

Reducing Tax Aggressiveness via Information Asymmetry Mitigation: The Impact of Financial Analyst Coverage on Brazilian Companies Listed on B3.

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Abstract

This study investigates the relationship between tax aggressiveness and the number of financial analysts covering Brazilian companies listed on the B3 stock exchange between 2010 and 2021, with a focus on the role of information asymmetry. Specifically, the analysis examines metrics such as Book-Tax Differences (BTD) and Effective Tax Rates (ETR) to assess the extent to which companies employ aggressive tax practices. The findings indicate that an increase in the number of financial analysts covering a company is associated with a decrease in tax aggressiveness, which highlights the role of financial analyst coverage in mitigating information asymmetry between investors and company management. The study employs multiple regression analysis to support the hypothesis that an increase in analyst coverage has a negative impact on tax aggressiveness, which is consistent with the findings of previous research. The research has significant implications for regulators, financial statement preparers, and users who rely on accounting information in Brazil for decision-making. An increase in analyst coverage enhances business visibility and generates a heightened demand for transparent information from analysts, which helps to reduce information asymmetry and promote greater corporate integrity and accountability. Overall, the findings of this study underscore the importance of considering the relationship between information asymmetry and tax aggressiveness in Brazilian companies listed on the B3 stock exchange.

Keywords: Analyst coverage; information asymmetry; tax aggressiveness; book-tax differences; effective tax rates.

1 INTRODUCTION

The financial market is characterized by a substantial amount of asymmetric information, which can hinder investors' decision-making. In this context, financial analysts play a crucial role as gatekeepers, providing relevant and high-quality information about publicly traded companies.

Companies participating in this financial environment are exposed to monitoring and evaluation by financial analysts and independent auditors (Santos, 2003), who serve as leading intermediaries of information in the financial market alongside risk classification organizations (rating agencies) (Vasconcelos et al., 2008).

Financial analysts are responsible for processing and disseminating opinions to clarify the best scenarios for resource allocation. As a result, they play a vital role in market efficiency by contributing to reduced informational asymmetry and information diffusion (Bradley, Gokkaya & Liu, 2017).

According to Chen and Lin (2017), financial analysts possess the skills and incentives to prepare and disclose tax-related information, thus reducing information asymmetry between firms and their investors. This reduction makes it more challenging for firms to evade taxes. While there is considerable research on determinants of tax aggressiveness, it remains unclear whether the coverage of financial analysts (the primary information mediators between firms and investors) encourages or constrains corporate tax aggressiveness (Hanlon & Heitzman, 2010; Graham, Hanlon, Shevlin, & Shroff, 2014).

In the Brazilian context, Carvalho's research (2020) indicates that greater analyst coverage directly correlates with increased tax aggressiveness practiced by companies participating in B3. Companies with higher tax aggressiveness rates have more extensive financial analyst coverage, suggesting they ultimately generate information. Investor recognition of analysts is critical since the credibility of the information they provide significantly impacts investment decisions. Consequently, the demand for accurate and reliable information is high, especially in a market with increasingly volatile and competitive characteristics. However, financial analysts face constant market pressure to provide optimistic forecasts about the companies they cover to meet investors' expectations and maintain or increase demand for their recommendations. This can lead to conflicts of interest, as analysts may be tempted to compromise their independence and objectivity to secure their market position.

The primary focus of this research is to examine the impact of financial analyst coverage on tax aggressiveness among Brazilian companies listed on the B3 stock exchange. The phenomenon of tax aggressiveness involves complex accounting maneuvers adopted by companies aiming to reduce their tax liabilities. This practice can potentially undermine the transparency and accuracy of financial reporting.

This study aims to discern whether financial analyst coverage can mitigate tax aggressiveness by enhancing transparency and accountability in financial reporting, thereby reducing the information gap between investors and company management. The outcome of this research is expected to shed light on how financial analysts can foster improved tax practices among Brazilian companies, and add to the existing knowledge on factors that drive tax aggressiveness in emerging markets.

Investigating the theme of informational asymmetry measured by analysts' coverage is crucial in today's global economic scenario, particularly for emerging economies like Brazil. With the increasing role of financial analysts in shaping investors' decisions, it is essential to understand the impact of information asymmetry on investment outcomes. The findings of this study highlight the role of financial analyst coverage in mitigating information asymmetry between investors and company management, specifically in the context of tax aggressiveness.

The study's findings suggest that an increase in analyst coverage is associated with a decrease in tax aggressiveness, which is consistent with the findings of previous research in other countries. However, there is a lack of literature conversation on both favorable and unfavorable results of the theme addressed, indicating a research gap that needs to be bridged. Moreover, the implications of this study's findings are significant for regulators, financial statement preparers, and users who rely on accounting information in Brazil for decision-making. An increase in analyst coverage enhances business visibility and generates a heightened demand for transparent information from analysts, which helps to reduce information asymmetry and promote greater corporate integrity and accountability.

