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► **To cite this version:**

Ramzi Benkraiem, Ali Uyar, Merve Kilic, Friedrich Schneider. Ethical behavior, auditing strength, and tax evasion: A worldwide perspective. *Journal of International Accounting, Auditing and Taxation*, 2021, 43, pp.100380. 10.1016/j.intaccudtax.2021.100380 . hal-03185090

**HAL Id: hal-03185090**

**<https://hal-audencia.archives-ouvertes.fr/hal-03185090>**

Submitted on 24 Apr 2023

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# **Ethical Behavior, Auditing Strength, and Tax Evasion: A Worldwide Perspective**

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**Abstract:**

Most governments attempt to fight and reduce tax evasion. A dilemma arises about whether policies should encourage the ethical behavior of firms (an informal institution) or strengthen auditing standards (a formal institution). In this study, we provide novel worldwide evidence on the effects of these two factors on tax evasion. Overall, even though strong auditing standards may mitigate tax evasion, the ethical behavior of firms has a statistically more robust effect in achieving this goal; these results hold after we control for endogeneity and different subperiods (before, during, and after the recent global financial crisis). More specifically, the ethical behavior of firms is effective for low- and middle-income countries with low and high levels of investor protection and low-efficacy corporate boards; however, ethical behavior and auditing standards are mutually effective for high-income countries and countries with middle level investor protection and middle- and high-efficacy corporate boards. Thus, this study provides useful insights for organizations and policy makers.

**Keywords:** Institutional Theory, Tax Evasion, Ethical Behavior, Auditing Strength, Investor Protection, Corporate Boards.

## 1. Introduction

Businesses typically engage in operations and financial transactions to minimize their tax payments (Bame-Aldred et al., 2013) and hence increase their after-tax income (Gaaya et al., 2017). Although tax accountants often use legitimate means to reduce or avoid corporate tax obligations, they sometimes violate the legal framework and ethical standards (Richardson, 2008). Tax evasion<sup>1</sup> consists of intentional illegal actions taken by businesses to reduce their tax payments and obligations by underreporting wealth, incomes, or sales; overstating deductions and exemptions; or failing to declare financial assets (Alm & Torgler, 2011; Khlif & Achek, 2015). Tax evasion practices have various negative social and economic implications (Culiberg & Bajde, 2014).<sup>2</sup> Because income taxation is a necessary mechanism for fiscal capacity, economic infrastructure, and public and social services provided by the state in both developed and developing countries (Torgler, 2005; Bame-Aldred et al., 2013), tax authorities around the world have stepped up efforts to combat tax evasion. Understanding the underlying determinants of tax evasion is essential to governments and policy makers as they devise and implement policies to reduce these damaging effects (Atwood et al., 2012; Siglé et al., 2018).

Institutional theory provides a useful lens for understanding why the level of tax evasion differs across countries (Williams & Horodnic, 2015). According to this theory, the institutional environment is one of the most important factors in the differences in tax compliance across countries (Lin et al., 2017; Yamen et al., 2018). For instance, higher-

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<sup>1</sup> The prior literature uses various terms to refer to companies' tax-management practices, such as *tax evasion*, *tax avoidance*, *tax sheltering*, *tax aggressiveness*, and *tax noncompliance* (Atwood et al., 2012). In this study, we use the term *tax evasion* to refer to intentional illegal actions taken by businesses in an attempt to reduce tax payments and obligations.

<sup>2</sup> For example, tax evasion leads to budget deficits (Gërkhani, 2007), reduces tax revenue, which in turn shrinks the services offered by the state (Gërkhani, 2007; Culiberg & Bajde, 2014), grants an unfair economic advantage to tax evaders (Culiberg & Bajde, 2014), and increases the financial, social, and environmental risks associated with the production, exchange, and consumption of goods by sidestepping the formal regulatory framework (Culiberg & Bajde, 2014).

quality institutions could boost tax compliance through deterrence and a strong rule of law (Bruno, 2019). Surprisingly, very few studies have examined tax evasion in an institutional context (Alon & Hageman, 2013; Lin et al., 2017; Yamen et al., 2018). Maciejovsky et al. (2012), Lin et al. (2017), and Bradshaw et al. (2018) call for further research on the influence of the institutional infrastructure on tax evasion. In response to these calls, we draw on institutional theory and explore whether—and if so, how—informal institutions (i.e., the ethical behavior of firms) and formal institutions (i.e., the strength of auditing and reporting standards<sup>3</sup>) impact tax evasion across the world.

This empirical analysis has two levels: the first level tests the impacts of the two institutional factors (the ethical behavior of firms and the strength of auditing standards) on tax evasion. In this first part, we also apply robustness tests, examine the endogeneity issue, and investigate how the results change before, during, and after the global financial crisis. The second level deepens the analysis by examining the moderating role of the efficacy of corporate boards, investor protection mechanisms, and country income level in various subsamples.

Fundamental analyses have proved that both the ethical behavior of firms and the strength of auditing standards are two powerful informal and formal institutional mechanisms in alleviating tax evasion; however, after considering their joint effect on the outcome, we note that ethical behavior has a greater impact on tax evasion than the strength of auditing standards. These results hold after we control for endogeneity and different subperiods, that is, before, during, and after the recent global financial crisis. Incremental analyses have shown that the battle against tax evasion is a multilateral rather than unilateral task, and in some instances our results are not straightforward but are nevertheless intriguing. In summary, ethical behavior and strong auditing regulations are more impactful if corporate boards are

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<sup>3</sup> Hereafter, we use *strength of auditing standards* and *strength of auditing* interchangeably.

effective in their monitoring and controlling functions. Second, the relationship between ethical behavior and auditing regulations and tax evasion is conditional on investor protection status; these two institutions (ethical behavior and auditing standards) function best to curtail tax evasion under a moderate level of investor protection. Finally, the influence of ethical behavior and auditing regulations is far more pronounced in high-income countries than in low- or middle-income countries.

This paper contributes to the literature in several ways. First, although there is a long tradition of research that explores the firm-level drivers of corporate tax aggressiveness<sup>4</sup> (Taylor & Richardson, 2012; Tandean & Winnie, 2016), evidence on the country-level drivers of tax evasion is more scarce and limited (Atwood et al., 2012; Bame-Aldred et al., 2013; Zeng, 2018).<sup>5</sup> Second, most empirical evidence on tax evasion has come from single-country cases (Lin et al., 2017; Jiménez-Angueira, 2018; Lanis & Richardson, 2018) or specific regions, such as Scandinavia (Kleven, 2014), sub-Saharan Africa (Jahnke & Weisser, 2018), Latin America (Torgler, 2005), and the European Union (EU) (Yamen et al., 2018). The current study extends and complements prior research by providing empirical evidence on the relationship between institutional circumstances and tax evasion in a worldwide setting. Third, it adds to the literature by examining the ethics of tax evasion from an institutional perspective rather than focusing on individuals' ethical beliefs. Moreover, we deepen this main investigation by running the analyses before, during, and after the global financial crisis, as well as controlling for endogeneity. Fourth, the current study takes a multifaceted approach to tax evasion by examining the moderating effects of corporate board efficacy, investor protection mechanisms, and country income level on the relation between institutional infrastructure and tax evasion. To the best of our knowledge, these moderating effects have

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<sup>4</sup> Corporate tax aggressiveness implies tax-planning activities that are legal or may fall into the gray area, as well as activities that may be illegal (Richardson et al., 2013).

