

Relationship between executive variable compensation and tax aggressiveness: The moderating role of national culture

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Abstract

Objective: To examine the moderating role of national culture in the relationship between executive variable compensation and tax aggressiveness.

Method: The study population comprised non-financial firms listed on stock exchanges and located in G-20 countries. The sample included 29,148 firms and 80,891 firm-year observations from 2013 to 2021. The abnormal portion of Book-Tax Differences (ABTD) was used as a proxy for tax aggressiveness. Data were obtained from the Refinitiv Eikon® database, and analyses were conducted using multiple linear regression (OLS) with panel data and fixed effects.

Results: Executive variable compensation is positively associated with tax aggressiveness. Regarding the moderating role of national culture, the results indicate that this positive association is stronger in countries with high individualism, masculinity, and indulgence, and weaker in countries with high power distance, uncertainty avoidance, and long-term orientation.

Contributions: National culture influences the effectiveness of performance-based compensation contracts and shapes corporate tax behavior. These findings contribute to the design of executive compensation strategies that align with shareholder objectives while accounting for cultural context.

Keywords: executive compensation; tax aggressiveness; national culture.

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1 Introduction

Income taxation influences corporate decision-making, as taxes significantly affect financial choices, organizational structure and potential restructuring, as well as dividend distribution and executive compensation policies (Desai & Dharmapala, 2006). Because corporate taxes are among the highest costs for firms (Armstrong et al., 2012), reducing tax expenses is desirable to shareholders, as it aligns with the firm's profit-maximization objective (Hanlon & Heitzman, 2010; Wang et al., 2020).

In this context, tax planning is considered beneficial to firms, as reducing tax expenses implies increased cash flows for both the company and, residually, its shareholders, generally leading to higher firm value (Martinez, 2017; Wang et al., 2020). In the international literature, the term *tax avoidance* is commonly used to describe corporate behavior aimed at reducing tax burdens. In contrast, Brazilian literature often refers to this behavior as tax aggressiveness (Martinez, 2017).

However, the separation of ownership and control allows managers to make tax decisions that serve their own interests, to the detriment of shareholders (Hanlon & Heitzman, 2010, Slemrod, 2004). Managers hold private information—unavailable to shareholders—about tax reduction opportunities and may use it to set the firm's tax burden at a level that best suits their compensation arrangements.

Thus, one strand of the literature argues that executive variable compensation is positively associated with tax aggressiveness (Gaertner, 2014; Gomes, 2016; Minnick & Noga, 2010; Rego & Wilson, 2012). Complementary evidence from Huang et al. (2018) shows that cash-based executive compensation—without variable incentives tied to stock options—was negatively associated with tax aggressiveness in the Chinese context. Conversely, some studies have failed to consistently demonstrate a significant relationship between executive compensation and tax aggressiveness. For instance, Phillips (2003) found a significant association between tax aggressiveness and bonuses paid to business unit managers, but not between tax aggressiveness and bonuses paid to CEOs. Similarly, Armstrong et al. (2012) found little evidence that tax directors' compensation is related to measures of tax aggressiveness.

This study assumes that the mixed findings in the literature may be explained by the cultural context of the countries where the studies were conducted. It therefore raises questions of whether national culture influences the relationship between executive compensation and tax aggressiveness. According to Hofstede's definition (1980; 2011), culture is the collective programming of the mind that distinguishes the members of one group or category from others. Hofstede further argues that a group's culture, such as that of a country, is acquired early in life and becomes far more deeply rooted in individuals' minds than knowledge gained in school or at work.

Hofstede's (1980, 2011) six cultural dimensions—power distance, individualism *versus* collectivism, masculinity *versus* femininity, uncertainty avoidance, long-term *versus* short-term orientation, and indulgence *versus* restraint—may shape how managers respond to the incentives embedded in their compensation contracts, thereby influencing the firm's level of tax aggressiveness. Based on this premise, this study addresses the following research question: **Does national culture moderate the relationship between executive variable compensation and corporate tax aggressiveness?** Accordingly, the objective of this study is to examine the moderating role of national culture in the relationship between executive variable compensation and corporate tax aggressiveness.

Previous studies have identified a relationship between national culture and tax aggressiveness (Bame-Aldred et al., 2013; Richardson, 2008; Tsakumis et al., 2007), but none have examined its interaction with executive compensation as a determinant of tax avoidance. Another gap this study seeks to address is the lack of research in Brazil on the relationship between national culture and tax aggressiveness.

Only one study has examined the relationship between Hofstede's (1980, 2011) last two dimensions—long-term *versus* short-term orientation and indulgence *versus* restraint—and tax avoidance (Ribeiro, 2018). Addressing this gap represents an additional contribution of the present study.

2 Antecedents and Study Hypotheses

Corporate tax planning activities have important economic implications, as they can enhance shareholder wealth by generating cash savings and increasing corporate investment (Minnick & Noga, 2010). Firms are therefore inclined to engage in tax planning when it is regarded as a value-enhancing activity.

The concept of tax planning involves the prior analysis of business transactions, focusing on their legal and economic effects, with the aim of reducing financial outlays. Depending on the subsequent judgment of tax authorities and/or the Judiciary, tax planning activities and strategies may be classified as either tax avoidance or tax evasion (Lietz, 2013; Martinez, 2017). Tax avoidance refers to legal practices that reduce a firm's tax burden, whereas tax evasion involves illegal practices that may result in sanctions imposed by regulatory agencies (Hanlon & Heitzman, 2010; Wang et al., 2020; Martinez, 2017; Morais & Macedo, 2021).