2 THEORETICAL FRAMEWORK

2.1 INFORMATION ASYMMETRY

Informational asymmetry occurs when some agents possess more information than others about an asset because they have privileged access to information not yet reported to general users (Camargo, Gomes, & Barbosa, 2003; Lanzana, 2004; Belo & Brasil, 2006).

Akerlof (1970) argued that the problem of information asymmetry could cause the market to lose its role as a facilitator in allocating financial resources between surplus and deficit agents.

Brown and Hellegeist (2007) state that accounting helps reduce informational asymmetry between internal and external agents, leading investors to be more inclined to invest in companies with higher informative quality. High-quality information disclosure improves firm visibility and reduces moral hazard and adverse selection, which are linked to information imbalance (Biddle & Hilary, 2006).

Healy and Palepu (2001) cite several measures to reduce information asymmetry: (i) create optimal agreements between investors and entrepreneurs and provide incentives for full disclosure, (ii) establish regulations requiring managers to provide all accounting information, and (iii) use "information intermediaries" such as auditors, financial analysts, and rating agencies.

2.2 ANALYST COVERAGE

Girão, Martins, and Paulo (2013) state that informational asymmetry cannot be observed and thus cannot be measured directly. It is necessary to use proxies as variables that capture the effect of informational asymmetry. This study uses analyst coverage as a proxy for information transparency between firms and their investors. According to Vasconcelos et al. (2008), financial analysts are the primary agents providing information in various financial markets, the accounting industry, rating companies, and independent audit firms, as they serve as communication channels.

The financial analyst's job is to collect information disclosed and processed by firms, providing opinions that attempt to clarify the most efficient options for consumers in using their resources. Financial analysts play a crucial role in market efficiency by helping disseminate information and reducing the degree of information asymmetry (Schipper, 1991; Healy & Palepu, 2001; Martinez, 2004; Bradley, Gokkaya & Liu, 2017).

Research by Martinez (2004) highlights that market analysts are perceived as professionals who analyze publicly traded companies' performance and future potential, acting as information transfer channels to less informed segments and transmitting their analyses to users. In doing so, analysts deter the effects of informational asymmetry and contribute to increasing market efficiency in other ways.

According to Chen and Lin (2017), analysts are well-trained with extensive knowledge and expertise in finance, accounting, and tax matters. Therefore, they can identify possible irregularities in companies' financial statements promptly. Furthermore, as active information intermediaries, analysts disseminate information about a company throughout the financial market. Studies by Allen et al. (2016) indicate three different views regarding the effect of analyst coverage on tax aggressiveness: (i) investor recognition, (ii) demand for information, and (iii) market pressure. In all these views, analyst coverage is used by investors as a basis for determining company values. To increase their understanding of the company's underlying financial statements, it may contain some acts of tax aggressiveness.

For Allen et al. (2016), regarding investor recognition, greater analyst coverage increases the visibility of the stocks they follow and, therefore, the visibility of the underlying firms' business practices, such as aggressive tax activities. To the extent that public disclosure

of such activities incurs nontax costs, firms with more extensive analyst coverage are more likely to limit tax aggressiveness.

In the investor recognition view, broader disclosure by financial analysts will restrict aggressive tax strategies executed by management (Allen et al., 2016). Similarly, in the information demand view, investors seek more financial information. Consequently, to the extent that public disclosure of such activities incurs various nontax costs, such as loss of reputation (Hanlon & Slemrod, 2008), greater analyst coverage reduces the returns from aggressive tax activities and, thus, diminishes firms' incentives to engage in them.

However, the market pressure view posits a different notion. It suggests that analyst coverage increases external market pressure, compelling management to take necessary steps to avoid earnings disappointment. Therefore, when investors desire more analyst coverage, they should request company management explanations. Analysts' coverage proxies contain crucial information about expected returns (Lee & So, 2017). Furthermore, companies not adequately covered by analysts may result in an information asymmetry relationship (Nakazono, Koga, & Sugo, 2020).

The relationship between tax aggressiveness and analyst coverage can be explained by the fact that companies might need to meet analysts' and investors' expectations in a highmarket-pressure environment, even if it requires aggressive accounting practices. Additionally, analyst coverage can influence investors' perception of accounting information quality and, consequently, affect the demand for the company's shares.

Studies conducted by Yu (2008) and Healy and Palepu (2001) suggest that financial analysts also play a role in identifying misconduct by directors and managers concerning discretion in the treatment of accounting figures. Hoopes (2014) states that if analysts do not clearly understand tax issues, analyst coverage will have little effect on corporate tax avoidance.

Previous published study of França and Monte (2019) have confronted the relationship between financial analyst coverage and tax aggressiveness in Brazil, but their focus and methodology differ from the present study. For instance, they used financial analyst following as a binary variable, as a proxy for reputation and compared the tax aggressiveness of companies followed by analysts to those that were not. This study found that companies that are followed by analysts tend to be less tax aggressive. However, the present study takes a different approach by using the number of analysts covering a company as the independent variable, and measure of information assymetrie and examining how financial analyst coverage affects tax aggressiveness, while controlling for other factors that may influence it.

