**A R T I C L E**

# Tax Governance: A Study of Its Effects on Tax Evasion

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**ABSTRACT**

This study aimed to verify the relationship between tax governance and tax evasion. The motivation to analyze this interaction lies in the need to understand and prove that tax governance practices have an effect on the level of tax evasion. The results confirm the theoretical hypothesis that was tested: the countries in the sample with corporate tax governance practices presented lower levels of tax evasion, which is important empirical evidence of this relationship that has been postulated, but not yet verified by the literature. As for additional results, it was determined that only enforcement evokes the behavior expected from the literature, suggesting that it has a complementary relationship with tax governance. Thus, this paper supports the inclusion of another factor associated with our understanding of the tax evasion phenomenon, expanding our knowledge on the subject through the possibility of comparison with similar international studies. Furthermore, it may also generate government interest in encouraging the implementation of tax governance by companies.

**KEYWORDS**

Tax Governance, Relationship, Tax Evasion

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# 1. INTRODUCTION

Tax evasion is a critical problem for many countries, since economic development can be seriously hampered by reduced government revenue due to non-compliance with tax obligations (Picur & Riahi-Belkaoui, 2006). Moreover, evasion affects not only tax authorities and governments, but also the taxpayers themselves, who, as citizens, may be left without the required state services (Turner, 2010). Thus, tax evasion affects everyday life and social welfare (Russo, 2010).

It is due to these social consequences arising from tax evasion that studies seek to contribute to our understanding and mitigation of this problem (Cowell, 1990). Kirchler (2007) adds that, due to its explanatory complexity, tax evasion is a topic of interest (with varying degrees of focus) in social science studies in all countries.

Crocker and Slemrod (2005) explain that before pointing solutions to the problem of tax evasion, it is necessary to understand the theoretical mechanisms that underlie the phenomenon, and only then determine possible mitigating factors. As a complex phenomenon, tax evasion has different theoretical approaches (Khlif & Achek, 2015)-such as economic theory, firm and contract theory, stakeholder theory, stewardship theory, equity theory, and behavioral theories, among others-which, based on their assumptions, help us understand its occurrence (Kaplan et al., 1986). Despite this diversity, the present study primarily uses agency theory for support, aligning with the studies of Crocker and Slemrod (2005); Desai and Dharmapala (2006) and Desai et al. (2007).

Assuming that tax evasion derives from an agency problem, it is possible to identify and verify which factors influence this phenomenon. In the specific case of tax evasion, studies on the subject have revealed the existence of several subjective, objective, economic, and non-economic factors, which are intertwined and mutually connected (Wallschutzky, 1984) and differ from one country to another (Kirchler, 2007). In this context, Jackson and Milliron (1986) proposed that the presence of tax evasion is associated with factors called determinants according to relationships investigated in previous research.

In addition to this set of traditional elements, new studies have addressed other determinants of tax evasion (Armstrong et al., 2015); one of them is corporate governance, which is considered to be a mitigating element of agency conflicts, including in its tax aspect (Desai & Dharmapala, 2006). In this sense, "the international literature is prodigious in identifying aspects of corporate governance that can interact with tax practice" (Martinez, 2017, p. 112). An example to be cited is the research conducted by Desai et al. (2007), in which it was evidenced that, at the national level, when governance is weak, an increase in the tax rate results in more deviation.

On a different tack, the work of Minnick and Noga (2010) found little evidence for a link between corporate governance and tax evasion, as there are particular aspects of this relationship not encompassed by the overall governance system. This study arrived at similar results to the research of Rego and Wilson (2012). There have been several tax scandals involving renowned companies such as Starbucks, Apple, Offshore Leaks, and LuxLeaks (Dietsch & Rixen, 2016) that reinforce that the relationship between corporate governance and tax evasion is inconclusive in the existing literature and still under-explored nationally (Owens, 2015).

Given the notion that general corporate governance practices would not be able to mitigate tax deviations, the concept of tax governance emerges as a subset of corporate governance (Australian Taxation Office, 2016); as such, it is embedded in the context of organizations.

Tax governance has been encouraged by international organizations such as the Organization for Economic Cooperation and Development (OECD) and countries such as Australia and New Zealand (Deloitte, 2015), where it is implemented by companies which have adopted tax

principles and best practices. The presence of these specific governance practices for making tax-related decisions aims to reduce deviations, mitigating the taxpayer–government agency conflict and, consequently, potentially impacting the observed level of tax evasion (Hji Panayi, 2018).

Thus, verification of the effect of tax governance on tax evasion is a theoretical possibility (Amaral & Ainsworth, 2005); indeed, the adoption of tax governance practices has been encouraged by international organizations. However, such practices have not yet been incorporated into the literature as possible determinants in the analysis of tax evasion, in order to demonstrate the effective interaction between such governance and evasion (Eskelinen & Ylönen, 2017).

Moreover, the role of taxation is often neglected in both business strategies and state capacity expansion, which is why recent research has remained relatively theoretical and abstract (Prichard, 2010). "Empirical research has not converged to provide guidance on best practices that can be followed to improve tax governance" (Srinivasan & Kamala, 2009, p. 310), and the limited number of studies on tax evasion reduces our ability to identify other determinants (Khlif & Achek, 2015).

For this reason, given the gap in the literature, this study incorporates tax governance as a factor that can be tested to help us understand tax evasion behavior, and therefore seeks to answer the following research question: is there a relationship between tax governance (encouraged by governments and implemented by firms) and tax evasion within a country?

The objective is to verify the relationship between tax governance and tax evasion. To this end, this work uses a quantitative approach, employing balanced panel data regression to analyze the data of 90 countries that make up the sample, in the period from 2005 to 2015.