<sup>5</sup> See Khlif and Achek (2015) for a review of the literature on determinants of tax evasion.

not been examined in the literature to this extent. Overall, we show that fighting tax evasion is not a straightforward task for governments; instead, it requires a multilateral approach. Hence, we try to propose an optimal configuration of factors to alleviate tax evasion.

The remainder of the paper is organized as follows. The next section provides a comprehensive review of past studies on tax evasion. The third section explains our theoretical framework and hypothesis development. In the fourth section, we outline the research methodology and present the findings. Finally, we conclude by discussing implications, acknowledging limitations, and highlighting avenues for future research.

## **2. Literature review**

Over the past few decades, tax evasion has been of great interest to researchers<sup>6</sup>. In the accounting and finance fields, an extensive strand of research has examined the influence of various corporate governance factors (i.e., board size, board independence, board diversity, chief executive officer (CEO) duality, ownership structure, etc.) (Chan et al., 2013; Richardson et al., 2016; Jiménez-Angueira, 2018)<sup>7</sup>, sustainability level (Khlif et al., 2016), and corporate social responsibility (CSR) (Hoi et al., 2013; Laguir et al., 2015; Lanis & Richardson, 2018) on corporate tax-planning practices.

A country's economic, legal, and institutional environment may impact tax evasion practices (Ermasova et al., 2019). Nevertheless, the literature provides little empirical evidence on the link between institutional theory and tax evasion behavior in an international setting. For instance, Alon and Hageman (2013) examine the relationship between institutional factors, such as corruption and trust and tax compliance, in transition economies. Lin et al. (2017) explore the impact of regional institutions, both formal and informal, on the

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<sup>6</sup> See Cooper and Nguyen (2020) and Wang et al. (2020).

<sup>7</sup> See Kovermann and Velte (2019) for a review of the literature on the impact of corporate governance on tax evasion.

association between CSR and tax avoidance. Further, Zeng (2018) examines how the interplay of CSR and institutional conditions affects tax avoidance. Moreover, Yamen et al. (2018) investigate the impact of governance quality on tax evasion levels in older and newer EU member states. A recent study by Ermasova et al. (2019) explores the association between national culture and tax evasion in the USA and Germany. In particular, Bruno (2019) examines the relationship between tax enforcement, tax evasion, and tax morale within transition economies. Given that institutional mechanisms play a significant role in reducing tax evasion, surprisingly little research explores the impact of institutional infrastructure on tax evasion (Yamen et al., 2018; Zeng, 2018; McGee & Benk, 2019). Following Alon and Hageman (2013), Lin et al. (2017), Yamen et al. (2018), and Zeng (2018), we argue that it is important to consider the institutional situation when understanding tax evasion behavior. Thus, the current paper examines whether—and if so, how—institutional differences lead to differences in tax evasion levels across countries.

A further line of studies examines tax evasion from a cultural standpoint (Tsakumis et al., 2007; Richardson, 2008) and an ethical standpoint (Shafer & Simmons, 2008; Culiberg & Bajde, 2014). These studies highlight the important role of ethical considerations in shaping individuals' (i.e., citizens', taxpayers', tax collectors', and consumers') attitudes toward tax evasion, and they identify individual antecedents of tax noncompliance. However, few studies have yet examined the association between ethics and tax evasion in an institutional setting (Torgler, 2005). Therefore, this paper provides unique insights into the link between institutional ethics and tax evasion. Although a considerable number of studies have explored the impact of single or disaggregated corporate board characteristics on tax evasion,<sup>8</sup> only Jiménez-Angueira (2018) examines how the interplay between corporate governance structure and the external monitoring environment affects tax avoidance. We attempt to expand the

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<sup>8</sup> See Lanis and Richardson (2011), Richardson et al. (2013), and Lanis and Richardson (2018).



findings of Jiménez-Angueira (2018) by investigating how corporate board efficacy interacts with the institutional setting to influence tax evasion. Moreover, we incorporate another pillar of corporate governance (i.e., investor protection mechanisms) and examine how the relationship between the institutional context and tax evasion is influenced by the moderation of this variable.

The influence of the global financial crisis of 2008 (GFC) on the link between institutional circumstances and tax evasion needs explanation and clarification. The GFC provides a useful setting with which to understand whether the level of tax evasion is impacted by the financial crisis (Richardson et al., 2015). Using a sample of Australian firms, Richardson et al. (2015) examine whether the GFC impacted the association between financial distress and tax avoidance, finding that the GFC exacerbated the tax avoidance of financially distressed firms. While we also focus on the crisis period, we investigate whether institutions played a particular and different role during the crisis period than in the pre- or post-crisis periods in fighting against tax evasion. To our knowledge, the current paper is unique in that it investigates whether the impact of the institutional context on tax evasion differs throughout the periods of the GFC. Overall, the literature provides few empirical findings on the relationship between institutional structure and the level of tax evasion and how this relationship is impacted by corporate board efficacy, investor protection mechanisms, economic development, and financial crisis. The present paper addresses this gap by examining the institutional drivers of tax evasion with a multifaceted approach.

### **3. Theoretical framework and hypotheses**

Institutional theory has been used in numerous studies to explore the influence of institutional factors on corporate practices (Yang & Rivers, 2009; Nikolaeva & Bicho, 2011;

Ioannou & Serafeim, 2012; Lin et al., 2017). The theory states that corporate behavior is shaped by both informal institutions (i.e., socially accepted unwritten rules) and formal institutions (i.e., codified laws and regulations) (DiMaggio & Powell, 1983; Campbell, 2006; Campbell, 2007). The pressures exerted on organizations by these informal and formal institutions may result in homogeneous practices in the organization's field (DiMaggio & Powell, 1983). DiMaggio and Powell (1983) define the process of homogenization created by these informal and formal forces as *coercive isomorphism*.

Societal perceptions of the morality of an action can shape individuals' behavioral intentions and ethical judgments about whether a behavior is acceptable or unacceptable (Shafer & Wang, 2018). Because perceived social norms are an informal institution that affects the intentions, judgments, and intrinsic motivations of the individuals who manage and control companies, these norms can influence corporate-level decisions on tax evasion (Shafer & Wang, 2018). In the case of tax compliance, individuals may have a strong intrinsic motivation to pay their taxes that is driven by cultural or social norms (Luttmer & Singhal, 2014). In this context, the violation of social norms would result in higher moral costs (Torgler & Schneider, 2009).