Tax aggressiveness encompasses all actions aimed at reducing tax expenses, ranging from low to high levels of uncertainty regarding legality (Francis et al., 2022; Hanlon & Heitzman, 2010; Lisowsky et al., 2013). This uncertainty arises from the complexity of tax legislation. Business decisions with tax impacts vary according to firm characteristics (such as size, profitability, and governance) and managerial attributes. Studies suggest that tax aggressiveness may be associated with executive compensation and managerial ability (Desai & Dharmapala, 2006; Francis et al., 2016; Koester et al., 2017; Rego & Wilson, 2012).

Managers play a central role in determining a firm's level of tax aggressiveness (Desai & Dharmapala, 2006). According to Shackelford and Shevlin (2001), tax decisions require balancing risks and opportunities while taking into account the costs and impacts for all stakeholders (Martinez, 2017). Shareholders, in turn, influence these decisions through the design of executive compensation structures.

Performance-based compensation, especially variable compensation, gained prominence in the 1990s, coinciding with the growing divergence between accounting and taxable incomes (Desai & Dharmapala, 2006). CEOs play a pivotal role in both resource allocation and corporate tax strategy (Armstrong et al., 2012; Minnick & Noga, 2010). Dyreng et al. (2010) further demonstrate that executives exert a significant influence on firms' tax aggressiveness.

Phillips (2003) found that firms compensating managers based on after-tax income exhibited lower effective tax rates, suggesting managerial involvement in tax planning. However, the study found no significant relationship between CEO variable compensation and tax aggressiveness, a limitation that Gaertner (2014) attributed to the small sample size. In a subsequent study, Gaertner (2014) confirmed that CEO variable compensation was positively associated with tax aggressiveness, indicating that CEOs are rewarded for assuming tax risk (Costa, 2022).

Minnick and Noga (2010) identified a relationship between long-term incentives and reductions in the effective tax rate, reinforcing the link between variable compensation and tax aggressiveness. Chee et al. (2017) highlighted a non-linear relationship: at lower salary levels, there is an incentive for tax aggressiveness, whereas at higher levels, behavior becomes more conservative due to risk aversion.

Contrary to these findings, Desai and Dharmapala (2006) argued that variable compensation reduces tax aggressiveness by improving alignment between managers and shareholders, who are not interested in tax strategies that reduce transparency and enable managerial manipulation. The moderating effect of corporate governance may also shape this relationship.

Armstrong et al. (2012) found no evidence that CEO variable compensation was associated with tax aggressiveness, but they did show that the compensation of tax directors affects the effective tax rate. This suggests that the incentive structure of senior management as a whole, rather than the CEO alone, can influence tax aggressiveness.

Despite mixed results, the literature suggests that executive variable compensation encourages behaviors aligned with shareholder expectations in managing tax expenses. Managers tend to be more risk-averse toward taxation than shareholders, as they cannot diversify their employment and may be held personally liable for unpaid taxes (Eisenhardt, 1989; Moretti & Costa, 2016; Costa, 2022). Consequently, information asymmetry and risk perception play a critical role in shaping tax decisions (Chen & Chu, 2005; Crocker & Slemrod, 2005).

The compensation contract serves to align the interests of managers and shareholders (Jensen & Meckling, 1976; Santos et al., 2015). Variable compensation, particularly when tied to after-tax income, can offset the risk borne by managers and promote greater tax aggressiveness. Accordingly, the following hypothesis is proposed:

H₁: Executive variable compensation is positively associated with tax aggressiveness.

National culture shapes members of society by defining acceptable values and behaviors, thereby influencing organizational operations (Hofstede, 1980). In his analysis of cross-country cultural differences, Hofstede initially proposed four dimensions: power distance, uncertainty avoidance, individualism *versus* collectivism, and masculinity *versus* femininity. He later added two more dimensions: long-term *versus* short-term orientation and indulgence *versus* restraint (Hofstede, 2011).

The relationship between national culture and tax aggressiveness remains underexplored. Tsakumis et al. (2007) and Richardson (2008) did not fully examine the six cultural dimensions. Tsakumis et al. (2007), in a study of 50 countries, found that nations with high levels of tax aggressiveness tend to exhibit high uncertainty avoidance, low individualism, low masculinity, and high power distance. Richardson (2008) reinforced the positive association between uncertainty avoidance and tax aggressiveness, as well as the negative association with individualism, but found no significant evidence for power distance. Other studies employed alternative models that did not account for tax evasion (Bame-Aldred et al., 2013).

Power distance (PDI) reflects the extent to which inequality is accepted within a society. In countries with high power distance, strong hierarchy and obedience prevail, and the tax system may exacerbate inequalities (Hofstede, 2011). Richardson (2008) suggested that tax systems in such countries reinforce income inequality and foster tax aggressiveness, but his results did not confirm this prediction. By contrast, Tsakumis et al. (2007) reported a positive relationship between power distance and tax aggressiveness. Ribeiro (2018), however, identified a negative relationship, suggesting that acceptance of inequality strengthens tax compliance.

In societies with high power distance, the cultural emphasis on hierarchy and obedience may weaken the effectiveness of incentives designed to align managers' behavior with shareholders' interests. In such contexts, these incentives become less necessary, as the alignment of interests is already reinforced by prevailing cultural norms.

Thus, in countries with high power distance, the positive relationship between executive variable compensation and tax aggressiveness is expected to be weakened. Accordingly, the following research hypothesis is proposed:

H₂: Power distance attenuates the positive association between executive variable compensation and tax aggressiveness.