A previous study by França and Monte (2019) examined the relationship between financial analyst coverage and tax aggressiveness in Brazil, but their research question, focus, and methodology are different from the present study. They used financial analyst following as a binary variable and proxy for reputation, and compared the tax aggressiveness of companies followed by analysts to those that were not. The study found that companies that were followed by analysts tended to be less tax aggressive.

However, the present study takes a different approach by using the number of analysts covering a company as the independent variable, which is a more precise measure of financial analyst coverage, and a proxy for information asymmetry. The focus of this study is to examine how financial analyst coverage affects tax aggressiveness, while controlling for other factors that may influence it. By using a continuous variable for financial analyst coverage, this study is able to capture the effect of the level of analyst coverage on tax aggressiveness, instead of just comparing companies with and without analyst coverage. Overall, the present study

contributes to the literature by providing a more nuanced and comprehensive understanding of the relationship between financial analyst coverage and tax aggressiveness in Brazilian companies.

Based on the objective proposed by this study and the theoretical foundation, the following research hypothesis is formulated:

H1: The level of financial analyst coverage, as a measure of information asymmetry, is negatively associated with the degree of tax aggressiveness.

The study predicts that an increase in the number of analysts covering a company will lead to a decrease in tax aggressiveness, as a higher level of analyst coverage is expected to increase transparency and accountability in financial reporting and reduce information asymmetry between investors and company management.

2.3 TAX AGGRESSIVENESS

According to Klassen, Lisowsky, and Mescall (2016), tax planning has become essential for any company to reduce taxes and plays a vital role in decision-making. Tax avoidance by corporations is widespread. For example, Hanlon and Heitzman (2010) broadly refer to tax evasion as the overt reduction of taxes.

The tax literature describes the consequences of corporate tax avoidance. Some studies (Graham et al., 2014; Chen & Lin, 2017; Menichini, 2017; Cen et al., 2017) indicate that the main advantage of tax avoidance for firms is tax savings and the resulting increased cash flow. However, tax avoidance can also have adverse effects, which include reputational damage (Hanlon & Slemrod, 2008; Chen & Lin, 2017), higher litigation risk (Graham & Tucker, 2006), tax examination expenses (Mills & Newberry, 2001; Mills, 1998), a decrease in shareholder wealth (Desai & Dharmapala, 2009), higher audit fees (Donohoe & Knechel, 2014; Hanlon et al., 2012; Kuo & Lee, 2016), substantial fines imposed by tax authorities (Li, Pittman & Wang 2019; Wilson 2009), increased risk of stock price declines (Kim, Li & Zhang 2011), and growth in the cost of capital (Isin 2018; Hasan et al. 2014).

Martinez (2017) states that tax planning is a strategy to reduce obligations with tax authorities by taking advantage of legal concessions and exemptions in tax law. It involves organizing business operations to minimize tax obligations. According to Zimmermann and Goncharov (2006), aggressive tax planning is the reduction of income tax expenses. Tang (2011) defines aggressive tax planning as a taxpayer's strategy to take advantage of ambiguities and uncertainties in tax laws to maximize its exemption in tax burden and accounting structure.

Frank, Lynch, and Rego (2009) define tax aggressiveness as tax reduction achieved through manipulation and planning, which may or may not be considered fraud (evasion). Lietz (2013) states that tax aggressiveness is the willingness of agents to reduce the tax burden that is not explicitly stated. The greater the intensity of tax cost reduction, the greater the presence of tax aggressiveness.

2.4 THE METRICS FOR TAX AGGRESSIVENESS

Based on the research conducted by Hanlon and Heitzman (2010) and Lietz (2013), the primary methods for measuring tax aggressiveness have been identified. The authors note that a significant challenge in accounting investigations related to taxation is the unavailability of

information provided to tax agencies for external users. As a result, proxies used to assess the tax burden on profits or analyze differences between accounting and tax rules are based on estimates presented in financial statements.

Hanlon and Heitzman (2010) identify two primary metrics of tax aggressiveness: (i) Book-Tax Differences (BTD) and (ii) Effective Tax Rates (ETR).

(i) BTD - The divergence between accounting profit and taxable profit, known as Book-Tax Differences (BTD), is calculated by subtracting taxable profit from accounting profit. The existence of BTD can be justified by several factors, with the most basic being the difference in objectives between profit calculation systems, which follow distinct sets of rules (Hanlon & Heitzman, 2010);

(ii) ETR - According to the definition, the Long-Term Effective Tax Rate (ETR) is the ratio between the sum of Corporate Income Tax Expenses (IRPJ + CSLL) and the profit before income tax (PBIT) (Martinez & Silva, 2017).

As per Martinez (2017), the effective tax rate is the most prominent indicator of aggressiveness. ETR measures the tax percentage imposed on a firm's performance, so more aggressive firms tend to have lower ETR percentages (Martinez & Motta, 2020). Martinez et al (2019) contends that the meaning of BTD is opposite to that of ETR. While a higher BTD value indicates greater aggressiveness, a decline in ETR suggests that a company is more aggressive.