Formal institutions (i.e., governments, regulatory bodies, tax administrations, etc.) can deter companies from evading taxes by setting rules and regulations, imposing penalties (i.e., back taxes, interest, fines, etc.) (Hasseldine & Li, 1999), increasing the number of audits (Alm & Torgler, 2011), and promoting an environment of compliance among citizens (Bame-Aldred et al., 2013). Strong formal institutions can create a more transparent information environment that prompts companies to be transparent about their tax policies and reporting (Kanagaretnam et al., 2018) and to comply with tax laws (Lanis & Richardson, 2011). The institutional setting can also impact the perceptions of fairness in a jurisdiction, which would

in turn shape corporate attitudes toward tax reporting.<sup>9</sup> From this point of view, an unfair tax system and a government that is not trusted would enhance the individuals' incentives to rationalize their tax-cheating behavior (Torgler, 2005). Thus, taxpayers would refuse to fulfill their tax obligations in jurisdictions where the tax system is unfair (Torgler, 2003, 2005), where trust and confidence in the government are low (Richardson, 2008), where the corruption level is high (Torgler, 2005; Torgler & Schneider, 2009), and where favoritism is widespread (Lin et al., 2017). On the other hand, if taxpayers perceive that their taxes are spent well by the state, they are protected by the rule of law, and their interests are represented in the state's institutions (Torgler & Schneider, 2009), their willingness to evade taxes will decrease. Hence, we hypothesize that tax evasion is mitigated by the institutional factors characterized by informal institutions (i.e., corporate ethics) and formal institutions (i.e., strong auditing standards) on the level of tax evasion.

### *3.1. Ethical corporate behavior*

Tax evasion behavior cannot be understood in terms of traditional economic and financial considerations (Alm & Torgler, 2011; Shafer & Wang, 2018) or the level of fines and audit rates (Torgler & Schneider, 2007).<sup>10</sup> Although stringent rules and concrete sanctions that are backed by the power of the state play a considerable role in restraining tax evasion, we should not underestimate the role of noncoercive mechanisms in encouraging tax compliance (Bird & Davis-Nozemack, 2018). For instance, in many jurisdictions, the level of deterrence and the potential fines are too low to explain the high level of tax compliance (Torgler & Schneider, 2009).

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<sup>9</sup> In jurisdictions where trust in the government is low and the tax system is perceived as unfair, taxpayers might use tax evasion to protest the inequities of the system and compensate themselves for the unfairness of their tax burdens (Wenzel, 2007).

<sup>10</sup> Although penalties and audits exist, tax evasion continues to become a common phenomenon in many jurisdictions (Tsakumis et al., 2007; Maciejovsky et al., 2012).

From an ethical standpoint, tax evasion behavior can be driven by ethical beliefs, intrinsic intentions, or social motivations such as values, norms, and morals (Alm & Torgler, 2006; Kleven, 2014).<sup>11</sup> On the one hand, a nation can create a social identity for taxpayers, motivating them to act for the collective good with a sense of cooperation and cohesion (Wenzel, 2007). If individuals believe that tax compliance is widespread and the *right thing to do* in a jurisdiction, complying with tax regulations becomes a social norm and accepted mode of behavior (Torgler, 2005; Torgler & Schneider, 2005). On the other hand, if individuals notice that many other companies evade their tax obligations, their intrinsic incentives and motivation to pay taxes will decrease (Torgler & Schneider, 2005; Alm & Torgler, 2006). Therefore, in societies with low tax morale, individuals consider tax cheating acceptable and find it rational and justifiable to evade tax (Kemme et al., 2020). In this case, tax evasion becomes pervasive (Torgler, 2005; Alm & Torgler, 2011), the ethics of tax compliance disappears (Lin et al., 2017), and the moral costs of tax noncompliance decrease (Torgler, 2003, 2005; Culiberg & Bajde, 2014).

Regarding the empirical evidence in this area, Kaplan et al. (1997) determine that tax evasion intentions are lower for taxpayers who use high moral reasoning in their decision making. Likewise, Richardson (2006) and Kemme et al. (2020) find that the level of tax evasion is low in countries where the tax morale is high. Comparing the USA with 14 European countries, Alm and Torgler (2004) determine that the USA has the highest tax morale of all their sample countries, followed by Austria and Switzerland, because of a higher social norm of tax compliance. Furthermore, Torgler and Schneider (2005) document that societal values such as trust, national pride, or religiosity have a significant impact on tax morale. Wenzel (2005) finds a bi-directional causality between ethics and tax compliance by

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<sup>11</sup> In the prior literature, these motivations are usually grouped under the headings of *tax ethics* (Wenzel, 2005; Maciejovsky et al., 2012) and *tax morale* (Alm & Torgler, 2006; Torgler & Schneider, 2007, 2009; Luttmer & Singhal, 2014). *Tax morale* is the belief that paying taxes is a moral obligation (Torgler & Schneider, 2007, 2009).

demonstrating that higher ethical beliefs lead to greater compliance, and in turn, greater compliance leads to superior ethical beliefs. In addition, Lanis and Richardson (2012) determine that a firm's social investment commitment and CSR strategy (including the ethics and business conduct) are fundamental elements in preventing corporate tax aggressiveness. More specifically, Shafer and Simmons (2008) note that tax professionals who believe more strongly in the importance of corporate ethics are less likely to engage in aggressive tax-avoidance practices. In light of the above discussions and empirical findings, we predict that ethical corporate behavior has a significant influence on mitigating tax evasion. Thus, we propose the following hypothesis:

*Hypothesis 1:* Ethical corporate behavior is negatively associated with tax evasion.

### *3.2. Strength of auditing standards*

Regulatory systems tend to codify appropriate corporate behavior through regulations, rules, and sanctions (Muthuri & Gilbert, 2011). The strength of the regulatory system may deter tax evasion by enhancing the taxpayers' commitments to transparency and accountability (Khlif & Guidara, 2018), increasing audit probability and penalty rates (Maciejovsky et al., 2012; Jiménez-Angueira, 2018), and improving the quality of audits (Bame-Aldred et al., 2013). In turn, high audit quality is expected to provide effective monitoring of companies (Gaaya et al., 2017; Khlif & Guidara, 2018) and reduce the opportunistic tax evasion behavior of management (Atwood et al., 2012; Gaaya et al., 2017). One could thus argue that in countries where the enforcement of tax rules is strong and the probability of detection and imposition of penalties is high, the willingness of companies to evade tax will be low (Atwood et al., 2012). By contrast, in countries where the penalty levels and the frequency of audits are low, the propensity of companies to comply with tax

regulations will decrease because it is unlikely that tax noncompliance will be caught and penalized (Torgler, 2003).