Individualism *versus* collectivism (IDV) describes the relationship between the individual and the collective, capturing the extent to which people integrate into groups within society (Hofstede, 1980, 2011). In countries with higher levels of individualism, privacy is valued, and individuals are regarded as whole beings, regardless of their affiliation with interest groups. In contrast, collectivist societies emphasize family, friendship, or other relationships, which may override laws and regulations—particularly when formal rules are perceived to conflict with the group's unwritten code of conduct (Tsakumis et al., 2007). According to Richardson (2008), tax systems in collectivist countries tend to be unfair because laws are applied differently across groups. The empirical findings of Tsakumis et al. (2007) and Richardson (2008) supported these predictions, revealing a negative relationship between individualism and tax aggressiveness.

On the other hand, more autonomous countries encourage the pursuit of personal goals, which may lead to greater tax aggressiveness (Ribeiro, 2018). In this view, in highly individualistic countries, laws and regulations are perceived as providing managers with greater discretion to act in their own interests, implying that higher levels of individualism are associated with greater tax aggressiveness. This alternative perspective was reinforced by the empirical findings of Ribeiro (2018).

Following Ribeiro (2018), we predict that in countries with higher levels of individualism, incentives to align managers' behavior with shareholder interests may lead to greater tax aggressiveness. Accordingly, the following research hypothesis is proposed:

H₃: Individualism strengthens the positive association between executive variable compensation and tax aggressiveness.

According to Hofstede (1980, 2011), Masculinity (MAS), or masculinity *versus* femininity, measures the extent to which the inhabitants of a country, regardless of sex, pursue goals traditionally valued by men or by women. Masculine behavior is associated with assertiveness, while feminine behavior emphasizes modesty and care. A high degree of masculinity is characterized by competition and the pursuit of material success and recognition (Hofstede, 1980). In contrast, feminine behavior is associated with nurturing and the pursuit of a better quality of life (Tsakumis et al., 2007). Societies with high levels of masculinity are therefore more oriented toward material success in an unequal world and may be more prone to corruption. In this sense, a positive relationship between masculinity and tax aggressiveness would be expected.

However, societies with a high degree of masculinity may be more conscientious about their tax obligations, since the systematic pursuit of material success can attract greater scrutiny from tax authorities, and increase the likelihood of audits. Moreover, highly masculine societies tend to be less permissive, whereas more feminine societies are more lenient and inclined to support rehabilitation over punishment, which may encourage tax avoidance. Along these lines, although they did not predict the direction of the relationship between masculinity and tax aggressiveness, the empirical results of Tsakumis et al. (2007) indicated a negative association. Richardson (2008) also formulated a non-directional hypothesis, but his results were not significant for the masculinity dimension.

However, the direction of the interaction between masculinity and executive variable compensation is not expected to align with the results of previous studies. This is because the arguments supporting a negative relationship may not hold in the presence of variable compensation. Greater scrutiny by tax authorities and reduced leniency toward illegal behavior—characteristics of highly masculine societies—may be insufficient to offset the incentive provided by variable compensation. Moreover, heightened competitiveness and the pursuit of material success, when combined with compensation incentives, may lead managers in highly masculine societies to adopt even more aggressive tax positions.

Given this context, in cultures with a high degree of masculinity, the emphasis on competition and the pursuit of material success is expected to amplify the effects of executive variable compensation on tax aggressiveness. Accordingly, the following hypothesis is proposed:

H₄: Masculinity strengthens the positive association between executive variable compensation and tax aggressiveness.

The Uncertainty Avoidance Index (UAI) relates to how societies cope with the uncertainty of the future through technology, law, and religion (Hofstede, 1980, 2011). In countries with a high degree of uncertainty avoidance, people are more prone to stress and anxiety and feel more uncomfortable in unexpected situations. In general, these societies tend to be less tolerant of differing opinions and display a stronger emotional need for rules (Hofstede, 2011). Richardson (2008) argues that the tax systems of countries with high uncertainty avoidance tend to be complex, due to the proliferation of laws designed to reduce uncertainty, and that this complexity increases tax avoidance.

Similarly, Tsakumis et al. (2007) argue that public trust in governments is negatively associated with uncertainty avoidance, since government decisions are often unexpected or even surprising, and that a lack of institutional trust encourages tax noncompliance. Confirming these theoretical predictions, the empirical results of Tsakumis et al. (2007) and Richardson (2008) revealed a positive relationship between uncertainty avoidance and tax aggressiveness.

On the other hand, Ribeiro's (2018) results indicated a negative relationship between uncertainty avoidance and tax aggressiveness. The author explained this finding by arguing that individuals in countries with high uncertainty avoidance are more insecure and fearful of the consequences of tax aggressiveness, particularly the sanctions resulting from potential tax assessments. Consistent with this reasoning, and considering that managers are more risk-averse than shareholders (Eisenhardt, 1989), it is possible that, in countries with high uncertainty avoidance, the incentives offered to managers are less effective in aligning their behavior with shareholders' interests. Accordingly, the following hypothesis is proposed:

H₅: Uncertainty avoidance attenuates the positive association between executive variable compensation and tax aggressiveness.

According to Hofstede (1980, 2011), the Long-Term Orientation Index (LTO), or long-term *versus* short-term orientation, reflects the promotion of values related to future rewards, particularly perseverance, saving, a sense of shame, and the benefits of education. The opposite pole, short-term orientation, emphasizes values rooted in the past and the present, such as respect for tradition, consumption, dignity, and fulfillment of social obligations. A key contrast is the emphasis on saving in long-term-oriented societies, as opposed to the emphasis on consumption in short-term-oriented societies (Hofstede, 2011). This dimension is closely linked to economic decision-making: in short-term-oriented societies, economic growth is perceived as slow or stagnant, whereas in long-term-oriented societies, economic growth is perceived as rapid (Soschinski et al., 2025).

