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CEO Duality and Bank Tax Avoidance: The Moderating Role of Risk Committees - An International Evidence

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Abstract

This paper examines the influence of CEO duality on bank tax avoidance and whether the board-level risk committee moderates the relationship. Moreover, we examine whether two risk committees' characteristics (size and meeting frequency) moderate the CEO duality-bank tax avoidance relationship. Based on 1540 bank-year observations of 152 unique banks across 32 countries from 2011 to 2021, we find that CEO duality positively relates to bank tax avoidance. More importantly, we find that the board-level risk committee and its structural characteristics (size and meeting frequency) mitigate the positive influence of the CEO duality on bank tax avoidance. Our findings remain robustly similar using an alternative sample. This paper broadens our knowledge about the role of the risk committee and its attributes on the CEO duality-bank tax avoidance relationship. The findings of this study help policymakers understand the benefits of establishing bank board-level risk committees.

1. Introduction

In the last couple of years, the issue of tax avoidance¹, specifically among multinational corporations, has gained unprecedented attention from regulators, policymakers, media, and the public (Alexander et al., 2020; Campa et al., 2022; Dharmapala, 2014; Oats & Tuck, 2019; Wang et al., 2022). For instance, because corporate tax avoidance reached a global scale, policymakers have introduced several anti-avoidance mechanisms such as Common Consolidated Corporate Tax Base, Transfer Pricing Agreements, and Global Minimum Tax to curb the phenomenon (Athira & Ramesh, 2023; Cooper & Nguyen, 2020). In particular, the European Union (EU) in 2014 launched public country-by-country reporting (CbCR) – an anti-tax avoidance instrument mandating firms, specifically financial institutions

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¹ Tax avoidance is broadly defined as “to encompass anything that reduces the firm’s taxes relative to its pre-tax accounting income”(Dyreng et al., 2010, p. 1164).

headquartered in the European Economic Area, to publicly disclose key financial and tax data at a country-by-country level (Brown et al., 2019; De Simone & Olbert, 2022; Garcia-Bernardo et al., 2021; Janský, 2020; Joshi, 2020; Overesch & Wolff, 2021).

However, despite the moves to reduce corporate tax avoidance activities using the existing anti-avoidance mechanisms, research has established that multinationals exploit the ambiguities in tax laws through profit shifting, hybrid instruments, and financial derivatives to minimise their tax liabilities (Alexander et al., 2020; Baghdadi et al., 2022; Joshi, 2020; Zolotoy et al., 2021). For instance, prior research has established that multinational corporations, including financial institutions, used well-known income-shifting strategies to move taxable incomes from subsidiaries in high-tax jurisdictions to those in low-tax jurisdictions (Fatica & Gregori, 2020; Garcia-Bernardo et al., 2021; Merz & Overesch, 2016; Overesch & Wolff, 2021; Reiter et al., 2021; Richardson et al., 2021). In this regard, it has been estimated that governments worldwide are losing about \$240 billion annually due to corporate tax avoidance (OECD, 2015).

Although several academic research demonstrates that firms avoid tax to minimise their tax liabilities, the extant literature presented substantial evidence that the extent of tax avoidance activities varies significantly among firms (Wang et al., 2022; Zolotoy et al., 2021). For instance, while about one-quarter of the US corporations engaged in less tax avoidance, many US firms pay little tax (Dyrenge et al., 2008). This variation in the degree of firms' tax avoidance activities raises the question of why some companies avoided more corporate tax than others (Gallemore et al., 2014; Wang et al., 2022; Zolotoy et al., 2021).

Based on the evidence in the literature that tax avoidance practices vary among companies, Hanlon and Heitzman (2010) have called for further investigation into why some entities avoided more corporate tax than others. In response, numerous empirical studies have provided insights into how firm-specific factors, including size, leverage, and foreign operations (Lisowsky, 2010), ownership structures (Chen, Huang, et al., 2019; Lee & Bose, 2021), corporate social responsibility (Mayberry & Watson, 2021), labour market (Kubick & Lockhart, 2016), M&A (Hu et al., 2021), analysts forecast (Lee, 2021), interim CEO (Wang et al., 2023), and Covid-19 (Athira & Ramesh, 2023) influence corporate tax avoidance.

Similarly, in line with the calls for further research on the determinants of tax avoidance and consistent with Dyrenge et al. (2010) seminal work, which demonstrates that CEOs significantly influence firms' tax avoidance behaviour, some empirical studies analysed the influence of CEO duality² on firms' tax avoidance (e.g., Chan et al., 2013; Kolias & Koumanakos, 2022; Minnick & Noga, 2010). However, while there are calls from the public for investigations as to whether banks pay their fair share of taxes (Gawehn & Müller, 2020; Langenmayr & Reiter, 2022), the prior literature on CEO duality-tax avoidance relationship typically excluded banks from their samples.

Furthermore, following the global financial crisis (GFC), policymakers and regulators, including the Institute of International Finance and the US Dodd-Frank

² A practice where "a single individual holds the joint position of the chief executive officer and chairman of the board" (Kolias & Koumanakos, 2022, p. 1)

Act, have recommended that large publicly traded banks should establish a separate board-level risk committee to handle the significant risks faced by the banks (Abid et al., 2021; Ding & Wei, 2023; Elamer & Benyazid, 2018; Hines et al., 2015; Iselin, 2020; Nahar & Jahan, 2021). In that regard, many countries recommended the creation of board-level risk committees in financial institutions, including guidelines on risk committees' structural characteristics (Malik et al., 2021).

Given the emphasis placed on banks to create a board-level risk committee following the GFC, emerging literature in accounting, management, and finance has examined the influence of board-level risk committee and the committee's structural characteristics on various banks' policies and strategies, including risk-taking, audit fees, market risk disclosure, regulatory risk, disclosure quality, financial performance and cost of equity (e.g., Abid et al., 2021; Aljughaiman & Salama, 2019; Ding & Wei, 2023; Hines et al., 2015; Iselin, 2020; Nahar & Jahan, 2021; Zhang et al., 2021). However, despite the sizeable literature on risk committees (Nahar & Jahan, 2021) and the call by Carcello et al. (2011) and Yu (2022) for research on how other governance mechanisms, including board sub-committees, could moderate the CEO duality-firm performance relationship, prior studies on CEO duality-tax avoidance relationship primarily focus on the direct link between CEO duality and corporate tax avoidance, without investigating the mechanisms that moderate them.

Therefore, drawing on the evidence that the board-level risk committee influenced tax avoidance (Richardson et al., 2013), we conjecture that forming a risk committee and its structural attributes could interact with CEO duality to influence corporate tax avoidance jointly. Since the literature has not empirically addressed how CEO duality interacted with the risk committee to influence tax avoidance, consistent with Abid et al. (2021), we examine whether creating a board risk committee in banks and its two structural attributes (size and meetings frequency) moderate the impact of CEO duality on bank tax avoidance.

We consider the banking industry for analysing the role of risk committees on the CEO duality-tax avoidance relationship primarily for two reasons. First, the requirement for establishing a separate board-level risk committee, as provided in several policy documents, was primarily targeted at banks because they are more exposed to various risks, including credit, liquidity, insolvency, and operational risk (Abid et al., 2021; Malik et al., 2020; Nahar & Jahan, 2021). However, while tax avoidance exposed firms to several risks, including bankruptcy risk (Dhawan et al., 2020), the literature has not provided evidence on how risk committee associates with banks' tax avoidance. Therefore, since policymakers mandated banks to establish board-level risk committees, it is essential to understand how it influences banks' tax avoidance behaviour.