The relevance of this study lies in analyzing tax governance as an effective instrument that affects tax evasion and, based on the results obtained, demonstrating the relationship that exists between such governance and evasion. This study may also contribute to the international movement to implement tax governance (KPMG, 2017) and the possible adherence of new governments and companies to such principles (OECD, 2013).

## 2. LITERATURE REVIEW AND HYPOTHESIS

### 2.1. Factors Associated with Tax Evasion

According to Slemrod (2007, p. 25), "no government can announce a tax system and then rely on taxpayers' sense of duty to remit what is due." This is because no matter how well taxpayers fulfill their obligations, there will always be a percentage of non-compliance (Picur & Riahi-Belkaoui, 2006). Thus, tax evasion will exist to some degree even if there is an environment of control and accountability (Slemrod, 2007). Therefore, tax evasion is a problem that affects everyone; to mitigate it, we must understand the factors that are associated with it.

The first major literature review on the factors related to tax evasion was laid out by Wallschutzky (1984) and consolidated by Jackson and Milliron (1986). These elements can be analyzed both individually (firm/taxpayer data) and nationally (country data). However, although the methodological contribution was significant, the results from individual variables did not prove particularly useful for the analysis of general taxation policies, as the models considered only the actions of taxpayers (Hji Panayi, 2018). This led to the emergence of national approaches based on the metrics of tax evasion measurement constructed at the country level (Riedel, 2018). Table 1 consolidates the categories for these variables.

**Table 1**
*Summary of factors associated with tax evasion*

| Categories of determinants | Subcategories of determinants | Forms of Analysis |
| --- | --- | --- |
| | Age | Individual |
| | Genre | Individual |
| Demographic determinants | Education | Individual |
| | Occupation | Individual |
| | Religion | Individual and country |
| | Income level | Individual |
| | Source of income | Individual |
| Economic determinants | Tax burden | Country |
| | Economic development | Country |
| | Strong capital market | Country |
| | Justice | Individual |
| Behavioral determinants | Ethics or fiscal morality | Individual and country |
| | Corruption | Country |
| | Legal system | Country |
| | Tax complexity | Country |
| | Democracy | Country |
| Legal and institutional determinants | Trust in the government | Country |
| | Enforcement | Country |
| | Probability of detection | Country |
| | Tax authority contact | Country |

*Source:* Prepared by the authors.

Empirical studies began to use national determinants, enabling the expansion of knowledge and the use of their results by governments (Khlif & Achek, 2015). Along this line are the studies by Riahi-Belkaoui (2004); Picur and Riahi-Belkaoui (2006); Richardson (2006) and Gabor (2012).

Riahi-Belkaoui's (2004) research represents pioneering work on the determinants of tax evasion and perhaps the first rigorous empirical investigation that can be found in the recent literature (Khlif & Achek, 2015). With data from 30 countries, the study examined the association of four determinants (index of economic freedom, stock market importance, level of serious crime, and effectiveness of competition laws) with tax evasion. As for the results, the study provides evidence that cross-country evasion is negatively associated with national *enforcement*.

On the other hand, the study by Picur and Riahi-Belkaoui (2006) advances the research of Riahi-Belkaoui (2004), incorporating the effects of two other variables into the model: bureaucracy and corruption. The sample size was once again 30 countries and the data were from the year 1996. The results of the study showed that a low level of corruption is positively associated with tax compliance.

The work of Richardson (2006) follows a similar line to the previous ones, only this time with a sample of 45 countries and using 10 independent variables (age, gender, education, income level, source of income, marginal tax rates, tax fairness, complexity, revenue authority, and tax morale) and tax evasion as a dependent variable, in the years 2002, 2003, and 2004. As for the results, Richardson (2006) observed that non-economic determinants (tax complexity in particular) have the greatest impact on evasion.

Overall, it can be observed that researchers have expanded the tests, but the results are not in unison (Russo, 2010). In addition, tax scandals involving renowned multinational companies continue to occur; despite having corporate governance systems, these companies are still being questioned about the non-payment of taxes that are legally due (Dietsch & Rixen, 2016). According to Gemmell and Hasseldine (2012), this topic attracted renewed international interest from the OECD in 2016.

## 2.2. Tax Governance

Tax governance is a set of principles and best practices specifically related to tax which serve to guide the tax management and planning of companies (Deloitte, 2015). In this sense, international organizations and certain countries (e.g., Australia) classify, in their *frameworks,* tax governance as a subset of corporate governance (Australian Taxation Office, 2016). Complementing this line of thinking, Lopo Martinez et al. (2019, p. 29) conceptualize tax governance as being "good tax management practices, which involve lawful tax planning also known as tax evasion and represents a set of corporate management procedures."

Increased focus on tax governance is a recent phenomenon (Shtromberg, 2019), the international framework for which is provided by the program entitled *Tax and Development*, accompanied by the Erosion and Profit Shifting (BEPS) project, both from the OECD, which began in 2011 and ran until 2013 (OECD, 2013). The program emphasized the idea of taxation as an essential element of business strategies in order to influence good governance and state development (Owens, 2015).

Since tax governance is a type of corporate governance, it should be elucidated that its separate study is due to the fact that governance regimes should be especially vigilant about compliance with tax practices and strategies. However, this is possibly one of the main challenges for corporations and governments (Drezner, 2007).

This segregation makes sense because general corporate governance mechanisms, although their practical importance has long been recognized (Srinivasan & Kamala, 2009), are not sufficient for addressing tax practices. This can be seen through the financial scandals of US companies (regarding tax aspects) that have exposed doubt about the existing corporate governance model (Jo & Harjoto, 2011).