In a society with a high degree of long-term orientation, the most important life events are seen as occurring in the future, and the definition of what is good or bad depends on circumstances, which are also considered when adapting traditions. In contrast, in short-term-oriented cultures, the most important life events are perceived as having occurred in the past or are taking place in the present, and definitions of good or bad are regarded as universal and unchanging, as are traditions. Given their lack of future perspective and emphasis on immediate consumption, short-term-oriented cultures are expected to be more prone to tax noncompliance. Conversely, long-term-oriented cultures adopt a future-oriented perspective, in which both tax authorities and society at large evaluate present actions.

Ribeiro's (2018) results corroborate the view that a long-term orientation is associated with lower tax aggressiveness. According to her analysis, individuals in long-term-oriented societies are concerned not only with reducing their tax burden and achieving favorable results in a single year, but also with sustaining such outcomes recurrently over several years.

Thus, countries with a high degree of long-term orientation tend to display lower tax aggressiveness, in which case executive variable compensation may be insufficient to raise the firm's tax position to the level desired by shareholders. Therefore, the following research hypothesis is proposed:

H₆: Long-term orientation attenuates the positive association between executive variable compensation and tax aggressiveness.

Indulgence versus Restraint (IVR) measures the extent to which individuals allow themselves to enjoy pleasures or luxuries or, conversely, are restrained and refrain from engaging in certain activities (Hofstede, 2011). Countries with a high degree of indulgence are more tolerant and permissive, often supporting leisure and enjoyment-oriented activities. In indulgent societies, people tend to report higher levels of happiness, consider freedom of expression important, and view leisure as essential. By contrast, countries with a low degree of indulgence (i.e., more restraint-oriented) are more controlling; people tend to report lower levels of happiness, and freedom of expression is not considered an important value (Soschinski et al., 2025).

For Hofstede (2011), restraint-oriented societies are characterized by the need to maintain public order, reflected in the higher number of police officers per 100,000 inhabitants. In contrast, indulgent societies do not prioritize maintaining order. The greater permissiveness of countries with a high degree of indulgence may lead citizens to display higher levels of tax aggressiveness. Ribeiro's (2018) empirical results corroborate this view, revealing a positive relationship between indulgence and tax aggressiveness.

Consistent with the above argument, it is expected that in countries with a high degree of indulgence, executive variable compensation will exert a stronger effect on tax aggressiveness. Thus, the following hypothesis is proposed:

H₇: Indulgence amplifies the positive association between executive variable compensation and tax aggressiveness

3 Methodological Procedures

The population comprised non-financial firms listed on stock exchanges and located in G-20 countries. To compose the sample, observations lacking the data required to calculate the tax aggressiveness metric used (ABTD – Abnormal Book-Tax Differences) were excluded, as were firms without information on executive compensation or all dimensions of national culture. This last restriction led to the exclusion of two countries—South Africa and Saudi Arabia—yielding a final sample of firms from 25 countries.

Data were collected from the Refinitiv Eikon® database, covering financial information from 2013 to 2021. This final unbalanced sample comprised 29,148 firms and 80,891 firm-year observations, as shown in Table 1.

Table 1

Sample Selection

Initial number of observations	286,290
Observations excluded: missing data for the ABTD calculation	(48,894)
Observations excluded: missing data on executive compensation	(155,045)
Observations excluded: missing data on cultural dimensions	(1,460)
Final number of observations in the sample	80,891
Final number of firms in the sample	29,148

Source: study data

To measure tax aggressiveness, we used the abnormal portion of Book-Tax Differences (ABTD), following the model of Tang and Firth (2011). The BTM (Book-Tax Differences) construct is one of the most widely applied measures in the literature and represents the difference between accounting and taxable income (Hanlon & Heitzman, 2010). This metric is considered to capture the degree of accounting-tax compliance, making it useful for assessing tax reduction strategies that decrease taxable income without altering accounting income. However, BTM can also reflect two other distinct phenomena: (i) differences between accounting standards and tax rules; and (ii) earnings management, since differences between accounting and taxable incomes may arise from manipulation of accounting income, taxable income, or both (Ferreira et al., 2012; Morais & Macedo, 2021).

The literature classifies BTM as normal (NBTM), which is explained by differences between generally accepted accounting principles and tax legislation; and abnormal (ABTD), which may result from both earnings management and tax management, given managers' discretion in choosing accounting and tax practices (Tang & Firth, 2011). Using a sample of listed firms in China, Tang and Firth (2011) demonstrated that ABTD, although it may still contain some component of earnings management, effectively captures managers' discretionary actions aimed at reducing tax expenses.

According to Tang and Firth (2011), ABTD corresponds to the residual from regressing BTM on items that generate only normal differences between accounting income and taxable income, that is, differences arising solely from the mismatch between accounting standards and tax legislation, as expressed in Equation (1):

$$BTD = \beta_0 + \beta_1 \Delta INV + \beta_2 \Delta REV + \beta_3 NOL + \beta_4 TLU + \varepsilon \quad (1)$$

Where:

BTD = Book-Tax Differences, calculated as in Equation (2);

ΔINV = change in investments, measured as the variation in fixed assets and intangible assets from year t-1 to year t;

ΔREV = change in net revenue from year t-1 to year t;

NOL = tax loss carryforwards in the period. Since tax losses are not directly observable, accounting losses were used as a proxy, consistent with the literature (Morais & Macedo, 2021);

TLU = use of accumulated tax losses for offsetting in the calculation period, measured as the negative change in deferred tax assets from year t-1 to year t; and

ε = regression residual (ABTD).

