OLS (ordinary least squares) and dynamic OLS methods, according to the methodology adopted by Wintoki *et al.* (2012). Table 7 presents the results of the regressions in model (1).

All methods showed a positive and statistically significant relationship between the number of institutional investors, measured by the lnQII variable, and corporate governance practices, measured by the CGI. In other words, evidence was found that the presence of a higher number of institutional investors in a company's shareholder structure is associated with better-quality corporate governance practices. Hence, **hypothesis H$_1$ is confirmed**. This finding is relevant because the literature review showed that none of the studies addressing corporate governance practices in the Brazilian market investigated this variable.

One potential explanation for such a result is that the size of the shareholder base is relevant for a publicly traded company, considering that the market tends to more closely monitor companies with a larger shareholder base (Amihud *et al.*, 1999; Chia *et al.*, 2020). Therefore, companies with more institutional investors present in their shareholder base may be under more significant pressure to adopt good corporate governance practices to mitigate the costs arising from agency conflicts between principals (majority and minority shareholders) or between the principal (shareholders) and agent (managers), depending on each company's ownership structure (La Porta *et al.*, 2000; Aldrighi & Mazzer Neto, 2005; Crisóstomo & Brandão, 2019).

Another potential explanation is that there is some degree of reverse causality, which is not addressed by the model adopted here, i.e., companies with already good corporate governance practices and, consequently, a high CGI score are more attractive investments for institutional investors.

Regarding the impacts of different types of institutional investors on corporate governance practices, mixed findings were found concerning the remaining research hypotheses. The results indicate a positive and significant relationship between Pension Fund (PercentFP) participation and the CGI score. This finding would be in line with the international literature (Gillan & Starks, 2007; Ferreira & Matos, 2008) but not with Brazilian research (Punsuvo *et al.*, 2007; de Oliveira *et al.*, 2012; De Souza Lima, 2013).

Table 7
**Results of Regressions (model 1)**

| Variables | OLS | OLS without β | Dynamic OLS | Dynamic OLS without β | GMM-Sys | GMM-Sys without β |
|---|---|---|---|---|---|---|
| | (A) | (B) | (C) | (D) | (E) | (F) |
| CGI (t – 1) | | | 0,673*** | 0,630*** | 0,796*** | 0,833*** |
| | | | (0,020) | (0,017) | (0,066) | (0,045) |
| lnQII | 0,126*** | 0,197*** | 0,058** | 0,108*** | 0,053* | 0,058** |
| | (0,035) | (0,031) | (0,024) | (0,022) | (0,027) | (0,026) |
| PercentFP | 4,392*** | 3,038*** | 1,653*** | 1,245** | 1,021 | 0,856* |
| | (0,745) | (0,696) | (0,513) | (0,493) | (0,662) | (0,473) |
| PercentFI | 1,773*** | 0,888** | 1,043*** | 0,654** | 0,569** | 0,266 |
| | (0,531) | (0,426) | (0,362) | (0,301) | (0,278) | (0,233) |
| PercentFIF | -5,308*** | 1,124 | -2,145** | 0,978 | -1,346* | 0,778 |
| | (1,450) | (0,942) | (0,990) | (0,665) | (0,799) | (0,579) |
| dEST | 0,182 | 0,214* | -0,020 | 0,010 | 0,011 | 0,044 |
| | (0,121) | (0,116) | (0,083) | (0,082) | (0,081) | (0,063) |
| dPUB | -0,349** | 0,032 | -0,140 | 0,052 | -0,001 | 0,068 |
| | (0,143) | (0,129) | (0,098) | (0,091) | (0,115) | (0,091) |
| ROA | 0,770 | 0,530 | 0,257 | 0,206 | 0,879** | 0,822*** |
| | (0,543) | (0,445) | (0,370) | (0,314) | (0,387) | (0,241) |
| Q | 0,113* | 0,031 | 0,051 | -0,001 | 0,030 | 0,041 |
| | (0,066) | (0,054) | (0,045) | (0,038) | (0,041) | (0,029) |
| TAM | 0,465*** | 0,348*** | 0,198*** | 0,159*** | 0,076* | 0,047* |
| | (0,043) | (0,037) | (0,030) | (0,026) | (0,042) | (0,027) |
| END | -0,439* | -0,486** | -0,310* | -0,269 | 0,031 | -0,163 |
| | (0,266) | (0,239) | (0,181) | (0,169) | (0,208) | (0,159) |
| MTB | 0,007 | 0,014 | -0,005 | 0,001 | -0,001 | -0,004 |
| | (0,009) | (0,009) | (0,006) | (0,007) | (0,005) | (0,007) |
| CONT | 0,359*** | 0,342*** | 0,150* | 0,160* | 0,084 | 0,016 |
| | (0,130) | (0,121) | (0,089) | (0,086) | (0,101) | (0,081) |
| NM | 2,966*** | 2,930*** | 1,160*** | 1,292*** | 0,632** | 0,454*** |
| | (0,132) | (0,122) | (0,104) | (0,097) | (0,257) | (0,149) |

| Variables | OLS | OLS without β | Dynamic OLS | Dynamic OLS without β | GMM-Sys | GMM-Sys without β |
|---|---|---|---|---|---|---|
| BETA | 0,009 | | 0,044 | | 0,025 | |
| | (0,141) | | (0,096) | | (0,092) | |
| Constant | 6,887*** | 7,564*** | 1,661*** | 2,268*** | 1,247** | 1,193*** |
| | (0,378) | (0,302) | (0,300) | (0,259) | (0,569) | (0,420) |
| AR Test (2)   (p-valor) | | | | | 0,104 | 0,165 |
| Hansen's J Test (p-value) | | | | | 0,193 | 0,253 |
| Observations | 988 | 1,298 | 988 | 1,298 | 988 | 1298 |
| R² | 0,497 | 0,530 | 0,768 | 0,766 | | |
| Adjusted R² | 0,490 | 0,525 | 0,764 | 0,763 | | |
| F Statistics | 68,669*** | 111,182*** | 213,894*** | 299,840*** | | |

IPGC – Corporate Governance Index Score; lnQII – Natural logarithm of the institutional investors; PercentFP – percentage share of institutional investors classified as Pension Fund; PercentFI - percentage share of institutional investors classified as Investment Fund;  PercentFIF – percentage share of institutional investors classified as Fund Managed by Financial Institution; dEST - dummy indicating the presence of international institutional investors; ROA – Return on Assets; Q – Tobin's Q; TAM –natural logarithm of total assets; END – leverage degree; MTB – market-to-book; CONT – dummy indicating the presence of a controlling shareholder or block of shareholders; NM – dummy indicating listing on the Novo Mercado; BETA – 36-month CAPM beta.

Note: t statistics between parentheses, and ***, **, * represent statistical significance at 1%, 5%, and 10% respectively.

Source: developed by the authors.

Since the construction of the research hypothesis concerning Pension Funds followed the international literature, the research hypothesis H2A is confirmed. A potential explanation for this result is the difference between the pension funds investigated in the different studies. The Brazilian studies mentioned here addressed specific pension funds (Punsuvo *et al., 2*007; de Oliveira *et al.,* 2012; De Souza Lima, 2013), while this study did not impose such a restriction, addressing all the pension funds among the companies' five largest shareholders.

In turn, the Investment Funds (PercentFI) participation showed a positive and statistically significant relationship with CGI in all models, except GMM-Sys without the CAPM Beta variable (column F of Table 7). This finding indicates that institutional investors of the investment fund type are associated with the companies' better corporate governance practices, which is aligned with the literature (Chen *et al.,* 2007; Isaksson & Çelik, 2014; Gomtsian, 2019). Thus, **it confirms hypothesis H$_{2B.}$**

The participation of Funds Managed by Financial Institutions (PercentFIF) showed a negative and statistically significant relationship in the models that included the CAPM Beta variable (columns A, C, and E of Table 7) and did not show statistical significance in the models that did not include the CAPM Beta variable (columns B, D and F of Table 7). Therefore, evidence was found that the presence of Funds Managed by Financial Institutions would be associated with worse corporate governance practices among the companies in their portfolio, a finding that converges with the literature (Gillan & Starks, 2003; Ferreira & Matos, 2008; Chen *et al.*, 2019), but the result was inconclusive. Therefore, **hypothesis H$_{2C}$ is partially confirmed**.

Regarding the dummies indicating the presence of institutional investors of international or state-owned origin, dEST and dPUB, respectively, a statistically significant relationship was found between them and CGI only using the static OLS method (columns A and B of Table 7), which is the least robust of the regression methods used. This result indicates that the national or international origin and the nature of the capital behind institutional investors do not influence their relationship with the governance practices adopted by the companies in their portfolios. Therefore, the initial evidence indicates **the non-confirmation of research hypotheses H$_3$ and H$_4$.**

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 5, p. 384-406, Jul./Sep. 2024

**400**

In addition to the regression results, Table 7 also presents the results of the GMM-Sys specification tests. The first is the Arellano-Bond serial correlation test (level 2), which presented a p-value of 0.104 and 0.165 for the models with and without the CAPM Beta, respectively (columns E and F of Table 7). Therefore, the null hypothesis of the absence of second-order serial correlation cannot be rejected, which indicates the consistency of the models' estimators.

The second test was Hansen's J test, which presented p-values of 0.193 and 0.253 for the models with and without the CAPM Beta, respectively (columns E and F of Table 7). Thus, the null hypothesis of the validity of the GMM-Sys instruments used in the models cannot be rejected.

Thus, the conclusion is that this study's objective iv, which consists of quantitatively verifying whether companies' corporate governance practices are impacted by the number of institutional investors present in their shareholder structure and by the different types of institutions that hold participation among the largest shareholders, was met.

## 5. Final Considerations

This study analyzed whether there is a relationship between the various types of institutional investors in the companies' shareholding structure and these companies' corporate governance practices between 2010 and 2020. Hence, the presence of institutional investors was verified among the five largest shareholders of 118 publicly traded Brazilian companies traded on the B3 during the study period. Additionally, they were classified according to their legal type, national or international origin, and the nature of the capital behind the institution.

CGI indicated consistent improvements in the mean score of companies in the years analyzed here, rising from 12.58 to 14.56. Emphasis was on the composition and functioning of the board of directors dimension, in which the companies obtained the highest scores, with a mean of 4.55 points in 2020 out of a possible 5.00 points. This finding suggests improved corporate governance practices adopted in the Brazilian market, aligning with other Brazilian studies (Leal *et al.*, 2015; Maranho *et al.*, 2020).

The regression models' results show that companies with more institutional investors in their shareholder structure tend to present better corporate governance practices, confirming hypothesis $H_1$. This finding suggests that these institutions, considering all types of institutional investors together, have a greater capacity, on average, to monitor the controllers and managers of the companies in their portfolios and, therefore, positively influence their governance model.

However, the different legal types of institutional investors addressed here presented distinct relationships with the CGI score of the invested companies. Robust results contradict studies in the Brazilian market (Punsuvo et al., 2007; de Oliveira *et al.,* 2012; De Souza Lima, 2013), i.e., a positive relationship was found between the participation of Pension Funds and the companies' CGI score. Therefore, hypothesis $H_{2A}$ failed to be rejected.

This finding aligns with the international literature (Gillan & Starks, 2007; Ferreira & Matos, 2008) and suggests that Pension Funds seek to promote improvements in the corporate governance system adopted by the companies in which they invest. Such behavior is likely explained by the pension nature of these institutions; they focus on investments and results, observing a longer time horizon (Gillan & Starks, 2007; Punsuvo *et al.*, 2007).

Regarding institutional investors classified as Investment Funds, the positive relationship between these institutional investors and CGI confirmed hypothesis $H_{2B}$. This result is in line with the literature (Gillan & Starks, 2003; Ferreira & Matos, 2008; Chen *et al.,* 2019) and indicates that Investment Funds have a greater incentive to effectively monitor the companies to improve their corporate governance practices, possibly because they maintain an independent relationship with the companies.

In turn, the results regarding the participation of Funds Managed by a Financial Institution of Brazilian or international origin or state-owned nature presented inconclusive results, leading to the partial confirmation of $H_{2C}$ and the non-confirmation of $H_3$ and $H_4$.

This study contributes to Brazilian stock market participants and regulators by providing a better perception of risk and promoting a better understanding of the relationship between the different types of institutional investors and the companies' corporate governance practices. Additionally, this study contributes to the literature by pointing out that the number of institutional investors in the shareholder structure is relevant to the companies' CGI score. Future studies are suggested to explore this variable more deeply, also considering the possibility of reverse causality.

Finally, future studies are suggested to analyze the impact caused by the stability and longevity of institutional investors' holdings in Brazilian companies since international literature points to the relevance of this information. In this case, the challenge will be to find a way to construct variables that measure this information consistently in the Brazilian market, considering the information disclosure structure currently in force.