Empirical evidence shows considerable reluctance by management to disclose tax governance-related information to their shareholders and the government, which is in contrast to their overall governance policy (Abdul Wahab, 2010). This resistance highlights the conflict that exists between companies and governments, underpinning the theoretical assumption of agency theory in this relationship.

The institutionalization of control mechanisms executed by taxpayers themselves, such as tax governance, does not remove government–taxpayer conflict, since one of the central elements for mitigating this agency conflict is the definition of rules whose execution and implementation is up to the agent, with the principal being responsible for supervision and oversight. Thus, according to Mappadang et al. (2018), a firm's tax practices cannot be separated from the existence of agency theory mechanisms in firms, since one of the most significant types of business conflict is precisely the one with governments that are entitled to part of the wealth generated by the firm. For this reason, this study develops the role of tax governance from the perspective of agency theory, as it is the theoretical basis that best explains the relationship between tax governance and tax evasion.

From this perspective, corporate tax governance includes several subsets of specific policy options (Garbarino, 2011), materialized by principles and good practices serving as instruments to alleviate government–taxpayer agency conflict and thereby mitigate tax evasion. In this regard, it must be understood that these elements are distinct from those of general corporate governance, as there may be gaps in such governance in relation to taxes (Boll & Brehm Johansen, 2018).

Deloitte (2015) published a press release summarizing several national practices aimed at a more effective tax governance structure, mentioning the cases of countries such as New Zealand, Australia, and the UK, which seek to implement "voluntary corporate tax codes of practice to deal with companies that routinely undertake aggressive tax planning" (Deloitte, 2015, p. 2). Table 2 presents, from the compilation of various codes and reports, the main principles that tax governance is designed to preserve.

**Table 2**

*Main principles of tax governance*

| AICP Framework | United Kingdom | Australia |
|---|---|---|
| Equity | Integrity | Responsible management and supervision of the fiscal sector |
| Clarity of rules | Objectivity | Recognizing the fiscal risks |
| Predictability | Zeal and competence | Consulting the tax authorities |
| Economy of calculation | Respecting the rules | Integrity of reporting |
| Simplicity | Professionalism | Professional and productive relationship |
| Neutrality | Expertise | Timely payments |
| No impediment to economic growth and business efficiency | Consulting tax authorities | Ethical and responsible behavior |
| Transparency and visibility | - | - |
| Minimum tax difference | - | - |
| Appropriate sources of government revenue | - | - |

*Source:* Prepared by the authors.

Hji Panayi (2018) explains that by developing principles of good tax governance, international bodies and governments aim to support tax policies that combat tax evasion. With this, the application of good tax governance principles has come to be encouraged towards various countries (Hji Panayi, 2018).

Bedicks (2009) points out that these practices aim to minimize potential conflicts of interest between resource providers and decision makers. Therefore, good tax practices need to be derived from guiding principles in order to form the set of elements required for good tax governance. Table 3 presents some examples of such good practices.

**Table 3**
*Examples of good tax governance practices*

| Literature | United Kingdom | Australia |
| --- | --- | --- |
| Fiscal risk management program | Board reporting package | Tax compliance report (tax accountability) |
| Rules for disclosure of guidelines and fiscal results | Implementation of fiscal governance structure | Implementation of fiscal risk policy |
| Regulation of professionals in the sectors | Tax strategy approved by the board | Fiscal transparency with tax authorities and society (periodic tax reporting) |
| Stakeholder reporting | Fiscal Code of Conduct | Establishment of tax liability controls |
| Penalties related to tax evasion | Defined fiscal procedures | - |
| - | Fiscal risk assessment report | - |

**Source:** Prepared by the authors.

With the structuring and effective implementation of these tax governance elements, it is believed that the main conflicts capable of generating evasive behavior can be mitigated. This is the case for opportunistic tax management carried out by administrators in absentia of the company's board (Gomes, 2016); tax evasion strategies of common interest between administrators and the corporate board (Dietsch & Rixen, 2016); and the conflict arising from the adoption of aggressive tax planning that, although may be lawful, increases management risk and, therefore, is not desired by the company's *stakeholders* (Armstrong et al., 2012).

For all three cases, tax governance functions as an inhibitor of such attitudes: in the case of opportunistic management by helping the board to control its directors; in the case of evasive business strategy by providing information to tax authorities to carry out their checks and inspections; and in the case of aggressiveness by providing directives that provide formal treatment and clear demarcations between tax evasion, tax management, and tax planning practices (Jacob & Michaely, 2017).

Thus, the evidence presented by the literature suggests that organizations have little or no process in place to identify, control, or report tax conflicts (Deloitte, 2015). This is a gap that can be filled by tax governance. For this reason, it can be inferred that tax governance principles and practices aim to mitigate important factors related to tax evasion. Thus, the research hypothesis can be stated as follows:

- **H₁:** In countries where tax governance practices are present, lower levels of tax evasion are observed.

Support for this hypothesis lies in the fact that tax governance, as a set of principles and good practices aimed at guiding tax decisions, is aimed at reducing deviations of this nature, which consequently impacts the observed tax evasion. Thus, it makes sense to verify the direction of the existing relationship and whether it is significant enough to conclude that there is a relevant interaction between tax evasion and tax governance.