Second, unlike non-financial institutions, banks operate in a highly regulated environment (Kang et al., 2021); therefore, the additional regulatory oversight imposed on banks causes the tax avoidance behaviour of banks to differ from non-financial corporations (Gawehn & Müller, 2020; Langenmayr & Reiter, 2022). Given that a firm's incentive to avoid corporate tax may vary by industry (Dyregang et al., 2008) and that findings from firms in other industries cannot be reliably generalised to banks (Taylor et al., 2023), an investigation of factors affecting tax avoidance in the banking sector is warranted.

We test our hypotheses using the system generalised method of moments (GMM) on panel data involving 1540 bank-year observations for 152 unique banks across 32 countries from 2011 to 2021. We document that CEO duality encourages tax avoidance in banks. More importantly, we found that the existence of a board-level risk committee and its characteristics (size and meetings) reduced the positive effect of the CEO duality on bank tax avoidance. This result holds after we use a battery of robustness tests involving two sub-sample analyses.

This study makes three significant contributions to the literature. First, we expand the prior literature that analyses the effect of CEO duality on firms' tax avoidance (Amri et al., 2023; Chan et al., 2013; Kolias & Koumanakos, 2022; Li et al., 2022; Minnick & Noga, 2010). Studies on the CEO duality-tax avoidance relationship focused primarily on the direct link between CEO duality and corporate tax avoidance without investigating the mechanisms that moderate them. Contrary to the earlier studies, we provide evidence of how a board-level risk committee and its two structural characteristics (size and meetings) interacted with the CEO duality to influence tax avoidance.

Second, given that the banking industry is the primary focus of risk committees' literature (see Battaglia & Gallo, 2015; Iselin, 2020; Nahar & Jahan, 2021), this study expands the literature on the economic consequences of risk committees on banks' policies and strategies. This line of research linked risk committee and its characteristics with audit fees (Hines et al., 2015), disclosure quality (Nahar & Jahan, 2021), performance (Elamer & Benyazid, 2018), risk-taking (Abid et al., 2021) and regulatory risk (Iselin, 2020) among others. We broaden this emerging literature by providing evidence that links risk committee and its characteristics with bank tax avoidance.

Third, prior cross-country tax avoidance research (e.g., Athira & Ramesh, 2023; Atwood et al., 2012; Chen et al., 2022; Lee, 2021) demonstrate that countries' institutional factors, such as tax system and tax enforcement, affect corporate tax avoidance. However, except for Li et al. (2022), who analysed an international sample of non-financial firms, other previous research on CEO duality-tax avoidance relationships mainly focused on single-country settings. Therefore, by examining the CEO duality-tax avoidance relationship from a multi-country perspective, we expand the literature on international taxation and extend the within-country results to a more generalisable global setting. Our results would help policymakers, particularly tax authorities, to better understand the benefits of establishing bank board-level risk committees.

The article is structured as follows: Section 2 describes the theories and the hypotheses development. Section 3 explains the methodology. Section 4 outlines the findings and robust test. Section 5 concludes the article.

2. Theory and Hypotheses Development

2.1 Theoretical Background

Theoretically, the literature offers two views (the effort-aversion agency prediction and the private-benefits agency prediction) on the link between corporate governance and tax avoidance (Chen et al., 2022; Hu et al., 2021). The effort-aversion agency prediction, popularly known as the traditional view, maintains that

tax avoidance increases shareholders' value (Khurana et al., 2018); hence, managers would be motivated to undertake more tax avoidance activities to reduce the firm tax obligations (Chen et al., 2022; Hu et al., 2021; Khurana & Moser, 2013; Rego & Wilson, 2012; Wen et al., 2020). Based on this view, corporate taxes are a major cost to be minimised (Campa et al., 2022); consequently, firm governance mechanisms that align the interests of managers and shareholders would be positively related to tax avoidance (Chen et al., 2022).

The private-benefits agency prediction, also known as Desai and Dharmapala (2006) theory, asserts that agency conflict between managers and shareholders provides opportunities for self-interested managers to engage in tax avoidance activities to extract rent and divert resources (Chen et al., 2022; Desai & Dharmapala, 2006; Hu et al., 2021). Based on this view, there is a complementarity between tax avoidance and managerial diversion of resources (Desai & Dharmapala, 2006; Kim et al., 2011). Moreover, the view argued that the complementarity between tax avoidance and managerial rent extraction is more pronounced in firms with weak governance (Blaylock, 2016; Rego & Wilson, 2012; Shams et al., 2022). Based on this view, firms with weak governance have a greater incentive to undertake more tax avoidance activities to obtain private benefits in the form of rent extraction and resource diversion (Hu et al., 2021).

Given that the two views explained above provided the most widely accepted explanation of the corporate governance-tax avoidance relationship (Blaylock, 2016) and have been used by some prior studies (e.g., Chen et al., 2022; Hu et al., 2021; Khurana & Moser, 2013) investigating the corporate governance-tax avoidance relationship, we rely on them to develop our main hypothesis regarding the effect of CEO duality on tax avoidance. While effort-aversion and private-benefits predictions are our main theoretical frameworks, we also draw on signalling and resource dependence (RDT) theories as we consider the risk committee and its structural characteristics (size and meetings) to moderate the CEO duality-tax avoidance relationship.

Signalling theory asserts information asymmetry between a firm's management and external stakeholders (Spence, 1978). Therefore, to minimise the information gap between the two parties, firms have to send costly signals to other individuals in the market to signal its quality to the public (Sanders & Boivie, 2004). In this regard, prior literature has shown that various board attributes have been shown to signal firms' quality to external stakeholders (see Chen, Gramlich, et al., 2019; Miller & Del Carmen Triana, 2009). Concerning the board-level risk committee, the theory suggests that establishing a board-level risk committee sends a signal to investors regarding the companies' commitment to effective risk management practices (Jia & Bradbury, 2021) and that corporate resources would not be expropriated by the management (Malik et al., 2021). Since creating a risk committee signals to investors the companies' commitment to effective risk management practices, we focus on signalling theory to explain the role of a stand-alone risk committee on the CEO duality-tax avoidance relationship.

According to RDT, a firm is an open system, reliant on its external environments to ensure the flow of critical resources for its survival (Pfeffer & Salancik, 1978; Zhou et al., 2018). Hence, corporate boards are linkage mechanisms that connect a firm to other external entities to address environmental dependencies

(Hillman et al., 2007). From the RDT perspective, “a larger board brings greater opportunity for more links and hence access to resources” (Kiel & Nicholson, 2003, p. 194). Similarly, board meeting measures the intensity of the board activity (Jackling & Johl, 2009), and the greater the meeting frequency, the likelihood of better firm performance (Lipton & Lorsch, 1992). In line with the above discussion, we draw on RDT to explain the moderating role of the risk committee’s size and meetings on the CEO duality-bank tax avoidance relationship.

