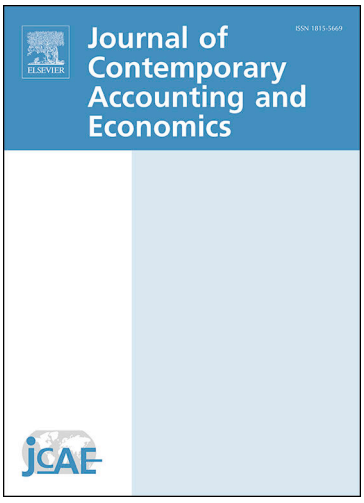


# Does Corporate Tax Avoidance Promote Managerial Empire Building?

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# Does Corporate Tax Avoidance Promote Managerial Empire Building?


## Abstract

We examine the association between corporate tax avoidance and empire building using 35,060 firm-year observations from the United States (US) for the period 1991–2015. We build a composite empire building measure by conducting a factor analysis on four popular empire building proxies used in the literature. We find a positive association between this composite measure and the four proxies used to represent the tax avoidance of firms in our sample. As our results suggest, agency problems are inflicted upon firms employing tax avoidance strategies which, in turn, facilitate managerial rent extraction through aggressiveness in growth and the accumulation of assets. Furthermore, the relationship of corporate tax avoidance to managerial empire building is found to be more pronounced in firms with weak governance, poor monitoring mechanisms, greater Chief Executive Officer (CEO) power and weak corporate social responsibility (CSR) performance. We also find that empire building-motivated tax avoidance leads to lower firm valuation. Our results remain insensitive even when employing several robustness tests.



**Keywords:** Tax avoidance; Empire building; Agency problems; Firm valuation

**JEL Classification:** G32, G34

## 1. Introduction

As argued in the literature on tax avoidance motives, managerial opportunism can be exacerbated by corporate tax avoidance activities (Desai and Dharmapala, 2006; Desai et al., 2007; Desai and Dharmapala, 2009; Chen et al., 2010; Rego and Wilson, 2012).[2] Desai et al. (2007) show how a tax system without proper enforcement allows managers to extract rents at a cost to the state in the form of lower taxes. Several studies provide evidence that managerial opportunism is facilitated by tax avoidance activities, as shown by earnings manipulation and the outright diversion of resources for managers' personal use (Desai and Dharmapala, 2006; Desai et al., 2007; Desai and Dharmapala, 2009; Chen et al., 2010). The protagonists of agency theory argue that managers are motivated to use corporate resources to build business empires for their own private interests by, for example, achieving higher compensation and satisfying their desire for status, power and prestige (Jensen, 1986; Hope and Thomas, 2008). Self-interested managers have an enhanced opportunity, through the separation of ownership from control, to involve themselves in tax avoidance practices for their own benefit, rather than using these practices to increase shareholders' wealth. Agency considerations fuelled by this separation have been the subject of investigation in several prior tax avoidance studies (Slemrod, 2004; Chen and Chu, 2005; Crocker and Slemrod, 2005). In a more recent study, Atwood and Lewellen (2019) show that managers of tax haven firms with weak investor protections divert tax savings into overinvestment and excessive research and development (R&D) expenditure, highlighting the possibility that these managers use corporate tax savings for empire building purposes. In this context, a sensible

[2] Traditional tax avoidance theory presents the counterview that corporate tax avoidance activities are motivated by creating wealth for shareholders as these activities allocate wealth from the tax authority to corporate shareholders. Several studies report evidence that tax management or tax planning activities increase shareholders' wealth by reducing the cost of tax and increasing firm profitability (e.g., Graham and Tucker, 2006; Hanlon and Slemrod, 2009; Hanlon and Heitzman, 2010; Robinson et al., 2012).

question to be raised is whether corporate tax avoidance strategies have any link with managerial empire building exercises. The current study addresses this question.

Accordingly, our study explores the impact of corporate tax avoidance on a firm's empire building exercises. Hanlon and Heitzman (2010) call for increased attention from researchers to investigate agency considerations of corporate tax avoidance. Desai and Dharmapala (2006) argue that corporate tax avoidance can complement rent extraction by managers in the presence of less monitoring and reduced transparency. Desai and Dharmapala (2009) find that tax avoidance has a positive influence on firm value only when institutional monitoring is present. Their finding implies that, in the absence of strong monitoring, managers could use tax avoidance practices for their personal benefit, for example, building business empires. This issue is investigated in our study by addressing the main research question: do corporate tax avoidance practices provide managers with the opportunity to divert corporate resources toward their empire building exercises? In addition, the study examines the role of governance and monitoring mechanisms as a moderator in the association between tax avoidance and empire building, together with the consequences of empire building when motivated by tax avoidance practices.

We examine the association between corporate tax avoidance and empire building using 35,060 firm-year observations from the United States (US) from 1991–2015. Following Guenther et al. (2017), we measure corporate tax avoidance using four proxies: the five-year effective tax rate (ETR); five-year cash effective tax rate (CETR); three-year adjusted effective tax rate (ETR); and three-year adjusted cash effective tax rate (CETR). Furthermore, we measure empire building as a composite score obtained from the principal component analysis (PCA) of four proxies of empire building: the acquisition ratio; level of capital expenditure; total assets growth; and growth in property, plant and equipment. These proxies are widely used in the literature for capturing the

propensity of a manager to engage in empire building (e.g., Giroud and Mueller, 2010; Chhaochharia et al., 2012; Levi et al., 2014). As we discuss in Section 2, managerial power and prestige, together with managers' compensation packages, heavily depend on the size of the firm and the resources under their control. Therefore, empire building managers are likely to invest funds in acquisitions and capital expenditure projects that do not necessarily create value for their firms. Managers with empire building motives also tend to invest excessively in firm assets to grow their firms beyond optimal size and to keep unutilised resources under their control. We also examine the moderating role of empire building in the association between tax avoidance and firm valuation. We employ the ordinary least squares (OLS) regression technique to estimate our research models. Additionally, we employ change model specifications to address endogeneity arising from time-invariant factors; instrumental variable analysis to address endogeneity arising from reverse causality; and Heckman's (1979) two-stage and entropy balancing analyses to address endogeneity arising from unobservable and observable selection bias. We also employ several alternative proxies for tax avoidance and empire building to check the robustness of our findings.

We find that corporate tax avoidance is positively associated with empire building, implying that firms with a higher level of tax avoidance engage in a greater level of empire building exercises. When using firm fixed effects, change specifications analysis, instrumental variable analysis, Heckman's (1979) two-stage estimation procedure and the entropy balancing approach, our findings remain robust. The positive association between tax avoidance and empire building is found to be more significant in firms with poor governance and weak monitoring mechanisms as these inadequacies imply a high entrenchment index (E-index) score and low analyst coverage, respectively. We also find that the association between tax avoidance and empire building is more

pronounced for firms with powerful Chief Executive Officers (CEOs) and for firms with weak ethical behaviour, as reflected by their corporate social responsibility (CSR) performance. Tax avoidance motivated by an empire building objective is found to reduce firm value by a significant margin.

Our study contributes to the existing literature in several ways. Firstly, the focus of many prior studies has been on tax avoidance from the perspective of its determinants and characteristics (i.e., the causes of tax avoidance). Relatively little understanding is found in the literature on the consequences of tax avoidance, especially on whether tax avoidance strategies allow managers to reap personal benefits when a firm's ownership is separated from its management. Our study's contribution to the literature is its evidence on the influence of tax avoidance on managers' desire to engage in empire building exercises. To the best of our knowledge, the current study is one of the first to link tax avoidance with empire building. We develop a composite measure of empire building using four proxies from the literature to capture the inherently elusive corporate phenomenon of empire building and to shed light on whether corporate tax avoidance is related to this form of managerial opportunism.

Secondly, following the finding by Desai and Dharmapala (2009) that tax avoidance strategies benefit shareholders only if a strong monitoring mechanism is present, our study investigates and demonstrates that the corporate tax avoidance–empire building association is moderated by the strength of managerial disciplinary mechanisms, as implied by the E-index score and extent of analyst coverage. Thirdly, our study's findings are useful to various firm stakeholders as they provide evidence on the motives behind managers' engagement in tax avoidance strategies. While attempts by firms to reduce tax payments have a direct impact on revenue raised by the government, with subsequent consequences for various stakeholders in society, the building of

business empires through tax avoidance can be considered as the diversion of stakeholders' resources to managers' personal use. Therefore, this study's findings are useful to shareholders, regulators and other stakeholders of firms.

The remainder of the paper is organised as follows. Section 2 presents the review of the literature on managerial motives behind corporate tax avoidance and then develops the study's hypotheses. Section 3 describes the study's data, methodology and empirical framework. Section 4 presents the data analyses and results, while Section 5 reveals the outcomes of several additional tests. The paper is concluded in Section 6.

## 2. Literature review and hypotheses development

Tax avoidance is defined by Hanlon and Heitzman (2010) as the reduction of explicit taxes. This broad definition encompasses a spectrum of tax planning strategies with totally legal tax-lowering strategies at one end, such as municipal bond investments, whereas tax planning strategies, such as "non-compliance", "evasion", "aggressiveness" and "sheltering", would appear closer to the other end. In a corporate setting, with perfect alignment of the interests of agents and principals, "risk-neutral shareholders expect managers acting on their behalf to focus on profit maximisation, which includes going after opportunities to reduce tax liabilities as long as the expected incremental benefit exceeds the incremental cost" (Hanlon and Heitzman, 2010, p.138). Acting in accordance with this phenomenon, managers would engage in tax avoidance exercises that impart a positive tax avoidance–firm value relationship. Several studies argue that tax shelters are a form of non-debt tax shield that firms use to operate under low leverage (DeAngelo and Masulis, 1980; Graham and Tucker, 2006), thus contributing to the view that corporate tax avoidance strategies are devices used to generate cash flow. The finding by Armstrong et al. (2012), that no association exists between CEO pay and corporate tax avoidance, implies that tax

avoidance is an activity that enhances value rather than being an exercise motivated by managerial rent extraction. Blaylock et al. (2012) argue that, if managers use tax avoidance to facilitate rent extraction, this exercise should ultimately result in the firm's lower future performance as any economically significant use of firm resources for the benefit of managers should result in lower cash flows and earnings. However, their study instead finds the opposite, revealing the significant positive influence of tax avoidance on the firm's future performance. The study by Goh et al. (2016) finds an association between higher tax avoidance and a significant decrease in the cost of equity, thus implying that the incremental benefit of substantial tax savings from tax avoidance activities outweighs the firm's incremental risk exposure.

Desai and Dharmapala (2006) bring an agency conflict perspective to the tax avoidance exercises practised by managers. In their view, separating firm ownership and firm control can lead to corporate tax decisions that reflect managers' private interests at the expense of shareholders' wealth. Desai and Dharmapala (2009) argue that tax avoidance activities, especially concealed strategies, can provide a protective shield for managerial opportunism and the diversion of rents. Equity investors are found by Hanlon and Slemrod (2009) to react negatively to news of a firm's involvement in tax sheltering, suggesting that shareholders may not perceive tax avoidance measures as value-enhancing exercises when the firm's tax management strategy information is asymmetric. Desai et al. (2007), in their examination of Russian oil companies, highlight the interrelationship between tax sheltering activities and the associated diversion of rents by managers. These authors use the example of Sibneft, a Russian oil company, showing how tax avoidance schemes are used by managers to transfer resources from minority shareholders to offshore entities primarily owned by the managers themselves. Desai and Dharmapala (2009) find no economically meaningful relationship between tax avoidance and firm value in the absence

of strong monitoring by institutional investors. Armstrong et al. (2012) and Kim et al. (2011) find a positive relationship between corporate tax avoidance activities and managerial risk-taking at a cost to shareholders' wealth. In addition to greater agency cost, tax avoidance exercises, without the objective of value maximisation as a motivator, could lead to greater firm risk. This would arise from changes in business fundamentals and tax-related transactions (e.g., foreign operations, R&D activities, transfer pricing), and penalties associated with possible non-compliance with tax regulations/laws (e.g., fines, interest).

It has long been argued that managerial rent extraction is reflected in managers' empire building exercises, with Schumpeter and Nichol (1934) expressing the view that managers are empire builders. Empire builder managers, through their decisions, opportunistically grow their firms beyond optimal size. Opportunistic decisions, such as excessive capital expenditure, assets growth beyond the optimum level and acquisition of new firms, are often associated with objectives, such as: (i) achieving power, prestige and status; (ii) obtaining excessive compensation packages; and (iii) keeping unutilised resources under managerial control (Jensen and Meckling, 1976; Jensen, 1986; Stulz, 1990; Masulis et al., 2007; Hope and Thomas, 2008). Stulz (1990) provides evidence that corporate managers prefer to increase the resources under their control to gain prestige, while Jensen (1986) argues that the results of managerial decisions motivated by empire building desires are inefficient investment decisions. Aggarwal and Samwick (2006) postulate that managerial entrenchment could result in imperfect investment decisions reflected in either the overinvestment or underinvestment of corporate resources. In relating these findings to tax avoidance, one could ask the following question: do managers use cash flows generated through tax avoidance strategies for their empire building exercises? To examine this phenomenon, our study proposes the following hypothesis:

H1: Tax avoidance is positively associated with empire building.