In line with Tang and Firth (2011), the regression in Equation (1) was estimated separately for each year, country, and sector. The BTD used in the regression was calculated as in Equation (2):

$$BTD = (EBT - \text{Income Tax Expense} / \text{Statutory Tax Rate}) / \text{Final Total Assets} \quad (2)$$

Where:

EBT = Earnings before tax; and

Rate = statutory corporate tax rate, by country and year, based on data from the Tax Foundation (2022). These rates represent the generally applicable legal percentages, excluding special regimes, deductions, or variations by sector or firm size.

To measure executives' variable compensation, the Executive Compensation Policy Score (ECPS) was used, a component of the overall corporate governance score offered by the ASSET4 database of Refinitiv Eikon® (formerly Thomson Reuters) (Iliev & Roth, 2018). The Refinitiv Eikon® governance score comprises five categories: board function, board structure, compensation policy, vision and strategy, and shareholder rights. Each category score is calculated relative to other firms in the same year, ranging from 0 to 100. Absolute scores are obtained by summing the positive responses (or those above the median) to governance questions (Iliev & Roth, 2018, Appendix A). Specifically, the ECPS is derived from responses to questions on director and executive compensation (Iliev & Roth, 2018), including:

- Does the firm have a performance-based compensation policy designed to attract and retain senior executives and board members?
- Does the firm have the necessary information and tools to develop an effective performance-based compensation policy?
- Does the firm structure executive compensation into fixed salaries, bonuses, and stock option plans?
- Do the firm's bylaws or the law require that stock options be granted only upon resolution at a shareholders' meeting?
- Is executive and director compensation partially linked to objectives or targets set beyond two years (i.e., long-term)?

The emphasis on performance-based compensation and the inclusion of stock-based pay highlight the importance of the variable component in executive compensation packages. Accordingly, the ECPS captures, to some extent, the weight of variable compensation in these packages. Its availability for all G-20 countries analyzed in this study further supports its use as a proxy for variable compensation. To improve the scale of the regression coefficients, the scores collected from Refinitiv Eikon® were divided by 100, converting them into percentages.

Regarding Hofstede's (1980, 2011) cultural dimensions, we used the data provided by Hofstede Insights (2022). Each dimension is measured on a scale from 0 to 100. To facilitate the interpretation of the interactions between cultural dimensions and the variable compensation proxy, each dimension was transformed into a dummy variable, taking the value 0 when the score was below 50 and 1 when the score was equal to or above 50. The dummy variables operationalized were PDI (Power Distance Index), IDV (Individualism), MAS (Masculinity), UAI (Uncertainty Avoidance Index), LTOWVS (Long-Term Orientation Index), and IVR (Indulgence versus Restraint).

The model also included profitability (ROA), leverage (LEV), firm size (SIZE), and goodwill change (CHGW) as control variables. Larger and more profitable firms have stronger incentives and greater ability to influence the political process, and are therefore expected to be more tax aggressive (Wang et al., 2020). More leveraged firms and those engaged in corporate reorganizations (which generate goodwill) tend to manage their taxable income more intensively (Armstrong et al., 2012; Fonseca & Costa, 2017). With the exception of SIZE, operationalized as the natural logarithm of total assets, all control variables were scaled by total assets at the beginning of the period.

The first econometric model did not include national culture variables, to assess the direct effect of executives' variable compensation on tax aggressiveness. The model was adapted from Armstrong et al. (2012), as shown in Equation (3). The adaptation consisted of adding lagged ABTD as an explanatory variable to enhance the model's explanatory power. The regression was estimated using the OLS estimator, with year, industry, and country fixed effects, and robust standard errors clustered at the firm level, since the White test indicated heteroskedasticity of the residuals.

$$ABTD_{it} = \beta_0 + \beta_1 ECPS_{it} + \beta_2 ABTD_{i,t-1} + \beta_3 ROA_{it} + \beta_4 TAM_{it} + \beta_5 LEV_{it} + \beta_6 CHGW_{it} + \varepsilon \quad (3)$$

Where:

ABTD = Abnormal Book-Tax Differences;

ECPS = Executive Compensation Policy Score;

ROA = Return on assets;

SIZE = Size;

LEV = Leverage; and

CHGW = Goodwill change.

To test the hypotheses involving the moderation of national culture, dummy variables for the cultural dimensions and their interactions with ECPS were included, as shown in Equation (4). The coefficients were estimated using the OLS estimator, with robust standard errors clustered at the firm level, and year and industry fixed effects. Since the cultural dimensions already capture cross-country differences, the regressions in Equation (4) were not estimated with country fixed effects.

$$\begin{aligned}
 ABTD_{it} = & \beta_0 + \beta_1 ECPS_{it} + \beta_2 CUL_{it} + \beta_3 ECPS_{it} * CUL_{it} + \beta_4 ABTD_{i,t-1} + \beta_5 ROA_{it} \\
 & + \beta_6 TAM_{it} + \beta_7 LEV_{it} + \beta_8 CHGW_{it} + \varepsilon
 \end{aligned}
 \tag{4}$$

Where:

CUL = PDI, IDV, MAS, UAI, LTOWVS or IVR, as applicable.