2.2 CEO Duality

Over the years, the issue of CEO duality (i.e., the practices of consolidating the titles of CEO and board chair on a single individual) has been one of the most debatable issues in academia and the corporate world (Borgholthaus et al., 2021; Duru et al., 2016; Finkelstein et al., 2009; Goergen et al., 2020; Krause et al., 2014; Mubeen et al., 2021). For instance, governance scholars differ on whether the board chair and CEO titles should be consolidated on a single individual or separated (Borgholthaus et al., 2021; Hassan et al., 2023; Krause et al., 2014). Proponents of CEO duality, specifically stewardship theorists (Donaldson & Davis, 1991), maintain that CEO duality promotes the unity of leadership and organisational effectiveness (Duru et al., 2016; Krause et al., 2014). In contrast, agency theorists (e.g., Jensen, 1993) argue that duality gives CEOs greater discretion, thereby weakening the board’s monitoring capacity (Wang et al., 2019; Yu, 2022).

Regardless of whether the position of CEO and board chair be separated or consolidated on a single individual, extensive literature analysed the impact of CEO duality on several firms’ outcomes, but the results are undecidedly mixed. For instance, while some prior studies (e.g., Cabrera-Suárez & Martín-Santana, 2015; Chang et al., 2019; Hassan et al., 2023) find CEO duality is positively related to firm performance, other related studies (e.g., Arora, 2023; Dong et al., 2017; Duru et al., 2016; Hsu et al., 2021; Mubeen et al., 2021; Singh et al., 2018; Tang, 2017; Uyar et al., 2021) documented a negative association between CEO duality and performance. Similarly, other prior works (e.g., Elsayed, 2007; Hsu & Liao, 2021) found that CEO duality is not significantly related to corporate performance. In sum, the picture from the studies mentioned above is that CEO duality influences firms’ policies and outcomes, but whether the effect is beneficial or detrimental to the firm remains unclear.

2.2.1 CEO Duality and Bank Tax Avoidance

Concerning the CEO duality-tax avoidance relationship, several studies, as shown in Table A1 in the appendix, examined the effect of CEO duality on firms’ tax avoidance, but the results are ambiguous. For example, out of the eight papers that studied the influence of CEO duality on tax avoidance, three studies (e.g., Abdul Wahab et al., 2017; Amri et al., 2023; Minnick & Noga, 2010) found that CEO duality does not significantly affect tax avoidance. However, two studies (e.g., Boussaidi & Hamed-Sidhom, 2021; Kolias & Koumanakos, 2022) documented that CEO duality is negatively related to tax avoidance. In contrast to the studies mentioned above, Chan et al. (2013), Halioui, Neifar, and Ben Abdelaziz (2016), and Li et al. (2022) find that CEO duality encourages tax avoidance.

Although the empirical evidence on the association between CEO duality and tax avoidance is mixed, our two main theoretical frameworks described in Section 2.1 suggest a positive relationship between CEO duality and tax avoidance. First, the effort-aversion agency prediction, also known as the traditional view, asserts that tax avoidance increases shareholders' value; as such, managers would be motivated to undertake more tax avoidance activities to increase firms' cash flow and after-tax income (Chen et al., 2022; Hu et al., 2021). According to this view, since corporate taxes are significant costs to be minimized (Campa et al., 2022), firm governance mechanisms that align the interests of managers and shareholders would be positively related to tax avoidance (Chen et al., 2022). Given that the interests of managers and shareholders are better aligned in firms with joint leadership structure (Chang et al., 2019; Duru et al., 2016), CEO duality would be positively related to corporate tax avoidance.

Second, the private-benefits agency prediction maintains that the agency conflict between managers and shareholders creates opportunities for self-interested managers to engage in tax avoidance activities to extract rent and divert resources (Chen et al., 2022; Desai & Dharmapala, 2006; Hu et al., 2021). This view maintains a complementarity between tax avoidance and managerial diversion of resources, especially in firms with weak governance (Blaylock, 2016; Rego & Wilson, 2012; Shams et al., 2022). Consequently, it posits that strong governance mechanisms would be negatively related to tax avoidance while weak governance mechanisms would be positively associated with tax avoidance (Chen et al., 2022; Shams et al., 2022). In this regard, Shams et al. (2022) use CEO duality as a proxy for weak governance and found that the positive association between tax avoidance and managerial empire-building is more pronounced in weakly governed firms, which suggests that CEO duality is positively related to corporate tax avoidance.

Besides the line of reasoning in our primary theoretical framework, which propose a positive association between CEO duality and tax avoidance, the extant literature provides additional evidence supporting the positive effect of CEO duality on tax avoidance. For instance, Lo et al. (2010) found that firms where the CEO equally serves as the board chair have a greater incentive to manipulate transfer prices to avoid corporate tax. Moreover, the literature on corporate social responsibility has revealed that tax avoidance is not only costly to society but is also an "unethical" and "irresponsible" activity, which is inconsistent with the principle of CSR (Hoi et al., 2013; Lanis & Richardson, 2018; Lanis & Richardson, 2015). In this regard, while the payment of corporate tax is a significant CSR activity and a crucial way in which firms engage with society (Hoi et al., 2013), prior studies (e.g., Gul & Leung, 2004; Tibiletti et al., 2021; Uyar et al., 2021) found that CEO duality is negatively related to CSR disclosure. Based on the above discussions, we hypothesised as follows:

H1: CEO duality is positively related to bank tax avoidance.

2.3 The Role of the Board-Level Risk Committee

In the last couple of years, particularly after the GFC, policymakers and regulators have increasingly emphasised the significance of establishing board-level

risk committees in financial institutions. For instance, the US parliament passed the Dodd-Frank Act of 2010, requiring large banks to create board-level risk committees to manage the risks confronting banks (Abid et al., 2021; Iselin, 2020; Vallascas et al., 2017). In line with that, an emerging stream of research that focuses on financial institutions has investigated the influence of board-level risk committees on bank risk-taking and financial performance (Abid et al., 2021; Ding & Wei, 2023; Iselin, 2020; Nahar & Jahan, 2021; Zhang et al., 2021). These studies reveal that board-level risk committees enhance banks' performance while reducing risk-taking.

Regarding corporate tax avoidance, existing evidence has shown that research analysing how risk committees influence tax avoidance is scarce except for Richardson et al. (2013), who found that board-level risk committees decrease firms' tax avoidance in a sample of Australian non-financial firms. Given that tax avoidance practices enable entrenched managers to divert the resources of the firm for personal use (Desai & Dharmapala, 2009), while an effective risk management system reduces managers' incentive to avoid tax (Richardson et al., 2013), we hypothesised as follows:

H2: The existence of a board-level risk committee will reduce the positive influence of CEO duality on bank tax avoidance.

2.4 Board-Level Risk Committee Characteristics

The emerging literature relating to risk governance established that risk committees' attributes, including size, independence, meetings, and expertise, enhance the committees' effectiveness (Abid et al., 2021; Jia & Bradbury, 2021; Nahar & Jahan, 2021). Based on that, numerous scholars highlighted the effect of various risk committees' characteristics on banks' policies and strategies, including audit fees (Hines et al., 2015), risk-taking (Abid et al., 2021), and performance (Battaglia & Gallo, 2015) among others. While several studies examined the effect of risk committees' structural characteristics on various banks' policies and strategies, studies on the impact of the committees' attributes on tax avoidance, specifically in banks, are scarce. Therefore, in addition to the moderating role of stand-alone risk committees, we analysed the moderating role of the risk committees' size and meeting frequency on the CEO duality-tax avoidance relationship.