## References

Aggarwal, R., Erel, I., Ferreira, M., & Matos, P. (2011). Does governance travel around the world? Evidence from institutional investors. Journal of Financial Economics, 100(1), 154–181. https://doi.org/10.1016/j.jfineco.2010.10.018

Aggarwal, R., Erel, I., Stulz, R., & Williamson, R. (2009). Differences in Governance Practices between U.S. and Foreign Firms: Measurement, Causes, and Consequences. Review of Financial Studies, 22(8), 3131–3169. https://doi.org/10.1093/rfs/hhn107

Aldrighi, D. M., & Mazzer Neto, R. (2005). Estrutura de propriedade e de controle das empresas de capital aberto no Brasil. Revista de Economia Política, 25(2), 115–137. https://doi.org/10.1590/S0101-31572005000200009

Amihud, Y., Mendelson, H., & Uno, J. (1999). Number of Shareholders and Stock Prices: Evidence from Japan. The Journal of Finance, 54(3), 1169–1184. https://doi.org/10.1111/0022-1082.00141

Ararat, M., Black, B. S., & Yurtoglu, B. B. (2017). The effect of corporate governance on firm value and profitability: Time-series evidence from Turkey. Emerging Markets Review, 30, 113–132. https://doi.org/10.1016/j.ememar.2016.10.001

Arora, A., & Bodhanwala, S. (2018). Relationship between Corporate Governance Index and Firm Performance: Indian Evidence. Global Business Review, 19(3), 675–689. https://doi.org/10.1177/0972150917713812

Barros, L. A. B. de C., Di Miceli da Silveira, A., Bortolon, P. M., & Leal, R. P. C. (2015). Facing the Regulators: Noncompliance With Detailed Mandatory Compensation Disclosure in Brazil. Emerging Markets Finance and Trade, 51(sup2), S47–S61. https://doi.org/10.1080/1540496X.2014.998942

Barros, L., Castro, F. H., da Silveira, A., & Bergmann, D. (2020). Endogeneity in panel data regressions: Methodological guidance for corporate finance researchers. Review of Business Management, 22(Special Issue), 437–461. https://doi.org/10.7819/rbgn.v22i0.4059

Bebchuk, L. A., Cohen, A., & Hirst, S. (2017). The Agency Problems of Institutional Investors. Journal of Economic Perspectives, 31(3), 89–112. https://doi.org/10.1257/jep.31.3.89

Bezerra, P. C. S., Lustosa, P. R. B., Sales, I. C. H., & Fernandes, B. V. R. (2015). Estrutura de Propriedade, Conselho de Administração f Disclosure Voluntário: Evidências de Empresas Brasileiras de Capital Aberto. Revista Universo Contábil, 11(2), 25–46. https://doi.org/10.4270/ruc.2015210

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 5, p. 384-406, Jul./Sep. 2024

402

Black, B. S., de Carvalho, A. G., & Gorga, É. (2012). What matters and for which firms for corporate governance in emerging markets? Evidence from Brazil (and other BRIK countries). Journal of Corporate Finance, 18(4), 934–952. https://doi.org/10.1016/j.jcorpfin.2011.10.001

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics, 87(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8

Borochin, P., & Yang, J. (2017). The effects of institutional investor objectives on firm valuation and governance. Journal of Financial Economics, 126(1), 171–199. https://doi.org/10.1016/j.jfineco.2017.06.013

Bortolon, P. M. (2013). POR QUE AS EMPRESAS BRASILEIRAS ADOTAM ESTRUTURAS PIRAMIDAIS DE CONTROLE. Revista Base (Administração e Contabilidade) da UNISINOS, 10(1), 2–18. https://doi.org/10.4013/base.2013.101.01

Brown, L. D., & Caylor, M. L. (2006). Corporate governance and firm valuation. Journal of Accounting and Public Policy, 25(4), 409–434. https://doi.org/10.1016/j.jaccpubpol.2006.05.005

Bushee, B. J., Carter, M. E., & Gerakos, J. (2014). Institutional Investor Preferences for Corporate Governance Mechanisms. Journal of Management Accounting Research, 26(2), 123–149. https://doi.org/10.2308/jmar-50550

Caixe, D. F., & Krauter, E. (2013). A influência da estrutura de propriedade e controle sobre o valor de mercado corporativo no Brasil. Revista Contabilidade & Finanças, 24(62), 142–153. https://doi.org/10.1590/S1519-70772013000200005

Carvalhal, A. L., & Leal, R. P. C. (2005). Corporate Governance Index, Firm Valuation and Performance in Brazil. Brazilian Review of Finance, 3(1), 1. https://doi.org/10.12660/rbfin.v3n1.2005.1143

Carvalhal, A., & Souza, L. (2014). Private equity and corporate governance in Brazil. Corporate Ownership and Control, 12(1), 187–192. https://doi.org/10.22495/cocv12i1c1p4

Carvalhal da Silva, A. L., & Leal, R. P. C. (2005). Índice de Governança Corporativa, Desempenho e Valor da Firma no Brasil. Brazilian Review of Finance, 3(1), 1. https://doi.org/10.12660/rbfin.v3n1.2005.1143

Chen, C. X., Lu, H., & Sougiannis, T. (2012). The Agency Problem, Corporate Governance, and the Asymmetrical Behavior of Selling, General, and Administrative Costs*: The Agency Problem and SG&A Costs. Contemporary Accounting Research, 29(1), 252–282. https://doi.org/10.1111/j.1911-3846.2011.01094.x

Chen, R., El Ghoul, S., Guedhami, O., & Wang, H. (2017). Do state and foreign ownership affect investment efficiency? Evidence from privatizations. Journal of Corporate Finance, 42, 408–421. https://doi.org/10.1016/j.jcorpfin.2014.09.001

Chen, X., Harford, J., & Li, K. (2007). Monitoring: Which institutions matter? Journal of Financial Economics, 86(2), 279–305. https://doi.org/10.1016/j.jfineco.2006.09.005

Chen, Z., Forsberg, D., & Gallagher, D. R. (2019). Which institutional investor types are the most informed? Accounting & Finance, 59(S1), 449–480. https://doi.org/10.1111/acfi.12378

Chia, Y.-E., Lim, K.-P., & Goh, K.-L. (2020). More shareholders, higher liquidity? Evidence from an emerging stock market. Emerging Markets Review, 44, 100696. https://doi.org/10.1016/j.ememar.2020.100696

Crane, A. D., Michenaud, S., & Weston, J. P. (2016). The Effect of Institutional Ownership on Payout Policy: Evidence from Index Thresholds. Review of Financial Studies, 29(6), 1377–1408. https://doi.org/10.1093/rfs/hhw012

Crisóstomo, V. L., & Brandão, I. de F. (2019). The ultimate controlling owner and corporate governance in Brazil. Corporate Governance: The International Journal of Business in Society, 19(1), 120–140. https://doi.org/10.1108/CG-01-2018-0043

Dasgupta, A., Fos, V., & Sautner, Z. (2021). Institutional Investors and Corporate Governance. Foundations and Trends in Finance, 12(4), 276–394. http://dx.doi.org/10.1561/0500000056

de Oliveira, R. M., Leal, R. P. C., & Almeida, V. de S. (2012). Large pension funds and the corporate governance practices of Brazilian companies. Corporate Ownership and Control, 9(2), 76–84. https://doi.org/10.22495/cocv9i2art6

De Souza Lima, L. (2013). Governança Corporativa, Valor e Desempenho de Empresas com Participação Acionária de Fundos de Pensão No Brasil [Mestre em Administração de Empresas, Pontifícia Universidade Católica do Rio de Janeiro]. https://doi.org/10.17771/PUCRio.acad.34668

Duarte, B. E., & Leal, R. P. C. (2021). Principal-principal conflicts leading to activism of a large government-owned investor in Brazil. Corporate Governance and Organizational Behavior Review, 5(1), 15–21. https://doi.org/10.22495/cgobrv5i1p2

Ferreira, M. A., & Matos, P. (2008). The colors of investors' money: The role of institutional investors around the world. Journal of Financial Economics, 88(3), 499–533. https://doi.org/10.1016/j.jfineco.2007.07.003

Fonseca, C. V. C., Silveira, R. L. F. da, & Hiratuka, C. (2020). Heterogeneidade dos investidores institucionais: Evidências entre companhias não financeiras brasileiras. Estudos Econômicos (São Paulo), 50(3), 411–446. https://doi.org/10.1590/0101-41615032crc

Gabriel, F. (2011). Impacto da adesão às práticas recomendadas de governança corporativa no índice de qualidade da informação contábil [Doutorado em Controladoria e Contabilidade: Contabilidade, Universidade de São Paulo]. https://doi.org/10.11606/T.12.2011.tde-09022012-195619

Gillan, S. L., & Starks, L. T. (2000). Corporate governance proposals and shareholder activism: The role of institutional investors. Journal of Financial Economics, 57(2), 275–305. https://doi.org/10.1016/S0304-405X(00)00058-1

Gillan, S. L., & Starks, L. T. (2003). Corporate Governance, Corporate Ownership, and the Role of Institutional Investors: A Global Perspective. Journal of Applied Science, 13(2), 4–22. https://doi.org/10.2139/ssrn.439500

Gillan, S. L., & Starks, L. T. (2007). The Evolution of Shareholder Activism in the United States. Journal of Applied Corporate Finance, 19(1), 55–73. https://doi.org/10.2139/ssrn.959670

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate Governance and Equity Prices. The Quarterly Journal of Economics, 118(1), 107–156. https://doi.org/10.1162/00335530360535162

Gomtsian, S. (2019). Shareholder Engagement by Large Institutional Investors. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3412886

IBGC. (2015). Código das Melhores Práticas de Governança Corporativa.

IFC, I. F. C. (2018). Governance and Performance in Emerging Markets.

Isaksson, M., & Çelik, S. (2014). Institutional investors and ownership engagement. OECD Journal: Financial Market Trends, 2013(2), 93–114. https://doi.org/10.1787/fmt-2013-5jz734pwtrkc

Jensen, C., & Meckling, H. (1976). THEORY OF THE FIRM: MANAGERIAL BEHAVIOR, AGENCY COSTS AND OWNERSHIP STRUCTURE. Journal of Financial Economics, 3(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Kałdoński, M., Jewartowski, T., & Mizerka, J. (2020). Capital market pressure, real earnings management, and institutional ownership stability—Evidence from Poland. International Review of Financial Analysis, 71, 101315. https://doi.org/10.1016/j.irfa.2019.01.009

Katan, H., & Mat Nor, F. (2015). Institutional Ownership Heterogeneity and Firm Performance: Evidence from Malaysia. International Journal of Economics and Finance, 7(12), 176. https://doi.org/10.5539/ijef.v7n12p176

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. Journal of Financial Economics, 58(1–2), 3–27. https://doi.org/10.1016/S0304-405X(00)00065-9

Latif, K., Bhatti, A. A., & Raheman, A. (2017). Earnings Quality: A Missing Link between Corporate Governance and Firm Value. Business & Economic Review, 9(2), 255–279. https://doi.org/10.22547/BER/9.2.11

Leal, R. P. C., Carvalhal, A. L., & Iervolino, A. P. (2015). One Decade of Evolution of Corporate Governance Practices in Brazil. Revista Brasileira de Finanças, 13(1), 134–161. https://doi.org/10.2139/ssrn.2611372

Lewellen, J., & Lewellen, K. (2022). Institutional Investors and Corporate Governance: The Incentive to Be Engaged. The Journal of Finance, 77(1), 213–264. https://doi.org/10.1111/jofi.13085

Lou, K.-R., Lu, Y.-K., & Shiu, C.-Y. (2020). Monitoring role of institutional investors and acquisition performance: Evidence from East Asian markets. Pacific-Basin Finance Journal, 59, 101244. https://doi.org/10.1016/j.pacfin.2019.101244

Maranho, F. S., Bortolon, P. M., & Leal, R. P. C. (2020). The firm–investor level characteristics of institutional investor engagement in Brazil. International Journal of Disclosure and Governance, 17(4), 267–281. https://doi.org/10.1057/s41310-020-00095-w

Melo, L. C. S. (2017). Governança Corporativa e Investidores Institucionais: o Impacto do Ativismo no Desempenho das Empresas de Capital Aberto No Brasil [Mestrado em Administração]. Universidade do Sul de Santa Catarina.

Nieiro, M. A. C., & Bortolon, P. M. (2020). INVESTIDORES INSTITUCIONAIS: EVOLUÇÃO DA PARTICIPAÇÃO NAS EMPRESAS INVESTIDAS. XIV CONGRESSO ANPCONT.

OECD. (2013). TRENDS AND FACTORS IMPACTING ON LATIN AMERICAN EQUITY MARKET DEVELOPMENT.

OECD. (2014). Are institutional investors the answer for long-term development financing. Paris: OECD Publishing. https://doi.org/10.1787/dcr-2014-en

OECD. (2019). Equity Market Development in Latin America: Enhancing Access to Corporate Finance.

Okimura, R. T., Silveira, A. di M. da, & Rocha, K. C. (2007). Estrutura de Propriedade e Desempenho Corporativo no Brasil. RAC - Eletrônica, 1(1), 119–135.

Pathan, S., Haq, M., Faff, R., & Seymour, T. (2021). Institutional investor horizon and bank risk-taking. Journal of Corporate Finance, 66, 101794. https://doi.org/10.1016/j.jcorpfin.2020.101794

Punsuvo, F. R., Kayo, E. K., & Barros, L. A. B. de C. (2007). O ativismo dos fundos de pensão e a qualidade da governança corporativa. Revista Contabilidade & Finanças, 18(45), 63–72. https://doi.org/10.1590/S1519-70772007000400006

Roberts, M. R., & Whited, T. M. (2013). Endogeneity in Empirical Corporate Finance1. Em Handbook of the Economics of Finance (Vol. 2, p. 493–572). Elsevier. https://doi.org/10.1016/B978-0-44-453594-8.00007-0

Shleifer, A., & Vishny, R. W. (1997). A SURVEY OF CORPORATE GOVERNANCE. The Journal of Finance, 52(2), 737–783. https://doi.org/10.1111/j.1540-6261.1997.tb04820.x

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 5, p. 384-406, Jul./Sep. 2024

405

Silva, B. A. D. O., Caixe, D. F., & Krauter, E. (2019). RELAÇÃO ENTRE GOVERNANÃ‡A CORPORATIVA E RESTRIÇÃO FINANCEIRA EM EMPRESAS BRASILEIRAS. RGC - Revista de Governança Corporativa, 6(1). https://doi.org/10.21434/rgc.v6i1.81

Silveira, A. D. M. da, Barros, L. A. B. de C., & Famá, R. (2003). Estrutura de governança e valor das companhias abertas brasileiras. Revista de Administração de Empresas, 43(3), 50–64. https://doi.org/10.1590/S0034-75902003000300005

Silveira, A. di M. da. (2004). Governança corporativa e estrutura de propriedade: Determinantes e relação com o desempenho das empresas no Brasil [Doutorado em Administração, Universidade de São Paulo]. https://doi.org/10.11606/T.12.2004.tde-23012005-200501

Sonza, I. B., & Granzotto, A. (2018). Are pension funds good monitors? RAUSP Management Journal, 53(2), 190–201. https://doi.org/10.1016/j.rauspm.2017.06.003

Sternberg, L., Leal, R. P. C., & Bortolon, P. M. (2011). Affinities and agreements among major Brazilian shareholders. International Journal of Disclosure and Governance, 8(3), 213–228. https://doi.org/10.1057/jdg.2011.6

Valadares, S. M., & Leal, R. P. C. (2000). Ownership and Control Structure of Brazilian Companies. Abante, Escuela de Administracion. Pontificia Universidad Católica de Chile., 3(1), 29–56. https://doi.org/10.2139/ssrn.213409

Vasconcelos, L. N. C., & Martins, O. S. (2020). GOVERNANCE THROUGH STOCK TRADING IN BRAZIL: EVIDENCE WITH INSTITUTIONAL INVESTORS. RAM. Revista de Administração Mackenzie, 21(6), eRAMD200046. https://doi.org/10.1590/1678-6971/eramd200046

Wintoki, M., Linck, J., & Netter, J. (2012). Endogeneity and the dynamics of internal corporate governance. Journal of Financial Economics, 105(3), 581–606. https://doi.org/10.1016/j.jfineco.2012.03.005

Zaman, R., Jain, T., Samara, G., & Jamali, D. (2022). Corporate Governance Meets Corporate Social Responsibility: Mapping the Interface. Business & Society, 61(3), 690–752. https://doi.org/10.1177/0007650320973415

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 5, p. 384-406, Jul./Sep. 2024

406

# The Moderating Role of Corporate Reputation on the Effect of CSR on Tax Aggressiveness

**Hellen Karla de Araújo Ideião Bizerra**
*https://orcid.org/0009-0002-1328-7875*

**Yahmany Fontenelle Abrahim**
*https://orcid.org/0009-0009-8420-7634*

**Robério Dantas de França**
*https://orcid.org/0000-0001-8204-7803*

**Wenner Glaucio Lopes Lucena**
*https://orcid.org/0000-0002-2476-7383*

## Abstract

**Objective:** This study analyzed the influence of corporate reputation (CR) as a moderator of the effect of corporate social responsibility (CSR) on the tax aggressiveness of companies listed on B3.