4 Presentation and Analysis of Results

Tables 2 and 3 present the descriptive statistics and Pearson's correlation matrix, respectively. Regarding ABTD, Table 2 shows a negative median and a positive mean. This indicates that most observations exhibit higher-than-expected accounting-tax compliance (BTD) for the year/industry, while the magnitude of those with greater accounting-tax noncompliance is substantial enough to make the mean positive.

Table 2 shows that the variable capturing executive variable compensation (ECPS) has a median of zero, suggesting that most observations take the value zero. This indicates that most firms do not offer variable compensation packages to their managers. As shown in Table 1, 155,045 observations without any value for the ECPS metric—not even zero—were excluded from the sample, indicating that these firms did not respond to the Thomson Reuters survey. Therefore, zero values for the ECPS variable are interpreted as evidence that the firm responded to the questions on executive compensation and, in fact, did not have variable compensation packages. Moreover, 34,198 observations, representing 42.3% of the total and covering all countries in the sample, have non-zero values for the ECPS variable, which supports the validity and reliability of the metric used.

Table 2

Descriptive Statistics

Panel A – Continuous variables					
Variable	Mean	Standard-Deviation	25%	Median	75%
ABTD	0.0024	0.0764	-0.0219	-0.0041	0.0174
ECPS	0.2317	0.2743	0.0000	0.0000	0.5132
ROA	-0.1844	1.5455	-0.0168	0.0330	0.0782
SIZE	20.2810	2.4424	18.8624	20.4974	21.9882
LEV	0.1667	0.1918	0.0054	0.1075	0.2647
CHGW	0.0048	0.0232	0.0000	0.0000	0.0000
Panel B – Dichotomous variables – frequency distributions					
Variable	0	1	Total		
PDI	52.68%	47.32%	100%		
IDV	41.79%	58.21%	100%		
MAS	14.14%	85.86%	100%		
UAI	65.90%	34.10%	100%		
LTOWVS	48.36%	51.64%	100%		
IVR	47.18%	52.82%	100%		

N = 80,891. Source: study data.

Table 3 shows that ABTD has significant correlations with ECPS and with all dimensions of national culture at the 1% level. The positive correlation between ABTD and ECPS provides preliminary evidence that executive variable compensation is associated with higher levels of tax aggressiveness.

Table 3

Pearson's correlation coefficients

Variables	ABTD	ECPS	PDI	IDV	MAS	UAI	LTOWVS	IVR
ABTD	1							
ECPS	0.0323*	1						
PDI	-0.0257*	-0.2686*	1					
IDV	0.0190*	0.2746*	-0.8723*	1				
MAS	0.0208*	0.0691*	-0.2970*	0.1549*	1			
UAI	-0.0193*	-0.0673*	0.3135*	-0.1615*	-0.4432*	1		
LTOWVS	-0.0492*	-0.2208*	0.6967*	-0.6450*	-0.1089*	0.1801*	1	
IVR	0.0276*	0.2680*	-0.8730*	0.7661*	0.2161*	-0.3095*	-0.8014*	1

N = 80,891. *Significant at 1%. Source: study data.

Table 4 presents the results of the regressions of Equations (3) and (4). For the regression estimated without moderation of national culture (Equation 3), the ECPS coefficient was significant at the 5% level. In the regressions with the moderation of national culture dimensions, the ECPS coefficient was also positive and significant at the 1% level in three of the six models, while in the other three it was not significant. Overall, these results are consistent with executive variable compensation contributing to increased tax aggressiveness, which supports the non-rejection of H_1 .

Table 4

Results of the regression model

	Dependent variable: ABTD. N = 80.891						
	Eq. (3)	Eq. (4)					
	(H ₁)	PDI (H ₂)	IDV (H ₃)	MAS (H ₄)	UAI (H ₅)	LTOWVS (H ₆)	IVR (H ₇)
Const.	-0,0042 (-0,72)	0,0030 (0,55)	0,0020 (0,36)	0,0055 (1,04)	0,0081 (1,53)	0,0007 (0,13)	0,0003 (-0,06)
ECPS	0,0028** (2,02)	0,0088*** (4,00)	0,0012 (0,88)	-0,0024 (-1,13)	0,0105*** (6,26)	0,0125*** (5,92)	-0,0009 (-0,65)
CUL		-0,0027*** (-2,76)	0,0021** (2,45)	0,0017** (2,03)	-0,0010 (-1,27)	0,0042*** (-4,40)	0,0029*** (3,01)
ECPS*CUL		-0,0088*** (-3,88)	0,0069*** (3,29)	0,0110*** (4,91)	-0,0085*** (-4,39)	-0,0177*** (-7,68)	0,0098*** (4,43)
ABTD _{t-1}	0,1338*** (5,28)	0,1357*** (5,28)	0,1360*** (5,29)	0,1360*** (5,28)	0,1360*** (5,29)	0,1341*** (5,27)	0,1356*** (5,28)
ROA	0,0035*** (7,44)	0,0033*** (6,85)	0,0033*** (6,86)	0,0032*** (6,88)	0,0033*** (6,90)	0,0033*** (6,85)	0,0032*** (6,84)
SIZE	0,0004 (1,44)	0,0002 (0,83)	0,0001 (0,49)	-0,0001 (-0,27)	-0,0001 (-0,40)	0,0004 (1,56)	0,0003 (0,95)
LEV	-0,0115*** (-3,98)	-0,0090*** (-3,24)	-0,0086*** (-3,06)	-0,0064** (-2,41)	-0,0070*** (-2,63)	-0,0114*** (-4,09)	-0,0095*** (-3,40)
CHGW	-0,0232** (-2,32)	-0,0553*** (-5,46)	-0,0559*** (-5,51)	-0,0496*** (-4,91)	-0,0487*** (-4,81)	-0,0426*** (-4,29)	0,0541*** (5,35)
Prob > F	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
Ajusted R ²	4,05%	3,77%	3,73%	3,72%	3,72%	4,01%	3,78%
Max VIF	2,27	3,03	3,76	7,27	2,25	3,04	3,51
DW	1,18	1,17	1,17	1,17	1,17	1,18	1,17

Note: VIF: Variance Inflation Factor. DW: Durbin-Watson. CUL = cultural dimensions (PDI, IDV, MAS, UAI, LTOWVS, IVR). Significance levels: * = p<0.10; ** = p<0.05; *** = p<0.01.