2.4.1 The Role of Risk Committee Size

Given that risk committees' attributes influence firms' outcomes, some previous studies have analysed the consequences of risk committee size on various corporate policies and strategies. For instance, drawing mainly on the assertion that large risk committees size symbolised good governance (Hines et al., 2015), researchers found that large risk committees reduced banks' risk-taking (Abid et al., 2021), improved access to capital (Malik et al., 2021), and enhance banks profitability (Battaglia & Gallo, 2015). Although previous research has not empirically addressed the effect of risk committee size on tax avoidance, Deslandes, Fortin, and Landry (2019) found that a large audit committee minimises firms' tax avoidance. Therefore, based on the above evidence that large audit committees lower tax avoidance and the argument in RDT that "large risk committees improve the

monitoring effectiveness because a large risk committee represents the diversity of opinion, expertise, and robust decision-making process” (Abid et al., 2021, p. 3), we hypothesised as follows:

H3: Large risk committee will reduce the positive influence of CEO duality on bank tax avoidance.

2.4.2 The Role of Risk Committee Meetings

Although there are conflicting views regarding the benefits of board meeting frequency (Hossain & Oon, 2022; Hussain et al., 2018), extant literature generally use the meeting frequency of the board or the committee to symbolize the diligence of the board or the committee (Iselin, 2020; Nahar & Jahan, 2021). While proponents of frequent board meetings suggest that it serves as an avenue through which a company’s directors acquire firm-specific information to fulfil their monitoring role (Adams & Ferreira, 2007), critics of frequent board meetings maintained that it distracts directors from performing their primary duties (Lipton & Lorsch, 1992) and does not effectively constrain managers from engaging in opportunistic behaviours (Ji et al., 2020).

However, despite the competing views, several studies that focused on financial firms found that risk committee frequent meetings reduced bank audit fees (Hines et al., 2015), enhanced corporate market valuation (Battaglia & Gallo, 2015), improved performance (Nahar & Jahan, 2021), and reduced bank risk-taking (Abid et al., 2021). Even though scholars have not yet analysed the effect of risk committee meetings on tax avoidance, Barros and Sarmiento (2020) showed that higher board meeting frequency mitigates tax avoidance. Similarly, Xie et al. (2003) showed that audit committee meetings mitigate managers’ propensity to manage earnings. Since tax avoidance is one of the channels managements use to manage earnings (Desai & Dharmapala, 2009), we hypothesised as follows:

H4: More risk committee meetings will reduce the positive influence of CEO duality on bank tax avoidance.

3. Research Methodology

3.1 Sample and Data Collection

Following prior research (e.g., Crossland & Hambrick, 2011), we draw our sample from the banks featured in “Forbes 2021 Global 2000 list” and collected data on these banks from 2011 to 2021. Forbes Global 2000 is a yearly ranking of the world’s largest 2000 public companies across different industries by Forbes Magazine based on assets, sales, profit, and market value. The Forbes 2021 rankings include 230 banks across 47 countries. From the 230 unique banks featured in the Forbes 2021 Global 2000 list, we remove banks that do not publish their annual reports in English and those whose annual reports within the periods of the study are unavailable. Moreover, we remove bank-year observations with “negative pre-tax income” and missing values on “tax expenses”. These criteria reduce the final sample to 152 unique banks involving 1540 bank-year observations across 32 countries. The

number of unique banks in our sample is remarkably similar to those employed by Nahar and Jahan (2021) in a recent multi-country study examining risk committees' role in the risk disclosures-bank performance relationship.

Table A2, in the appendix, shows the sample distribution on a country-by-country basis. Consistent with Chen et al. (2022), China has more banks in the sample, with 15.79% of the entire sample, followed by Japan, the US, and Taiwan with 11.84%, 9.21% and 5.92%, respectively. Consistent with Vallascas et al. (2017), some countries (e.g., Belgium, Finland, and Nigeria) have only one prominent bank in the sample. As for the data on boards' attributes, we manually source it from the bank's annual reports and proxy statements. Similarly, following Ding et al. (2021), firms' financial data measured in US dollars are obtained from S&P Capital IQ. Lastly, we sourced data on the statutory tax rates from the OECD websites while GDP and country-level governance indicators data were sourced from the World Bank's World Development Indicators database and the World Bank's Worldwide Governance Indicators database, respectively.

3.2 Measurement of Variables

3.2.1 Dependent Variable

Tax avoidance is our dependent variable. Although many proxies were used in the literature to measure tax avoidance (see Hanlon & Heitzman, 2010 for details), we used generally accepted accounting principle effective tax rate (hereafter, GAAP ETR) as our primary measure for tax avoidance, in accordance with prior literature (e.g., Brune et al., 2019; Joshi, 2020; Overesch & Wolff, 2021). GAAP ETR has been used widely in prior studies, specifically, those involving large multinationals (Joshi, 2020), because it considers worldwide tax expenses, which quantifies the firm's overall tax avoidance practice (Overesch & Wolff, 2021). GAAP ETR is calculated as tax expense divided by worldwide pre-tax accounting income. A higher/(lower) GAAP ETR signifies lower/(higher) tax avoidance (Joshi, 2020). Therefore, the coefficient of GAAP ETR in H1 is expected to be negative.

3.2.2 Independent Variable

CEO duality is the primary explanatory variable in the study. Following Han et al. (2022) and Hsu et al. (2021), we measure CEO duality as a dummy variable coded one if the CEO serves as the board chair and zero otherwise.

3.2.3 Moderating Variables

This study's moderating variables are the board-level risk committee, risk committee size, and meetings. Following Nahar and Jahan (2021), we measure risk committees as an indicator variable coded one if the bank has a board-level risk committee and zero otherwise; risk committee size is the total number of committee's members, while risk committee meetings is the total number of meetings held yearly by members of the committee.

3.2.4 Control Variables

We include board, firm, and country-specific variables as controls consistent with previous research. As for the board-specific variables, we follow Wen et al. (2020) to include board size and independence. Likewise, following Lanis et al. (2017), we include board gender diversity as board-level control. Regarding firm-specific control variables, we include the most frequently used variables that were shown to influence firms' tax avoidance, including size, leverage, and profitability (Francis et al., 2022; Luo et al., 2022). To account for discrepancies in financial accounting and tax accounting rules, we follow Christensen et al. (2015) and Lin et al. (2021) to include gross plant property and equipment (PPE), capital expenditure (Capex), and intangibles (Intangibles) as control variables.

Furthermore, since banks use loan loss provisions to manage tax expenses (Andries et al., 2017), consistent with Overesch and Wolff (2021), we include loan loss provisions as control variables. Concerning country-level control variables, we followed Joshi (2020) and Chen et al. (2022) to have statutory corporate tax rates, gross domestic product per capita, and the average country-level governance indicator. Lastly, because of inconsistent findings in the literature concerning the impact of the control variables on tax avoidance, we do not predict the direction in which the control variables relate to tax avoidance. Table A3, in the appendix, provides the definitions of all variables.

3.3 Estimation Method

Within the last decade, scholars have shown that endogeneity complicates corporate governance research (Wintoki et al., 2012). Furthermore, they suggested that the traditional ordinary least squares and fixed effects regressions produce biased estimates because they do not address the endogeneity issue (Sila et al., 2016; Wintoki et al., 2012). In line with that, governance scholars (e.g., Wintoki et al., 2012) demonstrate that the generalised method of moments (hereafter, GMM) is the suitable technique that controls for this endogeneity. An essential feature of the GMM estimator is that it controls for a firm's historical performance that can proxy for crucial governance attributes such as managerial ability, which is a significant determinant of future performance and future governance structures (Minnick & Noga, 2010; Wintoki et al., 2012).