Notably, the literature shows that strong enforcement mechanisms (e.g., audits, fines, and penalties) have positive effects on tax compliance. For instance, Atwood et al. (2012) find that tax avoidance is negatively associated with the perceived strength of tax enforcement. Richardson (2008), Bame-Aldred et al. (2013), and Yamen et al. (2018) determine that a strong rule of law significantly reduces the likelihood of tax evasion. Further, Zeng (2018) finds that a strong legal and institutional setting reduces tax evasion. Likewise, Bruno (2019) documents that sound institutions enhance a society's tax morale, which results in high tax compliance. In addition, Banerjee and Vaidya (2019) determine that, in the absence of harassment, only strong anticorruption reforms can reduce tax evasion and eliminate corruption. More specifically, Khlif and Guidara (2018) show that the strength of auditing and reporting standards is negatively associated with tax evasion. In line with the preceding discussions and empirical findings, we posit that the strength of the auditing and reporting standards plays a significant role in reducing tax evasion. Thus, we propose the following hypothesis:

*Hypothesis 2:* The strength of the auditing and reporting standards is negatively associated with tax evasion.

### *3.3. Financial crisis effect*

Financial crises increase public awareness of tax havens, tax evasion, and tax avoidance (Roland, 2019). In a booming economy, businesses have numerous opportunities to enhance corporate income in the official economy (Schneider et al., 2010). However, in times of financial crisis, businesses may try to compensate for their losses in the official economy by undertaking additional shadow economy practices (Schneider et al., 2010). For instance, when

businesses face a financial recession, they could be motivated to reduce corporate tax obligations and payments by engaging in aggressive tax-planning practices (Richardson et al., 2015). Tax evasion would then constrain the government's ability to restore the economic and financial system by limiting the government's resources to mitigate the effect of abnormal shocks (Ozili, 2020). In these difficult financial times, policy makers can improve the mechanisms to enhance control over companies to reduce the tax gap (Culiberg & Bajde, 2014; Bradshaw et al., 2018). Accordingly, we expect that institutions tend to play a greater role in restraining tax evasion during economic downturns.

### *3.4. Efficacy of corporate boards*

The effective implementation of corporate governance measures is considered a crucial mechanism to constrain tax-avoidance practices (Gaaya et al., 2017; Jiménez-Angueira, 2018) and reduce tax evasion. As the board is ultimately responsible for corporate governance mechanisms, it plays a significant role in implementing strategies, policies, and systems to ensure that tax-related risks are minimized (Richardson et al., 2013) and to reduce the opportunistic tax-avoidance activities of top management (Lanis & Richardson, 2011). Regarding the empirical research in this area, Minnick and Noga (2010) show that governance plays a significant role in directing the tax management practices that a firm pursues. Further, Lanis and Richardson (2011) indicate that effective boards with more independent directors reduce tax aggressiveness through better governance. In the same vein, Jiménez-Angueira (2018) documents that companies with a strong governance structure exhibit lower tax-avoidance levels when under a tighter external monitoring environment. In addition, Lanis and Richardson (2018) show that board independence strengthens the negative association between CSR performance and tax aggressiveness. In line with the above discussions and

empirical findings, we assume that effective corporate boards play a positive moderating role between institutional factors (i.e., ethical behavior and strength of auditing) and tax evasion.

### *3.5. Investor protection level*

A country's investor protection level reflects the strength of the legal mechanism that directs the protection of shareholders' rights. In countries where investor protection is low, legal and governance enforcement is weak (Jackson & Apostolakou, 2010), and monitoring mechanisms are poor (Herda et al., 2014). In these circumstances, taxpayers are more likely to engage in tax evasion because of the lower expected probability of detection and potential tax imposition (Kanagaretnam et al., 2018). Accordingly, one could argue that the association between institutional factors and tax evasion would be more significant for countries with strong investor protection mechanisms. Thus, we predict that the investor protection level will augment the influence of the institutional environment on tax evasion.

### *3.6. Income level effect*

In a poor country, businesses have limited opportunities to increase corporate income in the official economy (Jetter et al., 2015). In this case, businesses can be motivated to engage in illicit corrupt activities to boost their limited incomes (Jetter et al., 2015). Torgler and Schneider (2009) document that there is less of a shadow economy<sup>12</sup> in countries with a higher income level as proxied by the gross domestic product (GDP). In the same vein, Dzhumashev (2014) determines that the incidence of corruption declines with economic development. Williams and Horodnic (2015) state that illegal informal economic practices (i.e., envelope wages) are more widespread in countries with a low level of income, and Tsakumis et al. (2007) and Richardson (2008) show a negative relationship between the level

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<sup>12</sup> The shadow economy includes unreported income from the production of legal goods and services (Schneider & Enste, 2000).



of economic development and tax evasion. In line with the above empirical findings, we posit that institutional mechanisms play a greater role in diminishing the likelihood of tax evasion in countries with a high income level.

#### 4. Research methodology

##### 4.1. Sample

We compiled the study data from three different sources, as described in Table 1. These distinct sources have different sets of countries, which forced us to reconcile them and establish a common list of countries. This process resulted in a final set of 138 nations and 1,285 observations after we eliminated missing cases. In addition, we had to reconcile these three data sources to set common time intervals. This process led us to choose a 10-year period between 2006 and 2015.

“Insert Table 1 about here”

##### 4.2. Empirical model

First, we ran a regression analysis to observe the influence of the institutional context on tax evasion. Then, we executed the following model (Equation 1) to investigate whether the ethical behavior of firms and the strength of auditing standards reduce tax evasion. For the subgroup analyses and moderating effects, we subsequently ran the second equation.

$$TE_{j,t} = \alpha + \beta \times EB_{j,t} + \gamma \times AS_{j,t} + \theta X_{j,t} + \psi Z_j + \varepsilon_{j,t} \quad (1)$$

$$TE_{j,t} = \alpha + [\beta \times EB_{j,t} + \gamma \times AS_{j,t} + \theta X_{j,t}] * I(I_{j,t} \in 1^{st}, 2^{nd} \text{ or } 3^{rd} \text{ Moderator variable Tercile}) + \psi Z_j + \varepsilon_{j,t} \quad (2)$$

TE is Tax Evasion; EB is Ethical Behavior; AS is Strength of Auditing Standards; X is a set of control variables; Z is a set of a dummy variables controlling for year and country effects;  $\varepsilon_{j,t}$  is the error term, and I is the moderator variable terciles.

#### *4.3. Variable definitions*

We classified the variables into the following three classes: dependent, test (i.e., variables of interest), and control. The definitions and measurements of all the variables are presented in Table 1.