BTD high	High aggressiveness
BTD low	Low aggressiveness
Low ETR	High aggressiveness
High ETR	Low aggressiveness

BOX 1: Relationship of BTD and ETR with tax aggressiveness

Source: Elaborated by the authors

3 METHODOLOGY

The methodology employed to verify the hypothesis was adapted from Chen and Lin's (2017) work, which involved similar research. This study focuses on the empirical evaluation, utilizing multivariate statistical analysis techniques with the assistance of STATA software.

3.1 SAMPLE SELECTION

The study sample exclusively consists of Brazilian publicly traded companies listed on B3 - Brasil, Bolsa, and Balcão. Financial analyst coverage information was collected from the Economática® database between 2010 and 2021. Companies in the financial sector were excluded from the sample due to their unique characteristics, which include different tax and accounting rules compared to other companies in the sample. Furthermore, companies with negative ETR (Effective Tax Rate) metrics and those with values greater than one were also excluded. Analyst coverage data was gathered from the Thomson Reuters/IBES database.

The table below presents the composition of the sample:

TABLE 1 : Sample Composition

Description	Quantity
Stock Exchange Companies with Analyst Coverage Information	194
(-) Financial Sector Companies	26
(-) Negative ETR companies and greater than 1	58
(=) Total companies	110
(x) Years (2011-2021)	11
Number of observations used	599

Source: Elaborated from the research data

3.2 ECONOMETRIC MODEL

A panel data regression model was used to analyze the possible variables influencing tax aggressiveness. The model captures the predictive relationship between variables of individuals over time. For this model, two metrics (*proxy*) will be used to represent tax aggressiveness, *Book Tax Difference (BTD)* and *Effective Tax Rate (ETR)*.

The BTD corresponds to the difference between the book profit and the taxed profit, and its formula can be seen below:

 $BTD_{i,t}$: Book Tax Differences = $[PBIT_{i,t} - (CIT_{i,t})/0.34]/Total Assets_{i,t-1}$

ETR, in turn, is the ratio of income tax and social contribution expenses to book profit:

 $ETR_{i,t}$: effective tax rate (ETR) – $CIT_{i,t}$ /EBIT_{i,t}

These two variables can be used as metrics for tax aggressiveness, but one must pay attention to the sign of these variables. Thus, the higher the BTD, the higher the aggressiveness, and the lower this index, the lower the aggressiveness. In turn, the ETR indicates greater aggressiveness, the lower the index.

The independent variable used to measure the impact of financial analyst coverage on tax aggressiveness is the number of analysts covering a specific company during the year, the same as Martinez (2011) and Oliveira et al. (2018). Specifically, the number of analysts covering a specific company during the year is used as a proxy for the level of information asymmetry between investors and company management.

In addition, some control variables, including ROA (Return on Assets), FinLev (Financial Leverage), FixedAssets, SIZE, and MB (Market-to-Book Ratio), were also included in the model and will be detailed below. These control variables help to isolate the effect of financial analyst coverage on tax aggressiveness, while controlling for other factors that may also influence tax aggressiveness.

By using the number of analysts covering a company as the independent variable, the study aims to examine how financial analyst coverage affects tax aggressiveness, while controlling for other factors that may influence it. The hypothesis is that an increase in the number of analysts covering a company will lead to a decrease in tax aggressiveness, as a higher level of analyst coverage is expected to increase transparency and accountability in financial reporting and reduce information asymmetry between investors and company management. The following variables were used in this research:

*Coverage*_{*i*,*t*}: *Number of analysts* covering a specific company i during the year t

FinLev_{it}: Financial Leverage, Long term debt divided by total assets

FixedAssets_{i,t}: Tangibility, Fixed Assets dividided by total assets

Size_{i,t}: Enterprise size, measured as neperian logarithm of equity market value

MB_{i,t}: Market to Book, measured as market value of assets divided

by book value of assets

ROA_{i,t}: Return of o assets, measured operational profit from current year divided

of total assets of previous year

4 RESULTS

Next is the analysis of the results by descriptive statistics to understand possible results in the regression analysis, whose data are in Table 2.

Variable	Ν	Average	Std dev	Min	Max
BTD	599	0,08	0,08	-0,03	0,89
ETR	599	0,08	0,11	0,00	0,95
Coverage	599	6,77	5,30	0,00	19,00
MB	599	1,15	1,09	0,02	7,97
Size	599	16,19	1,54	11,20	20,97
FixedAssets	599	0,23	0,19	0,00	0,80
FinLev	599	1,51	9,73	-167,36	30,35
ROA	599	7,63	11,42	-10,52	221,73

TABLE 2 : Descriptive Statistics of Variables

Source: Own preparation based on the research data.

Note: All values are adjusted for inflation

The effective tax rate (ETR) averaged over the years 8% with a standard deviation of plus or minus 11%, and these values are well below the 34% rate customarily charged. However, suppose the minimum and maximum of this index are compared. In that case, there

is a significant difference, 95 percentage points, and a standard deviation more remarkable than the average. This indicates that this variable still presents outliers even after removing the negative limits and greater than 1. The BTD, in turn, had a mean of 8% and the same percentage of the standard deviation.