To this end, control variables will be used following those described in the theoretical framework that have already been significantly associated with tax evasion and can also be the target of governmental actions to enact change. Such variables are useful in relation to the adoption of governmental policies. Figure 1 presents the theoretical model for the research.
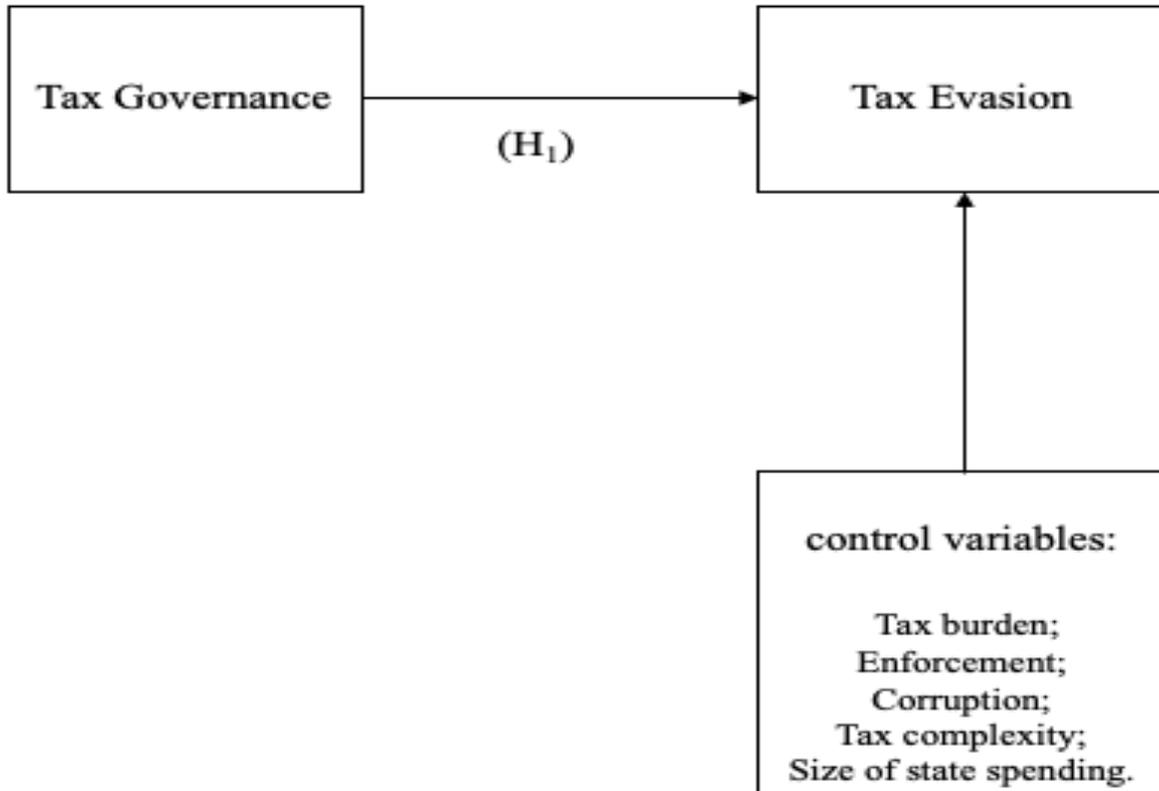


*Figure 1.* Research design
*Source:* Prepared by the authors.

## 3. RESEARCH METHODS

### 3.1. SAMPLE AND VARIABLES

In this paper, a sample of 90 countries will be used for the period between 2005 and 2015. This time span was chosen due to the availability of tax evasion data provided by the International Monetary Fund (IMF) report (Medina & Schneider, 2018), which provides estimates from 2005 to 2015.

Our analysis of 90 countries represents a significant sample size-up compared to other benchmark studies on tax evasion, such as the 32 countries examined by Desai et al. (2007) and the 45 countries examined by Richardson (2006). The study has also used control variables, namely: tax burden, country enforcement, country corruption, tax complexity, and size of state spending (per capita). Table 4 summarizes the model variables, source of collection, metrics, and their respective interpretations.

**Table 4**
*Description of the model variables*

| Variable | Collection Source | Metric | Metric Interpretation |
|---|---|---|---|
| Tax evasion index | IMF Report (Medina & Schneider, 2018) | Estimate calculated by the IMF through the Informal Economy MIMIC system (*Shadow Economy*) | The higher the indicator, the greater the tax evasion. |
| Tax governance | European Union report (European Commission, 2014) and national governance codes | *Dummy* | 0 = non-existence 1 = existence of tax governance |
| Tax burden | World Bank Tax Revenue | Percentage of GDP of taxes collected (in dollars) | The higher the indicator, the higher the tax burden. |
| Country enforcement | World Bank WGI | Index calculated by the World Bank based on analyses of the effectiveness of legislation | The higher the indicator, the greater the effectiveness of the laws. |
| Country corruption | Perception of international transparency corruption | Corruption Perception Index by Transparency International | The higher the indicator, the lower the perception of corruption. |
| Tax complexity | World Economic Forum Global Competitiveness Reports | Index calculated by the World Bank's Competitiveness Report | The higher the indicator, the greater the complexity. |
| Size of state expenditures | Total government spending provided by the OECD and the World Bank | Dollar value of public spending divided by population | The higher the indicator, the larger the size of the expenditures. |

*Source:* Prepared by the authors.

## 3.2. MODEL AND STATISTICAL TREATMENT

In this paper, we use the regression model with panel data for the period between 2005 and 2015, with national variables from a sample of 90 countries. The appropriate estimation technique was chosen according to assumptions regarding the possible correlation between the error term and the explanatory variables: ordinary least squares (OLS) for pooled data, fixed effects model, and random effects model (Gujarati & Porter, 2011). To determine which model was the most appropriate, the following tests were used: the Chow F-test, the Hausman test, and Breusch and Pagan's Lagrange multiplier test (or the Breusch–Pagan LM test).