##### *Dependent variable*

Tax evasion is proxied by the shadow economy as a percentage of GDP, which is in line with previous empirical studies (Tsakumis et al., 2007; Khelif et al., 2016; Yamen et al., 2018). The shadow economy includes “all market-based legal production of goods and services that are deliberately concealed from public authorities for the following reasons: (1) to avoid payment of income, value added or other taxes, (2) to avoid payment of social security contributions, (3) to avoid having to meet certain legal labor market standards, and (4) to avoid complying with certain administrative procedures” (Schneider, 2005, pp. 4-5). However, while the shadow economy addresses unregistered economic activities, it does not address all illegal economic activities (particularly criminal activities); accordingly, it does not show the absolute size of the complete unofficial economy (Schneider et al., 2015). In prior studies, the shadow economy is estimated based on surveys, questionnaires, or other indirect means at the micro level (Guerra & Harrington, 2018; Yamen et al., 2018) or based on the multiple indicators multiple causes (MIMIC)<sup>13</sup> model at the macro level, which takes

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<sup>13</sup> Please see Schneider and Buehn (2018, pp. 12) for a technical explanation of how the MIMIC method is applied.

different indicators into account that directly affect the development of shadow economies' sizes over time (Torgler & Schneider, 2009; Yamen et al., 2018). Schneider and Buehn (2012) admit that no exact measure of the size of the shadow economy exists and that the MIMIC method is also subject to an error margin; however, they assert its superiority over other methods.

#### *Variables of interest*

The ethical behavior of firms, the strength of auditing and reporting standards, the strength of investor protection, and the efficacy of corporate boards are the variables collected from the Global Competitiveness Index developed by the World Economic Forum (2018). It is the best-known index for measuring and ranking countries according to the weakness and strength of their economic and institutional settings (Ekici et al., 2016; Pérez-Moreno et al., 2016). Moreover, several prior cross-country studies highlight four variables as proxies of nations' ethics and accountability (Ekici & Onsel, 2013; Kılıç et al., 2019). Table 1 describes those indicators in more detail.

#### *Control variables*

The control variables (i.e., population, trade, urban population, and imports of goods and services) that consider the variations in the demographic and economic structures of the nations are based on Jetter et al. (2015).

#### *4.4. Descriptive statistics*

According to the descriptive statistics reported in Table 2, the average tax evasion as proxied by the shadow economy's percentage of GDP is 27.41% for all countries within the sample, and the rate of tax evasion in the last quartile is almost double the rate in the first one.

On average, the percentage of trade and imports of goods and services to GDP are 48.49% and 42.62%, respectively; however, the wide variations in these variables among the quartiles are noteworthy. Although the ratio of urban population to total population is on average 60.49%, it rises to 78.48% in the upper quartile. The averages of the two indicators of the institutional environment as proxied by the ethical behavior of firms and the strength of auditing standards are 4.23 and 4.67, respectively, on a scale of 1 to 7 (best). This shows that world nations have room for improvement.

“Insert Table 2 about here”

#### *4.5. Correlation analysis*

To test the existence of multicollinearity among the independent variables, we calculated the Pearson correlation coefficients and documented them in Table 3. The results indicate that there is no multicollinearity problem because the correlation coefficients are below a threshold value of 0.90.<sup>14</sup> In this table, the correlation between the ethical behavior of firms and the strength of auditing standards signals the coexistence of these institutional dimensions in business environments ( $r = 0.513$ ,  $p < 0.01$ ). While imports of goods and services are negatively correlated with both the ethical behavior of firms and the strength of auditing standards, urban population is positively correlated with both of them. This implies that the higher the urban population is, the better the monitoring and controlling through formal and informal institutions are. In addition, the stronger the formal and informal institutions are, the fewer imports of goods and services there are. Other significant correlations are observable on Table 3.

“Insert Table 3 about here”

## **5. Findings**

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<sup>14</sup> Please see Hair et al. (2009) for the threshold value for the multicollinearity.

### 5.1. Baseline analyses

Table 4 documents the output of the pooled regression analysis in three parts: individual effects of the ethical behavior of firms, the strength of auditing standards, and their joint effects. The results demonstrate that both the ethical behavior of firms ( $\beta = -0.502$ ,  $p < 0.01$ ) and the strength of auditing standards ( $\beta = -0.380$ ,  $p < 0.01$ ) have a significant negative effect on tax evasion individually in Models 1 and 2, respectively; however, after we put both of these into the equation in Model 3, the strength of auditing standards loses its significance, whereas ethical behavior keeps its significance ( $\beta = -0.029$  and  $\beta = -0.481$ ,  $p < 0.01$ , respectively). Thus, these preliminary results show that although both of these variables have a significant diminishing effect on tax evasion, the ethical behavior of firms is a more powerful determinant than the strength of auditing standards. The adjusted  $R^2$  values ranging between 40.2% and 47.6% show the strength of the explanatory power of the established models.

“Insert Table 4 about here”

After the pooled regression analysis, we ran fixed effect regressions, which enabled us to account for country- and time-specific unobservable factors. The findings reported in Table 5 are mostly in line with the pooled regression results and produced minimal incremental information. Again, the results show the significant negative effect of both institutional factors (i.e., ethics and auditing standards) individually ( $\beta = -0.517$ ,  $p < 0.01$ ;  $\beta = -0.394$ ,  $p < 0.01$ , respectively) in Models 1 and 2, respectively. We also observe the dominant influence of the ethical behavior of firms ( $\beta = -0.489$ ,  $p < 0.01$ ) over the strength of auditing standards ( $\beta = -0.039$ ) after incorporating them into the equation together in Model 3. The explanatory power of the models also improves slightly, ranging between 41% and 48.4%. As a result, both pooled and fixed effect regressions support Hypotheses 1 and 2 regarding the

negative association between tax evasion and both ethical corporate behavior and the strength of auditing standards.

“Insert Table 5 about here”

For a robustness check, we ran two-stage least squares (2SLS) regressions and executed the fundamental equations for subsamples divided into three time periods: before, during, and after the GFC.

#### *5.1.1. Two SLS regressions*

The causality direction of one of our main assumptions can be criticized by stating that increasing acceptance of tax evasion as proxied by the shadow economy may cause taxpayers to behave unethically as well (i.e., reverse causality). Thus, we ran 2SLS estimations to account for this endogeneity issue (Table 6) using lagged (n-1 year) variables as the instruments (Reed, 2015; Bellemare et al., 2017; Benkraiem et al., 2020). The results show that the coefficients of ethical behavior of firms and strength of auditing standards largely confirm previous findings regarding their individual effects in Models 1 and 2, respectively, as well as their joint effects in Model 3. Hence, our main empirical findings are robust to alternative specifications.

“Insert Table 6 about here”

#### *5.2. Further analyses: moderating effects*

We aim to deepen the analyses and check the robustness of our results by considering a number of moderators highlighted in the literature review. Thus, we investigate the moderating effect of the following four variables: the global financial crisis of 2008, the efficacy of corporate boards, investor protection level, and income level.