The average number of analysts was 6.7, the maximum was 19, and a standard deviation below the average. Of the control variables, it is worth mentioning the return on assets and the financial leverage that presented *outliers* in the upper range.

Finally, before the econometric analysis, the correlation between the variables will be analyzed at a 5% significance level. The data in Table 3 show the correlation between all the variables studied.

Variables	BTD	ETR	Coverage	MB	Size	FixAsset	FinLev	ROA
BTD	1							
ETR	-0,3622*	1						
Coverage	-0,1578*	0,0754	1					
MB	0,3364*	-0,1326*	0,0919*	1				
Size	-0,2300*	0,0808*	0,4562*	-0,2289*	1			
FixAssets	-0,0752	0,0113	0,1652*	-0,072	0,2314*	1		
FinLev	-0,0181	-0,0683	0,0511	0,0511	-0,0213	-0,1	1	
ROA	0,7154*	-0,1418*	-0,1116*	0,1919*	-0,2398*	-0,1	-0,0146	1

TABLE 3: Correlation Among the Variables

Source: Own elaboration based on the research data. (*) variable significant at 5% level,

BTD showed a significant negative correlation with ETR, size, and analyst coverage. In turn, it showed a positive correlation with MB. This relationship is in line with what is expected in the hypotheses, coverage reducing BTD and BTD in the opposite direction of ETR. The second variable that captures tax aggressiveness, ETR, had a significant positive correlation with company size and return on assets. Finally, there was also a correlation between ETR and MB, but this relationship was negative.

The ROA variable had a high correlation with BTD, probably because both are formed by the asset split lagged by one year. Because of this high correlation, model 1 estimates the impact on BTD and does not introduce the return on assets variable to avoid multicollinearity

Model 1:

Next, in Equation 1, the functional form of the regression estimated in Model 1 is presented. In this equation, the coefficients os $\beta's$ coefficients measure the impact of each variable on the BTD.

$$BTD_{i,t} = \beta o + \beta_{1}Coverage + \beta_{2}FinLev_{i,t} + \beta_{3}FixedAssets_{i,t} + \beta_{4}Size_{i,t} + \beta_{5}MB_{i,t} + u_{i,t}$$
(1)

R ²				
Within	0,09	-		
Between	0,05	-		
Overall	0,14	-		
Variables	Coefficient	Standard error	t	P> t
Coverage	-0,003*	0,001	-3,26	0,001
MB	0,023*	0,004	5,56	0,000
Size	-0,007	0,005	-1,50	0,134
FixedAssets	-0,037	0,032	-1,14	0,253
FinLev	0,000	0,000	0,70	0,481
_cons	0,207	0,080	2,60	0,009

TABLE 4: Panel Data Model for BTD Variable (Random Effects)

Note: (*) variable significant at 1% level, (**) variable significant at 5% level, (***) variable significant at 10% level.

Source: Own preparation based on the research data.

The estimated model was the panel data random effects model, and a fixed effects model was also assessed; however, the Hausman test indicated the former as more suitable for the data (Prob>chi2 = 0.4967).

The results indicate a significant coefficient for the coverage variable with a negative sign. This suggests that an increase in analyst coverage reveals a decrease in the BTD; thus, it is possible to state that the higher the coverage, the lower the tax aggressiveness. Among the control variables, MB also showed a significant coefficient, but positive. Therefore, an increase in MB causes an expansion of the BTD, so the higher the MB, the greater the aggressiveness.

Chen and Lin (2017) examined how tax aggressiveness was related to financial analyst coverage, obtaining a result that tax aggressiveness in organizations is lower when there is higher financial analyst coverage, which corroborates the result and confirms the hypothesis of this research.

According to Hong and Kacperczyk (2010), reducing analyst coverage leads to higher informational asymmetry, allowing firms more opportunities for tax avoidance practices. Thus, more intense analyst coverage reduces tax avoidance practices by firms.

Model 2:

Equation 2 shows the functional form of the regression model that uses ETR as a *proxy for* tax aggressiveness.

$$ETR_{i,t} = \beta o + \beta_{1}Coverage + \beta_{2}FinLev_{i,t} + \beta_{3}FixedAssets_{i,t} + \beta_{4}Size_{i,t} + \beta_{5}MB_{i,t} + \beta_{6}ROA_{i,t} + u_{i,t}$$
(2)

The second model has the effective tax rate (ETR) as the dependent variable. Again, the same explanatory variables were selected for this model as in Model 1. The results are contained in Table 5.