**Method:** The sample included 106 publicly traded companies listed on the Brazilian stock exchange from 2010 to 2021, generating 1,272 observations. The panel data model was used for data analysis. The proxy for CR was the Exame Magazine Yearbook classification. For CSR, the Refinitiv Eikon® ESG score was collected. The Normalized Differential ETR was used as a proxy for tax aggressiveness.

**Results:** The results showed a negative relationship between tax aggressiveness and CR and no statistical significance between tax aggressiveness and CSR. However, the relationship is reversed when CR moderates CSR, which can be explained by the Moral Licensing Theory, in which companies with moral credits (represented by CR and high levels of CSR) would use their moral license to be more aggressive.

**Contributions:** This study proposes the Normalized Differential ETR, a measure of tax aggressiveness intended to obtain greater precision and reliability. Additionally, an innovative contribution is the analysis of the moderating role of CR on the effect of CSR on aggressiveness.

**Keywords:** Tax Aggressiveness; Corporate reputation; CSR.

## 1. Introduction

Tax aggressiveness is related to the companies' pursuit to maximize results. However, some companies perform Corporate Social Responsibility (CSR) actions that are not necessarily intended to obtain higher financial returns only, as they also expect to benefit the environment and society. Such actions even influence the decision-making of some investors, who, against the classical economic theory, would not seek to maximize their profits only but also consider how their investment benefits society. In addition to CSR, corporate reputation (CR) is another indicator that companies seek to gain more notoriety. Research on tax planning indicates that CSR and CR impact a company's tax aggressiveness (Martinez, 2017).

Tax aggressiveness is not illegal per se, but it may be considered abusive and represent a risk for a company if tax authorities question its actions and deem its behavior abusive, as Martinez (2017) notes. Some proxies are used to identify tax aggressiveness, such as Book-tax difference (BTD), which deals with the difference between accounting profit and taxable profit, and Effective Tax Rate (ETR), in which a lower ETR indicates a higher level of tax aggressiveness. In this paper, Normalized Differential ETR is adopted.

As companies engage in tax aggressiveness to maximize their results, Santos (2016) notes that it may represent an additional tool for companies to practice opportunism so that state tax inspection would function as an external governance mechanism, i.e., companies would weigh their actions according to the probability of being detected by tax authorities. However, some companies adopt these practices not necessarily to obtain higher financial returns, which is the case of companies making socially responsible investments (Guzavicius *et al.*, 2014).

Guzavicius *et al.* (2014) argue that socially responsible companies seek to promote public welfare and protect the environment. Such a notion contradicts the classical economic theory, in which companies solely aim to maximize profits. According to Khawaja and Alharbi (2021), this economic view has a divergent aspect. For long, investors were assumed to make only rational decisions, implying that they would always seek to maximize their wealth and profits. However, as these authors have found, investors may be influenced by factors unrelated to higher financial returns, such as a company's corporate reputation.

Research on tax aggressiveness found evidence of its relationship with CSR. The studies by Lanis and Richardson (2012), Montenegro (2021), and Huseynov and Klamm (2012) show a negative relationship between CSR and tax aggressiveness. The first found a negative relationship between national governance in countries of the Organization for Economic Co-operation and Development (OECD), in which CSR plays a mediating role in tax evasion. The second study investigates tax aggressiveness using two proxies associated with different dimensions of CSR, also finding that higher levels of CSR result in higher ETRs, i.e., lower levels of tax aggressiveness.

Regarding studies on corporate reputation, some divergences are found in the literature related to tax aggressiveness. According to Fombrun and Shanley (1990), an individual's decision considers actions that may culminate in a favorable or unfavorable reputation; a decision is more appropriate when it favors the company with the best reputation. Therefore, decision-makers might consider reputation when engaging with more aggressive tax practices. Studies analyze to what extent companies consider their reputation when attempting to perform such practices.

Although every action incurs a certain level of reputational risk, one explanation provided by the literature is that more aggressive tax practices are associated with the Moral Licensing Theory (MLT). According to Bai *et al.* (2017), an entity may be granted a moral license to commit dubious actions in the present given its past good deeds, i.e., past actions would ensure a company's higher reputation in the present, so that its "moral credits" would prevent hurting its reputation.

Therefore, except in some specific cases, companies with higher overall CSR indices present lower tax aggressiveness levels, while companies with a corporate reputation may or may not adopt higher tax aggressiveness, depending on the context in which they operate. Companies with higher CSR may also have a strong reputation.

López-González, Martínez-Ferrero, and García-Meca (2019) note that concern with CSR may emerge from incentives, such as having a good corporate reputation and a favorable image. Fombrun (2007) explains that companies focus on CSR practices to create a good reputation. Hence, these studies indicate that these two constructs might be associated. On the one hand, studies find evidence that CSR (Lanis, Richardson, 2012; Huseynov, Klamm, 2012; Melo et al., 2020) and corporate reputation (Bai; Lobo; Zhao, 2017; França; Monte, 2020; Dhaliwal et al., 2022; Santos; França, 2022) are individually related with tax aggressiveness. However, considering that one aspect may influence the other and no studies have analyzed the relationship between these two constructs and tax aggressiveness, this study aims to fill this gap by assessing the effect of being a reputable company performing socially responsible actions on tax aggressiveness.

Thus, this study assesses the relationship between reputable companies in the Brazilian context and tax aggressiveness and whether corporate reputation affects companies with higher CSR, considering that the latter are usually classified as less aggressive, while reputable companies might be more aggressive. Therefore, the following general research objective was established: identifying the influence of corporate reputation as a moderating factor of corporate social responsibility on the tax aggressiveness of companies listed on the Brazilian Stock Exchange. Thus, the research problem was established according to the following question: **What is the influence of corporate reputation as a moderating factor of corporate social responsibility on the tax aggressiveness of companies on the Brazilian Stock Exchange?**

Econometric models were used to answer this question, in which proxy Normalized Differential ETR was used for tax aggressiveness to identify companies considered more aggressive. Thus, this study provides a methodological contribution using an ETR to obtain more accurate and reliable analyses. It also contributes to knowledge by studying the moderating factor of corporate reputation on CSR and its effect on tax aggressiveness, which adds to the literature on aggressive tax planning. Finally, a practical contribution concerns facilitating stakeholders' understanding of how a company's tax behavior varies depending on its CSR practices and corporate reputation, which is relevant information for decision-making.

## 2. Theoretical Framework

### 2.1 Tax Aggressiveness

The definition of tax planning is broad and encompasses entirely legal practices, as well as aggressive and abusive practices. Note that tax aggressiveness has consequences for the companies' reputation, but not necessarily clashes with the law, unless it exceeds a certain limit and is characterized as abusive, though, such a concept depends on the tax authority's judgment. According to art. 187 of the Brazilian Civil Code, even if a company does not commit a tax evasion, i.e., commits a clearly illegal act, it may exceed the limits imposed by its economic or social purpose and good faith, thus constituting an unlawful act.

Therefore, tax aggressiveness is not considered illicit in this study, but a practice, in which a company assumes the risk of committing or being judged as having committed illegal acts, by abusing the law, to reduce its tax burden.

According to Zucolotto *et al.* (2020), Brazilian and international studies adopt ETR and BTD proxies to capture tax aggressiveness among companies, as these measures are associated with profit taxes. According to Rodrigues and Morgan (2022), companies aim to maximize profits and reduce its costs, though increased profits also result in higher taxes. Nevertheless, the Brazilian legislation presents mechanisms that allow companies to reduce their taxable base. As previously explained, such mechanisms can be managed and used aggressively.

ETR and BTD are measures commonly used to assess tax management, assessing discrepancies between the nominal tax rate (34%) and effective tax rate, as is the case of ETR; and the difference between taxable profit and accounting profit, which is reported in the income statement for the year before taxes, and concerns the BTD. In this study, the ETR was used as a proxy for tax aggressiveness.

### 2.2 Corporate Social Responsibility and Tax Aggressiveness: Empirical evidence

The definition and scope of corporate social responsibility and tax aggressiveness must become unmistakable. However, as Melo *et al.* (2020) note, there is no homogeneous and unquestionable definition of CSR. The main idea of this practice is that companies assume responsibilities beyond what are legally mandatory, covering environmental, social, governance, and economic issues. According to Carrol (1991), CSR implies ethical and philanthropic responsibilities.

Therefore, many studies in Accounting, Economics, and related fields have empirically tested the relationship between CSR and tax aggressiveness, such as Montenegro (2021), where a sample of OECD countries is addressed to examine the association between CSR, national governance, and tax evasion. How the interaction between the governance level and CSR affects tax evasion is also explored. His results show that the level of governance is negatively related to tax evasion. Additionally, a relationship was found for the mediating effect of national governance with CSR on evasion, i.e., the companies in countries with national solid governance and CSR (in particular, environmental disclosures) use these to mitigate reputational risks and public concern arising from tax evasion activities.

Mamede de Andrade, Rodrigues, and Cosenza (2020) found that tax management was related to ethics and CSR reports. They analyzed the financial and social responsibility information disclosed by the five leading Brazilian construction companies investigated in Brazil's Lava Jato Operation, and their results showed evidence of aggressive tax management and contradictions between tax behavior, CSR, and ethical discourse of the companies under investigation.

Lanis and Richardson (2012) studied the association between CSR and corporate tax aggressiveness. Their sample was composed of Australian businesses assessed in 2008 and 2009. Their findings show that the higher a company's level of CSR disclosure, the lower its corporate tax aggressiveness. These results remained in several specifications of the different regression models they performed. They also found that being committed to social investment, corporate strategy, ethics, and a code of business conduct are important elements of CSR that negatively impact tax aggressiveness.

Huseynov and Klamm (2012) examined the effect of three CSR measures: corporate governance, community, and diversity on the tax evasion of companies using tax services provided by S&P500 auditors. The results indicate that companies that care about the community will present higher GAAP ETR levels and Cash ETR, which is higher in companies displaying community concerns; only governance negatively affects Cash ETR, i.e., the companies were more aggressive in this case. The paper previously mentioned also shows additional evidence that CSR affects tax evasion when companies are classified according to CSR levels.

Laguir et al. (2015) conducted a study with French companies to show that the greater a company's social dimension of corporate social responsibility, the lower the level of corporate tax aggressiveness; no significance was found for the other dimensions. Laguir et al. (2015) also argue that the corporate social responsibility dimensions should not be aggregated, verifying the effect of the CSR dimensions individually, as the results may change. Finally, they verified CSR in the social, environmental, and governance contexts. The results of Melo et al. (2020) reveal a negative relationship between CSR and tax aggressiveness.

Therefore, divergent results are found in the literature regarding tax aggressiveness in some of these spheres when CSR is subdivided into different dimensions. Although, the literature generally provides evidence that companies with higher general CSR levels are less aggressive.

## 2.3 Corporate Reputation and Moral Licensing Theory

Reputation is the sum of various stakeholders' perceptions and might be considered part of corporate strategy, which companies seek to promote and always protect (Gallemore, Maydew and Thornock, 2014; Fombrun and Shanley, 1990). Theoretically, and according to Fombrun and Shanley (1990), companies will always weigh their attitudes, considering what might positively or negatively affect their reputation, and normally make decisions to maximize it.

Khawaja and Alharbi (2021) explain that a company's corporate reputation also influences investors' decision-making. However, there is a dilemma; according to classical economic theory, investors always seek to maximize their results. Furthermore, being a reputable company may not necessarily result in higher profits, and these companies may even adopt aggressive tax planning strategies (Buss, 2009; Guzavicius et al., 2014).

Along these lines, there is a parallel approach to the behavior of reputable companies, as discussed by Bai *et al.* (2017). Accordingly, a good reputation might influence aggressive tax planning levels from the perspective of Moral Licensing Theory. They found that more reputable companies are more likely to adopt tax aggressiveness. As noted by Merritt, Effron, and Monin (2010), such theory proposes that past actions considered good would allow companies or individuals to engage in questionable or even immoral and unethical behavior in the present. Thus, according to Merritt, Effron, and Monin (2010), reputable companies would be granted a moral license, or moral credit, for having accumulated good deeds in the past.

The findings of empirical research involving reputational costs associated with tax practices may diverge depending on the company's type of reputation. Gallemore, Maydew, and Thornock (2014) studied the reputation of companies accused of using tax shelters. They found that aggressive tax planning activities did not decrease after these companies were accused, i.e., even with their reputations at risk, the companies maintained the same levels of tax aggressiveness; little evidence was found that companies or their top executives bear significant reputational costs as a result of being accused of engaging in tax shelter activities.

Dhaliwal *et al.* (2022) investigated the incidence, assessment, and management of tax-related reputational costs during heightened scrutiny of corporate tax evasion, taking social protests in the USA in 2011 as a reference. The companies that incurred tax-mediated reputational costs were positively associated with negative media sentiment during the protest period but not during the pre- and post-protest periods. In other words, the companies behaved less aggressively in tax matters only when protests occurred; the media sentiment about a company influences it to lessen such practices.