The GMM approach also “treats all the explanatory variables as endogenous and orthogonally uses their past values as their respective instruments” (Pathan & Faff, 2013, p. 1578). Given that system GMM uses lags of the outcome variable to control for endogeneity (Pathan & Faff, 2013), we follow Minnick and Noga (2010) to use the two-step system GMM with 1 and 2 years lagged dependent variable to test our hypotheses. Arellano and Bond (1991) (AB) suggest two tests to check the reliability of the system GMM: the test of second-order serial correlation and the Hansen test of over-identification. However, since the Hansen test cannot be computed when Windmeijer (2005) WC-robust estimator is used (StataCorp, 2021), we use Arellano and Bond (1991) test of second-order serial correlation to check the reliability of the system GMM.

The AB test for autocorrelation; “AR(1) and AR(2) are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of

no serial correlation” (Minnick & Noga, 2010, p. 715). According to the AB estimator, the AR(1) test might yield low p-values indicating there is a serial correlation; however, higher p-values are desired for in AR(2), which shows no serial correlation (Minnick & Noga, 2010; Wintoki et al., 2012).

3.3.1 Empirical Model

The GMM regression model in equation 1 below, which includes two lags of corporate tax avoidance as an explanatory variable, is used to test our first hypothesis (e.g., the effect of CEO duality on tax avoidance). The model is as follows:

$$ETR_{it} = \beta_0 + \beta_1 ETR_{it-1} + \beta_2 ETR_{it-2} + \beta_3 Duality_{it} + \sum \beta_j ControlVariables_{it} + \beta_k YR_t + \varepsilon_i \quad (1)$$

To examine the moderating role of board-level risk committee (Hypothesis 2), risk committee size (Hypothesis 3), and risk committee meetings (Hypothesis 4), we introduce an interaction term between CEO duality and the moderating variables in equations (2) to (4) as follows:

$$ETR_{it} = \beta_0 + \beta_1 ETR_{it-1} + \beta_2 ETR_{it-2} + \beta_3 Duality_{it} + \beta_4 RC_{it} + \beta_5 Duality_{it} * RC_{it} + \sum \beta_j ControlVariables_{it} + \beta_k YR_t + \varepsilon_i \quad (2)$$

$$ETR_{it} = \beta_0 + \beta_1 ETR_{it-1} + \beta_2 ETR_{it-2} + \beta_3 Duality_{it} + \beta_4 RCsize_{it} + \beta_5 Duality_{it} * RCsize_{it} + \sum \beta_j ControlVariables_{it} + \beta_k YR_t + \varepsilon_i \quad (3)$$

$$ETR_{it} = \beta_0 + \beta_1 ETR_{it-1} + \beta_2 ETR_{it-2} + \beta_3 Duality_{it} + \beta_4 RCmeeting_{it} + \beta_5 Duality_{it} * RCmeeting_{it} + \sum \beta_j ControlVariables_{it} + \beta_k YR_t + \varepsilon_i \quad (4)$$

Where: ETR_t represents GAAP ETR at time t ; β_0 means the intercept; ETR_{t-1} refers to GAAP ETR lagged by one year; ETR_{t-2} refers to GAAP ETR lagged by two years; $Duality$ refers to CEO duality, RC refers to board-level risk committee, $RCsize$ stands for RC size; $RCmeetings$ refers to RC meetings; $\sum \beta_j ControlVariables$ refers to all control variables mentioned in Section 3.2.4. YR refers to year dummies, while ε is the error term. Following Minnick and Noga (2010), the regression equations were assessed with heteroscedasticity-robust standard errors. We obtained the system GMM estimates using the ‘xtdpdsys’ command in Stata 17.

4. Results

4.1 Descriptive Statistics

Table A4, in the appendix, shows the descriptive statistics for all the variables included in the study for the benchmark period covering 2011 to 2021. From the descriptive statistics table, an ordinary bank in the sample has an average GAAP ETR of 0.25, comparable to that of large banks of 0.265, as reported by Joshi (2020). Relative to Abid et al. (2021), the banks in our sample are managed by slightly fewer proportions of CEOs serving as board chairs (0.153 vs 0.161). As for the board-level risk committee and its size, the average values stand at 0.835 and 4.32, similar to that

of 0.854 and 4.326, as documented by Abid et al. (2021). A risk committee meeting has an average value of 6.68, slightly higher than 5.63 in Nahar and Jahan (2021).

Concerning the control variables, the average value for board size is 13.79, similar to the 13.21 reported by Battaglia and Gallo (2015). Furthermore, the mean value for independent directors is 54%, while that of women directors is 18%. These values are comparable to 55% and 21%, reported by Addo et al. (2021). Table 1 also provides average values for our bank-specific and country-level variables that we use as control variables in our regression models. For instance, the average values for ROA (e.g., a proxy for profitability), leverage, and the country's statutory tax rate stands at 0.8%, 8.9%, and 26%, respectively. Table A5, in the appendix, reports the pairwise correlation matrix. Furthermore, the reported Pearson correlation coefficient for all the variables is less than 0.80, indicating that multicollinearity does not seriously concern our analysis (Wooldridge, 2010).

4.2 Multivariate Results

To examine the effect of CEO duality on bank tax avoidance as moderated by the risk committee, we estimated the regression equations in Models (1) to (4) and presented the results in Table 1. Regarding H1, column (1) of Table 1 shows the result of the effect of CEO duality on bank tax avoidance, and the coefficient of GAAP ETR is negative and significant ($\beta = -.031$; $p < .1$). The result supports H1 and is consistent with the findings of Chan et al. (2013) and Halioui et al. (2016), suggesting that CEO duality increases banks' tax avoidance behaviour.

Concerning H2, column (2) of Table 1 shows the results of an interaction effect between CEO duality and board-level risk committees on bank tax avoidance. As shown in Table 1, the result of the interaction term in column (2) is positive and significant ($\beta = .063$; $p < 0.05$). The result supports H2, suggesting that establishing board-level risk committees in banks lessens CEO duality's positive effect on tax avoidance.

Regarding H3, column (3) of Table 1 shows the result of an interaction effect between CEO duality and risk committee size on bank tax avoidance. As shown in Table 1, the result of the interaction term in column (3) is positive and significant ($\beta = .007$; $p < .1$). The finding is consistent with H3, suggesting that larger risk committees mitigate the positive effect of CEO duality on bank tax avoidance.

Lastly, regarding H4, column (4) of Table 1 shows the result of an interaction effect between CEO duality and risk committee meetings on bank tax avoidance. As shown in Table 1, the result of the interaction term in column (4) is positive but not significant ($\beta = .005$). Although the coefficient in H4 is insignificant, the result partially supports H4, implying that having more risk committee meetings reduces the positive effect of CEO duality on bank tax avoidance.

In sum, the results support almost all of our hypotheses, suggesting that CEO duality encourages tax avoidance in financial institutions, while board-level risk committees and its structural characteristics (size and meetings) reduce the positive effect of CEO duality on tax avoidance. Regarding firm-specific control variables, we found that board size and profitability are positively and significantly associated with tax avoidance. At the country level, we found that the average worldwide governance indicator is negatively related to tax avoidance.