After the tests, the following econometric model was estimated:

$$EF = b_0 + b_1 GT + b_2 ENF + b_3 CORR + b_4 CT + b_5 COMP + b_6 TGE + e_i. \qquad (1)$$

Where:

- **EF:** the dependent variable of tax evasion;
- **$B_0$:** the model intercept, corresponding to the constant;
- **$b_1$GT:** tax governance;
- **$b_2$ENF:** country enforcement;
- **$b_3$CORR:** the corruption perception index of the country;
- **$b_4$CT:** the tax burden of the country;
- **$b_5$COMP:** the tax complexity of the country;
- **$b_6$TGE:** size of state expenditures;
- **$e_i$:** error term (perturbation of the relation).

Statistical tests were performed regarding the normality, independence, and multicollinearity of the residuals, as well as model consistency and endogeneity tests. This is because these assumptions in regression models aim to facilitate the interpretation of results, make statistical techniques simpler, and enable testing of the hypothesis (Johnson & Wichern, 1998). To this end, SPSS, Gretl, and *Microsoft* Excel *software* were used for data treatment and analysis.

# 4. RESULTS

## 4.1. DESCRIPTIVE ANALYSIS

The sample was composed of 90 countries over an 11-year period with seven variables (one dependent and six independent), which amounts to a total of 6,930 observations. Of the total number of countries, 15 of them were identified to have tax governance practices, namely: Australia, Bulgaria, Canada, China, Croatia, Croatia, Slovenia, United States, Netherlands, Ireland, Italy, Japan, New Zealand, Poland, Portugal, Slovak Republic, United Kingdom, and Sweden. Table 5 presents the general descriptive statistics of the variables for all countries analyzed.

**Table 5**
*Descriptive statistics of the variables for the complete model*

| Variable | Average | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|
| Tax burden | 17.40 | 7.96 | 0.72 | 62.90 |
| Enforcement | 0.350 | 1.04 | –1.77 | 2.47 |
| Tax evasion | 25.20 | 11.80 | 6.16 | 68.50 |
| Corruption | 50.00 | 21.70 | 17.00 | 97.00 |
| Complexity | 7.73 | 4.89 | 0.30 | 23.40 |
| TGE | 16824.90 | 18967.99 | 338.67 | 73023.90 |

**Note:** TGE—size of state spending; N = 90 countries.
*Source:* Prepared by the authors.

For tax burden, Namibia has the lowest level (0.72) and Bulgaria has the highest (59.68), and only five countries that have tax governance are below the average for this variable in the sample. This may indicate that countries with higher tax burdens have more mechanisms for control over their tax collection.

As for the level of enforcement, Denmark (2.47), Finland (2.46), and New Zealand (2.45) have the highest indicators. It is important to emphasize that these three countries are among the least corrupt. On the other hand, Equatorial Guinea (–1.77), Bangladesh (–1.43), and Paraguay (–1.32) occupy the worst positions. For tax complexity, Oman and Paraguay have the lowest values whilst Georgia (23.40) and Poland (20.90) have the highest. Considering the measures of dispersion of the variables, especially the coefficient of variation, it can be seen that the variables have a high standard deviation, suggesting that the data does not have a normal distribution. This is a fact that will be treated and corrected with the analysis of the assumptions of the residues.

As for tax evasion, the countries from the sample have been divided into two groups: those with tax governance (GT countries) and those without (other countries). This grouping allows us to determine that for the observed period, the average tax evasion of the other countries is higher than the average for the entire sample, whilst that of the GT countries is below the overall average Tax evasion - EF (Figure 2).
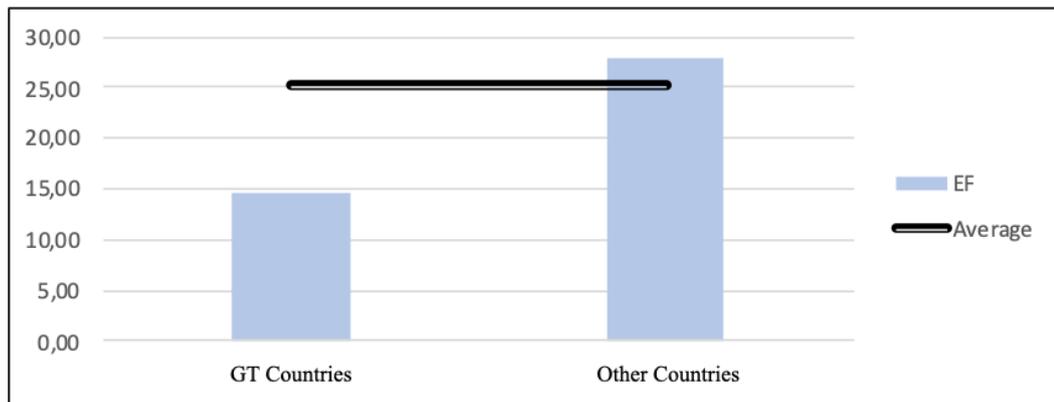


*Figure 2.* Average tax evasion of countries with and without tax governance
*Source:* Prepared by the authors.