Source: study data.

This result aligns with Minnick and Noga (2010), Armstrong et al. (2012), and Gaertner (2014), suggesting that executive variable compensation is, in the context of G-20 countries, an incentive to reduce corporate tax burdens. This is consistent with the understanding that tax expense significantly reduces the income used to calculate the variable portion of executive compensation, leading managers to increase their efforts to identify and implement tax-planning strategies.

The positive relationship between variable compensation and tax aggressiveness has implications for determining executive compensation structures, since the greater the share of compensation based on after-tax income, the stronger the incentive to reduce the firm's tax expense. Based on this relationship, shareholders can structure executive compensation contracts to take into account, among other factors, their appetite for tax risk.

This relationship between variable compensation and tax aggressiveness is not uniform across G-20 countries though, as it is influenced by different dimensions of Hofstede's (1980, 2011) national culture. Table 4 shows that, in all six models estimated for Equation (4), the interaction coefficients between variable compensation and cultural dimensions were statistically significant at the 1% level.

Regarding power distance, the coefficient of its interaction with ECPS was negative, suggesting that in countries with high power distance, the effect of executive variable compensation on tax aggressiveness is weaker. Specifically, since the sum of the ECPS and ECPS*PDI coefficients is not statistically different from zero ($0.0088 - 0.0088 = 0$; F-test: 0.00; $p < 0.9991$), the moderating effect is substantial. Thus, in countries with high power distance, executive variable compensation has no effect on tax aggressiveness, implying that H_2 cannot be rejected. This finding contrasts with Tsakumis et al. (2007), who reported a positive relationship between power distance and tax aggressiveness, attributing their result to the leniency toward morality and laws characteristic of high power distance societies.

Nevertheless, our results suggest that the emphasis on hierarchy and obedience diminishes the effectiveness of variable compensation in fostering alignment of interests between agents and principals. In cultures with high power distance, where subordinates tend to comply with their superiors' requests, managers are more likely to act in the best interests of shareholders without the need for the incentive provided by variable compensation. Although, from a legal perspective, there is no direct relationship of subordination between managers and shareholders, this seems to explain the result obtained. According to Ribeiro (2018), countries with high power distance are characterized by low decentralization in decision-making. Among the G-20 countries with high power distance, we highlight China, Japan, India, South Korea, France, Brazil, Italy, and Indonesia.

Regarding the individualism *versus* collectivism dimension, the coefficient of its interaction with ECPS was positive, suggesting that in societies with high individualism, executive variable compensation exerts a strong influence on corporate tax aggressiveness. Thus, H_3 cannot be rejected. This finding contrasts with Tsakumis et al. (2007) and Richardson (2008), who found a negative relationship between individualism and tax aggressiveness.

On the other hand, in line with Ribeiro's (2018) findings, our results suggest that individualism accentuates the tax-aggressive behavior of managers who receive performance-based compensation. In individualistic cultures, the lack of group sentiment undermines the perception that taxes are collected for the benefit of society as a whole, thereby favoring activities that reduce the firm's tax burden and are not perceived collectively as an appropriation of state assets (Ribeiro, 2018). Furthermore, countries with high individualism are generally more developed (Tsakumis et al., 2007), which may also explain the greater influence of variable compensation on tax aggressiveness in this context, since compensation contracts tend to be more efficient in more developed capital markets. Among the G-20 countries with high individualism, we highlight the United States, Canada, the United Kingdom, Australia, Germany, France, and Italy.

Regarding the masculinity dimension, the coefficient of its interaction with ECPS was positive, suggesting that in countries with high masculinity, the relationship between executive variable compensation and tax aggressiveness is stronger, indicating that H_4 cannot be rejected. A high degree of masculinity fosters competitive behavior and the pursuit of material success, which amplifies the incentive provided by variable compensation, reinforcing managers' alignment with shareholders' interests in reducing the firm's tax burden.

As expected, this finding contrasts with the results of Tsakumis et al. (2007) and Ribeiro (2018), which can be explained precisely by the interaction with executive variable compensation. This study's results suggest that the incentives provided by variable compensation amplify the competitive behavior characteristic of high-masculinity societies, leading managers to accept the risks associated with greater scrutiny and reduced leniency toward illegal acts, which are also characteristics of such societies. Among the G-20 countries with high masculinity, the United States, China, Japan, Canada, India, the United Kingdom, Australia, Germany, and Italy stand out.

Regarding the cultural dimension of uncertainty avoidance, Table 4 indicates that the coefficient of its interaction with ECPS is negative, suggesting that uncertainty avoidance mitigates the positive relationship between executive variable compensation and tax aggressiveness, indicating that H_5 cannot be rejected. As expected, this finding contrasts with the results of Tsakumis et al. (2007) and Richardson (2008), but aligns with Ribeiro (2018).