##### *5.2.1. Financial crisis effect*

Table 7 reports the relationship between institutional factors and tax evasion in three time periods: before, during, and after the 2008 GFC. The results reveal that the role of the ethical behavior of firms in mitigating tax evasion is firm and consistent in all subperiods; however, its influence on tax evasion is more pronounced in the crisis period than before or after the crisis period, as highlighted by the coefficient of the underlying variable ( $\beta = -0.536$ ,  $p < 0.01$ ) and the value of adjusted  $R^2$  (50.2%). On the contrary, the other dimension of institutional context (i.e., the strength of auditing standards) is not influential, regardless of the period.

“Insert Table 7 about here”

Drawing upon the previous fundamental assumptions and analyses, we carried out incremental tests to gain more insight into the effect of other institutional and economic factors on tax evasion. We ran three different sub-analyses on the moderators: efficacy of corporate boards, degree of investor protection, and income level. For every moderating variable, we broke down the sample into three groups according to the moderating variable's cross-sectional (i.e., annual) terciles. The analyses reveal interesting and sometimes puzzling relationships.

### *5.2.2. Efficacy of corporate boards*

To test whether the efficacy of corporate boards has a significant moderating effect on the baseline assumptions on the relation between ethics and the strength of auditing and tax evasion, we reran the regressions considering this moderating factor. According to the results reported in Table 8, as corporate boards grow stronger, the ethical behavior of firms is more influential in reducing tax evasion. In other words, the effectiveness of corporate boards plays a positive moderating role between ethical behavior and tax evasion at varying degrees that are contingent on the boards' efficacy level. This impact is more clearly observable in the last

column titled “high-efficacy corporate boards.” Although the explanatory power of the model is 18.0% and 25.4% in the first two columns for low- and middle-efficacy corporate boards, respectively, it rises sharply to 62.4% for high-efficacy corporate boards. The change in the coefficient of the ethical behavior of firms is the major factor in the increase of the model’s explanatory power ( $\beta = -0.114$ ,  $p < 0.05$ ;  $\beta = -0.249$ ,  $p < 0.01$ ;  $\beta = -0.513$ ,  $p < 0.01$ , respectively). In addition, the strength of auditing standards plays a significant role in the reduction of tax evasion in middle- and high-efficacy corporate boards ( $\beta = -0.150$ ,  $p < 0.01$ ;  $\beta = -0.147$ ,  $p < 0.01$ , respectively).

“Insert Table 8 about here”

### 5.2.3. *Investor protection level*

Moreover, we sought further evidence on the effect of another component of the institutional context of combating tax evasion by incorporating the nations’ degree of investor protection into the equation (Table 9). The results are neither consistent nor straightforward; interestingly, the ethical behavior of firms and the strength of auditing standards jointly produce superior results in medium-level investor protection jurisdictions rather than low- or high-level investor protection situations. Indeed, the predictive power of this middle model ( $R^2 = 0.644$ ) is the highest among all the models outlined in the present study, showing that the relationship between these two factors (ethical behavior and auditing standards) and tax evasion are severely affected by the degree of investor protection.

Although the significant negative effect of the ethical behavior of firms on tax evasion is consistent and robust across the subgroups ( $\beta = -0.484$ ,  $p < 0.01$ ;  $\beta = -0.363$ ,  $p < 0.01$ ;  $\beta = -0.555$ ,  $p < 0.01$ , respectively), the results for the strength of auditing are a bit puzzling, because this factor has a significant effect on tax evasion only when there is a medium level of investor protection ( $\beta = -0.188$ ,  $p < 0.01$ ). One possible reason for this intriguing result is that under weaker investor protection where tax evasion tends to be high, auditing regulations are



insufficient to stop tax evasion. The second possible explanation is that in the strong investor protection jurisdictions where tax evasion tends to be low, the influence of auditing standards is minimal.<sup>15</sup>

“Insert Table 9 about here”

#### 5.2.4. *Income level effect*

To investigate whether the income level of countries plays a moderating role in the association between the institutional environment and tax evasion, we classified the sample into low-income, middle-income, and high-income subgroups. In considering the explanatory power of the models, coefficients, and significance levels, we find major differences that highlight the great variations among the three subgroups (Table 10).

“Insert Table 10 about here”

Although the predictive power (i.e., adjusted  $R^2$ ) is 19.7% for the model run for the low-income level, it rises to 52.7% for the high income level and decreases to its lowest value of 10.9% for the middle income level. Furthermore, the coefficient for the ethical behavior of firms takes the highest value ( $\beta = -0.557$ ,  $p < 0.01$ ) for the high-income subgroup, whereas a substantial decrease is apparent in the low-income and middle-income groups ( $\beta = -0.197$ ,  $p < 0.01$ ;  $\beta = -0.158$ ,  $p < 0.05$ , respectively). Another noteworthy finding is the contradictory sign of the strength of auditing in the low-income ( $\beta = 0.214$ ,  $p < 0.01$ ) and high-income groups ( $\beta = -0.173$ ,  $p < 0.01$ ). The unexpected positive coefficient of auditing regulations in low-income nations might signal the adverse effects of auditing regulations on tax evasion, whereas it yields the desired outcomes in high-income countries, consequently leading to neutral effects in middle-income countries.

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<sup>15</sup> Prior work suggests that firms engage less in tax avoidance when investor protection is stronger, because the probability of detection and penalties is higher in such jurisdictions, which discourage tax aggressiveness (Atwood et al. 2012; Kanagaretnam et al., 2018). We assume that the same argument is even more valid in this study's case, in which tax evasion is riskier because it is illegal.

## 6. Discussion and conclusion

This study aimed to determine the institutional factors that alleviate tax evasion and promote a better institutional and corporate environment to maximize tax collection. Thus, we provided empirical evidence on tax evasion, which is likely to have a domino effect on other economic indicators and on society as a whole. Our study is based on cross-country data from 138 nations derived from several sources for the years between 2006 and 2015. Although a substantial number of studies have been published on tax evasion and other forms of tax management, the institutional perspective of our paper differentiates it from previous ones.<sup>16</sup>

The fundamental analyses prove that both the strength of auditing standards and the ethical behavior of firms are powerful formal and informal institutional mechanisms in alleviating tax evasion. After considering their joint effect on the outcome, however, we find that ethical behavior has a larger impact on tax evasion than the strength of auditing standards. Furthermore, the ethical behavior of firms has a more decisive impact than the strength of auditing on the diminution of tax evasion before, during, and after the GFC; however, during the economic downturn, the ethical stance of firms is more consequential than regulatory strength in curbing tax evasion (as indicated by the regression coefficients).