Following the same line, to verify the average behavior of the countries, a comparison was made between countries with and without tax governance for the averages of all variables in the observed period, in order to demonstrate the percentage differences (Figure 3).
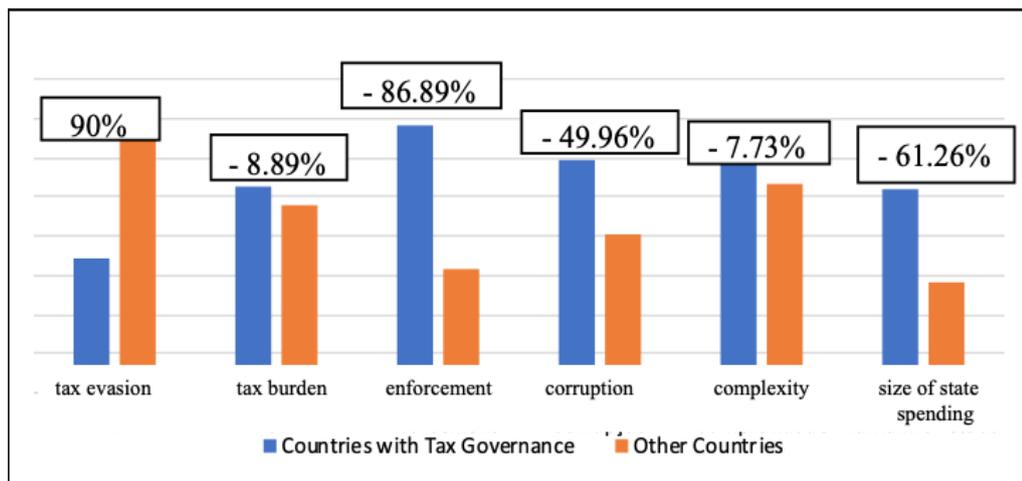


*Figure 3.* Overall comparison of the variables
*Source:* Prepared by the authors.

One can see that the average level of tax evasion in countries without tax governance is 90% higher than in countries with tax governance. For all other variables, the countries without tax governance present lower average indexes—especially for enforcement, with a difference of 86.89%.

It is important to note that the corruption variable for countries with governance was higher because the metric of this index uses an inverted scale; i.e., countries that have higher values for this indicator have a lower perception of corruption. The tax burden and tax complexity of the countries with tax governance are, on average, higher than the other countries, without this being reflected in a higher level of tax evasion.

## 4.2. ANALYSIS OF CORRELATIONS

Although correlation does not confirm a cause-and-effect relationship between the verified data, it is useful to indicate possible multicollinearity problems. Thus, Table 6 presents the correlation matrix and the respective existing significances.

**Table 6**
*Correlation matrix of the analyzed variables*

| | | EF | CT | ENF[a] | CORR | GT | COMP | TGE |
|---|---|---|---|---|---|---|---|---|
| **EF** | Pearson Correlation Sig (bilateral) | 1 | −0.171** 0.000 | −0.719** 0.000 | −0.733 0.000 | −0.229 0.000 | −0.284 0.000 | −0.577 0.000 |
| **CT** | Pearson Correlation Sig (bilateral) | −0.171** 0.000 | 1 | 0.367** 0.000 | 0.326** 0.000 | 0.020 0.520 | 0.111** 0.000 | 0.133** 0.000 |
| **ENF** | Pearson Correlation Sig (bilateral) | −0.719** 0.000 | 0.367** 0.000 | 1 | 0.981** 0.000 | 0.161** 0.000 | 0.358** 0.000 | 0.595** 0.000 |
| **CORR[a]** | Pearson Correlation Sig (bilateral) | −0.733** 0.000 | −0.326** 0.000 | **0.981** 0.000** | 1 | 0.171** 0.000 | 0.358** 0.000 | 0.616** 0.000 |
| **COMP** | Pearson Correlation Sig (bilateral) | −0.284** 0.000 | 0.111** 0.000 | 0.358** 0.000 | 0.358** 0.000 | 0.103** 0.001 | 1 | 0.414** 0.000 |
| **TGE** | Pearson Correlation Sig (bilateral) | −0.577** 0.000 | 0.133** 0.000 | 0.595** 0.000 | 0.616** 0.000 | 0.205** 0.000 | 0.414** 0.000 | 1 |

**Note:** EF—tax evasion; CT—tax burden; ENF—enforcement; CORR—corruption; COMP—complexity; TGE—size of state spending.
** Correlation is significant at the 0.01 level (two-sided).
[a] = Variables that showed strong correlation, suggesting multicollinearity between them (corruption and enforcement).
*Source:* Prepared by the authors.

From the correlation matrix, it can be seen that only one interaction (between corruption and enforcement) is significant, with an indicator of 0.981; this suggests collinearity of the two variables. To prove the existence of multicollinearity, the VIF test was used, which showed a statistic of 28.82 for these variables. According to the test, the variables corruption and enforcement presented values greater than 10 for the parameter for the existence of multicollinearity (Gujarati & Porter, 2011).

In this case, there is evidence of collinearity between corruption and enforcement. In these circumstances, the model can dispense with one of the variables, since their information set is similar. Table 7 contains a summary of the directions found and compares them with those expected.

**Table 7**
*Comparison between expected and found correlations*

| Independent variables | Direction of correlation with the dependent variable | |
| --- | --- | --- |
| | **Expected** | **Found at** |
| CT | Positive | Negative |
| ENF | Negative | Negative |
| CORR | Positive | Negative |
| GT | Negative | Negative |
| COMP | Positive | Negative |
| TGE | Positive | Negative |

**Note:** CT—tax burden; ENF—enforcement; CORR—corruption; GT—tax governance; COMP—complexity; TGE—size of state spending.
*Source:* Prepared by the authors.

Only the variables enforcement and tax governance presented the expected behavior. This behavior already indicates an important finding of the research, since it reveals that tax burden and complexity—indicated by the literature to be important determinants of tax evasion—do not present the expected behavior when analyzed with a larger set of countries and in the presence of determinants such as enforcement and tax governance.

## 4.3. ANALYSIS OF REGRESSION RESULTS

### 4.3.1. Model Choice Test Results

To choose the model for panel data analysis, the following tests were performed: the Chow F-test, the Hausman test, and the Breusch and Pagan Lagrange multiplier test (or the Breusch–Pagan LM test). The results are shown in Table 8.