Bai *et al.* (2017) sought to identify the perception of managers and other stakeholders, observing whether high levels of tax aggressiveness are related to a company's good reputation. Their findings suggest that companies with reputation indicators use their moral license. Thus, companies may risk aggressive practices when they have a history of "good deeds", represented by a high reputation indicator, thus using their moral credits despite incurring reputational risks.

On the other hand, some studies contradict these results and reinforce that reputational costs may be a preponderant factor in implementing less aggressive tax planning. For example, Graham *et al.* (2014) interviewed tax managers worldwide to identify incentives and disincentives for more aggressive tax planning. Their results indicate that reputation is an influential factor for managers, with approximately 70% of them classifying reputation as relevant; reputation ranked second in importance among all the factors explaining why companies do not adopt specific, more aggressive tax planning practices.

Some Brazilian studies, such as Santos and França (2022), have associated reputation and tax aggressiveness. Taking companies with a weak reputation as a parameter, they found that companies with a strong reputation have, on average, higher tax expenditures. Thus, they found that a weaker reputation is associated with more aggressive practices. As explained, there is no consensus on the behavior of highly reputable companies.

In short, there may be exceptions when CSR is analyzed in different spheres; however, the literature converges with the notion that companies with higher general CSR have lower levels of tax aggressiveness. Nonetheless, there is no consensus regarding corporate reputation; there may be greater tax aggressiveness depending on the context in which a company is inserted. One factor is that companies with higher CSR may also enjoy good corporate reputation. Therefore, the following study hypothesis is proposed:

**H$_1$**: Corporate reputation positively moderates the effect of corporate social responsibility on the tax aggressiveness of companies on the Brazilian Stock Exchange.
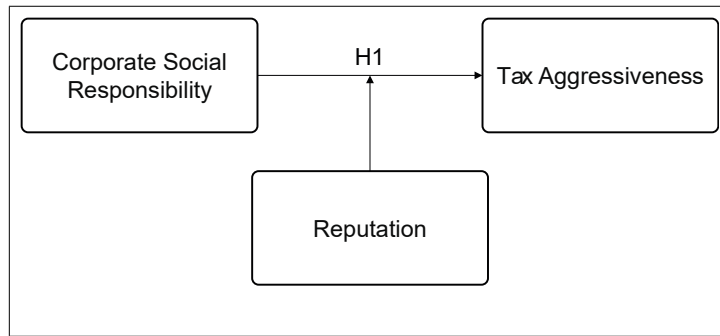
Source: developed by the authors (2022).

**Figure 1.** Study Hypothesis

Figure 1 shows the research hypothesis, which aims to clarify the effect of the interaction between CSR and corporate reputation on tax aggressiveness

## 3. Methodological Procedures

### 3.1 Study Design

This study used data collected from financial statements and websites, characterizing it as documentary research. Additionally, it is a descriptive study, as it sought to identify the relationship between corporate social responsibility, corporate reputation, and tax aggressiveness. Statistical procedures and econometric models were used to analyze data; hence, a quantitative approach was adopted here.

### 3.2 Universe and Sample

This study's universe consists of publicly traded companies listed on the Brazilian Stock Exchange (B3). Companies that did not present data from the Refinitiv Eikon® Environmental, Social, and Governance (ESG) indicator, as well as financial companies, were excluded from the sample, as the latter are subject to different tax legislation.

Table 1 shows the composition of the study sample, totaling 106 companies.

Table 1
**Sample Composition**

| Sample Composition | |
|---|---|
| Companies | 407 |
| (-) Companies with missing or insufficient data | 282 |
| = Companies with sufficient data | 125 |
| (-) Financial Companies | 19 |
| = Total of companies in the sample | 106 |

Source: developed by the authors (2022).

The study period ranged from 2010 to 2021, and it began in 2010 because of the standardization of accounting standards with CPC 32—Profit tax, which affects the data collected for the tax aggressiveness proxy, the ETR.

### 3.3 Study Variables

The classification of Revista Exame Yearbook was used as a proxy for corporate reputation, as it provides the ranking of the Melhores & Maiores Empresas do Brasil (M&M) [Best & Largest Companies in Brazil] and is one of the leading Brazilian corporate reputation indexes (Fombrum, 2007). One "1" was assigned to companies classified in the top 100th and "0" otherwise.

The metric for CSR was the score provided by the Refinitiv Eikon® ESG performance indicator, rated on a scale from 0 (D-) to 100 (A+). Such a score is assigned to companies according to 10 factors: greenhouse gas emissions, sustainable product innovation, resources use, management, shareholders, CSR strategy, workforce, human rights, and community and product responsibility, subdivided into three dimensions: environmental, social, and governance. The Refinitiv Eikon® global score, covering all these dimensions, is used in this study as the CSR metric.

Effective Tax Rate (ETR) is usually used to measure tax aggressiveness. It measures the relationship between Total Income Tax Expenses (IRPJ in Portuguese) and Social Contribution on Net Profit (CSLL in Portuguese) with Earnings Before Tax (EBT). Equation 3.1 presents its formula.

$$ETR\ GAAP = \frac{Total\ IRPJ/CSLL}{EBT} \tag{3.1}$$

In Brazil, the nominal rate is 34% (15% of IRPJ, 9% of CSLL, and 10% of additional IRPJ); thus, the interpretation of the GAAP ETR calculation is that if the values are lower than the nominal rate, the company might have engaged in some level of tax aggressiveness. As companies may present negative EBT, IRPJ, and CSLL, ETR is commonly expressed between 0 and 1 (Gupta & Newberry, 1997). Hence, "0" is assigned for ETR when negative and "1" when ETR is above 1. This procedure is done in this study to prevent outliers from distorting the estimate and having to discard them. Another way to assess tax aggressiveness is using the Differential ETR (Hanlon & Heitzman, 2010), whose formula is presented by Equation 3.2.

$$Differential\ ETR = NOMINAL\ ETR - GAAP\ ETR \tag{3.2}$$

The differential ETR measures the distance between a company's GAAP ETR and its nominal ETR, in this case, 34%. Regarding tax aggressiveness, the Differential ETR is interpreted as meaning that the higher it is, the further away a company's ETR is from its nominal ETR; hence, the greater its aggressive tax planning.

However, we should note that the sectors to which companies are associated in Brazil may present specific characteristics, such as tax incentives or exemptions, which allow adjusting the calculation of their base profit that will be taxed (Santos, Cavalcante & Rodrigues, 2013). Therefore, stating that a company is more aggressive than another in a different sector, based on its ETRs only, is not simple. Thus, the nominal ETR can be replaced by the ETR of the company's sector to incorporate the tax characteristics of that sector (Lopes, 2012).

In this case, the median of the GAAP ETRs for that sector was used to calculate the sector's ETR for the entire universe of B3 companies. The median was chosen because it is less sensitive to outliers. When obtaining the median for the sector's ETR was not possible, as in the case of a sector with companies with all ETRs equal to zero, negative, or both, we adopted the sector's nominal ETR, which is 34%.

Even so, the magnitudes of the absolute values obtained by calculating the Differential ETR may not generate adequate comparisons between companies. For example, the fact that a company presents a Differential ETR of 0.10 may indicate either that the sector's ETR would be 0.32 and the GAAP ETR 0.22 or that the sector's ETR would be 0.25 and the GAAP ETR would be 0.15, i.e., there was a proportionally larger decrease in ETR for the latter (60%) than for the first case (31.25%). Thus, the greater the magnitudes used to calculate the Differential ETR, the less sensitive the result. Therefore, this study adopted the Normalized Differential ETR shown by Equation 3.3.

$$ETR\ Diferencial\ Norm. = 1 - \frac{ETR\ GAAP}{ETR\ Setor} \qquad (3.3)$$

Thus, in addition to a company's ETR being normalized with its peers, the calculated value of a company's Normalized Differential ETR is comparable to that of companies in different sectors, considering that the distances are now measured in relative rather than absolute values. The interpretation of the results remains the same as for the Differential ETR; the further away a company's ETR is from its sector's ETR, the more aggressive it is from a tax perspective. Figure 2 illustrates this concept.
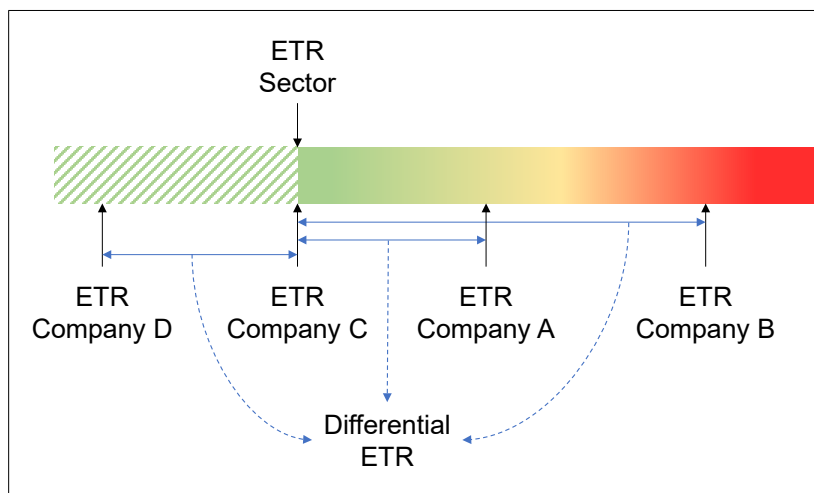


Source: developed by the authors (2022).

**Figure 2.** Interpretation of Differential ETR

Some observations regarding the values obtained in the calculation of the Normalized Differential ETR are presented in Figure 3.

| Differential ETR | Interpretation | Value used |
|---|---|---|
| Normalized Differential ETR > 0 | It indicates a positive distance between the company's ETR and its sector's ETR. In this case, the company may be engaged in some level of tax aggressiveness. | Normalized Differential ETR |
| Normalized Differential ETR = 0 | It indicates no gap between the company's ETR and that of its sector. In this case, the company is not involved in tax aggression. | 0 |
| Normalized Differential ETR < 0 | It indicates that the company's ETR is higher than its sector's. In this case, the company has not engaged in tax aggression, regardless of the magnitude of this difference. | 0 |

Source: developed by the authors (2022).

**Figure 3.** Interpretation of Differential ETRs

The control variables are arranged according to the literature, and some of the main determinants of tax aggressiveness have been selected. Thus, the variables include company size (TAM) (Zimmerman, 1983), leverage (ALV) (Dyreng, Hanlon & Maydew, 2010; Kraft, 2014), intangibility (INTG) (Liu & Cao, 2007; Chen et al., 2010), capital intensity (INTCAP) (Chen et al. 2010), inventory intensity (INTINV) (Gupta & Newberry, 1997; Richardson & Lanis, 2007), financial performance (ROA) (Richardson & Lanis, 2007; Armstrong, Blouin & Larcker, 2012), and the presence or absence of tax loss in the previous year (PF) (França & Monte, 2020). Figure 4 describes the variables adopted here.

| Variable | Description | Type | Proxy |
|---|---|---|---|
| ETR_Diff_Norm | Normalized Differential ETR | Dependent | ETR Diff. Norm. = 1 – ETR GAAP / ETR Sector. |
| CR | Corporate Reputation | Independent | Binary variable, "1" is assigned if the firm i in time t is listed on the M&M ranking, and "0" otherwise |
| CSR | ESG Score | Moderating | ESG Score from Refinitiv Eikon©, ranging from 0.00 and 100.00. |
| TAM | Size | Control | *Total Asset Log* |
| ALV | Leverage | | Total debts / Total assets |
| ITNG | Intangibility | | Intangible assets / Total assets |
| INTCAP | Capital Intensity | | Fixed assets / Total assets |
| INTINV | Inventory Intensity | | Inventory / Total assets |
| ROA | Financial Performance | | EBT / Total assets |
| PF | Tax Loss | | *Dummy, "1" is assigned if the company presented negative EBT in the previous year, and "0" otherwise.* |

Source: Developed by the author (2022)

**Figure 4.** Variables Description

The data for calculating the control variables were collected from the companies' financial statements, such as Balance Sheets, Income Statements, and Cash Flow Statements extracted from the Refinitiv Eikon® database.

### 3.4 Econometric models

Since the sample includes different companies that vary over time, the estimation for the Normalized Differential ETR was obtained through a panel data regression. Additionally, panel data modeling allows for controlling individual heterogeneity. For better visualization, all econometric models used in this study are presented in Figure 5:

---

**1st Econometric Model**

$$ETR\_Diff\_Norm_{i,t} = \beta_0 + \beta_1 RSCi,t + \beta_2 TAM_{i,t} + \beta_3 ALAV_{i,t} + \beta_4 ITNG_{i,t} + \beta_5 INTCAP_{i,t} + \beta_6 INTINV_{i,t} + \beta_7 ROA_{i,t} + \beta_8 PF_{i,t} + \beta_{11} SETOR_{i,t} + \beta12 ANO_{i,t} + \mu_{i,t}$$

**2nd Econometric Model**

$$ETR\_Diff\_Norm_{i,t} = \beta_0 + \beta_1 RC_{i,t} + \beta_2 TAM_{i,t} + \beta_3 ALAV_{i,t} + \beta_4 ITNG_{i,t} + \beta_5 INTCAP_{i,t} + \beta_6 INTINV_{i,t} + \beta_7 ROA_{i,t} + \beta_8 PF_{i,t} + \beta_{11} SETOR_{i,t} + \beta_{12} ANO_{i,t} + \mu_{i,t}$$

**3rd Econometric Model**

$$ETR\_Diff\_Norm_{i,t} = \beta_0 + \beta_1 RSC_{i,t} + \beta_2 RC + \beta_3 RSC_{i,t} * RC_{i,t} + \beta_4 TAM_{i,t} + \beta_5 ALAV_{i,t} + \beta_6 ITNG_{i,t} + \beta_7 INTCAP_{i,t} + \beta_8 INTINV_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} PF_{i,t} + \mu_{i,t}$$

Source: developed by the authors (2022).

**Figure 5.** Econometric models

Where *i* and *t* represent the company and year for each variable, respectively. Three regressions were estimated; the first two models tested the relationship between CSR and tax aggressiveness and corporate reputation with tax aggressiveness. Although studies have investigated this relationship, verifying how this behavior occurs in this study sample and whether it corroborates or contradicts the literature is relevant. Finally, the 3rd econometric model directly tests this study's research hypothesis.