Several studies argue that opportunistic behaviour by managers can be curbed through improved corporate governance and vigilant external monitoring. The model developed by Crocker and Slemrod (2005) recognises that an effective mechanism for reducing tax evasion in a world of information asymmetry is penalty imposition on the firm's tax officer. Their model asserts that a corporation can offset the possible imposed tax penalties by redesigning managerial compensation contracts. The implication is that monitoring and incentive mechanisms should be in place to align the tax avoidance motives of managers with those of shareholders. In the absence of these mechanisms, tax avoidance strategies could be implemented by executives to enable the extraction of personal benefits from the firm at the expense of shareholders' wealth. Desai and Dharmapala (2009) argue that the benefits from tax avoidance exercises could possibly be offset by the opportunities for managers to undertake rent diversion, particularly in poorly governed firms. The influence of tax avoidance on firm value is found by these authors to be positive and more significant among well-governed firms than in poorly governed firms, implying that improved corporate governance aligns the managerial objectives of tax avoidance with those of shareholders. Phillips (2003) finds that the after-tax performance of business units has a negative influence on the firm's effective tax rate (ETR), implying that designing explicit accounting-based incentive schemes for managers is important in achieving economically significant tax benefits. Similarly, Minnick and Noga (2010) find that, through pay–performance sensitivity, directors are provided with incentive contracts to reduce the taxes paid by their firms in the long run. Gaertner (2014) also finds that after-tax earnings incentives in CEO compensation translate into a significant decrease in the effective tax rate (ETR) of approximately 5.7% for a typical firm in their sample.

McGuire et al. (2014) find that managers with excessive rights of control engage in significantly less tax avoidance, a result interpreted by these authors as the creation of managerial entrenchment through excess voting rights that allow managers to perform at a suboptimal level. Bird and Karolyi (2017) find that an exogenous increase in ownership by institutions is associated with a decrease in effective tax rates (ETRs) and increased use of tax haven subsidiaries. Similarly, Khan et al. (2017) find a significant positive relationship between institutional ownership and corporate income tax avoidance: this translates into immediate benefits, for instance, increased net income margins and a higher likelihood of meeting, or beating, analyst earnings expectations. Based on the finding of Klein and Zur (2009) that hedge fund intervention results in an improved governance structure, the association between hedge fund activism and corporate tax avoidance is examined by Cheng et al. (2012). These authors find that significant increases in tax avoidance are experienced by target firms following the intervention of activist funds, thus implying that external monitoring has a role to play in improving corporate tax efficiency. In response to the premise that a firm's information asymmetry level and corporate governance quality change after it is added to a major index, Huseynov et al. (2017) examine the tax avoidance behaviour of firms after they are added to the Standard and Poor (S&P) 500 Index. The cash effective tax rate (CETR) is found to increase significantly for firms in the low CETR group before addition to the index. On the other hand, the CETR decreases for firms in the pre-addition high CETR group. More importantly, the increase in the CETR in the pre-addition low CETR group is found to be associated with increased institutional ownership and managerial incentive increases. This finding implies that firms that, before addition to the index, were not tax avoiders decide to avoid cash taxes more following that addition and that they have greater institutional ownership, with these improved governance mechanisms being the reasons for these tax savings. Taken together, the above studies' findings

highlight that it is important for firms to have improved governance and monitoring mechanisms in place to benefit from tax avoidance strategies when ownership and control are separated in a firm. Therefore, we propose the following hypothesis:

> H2: The positive association between tax avoidance and empire building is conditional on the strength of the governance and monitoring mechanisms in place to mitigate agency conflict.

Much remains unknown about firms' incentives for engaging in activities involving aggressive tax planning and tax avoidance (Hanlon and Heitzman, 2010). This vacuum is particularly visible in relation to the agency theory implications of corporate tax avoidance exercises. Desai and Dharmapala (2006) and Scholes et al. (2014) call for more research on tax management when agency conflict is present between investors and managers. Our study responds to this call, investigating whether managers with more aggressive tax strategies have an increased likelihood of diverting resources to build business empires and, if so, whether their ability to use tax avoidance for empire building depends on the strength of the governance and monitoring mechanisms in place.

## 3. Research methodology

### *3.1 Sample and data*

The data necessary for our study are collected from the following sources: (i) the Standard and Poor (S&P) Compustat database for firm-specific financial data; (ii) the Thomson Reuters Ownership database for institutional investors' ownership data; (iii) the BoardEx and Institutional Shareholder Services (ISS) database for corporate governance data; (iv) the MSCI ESG KLD STATS database for CSR performance data; (v) the Institutional Brokers' Estimate System

(I/B/E/S) database for analysts' forecasts; and (vi) the Thomson Reuters Securities Data Company (SDC) Platinum™ database for mergers and acquisitions (M&As) data. Our study period is from 1991–2015. After removing observations with incomplete data, our final sample comprises 35,060 firm-year observations with 7,190 unique firms.

The industry distribution of firms in our study's sample is presented in Table 1. The business services industry, as one sector, comprises the largest proportion in our sample (13.95%), followed by the electronic equipment industry (8.20%), pharmaceuticals products industry (6.68%) and computers industry (5.20%). The individual contribution of other industries remains below 5%.

***[INSERT TABLE 1 HERE]***

*3.2 Measures of empire building*

We develop a composite measure for empire building *(EMPIRE_BUILD)* based on four proxies: acquisition ratio *(ACQRATIO)*; the level of capital expenditure *(CAPEX)*; total assets growth *(AGROWTH)*; and growth in property, plant and equipment (*PPEGROWTH)*. While *CAPEX*, *AGROWTH* and *PPEGROWTH* are perceived to be indirect measures of empire building, *ACQRATIO* is a more direct measure of a manager's empire building (Chhaochharia et al., 2012; Levi et al., 2014). This composite measure is based on the factor scores obtained from the principal component analysis (PCA) of *CAPEX*, *AGROWTH*, *PPEGROWTH* and *ACQRATIO*. Higher values of *EMPIRE_BUILD* indicate a greater level of empire building, while lower values denote a lower level of empire building.

*3.3 Measures of tax avoidance*

Prior studies in the extant literature use several proxies to capture tax avoidance, but limitations can be found in each one (Hanlon and Heitzman, 2010; Hoi et al., 2013; Lisowsky et al., 2013). In the current study, we use four tax avoidance proxies to assert the robustness of our findings: (i) five-year effective tax rate *(5-YEAR ETR)*; (ii) five-year cash effective tax rate *(5-YEAR CETR)*; (iii) three-year adjusted effective tax rate *(3-YEAR ADJUSTED ETR)*; and (iv) three-year adjusted cash effective tax rate *(3-YEAR-ADJUSTED CETR)*. Following prior studies (Dyreng et al., 2008; Guenther et al., 2017), we compute *ETR (CETR)* as the ratio of the sum of the tax expense (cash tax payments) over a five-year period to the sum of income before taxes and special items over the same five-year period. Furthermore, while higher values of *ETR* and *CETR* represent less tax avoidance, we multiply these measures by minus one (–1) to indicate that higher values represent greater tax avoidance (Lee and Bose, 2021). We truncate *ETR* and *CETR* to a range between 0 and 1; that is, *ETR* and *CETR* are set as missing when the denominator is 0 or negative. As per Guenther

et al. (2017) and Balakrishnan et al. (2019), we compute *3-YEAR ADJUSTED CETR* as the ratio of the sum of the tax expense (cash tax payments) over a three-year period, scaled by the sum of income before taxes and special items over the same three-year period adjusted by the *ETR (CETR)* for the firm's size/industry portfolio. Industry-size *ETR (CETR)* is subtracted from the firm's *ETR (CETR)* to create a variable that is consistent with Dyreng et al. (2008).

*3.4 Baseline regression model*

As we are interested in the effect of tax avoidance on a firm's empire building, the hypotheses in our study are tested by regressing the empire building measure in year $t$+1 on the tax avoidance measures in year $t$. To be specific, the regression model below is estimated to test our hypotheses:

$$\begin{aligned} EMPIRE\_BUILD_{i,t+1} = {} & \beta_0 + \beta_1 TAX\_AVOID_{i,t} + \beta_2 CASH_{i,t} + \beta_3 LEV_{i,t} + \beta_4 ROA_{i,t} + \beta_5 SIZE_{i,t} \\ & + \beta_6 MB_{i,t} + \beta_7 SGROWTH_{i,t} + \beta_8 FAGE_{i,t} + \beta_9 INSTOWN_{i,t} \\ & + \beta_{10} MABILITY + \sum YEAR_{i,t} + \sum INDUSTRY_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where the dependent variable *EMPIRE_BUILD* is the composite measure of empire building, as explained in Section 3.2 above. Our study's main test variable is *TAX_AVOID* that captures a firm's level of tax avoidance (proxied by *5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR)*. Following prior studies (Chhaochharia et al., 2012; Levi et al., 2014; Koester et al., 2017), several control variables are included in Equation (1). These control variables comprise cash holdings (*CASH*); leverage ratio (*LEV)*; profitability (*ROA*); firm size (*SIZE*); market-to-book ratio (*MB*); annual growth in sales (*SGROWTH*); firm age (*FAGE*); percentage of shares held by institutional shareholders (*INSTOWN*); and managerial ability (*MABILITY*). We include a year dummy variable and Fama and French's (1997) industry classifications in Equation (1) to control for year and industry effects in the estimated models. We apply robust standard errors clustered by firm to correct heteroscedasticity and serial correlation

in error terms. All continuous variables are winsorised at the 1% level and 99% level to mitigate the outlier influence. The definitions of all variables are provided in Appendix A.

## 4. Empirical analyses

### *4.1 Descriptive statistics and correlations analysis*

Table 2 provides the descriptive statistics for the dependent and independent variables used in Equation (1). Panel A presents descriptive statistics for the dependent variable, with Panel B showing those for test variables and Panel C presenting those for control variables. The mean value of the composite measure of empire building *(EMPIRE_BUILD)* of firms in our sample is 0.134. The four empire building proxies used to build this composite measure report the following mean values: acquisition ratio (*ACQRATIO)* = 0.029; capital expenditure *(CAPEX)* = 0.052; assets growth (*AGROWTH)* = 0.172; and property, plant and equipment growth (*PPEGROWTH)* = 0.120. While the averages of *ACQRATIO* and *AGROWTH* of firms in our sample are higher than the mean values of 0.019 and 0.137, respectively, reported by Chhaochharia et al. (2012), the mean values reported for *CAPEX* and *PPEGROWTH* are lower than the values of 0.068 and 0.175, respectively, reported in their study. This can be attributed to the differences in sample periods between the two studies; our study analyses data for 25 years from 1991–2015, whereas Chhaochharia et al. (2012) analyse data over 12 years from 1996–2007. The means for the tax avoidance proxies are as follows: (i) five-year effective tax rate (*5-YEAR ETR*) = –0.306; (ii) five-year cash effective tax rate (*5-YEAR CETR*) = –0.244; (iii) three-year adjusted effective tax rate (*3-YEAR ADJUSTED ETR*) = –0.034; and (iv) three-year adjusted cash effective tax rate (*3-YEAR ADJUSTED CETR*) = 0.004.

A typical firm in our study's sample finances about 21% of its assets through debt *(LEV)*, while holding cash *(CASH)* equivalent to nearly 20% of its total assets. Although firms in the sample

report that their sales revenue shows positive growth (*SGROWTH)*, they report very low returns to total assets invested *(ROA)*. An average firm holds assets worth US$2,877.95 million (unreported) and has existed in business *(FAGE)* for about 18.95 years.[3] These firms report a market-to-book *(MB)* value of 2.830, implying that stocks of the firms in our sample trade at a price 2.8 times their book value. Approximately 40% of the equity ownership of firms in the sample is held by institutional investors *(INSTOWN)*. The average managerial ability *(MABILITY)* score is 0.002.

***[INSERT TABLE 2 HERE]***

Table 3 reports Pearson's correlations matrix between the study's dependent and independent variables. The tax avoidance proxies (*5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR)* have significant positive correlations with the composite empire building proxy, showing consistency with the expectation in our study that firms with aggressive tax avoidance activities are involved in empire building. All other control variables are significantly correlated with the empire building proxy, with significant correlations also observed between the control variables themselves. As the magnitude of these correlation coefficients is small, the possibility of our results being influenced by multicollinearity can be ruled out.[4]

***[INSERT TABLE 3 HERE]***

*4.2 Regression analysis*

[3] Table 2 shows the natural logarithms of both total assets and firm age as they are used in estimating the regression models.

[4] The highest correlation coefficient value of 0.480 is found between *SIZE* and *INSTOWN*. Gujarati and Porter (2009) suggest that multicollinearity problems arise if the value of correlation coefficients between variables exceeds 0.80. We also examine variance inflation factors (VIFs) in our regression models. A VIF value of more than 10 is considered to signal the presence of multicollinearity (Greene, 2008). The VIF values of our study's variables range between 1.07 and 1.47, suggesting that multicollinearity is absent in the data set.

The testing of our study's first hypothesis (H1) is presented in this section, with the influence of tax avoidance on a firm's empire building exercises estimated by Equation (1). Table 4 presents the regression results, with Columns 1–4 reporting regression estimates when the four different proxies of tax avoidance (*5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR)* are used as the main explanatory variable in each model. Panel A reports the regression results using the ordinary least squares (OLS) estimation method, while Panel B reports the firm fixed effects regression results. In both panels, the coefficients of the *TAX_AVOID* variable are consistently positive across all four estimated models while being significant at the 1% level. These findings provide strong support for H1, as corporate tax avoidance activities are found to be significantly positively associated with managers' empire building exercises. In terms of the economic significance of the results reported in Table 4, Panel A, a one unit increase in the standard deviation (SD) of each tax avoidance proxy results in the following increases in empire building measures: *5-YEAR ETR* by 0.044; *5-YEAR CETR* by 0.041; *3-YEAR ADJUSTED ETR* by 0.061; and *3_YEAR ADJUSTED CETR* by 0.069. Considering the average *EMPIRE_BUILD* value of 0.134, these increases can be considered economically important. In terms of firm characteristics, the current study finds that cash-rich *(CASH),* large *(SIZE)* and growth-oriented firms with high market-to-book *(MB)* values and positive sales growth *(SGROWTH)*, together with those with higher ability managers (*MABILITY*) and greater institutional ownership (*INSTOWN*), are more likely to engage in empire building. In contrast, older firms *(FAGE)* and those with high leverage (*LEV*) appear to have less likelihood of empire building engagement.