**Table 8**
*Model Choice Test Results*

| Test | P-value |
| --- | --- |
| Chow | 0.0000 *** |
| Breusch–Pagan | 0.0000 *** |
| Hausman | 0.0025 *** |

**Note:** *** Significant at the 0.01 level.
*Source:* Prepared by the authors.

The Chow test was used to choose the best alternative between the *pooled* model and the fixed effects model. In this case, this test allowed us to reject the null hypothesis of parameter stability since the p-value was 0.0000, which is lower than the 5% significance level. It can then be concluded that there is a structural change in the data, so the fixed effects estimation is better than the *pooled* model (Ordinary Least Squares—MQO).

The Breusch–Pagan test was used to choose the best estimate between the *pooled* model and the random effects model. If the null hypothesis is not rejected, the random effects model is not adequate (Gujarati & Porter, 2011). In this study, considering that the p-value was significant, the null hypothesis that the *pooled* model would be more appropriate should be rejected. Therefore, the estimation by random effects would be more appropriate.

Therefore, the MQO model was ruled out by the Chow and Breusch–Pagan tests. Next, it was necessary to know which type of effect should be considered: the fixed effect (indicated by the Chow test) or the random effect (indicated by the Breusch–Pagan test). For this choice, the Hausman test was performed. The null hypothesis of the test is that the estimators of the fixed effects model and the random effects model do not differ substantially. If the null hypothesis is rejected, the random effects model is not appropriate.

Note that the p-value was 0.0025, which is significant. Thus, the null hypothesis of no simultaneity should be rejected, and it can be inferred that a fixed effects estimator should be used to study the data.

### 4.3.2. Assumption Tests of the Residuals

The analysis of assumptions may indicate additional treatments to be performed to validate the use of parametric tests, as devised in this study. Table 9 consolidates the results of the normality, independence, and heteroscedasticity tests.

**Table 9**
*Results of the residual assumption tests*

| Assumption | Test | P-value |
| --- | --- | --- |
| Normality | Jarque–Bera | 1.92165e–104[a] |
| Independence | Durbin–Watson | 0.653893[b] |
| Heteroscedasticity | White | 7.31213e–13[c] |

**Note.** [a] p-value less than α of 5% = rejects normality hypothesis.
[b] p-value in the non-rejection interval of the independence hypothesis.
[c] p-value less than α of 5% = rejects hypothesis of absence of heteroscedasticity.
*Source:* Prepared by the authors.

The Jarque–Bera Test revealed that the normality assumption was not verified. Thus, to correct the normality problem, a logarithmic transformation of all data was performed, resulting in the information shown in Table 10.

**Table 10**
*Result with logarithmic transformation*

| Assumption | Test | P-value |
| --- | --- | --- |
| Normality | Jarque–Bera | 0.484397 ** |

**Note:** ** Significant at the 0.05 level.
*Source:* Prepared by the authors.

Note that normality was indeed established with the transformation performed, so the fixed effects model to be used will use a sample that meets this assumption.

### 4.3.3. Results of the Fixed Effects Model

Regression was performed with the main verification variable and all control variables. Table 11 summarizes the results for this initial model.

**Table 11**

*Results for Model 1 (with all variables)*

|  | Coefficient | Standard error | T-ratio | P-value |
|---|---|---|---|---|
| Constant | 40.4969 | 2.90521 | 13.94 | 4.25e–24*** |
| Tax burden | –0.0741608 | 0.0647338 | –1.146 | 0.2550 |
| Enforcement | –0.610395 | 1.14135 | –0.5348 | 0.5941 |
| Corruption | –0.247051 | 0.0446832 | –5.529 | 3.18e–07*** |
| Tax governance | –1.17745 | 0.333001 | –3.536 | 0.0006*** |
| Complexity | 0.0921915 | 0.0400518 | 2.302 | 0.0237** |
| TGE | –0.000127043 | 8.76339e–05 | –1.450 | 0.1507 |
| R-squared | 0.9711 |  |  |  |

**Note:** *** Significant at the 0.01 level.
** Significant at the 0.05 level.
*Source:* Prepared by the authors.

The variables corruption, tax governance, and complexity were the only ones that presented as statistically significant in this model, which indicated an R-squared value of 0.9711. With this, all the variables that did not show significance were removed (tax burden and size of expenditures). The corruption variable was also omitted, leaving in its place the enforcement variable to verify if the collinearity found between these variables can be confirmed in terms of statistical significance in the regression model. Table 12 summarizes the results for this second adjusted model.

**Table 12**

*Results for Model 2 (reduced)*

|  | Coefficient | Standard error | T-ratio | P-value |
|---|---|---|---|---|
| Constant | 26.0082 | 0.556903 | 46.70 | 2.18e–64*** |
| Enforcement | –3.92794 | 1.33404 | –2.944 | 0.0041*** |
| Tax governance | –1.58580 | 0.275130 | –5.764 | 1.17e–07*** |
| Complexity | 0.0793933 | 0.0477949 | 1.661 | 0.1002 |
| R-squared | 0.965619 |  |  |  |

**Note:** *** Significant at the 0.01 level.
*Source:* Prepared by the authors.

These results show that, with the adjustments made, tax governance continues to present significance, while complexity no longer does. It was also confirmed that the variables corruption and enforcement have the same explanatory power. This model indicated an R-squared value of 0.9656.

Finally, all control variables were removed and a third simple model was estimated. Table 13 presents the results for this simple model.