We also sought incremental factors that might lessen tax evasion, which in turn were expected to augment tax collection. For this purpose, we ran baseline equations that consider the efficacy of corporate boards, investor protection status, and the income level of nations. These additional analyses, which yielded some surprising and intriguing results, suggest that the battle against tax evasion is a multilateral task rather than unilateral one. In summary, ethical behavior and strong auditing regulations are more impactful if corporate boards are effective in their monitoring and controlling functions. Second, the relationship between tax evasion and the institutions of ethical behavior and auditing regulations is conditional on

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<sup>16</sup> Numerous studies focus on ethical behaviors of taxpayers and tax compliance (McGee et al., 2008; Shafer & Simmons, 2008; Culiberg & Bajde, 2014; Sidani et al., 2014).

investor protection status; these two institutions function best in harnessing tax evasion under a moderate level of investor protection. Finally, the influence of ethical behavior and auditing regulations is far more pronounced in high-income countries than in low- or middle-income countries.

The present study is not free from limitations. The results should be considered in light of the time period and sample of countries it covers. Moreover, we had to measure the effectiveness of corporate boards with one composite variable because of the unavailability of country-wide data regarding the constituents of this composite indicator, such as the independence, diversity, or competence of the boards. Future research might consider other institutional, economic, and cultural factors that may provide further insights into the tax evasion tendencies of nations. The different outcomes for various income levels could justify further work to tailor different policies to constrain tax evasion in low-, middle-, and high-income countries.

The current study has implications for organizations and policy makers worldwide. Policy makers can use the results in formulating institutional circumstances to minimize tax evasion, which in turn might maximize tax collection. First, organizations' ethical behavior in relationship with authorities and their construction of effective boards are fundamentally important in mitigating tax evasion. In addition, the strength of auditing standards is not as influential as the ethical behavior of firms in many ways, even though it has an adverse effect on tax evasion in the low-income subgroup. These results indicate either that the regulatory framework is not well formulated to yield the desired outcome, or that it lacks enforcement. The surprising inability of auditing standards to discourage tax evasion, particularly that of corporate boards, in low and high investor protection jurisdictions that are in low- and medium-income countries requires further investigation, even though we provide some possible reasons for these puzzling results. Furthermore, as internal governance mechanisms,

corporate boards undertake the crucial duty of constraining tax evasion. Thus, we propose that governmental or market-related institutions should closely monitor corporate board structures and formulate regulations accordingly.

Overall, the results show the importance of the joint role of firms and regulators in reducing tax evasion. Thus, the findings imply the need for these two parties to cooperate synergistically to reach a desired outcome. We also infer from the results that both micro (i.e., firm-level) and macro (i.e., country-level) institutions must assume responsibilities in the struggle against tax evasion. Furthermore, we acknowledge that creating an institutional environment that curbs tax evasion is not always straightforward, as highlighted in the findings section. As a theoretical contribution, the present study demonstrates that examining tax evasion through the lens of institutional theory provides rich and meaningful insights. Indeed, we largely confirm the propositions of institutional theory highlighted in the literature review and theoretical background of this study.

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Table 1. Definitions of the variables and sources

Variables	Definition	Source
Tax evasion (TE)	Shadow economy's percentage of GDP	Schneider and Buehn (2012), Schneider et al. (2015)
Ethical behavior of firms (EB)	Ethical behavior of firms, measured by response to survey question: "How do you rate (in your country) the corporate ethics of companies (ethical behavior in interactions with public officials, politicians and other firms)?" (1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world)	World Economic Forum (2018)
Strength of auditing standards (AS)	Strength of auditing and reporting standards, measured by response to survey question: "In your country, how strong are financial auditing and reporting standards?" (1 = extremely weak; 7 = extremely strong)	World Economic Forum (2018)
Investor protection	Strength of investor protection, measured by the Strength of Investor Protection Index on a 0–10 (best) scale.	World Economic Forum (2018)
Efficacy of corporate boards	Efficacy of corporate boards, measured by response to question: "To what extent is management accountable to investors and boards of directors?" (1 = not at all; 7 = to a great extent)	World Economic Forum (2018)
Population	Population, total (Natural logarithm)	The World Bank (2018)
Trade	Trade (% of GDP)	The World Bank (2018)
Urban population	Urban population (% of total)	The World Bank (2018)
Imports of goods and services	Imports of goods and services (% of GDP)	The World Bank (2018)
Income level of countries	GDP per capita (constant 2010 \$US) (Natural Logarithm)	The World Bank (2018)

Table 2. Descriptive statistics

Variables	Mean	Std. Dev.	Quartiles		
			25	50	75
Tax evasion	27.408	12.315	18.100	27.320	34.640
Population	16.326	1.572	15.305	16.187	17.341
Trade	48.488	28.172	15.000	51.000	72.000
Urban population	60.486	22.528	44.235	62.002	78.477
Imports of goods and services	42.621	19.085	28.000	39.000	56.000
Ethical behavior of firms	4.229	0.974	3.532	3.945	4.826
Strength of auditing	4.670	0.885	3.975	4.658	5.323

Notes: See Table 1 for variable definitions.

Table 3. Pearson correlation matrix

	Population	Trade	Urban population	Imports of goods and services	Ethical behavior of firms	Strength of auditing
Population	1	0.098***	-0.178***	-0.405***	-0.170***	-0.128***
		0.001	0.000	0.000	0.000	0.000
Trade		1	-0.020	-0.362***	-0.045	-0.091***
			0.486	0.000	0.110	0.001
Urban population			1	-0.162***	0.557***	0.552***
				0.000	0.000	0.000
Imports of goods and services				1	-0.077***	-0.065**
					0.006	0.022
Ethical behavior of firms					1	0.513***
						0.000
Strength of auditing						1

Notes: \*\*\*significance at 1%; \*\*significance at 5%; \*significance at 10%. See Table 1 for variable definitions.

Table 4. Pooled regressions of tax evasion on ethical behavior, strength of auditing, and control variables

Variables	Model 1			Model 2			Model 3		
	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t
Population	-0.143***	(0.186)	0.000	-0.104***	(0.197)	0.000	-0.141***	(0.186)	0.000
Trade	0.129***	(0.010)	0.000	0.118***	(0.010)	0.000	0.127***	(0.010)	0.000
Urban population	-0.276***	(0.014)	0.000	-0.338***	(0.015)	0.000	-0.272***	(0.014)	0.000
Imports of goods and services	-0.092***	(0.016)	0.000	-0.076***	(0.017)	0.004	-0.091***	(0.016)	0.000
Ethical behavior of firms	-0.502***	(0.316)	0.000				-0.481***	(0.466)	0.000
Strength of auditing				-0.380***	(0.368)	0.000	-0.029	(0.510)	0.429
Adj. R2	0.474			0.402			0.476		

Notes: \*\*\*significance at 1%; \*\*significance at 5%; \*significance at 10%. See Table 1 for variable definitions.