***[INSERT TABLE 4 HERE]***

The results presented in Table 4 are based on a composite measure of empire building *(EMPIRE_BUILD)* developed from the factor scores obtained from the principal component

analysis (PCA) of *ACQRATIO, CAPEX*, *AGROWTH* and *PPEGROWTH*. To check the robustness of our findings, we separately run Equation (1) for the four individual proxies of empire building. To conserve space in this paper, we report the summary results in Appendix B. In Panels A–D, the coefficients of all four proxies are positive and statistically significant across all four estimated models, providing further corroborative evidence for the findings reported in Table 4.

Furthermore, following Frank et al. (2009), Wilson (2009), Rego and Wilson (2012) and Lisowsky et al. (2013), we use two other tax avoidance proxies that capture more extreme aggressive tax planning activities: (i) the discretionary permanent tax difference (*DTAX*) – the residuals obtained by regressing the total permanent tax differences on non-discretionary items known to cause permanent differences (e.g., intangible assets) and other statutory adjustments (e.g., state taxes) – and (ii) the probability of tax sheltering (*SHELTER*), calculated using several firm-specific characteristics, as defined in Wilson (2009), that influence the probability that a firm would engage in tax sheltering activities. Appendix C shows the regression results. The coefficients of *TAX_AVOID* are positive and statistically significant in both models, suggesting that our findings remain robust to the use of these two tax avoidance proxies.

*4.3 Endogeneity correction*

A potential endogenous relationship between tax avoidance and empire building could be a concern in our regression models. For example, the association between tax avoidance and empire building may be affected by reverse causality. While it is reasonable to argue that tax avoidance influences empire building activities, the opposite effect is also possible; that is, managers first anticipate empire building exercises and then engage in tax avoidance activities. Furthermore, our findings may be affected by unobservable and observable selection bias which are considered to be other sources of endogeneity. Therefore, we address the endogeneity issues by applying change-

specific models, instrumental variables analysis, Heckman's (1979) two-stage model and the entropy balancing approach.

*4.3.1 Change-specific models*

In our regression models, an important source of endogeneity is the influence of time-invariant factors (Kim et al., 2020) that could possibly affect both tax avoidance and empire building. We address this concern by using the change regression approach in which the change in empire building is regressed on the change in tax avoidance and the changes in control variables. The advantage of this approach is that it controls for time-invariant factors that have an impact on both dependent and explanatory variables. Table 5 reports the output of these change regression models, with the results similar to those presented in Table 4. The coefficients of all four tax avoidance proxies are positive and significant. Regarding their signs and significance levels, the control variables also do not display any marked differences. Therefore, it can be concluded that our study's results do not suffer from potential endogeneity that could have arisen from the influence of time-invariant factors.

***[INSERT TABLE 5 HERE]***

*4.3.2 Instrumental variable approach*

We employ an instrumental variable two-stage least squares (2SLS) method to mitigate the potential endogeneity problem arising from reverse causality. Platikanova (2017) argues that tax planning is endogenous to financial policy and that finding valid instruments is very challenging. Following that study, we consider industry-median tax avoidance and state-median tax avoidance as instrumental variables. The rationale behind these instruments is that a firm's tax avoidance

planning is mostly determined by industry practices while being subject to state regulations (Platikanova, 2017). We also use the prior year's tax avoidance as another instrumental variable. The 2SLS regression results are reported in Table 6. The first-stage results from regression of the relevant tax avoidance proxy on instrumental variables and other control variables are presented in Models (1), (3), (5) and (7). Consistent with our expectations, the coefficients of the instrumental variables are positive and statistically significant. Shea's partial $R^2$ values of the first-stage models vary between 6.90% and 10%, while partial *F*-statistics are between 733.92 and 1076.52. Based on the analysis by Stock et al. (2002), these high *F*-statistics suggest that our instruments are not weak. Models (2), (4), (6) and (8) report the second-stage regression results, with the four tax avoidance proxies developed from the first-stage model estimates. The coefficients of *TAX_AVOID* remain positive and statistically significant across all four models, corroborating our main finding of a positive relationship between tax avoidance and empire building. Furthermore, the over-identification test statistic (Sargan's test statistic) is insignificant in Models (2) and (4) and weakly significant in Models (6) and (8), suggesting that our instruments fulfil the conditions of exogeneity and relevance. Therefore, these three instrumental variables can be considered valid. Overall, our conclusion remains robust to the correction of endogeneity arising from reverse causality.

***[INSERT TABLE 6 HERE]***

*4.3.3 Correction for self-selection bias*

The empirical association between empire building and tax avoidance could be affected by unobservable self-selection bias. Internal factors (e.g., financial constraints, firm performance, corporate governance) and external factors (e.g., fiscal policies, political factors) can both influence a firm's involvement in aggressive tax avoidance. Although we include some of these

variables in Equation (1), the possibility exists that some underlying factors affecting tax avoidance are not controlled for in Equation (1). This exclusion could introduce self-selection bias when modelling the relationship between tax avoidance and empire building. To mitigate this potential bias, we implement Heckman's (1979) two-stage regression framework.

In the first stage, our study estimates a probit regression model that predicts the probability that a firm engages in tax avoidance exercises. A dichotomous tax avoidance variable, *TAX_AVOID_DUM*, is developed which takes the value of 1 if a firm's tax avoidance in any given year is higher than the industry's median tax avoidance of that year, and 0 otherwise. Using this variable as the dependent variable, the following probit regression model is estimated:

$$\begin{aligned} TAX\_AVOID\_DUM_{i,t} = {} & \beta_0 + \beta_1 TAX\_AVOID\_DUM\_LAG_{i,t} + \beta_2 TAX\_AVOID\_IND_{i,t} + \beta_3 CASH_{i,t} \\ & + \beta_4 LEV_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 MB_{i,t} + \beta_8 SGROWTH_{i,t} + \beta_9 FAGE_{i,t} + \\ & \beta_{10} INSTOWN_{i,t} + \beta_{11} FCF_{i,t} + \beta_{12} RND_{i,t} + \beta_{13} LOSS_{i,t} + \beta_{14} ADV_{i,t} + \\ & \beta_{15} FOREIGN_{i,t} + \beta_{16} INTANG_{i,t} + \beta_{17} PPENT_{i,t} + \beta_{18} MABILITY_{i,t} + \sum YEAR_{i,t} \\ & + \sum INDUSTRY_{i,t} + \varepsilon_{i,} \qquad (2) \end{aligned}$$

Equation (2) contains the following control variables in addition to those used in Equation (1): previous year's tax avoidance (*TAX_AVOID_DUM_LAG)*; industry-level tax avoidance *(TAX_AVOID_IND)*; free cash flow *(FCF)*; research and development (R&D) intensity (*RND*); earnings loss (*LOSS*); advertising intensity (*ADV*); foreign operations (*FOREIGN*); intangible assets (*INTANG*); and investment in property, plant and equipment (*PPENT*).[5] We consider *TAX_AVOID_DUM_LAG* and *TAX_AVOID_IND* as exclusion restrictions in the first-stage model as Lennox et al. (2012) emphasise the inclusion of at least one exclusion restriction in the first-stage model that is conceptually excluded from the second-stage model. The variable, *TAX_AVOID_DUM_LAG*, is included because, if a firm engages in tax avoidance activities in the

[5] Appendix A presents the definitions of these variables. These variables are excluded from the second-stage model as they are deterministic variables of corporate tax avoidance and are unrelated to empire building.

previous year, it is likely that it will also engage in the same activities in the current year. The variable, *TAX_AVOID_IND*, is included to capture industry pressure: if more firms in a given industry are engaged in tax avoidance activities, then other firms in the same industry come under pressure to do the same thing to enhance their performance. We expect positive coefficients for *TAX_AVOID_DUM_LAG* and *TAX_AVOID_IND*. The other variables (*FCF, RND, LOSS, ADV, FOREIGN, INTANG* and *PPENT*) are included as previous studies find them to be important determinants of firms' tax avoidance activities (Lanis and Richardson, 2012; Hoi et al., 2013). We generate the inverse Mills ratio (*IMR*) from the first-stage regression and include it as an additional control variable in Equation (1) when we estimate the second-stage regression model. Being a bias correction factor, the *IMR* controls for the influence of unobservable selection bias in the second-stage regression model.

Table 7, Panel A presents the outputs of the first-stage probit regression models. The coefficients of *TAX_AVOID_DUM_LAG* and *TAX_AVOID_IND* are positive across all four models, and all, except one, are statistically significant, suggesting that the two exclusion restrictions are reasonable exogenous variables. Consistent evidence suggests that cash-rich, highly leveraged, R&D-oriented firms, together with firms that report positive growth in their sales revenue, are likely to engage in tax avoidance activities, while older and more profitable firms are less likely to avoid taxes. More importantly, the output of the second-stage regression model, presented in Table 7, Panel B, reveals results similar to those reported in Table 4. All four tax avoidance proxies enter the respective models with positive and significant coefficients, while the influence of control variables also remains largely unchanged. Therefore, these results reinforce the current study's earlier findings, as documented in Table 4, thus ruling out the possibility that the study's main findings are subject to unobservable self-selection bias.

***[INSERT TABLE 7 HERE]***

*4.3.4 Entropy balancing procedure*

Whether a firm decides to engage in aggressive tax avoidance activities depends on its perception of the costs and benefits associated with these activities, with this also partly determined by the firm's characteristics. Therefore, it is possibly the firm's characteristics that determine empire building and not aggressive tax avoidance measures. To address this particular endogeneity concern, firms in our study's sample are randomised by applying the entropy balancing method. This technique mitigates the effects of imbalances in firm characteristics, thereby reducing the likelihood that our results would relate to these imbalances rather than to tax avoidance. We split firm-year observations into a treatment group *(HIGH_TAX_AVOID)* and a control group *(LOW_TAX_AVOID)*, based on the industry's median for the tax avoidance proxies. Table 8 presents the entropy balancing results, assigning weights to adjust for the sample's distributions of control observations (Hainmueller, 2012; Hainmueller and Xu, 2013). This adjustment reweights each observation in the control group so that the mean, variance and skewness of all covariates are balanced between the treatment and control groups. The procedure assigns more weight to underrepresented observations and less weight to overrepresented observations, resulting in a "pseudo" control group that mitigates the risk that design choices could affect our results.

Table 8, Panels A–D present the descriptive statistics for the entropy-balanced samples when balancing *HIGH_TAX_AVOID* versus *LOW_TAX_AVOID*, respectively, for the treatment and control groups. Table 8, Panel E presents the second-stage regression results generated by estimating Equation (1) on the entropy-balanced samples. The coefficients of *TAX_AVOID* are consistently positive across Models (1)–(4) while being significant at the 1% level. These entropy-

balanced sample-based findings, therefore, confirm our main finding that a significant positive association exists between tax avoidance strategies and managerial empire building exercises.

***[INSERT TABLE 8 HERE]***

*4.4 Is the tax avoidance–empire building association influenced by governance and monitoring mechanisms?*

This section presents the results of testing the study's second hypothesis, H2. Several studies argue that managerial tax avoidance objectives can be aligned with shareholders' objectives if strong governance and monitoring mechanisms are in place (Crocker and Slemrod, 2005; Desai and Dharmapala, 2009; Cheng et al., 2012; Huseynov et al., 2017). From the agency theory perspective, managers of firms with weak governance and poor monitoring mechanisms in place are more likely to engage in empire building exercises than those in firms with strong governance and monitoring mechanisms (Chhaochharia et al., 2012). It can therefore be argued that the influence of tax avoidance on empire building is conditional, as it is dependent on whether strong governance and monitoring mechanisms are in place to curb managerial opportunism. This issue is investigated using governance and monitoring measures: our study's governance measure is the entrenchment index (E-index) developed by Bebchuk et al. (2009)[6], with the number of analysts following the firm used as our study's monitoring measure.

Our study first splits firms in the sample into two groups using the industry-year medians of the above two measures. Firms with a low (high) E-index score are identified as better-governed (poorly governed) firms, while firms with high (low) analyst coverage are identified as better-

[6] The entrenchment index (E-index) contains four constitutional provisions that prevent the majority of shareholders having their say in corporate decisions and two takeover provisions that boards adopt to make their firms unattractive to prospective bidders. Bebchuk et al. (2009) find a negative association between the entrenchment index (E-index) and Tobin's Q, with this suggesting that entrenching provisions lead to lower firm valuations.

monitored (poorly monitored) firms. We then separately estimate Equation (1) for each group. The findings are presented in Table 9. In Panel A, the *TAX_AVOID* coefficients are positive and significant for the poorly governed sub-sample in all four models estimated, while the same coefficient remains insignificant in three of the four models estimated for the better-governed sub-sample. Similarly, as shown in Panel B, the *TAX_AVOID* variable generates positive and significant coefficients across all models estimated for the poorly monitored sub-sample. However, for the better-monitored sub-sample, this variable generates either insignificant or negative and significant coefficients in three of the four models estimated. Taken together, these findings provide support for our study's H2, with the positive influence of aggressive tax avoidance on managerial empire building appearing to be more pronounced for poorly governed/poorly monitored firms than for their better-governed/better-monitored counterparts.