## 4. Analysis and Discussion of Results

### 4.1 Descriptive Statistics

Table 2 presents the descriptive statistics of the variables used in the models for the sample of 106 companies from 2010 to 2021, totaling 1,272 observations. The mean distance between the companies' ETR and the sector's ETR was 0.105, with a standard deviation equal to 0.234. This finding shows that the companies in the sample may have engaged in some level of tax aggressiveness.

Table 2

**Descriptive Statistics**

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Normalized Differential ETR Normalized Differential | 1272 | 0.105 | 0.234 | 0 | 0.988 |
| Corporate Reputation | 1272 | 0.320 | 0.467 | 0 | 1 |
| CSR | 1272 | 31.765 | 28.879 | 0 | 90.030 |
| Size | 1272 | 21.883 | 5.395 | 0 | 27.618 |
| Leverage | 1272 | 0.320 | 0.207 | 0 | 1.928 |
| Intangibility | 1272 | 0.088 | 0.157 | 0 | 0.856 |
| Capital Intensity | 1272 | 0.222 | 0.209 | -0.398 | 0.837 |
| Inventory Intensity | 1272 | 0.075 | 0.091 | 0 | 0.601 |
| Financial Performance | 1272 | 0.049 | 0.136 | -1.419 | 2.232 |
| Tax Loss | 1272 | 154.874 | 361.927 | 0 | 1000 |

Source: developed by the authors (2022).

Regarding the variables of interest, CR and CSR, Table 3 presents the descriptive statistics, considering the variations of a given company in a given period compared to all the companies that remain in the sample throughout the study period (overall variation), the variations of a company compared to the others in the same period (between variation), and variations within the same company over time (within variation).

Table 3

**Descriptive statistics of CR and CSR considering overall, between, and within variances.**

| | Variable | Mean | Stand. Error | Min. | Max. | Observations |
|---|---|---|---|---|---|---|
| rc | overall | 0.320 | 0.467 | 0 | 1 | N = 1.272 |
| | between | | 0.395 | 0 | 1 | n = 106 |
| | within | | 0.252 | -0.597 | 1.236 | T = 12 |
| CSR | overall | 31.765 | 28.879 | 0 | 90.030 | N = 1.272 |
| | between | | 24.779 | 0.5565 | 84.294 | n = 106 |
| | within | | 15.012 | -41.459 | 96.467 | T = 12 |

Source: developed by the authors (2024).

Note that there is a greater variation between companies and over time (overall) for both variables, suggesting that estimating the model using panel data considering random effects may be the most appropriate.

## 4.2 Regression Analysis

The Chow, Breusch-Pagan, and Hausman tests were performed to identify the most appropriate model. For better workflow, the results of these tests are presented in the appendix. Both the Chow, Breusch-Pagan, and Hausman tests indicated the estimation of panel data by fixed effects as being the most appropriate for the 1st model. This estimation aims to capture the variation of individuals over time. Table 4 shows the regression results for the 1st model.

Table 4

**Results of the Regression between Normalized Differential ETR and Corporate Social Responsibility**

| ETR_DIFF_NORM | Coef. | Stand. Error | t-value | p-value | [95%CI] | | Sig |
|---|---|---|---|---|---|---|---|
| CSR | 0.001 | 0.001 | 0.94 | 0.346 | 0.001 | 0.001 | |
| Size | **0.006** | 0.002 | 3.25 | **0.001** | 0.002 | 0.010 | *** |
| Leverage | 0.012 | 0.052 | 0.23 | 0.818 | -0.009 | 0.114 | |
| Intangibility | -0.040 | 0.070 | -0.58 | 0.564 | -0.177 | 0.097 | |
| Capital Intensity | -0.063 | 0.070 | -0.91 | 0.364 | -0.200 | 0.074 | |
| Inventory Intensity | **-0.261** | 0.158 | -1.65 | **0.098** | -0.571 | 0.049 | * |
| Financial Performance | **0.265** | 0.049 | 5.44 | **0.001** | 0.169 | 0.361 | *** |
| Tax Loss | 0.001 | 0.001 | -2.91 | **0.004** | 0.001 | 0.001 | *** |
| Constant | -0.016 | 0.031 | -0.50 | 0.620 | -0.077 | 0.046 | |
| Mean dependent variable | | 0.1047 | | SD dependent variable | | | 0.2335 |
| R-squared | | 0.0814 | | Number of observations | | | 1272 |
| F-test | | 79.8958 | | Prob > F | | | 0.0000 |
| Akaike crit. (AIC) | | 0.0515 | | Bayesian crit. (BIC) | | | 0.1397 |

*** p<.01, ** p<.05, * p<.1

Model: $ETR\_Diff\_Norm_{i,t} = \beta_0 + \beta_1 RSC_{i,t} + \beta_2 TAM_{i,t} + \beta_3 ALAV_{i,t} + \beta_4 ITNG_{i,t} + \beta_5 INTCAP_{i,t} + \beta_6 INTINV_{i,t} + \beta_7 ROA_{i,t} + \beta_8 PF_{i,t} + \beta_{-11} SETOR_{i,t} + \beta_{12} ANO_{i,t} + \mu_{i,t}$

Source: Refinitv Eikon® (2022).

Although the model is statistically significant, the variable of interest (CSR) is not. Therefore, it is impossible to assess the tax aggressiveness behavior of companies with an ESG score. On the other hand, some control variables, such as size, inventory intensity, financial performance, and tax loss, were statistically significant.

The 2nd model's most appropriate regression was panel data considering random effects. Table 5 shows the results of the 2nd model.

Table 5

**Results of the Regression between Normalized Differential ETR and Corporate Reputation**

| ETR_DIFF_NORM | Coef. | Stand. Error | t-value | p-value | [95%CI] | | Sig |
|---|---|---|---|---|---|---|---|
| CR | **-0.036** | 0.018 | -2.01 | **0.045** | -0.072 | -0.001 | ** |
| Size | **0.008** | 0.002 | 4.66 | **0.001** | 0.004 | 0.011 | *** |
| Leverage | -0.041 | 0.045 | -0.91 | 0.361 | -0.129 | 0.047 | |
| Intangibility | -0.085 | 0.057 | -1.50 | 0.133 | -0.196 | 0.026 | |
| Capital Intensity | **-0.101** | 0.050 | -2.02 | **0.044** | -0.199 | -0.003 | ** |
| Inventory Intensity | **-0.203** | 0.101 | -1.84 | **0.066** | -0.419 | 0.013 | * |
| Financial Performance | **0.249** | 0.048 | 5.20 | **0.001** | 0.155 | 0.343 | *** |
| Tax Loss | **0.001** | 0.001 | -2.62 | **0.009** | 0.001 | 0.001 | *** |
| Constant | 0.003 | 0.031 | 0.09 | 0.932 | -0.057 | 0.062 | |
| Mean dependent variable | | 0.105 | | SD dependent variable | | | 0.234 |
| Overall r-squared | | 0.081 | | Number of observations | | | 1272 |
| Chi-square | | 79.896 | | Prob > chi2 | | | 0.000 |
| R-squared within | | 0.052 | | R-squared between | | | 0.140 |

*** p<.01, ** p<.05, * p<.1

Model: $ETR\_Diff\_Norm_{i,t} = \beta_0 + \beta_1 RC_{i,t} + \beta_2 TAM_{i,t} + \beta_3 ALAV_{i,t} + \beta_4 ITNG_{i,t} + \beta_5 INTCAP_{i,t} + \beta_6 INTINV_{i,t} + \beta_7 ROA_{i,t} + \beta_8 PF_{i,t} + \beta_{11} SETOR_{i,t} + \beta_{12} ANO_{i,t} + \mu_{i,t}$

Source: Refinitiv Eikon® and Revista Exame Yearbook (2022).

The variable of interest (CR) presented a coefficient of -0.036 and statistical significance, indicating that the Normalized Differential ETR for reputable companies is smaller, consequently indicating lower tax aggressiveness levels.

This result contrasts with the findings of Bai *et al.* (2017), in which higher levels of tax aggressiveness were found among more reputable companies. This study's results also contradict the results by Dhaliwal *et al.* (2022), which indicate that companies express themselves less aggressively only when facing protests and unfavorable media sentiment, showing that corporate reputation may be considered only in specific cases.

Thus, corporate reputation negatively affects the tax aggressiveness of the Brazilian companies in the sample. Finally, the most efficient estimation to verify the study hypothesis was performed through panel data regression by fixed effects. Table 6 shows the regression result for the 3rd model:

Table 6

**Results of the Regression between Normalized Differential ETR and the interaction between Corporate Reputation and CSR**

| ETR_DIFF_NORM | Coef. | Stand. Error | t-value | p-value | [95%CI] | | Sig |
|---|---|---|---|---|---|---|---|
| **CR** | **-0.062** | 0.034 | -1.82 | **0.069** | -0.129 | 0.005 | * |
| CSR | 0.001 | 0.001 | -0.06 | 0.953 | -0.001 | 0.001 | |
| **CR * CSR** | **0.001** | 0.001 | 2.00 | **0.046** | 0.001 | 0.002 | ** |
| **Size** | **0.007** | 0.002 | 3.42 | **0.001** | 0.003 | 0.011 | *** |
| Leverage | 0.013 | 0.052 | 0.25 | 0.805 | -0.089 | 0.115 | |
| Intangibility | -0.027 | 0.070 | -0.38 | 0.701 | -0.164 | 0.111 | |
| Capital Intensity | -0.064 | 0.007 | -0.92 | 0.357 | -0.201 | 0.073 | |
| Inventory Intensity | -0.251 | 0.158 | -1.59 | 0.113 | -0.560 | 0.059 | |
| **Financial Performance** | **0.267** | 0.049 | 5.49 | **0.001** | 0.172 | 0.363 | *** |
| **Tax Loss** | **0.001** | 0.001 | -2.90 | **0.004** | 0.001 | 0.001 | *** |
| Constant | -0.015 | 0.031 | -0.47 | 0.639 | -0.077 | 0.047 | |
| Mean dependent variable | | 0.10467 | | SD dependent variable | 0.23353 | | |
| Overall r-squared | | 0.08801 | | Number of observations | 1272 | | |
| Chi-square | | 95.58837 | | Prob > chi2 | 0.00000 | | |
| R-squared within | | 0.05382 | | R-squared between | 0.15503 | | |

*** p<.01, ** p<.05, * p<.1

Model: $ETR\_Diff\_Norm_{i,t} = \beta_0 + \beta_1 RSC_{i,t} + \beta_2 RC + \beta_3 RSC_{i,t} * C_{i,t} + \beta_4 TAM_{i,t} + \beta_5 ALAV_{i,t} + \beta_6 ITNG_{i,t} + \beta_7 INTCAP_{i,t} + \beta_8 INTINV_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} PF_{i,t} + \mu_{i,t}$

Source: Refinitiv Eikon® and Revista Exame Yearbook (2022).

The interaction between the CR and CSR variables was statistically significant with a coefficient of 0.001; hence, the interaction between the companies' corporate reputation and the ESG score affects tax aggressiveness. Table 7 presents the marginal effect of this interaction.

Table 7

**Marginal effect of the moderating role between Corporate Reputation and Corporate Social Responsibility**

|  | dy/dx | Stand. Error | z | P>z |  |  |
|---|---|---|---|---|---|---|
| CSR |  |  |  |  |  |  |
| 1._at: RC = 0 | **-0.000** | 0.000 | -0.060 | **0.953** | -0.001 | 0.001 |
| 2._at: RC = 1 | **0.001** | 0.001 | 2.160 | **0.031** | 0.000 | 0.002 |

Source: Refinitv Eikon® (2022).

Note that no impact on tax aggressiveness was found among companies with an ESG score only. However, an increase in the distance of the company's ETR from that of its sector was found when the company was highly reputable and presented an ESG score, although the coefficient found was very low (0.001).

## 4.3 Discussion of Results

Figure 6 shows a summary of the results. The 1st model concerning CSR showed no statistical significance. Statistically significant results were found only in the econometric model testing the effect of corporate reputation on tax aggressiveness, as well as its moderating role, i.e., the 2nd and 3rd models presented analyzable results.

The results from the 2nd model indicate a negative relationship between corporate reputation and tax aggressiveness, indicating fewer signs of aggressive tax planning among highly reputable companies.

Thus, these findings contribute to the literature and complement studies stating that companies with higher corporate reputation are less tax aggressive (Graham *et al*., 2014; Santos & França, 2022). Such results contradict studies indicating that highly reputable companies are more tax-aggressive (Bai *et al*., 2017) or even that organizations behave less aggressively at specific times only, as shown by Dhaliwal *et al.* (2022), in which entities shaped their behavior to deal with unfavorable media sentiment.
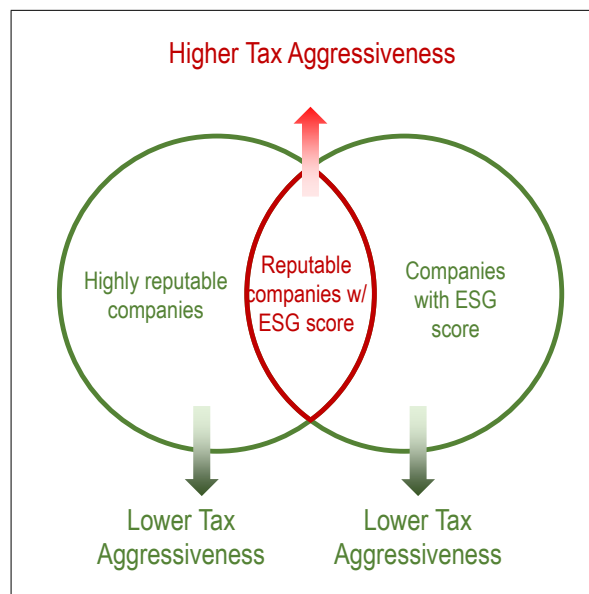


Source: developed by the authors (2024)

**Figure 6.** Marginal effect of the CR and CSR moderating role

Significance was found for the control variables size, capital intensity, inventory intensity, financial performance, and tax loss. Size showed a positive relationship with the Normalized Differential ETR, meaning larger companies more frequently engage in tax-aggressive practices. According to Delgado, Fernandez-Rodriguez, and Martinez-Arias (2012), larger companies more frequently perform tax planning and, therefore, can reduce their tax burden. Such a result contradicts the government control hypothesis, which predicts that larger companies are less tax-aggressive due to stricter government control over their taxes (Santos, Cavalcante & Rodrigues, 2013). Therefore, according to Delgado, Fernandez-Rodriguez, and Martinez-Arias (2012), the effect of tax planning is more significant than government control.