Table 5. Fixed effect regressions of tax evasion on ethical behavior, strength of auditing, and control variables

Variables	Model 1			Model 2			Model 3		
	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t
Population	-0.147***	(0.188)	0.000	-0.107***	(0.199)	0.000	-0.145***	(0.188)	0.000
Trade	0.127***	(0.010)	0.000	0.117***	(0.010)	0.000	0.125***	(0.010)	0.000
Urban population	-0.265***	(0.014)	0.000	-0.328***	(0.015)	0.000	-0.259***	(0.014)	0.000
Imports of goods and services	-0.090***	(0.016)	0.000	-0.073***	(0.017)	0.006	-0.089***	(0.016)	0.000
Ethical behavior of firms	-0.517***	(0.320)	0.000				-0.489***	(0.467)	0.000
Strength of auditing				-0.394***	(0.376)	0.000	-0.039	(0.513)	0.292
Fixed Effects	Yes			Yes			Yes		
Adj. R2	0.483			0.410			0.484		

Notes: \*\*\*significance at 1%; \*\*significance at 5%; \*significance at 10%. See Table 1 for variable definitions.

Table 6. 2SLS regressions of tax evasion on ethical behavior, strength of auditing, and control variables

Variables	Model 1			Model 2			Model 3		
	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t
Population	-0.139***	(0.192)	0.000	-0.099***	(0.203)	0.000	-0.138***	(0.192)	0.000
Trade	0.195***	(0.014)	0.000	0.182***	(0.015)	0.000	0.194***	(0.014)	0.000
Urban population	-0.274***	(0.014)	0.000	-0.337***	(0.015)	0.000	-0.271***	(0.015)	0.000
Imports of goods and services	-0.068**	(0.019)	0.020	-0.049	(0.020)	0.114	-0.067**	(0.019)	0.020
Ethical behavior of firms	-0.498***	(0.317)	0.000				-0.484***	(0.468)	0.000
Strength of auditing				-0.373***	(0.371)	0.000	-0.019	(0.514)	0.603
Fixed Effects	Yes			Yes			Yes		
Adj. R2	0.473			0.400			0.471		

Notes: \*\*\*significance at 1%; \*\*significance at 5%; \*significance at 10%. See Table 1 for variable definitions.



Table 7. Regressions before, during, and after the Global Financial Crisis (GFC)

Variables	Before the GFC			During the GFC			After the GFC		
	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t
Population	-0.086	(0.449)	0.112	-0.124**	(0.426)	0.017	-0.175***	(0.237)	0.000
Trade	0.130**	(0.023)	0.011	0.143***	(0.023)	0.004	0.116***	(0.012)	0.000
Urban population	-0.243***	(0.037)	0.000	-0.285***	(0.033)	0.000	-0.259***	(0.018)	0.000
Imports of goods and services	-0.082	(0.040)	0.148	-0.065	(0.038)	0.222	-0.107***	(0.020)	0.001
Ethical behavior of firms	-0.437***	(1.380)	0.000	-0.536***	(1.171)	0.000	-0.503***	(0.550)	0.000
Strength of auditing	-0.112	(1.255)	0.232	-0.018	(1.329)	0.845	-0.015	(0.633)	0.733
Fixed Effects	Yes			Yes			Yes		
Adj. R2	0.497			0.502			0.459		

Notes: \*\*\*significance at 1%; \*\*significance at 5%; \*significance at 10%. See Table 1 for variable definitions.

Table 8. Regressions depending on the efficacy level of corporate boards

Variables	Low-efficacy corporate boards			Middle-efficacy corporate boards			High-efficacy corporate boards		
	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t
Population	-0.208***	(0.378)	0.000	-0.191***	(0.341)	0.000	-0.121***	(0.263)	0.000
Trade	0.233***	(0.016)	0.000	0.060	(0.019)	0.195	0.104***	(0.015)	0.002
Urban population	-0.287***	(0.023)	0.000	-0.253***	(0.027)	0.000	-0.237***	(0.025)	0.000
Imports of goods and services	-0.097*	(0.030)	0.096	-0.218***	(0.030)	0.000	-0.048	(0.024)	0.186
Ethical behavior of firms	-0.114**	(1.117)	0.042	-0.249***	(1.101)	0.000	-0.513***	(0.683)	0.000
Strength of auditing	-0.069	(0.933)	0.246	-0.150***	(1.017)	0.008	-0.147***	(0.929)	0.002
Fixed Effects	Yes			Yes			Yes		
Adj. R2	0.180			0.254			0.624		

Notes: \*\*\*significance at 1%; \*\*significance at 5%; \*significance at 10%. See Table 1 for variable definitions.

Table 9. Regressions depending on the country investor protection level

Variables	Low investor protection			Middle investor protection			High investor protection		
	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t
Population	-0.169***	(0.417)	0.000	-0.224***	(0.287)	0.000	-0.058	(0.310)	0.196
Trade	0.292***	(0.019)	0.000	0.026	(0.013)	0.417	0.083**	(0.018)	0.044
Urban population	-0.189***	(0.027)	0.000	-0.393***	(0.018)	0.000	-0.238***	(0.027)	0.000
Imports of goods and services	-0.045	(0.030)	0.287	-0.336***	(0.028)	0.000	-0.061	(0.028)	0.221
Ethical behavior of firms	-0.484***	(0.931)	0.000	-0.363***	(0.646)	0.000	-0.555***	(0.789)	0.000
Strength of auditing	0.084	(0.988)	0.178	-0.188***	(0.722)	0.000	0.083	(0.991)	0.245
Fixed Effects	Yes			Yes			Yes		
Adj. R2	0.385			0.644			0.444		

Notes: \*\*\*significance at 1%; \*\*significance at 5%; \*significance at 10%. See Table 1 for variable definitions.

Table 10. Regressions depending on the country income level

Variables	Low-income group			Middle-income group			High-income group		
	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t
Population	-0.324***	(0.398)	0.000	-0.138**	(0.346)	0.023	-0.333***	(0.155)	0.000
Trade	0.245***	(0.019)	0.000	0.085*	(0.016)	0.097	0.014*	(0.009)	0.071
Urban population	0.136***	(0.034)	0.004	-0.129***	(0.031)	0.009	0.084**	(0.022)	0.046
Imports of goods and services	-0.163***	(0.030)	0.003	-0.154**	(0.034)	0.020	-0.125***	(0.015)	0.005
Ethical behavior of firms	-0.197***	(1.242)	0.000	-0.158**	(0.981)	0.011	-0.557***	(0.413)	0.000
Strength of auditing	0.214***	(0.933)	0.000	-0.100	(0.858)	0.118	-0.173***	(0.650)	0.003
Fixed Effects	Yes			Yes			Yes		
Adj. R2	0.197			0.109			0.527		

Notes: \*\*\*significance at 1%; \*\*significance at 5%; \*significance at 10%. See Table 1 for variable definitions.