***[INSERT TABLE 9 HERE]***

## 5. Additional analyses and robustness checks

### *5.1 Tax avoidance and empire building: Implications for firm value*

Our study's main findings indicate that tax avoidance leads to managerial empire building exercises. In this context, one sensible question to be asked is whether tax avoidance leading to empire building causes lower firm valuation. To address this issue, we estimate the following model using Tobin's Q to represent firm valuation:

$$TOBINQ_{i,t+1} = \beta_0 + \beta_1 EMPIRE\_BUILD_{i,t} + \beta_2 TAX\_AVOID_{i,t} \times EMIRE_{i,t} + \beta_3 TAX\_AVOID_{i,t} + \beta_4 CASH_{i,t} + \beta_5 LEV_{i,t} + \beta_6 ROA_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 SGROWTH_{i,t} + \beta_9 FAGE_{i,t} + \beta_{10} INSTOWN_{i,t} + \beta_{11} MABILITY + \sum YEAR_{i,t} + \sum INDUSTRY_{i,t} + \varepsilon_{i,t} \quad (3)$$

where $TOBINQ_{i,t+1}$ is the one-year ahead Tobin's Q. In Equation (3), our variable of interest is the interaction between tax avoidance and empire building ($TAX\_AVOID_{i,t} \times EMIRE\_BUILD_{i,t}$). Appendix A provides the definition of all variables.

The findings of this analysis are reported in Table 10. The coefficients of $TAX\_AVOID_{i,t} \times EMIRE\_BUILD_{i,t}$ are found to be negative in all the estimated models while being significant at the 1% level. The implication is that empire building-motivated tax avoidance leads to lower firm valuation, making shareholders the victims of these opportunistic managerial exercises.

***[INSERT TABLE 10 HERE]***

*5.2 Tax avoidance and empire building: The role of CEO power*

Powerful CEOs can consistently influence key decisions in their firms, despite potential opposition from other executives (Adams et al., 2005). Bebchuk et al. (2002) argue that the personal traits and philosophies of powerful CEOs can have an undue influence on managerial decisions, thereby exacerbating the conflict of interest between investors and management. When CEOs are able to exert dominance over their boards, they tend to pursue self-interest at the expense of shareholders' wealth (Bebchuk et al., 2011; Morse et al., 2011; Han et al., 2016). Corporate tax policies are major strategic decisions over which powerful CEOs could exert influence. Therefore, it is worth investigating whether the observed relationship between tax avoidance and empire building is more pronounced in firms with powerful CEOs.

For this purpose, we use CEO equity ownership and CEO duality to reflect CEO power, splitting firms in our sample into two groups using the industry median of CEO equity ownership as the cut-off and based on whether the CEO is also the firm's chairperson. We then estimate Equation (1) for each sub-group. The findings are reported in Table 11. In Panel A, the *TAX_AVOID* coefficients are consistently positive and significant across all estimated models for the high CEO equity ownership group while being insignificant for the low CEO equity ownership group, except in Model (8). In Panel B, the same coefficients are positive for the CEO duality group across all four models, with three coefficients being significant; however, the same variable generates insignificant coefficients for the non-duality group. These findings, which are in agreement with the existing literature, reveal that the tax avoidance–empire building relationship is more pronounced for firms with powerful CEOs.

***[INSERT TABLE 11 HERE]***

*5.3 Tax avoidance and empire building: Implications of Sarbanes–Oxley Act (SOX Act)*

Our study's sample covers the period from 1991–2015. In 2002, the US Congress enacted the Sarbanes–Oxley Act (SOX Act) in response to a series of corporate scandals and their aftermath. The enactment of this Act allows firms' empire building activities to be limited through greater monitoring. This section examines how the enactment of the SOX Act affects our study's findings on the tax avoidance–empire building association. Of particular interest is discovering whether the positive association between tax avoidance and empire building disappears after the SOX Act's implementation.

For this purpose, firms in our study's sample are split into two periods: (i) pre-SOX Act period (1991–2001) and (ii) post-SOX Act period (2002–2015), with the regression Equation (1) then re-estimated. The findings are reported in Table 12, Panel A. The coefficients of all four tax avoidance proxies are found to be positive and significant at the 1% level in all the estimated models for both pre-SOX Act and post-SOX Act periods. Based on this evidence, it can be concluded that the enactment of the SOX Act has had no influence on the main relationship revealed in the current study.

***[INSERT TABLE 12 HERE]***

*5.3 Tax avoidance and empire building: Implications for corporate social responsibility (CSR)*

This section examines whether managers' ethical conduct has any influence on the managerial desire to build business empires through tax avoidance strategies. Prior research uses firms' corporate social responsibility (CSR) performance as an indication of managerial ethical conduct (Bouslah et al., 2018; Bose et al., 2021a; Bose et al., 2021b). Firms with superior CSR performance have a lower tendency to engage in empire building (Gul et al., 2020), implying that these firms

are more focused on stakeholders as opposed to being poor CSR performers. Our study, therefore, examines whether the association between tax avoidance and empire building is conditional on a firm's ethical behaviour as reflected by its CSR performance. More specifically, using the KLD CSR rating to reflect the CSR performance of a firm, the current study splits firms in the sample into two groups using the industry-year median CSR performance as the cut-off: (i) high CSR performers and (ii) low CSR performers, with Equation (1) separately estimated for the two groups. The results are reported in Table 12, Panel B.

The tax avoidance coefficients are found to be consistently positive and statistically significant for the low CSR performers' group. On the other hand, three of the four coefficients generated for the high CSR performers' group remain either insignificant or negatively significant. These findings provide evidence that the positive impact of tax avoidance on empire building is more pronounced for firms with managers whose behaviour is unethical, as reflected by their firm's low CSR performance.[7]

*5.4 Tax avoidance and empire building: Additional governance controls*

We also run an additional test to assert the robustness of our findings. This is conducted by re-estimating the baseline regression with three more governance variables added as controls: (i) board size (*BSIZE*); (ii) board independence (*BIND*); and (iii) CEO duality (*DUAL*). All variables are defined in Appendix A. The findings are reported in Table 13. All four tax avoidance

[7] Our sample comprises six states that adopted constituency statutes in and after 1991: Nevada in 1991; North Dakota in 1993; North Carolina in 1993; Vermont in 1998; Maryland in 1999; and Texas in 2006. The adoption of these statutes may increase firms' stakeholder orientation, thereby reducing managers' empire building-motivated tax avoidance activities. The same statutes may increase their CSR performance. To account for these variations, we estimate Equation (1) by splitting firms in our sample into two periods, namely, pre-adoption period (low CSR) and post-adoption period (high CSR). The findings (unreported) remain qualitatively similar to those for the full sample.

coefficients maintain their positive signs while also being significant. Our findings, therefore, remain robust to the inclusion of these additional governance variables as controls in Equation (1).

***[INSERT TABLE 13 HERE]***

## 6. Conclusion

Although the determinants of corporate tax avoidance have been thoroughly investigated in the extant literature, the consequences of tax avoidance have received scant attention. In the current study, we conduct a comprehensive investigation of one possible consequence of tax avoidance by examining whether cash flows saved by avoiding corporate tax are diverted to managers' coffers and used to build business empires. Thus, our study contributes to the existing literature and uncovers empirical evidence that can be useful to investors, regulators and other stakeholders of firms. To provide robust evidence, four tax avoidance proxies and a composite measure of empire building are analysed by employing a battery of advanced econometric tests.

Our study finds strong evidence that managerial empire building exercises are positively and significantly affected by corporate tax avoidance strategies. Our results are robust to the use of four tax avoidance measures (five-year effective tax rate [ETR]; five-year cash effective tax rate [CETR]; three-year adjusted effective tax rate [ETR]; and three-year adjusted cash effective tax rate [CETR]). The positive influence of tax avoidance on empire building holds when the study addresses endogeneity concerns by employing change specification regressions, instrumental variable 2SLS models, Heckman's (1979) two-stage procedure and the entropy balancing approach.

Our study's findings provide support for the agency perspective of tax avoidance. Our composite empire building measure is based on the acquisition ratio, the level of capital expenditure, total assets growth and growth in property, plant and equipment. Therefore, the results

point to four different investment channels through which managers divert resources for their personal benefit by evading taxes due to the government authority. Thus, opportunistic managerial behaviour appears to be reflected in corporate tax avoidance activities. This opportunistic behaviour is more pronounced in firms with weak corporate governance, weak external monitoring, greater CEO power and weak ethical conduct. Unsurprisingly, the ultimate losers from these empire building exercises are shareholders. Our study's findings show that tax avoidance activities, motivated by empire building desires, significantly lower firm value.

In view of the increasing interest in corporate tax avoidance activities by various segments of society, such as auditors, tax authorities, researchers, regulators and the investment community, an investigation of the influence of tax avoidance on firm-specific outcomes is warranted. Our study provides timely evidence on this issue by analysing the direct association between corporate tax avoidance and managerial rent extraction, as implied by empire building exercises. This investigation is also a response to calls made by many researchers for more empirical research on the agency perspective of corporate tax avoidance. Future research may benefit by investigating other consequences of tax avoidance, such as CEO pay structure, level of firm leverage, etc.

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**Table 1**
Industry distribution

| Name of Industry | Observations | % of Sample |
|---|---|---|
| Agriculture | 92 | 0.26 |
| Food Products | 687 | 1.96 |
| Candy & Soda | 128 | 0.37 |
| Beer & Liquor | 172 | 0.49 |
| Recreation | 394 | 1.12 |
| Entertainment | 492 | 1.40 |
| Printing and Publishing | 269 | 0.77 |
| Consumer Goods | 698 | 1.99 |
| Apparel | 586 | 1.67 |
| Healthcare | 638 | 1.82 |
| Medical Equipment | 1,652 | 4.71 |
| Pharmaceutical Products | 2,341 | 6.68 |
| Chemicals | 727 | 2.07 |
| Rubber and Plastic Products | 361 | 1.03 |
| Textiles | 211 | 0.60 |
| Construction Materials | 1,012 | 2.89 |
| Construction | 502 | 1.43 |
| Steel Works etc | 694 | 1.98 |
| Fabricated Products | 112 | 0.32 |
| Machinery | 1,581 | 4.51 |
| Electrical Equipment | 723 | 2.06 |
| Automobiles and Trucks | 622 | 1.77 |
| Aircraft | 246 | 0.70 |
| Precious Metals | 309 | 0.88 |
| Non-Metallic and Industrial Metal Mining | 272 | 0.78 |
| Coal | 54 | 0.15 |
| Petroleum and Natural Gas | 1,253 | 3.57 |
| Communication | 1,049 | 2.99 |
| Personal Services | 445 | 1.27 |
| Business Services | 4,890 | 13.95 |
| Computers | 1,824 | 5.20 |
| Electronic Equipment | 2,876 | 8.20 |
| Measuring and Control Equipment | 1,075 | 3.07 |
| Business Supplies | 626 | 1.79 |
| Shipping Containers | 85 | 0.24 |
| Transportation | 1,469 | 4.19 |
| Wholesale | 1,639 | 4.67 |
| Retail | 1,305 | 3.72 |
| Restaurants, Hotels, Motels | 587 | 1.67 |
| Others | 362 | 1.03 |
| Total | 35,060 | 100 |

**Table 2**
Descriptive statistics

| | Observations | Mean | SD | Q1 | Median | Q3 |
|---|---|---|---|---|---|---|
| **Panel A: Dependent variables** | | | | | | |
| *EMPIRE_BUILD* | 35060 | 0.134 | 1.011 | -0.384 | -0.124 | 0.302 |
| *ACQRATIO* | 35060 | 0.029 | 0.126 | 0.000 | 0.000 | 0.000 |
| *CAPEX* | 35060 | 0.052 | 0.057 | 0.018 | 0.035 | 0.064 |
| *AGROWTH* | 35060 | 0.172 | 0.424 | -.0017 | 0.070 | 0.206 |
| *PPEGROWTH* | 35060 | 0.120 | 0.406 | -.0052 | 0.033 | 0.166 |
| **Panel B: Test variables** | | | | | | |
| *5-YEAR ETR* | 35060 | -0.306 | 0.308 | -0.406 | -0.245 | -0.034 |
| *5-YEAR CETR* | 35060 | -0.244 | 0.291 | -0.342 | -0.155 | 0.000 |
| *3-YEAR ADJUSTED ETR* | 35060 | -0.034 | 0.372 | -0.175 | 0.000 | 0.158 |
| *3-YEAR ADJUSTED CETR* | 35060 | 0.004 | 0.360 | -0.122 | 0.000 | 0.179 |
| **Panel C: Control variables** | | | | | | |
| *CASH* | 35060 | 0.196 | 0.215 | 0.032 | 0.112 | 0.294 |
| *LEV* | 35060 | 0.209 | 0.218 | 0.013 | 0.162 | 0.328 |
| *ROA* | 35060 | 0.002 | 0.220 | -0.013 | 0.042 | 0.091 |
| *SIZE* | 35060 | 5.570 | 2.091 | 4.075 | 5.554 | 7.009 |
| *MB* | 35060 | 2.830 | 4.169 | 1.127 | 1.938 | 3.390 |
| *SGROWTH* | 35060 | 0.181 | 0.467 | -0.012 | 0.090 | 0.235 |
| *FAGE* | 35060 | 2.607 | 0.736 | 2.079 | 2.565 | 3.135 |
| *INSTOWN* | 35060 | 0.395 | 0.311 | 0.099 | 0.352 | 0.664 |
| *MABILITY* | 35060 | 0.002 | 0.125 | -0.070 | -0.019 | 0.040 |