Capital and inventory intensity were significant and negatively correlated with tax aggressiveness. Although companies can deduct their income for the year through fixed assets and inventory, the negative relationship found here suggests that this strategy has not been considered by the companies in the sample, which would not aim to reduce their tax burden based on the acquisition of fixed assets or inventory.

Regarding financial performance, greater aggressiveness was found for the best-performing companies. According to França and Monte (2020), this lower taxation can be explained by greater efficiency in resource application. The tax loss variable showed statistical significance and a positive relationship with tax aggressiveness. This finding indicates that companies use their historical losses as a deductible from the calculation basis for taxes on profits, thus presenting lower ETRs and greater tax aggressiveness.

Analysis of the research hypothesis shows reversed results. These results are connected to the studies by Bai *et al.* (2017) and França and Monte (2020), as these authors found that reputation negatively influences tax aggressiveness. However, in this study, reputation interacts with CSR and exerts such influence; therefore, greater tax aggressiveness is found for the Brazilian companies in the sample of highly reputable corporates with high CSR levels.

This finding suggests that these companies could act according to the Moral Licensing Theory, considering that corporate reputation and high corporate social responsibility would grant them moral credits, leading to higher levels of aggressive tax planning. The control variables, size, financial performance, and the dummy for previous periods' tax loss were significant.

The relationship remains the same for size, suggesting that government control over larger companies would not effectively restrict them, enabling these companies to continue engaging in aggressive tax planning practices (Delgado, Fernandez-Rodriguez & Martinez-Arias, 2012). Financial performance also presented the same result as the one found in the previous regression and was positively related to tax aggressiveness. The dummy for tax loss from previous periods was also significant, though its influence on the model was minimal, close to zero (-0.001).

## 5. Final Considerations

This study achieved its objective by analyzing the influence of corporate reputation as a moderating factor of corporate social responsibility on the tax aggressiveness of companies on the Brazilian Stock Exchange. Complementary analyses were performed to contribute to the subject studied here and verify the individual effect of CR and CSR on tax aggressiveness. Hence, three models were performed: the 1st model assessed the relationship between CSR and tax aggressiveness; the 2nd model assessed the relationship between CR and tax aggressiveness; and the 3rd model assessed the moderating role of CR on the effect of CSR on tax aggressiveness. The 3rd model tested the research hypothesis, presented as follows: corporate reputation positively moderates the effect of corporate social responsibility on the tax aggressiveness of companies on the Brazilian Stock Exchange.

The result of the 1st model was statistically significant, but not for the variable of interest, CSR. Regarding the 2nd model, this study's findings contradict some studies, such as those by Bai *et al.* (2017) and Dhaliwal *et al.* (2022), who found that highly reputable companies would adopt more aggressive tax strategies. As for the result obtained with the analysis of the moderating effect, this was associated with the Moral Licensing Theory since high CSR and corporate reputation represent the achievement of moral credits resulting from the companies' past good deeds, which would grant them moral license to adopt tax aggressiveness practices in the present. Thus, the research problem was answered, and the potential motivations for this result were analyzed.

Concerning the control variables, size, financial performance, and tax loss remained significant in the regressions and always positively related to tax aggressiveness. Capital and inventory intensity suggest that the greater the acquisition of fixed assets and inventory, the lower the tax aggressiveness levels. Therefore, the companies in the sample would not be taking these aspects as part of their tax minimization strategy.

The proxy for tax aggressiveness used here was the Normalized Differential ETR, which brings a differential to this study, as it uses a measure that incorporates both the tax issues of each sector and the normalization of the calculation so that the effective rates of companies in different sectors can be compared.

Future studies are recommended to adopt other metrics of corporate reputation and tax aggressiveness and other econometric models to confirm these findings in the Brazilian context. Likewise, investigating other phenomena that may mediate or moderate the relationship between corporate social responsibility and tax aggressiveness is also relevant.

## References

Armstrong, C. S., Blouin, J. L., & Larcker, D. F. (2012). The incentives for tax planning. *Journal of Accounting and Economics*, *53*(1–2), 391–411. https://doi.org/10.1016/j.jacceco.2011.04.001

Bai, Y., Lobo, G. J., & Zhao, Y. (2017). *Reputation and Corporate Tax Planning : A Moral Licensing View Prepared for the 2017 Lone Star Accounting Research Conference.*

Buss, D. M. (2009). How Can Evolutionary Psychology Successfully Explain Personality and Individual Differences? *Perspectives on Psychological Science*, *4*(4), 359–366. https://doi.org/10.1111/j.1745-6924.2009.01138.x

Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, *34*(4), 39–48. https://doi.org/10.1016/0007-6813(91)90005-G

Chen, S., Chen, X., Cheng, Q., & Shevlin, T. (2010). Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics*, *95*(1), 41–61. https://doi.org/10.1016/j.jfineco.2009.02.003

Delgado, F. J., Fernández-Rodríguez, E., & Martínez-Arias, A. (2012). Size and other determinants of corporate effective tax rates in US listed companies. *International Research Journal of Finance and Economics*, 160–165.

Dhaliwal, D. S., Goodman, T. H., Hoffman, P. J., & Schwab, C. M. (2022). The Incidence, Valuation, and Management of Tax-Related Reputational Costs: Evidence from Negative Media Attention During Periods Characterized by High Scrutiny of Corporate Tax Avoidance. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2760366

Dyreng, S., Hanlon, M., & Maydew, E. L. (2010). The Effects of Executives on Corporate Tax Avoidance. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1158060

Fombrun, C. (2007). List of Lists: A Compilation of International Corporate Reputation Ratings. *Corporate Reputation Review*, *10*, 144–153. https://doi.org/10.1057/palgrave.crr.1550047

Fombrun, C., & Shanley, M. (1990). What's in a Name? Reputation Building and Corporate Strategy. *Academy of Management Journal*, *33*, 233–258. https://doi.org/10.2307/256324

França, R. D. de, & Monte, P. A. do. (2020). Efeitos Da Reputação Corporativa Na Tax Avoidance De Empresas Brasileiras De Capital Aberto. *Revista Universo Contábil*, *15*(4), 109. https://doi.org/10.4270/ruc.2019430

Gallemore, J., Maydew, E. L., & Thornock, J. R. (2014). The Reputational Costs of Tax Avoidance. *Contemporary Accounting Research*, *31*(4), 1103–1133. https://doi.org/10.1111/1911-3846.12055

Graham, J. R., Hanlon, M., Shevlin, T., & Shroff, N. (2014). Incentives for Tax Planning and Avoidance: Evidence from the Field. *The Accounting Review*, *89*(3), 991–1023. https://doi.org/10.2308/accr-50678

Gupta, S., & Newberry, K. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. *Journal of Accounting and Public Policy*, *16*(1), 1–34. https://econpapers.repec.org/RePEc:eee:jappol:v:16:y:1997:i:1:p:1-34

Guzavicius, A., Vilkė, R., & Barkauskas, V. (2014). Behavioural Finance: Corporate Social Responsibility Approach. *Procedia - Social and Behavioral Sciences*, *156*(April), 518–523. https://doi.org/10.1016/j.sbspro.2014.11.232

Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, *50*(2–3), 127–178. https://doi.org/10.1016/j.jacceco.2010.09.002

Huseynov, F., & Klamm, B. K. (2012). Tax avoidance, tax management and corporate social responsibility. *Journal of Corporate Finance*, *18*(4), 804–827. https://doi.org/https://doi.org/10.1016/j.jcorpfin.2012.06.005

Khawaja, M. J., & Alharbi, Z. N. (2021). Factors influencing investor behavior: an empirical study of Saudi Stock Market. *International Journal of Social Economics*, *48*(4), 587–601. https://doi.org/10.1108/IJSE-07-2020-0496

Kraft, A. (2014). What Really Affects German Firms' Effective Tax Rate? *International Journal of Financial Research*, *5*(3). https://doi.org/10.5430/ijfr.v5n3p1

Laguir, I., Staglianò, R., & Elbaz, J. (2015). Does corporate social responsibility affect corporate tax aggressiveness? *Journal of Cleaner Production*, *107*, 662–675. https://doi.org/10.1016/j.jclepro.2015.05.059

Lanis, R., & Richardson, G. (2012). Corporate social responsibility and tax aggressiveness: An empirical analysis. *Journal of Accounting and Public Policy*, *31*(1), 86–108. https://doi.org/10.1016/j.jaccpubpol.2011.10.006

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 6, p. 407-426, Jul./Sep. 2024

424

Lei n. 10.406, 10 de janeiro de 2002. Institui o Código Civil. Recuperado de https://www.planalto.gov.br/ccivil_03/leis/2002/l10406compilada.htm

Liu, X., & Cao, S. (2007). Determinants of Corporate Effective Tax Rates: Evidence from Listed Companies in China. *The Chinese Economy*, *40*(6), 49–67. https://doi.org/10.2753/CES1097-1475400603

Lopes, T. (2012). *Custos políticos tributários: o impacto do tamanho na alíquota tributária efetiva* (Vol. 3, Issue September) [Universidade de São Paulo]. https://doi.org/10.11606/T.12.2012.tde-06022013-190650

Mamede de Andrade, E. A., Rodrigues, L. L., & Cosenza, J. P. (2020). Corporate Behavior: An Exploratory Study of the Brazilian Tax Management from a Corporate Social Responsibility Perspective. *Sustainability*, *12*(11), 4404. https://doi.org/10.3390/su12114404

Martinez, A. L. (2017). Agressividade Tributária: Um Survey da Literatura. *Revista de Educação e Pesquisa Em Contabilidade (REPeC)*, *11*. https://doi.org/10.17524/repec.v11i0.1724

Melo, L. Q. de, Moraes, G. S. de C., Souza, R. M. de, & Nascimento, E. M. (2020). A responsabilidade social corporativa afeta a agressividade fiscal das firmas? Evidências do mercado acionário brasileiro. *Revista Catarinense Da Ciência Contábil*, *19*, 1–19. https://doi.org/10.16930/2237-766220203019

Merritt, A. C., Effron, D. A., & Monin, B. (2010). Moral Self-Licensing: When Being Good Frees Us to Be Bad. *Social and Personality Psychology Compass*, *4*, 344–357.

Montenegro, T. M. (2021). Tax Evasion, Corporate Social Responsibility and National Governance: A Country-Level Study. *Sustainability*, *13*(20). https://doi.org/10.3390/su132011166

Richardson, G., & Lanis, R. (2007). Determinants of the variability in corporate effective tax rates and tax reform: Evidence from Australia. *Journal of Accounting and Public Policy*, *26*(6), 689–704. https://econpapers.repec.org/RePEc:eee:jappol:v:26:y:2007:i:6:p:689-704

Santos, I. A. B., & França, R. D. (2022). Análisis de las relaciones entre reputación corporativa y tax avoidance de empresas brasileñas. *Contabilidad y Negocios*, *17*(34), 117–141. https://doi.org/10.18800/contabilidad.202202.005

Santos, M. A. C. dos. (2016). *Evasão tributária, probabilidade de detecção e escolhas contábeis : um estudo à luz da teoria de agência* [Universidade de Brasília]. https://doi.org/10.26512/2016.05.T.21537

Santos, M. A. C. dos, Cavalcante, P. R. N., & Rodrigues, R. N. (2013). Tamanho da firma e outros determinantes da tributação efetiva sobre o lucro no Brasil. *Advances in Scientific and Applied Accounting*, 179–210. https://doi.org/10.14392/ASAA.2013060204

Thomson Reuters ESG Scores (2017). Thomson-Reuters Eikon. Retrieved from http://www.esade.edu/itemsweb/biblioteca/bbdd/inbbdd/archivos/Thomson_Reuters_ESG_Scores.pdf

Zimmerman, J. L. (1983). Taxes and firm size. *Journal of Accounting and Economics*, *5*(1), 119–149. https://econpapers.repec.org/RePEc:eee:jaecon:v:5:y:1983:i::p:119-149

Zucolotto, A., Acerbe, L., Marques, V., & Jose Zanoteli, E. (2020). *Ambiente de Crise Econômica e Agressividade Tributária: Uma Análise das Empresas Listadas na [B]³ no Período de 2013-2018*.

## Appendix A. Breusch-Pagan and Hausman tests

Table 8

**Breusch-Pagan test for the 1st econometric model**

|  | Coef. |
|---|---|
| Chi-square test | 402.100 |
| Prob > chibar2 | 0.000 |

Source: Developed by the author (2024)

Table 9

**Hausman test for the 1st econometric model**

|  | Coef. |
|---|---|
| Chi-square test | 17.679 |
| P-value | 0.014 |

Source: Developed by the author (2024)).

Table 10

**Breusch-Pagan test for the 2nd econometric model**

|  | Coef. |
|---|---|
| Chi-square test value | 405.940 |
| Prob > chibar2 | 0.000 |

Source: Developed by the author (2024)

Table 11

**Hausman test for the 2nd econometric model**

|  | Coef. |
|---|---|
| Chi-square test | 13.410 |
| P-value | 0.063 |

Source: Developed by the author (2024)

Table 12

**Breusch-Pagan test for the 3rd econometric model**

|  | Coef. |
|---|---|
| Chi-square test | 380.940 |
| Prob > chibar2 | 0.000 |

Source: Developed by the author (2024)

Table 13

**Hausman test for the 3rd econometric model**

|  | Coef. |
|---|---|
| Chi-square test | 17.136 |
| P-value | 0.047 |

Source: Developed by the author (2024)

# IFRS 18 – The Forthcoming Standard for Presentation in Financial Statements: main changes, practical implications, and research opportunities

**Bruno Meirelles Salotti**
*https://orcid.org/0000-0002-2735-7048*

## 1. Introduction

The International Accounting Standards Board (IASB), the body responsible for the international accounting standardization process, issued IFRS 18, "Presentation and Disclosure in Financial Statements" (IASB, 2024), on April 9, 2024. This standard is the result of a project initiated in April 2016 and is now issued in its final form; its adoption is mandatory for fiscal years beginning in 2027. It mainly modifies the presentation format of Income Statements and requires new information related to the management-defined performance measures (MPMs).