R ²				
Within	0.05			
Between	0,02			
Overall	0,04			
Variables	Coefficient	standard error	t	P> t
Coverage	0,0025**	0,00	2,05	0,04
MB	-0,0124**	0,01	-2,19	0,03
Size	-0,0032	0,01	-0,63	0,53
FixedAssets	-0,0084	0,04	-0,24	0,81
FinLev	-0,0007	0,00	-1,60	0,11
ROA	-0,0015*	0,00	-3,56	0,00
_cons	0,1456	0,08	1,80	0,07

TABLE 5 : Panel Data Model for ETR Variable (Random Effects)

Note: (*) variable significant at 1% level, (**) variable significant at 5% level, (***) variable significant at 10% level.

Source: Own preparation based on the research data.

Model 2 was also estimated by random effects and confirmed by the Hausman test ((Prob>chi2 = 0.5275).

In the second model, the coverage variable was significant at 5% and with a positive sign, so the higher the analyst coverage, the higher the ETR and, consequently, the lower the tax aggressiveness. The MB variable and the return on assets were also statistically significant but with a negative sign. Therefore, higher MB and higher asset return imply lower ETR rates. Thus, the higher the MB and the return, the higher the tax aggressiveness.

The two models are consistent concerning the impact on tax aggressiveness. In both, analyst coverage helps to reduce corporate tax aggressiveness.

5 CONCLUSIONS AND IMPLICATIONS

The study aimed to determine whether analyst coverage influences tax aggressiveness among Brazilian publicly traded companies listed on the B3 between 2010 and 2021. The models employed were tested using multiple regression analysis. The literature review suggests that tax aggressiveness in companies decreases as financial analyst coverage increases, reducing the dispersion of information between investors and the company's management, thereby enhancing business visibility.

The findings of this research support the hypothesis that analyst coverage negatively impacts tax aggressiveness, as explored by Allen et al. (2016). Furthermore, our results are consistent with the notion that higher analyst coverage boosts the visibility and performance of firms while increasing the demand for more transparent information from analysts, ultimately reducing tax aggressiveness.

The implications of the findings in this study are significant for various stakeholders, including investors, regulators, and financial statement preparers. Firstly, the study's results indicate that financial analyst coverage can serve as an effective mechanism to reduce tax aggressiveness among Brazilian companies. This finding has important implications for mitigating information asymmetry and promoting ethical and transparent tax practices, which can contribute to a fairer tax system and reduce the potential for tax evasion or aggressive tax planning.

Secondly, the study finds that higher financial analyst coverage is associated with increased business visibility and performance of firms. This suggests that companies that adopt more transparent and less aggressive tax practices are more likely to attract investors, enhance their market reputation, and contribute to long-term sustainability.

Thirdly, the findings of this study have regulatory implications, where regulators responsible for overseeing corporate tax practices can consider policies and measures that incentivize companies to engage with financial analysts, share accurate tax information, and increase transparency in their tax reporting. These measures can promote ethical tax practices and contribute to a fairer tax system.

Finally, the study highlights the importance of financial analyst coverage for users who rely on published accounting information in Brazil for decision-making. Companies with higher financial analyst coverage are likely to provide more transparent and reliable financial information, including tax-related disclosures, which can inform stakeholders' decision-making processes and help mitigate the risks associated with tax aggressiveness.

While the study presents valuable insights, it acknowledges certain limitations such as sample size, the number of observations, and challenges in obtaining data related to analyst coverage. Future research should address these limitations and explore other variables that may influence corporate tax aggressiveness. Additionally, employing new econometric models and examining a more extended period can further enhance our understanding of the factors influencing corporate tax behavior.

In sum, the main findings of this research reveal a captivating negative association between financial analyst coverage and tax aggressiveness, illuminating that as the extent of coverage by financial analysts grows, the probability of companies employing aggressive tax practices diminishes. This captivating discovery implies that financial analyst coverage can act as a compelling catalyst for fostering the adoption of ethical and transparent tax practices, effectively mitigating information asymmetry between investors and company management. By bolstering business visibility and generating a heightened demand for transparent information from analysts, increased analyst coverage significantly contributes to the reduction of tax aggressiveness within firms, painting a picture of enhanced corporate integrity and accountability.

In conclusion, this study lays the groundwork for future research on the relationship between financial analyst coverage, tax aggressiveness, and information asymmetry in Brazilian companies. Some potential areas for further research include: i) Examining whether financial analyst coverage affects other corporate behaviors, such as financial reporting quality, investment decisions, or ESG practices. ii) Expanding the study to other countries to explore whether financial analyst coverage has a similar impact on reducing tax aggressiveness and promoting greater corporate accountability. iii) Investigating the impact of tax reforms in Brazil on financial analyst coverage and whether this has led to a reduction in tax aggressiveness among Brazilian companies. Overall, the study's findings provide a starting point for further research on this topic.