Note: SD = standard deviation

**Table 3**

Correlation matrix

| | | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] | [13] | [14] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *EMPIRE_BUILD* | **[1]** | 1.000 | | | | | | | | | | | | | |
| *5-YEAR ETR* | **[2]** | 0.100*** | 1.000 | | | | | | | | | | | | |
| *5-YEAR CETR* | **[3]** | 0.105*** | 0.518*** | 1.000 | | | | | | | | | | | |
| *3-YEAR ADJUSTED ETR* | **[4]** | 0.130*** | 0.217*** | 0.145*** | 1.000 | | | | | | | | | | |
| *3-YEAR ADJUSTED CETR* | **[5]** | 0.140*** | 0.141*** | 0.250*** | 0.596*** | 1.000 | | | | | | | | | |
| *CASH* | **[6]** | 0.170*** | 0.153*** | 0.144*** | 0.066*** | 0.054*** | 1.000 | | | | | | | | |
| *LEV* | **[7]** | -0.063*** | 0.019*** | 0.046*** | 0.011** | 0.032*** | -0.391*** | 1.000 | | | | | | | |
| *ROA* | **[8]** | -0.041*** | -0.204*** | -0.207*** | -0.057*** | -0.055*** | -0.241*** | -0.106*** | 1.000 | | | | | | |
| *SIZE* | **[9]** | 0.084*** | -0.025*** | -0.016*** | 0.109*** | 0.090*** | -0.022*** | 0.001 | 0.242*** | 1.000 | | | | | |
| *MB* | **[10]** | 0.155*** | 0.065*** | 0.073*** | 0.059*** | 0.060*** | 0.191*** | -0.097*** | -0.040*** | 0.202*** | 1.000 | | | | |
| *SGROWTH* | **[11]** | 0.446*** | 0.107*** | 0.110*** | 0.084*** | 0.087*** | 0.174*** | -0.030*** | -0.123*** | 0.016*** | 0.145*** | 1.000 | | | |
| *FAGE* | **[12]** | -0.280*** | -0.100*** | -0.110*** | -0.089*** | -0.100*** | -0.210*** | 0.016*** | 0.139*** | 0.186*** | -0.086*** | -0.231*** | 1.000 | | |
| *INSTOWN* | **[13]** | 0.010* | -0.032*** | -0.046*** | 0.056*** | 0.044*** | 0.020*** | -0.038*** | 0.177*** | 0.480*** | 0.073*** | -0.036*** | 0.216*** | 1.000 | |
| *MABILITY* | **[14]** | 0.123*** | -0.013** | -0.004 | -0.008 | -0.013** | 0.187*** | -0.143*** | 0.159*** | 0.153*** | 0.134*** | 0.108*** | -0.016*** | 0.026*** | 1.000 |

: Notes: Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively. All variables are defined in Appendix A.

**Table 4**
Empire building and tax avoidance

**Panel A: OLS regression results**

| | Dependent variable (DV) = *EMPIRE_BUILD* | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.142*** | 0.141*** | 0.164*** | 0.191*** |
| | (9.170) | (9.483) | (12.962) | (16.244) |
| *CASH* | 0.346*** | 0.346*** | 0.341*** | 0.336*** |
| | (8.838) | (8.821) | (8.730) | (8.624) |
| *LEV* | -0.111*** | -0.115*** | -0.110*** | -0.118*** |
| | (-3.538) | (-3.645) | (-3.514) | (-3.753) |
| *ROA* | 0.001 | 0.001 | -0.004 | -0.003 |
| | (0.028) | (0.020) | (-0.076) | (-0.056) |
| *SIZE* | 0.047*** | 0.047*** | 0.042*** | 0.042*** |
| | (13.664) | (13.507) | (12.295) | (12.310) |
| *MB* | 0.011*** | 0.011*** | 0.011*** | 0.011*** |
| | (6.653) | (6.604) | (6.705) | (6.615) |
| *SGROWTH* | 0.797*** | 0.797*** | 0.795*** | 0.793*** |
| | (33.192) | (33.209) | (33.139) | (33.133) |
| *FAGE* | -0.251*** | -0.251*** | -0.247*** | -0.246*** |
| | (-27.591) | (-27.613) | (-27.306) | (-27.188) |
| *INSTOWN* | 0.086*** | 0.087*** | 0.079*** | 0.077*** |
| | (4.269) | (4.312) | (3.970) | (3.843) |
| *MABILITY* | 0.439*** | 0.435*** | 0.448*** | 0.450*** |
| | (7.602) | (7.516) | (7.758) | (7.811) |
| Intercept | 0.364*** | 0.350*** | 0.333*** | 0.285*** |
| | (4.676) | (4.500) | (4.397) | (3.707) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 35,060 | 35,060 | 35,060 | 35,060 |
| Adj. $R^2$ | 0.277 | 0.277 | 0.279 | 0.280 |

**Panel B: Firm fixed effects regression results**

| | Dependent variable (DV) = *EMPIRE_BUILD* | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.084*** | 0.097*** | 0.106*** | 0.134*** |
| | (4.892) | (5.686) | (7.261) | (9.443) |
| *CASH* | 0.304*** | 0.302*** | 0.302*** | 0.303*** |
| | (4.070) | (4.039) | (4.041) | (4.049) |
| *LEV* | 0.240*** | 0.241*** | 0.240*** | 0.238*** |
| | (3.664) | (3.669) | (3.658) | (3.626) |
| *ROA* | 0.228*** | 0.230*** | 0.227** | 0.228*** |
| | (2.583) | (2.601) | (2.569) | (2.577) |
| *SIZE* | 0.276*** | 0.276*** | 0.272*** | 0.271*** |
| | (21.630) | (21.626) | (21.327) | (21.301) |
| *MB* | -0.000 | -0.000 | -0.000 | -0.000 |
| | (-0.054) | (-0.076) | (-0.003) | (-0.007) |
| *SGROWTH* | 0.610*** | 0.610*** | 0.609*** | 0.609*** |
| | (19.915) | (19.911) | (19.880) | (19.902) |
| *FAGE* | -0.585*** | -0.587*** | -0.581*** | -0.580*** |
| | (-15.095) | (-15.147) | (-14.975) | (-14.953) |
| *INSTOWN* | -0.106* | -0.109** | -0.112** | -0.112** |
| | (-1.952) | (-2.003) | (-2.053) | (-2.066) |
| *MABILITY* | 0.650*** | 0.647*** | 0.655*** | 0.653*** |
| | (7.089) | (7.050) | (7.158) | (7.144) |

| | | | | |
|---|---|---|---|---|
| Intercept | -0.054 | -0.046 | -0.056 | -0.055 |
| | (-0.374) | (-0.319) | (-0.388) | (-0.383) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 35,060 | 35,060 | 35,060 | 35,060 |
| Adj. $R^2$ | 0.569 | 0.569 | 0.569 | 0.570 |

This table presents the regression results for the association between empire building and tax avoidance. Panel A shows the OLS regression results, while Panel B shows the firm fixed effects regression results. Panels A and B, Columns 1–4 report the results for four different models using four proxies for tax avoidance as the explanatory variable: *5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR.* Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript $^{***}$, $^{**}$ and $^{*}$ represent significance levels at 1%, 5% and 10%, respectively.

**Table 5**

Empire building and tax avoidance: Change specification regressions

| | Dependent variable (DV) = Δ*EMPIRE_BUILD* | | | |
|---|---|---|---|---|
| | **Δ*5-YEAR ETR*** | **Δ*5-YEAR CETR*** | **Δ*3-YEAR ADJUSTED ETR*** | **Δ*3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| Δ*TAX_AVOID* | 0.040*** | 0.059*** | 0.073*** | 0.087*** |
| | (2.668) | (3.714) | (5.322) | (6.396) |
| Δ*CASH* | 0.367*** | 0.365*** | 0.369*** | 0.371*** |
| | (3.367) | (3.355) | (3.396) | (3.409) |
| Δ*LEV* | 1.372*** | 1.370*** | 1.370*** | 1.368*** |
| | (13.077) | (13.056) | (13.055) | (13.045) |
| Δ*ROA* | 0.425*** | 0.427*** | 0.424*** | 0.427*** |
| | (4.424) | (4.443) | (4.426) | (4.455) |
| Δ*SIZE* | 0.389*** | 0.388*** | 0.386*** | 0.385*** |
| | (22.652) | (22.618) | (22.487) | (22.480) |
| Δ*MB* | -0.008*** | -0.008*** | -0.008*** | -0.008*** |
| | (-3.088) | (-3.074) | (-3.034) | (-3.053) |
| Δ*SGROWTH* | 0.544*** | 0.544*** | 0.544*** | 0.544*** |
| | (18.382) | (18.398) | (18.409) | (18.397) |
| Δ*FAGE* | -1.376*** | -1.378*** | -1.376*** | -1.370*** |
| | (-14.997) | (-15.024) | (-15.003) | (-14.960) |
| Δ*INSTOWN* | 0.177** | 0.177** | 0.177** | 0.180** |
| | (2.312) | (2.309) | (2.318) | (2.349) |
| Δ*MABILITY* | 0.920*** | 0.918*** | 0.920*** | 0.917*** |
| | (9.467) | (9.449) | (9.485) | (9.461) |
| Intercept | -0.022 | -0.022 | -0.020 | -0.026 |
| | (-0.407) | (-0.410) | (-0.378) | (-0.491) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 27,352 | 27,352 | 27,352 | 27,352 |
| Adj. $R^2$ | 0.166 | 0.166 | 0.167 | 0.167 |

This table presents the regression results of the association between empire building and tax avoidance using change specification models. Columns 1–4 report the results for four different models using four proxies for tax avoidance as the explanatory variable: *5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR.* Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.

**Table 6**

Two-stage least squares (2SLS) regression results between empire building and tax avoidance

| | *5-YEAR ETR* | | *5-YEAR CETR* | | *3-YEAR ADJUSTED ETR* | | *3-YEAR ADJUSTED CETR* | |
|---|---|---|---|---|---|---|---|---|
| | **First stage** | **Second stage** | **First stage** | **Second stage** | **First stage** | **Second stage** | **First stage** | **Second stage** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** | **Model (5)** | **Model (6)** | **Model (7)** | **Model (8)** |
| *TAX_AVOID* | | 0.284*** | | 0.153*** | | 0.208*** | | 0.179*** |
| | | (5.217) | | (3.086) | | (5.208) | | (4.659) |
| *IND_ADJ_TAX_AVOID* | 0.538*** | | 0.532*** | | 1.071*** | | 0.981*** | |
| | (15.780) | | (15.090) | | (30.310) | | (29.810) | |
| *STATE_ADJ_TAX_AVOID* | 0.444*** | | 0.364*** | | 0.781*** | | 0.623*** | |
| | (17.830) | | (16.450) | | (16.960) | | (15.030) | |
| *TAX_AVOID_LAG* | 0.214*** | | 0.265*** | | 0.202*** | | 0.238*** | |
| | (39.010) | | (48.750) | | (37.220) | | (44.000) | |
| Intercept | –0.032 | 0.110 | –0.055* | 0.064 | –0.102*** | 0.071 | –0.029 | 0.028 |
| | (–0.0950) | (1.316) | (–1.830) | (0.773) | (–2.630) | (0.859) | (–0.770) | (0.339) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 29,923 | 29,923 | 29,923 | 29,923 | 29,923 | 29,923 | 29,923 | 29,923 |
| Adj. $R^2$ | 0.131 | 0.226 | 0.163 | 0.227 | 0.132 | 0.228 | 0.144 | 0.230 |
| Shea's partial $R^2$ | 0.069 | | 0.093 | | 0.085 | | 0.100 | |
| Partial *F*-statistic | 733.92*** | | 1,014.63*** | | 927.64*** | | 1076.52*** | |
| Sargan's test statistic | | 3.097 | | 1.030 | | 10.326 | | 3.025 |
| (over-identification test) | | (*p*-value>0.10) | | (*p*-value>0.10) | | (*p*-value<0.10) | | (*p*-value<0.10) |

This table presents the two-stage least squares (2SLS) regression results of the association between empire building and tax avoidance. Columns (1), (3), (5) and (7) show the first-stage regression results in which the tax avoidance proxy is regressed on instrumental variables and other controls. Columns (2), (4), (6) and (8) show the second-stage regression results of the association between empire building and tax avoidance. Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.