**Table 13**
*Results for Model 3 (simple)*

|  | Coefficient | Standard Error | T-ratio | P-value |
|---|---|---|---|---|
| Constant | 25.2490 | 0.0111856 | 2257 | 1.60e–213*** |
| Tax governance | –1.59948 | 0.230704 | –6.933 | 6.30e–10*** |
| R-squared | 0.963731 |  |  |  |

**Note:** *** Significant at the 0.01 level.
**Source:** Prepared by the authors.

These results show that tax governance continues to show significance, and the R-squared value of 0.9637 reveals that the omission of variables did not influence the model's results in a relevant way.

As an additional robustness test, a between-groups model was estimated. This is because the normal model assigns weights to the data variances, making the variance of the residual constant. The between-groups model, on the other hand, expresses the variations between groups, which in this case are the component countries of the sample. Thus, it is possible to maintain the information set without removing observations and obtain results without bias due to the diversity of data used. For this estimator, all the control variables were used again; the results are shown in Table 14.

**Table 14**
*Results for the between-groups model*

|  | Coefficient | Standard Error | T-ratio | P-value |
|---|---|---|---|---|
| Constant | 40.3501 | 16.9643 | 2.379 | 0.0197** |
| Tax burden | 0.101835 | 0.124639 | 0.8170 | 0.4162 |
| Enforcement | –0.847364 | 7.76351 | –0.1091 | 0.9133 |
| Corruption | –0.298122 | 0.377181 | –0.7904 | 0.4315 |
| Tax governance | –18.9301 | 8.53950 | –2.217 | 0.0294** |
| Complexity | 0.104779 | 0.211481 | 0.4955 | 0.6216 |
| TGE | –9.78732e–05 | 5.99803e–05 | –1.632 | 0.1065 |
| R-squared | 0.605689 |  |  |  |

**Note:** ** Significant at the 0.05 level.
**Source:** Prepared by the authors.

These results confirm that only tax governance is significant in relation to the dependent variable tax evasion. Thus, with an α value of 5%, we accept hypothesis $H_1$ that the presence of tax governance implies lower tax evasion rates. Thus, we can confirm that there is a negative relationship between the level of tax evasion and the existence of tax governance. This confirmation suggests that the adoption of tax governance principles and good practices is a factor that can be associated with the reduction of tax evasion, supporting the international movement of adherence to this practice.

In addition, it is worth noting the results regarding the control variables used, in which tax burden and size of state expenditures did not show the same behavior that was suggested by the studies of Desai et al. (2007) and Valderrama et al. (2018). Similarly, the variable of complexity when associated with tax governance and enforcement did not show significance, which is a possible explanation for the divergence from the results determined by Richardson (2006).

The variable of enforcement presented statistical significance, confirming the assumption of the seminal model of Allingham and Sandmo (1972): in countries with effective enforcement and adequate punishments, evasion is discouraged. However, as already indicated by Cowell (1990), increasing the effectiveness of the rules (greater frequency of auditing or increases in fines for evasion) is not a sufficient and necessary solution for reducing the amount of illegal activity; tax evasion would persist, precisely because of the complexity of factors that influence it. Thus, Cowell (1990) suggests that national governments check other complementary ways of mitigating evasion, especially those that improve the cost–benefit ratio of tax collection and inspection.

Along these lines, the present study advances past studies by testing and confirming that tax governance can be considered to be an additional factor of evasive coping (Wymeersch, 2006). Governance rules affect agents in the decision-making process around tax strategies by complementing the set of delineators of their actions (Wymeersch, 2006).

The results of Atwood et al. (2012) suggest that governance arrangements motivate managers to undertake more risky tax strategies when countries have permissive legislation. Thus, enforcement and tax governance complement each other in their objectives.

## 5. CONCLUDING REMARKS

This study aimed to verify the relationship between tax governance and tax evasion, through the theoretical support of agency theory, assuming that evasion is a phenomenon arising from the conflict between taxpayers and governments, the so-called tax agency, and that tax governance is an element of mitigation for this conflict. Thus, tax governance has been a business management tool whose implementation has been encouraged by international organizations and different governments, but there is still no empirical evidence on its effects on tax evasion.

### 5.1. THEORETICAL IMPLICATIONS

The results confirmed the study hypothesis that the presence of tax governance practices is associated with lower levels of tax evasion. This finding fills an important gap in the sense of testing the supposed relationship and also contributes to the tax literature with another factor associated with tax evasion, thereby expanding the frontiers of research on the subject.

As for secondary results, this study presents evidence from the conflicting theoretical perspective existing between government and taxpayer, analyzed with a wide set of countries and for a period longer than a decade. These findings were obtained by the examining the behavior of the control variables tax burden, size of state expenditures, and complexity, which would not significantly influence the level of tax evasion. Enforcement, on the other hand, presented the expected theoretical result, as well as demonstrating its strong correlation with countries' corruption perception index. Our findings also confirm the findings of previous studies that point to the complementary relationship between enforcement and tax governance, in such a way that the first represents coercive aspects whilst the second represents recommendation aspects.

## 5.2. Practical Implications

This study presents empirical evidence that the international movement led by the OECD to emphasize the relevance of and extend guidelines for tax governance has measurable indications of tax evasion mitigation, which can help companies to better understand and implement their tax governance models as an element to efficiently and responsibly deal with their tax performance. At the state level, governments can use or induce the application of principles and best practices that bring better results to the public revenue process and, indirectly, to the provision of services to society.

## 5.3. Limitations and recommendations

The main limitation of this research lies in the availability and temporality of the data, since the release of national information has a gap with the base periods. Another limitation is the metrification of the response variable. This difficulty is related to the criminal nature of this activity, which makes it difficult to have more direct and primary metrics regarding its execution. Finally, it is hoped that future works can contribute with respect to the type of methodology used, since the possibilities of analysis go beyond the models, premises, and quantitative methods used in this work.

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