REFERENCES

- Akerlof, G. A. (1970). The Market for "Lemons": *Quality uncertainty and the Market Mechanism. Quarterly Journal of Economics*, 84(3). 488-500.
- Akerlof, G. A., & Kranton, R. E. (2000). Economics and identity. *The Quarterly Journal of Economics*, 115(3), 715-753.
- Allen, A., Francis, B. B., Wu, Q., & Zhao, Y. (2016). Analyst coverage and corporate tax aggressiveness. *Journal of Banking & Finance*, 73, 84-98.
- Belo, N. M., & Brasil, H. G. (2006). Assimetria informacional e eficiência semiforte de mercado. *Revista de Administração de Empresas RAE*, 46, 48-57.
- Biddle, G. C., & Hilary, G. (2006). Accounting quality and firm-level capital investiment. *The Accounting Review*, 81(5), 963-982.
- Bradley, D., Gokkaya, S., & Liu, X. (2017). Before an analyst becomes an analyst: Does industry experience matter? *The Journal of Finance*, 72(2), 751-792.
- Brown, S., & Hillegeist, S. A. (2007). How disclosure quality affects the level of information asymmetry. *Review of Accounting Studies*, 12, 443-477.
- Camargo, M. A., Gomes, G. D., & Barbosa, F. V. (2003). Integração de mercados e arbitragem com títulos transfronteiriços: ADRS – american depositary receipts. *Caderno de Pesquisas em Administração*, 10(2), 51-67.
- Carvalho, T. A. (2020). *Cobertura de analistas e agressividade fiscal no Brasil*. 2020. Dissertação (Mestrado em Ciências Contábeis), Fundação de Pesquisa e Ensino, Vitória.
- Cen, L., Maydew E., Zhang, L., & Zuo, L. (2017) Customer-supplier relationships and corporate tax avoidance. *Journal of Financial Economics*, 123, 377–394.
- Chen, T., & Lin, C. (2017). Does information asymmetry affect corporate tax aggressiveness?. *Journal of Financial and Quantitative Analysis*, 52(5), 2053-2081.

- Coman, A., Koller, G., & Ronen, B. (2009). The application of focused management in the electronics industry: A case study. *Production and Inventory Management*, 2, 65–70.
- Culiberg, B., & Bajde, D. (2014). Do You Need a Receipt? Exploring Consumer Participation in Consumption Tax Evasion as an Ethical Dilemma. *Journal of Business Ethics*, 124, 271-282.
- Desai, M. A., & Dharmapala, D. (2009a) "Corporate Tax Avoidance and Firm Value" *Review* of Economics and Statistics, 91, 537–546.
- Desai, M. A., & Dharmapala, D. (2009b). "Earnings Management, Corporate Tax Shelters, and Book-Tax Alignment." *National Tax Journal*, 62, 169–186.
- Donohoe, M. P., & Knechel, W. R. (2014) Does corporate tax aggressiveness infuence audit pricing? *Contemporary Accounting Research*, 31(1), 284–308.
- França, R. D. de, & Monte, P. A. do. (2019). Efeitos Da Reputação Corporativa Na Tax Avoidance De Empresas Brasileiras De Capital Aberto. Revista Universo Contabil, 15(4), 109–126.
- Frank, M. M., Lynch, L. J., & Rego, S. O. (2009). Tax Reporting Aggressiveness and Its Relation to Aggressive Financial Reporting. *The Accounting Review*, 84(2), 467–496.
- Girão, L. F. A. P., Martins, O. S., & Paulo, E. (2013). Avaliação de empresas e probabilidade de negociação com informação privilegiada no mercado brasileiro de capitais. *Revista de Administração da USP (RAUSP)*, 49(3), p. 462-475.
- Graham, J. R., Hanlon, M., Shevlin, T., & Shroff, N. (2014). "Incentives for Tax Planning and Avoidance: Evidence from the Field." *Accounting Review*, 89, 991-1023.
- Graham J. R., & Tucker, A. L. (2006). Tax shelters and corporate debt policy. *Journal of Financial Economics*, 81(3), 563–594.
- Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, 50(2), 127-178.
- Hanlon, M. (2005). "The Persistence and Pricing of Earnings, Accruals, and Cash Flows When Firms HaveLarge Book-Tax Differences." *Accounting Review*, 80, 137–166.
- Hanlon, M., & Slemrod, J. (2008). What does tax aggressiveness signal? Evidence from stock price reactions to news about tax shelter involvement. *Journal of Public Economics*, 93(1-2), 126-141.
- Hanlon, M., Krishnan, G. V., & Mills, L. F. (2012). Audit fees and book-tax diferences. *The Journal of the American Taxation Association*, 34(1), 55–86.
- Hasan, I., Hoi, C. K., Wu, Q., & Zhang, H. (2014) Beauty is in the eye of the beholder: the effect of corporate tax avoidance on the cost of bank loans. *Journal of Financial Economics*, 113(1),109–130.
- Healy, P. M.; Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: a review of the disclosure literature. *Journal of Accounting and Economics*, 31, 405-440.
- Hong, H., & Kacperczyk, M. (2010). "Competition and Bias." *Quarterly Journal of Economics*, 125,1683–1725.
- Hoopes, J. (2014). Financial Accounting Consequences of Temporary Tax Law: Evidence from the R&D Tax Credit. *Working Paper*, Ohio State University.