**Table 7**

Empire building and tax avoidance: Heckman's (1979) two-stage procedure

| **Panel A: Heckman's (1979) first-stage probit regression results** | | | | |
|---|---|---|---|---|
| | ***HIGH_5-YEAR ETR DUM*** | ***HIGH 5-YEAR CETR DUM*** | ***HIGH 3-YEAR ADJUSTED ETR DUM*** | ***HIGH 3-YEAR ADJUSTED CETR DUM*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID_DUM_LAG* | 0.725*** | 0.971*** | 0.443*** | 0.509*** |
| | (33.151) | (40.750) | (22.417) | (23.442) |
| *TAX_AVOID_IND* | 0.593*** | 0.975*** | 0.044 | 0.671*** |
| | (2.616) | (4.076) | (0.434) | (6.379) |
| *CASH* | 0.303*** | 0.326*** | 0.157** | 0.071 |
| | (4.350) | (4.446) | (2.163) | (0.918) |
| *LEV* | 0.345*** | 0.466*** | 0.238*** | 0.337*** |
| | (6.432) | (7.921) | (4.234) | (5.436) |
| *ROA* | -0.701*** | -1.093*** | -0.183** | -0.021 |
| | (-7.020) | (-10.691) | (-2.218) | (-0.243) |
| *SIZE* | -0.035*** | -0.021*** | 0.129*** | 0.179*** |
| | (-5.598) | (-2.997) | (17.714) | (21.332) |
| *MB* | 0.007*** | 0.010*** | -0.002 | -0.000 |
| | (2.654) | (3.345) | (-0.885) | (-0.142) |
| *SGROWTH* | 0.188*** | 0.210*** | 0.168*** | 0.190*** |
| | (5.823) | (6.681) | (6.109) | (6.808) |
| *FAGE* | -0.107*** | -0.108*** | -0.106*** | -0.153*** |
| | (-6.729) | (-6.246) | (-5.869) | (-7.988) |
| *INSTOWN* | -0.330*** | -0.346*** | 0.072* | 0.235*** |
| | (-8.868) | (-8.476) | (1.760) | (5.137) |
| *FCF* | -0.504*** | -0.315*** | -0.215** | 0.179* |
| | (-4.591) | (-2.732) | (-2.310) | (1.895) |
| *RND* | 0.657*** | 0.927*** | 0.407** | 0.117 |
| | (3.009) | (3.420) | (2.228) | (0.613) |
| *LOSS* | 0.007 | -0.053** | -0.011 | 0.059** |
| | (0.319) | (-2.330) | (-0.450) | (2.265) |
| *ADV* | 0.081* | 0.075* | -0.042 | -0.076** |
| | (1.930) | (1.689) | (-1.396) | (-2.194) |
| *FOREIGN* | 0.070*** | -0.064*** | 0.029 | -0.054** |
| | (3.141) | (-2.731) | (1.172) | (-2.063) |
| *INTANG* | -0.102 | -0.131* | -0.193*** | -0.358*** |
| | (-1.507) | (-1.758) | (-2.607) | (-4.327) |
| *PPENT* | 0.000* | -0.000*** | -0.000 | -0.000 |
| | (1.678) | (-2.616) | (-0.657) | (-0.199) |
| *MABILITY* | -0.175* | -0.094 | -0.235** | -0.283*** |
| | (-1.895) | (-0.918) | (-2.478) | (-2.668) |
| Intercept | -0.351** | -0.644*** | -0.802*** | -0.881*** |
| | (-2.036) | (-4.465) | (-5.355) | (-4.158) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 25,566 | 25,566 | 25,566 | 25,566 |
| Pseudo-$R^2$ | 0.121 | 0.196 | 0.055 | 0.093 |

| **Panel B: Heckman's (1979) second-stage regression results** | | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.129*** | 0.163*** | 0.136*** | 0.160*** |
| | (8.795) | (12.432) | (11.062) | (14.194) |
| *CASH* | 0.107*** | 0.123*** | 0.104** | 0.101** |
| | (2.635) | (3.029) | (2.557) | (2.505) |
| *LEV* | 0.002 | 0.014 | 0.003 | -0.010 |
| | (0.068) | (0.429) | (0.085) | (-0.315) |
| *ROA* | 0.391*** | 0.358*** | 0.378*** | 0.366*** |
| | (5.446) | (5.020) | (5.421) | (5.416) |
| *SIZE* | 0.030*** | 0.028*** | 0.021*** | 0.018*** |
| | (9.282) | (8.578) | (4.846) | (3.959) |
| *MB* | 0.010*** | 0.011*** | 0.011*** | 0.010*** |
| | (5.737) | (5.826) | (5.949) | (5.810) |
| *SGROWTH* | 0.958*** | 0.965*** | 0.953*** | 0.949*** |
| | (27.235) | (27.409) | (26.837) | (26.617) |
| *FAGE* | -0.148*** | -0.153*** | -0.144*** | -0.139*** |
| | (-16.829) | (-17.437) | (-16.084) | (-15.210) |
| *INSTOWN* | 0.121*** | 0.104*** | 0.105*** | 0.096*** |
| | (6.094) | (5.273) | (5.577) | (5.086) |
| *MABILITY* | 0.340*** | 0.329*** | 0.354*** | 0.357*** |
| | (5.565) | (5.381) | (5.764) | (5.857) |
| *IMR* | -0.034* | 0.025 | -0.055* | -0.065** |
| | (-1.685) | (1.504) | (-1.699) | (-2.359) |
| Intercept | 0.144* | 0.100 | 0.162* | 0.196** |
| | (1.810) | (1.267) | (1.935) | (2.369) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 25,566 | 25,566 | 25,566 | 25,566 |
| Adj. $R^2$ | 0.258 | 0.258 | 0.259 | 0.261 |

This table presents the regression results of the association between empire building and tax avoidance using Heckman's (1979) two-stage procedure. Panel A shows the first-stage regression, while Panel B shows the second-stage regression results. In Panel A, the following variables are used as the dependent variable in each model: *HIGH_5-YEAR ETR DUM* which takes the value of 1 if a firm's *5-YEAR ETR* is higher than the median *5-YEAR ETR* of the industry (Model 1); *HIGH 5-YEAR CETR DUM* which takes the value of 1 if a firm's *5-YEAR CETR* is higher than the median *5-YEAR CETR* of the industry (Model 2); *HIGH 3-YEAR ADJUSTED ETR DUM* which takes the value of 1 if a firm's *3-YEAR ADJUSTED ETR* is higher than the median *3-YEAR ADJUSTED ETR* of the industry (Model 3); and *HIGH 3-YEAR ADJUSTED CETR DUM* which takes the value of 1 if a firm's *3-YEAR ADJUSTED CETR* is higher than the median *3-YEAR ADJUSTED CETR* of the industry (Model 4). In Panel B, four models are estimated using the following tax avoidance proxies as the explanatory variable while controlling for the inverse Mills ratio (*IMR*): *5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR.* Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.

**Table 8**
Entropy balancing results

| **Panel A: Descriptive statistics for *5-YEAR ETR* model variables after entropy balancing** | | | | | | |
|---|---|---|---|---|---|---|
| | **Treatment (*HIGH_5-YEAR ETR*)** | | | **Control (*LOW_5-YEAR ETR*)** | | |
| | **Mean** | **Variance** | **Skewness** | **Mean** | **Variance** | **Skewness** |
| *CASH* | 0.214 | 0.053 | 1.267 | 0.214 | 0.053 | 1.267 |
| *LEV* | 0.222 | 0.055 | 1.425 | 0.222 | 0.055 | 1.424 |
| *ROA* | -0.043 | 0.073 | -2.862 | -0.043 | 0.073 | -2.862 |
| *SIZE* | 5.233 | 4.152 | 0.175 | 5.232 | 4.153 | 0.175 |
| *MB* | -1.045 | 3.276 | -2.268 | -1.045 | 3.276 | -2.268 |
| *SGROWTH* | 0.217 | 0.296 | 3.333 | 0.217 | 0.296 | 3.333 |
| *FAGE* | 2.506 | 0.535 | 0.028 | 2.506 | 0.535 | 0.028 |
| *INSTOWN* | 0.344 | 0.090 | 0.566 | 0.344 | 0.090 | 0.566 |
| *MABILITY* | -0.005 | 0.014 | 1.846 | -0.005 | 0.014 | 1.846 |
| **Panel B: Descriptive statistics for *5-YEAR CETR* model variables after entropy balancing** | | | | | | |
| | **Treatment *(HIGH_5- YEAR CETR)*** | | | **Control (*LOW_5-YEAR CETR*)** | | |
| | **Mean** | **Variance** | **Skewness** | **Mean** | **Variance** | **Skewness** |
| *CASH* | 0.197 | 0.046 | 1.326 | 0.197 | 0.046 | 1.326 |
| *LEV* | 0.230 | 0.056 | 1.363 | 0.230 | 0.056 | 1.363 |
| *ROA* | -0.032 | 0.063 | -3.068 | -0.032 | 0.063 | -3.067 |
| *SIZE* | 5.188 | 4.355 | 0.164 | 5.187 | 4.356 | 0.164 |
| *MB* | -0.960 | 3.122 | -2.357 | -0.960 | 3.125 | -2.357 |
| *SGROWTH* | 0.201 | 0.257 | 3.415 | 0.201 | 0.257 | 3.414 |
| *FAGE* | 2.511 | 0.526 | 0.036 | 2.511 | 0.526 | 0.036 |
| *INSTOWN* | 0.339 | 0.092 | 0.597 | 0.339 | 0.092 | 0.597 |
| *MABILITY* | -0.007 | 0.013 | 1.823 | -0.007 | 0.013 | 1.823 |
| **Panel C: Descriptive statistics for *5-YEAR ADJUSTED ETR* model variables after entropy balancing** | | | | | | |
| | **Treatment (*HIGH_5-YEAR ADJUSTED ETR*)** | | | **Control (*LOW_5-YEAR ADJUSTED ETR*)** | | |
| | **Mean** | **Variance** | **Skewness** | **Mean** | **Variance** | **Skewness** |
| *CASH* | 0.198 | 0.046 | 1.349 | 0.198 | 0.045 | 1.350 |
| *LEV* | 0.218 | 0.050 | 1.370 | 0.218 | 0.050 | 1.369 |
| *ROA* | 0.002 | 0.050 | -3.524 | 0.002 | 0.050 | -3.525 |
| *SIZE* | 5.871 | 3.911 | 0.051 | 5.870 | 3.912 | 0.051 |
| *MB* | -1.116 | 3.218 | -2.211 | -1.116 | 3.217 | -2.211 |
| *SGROWTH* | 0.206 | 0.236 | 3.652 | 0.206 | 0.236 | 3.653 |
| *FAGE* | 2.563 | 0.559 | -0.031 | 2.563 | 0.559 | -0.031 |
| *INSTOWN* | 0.413 | 0.097 | 0.250 | 0.413 | 0.097 | 0.251 |
| *MABILITY* | 0.001 | 0.016 | 1.787 | 0.001 | 0.016 | 1.787 |
| **Panel D: Descriptive statistics for *5-YEAR ADJUSTED CETR* model variables after entropy balancing** | | | | | | |
| | **Treatment (*HIGH_5-YEAR ADJUSTED CETR*)** | | | **Control (*LOW_5-YEAR ADJUSTED CETR*)** | | |
| | **Mean** | **Variance** | **Skewness** | **Mean** | **Variance** | **Skewness** |
| *CASH* | 0.186 | 0.042 | 1.393 | 0.186 | 0.042 | 1.394 |
| *LEV* | 0.222 | 0.046 | 1.155 | 0.222 | 0.046 | 1.155 |
| *ROA* | 0.025 | 0.032 | -3.817 | 0.025 | 0.032 | -3.818 |
| *SIZE* | 6.111 | 3.536 | 0.050 | 6.110 | 3.537 | 0.050 |
| *MB* | -1.123 | 3.226 | -2.220 | -1.122 | 3.225 | -2.220 |
| *SGROWTH* | 0.203 | 0.206 | 3.691 | 0.202 | 0.206 | 3.691 |
| *FAGE* | 2.571 | 0.561 | -0.038 | 2.571 | 0.561 | -0.038 |
| *INSTOWN* | 0.436 | 0.099 | 0.160 | 0.436 | 0.099 | 0.160 |
| *MABILITY* | 0.003 | 0.017 | 1.805 | 0.003 | 0.017 | 1.805 |

| **Panel E: Regression results using entropy-balanced sample** | | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID_DUM* | 0.113*** | 0.087*** | 0.086*** | 0.112*** |
| | (6.801) | (4.370) | (7.975) | (10.412) |
| *CASH* | 0.312*** | 0.378*** | 0.412*** | 0.463*** |
| | (5.869) | (4.190) | (9.264) | (10.265) |
| *LEV* | -0.232*** | -0.220*** | -0.111*** | -0.023 |
| | (-4.600) | (-3.462) | (-3.328) | (-0.706) |
| *ROA* | -0.095 | -0.092 | 0.008 | 0.322*** |
| | (-0.925) | (-0.849) | (0.144) | (5.380) |
| *SIZE* | 0.068*** | 0.060*** | 0.040*** | 0.026*** |
| | (12.029) | (9.846) | (10.389) | (6.934) |
| *MB* | 0.013*** | 0.017*** | 0.012*** | 0.011*** |
| | (5.120) | (5.422) | (6.656) | (6.411) |
| *SGROWTH* | 0.722*** | 0.885*** | 0.837*** | 0.956*** |
| | (16.240) | (17.072) | (32.131) | (34.592) |
| *FAGE* | -0.281*** | -0.239*** | -0.254*** | -0.231*** |
| | (-20.084) | (-14.252) | (-25.941) | (-24.978) |
| *INSTOWN* | 0.109*** | 0.111*** | 0.107*** | 0.117*** |
| | (3.600) | (4.169) | (4.938) | (5.607) |
| *MABILITY* | 0.480*** | 0.611*** | 0.467*** | 0.418*** |
| | (4.955) | (6.196) | (7.653) | (6.843) |
| Intercept | 0.101 | 0.038 | 0.255*** | 0.194*** |
| | (0.851) | (0.339) | (3.543) | (2.895) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 35,060 | 35,060 | 35,060 | 35,060 |
| $R^2$ | 0.280 | 0.335 | 0.294 | 0.322 |

This table presents the entropy balancing results. Panels A–D show descriptive statistics for the entropy-balanced samples when balancing *HIGH_TAX_AVOID* vs. *LOW_TAX_AVOID*, respectively, for the treatment and control groups. Panel B shows second-stage regression results generated by Equation (1) for the entropy-balanced samples using the following tax avoidance proxies as the explanatory variable: *5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR.* Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.