Table 1 Baseline Result (Two-Step System GMM)

<i>Dependent Variable = GAAP ETR</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
<i>GAAP ETR_{t-1}</i>	-.073 (.192)	-.069 (.214)	-.068 (.224)	-.074 (.195)
<i>GAAP ETR_{t-2}</i>	-.05*** (.01)	-.048** (.013)	-.049** (.012)	-.053*** (.005)
<i>CEO duality</i>	-.031* (.075)	-.051** (.024)	-.042** (.036)	-.044* (.056)
<i>Risk committee</i>		.008 (.645)		
<i>Duality*Risk committee</i>		.063** (.02)		
<i>Risk committee size</i>			.001 (.664)	
<i>Duality*risk committee size</i>			.007* (.087)	
<i>Risk committee meetings</i>				-.002 (.479)
<i>Duality*risk committee meetings</i>				.005 (.528)
<i>Board size</i>	-.004** (.027)	-.004** (.021)	-.005** (.013)	-.003* (.051)
<i>Board Independent</i>	.044 (.426)	.033 (.535)	.038 (.465)	.04 (.501)
<i>Board gender diversity</i>	.069 (.274)	.085 (.162)	.074 (.228)	.101 (.143)
<i>Firm size</i>	-.012 (.751)	-.015 (.648)	-.01 (.796)	-.006 (.911)
<i>ROA</i>	-21.051*** (.01)	-20.944*** (.008)	-20.885*** (.005)	-21.843*** (.004)
<i>Leverage</i>	-.083 (.488)	-.078 (.505)	-.069 (.58)	-.087 (.472)
<i>Loan loss provision</i>	-.082 (.232)	-.077 (.231)	-.083 (.2)	-.08 (.166)
<i>PPE</i>	1.185 (.287)	1.115 (.306)	1.356 (.259)	.988 (.407)
<i>Intangibles</i>	-.214 (.287)	-.725 (.81)	-.53 (.852)	.204 (.951)
<i>Capital expenditure</i>	.039 (.619)	.038 (.634)	.035 (.635)	.048 (.612)
<i>Tax rate</i>	.253 (.305)	.254 (.279)	.262 (.235)	.219 (.394)
<i>GDP per capita growth</i>	.002 (.125)	.002 (.109)	.002 (.112)	.002* (.093)
<i>Average WGI</i>	.101* (.081)	.105* (.06)	.102* (.073)	.101* (.081)
<i>Constant</i>	.449 (.324)	.482 (.292)	.42 (.365)	.379
<i>Year</i>	Yes	Yes	Yes	Yes
<i>AR (1) test</i>	0.1203	0.1204	0.1188	0.1188
<i>AR (2) test</i>	0.4244	0.4245	0.4130	0.4199
<i>Sargan test</i>	Not applicable	Not applicable	Not applicable	Not applicable

Notes: The numbers outside the brackets represent the coefficients, while those within the brackets are the p-values. ***, **, and * indicates statistical significance at 1%, 5% and 10% levels, respectively.

4.3 Robustness Tests

In this section, we perform two additional analyses to test the robustness of our main results.

4.3.1 Effect of Most Representative Country

To ensure that our results are not driven by one or two countries with the highest observations, we follow some recent international tax avoidance research (Athira & Ramesh, 2023; Campa et al., 2022; Chen et al., 2022) to remove the most representative country in the sample. Accordingly, we exclude China (15.79%) and re-estimate the regression equation in Models (1) to (4) without China. The results are reported in Table 2 and are similar to the main result reported in Table 1. For example, CEO duality has a positive effect on tax avoidance, while the board-level risk committee and its structural characteristics mitigate the positive impact of CEO duality on tax avoidance.

Table 2 Robust Test for Sub-sample Analysis Excluding China (Two Step GMM)

<i>Dependent Variable = GAAP ETR</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
<i>GAAP ETR_{t-1}</i>	-.106* (-1.68)	-.101 (.112)	-.099 (.11)	-.103 (.102)
<i>GAAP ETR_{t-2}</i>	-.074*** (-3.17)	-.072*** (.002)	-.073*** (.001)	-.074*** (.001)
<i>CEO duality</i>	-.032* (-1.73)	-.05** (.032)	-.043** (.043)	-.043** (.043)
<i>Risk committee</i>		.009 (.621)		
<i>Duality*risk committee</i>		.07** (.016)		
<i>Risk committee size</i>			.004 (.449)	
<i>Duality*risk committee size</i>			.009* (.058)	
<i>Risk committee meetings</i>				-.002 (.439)
<i>Duality*risk committee meetings</i>				.007 (.331)
<i>Board size</i>	-.004** (-2.11)	-.005** (.022)	-.005** (.016)	-.004* (.063)
<i>Board Independent</i>	.034 (0.45)	.021 (.762)	.021 (.764)	.033 (.656)
<i>Board gender diversity</i>	.101 (1.09)	.116 (.198)	.116 (.193)	.128 (.174)
<i>Firm size</i>	.005 (0.10)	-.001 (.989)	-.002 (.97)	.005 (.927)
<i>ROA</i>	-25.169*** (-2.92)	-25.133*** (.004)	-24.901*** (.003)	-25.277*** (.001)
<i>Leverage</i>	-.084 (-0.56)	-.072 (.616)	-.073 (.623)	-.071 (.636)
<i>Loan loss provision</i>	-.136 (-1.17)	-.138 (.222)	-.139 (.201)	-.132 (.189)
<i>PPE</i>	1.098 (0.72)	1.112 (.456)	1.164 (.454)	1.153 (.431)
<i>Intangibles</i>	-1.927 (-0.70)	-2.291 (.419)	-2.168 (.394)	-2.121 (.447)
<i>Capital expenditure</i>	.016 (0.42)	.017 (.67)	.013 (.722)	.02 (.677)
<i>Tax rate</i>	.405 (1.36)	.39 (.176)	.358 (.185)	.374 (.215)
<i>GDP per capita growth</i>	.002 (1.24)	.002 (.198)	.002 (.207)	.002 (.157)
<i>Average WGI</i>	.145* (1.68)	.156* (.054)	.153* (.059)	.151* (.087)
<i>Constant</i>	.209 (.746)	.276 (.673)	.295 (.621)	.204 (.779)
<i>Year</i>	Yes	Yes	Yes	Yes
<i>AR (1) test</i>	0.1230	0.1245	0.1233	0.1219
<i>AR (2) test</i>	0.4034	0.4066	0.3948	0.4003
<i>Sargan test</i>	Not applicable	Not applicable	Not applicable	Not applicable

Notes: See Table 1

4.3.2 Strength of Tax Enforcement

To ensure that countries with weak tax enforcement rules do not drive our result, we follow Bartelsman and Beetsma (2003) to focus primarily on OECD countries and re-estimate the regression equations in Model (1) to (4) without the non-OECD countries. The result is reported in Table 3 and is almost the same as the main one reported in Table 1.