- Isin, A. A. (2018). Tax avoidance and cost of debt: the case for loan-specifc risk mitigation and public debt fnancing. *Journal of Corporate Finance*, 49(1), 344–378.
- Kim, J. B., Li, Y., & Zhang, L. (2011). Corporate Tax Avoidance and Stock Price Crash Risk: Firm-Level Analysis. *Journal of Financial Economics*, 100,639–662.
- Klassen, K. J., Lisowsky, P., & Mescall, D. (2016). The Role of Auditors, Non-Auditors, and Internal Tax Departments in Corporate Tax Aggressiveness. *The Accounting Review*, 91(1), 179–205.
- Kuo, N. T., & Lee, C. F. (2016) A potential beneft of increasing book-tax conformity: evidence from the reduction in audit fees. *Review of Accounting Studies*, 21(4),1287–1326.
- Lanzana, A. P. (2004). *Relação entre disclosure e governança corporativa das empresas brasileiras*. Dissertação (Mestrado em Administração) Faculdade de Economia e Administração e Contabilidade, Universidade de São Paulo, São Paulo.
- Lee, C. M. C., & So, E. C. (2017) Uncovering expected returns: information in analyst coverage proxies. *Journal Financial Economics*, 124(2), 331–348.
- Li, W., Pittman, J., & Wang, Z. (2019) The determinants and consequences of tax audits: some evidence from China. *Journal of American Taxation Association*, 41(1), 91-122.
- Lietz, G. (2013). Tax Avoidance vs. Tax Aggressiveness: A Unifying Conceptual Framework. *Social Science Research Network – SSRN*. Rochester, NY.
- Martinez, A. L. (2004). Analisando os analistas: estudo empírico das projeções de lucros e das recomendações dos analistas de mercado de capitais para as empresas brasileiras de capital aberto. 2004. Tese [Doutorado em Administração de Empresas]. São Paulo – Escola de Administração de Empresas de São Paulo da Fundação Getúlio Vargas.
- Martinez, A. L. (2011). The role of analysts as gatekeepers: Enhancing transparency and curbing earnings management in Brazil. *Revista de Administração Contemporânea*, *15*(4), 712–730.
- Martinez, A. L. (2017). Agressividade tributária: um Survey da literatura. *Revista de Educação e Pesquisa em Contabilidade*, *11*, 106-124.
- Martinez, A. L., & Silva, R. F. (2017). Agressividade Fiscal e o Custo de Capital de Terceiros no Brasil. *Revista de Gestão, Finanças e Contabilidade*, 7(1), 240–251.
- Martinez, A. L., Ribeiro, A. C., & Funchal, B. (2019). Sarbanez Oxley Act and Taxation: A study of the effects of the tax aggressiveness of brazilian firms. *Contabilidade Vista & Revista*, 30(1).
- Martinez, A. L., & Motta, F. P. (2020). Tax Aggressiveness of Government-Controlled Corporations in Brazil. *Revista Contemporânea de Contabilidade*, 17(43), 136-148.
- Menichini, A. A. (2017) On the value and determinants of the interest tax shields. *Review of Quantitative Finance and Accounting*, 48,725–748.
- Mills, L. F., & Newberry, K. J. (2001) The Influence of Tax and Nontax Costs on Book-Tax Reporting Differences: Public and Private Firms. *Journal of the American Taxation Association*, 1, 1-19.
- Mills, L. F. (1998). Book-Tax Differences and Internal Revenue Service Adjustments. *Journal* of Accounting Research, 36(2), 343-356.

- Nakazono, Y., Koga, M., & Sugo, T. (2020). Private information and analyst coverage: Evidence from firm survey data. *Journal of Economic Behavior & Organization*, 174, 284-298.
- Oliveira, R. X. de, Goncalves, R. de S., Medeiros, O. R. de, & Fernandes, B. V. R. (2018). Cobertura de Analistas e Mercado Social Disclosure: Evidencias em Empress Brasileiros Abertas. *Advances in Scientific and Applied Accounting*, 024–046.
- Santos, J. A. (2003). *Teoria Fiscal*. Instituto Superior de Ciências Sociais e Políticas, Universidade Técnica de Lisboa, Lisboa.
- Schipper, K. (1991). Analysts' forecasts. Accounting Horizons, 5 (4), 105-121.
- Tang, T. Y. H. (2011). Does Book-Tax Conformity Deter Opportunistic Book and Tax Reporting? An International Analysis. *European Accounting Review*, 24(3).
- Vasconcelos, C., Miyashiro, I., Reis, D., & Paulo, E. (2008). A influência da cobertura das empresas de rating sobre o gerenciamento de resultados das companhias abertas brasileiras. *Revista de Contabilidade e Organizações*, 2(3), 37-52.
- Yu, F. (2008). Analyst Coverage and Earnings Management. *Journal of Financial Economics*, 88, 245–271.
- Wilson, R. J. (2009) An examination of corporate tax shelter participants. *The Accounting Review*, 84(3), 969–999.
- Zimmermann, J., & Goncharov, I. (2006). Earnings management when incentives compete: the role of tax accounting in Russia. *Journal of International Accounting Research*, 5(1), 41– 65.