**Table 9**

Empire building and tax avoidance: Role of governance and monitoring (analyst coverage)

**Panel A: Results based on governance (E-index)**

| | Dependent variable (DV) = *EMPIRE_BUILD* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ***5-YEAR ETR*** | | ***5-YEAR CETR*** | | ***3-YEAR ADJUSTED ETR*** | | ***3-YEAR ADJUSTED CETR*** | |
| | **Better Governed** | **Poorly Governed** | **Better Governed** | **Poorly Governed** | **Better Governed** | **Poorly Governed** | **Better Governed** | **Poorly Governed** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** | **Model (5)** | **Model (6)** | **Model (7)** | **Model (8)** |
| *TAX_AVOID* | 0.070 | 0.155** | 0.146* | 0.224*** | -0.050 | 0.178*** | 0.034 | 0.194*** |
| | (0.733) | (2.546) | (1.715) | (4.569) | (-0.690) | (4.402) | (0.675) | (5.847) |
| Intercept | 0.667*** | -0.040 | 0.669*** | -0.025 | 0.634*** | -0.073 | 0.635*** | -0.105 |
| | (3.758) | (-0.213) | (3.920) | (-0.135) | (3.719) | (-0.397) | (3.742) | (-0.562) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,793 | 4,462 | 1,793 | 4,462 | 1,793 | 4,462 | 1,793 | 4,462 |
| Adj. $R^2$ | 0.289 | 0.300 | 0.290 | 0.302 | 0.289 | 0.302 | 0.289 | 0.303 |

**Panel B: Results based on financial analysts' coverage**

| | Dependent variable (DV) = *EMPIRE_BUILD* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ***5-YEAR ETR*** | | ***5-YEAR CETR*** | | ***3-YEAR ADJUSTED ETR*** | | ***3-YEAR ADJUSTED CETR*** | |
| | **Better Monitored** | **Poorly Monitored** | **Better Monitored** | **Poorly Monitored** | **Better Monitored** | **Poorly Monitored** | **Better Monitored** | **Poorly Monitored** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** | **Model (5)** | **Model (6)** | **Model (7)** | **Model (8)** |
| *TAX_AVOID* | -0.009 | 0.152*** | 0.017 | 0.178*** | -0.110*** | 0.240*** | 0.054** | 0.249*** |
| | (-0.285) | (5.886) | (0.528) | (7.358) | (-4.436) | (11.325) | (2.330) | (12.835) |
| *I*ntercept | 0.443*** | 0.409*** | 0.453*** | 0.415*** | 0.443*** | 0.410*** | 0.437*** | 0.351** |
| | (4.269) | (2.617) | (4.438) | (2.746) | (4.323) | (2.616) | (4.316) | (2.249) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 11,435 | 11,648 | 11,435 | 11,648 | 11,435 | 11,648 | 11,435 | 11,648 |
| Adj. $R^2$ | 0.302 | 0.292 | 0.302 | 0.292 | 0.303 | 0.297 | 0.302 | 0.298 |

This table presents the regression results of sub-sample analysis of the association between empire building and tax avoidance. In Panel A, firms in the sample are divided into two governance groups (better-governed firms and poorly governed firms) using the industry-year median of the E-index as the cut-off. In Panel B, firms in the sample are divided into two monitoring groups (better-monitored firms and poorly monitored firms) using the industry-year median of the number of analysts following as the cut-off. Panels A and B, Columns 1–8 report the results for eight different models using the following tax avoidance proxies as the explanatory variable: *5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR.* Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.

**Table 10**

Empire building and tax avoidance: Implications for firm value

| | Dependent Variable (DV) = *TOBINQ* | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *EMPIRE_BUILD* | 0.006 | 0.019 | 0.088*** | 0.101*** |
| | (0.331) | (1.213) | (6.824) | (7.573) |
| *TAX_AVOID*× *EMPIRE_BUILD* | -0.306*** | -0.364*** | -0.159*** | -0.198*** |
| | (-7.798) | (-7.515) | (-6.367) | (-6.602) |
| *TAX_AVOID* | 0.248*** | 0.214*** | 0.070*** | 0.053** |
| | (10.318) | (8.156) | (3.481) | (2.510) |
| *CASH* | 1.323*** | 1.325*** | 1.340*** | 1.341*** |
| | (14.701) | (14.638) | (14.800) | (14.794) |
| *LEV* | 0.177* | 0.169* | 0.196** | 0.193** |
| | (1.848) | (1.753) | (2.029) | (1.995) |
| *ROA* | -1.295*** | -1.300*** | -1.280*** | -1.280*** |
| | (-9.759) | (-9.772) | (-9.726) | (-9.732) |
| *SIZE* | 0.126*** | 0.126*** | 0.124*** | 0.124*** |
| | (15.073) | (15.053) | (14.518) | (14.588) |
| *SGROWTH* | 0.210*** | 0.212*** | 0.213*** | 0.215*** |
| | (6.312) | (6.360) | (6.374) | (6.437) |
| *FAGE* | -0.057*** | -0.056*** | -0.063*** | -0.063*** |
| | (-3.205) | (-3.155) | (-3.545) | (-3.527) |
| *INSTOWN* | 0.015 | 0.020 | 0.009 | 0.010 |
| | (0.298) | (0.408) | (0.176) | (0.194) |
| *MABILITY* | 1.274*** | 1.270*** | 1.284*** | 1.284*** |
| | (9.178) | (9.126) | (9.204) | (9.203) |
| Constant | 1.025*** | 1.070*** | 1.037*** | 1.024*** |
| | (8.642) | (8.909) | (8.403) | (8.279) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 31,672 | 31,672 | 31,672 | 31,672 |
| Adj. $R^2$ | 0.245 | 0.245 | 0.241 | 0.241 |

This table presents the regression results of the interaction between tax avoidance and empire building on firm valuation. Columns 1–4 report the regression results using the following tax avoidance proxies as the explanatory variable: *5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR*. Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.

**Table 11**

Empire building and tax avoidance: Role of CEO power

**Panel A: Results based on CEO equity ownership**

| | **Dependent variable (DV) = *EMPIRE_BUILD*** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ***5-YEAR ETR*** | | ***5-YEAR CETR*** | | ***3-YEAR ADJUSTED ETR*** | | ***3-YEAR ADJUSTED CETR*** | |
| | **High Equity** | **Low Equity** | **High Equity** | **Low Equity** | **High Equity** | **Low Equity** | **High Equity** | **Low Equity** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** | **Model (5)** | **Model (6)** | **Model (7)** | **Model (8)** |
| *TAX_AVOID* | 0.134* | 0.007 | 0.184*** | 0.132 | 0.083** | -0.034 | 0.154*** | 0.098* |
| | (1.767) | (0.084) | (3.150) | (1.393) | (2.125) | (-0.574) | (3.586) | (1.871) |
| Intercept | -0.200 | -0.364 | -0.170 | -0.308 | -0.242* | -0.365 | -0.234* | -0.362 |
| | (-1.380) | (-1.108) | (-1.257) | (-0.887) | (-1.704) | (-1.111) | (-1.679) | (-1.073) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,985 | 1,816 | 1,985 | 1,816 | 1,985 | 1,816 | 1,985 | 1,816 |
| Adj. $R^2$ | 0.286 | 0.314 | 0.287 | 0.315 | 0.287 | 0.314 | 0.288 | 0.315 |

**Panel B: Results based on CEO duality**

| | **Dependent variable (DV) = *EMPIRE_BUILD*** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ***5-YEAR ETR*** | | ***5-YEAR CETR*** | | ***3-YEAR ADJUSTED ETR*** | | ***3-YEAR ADJUSTED CETR*** | |
| | **Duality** | **Non-duality** | **Duality** | **Non-duality** | **Duality** | **Non-duality** | **Duality** | **Non-duality** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** | **Model (5)** | **Model (6)** | **Model (7)** | **Model (8)** |
| *TAX_AVOID* | 0.064 | 0.041 | 0.222*** | -0.003 | 0.095** | 0.111 | 0.149*** | 0.082 |
| | (1.260) | (0.421) | (5.186) | (-0.038) | (2.520) | (1.569) | (4.981) | (1.406) |
| Intercept | 0.126 | 0.653** | 0.150* | 0.638** | 0.113 | 0.637** | 0.077 | 0.632** |
| | (1.356) | (2.158) | (1.725) | (2.089) | (1.300) | (2.107) | (0.897) | (2.090) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 4,742 | 2,441 | 4,742 | 2,441 | 4,742 | 2,441 | 4,742 | 2,441 |
| Adj. $R^2$ | 0.305 | 0.314 | 0.308 | 0.314 | 0.306 | 0.315 | 0.308 | 0.315 |

This table presents the regression results of sub-sample analysis of the association between empire building and tax avoidance. In Panel A, firms in the sample are divided into two groups based on CEO equity ownership (high CEO equity ownership firms vs. low CEO equity ownership firms) using the industry-year median of the CEO equity ownership as the cut-off. In Panel B, firms in the sample are divided into two groups based on CEO duality (CEO duality firms vs. CEO non-duality firms). Panels A and B, Columns 1–8 report the results for eight different models using the following tax avoidance proxies as the explanatory variable: *5-YEAR ETR, 5-YEAR CETR, 3-YEAR ADJUSTED ETR* and *3-YEAR ADJUSTED CETR*. Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.

**Table 12**

Empire building and tax avoidance: Role of Sarbanes–Oxley Act (SOX Act)

**Panel A: Results based on SOX Act**

| | Dependent variable (DV) = *EMPIRE_BUILD* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ***5-YEAR ETR*** | | ***5-YEAR CETR*** | | ***3-YEAR ADJUSTED ETR*** | | ***3-YEAR ADJUSTED CETR*** | |
| | **Pre-SOX Act** | **Post-SOX Act** | **Pre-SOX Act** | **Post-SOX Act** | **Pre-SOX Act** | **Post-SOX Act** | **Pre-SOX Act** | **Post-SOX Act** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** | **Model (5)** | **Model (6)** | **Model (7)** | **Model (8)** |
| *TAX_AVOID* | 0.158*** | 0.135*** | 0.121*** | 0.172*** | 0.192*** | 0.136*** | 0.199*** | 0.184*** |
| | (6.849) | (6.747) | (5.364) | (9.123) | (9.733) | (8.448) | (10.841) | (12.715) |
| Intercept | 0.180 | 0.395*** | 0.154 | 0.394*** | 0.148 | 0.384*** | 0.111 | 0.352*** |
| | (1.375) | (3.788) | (1.145) | (3.823) | (1.192) | (3.717) | (0.868) | (3.254) |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 14,643 | 20,417 | 14,643 | 20,417 | 14,643 | 20,417 | 14,643 | 20,417 |
| Adj. $R^2$ | 0.313 | 0.245 | 0.312 | 0.245 | 0.316 | 0.246 | 0.316 | 0.247 |

**Panel B: Results based on CSR performance**

| | Dependent variable (DV) = *EMPIRE_BUILD* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ***5-YEAR ETR*** | | ***5-YEAR CETR*** | | ***3-YEAR ADJUSTED ETR*** | | ***3-YEAR ADJUSTED CETR*** | |
| | **High CSR** | **Low CSR** | **High CSR** | **Low CSR** | **High CSR** | **Low CSR** | **High CSR** | **Low CSR** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** | **Model (5)** | **Model (6)** | **Model (7)** | **Model (8)** |
| *TAX_AVOID* | 0.036 | 0.133*** | 0.045 | 0.255*** | -0.085* | 0.080** | 0.093** | 0.190*** |
| | (0.553) | (3.129) | (0.758) | (6.932) | (-1.782) | (2.552) | (2.249) | (6.827) |
| Intercept | 0.591*** | 0.586*** | 0.594*** | 0.611*** | 0.551*** | 0.546*** | 0.559*** | 0.530*** |
| | (3.946) | (3.074) | (4.031) | (3.308) | (3.536) | (2.916) | (3.538) | (2.892) |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3,516 | 5,501 | 3,516 | 5,501 | 3,516 | 5,501 | 3,516 | 5,501 |
| Adj. $R^2$ | 0.223 | 0.233 | 0.223 | 0.237 | 0.223 | 0.232 | 0.223 | 0.236 |

This table presents the regression results of sub-sample analysis of the association between empire building and tax avoidance. Panel A shows the regression results using the sub-sample based on the SOX Act (the pre-SOX Act period and the post-SOX Act period). Panel B shows the regression results using the sub-sample based on CSR performance. Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.

**Table 13**

Empire building and tax avoidance: Results with additional governance variables

| | **Dependent variable (DV) = *EMPIRE_BUILD*** | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.080* | 0.175*** | 0.129*** | 0.153*** |
| | (1.668) | (4.634) | (3.965) | (5.685) |
| *CASH* | -0.028 | -0.044 | -0.032 | -0.042 |
| | (-0.381) | (-0.606) | (-0.446) | (-0.578) |
| *LEV* | 0.139** | 0.121** | 0.136** | 0.125** |
| | (2.379) | (2.077) | (2.339) | (2.152) |
| *ROA* | 0.840*** | 0.856*** | 0.838*** | 0.845*** |
| | (4.978) | (5.086) | (4.996) | (5.019) |
| *SIZE* | 0.024*** | 0.024*** | 0.024*** | 0.026*** |
| | (3.171) | (3.100) | (3.110) | (3.418) |
| *MB* | 0.005 | 0.005 | 0.005 | 0.005 |
| | (1.512) | (1.479) | (1.524) | (1.486) |
| *SGROWTH* | 1.233*** | 1.223*** | 1.232*** | 1.227*** |
| | (14.476) | (14.376) | (14.481) | (14.470) |
| *FAGE* | -0.102*** | -0.099*** | -0.102*** | -0.100*** |
| | (-6.867) | (-6.779) | (-6.893) | (-6.825) |
| *INSTOWN* | 0.174*** | 0.171*** | 0.171*** | 0.170*** |
| | (3.500) | (3.451) | (3.452) | (3.442) |
| *BSIZE* | -0.017*** | -0.017*** | -0.017*** | -0.017*** |
| | (-3.617) | (-3.618) | (-3.664) | (-3.665) |
| *BIND* | -0.208*** | -0.208*** | -0.208*** | -0.206*** |
| | (-3.543) | (-3.571) | (-3.547) | (-3.536) |
| *DUAL* | -0.011 | -0.010 | -0.010 | -0.011 |
| | (-0.675) | (-0.627) | (-0.597) | (-0.667) |
| Intercept | 0.221*** | 0.221*** | 0.225*** | 0.223*** |
| | (2.912) | (2.939) | (2.960) | (2.949) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 7,344 | 7,344 | 7,344 | 7,344 |
| Adj. $R^2$ | 0.299 | 0.300 | 0.300 | 0.301 |

This table presents the regression results of the association between empire building and tax avoidance using additional governance variables. Models (1)-(4) report the regression results for four different models that used four proxies for tax avoidance. Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, **, and * represent significance levels at 1%, 5% and 10%, respectively.