Table 3 Robust Test for Sub-sample Analysis excluding Non-OECD Countries (Two Step GMM)

<i>Dependent Variable = GAAP ETR</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
<i>GAAP ETR_{t-1}</i>	-.082 (.129)	-.08 (.144)	-.079 (.155)	-.079 (.138)
<i>GAAP ETR_{t-2}</i>	-.054** (.012)	-.053*** (.009)	-.055** (.012)	-.052** (.013)
<i>CEO duality</i>	-.054** (.024)	-.076*** (.009)	-.063** (.029)	-.072*** (.002)
<i>RC</i>		.018 .901		
<i>Duality*RC</i>		.077* (.06)		
<i>Risk committee size</i>			.006 (.331)	
<i>Duality*risk committee size</i>			.008 (.362)	
<i>Risk committee meetings</i>				-.004 (.296)
<i>Duality*risk committee meetings</i>				.01 (.321)
<i>Board size</i>	0 (.951)	-.001 (.837)	-.001 (.063)	0 (.936)
<i>Board Independent</i>	.123 (.333)	.115 (.355)	.121 (.327)	.104 (.393)
<i>Board gender diversity</i>	.19 (.226)	.186 (.233)	.185 (.232)	.209 (.158)
<i>Firm size</i>	.002	-.003 (.973)	-.01 (.865)	.008 (.906)
<i>ROA</i>	-45.214*** (0)	-45.58*** (0)	-45.964*** (0)	-44.138*** (0)
<i>Leverage</i>	-.023 (.889)	-.021 (.892)	-.059 (.72)	-.017 (.923)
<i>Loan loss provision</i>	-.036 (.768)	-.032 (.768)	-.053 (.675)	-.009 (.934)
<i>PPE</i>	5.588* (.061)	5.485* (.059)	5.763** (.046)	5.435* (.075)
<i>Intangibles</i>	3.54 (.322)	2.48 (.507)	2.613 (.486)	2.951 (.382)
<i>Capital expenditure</i>	.042 (.594)	.047 (.566)	.041 (.586)	.049 (.615)
<i>Tax rate</i>	.32 (.288)	.317 (.263)	.281 (.33)	.33 (.251)
<i>GDP per capita growth</i>	.008*** (.006)	.009*** (.005)	.009*** (.002)	.008*** (.004)
<i>Average WGI</i>	.034 (.813)	.022 (.874)	.037 (.799)	.019 (.89)
<i>Constant</i>	.171 (.814)	.252 (.775)	.341 (.603)	.129 (.871)
<i>Year</i>	Yes	Yes	Yes	Yes
<i>AR (1) test</i>	0.1447	0.1449	0.1464	0.1429
<i>AR (2) test</i>	0.4594	0.4587	0.4497	0.4650
Sargan test	Not applicable	Not applicable	Not applicable	Not applicable

Notes: See Table 1

5. Conclusions

Motivated by calls for investigation on whether banks pay their fair share of corporate taxes (Gawehn & Müller, 2020; Langenmayr & Reiter, 2022), calls to analyze the interactions among corporate board and its sub-committees (Carcello et al., 2011) and calls to explore the effect of CEO duality on firms' outcomes from a multi-country perspective (Duru et al., 2016), we draw on an international sample of banks across 32 countries to examine the effect of CEO duality on bank tax avoidance. More importantly, we investigate whether creating a board-level risk committee, the committee's size, and meeting frequency moderate the CEO duality-tax avoidance relationship.

Consistent with the agency's view that CEO duality encourages managerial opportunism (Jensen, 1993) and that managers engaged in tax avoidance to divert corporate resources for personal benefits (Desai et al., 2007; Hu et al., 2021), we found that CEO duality is positively related to bank tax avoidance. Similarly, consistent with the views in signalling theory that establishing a board-level risk committee sends a signal to investors that the management would not expropriate firms' resources (Malik et al., 2021), we found that the creation of a board-level risk committee, the committee's size and meeting frequency mitigate the positive effect of CEO duality on bank tax avoidance. The evidence that CEO duality increases tax avoidance aligns with the prior results of Chan et al. (2013) and Li et al. (2022), respectively. Likewise, the negative effect of the risk committee on the CEO duality-tax avoidance relationship is consistent with the prior work of Richardson et al. (2013).

Given that corporate tax avoidance exposes a firm to several risks, including financial, reputational, and bankruptcy risks (Dhawan et al., 2020) while managers engaged in tax avoidance to divert corporate resources (Desai et al., 2007), our results support the calls by policymakers and activist investors for the abolishment of CEO duality. Similarly, the results support the call by regulators for establishing a separate board-level risk committee in banks to manage the risks faced by the banks. Our results survive a series of robustness tests.

As stated earlier, this study makes three significant contributions. First, we expand the prior literature on the CEO duality-tax avoidance relationship. However, contrary to the earlier studies that focused primarily on the direct connection between CEO duality and corporate tax avoidance, without analyzing the mechanisms that moderate them, we extend this literature by providing evidence of how the presence of board-level risk committee and its structural characteristics (size and meetings) moderates the CEO duality-tax avoidance relationship. Second, we expand the literature on the economic consequences of risk committees in banks. We contribute to this emerging literature by providing evidence that risk committee influence bank tax avoidance. Third, by analyzing the CEO duality-tax avoidance relationship from a multi-country perspective, we contribute to the literature on international taxation and extend the within-country results to a global setting.

Considering the evidence of extensive tax avoidance activities among multinational corporations and the considerable revenue lost by the government due to substantial tax avoidance activities by MNCs, our findings would be important to policymakers and regulators in at least two ways. First, results from this study would

help policymakers and regulators sustain the ongoing board reform mandating companies to split the single CEO and board chair position because CEO duality facilitates managerial opportunism through tax avoidance activities. Second, this study's findings would help policymakers and regulators understand that establishing board-level risk in financial institutions reduces CEOs' opportunistic behaviours, hence the need to encourage the creation of risk committees in non-financial firms.

This paper is not without limitations. For instance, given that directors' influence on firms' policies and strategies operates more directly through their presence on board committees (Neville, Byron, Post, & Ward, 2019), our work focused on how board-level risk committees and two structural characteristics: size and meeting moderate the CEO duality-tax avoidance relationship, nevertheless the paper does not analyze the role of other risk committees' attributes, such as independence, gender, and accounting experts. Therefore, future research can investigate how the other risk committees' attributes would moderate the CEO duality-tax avoidance relationship. Furthermore, while we focused on the moderating role of internal mechanisms (risk committee), future studies can examine how country-level formal and informal institutions would moderate the tax avoidance effect of CEO duality.

APPENDIX

Table A1 Prior Studies on the Relationship between CEO Duality and Corporate Tax Avoidance

<i>Author(s)</i>	<i>Country</i>	<i>Sample</i>	<i>Period</i>	<i>Independent variable(s)</i>	<i>Proxy for tax avoidance</i>	<i>Moderator</i>	<i>Econometric model</i>	<i>Results</i>
<i>Minnick and Noga (2010)</i>	US	2,339 firm-years	1996-2005	CEO duality	Cash ETR and GAAP ETR	None	GMM	None
<i>Chan et al. (2013)</i>	China	6,032 firm-year	2003-2009	CEO duality	GAAP ETR	None	Tobit regression	Positive
<i>Halloui et al. (2016)</i>	US	471 firm-year	2008-2012	CEO duality	GAAP ETR	None	OLS and Fixed effect	Positive
<i>Abdul Wahab et al. (2017)</i>	Malaysia	2,538 firm-year	2000-2009	CEO duality	Tax aggressiveness dummy	None	Logit regression	None
<i>Boussaidi and Hamed-Sidhom (2021)</i>	Tunisia	250 firm-year	2011-2017	CEO duality	GAAP ETR	None	OLS	Negative
<i>Kolias and Koumanakos (2022)</i>	Greece	149,985 firm-year	2003-2014	CEO duality	BTD and GAAP ETR	None	Multinomial Logit regression	Negative
<i>Li et al. (2022)</i>	Multi-country	19,683 firm-year	1995-2010	CEO duality	Cash ETR	None	OLS	Positive
<i>Amri et al. (2023)</i>	Tunisia	52 unique firms	2003-2016	CEO duality	TA_ETR	None	Logistic regression	None