Given this context, this editorial aims to explain, in general terms, this standard's main definitions, highlighting the most significant changes upon the current standard, established by IAS 1, "Presentation of Financial Statements" (*Pronunciamento Técnico* CPC 26 R2 in Brazil), as well as practical implications and research opportunities.

## 2. From Project to Standard – Phases of the Regulatory Process

As mentioned in the introduction, IFRS 18 emerged from a project initiated in 2016 "Primary Financial Statements." There was already an initiative before that, in 2001, between IASB and FASB (the US accounting standards body) called "Joint Financial Statement Presentation."[1] This joint project promoted by IASB and FASB was intended to achieve the long-awaited international convergence of accounting standards (Pacter, 2013). This project's scope included propositions to structure the financial statements using the operational, investment, and financing categories, as it already occurs with the Cash Flow Statement. The project was discontinued in 2011, but five years later, its central ideas gave rise to the IASB's project (now without FASB participation).

---

1   Further details at: https://www.ifrs.org/projects/completed-projects/2011/joint-financial-statement-presentation-replacement-of-ias-1/.

The "Primary Financial Statements" project reached an important milestone in December 2019, when Exposure Draft ED/2019/7 "General Presentation and Disclosures" was issued. The deadline for comments had been initially set for June 2020. However, it was extended to September 2020 due to the COVID-19 pandemic, after which IASB received 215 comment letters[2] that were analyzed to refine the draft. Figure 1 presents the 215 letters organized according to the type of stakeholder:
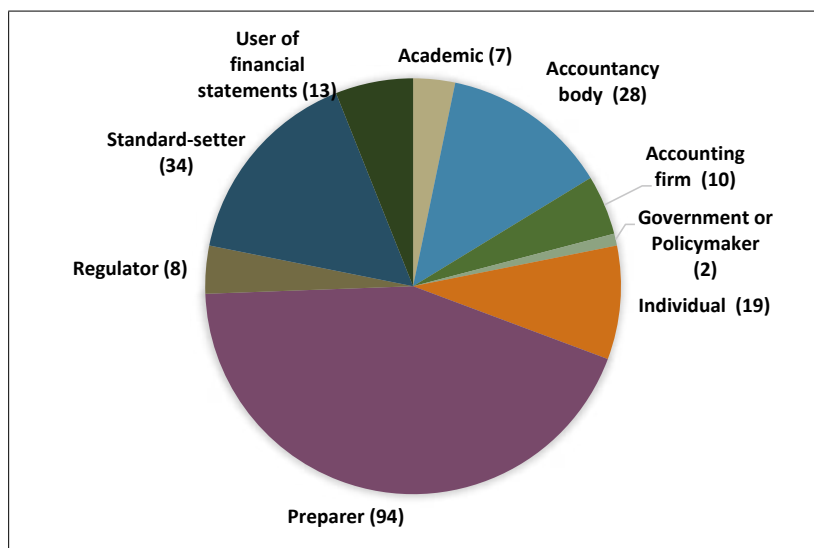


Source: IASB (2020).

**Figure 1.** Analysis of comment letters to ED/2019/7 according to the type of stakeholder

Figure 1 shows that preparers comprise the most significant group of respondents (94 letters), followed by regulatory (34 letters) and accounting bodies (28 letters). On the other hand, the potential beneficiaries of changes, those using accounting information, totaled only 13 letters, approximately 6% of the total.

In addition to the letters, the IASB conducted 139 outreach events in more than 20 jurisdictions between January and October 2020, specific fieldwork in partnership with local accounting standard issuers, and an extensive literature review, including published and working papers (IASB, 2020a).

IASB led the discussion of the results of ED/2019/7 between 2021 and 2024 and proceeded to the project's refinement phase, addressing it in virtually all meetings. The topics concerning the main changes introduced by IFRS 18 are discussed in the following section.

## 3. IFRS 18 Content and Main Changes in Accounting Standards

As previously mentioned, IFRS 18 aims to address the presentation of financial statements and will replace IAS 1 starting in 2027. Therefore, many of the IAS 1 current requirements in (*Pronunciamento Técnico* CPC 26 R2 in Brazil) will continue to apply but then as part of IFRS 18.

---

2    All comment letters are available at: *https://www.ifrs.org/projects/completed-projects/2024/primary-financial-statements/ed-primary-financial-statements/.*

Note that this standard comprises very detailed technical content: approximately 180 pages of the standard itself, another 180 pages of Basis for Conclusions, and almost 90 pages of Illustrative Examples. There are also several other reference materials, such as the Project Summary (17 pages), Effect Analysis (64 pages), Feedback Statement (31 pages), and Reference Material (31 pages). Therefore, there are almost 600 pages of content considering the official IASB material.

In addition to the IASB content, there are several educational materials from the big four (Deloitte, 2024; EY, 2024; KPMG, 2024; PwC, 2024). Note that no local version of this standard provided by CPC was available when writing this editorial.

The most relevant changes introduced by IFRS 18 concern the presentation of Income Statements and the requirement for specific disclosures related to management-defined performance measures. In addition to these two, specific adjustments are made to the other financial statements. Such changes are discussed in the following subsections.

But before that, it is worth noting that the IAS 1 general considerations remain in the new standard, though not in exactly the same format. Table 1 shows a comparison.

Table 1

**General Considerations – IAS 1 vs. IFRS 18**

| General Considerations | IAS 1 | IFRS 18 |
|---|---|---|
| Fair Presentation and Compliance | Items 15-24 | Transferred to IAS 8 - Items 6A-6J |
| Compliance | Items 25-26 | Transferred to IAS 8 - Items 6K-6L |
| Accrual Basis | Items 27-28 | Transferred to IAS 8 - Items 6M-6N |
| Materiality and Aggregation/Disaggregation | Items 29-31 | Items 19-20 and 41-43 (updated) |
| Offsetting Amount | Items 32-35 | Items 44-45 |
| Frequency of Presentation of Financial Statements | Items 36-37 | Items 28-29 |
| Comparative Information | Items 38-44 | Items 31-40 |
| Consistency of Presentation | Items 45-46 | Item 30 |

Source: developed by the author.

Table 1 shows that the first three general considerations (fair presentation and compliance, continuity, and accrual basis) were transferred to the IAS 8 standard, which is currently called "Accounting Policies, Changes in Accounting Estimates and Errors" (equivalent to *Pronunciamento Técnico* CPC 23 in Brazil). However, due to the IFRS 18 revision, it will be called "Basis of Preparation of Financial Statements." IASB explains in item BC3A of the revised IAS 8 Basis for Conclusions that this name was changed to reflect the revised content of IAS 8. Thus, the famous device True and Fair Override, previously provided for by IAS 1, is now included in the IAS 8 text.

In addition to the transfers from IAS 1 to IAS 8 previously mentioned, the concept of aggregation and disaggregation was significantly expanded, with the IASB establishing more explicit principles. According to these principles, companies must classify and aggregate assets, liabilities, equity, revenues, expenses, or cash flows into items based on common characteristics and disaggregate items based on characteristics that are not shared. Aggregation and disaggregation must not hide material information; disaggregation must be applied whenever it generates material information.

The following subsections discuss the primary changes imposed by IFRS 18.

## 3.1 Income Statement Presentation

Undoubtedly, the central scope of the project that culminated in issuing IFRS 18 is related to the format for presenting the Income Statement. The new standard generally organizes revenues and expenses into categories, similar to the Financial Statement, which will be presented in blocks of operational, investment, and financing results. There will also be two categories separate from the first three: profit tax and discontinued operations, the latter being applicable only in cases with income from discontinued operations.

The **operational category** includes the main results arising from the company's operations. Thus, for example, a business's all revenues and expenses, such as sales revenue, cost of goods sold, sales expenses, and general and administrative expenses, will be listed under this category. It is also important to highlight that the results not classified under the other categories (e.g., investment, financing, profit tax, and discontinued operations) will be residually classified in the operational category.

The **investment category** includes revenues and expenses from corporate and financial investments in general and the results arising from investment properties, such as appreciation, depreciation, or rent generated by these assets.

Finally, the **financing category** includes revenues and expenses from liabilities related to raising financing (e.g., bank loans and financing), interest income and expenses, and exchange rate variation from liabilities arising from transactions that do not involve only raising financing (e.g., lease liabilities or retirement benefit plan liabilities).

The **income tax category** records revenues and expenses from the application of IAS 12 (*Pronunciamento Técnico* CPC 32 in Brazil) and, likewise, the **discontinued operations category** records results from the application of IFRS 5 (*Pronunciamento Técnico* CPC 31 in Brazil).

Table 2 was extracted and adapted from example IE 7 presented in the Illustrative Examples of IFRS 18. Using a numerical example, it shows the presentation of the Income Statement for companies in general, using the categories previously described.

Table 2

**Structure of the New Income Statement for companies in general according to IFRS 18**

| XYZ Group - Statement of Profit or Loss for the year ended in 31/12/20X2 | | | | |
|---|---|---|---|---|
| (in thousands of CU) | | | | |
| | Note | 20x2 | 20x1 | Categories |
| Revenue | | 367.000 | 353.100 | Categories |
| Cost of Sales | 1 | (241.600) | (224.100) | |
| **Gross Profit** | | **125.400** | **129.000** | |
| Other operating income | 2 | 12.200 | 4.100 | |
| Selling expenses | 1 | (28.900) | (27.400) | |
| Research and develement expenses | 1, 2 | (25.100) | (25.900) | Operational |
| General and administrative expenses | 1, 2 | (20.900) | (22.400) | |
| Goodwill impairment loss | 1, 2 | (4.500) | — | |
| Other operating expenses | | (1.200) | (5.600) | |
| **Operating Profit** | **2** | **57.000** | **51.800** | |
| Share of profit and gains on disposal of associates | 2 | 5.300 | 7.300 | Investiment |
| **Profit before financing and income taxes** | | **62.300** | **59.100** | |
| Interest expenses on borrowings and lease liabilities | | (13.000) | (13.200) | |
| Interest expenses on pension liabilities and provisions | | (6.500) | (6.000) | Financing |
| **Profit before income taxes** | | **42.800** | **39.900** | |
| Income tax expense | 2 | (10.700) | (9.975) | Non-Profit Taxes |
| **Profit from continuing operations** | **2** | **32.100** | **29.925** | |
| Loss from discontinued operations | | — | (5.500) | Discontinued Operat. |
| **Net Profit** | | **32.100** | **24.425** | |
| Profit attributable to: | | | | |
| Owners of the parent | | 25.680 | 19.540 | |
| Non-controlling interests | | 6.420 | 4.885 | |
| | | 32.100 | 24.425 | |
| Earnings per share from continuing operations: | | | | |
| Basic and diluted | | 0,67 | 0,66 | |
| Earnings per share: | | | | |
| Basic and diluted | | 0,67 | 0,54 | |

Source: IE7 extracted and adapted from Illustrative Examples from IFRS 18.

The previous example shows that the categories are sequential. Each group of revenues and expenses classified in each category presents a subtotal of the result, which sequentially incorporates the remaining results. According to IFRS 18, the operating results subtotals, before financing and profit taxes and net results, are, as a general rule, mandatory.

Another interesting aspect is the presentation pattern of expenses classified in the operational category, which can be presented according to function or nature; note that the previous example concerns a presentation according to function.

This distinction already exists in IAS 1; however, there are two relevant aspects to highlight. The first is that income statements in Brazil usually do not present expenses according to their nature because the model established by corporate law (Law No. 6,404 from 1976) determines that the presentation of income statements is according to function. The second aspect refers to the change introduced by IFRS 18 concerning this topic. According to the standard, the choice of presentation should be based on the format that provides the most useful structured summary of an entity's expenses. Therefore, although this choice is based on a subjective judgment of the preparer of the financial statement, the choice of presentation according to nature would conflict with current Brazilian corporate law.

Another aspect important to note is that the presentation of the Income Statement for entities with a specific main business, such as investment companies, investment property companies, banks, lessors, insurance companies, etc., presents relevant modifications in the Income Statement presentation standard since these are businesses related to investments or financing.

## 3.2 Management-Defined Performance Measure

Another topic that IFRS 18 proposes is a significant novelty. A Management-Defined Performance Measure (MPM) is the subtotal of a company's revenues and expenses disclosed in public communications outside the financial statement to communicate its management's view on an aspect of its financial performance to the users of financial statements and is not required or disclosed by IFRS.

Item 118 from IFRS 18 also lists some excluded items, i.e., measures other than MPMs, such as:

a.   gross profit (and similar subtotals);
b.   operating income before depreciation, amortization, and impairment within the scope of IAS 36;
c.   operating profit and investment results according to the equity method;
d.   earnings before income taxes; and
e.   income from continuing operations.

Obviously, item "b" listed above is very similar to the famous Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) measure. So why would this measure be excluded from the list of MPMs defined by the IASB?

IASB justifies this list of excluded items in its Basis for Conclusions document, where the purpose and relationship of the totals or subtotals defined by IFRS are explained to be well-known or often presented in the income statement. Hence, in IASB's view, disclosing these measures would not add valuable information to users. However, we should remember that, in most EBITDA disclosures in annual reports, management reports, earnings releases, and similar reports, management has discretionary power to adjust EBITDA and artificially modify its numbers (Barsky & Catanach, 2014). Therefore, cases of adjusted EBITDA undoubtedly meet the MPM definition; thus, they must comply with the new disclosure requirements.

Nevertheless, according to the Basis for Conclusions, IFRS 18 did not define EBITDA or even EBIT, as companies in some segments, such as banks and insurance companies, do not use these measures. Additionally, there was no consensus on what these measures represent besides being the starting point for several analyses.

Once an MPM or MPMs are identified and defined, entities must disclose several items in a single note, as described by item 123 of IFRS 18, such as:

a. why the management believes such an MPM provides valuable information about the company's financial performance;
b. how is the MPM calculated;
c. reconcile the MPM and the most directly comparable subtotal of the Income Statement;
d. report the effects of taxes on profit and calculation criteria used; and
e. the effects on the participation of non-controlling shareholders.