**Appendix A: Definitions of variables**

| Notation | Name of variable(s) | Explanation |
|---|---|---|
| **Panel A: Tax avoidance measures** | | |
| *TAX_AVOID* | Tax avoidance | One of the measures of tax avoidance activity. |
| *5-YEAR ETR* | Five-year effective tax rate | The ratio of the sum of tax expenses over a five-year period to the sum of income before taxes and special items over the same five-year period. |
| *5-YEAR CETR* | Five-year cash effective tax rate | The ratio of the sum of cash tax payments over a five-year period to the sum of income before taxes and special items over the same five-year period. |
| *3-YEAR ADJUSTED ETR* | Three-year adjusted effective tax rate | The ratio of the sum of tax expenses over a three-year period, scaled by the sum of income before taxes and special items over the same three-year period, adjusted by the effective tax rate (ETR) of the firm's size/industry portfolio, following Guenther et al. (2017) and Balakrishnan et al. (2019). |
| *3-YEAR ADJUSTED CETR* | Three-year adjusted cash effective tax rate | The ratio of the sum of cash tax payments over a three-year period, scaled by the sum of income before taxes and special items over the same three-year period, adjusted by the cash effective tax rate (CETR) for the firm's size/industry portfolio, following Guenther et al. (2017) and Balakrishnan et al. (2019). |
| *DTAX* | Discretionary permanent book-tax difference | Following Frank et al. (2009), *DTAX* is estimated by regressing total permanent differences on non-discretionary items (*PERMDIFF*) that are known to cause permanent differences (e.g., intangible assets) and other statutory adjustments (e.g., state taxes) but are likely to be unrelated to tax reporting aggressiveness. The regression equation takes the following form: $PERMDIFF_{i,t} = \beta_0 + \beta_1 INTAN_{i,t} + \beta_2 UNCON_{i,t} + \beta_3 MI_{i,t} + \beta_4 CSTE_{i,t} + \beta_5 \Delta NOL_{i,t} + \beta_6 LAGPREM_{i,t} + \varepsilon_{i,t}$ where *INTAN* is the sum of goodwill and other intangibles; *UNCON* is the income (loss) reported under the equity method; *MI* is income (loss) attributable to minority interest; *CSTE* is the current state income tax expense; *ΔNOL* is the change in net operating loss carry-forwards; and *LAGPREM* is the one-year lagged *PERMDIFF*. |
| *SHELTER* | Tax sheltering probability | The tax sheltering probability (*SHELTER*) is estimated based on the model by Wilson (2009): $SHELTER = -4.30 + 6.63 \times BTD - 1.72 \times LEV + 0.66 \times SIZE + 2.26 \times ROA + 1.62 \times FOR\_INCOME + 1.56 \times R\&D$ where *BTD* is the book-tax difference; *FOR_INCOME* is an indicator variable of 1 for firms reporting foreign income; and *R&D* is research and development expenses divided by net sales (when missing, coded 0). Other variables are defined below. |
| **Panel B: Empire building measures** | | |
| *EMPIRE_BUILD* | Empire building | A composite empire building measure based on the acquisition ratio *(ACQRATIO)*, the level of capital expenditure *(CAPEX)*, total assets growth *(AGROWTH)* and growth in property, plant and equipment (*PPEGROWTH)*. We develop a composite measure based on the factor scores obtained from principal component analysis (PCA). |
| *ACQRATIO* | Acquisition ratio | The sum of the value of all mergers and acquisitions (M&As) made by a firm in a given year, divided by the firm's market capitalisation in the year before acquisition. |
| *CAPEX* | Capital expenditure | The ratio of capital expenditure at the end of the current fiscal year to capital expenditure at the end of the previous fiscal year, minus 1. |
| *AGROWTH* | Asset growth | The ratio of total assets at the end of the current fiscal year to total assets at the end of the previous fiscal year, minus 1. |

| | | |
|---|---|---|
| *PPEGROWTH* | Property, plant and equipment growth | The ratio of property, plant and equipment at the end of the current fiscal year to property, plant and equipment at the end of the previous fiscal year, minus 1. |
| *ACQPR* | Acquisition probability | The acquisition probability of a firm; an indicator variable of 1 if a firm acquires a target, and 0 otherwise. |
| *ACQNO* | Acquisitions number | The number of acquisitions announced during a fiscal year. |
| **Panel C: Firm characteristics** | | |
| *CASH* | Cash holdings | The ratio of cash and cash equivalents to total assets. |
| *LEV* | Leverage | The ratio of total debt to total assets. |
| *ROA* | Profitability | Pre-tax earnings divided by total assets. |
| *SIZE* | Firm size | The natural logarithm of total assets. |
| *MB* | Growth opportunities | The ratio of market-to-book value of equity. |
| *SGROWTH* | Sales growth | The percentage change in annual sales revenue. |
| *FAGE* | Firm age | The natural logarithm of the number of years since the firm's first appearance in the Compustat database. |
| *INSTOWN* | Institutional ownership | The percentage of ownership held by institutional owners. |
| *MABILITY* | Managerial ability | The managerial ability score developed by Demerjian et al. (2012). |
| *FCF* | Free cash flow | The amount of free cash flow of a firm scaled by total assets at the beginning of each year. Free cash flow is measured as the operating income before depreciation minus interest and related expenses minus total income taxes and total common share dividends. |
| *RND* | Research and development intensity | The ratio of research and development (R&D) expenditure, scaled by total revenue. |
| *LOSS* | Loss firms | An indicator variable if the firm incurs a loss, and 0 otherwise. |
| *ADV* | Advertising intensity | The ratio of advertisement expenses scaled by total revenue. |
| *FOREIGN* | Foreign operations | An indicator variable of 1 if the firm has foreign operations, and 0 otherwise. |
| *INTANG* | Intangible assets | The ratio of intangible assets to total assets. |
| *PPENT* | Property, plant and equipment | The ratio of net property, plant and equipment, scaled by total assets. |
| *EINDEX* | Entrenchment index (E-index) | The sum of staggered board and 'poison pill' provisions. |
| *EQUITY* | CEO power | The percentage of equity ownership held by a CEO. |
| *DUAL* | CEO power | An indicator variable of 1 if the CEO and chairman of the board is the same person, and 0 otherwise. |
| *ANALYST* | Analysts' coverage | The natural logarithm of 1 plus the number of analysts providing annual earnings forecasts. |
| *TOBINQ* | Firm value | The market value of total assets divided by the book value of total assets, where the market value of assets is calculated as the book value of total assets minus the book value of common equity plus the number of common shares outstanding times the stock price. |
| *SOX* | *Sarbanes–Oxley Act of 2002* | An indicator variable of 1 if a firm's fiscal year is between 2002 and 2015 (post-SOX Act period), and 0 otherwise. |
| *CSR* | Corporate social responsibility | The sum of adjusted scores from six major dimensions (community, diversity, employee relations, the environment, human rights and product quality) of strength and concern indicators of CSR performance. The adjusted score for each dimension is calculated as the difference between the adjusted total strength and the adjusted total concern score for that dimension (Deng et al., 2013). |
| *BSIZE* | Board size | The natural logarithm of the total number of board members. |
| *BIND* | Board independence | The ratio of independent directors to the total number of board members. |
| **Panel D: Instrumental variables** | | |
| *IND_ADJ_TAX_AVOID* | Median industry tax avoidance | The median industry value of tax avoidance using the four proxies of tax avoidance. |

| | | |
|---|---|---|
| *STATE_ADJ_TAX_AVOID* | Median state tax avoidance | The median state value of tax avoidance using the four proxies of tax avoidance. |
| *TAX_AVOID_LAG* | Prior year's tax avoidance | One-year lag of tax avoidance. |

**Appendix B: Regression results of Equation (1) using alternative measures of empire building**

**Panel A: Regression results using acquisition ratio *(ACQRATIO)* as a proxy for empire building**

| | Dependent variable (DV) = *ACQRATIO* | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.021*** | 0.031*** | 0.018*** | 0.014*** |
| | (11.486) | (19.472) | (11.600) | (7.876) |
| Intercept | 0.006 | 0.007 | 0.001 | -0.004 |
| | (0.780) | (0.841) | (0.099) | (-0.433) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 35,060 | 35,060 | 35,060 | 35,060 |
| Adj. $R^2$ | 0.028 | 0.030 | 0.028 | 0.027 |

**Panel B: Regression results using capital expenditure *(CAPEX)* as a proxy for empire building**

| | Dependent variable (DV) = *CAPEX* | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.003*** | 0.007*** | 0.005*** | 0.009*** |
| | (2.893) | (6.517) | (5.366) | (10.399) |
| Intercept | 0.088*** | 0.089*** | 0.088*** | 0.086*** |
| | (9.566) | (9.759) | (9.515) | (9.339) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 35,060 | 35,060 | 35,060 | 35,060 |
| Adj. $R^2$ | 0.299 | 0.300 | 0.300 | 0.302 |

**Panel C: Regression results using asset growth *(AGROWTH)* as a proxy for empire building**

| | Dependent variable (DV) = *AGROWTH* | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.036*** | 0.036*** | 0.045*** | 0.054*** |
| | (5.815) | (6.358) | (8.931) | (11.260) |
| Intercept | 0.167*** | 0.163*** | 0.160*** | 0.146*** |
| | (6.209) | (6.046) | (6.137) | (5.497) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 35,060 | 35,060 | 35,060 | 35,060 |
| Adj. $R^2$ | 0.283 | 0.283 | 0.284 | 0.284 |

**Panel D: Regression results using property, plant and equipment growth *(PPEGROWTH)* as a proxy for empire building**

| | Dependent variable (DV) = *PPEGROWTH* | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.056*** | 0.050*** | 0.058*** | 0.064*** |
| | (8.455) | (7.839) | (10.508) | (12.694) |
| Intercept | 0.221*** | 0.214*** | 0.208*** | 0.192*** |
| | (7.015) | (6.787) | (6.691) | (6.143) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 35060 | 35060 | 35060 | 35060 |
| Adj. $R^2$ | 0.160 | 0.160 | 0.161 | 0.161 |

**Panel E: Regression results using acquisition number *(ACQNO)* as a proxy for empire building**

| | Dependent variable (DV) = *ACQNO* | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.227*** | 0.165*** | 0.114** | 0.009 |
| | (3.970) | (2.618) | (2.505) | (0.196) |

| | | | | |
|---|---|---|---|---|
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 35060 | 35060 | 35060 | 35060 |
| Pseudo $R^2$ | 0.098 | 0.098 | 0.098 | 0.098 |

**Panel F: Regression results using acquisition probability *(ACQPR)* as a proxy for empire building**

| | **Dependent variable (DV) = *ACQPR*** | | | |
|---|---|---|---|---|
| | ***5-YEAR ETR*** | ***5-YEAR CETR*** | ***3-YEAR ADJUSTED ETR*** | ***3-YEAR ADJUSTED CETR*** |
| | **Model (1)** | **Model (2)** | **Model (3)** | **Model (4)** |
| *TAX_AVOID* | 0.189*** | 0.145** | 0.406*** | 0.153*** |
| | (3.102) | (2.228) | (9.092) | (3.107) |
| Intercept | -7.195*** | -7.214*** | -7.170*** | -7.241*** |
| | (-18.439) | (-18.396) | (-18.277) | (-18.531) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 35058 | 35058 | 35058 | 35058 |
| Pseudo $R^2$ | 0.127 | 0.127 | 0.129 | 0.127 |

This table presents the regression results of the association between empire building and tax avoidance. Panels A–D show the regression results using four different proxies of empire building as dependent variables: *ACQRATIO, CAPEX, AGROWTH* and *PPEGROWTH.* Panels E and F show the regression results using *ACQPR* and *ACQNO* as measures of empire building. Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.

**Appendix C**

Empire building and tax avoidance: Results with *DTAX* and *SHELTER* variables

| | **Dependent variable (DV) = *EMPIRE_BUILD*** | |
|---|---|---|
| | ***DTAX*** | ***SHELTER*** |
| | **Model (1)** | **Model (2)** |
| *TAX_AVOID* | 0.718*** | 0.113*** |
| | (16.242) | (6.656) |
| *CASH* | 0.395*** | 0.442*** |
| | (7.900) | (6.338) |
| *LEV* | -0.022 | 0.110** |
| | (-0.557) | (1.982) |
| *ROA* | -0.095 | -0.288** |
| | (-1.510) | (-2.129) |
| *SIZE* | 0.070*** | -0.017 |
| | (14.551) | (-1.615) |
| *MB* | 0.009*** | 0.010*** |
| | (4.605) | (3.475) |
| *SGROWTH* | 0.879*** | 1.281*** |
| | (29.601) | (19.172) |
| *FAGE* | -0.291*** | -0.203*** |
| | (-25.795) | (-13.308) |
| *INSTOWN* | 0.068*** | -0.039 |
| | (2.587) | (-1.058) |
| *MABILITY* | 0.423*** | 0.372*** |
| | (5.962) | (3.856) |
| *Intercept* | 0.245*** | 0.674*** |
| | (2.719) | (4.319) |
| Year Fixed Effects | Yes | Yes |
| Industry Fixed Effects | Yes | Yes |
| Observations | 24,407 | 9,456 |
| Adj. $R^2$ | 0.315 | 0.345 |

This table presents the regression results of the association between empire building and tax avoidance using *DTAX* and *SHELTER* as proxies for tax avoidance. Model (1) shows the regression results using *DTAX* as the proxy for tax avoidance, while Model (2) shows the results using *SHELTER* as the proxy for tax avoidance. Numbers in parentheses are *t*-statistics based on standard errors clustered at firm level. All variables are defined in Appendix A. Superscript ***, ** and * represent significance levels at 1%, 5% and 10%, respectively.