Table A2 Sample Distribution by Country

COUNTRY	Unique Banks	Per cent	Freq.	Per cent
<i>Australia</i>	4	2.63	44	2.86
<i>Austria</i>	3	1.97	31	2.01
<i>Belgium</i>	1	0.66	10	0.65
<i>Canada</i>	5	3.29	55	3.57
<i>China</i>	24	15.79	226	14.68
<i>Denmark</i>	2	1.32	21	1.36
<i>Finland</i>	1	0.66	11	0.71
<i>France</i>	3	1.97	33	2.14
<i>Germany</i>	3	1.97	30	1.95
<i>Greece</i>	2	1.32	11	0.71
<i>Hong Kong</i>	2	1.32	20	1.3
<i>India</i>	7	4.61	54	3.51
<i>Indonesia</i>	4	2.63	44	2.86
<i>Ireland</i>	2	1.32	14	0.91
<i>Italy</i>	4	2.63	33	2.14
<i>Japan</i>	18	11.84	189	12.27
<i>Malaysia</i>	5	3.29	55	3.57
<i>Morocco</i>	2	1.32	21	1.36
<i>Nigeria</i>	1	0.66	11	0.71
<i>Philippines</i>	2	1.32	22	1.43
<i>Russia</i>	2	1.32	22	1.43
<i>South Korea</i>	4	2.63	44	2.86
<i>Singapore</i>	3	1.97	33	2.14
<i>South Africa</i>	3	1.97	33	2.14
<i>Spain</i>	4	2.63	39	2.53
<i>Sweden</i>	3	1.97	33	2.14
<i>Switzerland</i>	2	1.32	19	1.23
<i>Taiwan</i>	9	5.92	98	6.36
<i>Thailand</i>	5	3.29	55	3.57
<i>Turkey</i>	3	1.97	33	2.14
<i>UK</i>	5	3.29	49	3.18
<i>US</i>	14	9.21	147	9.55
Total	152	100.00	1540	100

Table A3 Variables Definitions

Variables	Description
<i>GAAP ETR</i>	Annual tax expense divided by pre-tax income
<i>CEO duality</i>	The dummy variable coded one if the CEO is also the board chair and zero otherwise
<i>Risk committee</i>	The dummy variable coded one if the bank has a dedicated board-level risk committee and zero otherwise
<i>Risk committee size</i>	Number of directors on the risk committee
<i>Risk committee meetings</i>	Number of meetings held by the risk committee during the year
<i>Board Size</i>	Total number of directors in the current year
<i>Board independence</i>	Number of independent directors divided by the total number of directors.
<i>Board gender diversity</i>	Number of female directors on the board scale by the total number of directors
<i>Firm Size</i>	Natural logarithm of the bank's total assets in millions of US dollars.
<i>Leverage</i>	Long-term debt divided by total assets
<i>Profitability (ROA)</i>	Pre-tax income divided by total equity
<i>Plant property and equipment (PPE)</i>	Gross property, plant, and equipment divided by total assets
<i>Intangibles</i>	intangibles divided by total assets
<i>Capital expenditure (Capex)</i>	capital expenditure divided by the gross value of plant, property, and equipment
<i>Loan loss provision (LLP)</i>	Loan loss provision divided by net income
<i>Statutory Corporate Tax Rate</i>	Country's statutory corporate tax rate
<i>Gross domestic product</i>	The GDP per capita annual growth
<i>Country's governance indicators (CGI)</i>	Average of six governance indicators: control of corruption, government effectiveness, political stability, regulatory quality, the rule of law, voice, and accountability

Table A4 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>GAAP ETR</i>	1540	.25	.168	.001	3.667
<i>CEO duality</i>	1540	.153	.36	0	1
<i>Risk committee</i>	1540	.835	.371	0	1
<i>Risk committee size</i>	1540	4.32	2.646	0	13
<i>Risk committee meetings</i>	1540	6.686	5.674	0	45
<i>Board size</i>	1540	13.796	3.787	5	38
<i>Board independence</i>	1540	.546	.237	0	1
<i>Board gender diversity</i>	1540	.18	.134	0	.615
<i>Firm size</i>	1540	12.11	1.329	8.633	15.376
<i>Profitability</i>	1540	.008	.006	-.061	.04
<i>Leverage</i>	1540	.089	.093	0	.671
<i>Loan loss provision</i>	1540	.178	.175	-.002	1.845
<i>PPE</i>	1540	.015	.026	.001	.41
<i>Intangibles</i>	1540	.006	.009	0	.094
<i>Capital expenditure</i>	1540	.119	.161	0	3.301
<i>Tax rate</i>	1540	.265	.063	.125	.407
<i>GDP</i>	1540	2.2	3.38	-11.758	23.201
<i>WWGI</i>	1540	.697	.806	-1.145	1.867

Table A5 Pairwise Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. GAAP ETR	1.000																	
2. CEO duality	0.076*	1.000																
3. RC	-0.105*	-0.356*	1.000															
4. RC size	-0.004	-0.241*	0.724*	1.000														
5. RC meetings	-0.039	-0.240*	0.523*	0.450*	1.000													
6. Board size	0.108*	-0.068*	-0.066*	0.100*	0.108*	1.000												
7. Independence	0.028	0.104*	0.384*	0.483*	0.280*	-0.123*	1.000											
8. Gender diversity	-0.050	-0.164*	0.392*	0.377*	0.344*	-0.013	0.510*	1.000										
9. Firm size	0.003	-0.024	0.286*	0.386*	0.192*	0.198*	0.415*	0.407*	1.000									
10. Profitability	-0.232*	-0.152*	0.311*	0.239*	0.189*	-0.100*	-0.049	-0.036	-0.215*	1.000								
11. Leverage	0.071*	-0.056*	0.170*	0.110*	0.110*	-0.027	0.249*	0.199*	0.099*	-0.165*	1.000							
12. Loan loss	0.024	-0.182*	0.243*	0.194*	0.173*	0.023	-0.172*	-0.067*	-0.030	-0.091*	0.034	1.000						
13. PPE	-0.015	-0.056*	0.060*	0.064*	0.021	-0.070*	-0.092*	-0.062*	-0.173*	0.166*	0.054*	0.288*	1.000					
14. Intangibles	0.004	0.255*	0.244*	0.284*	0.169*	-0.099*	0.504*	0.284*	0.222*	0.005	-0.021	-0.157*	-0.004	1.000				
15. CAPEX	0.032	-0.099*	0.149*	0.196*	0.118*	-0.005	0.130*	0.152*	0.135*	0.053*	0.115*	0.003	-0.042	0.088*	1.000			
16. Tax rate	0.249*	0.431*	-0.257*	-0.055*	-0.110*	0.106*	0.151*	-0.055*	-0.035	-0.094*	-0.033	-0.108*	-0.034	0.209*	0.078*	1.000		
17. GDP	-0.087*	-0.116*	0.224*	0.164*	0.042	-0.084*	-0.143*	-0.126*	-0.006	0.289*	-0.107*	0.067*	0.057*	-0.136*	0.077*	-0.100*	1.000	
18. WWGI	0.113*	0.252*	-0.312*	-0.177*	-0.145*	0.068*	0.440*	0.278*	0.257*	-0.508*	0.238*	-0.459*	-0.205*	0.269*	-0.017	0.137*	-0.425*	1.000

Notes: ***, **, and * indicates statistical significance at 1%, 5% and 10% levels, respectively.

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