The F-test result indicates that the sum of the ECPS coefficient and the ECPS*UAI coefficient is not statistically different from zero ($0.0105 - 0.0085 = 0.0020$; F-test: 1.78; $p < 0.1823$), suggesting that the moderating effect is quite relevant. Accordingly, in countries with high uncertainty avoidance, executive variable compensation has no effect on tax aggressiveness. This result is consistent with the fact that managers in such countries are less inclined to accept the risks inherent in more aggressive tax planning, even when incentives are tied to variable compensation. Among the G-20 countries characterized by high uncertainty avoidance, Japan, Australia, South Korea, Germany, France, Brazil, and Italy stand out.

Regarding the long-term orientation dimension, Table 4 shows that the coefficient of its interaction with ECPS is negative. This result, which is consistent with Ribeiro (2018), supports the non-rejection of H_6 . The F-test result indicates that the sum of the coefficient of ECPS and the ECPS*LTOWVS coefficient is statistically less than zero ($0.0125 - 0.0177 = -0.0052$; F-test: 13.23; $p < 0.0003$), suggesting that, in countries with a high long-term orientation, executive variable compensation has the opposite effect, namely, reducing tax aggressiveness. Among the G-20 countries with a high long-term orientation, China, Japan, India, the United Kingdom, South Korea, Germany, France, Italy, and Indonesia stand out.

This finding is noteworthy because long-term orientation is the only cultural dimension in Brazil that inverts the relationship between executive variable compensation and tax aggressiveness. This can be partially explained by the presence of stock-based compensation schemes (stock options) in variable compensation packages. In general, stock-based compensation is associated with long-term goals, where the appreciation of the share price at the end of the agreed period is the manager's main incentive. In societies with a strong long-term orientation, such a compensation structure may encourage managers to adopt a more conservative stance toward corporate taxation, since the risk of a tax scandal—potentially identified by authorities many years after the events—could affect the final share price and, consequently, the manager's compensation.

On the other hand, in societies with a strong short-term orientation, executive variable compensation may encourage the adoption of aggressive tax strategies, as managers tend to be more short-term oriented and do not attach importance to future and uncertain events, such as the possibility of a tax audit.

Finally, with regard to indulgence, Table 4 shows that the coefficient of its interaction with ECPS is positive, suggesting that, in countries with a high degree of indulgence, executive variable compensation has a greater influence on tax aggressiveness, which supports the non-rejection of H_7 .

This result is consistent with the greater permissiveness observed in countries with a stronger cultural trait of indulgence. In this context of greater freedom and permissiveness, managers whose compensation depends on the after-tax income tend to be more aggressive in their tax strategies, as they perceive tax reduction as less risky. Among the G-20 countries with a high degree of indulgence, the United States, Canada, the United Kingdom, Australia, and Brazil stand out.

5 Conclusion

This study aimed to evaluate the moderating role of national culture in the relationship between executive variable compensation and corporate tax aggressiveness. The analyses were conducted using data from 80,891 firm-year observations of companies located in G-20 countries, covering the period from 2013 to 2021.

Multivariate analysis demonstrated that executive variable compensation is positively associated with tax aggressiveness. This result is consistent with Minnick and Noga (2010), Armstrong et al. (2012), and Gaertner (2014), suggesting that variable compensation schemes, particularly those in which compensation is tied to after-tax income, are effective in aligning managers' actions with shareholders' interests by reducing the firm's tax expense.

Regarding the moderation of national culture dimensions, the results indicate that the positive relationship between executive variable compensation and tax aggressiveness is stronger in countries with high individualism, masculinity, and indulgence, and weaker in countries with high levels of power distance, uncertainty avoidance, and long-term orientation.

More specifically, the effect of the cultural dimensions of power distance, uncertainty avoidance and long-term orientation is quite relevant, to the point of nullifying the effect of variable compensation on tax aggressiveness in the cases of power distance and uncertainty avoidance, and of reversing this effect in the case of long-term orientation.

This study has some limitations that may guide future research, especially with regard to the proxies adopted. The ABTD metric can capture both tax aggressiveness and earnings management, making it difficult to distinguish between the two phenomena. Furthermore, because it only considers differences between accounting and taxable income, ABTD is limited to capturing noncompliant forms of tax aggressiveness, leaving out strategies that simultaneously reduce both. With respect to variable compensation, the use of the ECPS variable restricted the sample due to its absence in a large number of observations. In addition, it is a qualitative measure, based on questionnaire responses, which limits its accuracy. Future research could advance by developing metrics that better distinguish the effects or that quantitatively capture the composition of executive compensation across the different countries analyzed.

Additionally, future research could incorporate robustness and sensitivity tests to verify the stability of results across different specifications, methods, or variables. Alternative approaches to measuring national culture, beyond Hofstede's model, could also be explored to broaden the understanding of the role of cultural context in the relationship between compensation contracts and corporate tax decisions.

The study offers relevant contributions to academics, managers, and shareholders. From a theoretical perspective, it clarifies the divergent findings in the literature on the relationship between executive variable compensation and tax aggressiveness by demonstrating that countries' cultural aspects moderate this relationship—a gap that had previously received little attention. This shows that the impact of compensation on corporate tax behavior varies according to the institutional context, thereby expanding the understanding of the determinants of this practice. From a practical perspective, the findings contribute to the design of more efficient executive compensation contracts tailored to the institutional context, helping managers and shareholders formulate compensation strategies aligned with corporate interests regarding taxation. Moreover, the results underscore the importance of considering cultural factors in international comparative research on corporate behavior.

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