Additionally, the reasons for any changes, such as in calculation criteria, additions, or cessations, must be explained, and comparative information must be presented (unless impracticable). This requirement is very relevant in the context of disclosures of non-GAAP measures, such as EBITDA, because companies often change the measures adjustment criteria from one report to another without providing any detail, reconciliation, or explanation. Therefore, accounting consistency, which is required for information in general, will also be required for these measures after IFRS 18 is adopted.

Also noteworthy is that, in 2012, the Brazilian Securities and Exchange Commission (CVM in Portuguese) started regulating the voluntary disclosure of EBITDA and EBIT for reports released from 2013 onwards (CVM Instruction No. 527, of 2012, currently replaced by CVM Resolution No. 156, of 2022). This standard must be reviewed when IFRS 18 is applied in Brazil.

## 3.3 Changes in Other Financial Statements

The other financial statements will also undergo minor changes. For example, goodwill must be presented separately from intangible assets in a specific balance sheet account. Operating profit in the CFS will become the starting point for using the indirect method, which is the presentation method companies use the most in Brazil and globally (Lourenço *et al.*, 2018).

Received and paid interest and dividends will no longer have a classification option in the CFS. They will now be presented in investment activities (received interest and dividends) and financing activities (paid interest and dividends). Note that exceptions are provided for entities with a specific main business.

## 4. Practical Implications

IFRS 18 is a general-purpose standard that will impact virtually all entities worldwide. In terms of costs and benefits, such impacts will be distributed across the entire chain of accounting information stakeholders: accountants, auditors, regulators, investors and creditors, employees, government, professors, researchers, etc.

From the perspective of preparing financial statements, accountants and auditors are the first to be affected, as they must prepare and audit information based on the new standard. This process will undoubtedly involve changes in systems and charts of accounts, implementation of new internal controls, training teams, demand more time to prepare financial statements, and increased communication costs, both internal and external, among other factors. How intense such an impact will be depends greatly on the size of companies and their existing systems and internal controls, the adaptability of their teams, their segment and business model, among other aspects. In any case, these are not trivial changes, and therefore, companies are recommended to use the implementation period (until 2027) to study the new standard and implement processes and controls to assist in this task.

Regulators will also be affected because as the standard for presenting financial statements changes, the way regulators view information from regulated entities changes. Furthermore, given the interactions and potential conflicts between accounting standards and corporate legislation in Brazil, especially Law No. 6,404 from 1976, there will be debates on how to deal with these situations. For example, according to art. 187 of the law mentioned earlier, operating income includes financial income and expenses, which does not match the concept of operating income in IFRS 18, presented in section 3.1 of this editorial. How will this and other conflicts be resolved? Stay tuned for the scenes in the following chapters.

From the users' perspective, especially investors and creditors, there will be costs to adapting their accounting information analysis systems. To be implemented from 2027 onwards, the new presentation standard will require companies to present comparative information in the same standard (according to item C2 of IFRS 18), i.e., from 2026 onwards. Additionally, in line with item C3 of IFRS 18, entities must reconcile each line of the Income Statement in the old standard compared to the new standard. Thus, users will be able to see, in an explanatory note, how IFRS 18 impacted the income statement's presentation format with the 2026 data presented in both standards.

Employees may also be impacted by the IFRS 18 adoption, especially in terms of establishing performance targets and remuneration, considering that the way companies disclose performance will take on a new format.

Governments may also be affected, as they use accounting information from entities with various purposes, the most obvious of which is corporate taxation. IFRS 18 changes the standards by which results are presented and classified; hence, such changes may impact taxes. For example, in Brazil, tax legislation differentiates operating profit from other components for specific purposes (e.g., PIS/COFINS taxation, transfer pricing calculations, offsetting of tax loss, etc.). Thus, IFRS 18 definitions have the potential to impact taxes in Brazil. Thus, this is another topic to be discussed while adapting to the new standard.

Much remains to be done in the academic milieu. Accounting and finance professors will play a fundamental role in disseminating new knowledge. Hence, they must study the new standard in-depth, adapt it to their courses, syllabuses, and curricular structures, and teach such content to the community. From a research perspective, significant impacts are also expected, as discussed in the following section.

In any case, adaptation efforts, translated into costs for all those involved, are expected to yield informational benefits. After all, the changes were designed and discussed by the IASB to improve company comparability and information transparency; ultimately, the main goal is to enable users to make better decisions.

## 5. Research Opportunities

As previously mentioned, the implementation of IFRS 18 will substantially change how companies in countries where IFRS is adopted communicate their performance. Therefore, given this significant "shock" in the reporting format, exciting research opportunities will arise, in addition to changes in databases widely used in archival research.

The literature review conducted by the IASB staff (IASB, 2020b) lists ten research topics related to the items discussed in the project that gave rise to IFRS 18. Such topics are listed below. These might be on the agenda of future research following the adoption of the new standard:

a.  usefulness of operating profit as a performance measure and benefits arising from increased comparability;
b.  usefulness of distinguishing between the operating and investment categories for investor decision-making;
c.  usefulness of using the EBIT measure, represented by the subtotal profit or loss, before the financing category and profit taxes;
d.  differentiation between investments in associates and joint ventures;
e.  relationship between the level of disaggregation of accounts and the reliability of accounting information;
f.  determinants of the choice between presenting expenses according to nature or function;
g.  presentation of unusual revenues and expenses;
h.  relevance of management performance measures;
i.  use and relevance of EBITDA; and
j.  ]flexibility in classifying specific cash flows in the CFS.

The IASB staff collected and discussed the results of academic research for each topic, listing all the references at the end for a total of 121 studies.

Thus, several research questions related to these and other topics might arise following the implementation of IFRS 18. After all, if IASB expects, at least in theory, that IFRS 18 will improve the quality of accounting information following its effective implementation, this hypothesis can and should be tested in future empirical studies.

## 6. Final Considerations

This editorial seeks to draw attention to the main changes promoted by IFRS 18, particularly the new standard for presenting the Income Statement and the new disclosure requirements for management-defined performance measures.

At first glance, this new standard could be interpreted as a relatively simple change involving changes to the chart of accounts and presentation formats. However, such changes are much deeper than that and require careful analysis, interpretation, and discernment for the effective adoption of IFRS 18. For example, an entity's business model might impact how the income statement is presented.

Furthermore, this new standard is very extensive, including several details and exceptions, which will require much energy from those involved in the accounting process in the coming years.

It is human nature to maintain the *status quo*. Therefore, changes are never easy, as adapting to IFRS 18 will not be. Hence, the coming years will be very "hot" for accounting professionals and academic researchers alike.

# References

Barsky, N. P., & Catanach, A. . J. (2014). Non-GAAP nonsense: fixing the problem once and for all. *Strategic Finance*, *96*(10), 47–51.

Deloitte. (2024). *IFRS 18 - IASB publishes new standard on presentation and disclosure in financial statements.* https://www2.deloitte.com/content/dam/Deloitte/in/Documents/audit/in-audit-ifrs-18-noexp.pdf

EY. (2024). *Applying IFRS: A closer look at IFRS 18.* https://www.ey.com/en_gl/ifrs-technical-resources/applying-ifrs-a-closer-look-at-ifrs-18

IASB. (2020a). *Staff Paper AP21A - Feedback Summary - Overview.* https://www.ifrs.org/content/dam/ifrs/meetings/2020/december/iasb/ap21a-pfs.pdf

IASB. (2020b). *Staff Paper AP21L - Feedback Summary - Literature Review.* https://www.ifrs.org/content/dam/ifrs/meetings/2020/december/iasb/ap21l-pfs.pdf

IASB. (2024). *IFRS 18 Presentation and Disclosure in Financial Statements.*

KPMG. (2024). *Presentation and disclosure - IFRS 18.* https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2024/06/isg-first-impressions-presentation-and-disclosure-ifrs-18.pdf

Lourenço, I. C., Sarquis, R., Branco, M. C., & Magro, N. (2018). International Differences in Accounting Practices Under IFRS and the Influence of the US. *Australian Accounting Review*, *28*(4), 468–481. https://doi.org/10.1111/auar.12207

Pacter, P. (2013). What Have IASB and FASB Convergence Efforts Achieved. *Journal of Accontancy*, *215*(2).

PwC. (2024). *IFRS 18 is here: redefining financial performance reporting.* https://viewpoint.pwc.com/dt/gx/en/pwc/in_briefs/in_briefs_INT/in_briefs_INT/ifrs-18-is-here-redefining-financial-performance-reporting.html

# Guidelines for Authors

## 1. Paper Submission Guidelines

To submit articles to the *Journal of Education and Research in Accounting* – REPeC authors should follow the standards and criteria set by REPeC. From January 2013, the guidelines of the American Psychological Association (APA) with regard to citations and references should be followed. Submissions not complying with the standards will be rejected.

Articles submitted to the journal must be original, i.e., cannot have been published or submitted to another journal.

Articles may be written in Portuguese, English, with at least 5,000 and maximum 9,000 words, including tables, figures, notes and references. A maximum of 5 (five) authors are allowed per article. All papers accepted will be translated and published in two languages: Portuguese and English.

Articles containing tables or figures, they [the tables and figures] should be in a format that allows them to be edited. In case some of these Figures or Tables have been imported from other programs such as Excel, Power Point etc.., the source file must also be sent as Supplementary File.

Do not use expressions like id., ibid., op. cit., loc. cit. and the like, or reference notes and footnotes. Notes at the end of the text are acceptable, but should be avoided.

The submission of articles should be done electronically, through the www.repec.org.br website. At the end of the submission an electronic message will be sent by e-mail, confirming receipt of the article.

## 2. Content and Formatting of Papers

At the moment of submission, the articles should contain:

- The **title** in the language of origin of the article (Portuguese or English) without identifying the author(s);
- An **abstract** written in the language of origin of the article (Portuguese or English) with at least 150 and at most 200 words, single space between lines, in four paragraphs containing the following elements, highlighted: **Objective, Method, Results and Contributions**. At the end of the abstract should be placed **three to five** keywords;

**Objective:** this study was aimed at investigating the relevance of accounting education and research for the growth of the Brazilian economy during the first decade of the 21st century.

**Method:** to collect the data, a structured questionnaire was used, elaborated based on the relevant literature. The questionnaire was tested and applied to a sample of Brazilian accountants and businessmen during 2017. In the analysis of these data, content analysis was applied and statistical tests were used to establish relations between the answers obtained.

**Results:** the main findings of this study indicate that the expansion of accounting education and research in Brazil was essential for the growth of the economy, according to the respondents' perception, despite the impression that accountants and businessmen need to make better use of the accounting information.

**Contributions:** from the academic viewpoint, the evidences from this research contribute to fill of an important existing gap in the Brazilian literature. What the market is concerned, they contribute by providing evidence that, despite its perceived relevance, its users need to make better use of the accounting information.

**Key words:** Education: Research; Accounting.

- The article itself, written in Portuguese or English, with at least 5,000 and at most 9,000 words, including tables, figures, notes and references.
- The pages of the articles should be properly numbered in the upper right corner, typed with Word for Windows, under the following conditions:
  - A4 paper (210 x 297 mm);
  - Times New Roman, size 12;
  - Spacing: single;
  - Paragraph input: 1.25;
  - Margins: 3cm top, 2cm bottom, 3cm left, 2cm right;
  - Tables and figures in Times New Roman, size 10;
  - Citations and references must comply with current standards of the APA (American Psychological Association).

## 3. Tables and Figures[1]

Tables and figures should be used in articles whenever their information make text comprehension more efficient, without repeating information already described in the text.

### 3.1 Tables

The table should usually show numeric or textual information organized in an orderly exposition of columns and rows. Any other statement should be characterized as textual figure.

The table should be displayed with its information visible and sufficient for their understanding and should be formatted as follows:

---

1 Most of these guidelines were adapted from the Manual for Submissions of the *Revista de Administração Contemporânea* – RAC, available at www.anpad.org.br.

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.18, n. 3, art. 7, p. 437-439, Jul./Sep. 2024

**438**

| Table editor | Word for Windows 97 or superior. In case authors have drawn their tables in Microsoft Excel or in a similar program, please remake the tables using the feature in Word |
|---|---|
| Font | Times New Roman, size 10 |
| Line spacing | Simple |
| Spacing before and after paragraphs | 3 pt |
| Table colors | Use only black and white (grayscale) |
| Title | The table title must be brief, clear and explanatory. It should be placed above the table, in the top left corner, and on the next line, just below the word Table (with a capital initial), followed by the number that designates it. The tables are presented with Arabic numerals in sequence and within the text as a whole. Eg: Table 1, Table 2, Table 3, and so on |
| Citation of tables | When citing tables in the text, type only the number referring to the table, for example Table 1, Table 2, Table 3 and so on. (the word 'Table' should be presented with the first letter capitalized). Never write 'table below', 'table above' or 'table on page XX' because the page numbers of the article may change while formatting |
| Table notes | The font used in the notes of the table should be Times New Roman, size 10, single spaced. The notes should be described in the footnote of the table, and they serve to indicate the Source of the information of the table, and other information important to understanding the table |

## 3.2 Figures

The figure should show a flow chart, a chart, a photograph, a drawing or any other illustration or textual representation.

The figure should be displayed with its information visible and adequate for its understanding, and should be formatted as follows:

| Font | Times New Roman, size 10 |
|---|---|
| Figure colors | Use only black and white (grayscale) |
| Format | Figures should be submitted in an editable format |
| Title | It explains the figure concisely, but discursively. The title should be placed under the figure and numbered with Arabic numerals in sequence, preceded by the word Figure (with initial capital). Eg: Figure 1, Figure 2, Figure 3, etc. After the title, any other information necessary for clarification of the figure or source must be added as a note |
| Captions | The caption is the explanation of the symbols used in the figure and must be placed within the limits of the figure |
| Size and proportion | Figures must fit the dimensions of the journal. Therefore, a figure should be drawn or inserted into the article so that it can be reproduced in the width of a column or page of the journal to which it will be submitted |
| Citations in the main text | When citing a figure in the text type only the number referring to the figure, e.g. Figure 1, Figure 2, Figure 3 and so on. (the word 'Figure' should be presented with the first letter capitalized). Never write 'figure below' figure above ', or even 'figure on page XX' because the page numbers of the article can be changed during formatting |

## 4. Citations and References

For the full version of the standards of citations and references according to APA (American Psychological Association), access http://www.repec.org.br/index.php/repec/article/view/1607/1237.