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ORIGINAL ARTICLE

The effect of corporate governance mechanisms on tax planning during financial crisis: an empirical study of companies listed on the Athens stock exchange

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Abstract
While tax burden is always one of the primary concerns for corporate management and finance, it is questionable whether tax has always been among the core factors of corporate governance. This study aims to explore the effect of corporate governance on tax planning during the adverse circumstances created by the economic crisis. The effective tax rates of a sample of 55 non-financial companies listed on the Athens stock exchange (ASE) during the 2011–2015 period were used as a proxy of tax planning and were regressed on corporate governance characteristics, controlling for firm specific attributes. Results showed a significant positive association of board independence with tax planning and a significant negative association with chief executive officer (CEO) duality and firm size. The remaining corporate governance and firm variables which included board size, audit firm size, ownership concentration, leverage and liquidity were not found to exert a significant influence on corporate tax planning of listed companies in Greece. Our results shed light on the relationship of governance with corporate tax planning in periods of financial distress, and may be of particular interest for market participants, investors, tax authorities and policy makers in their efforts to improve the efficiency of the tax system and public revenue.

Keywords ETR · Ownership concentration · Board size · Board independence · CEO duality · Audit firm size · ASE

JEL Classification M41 · M42 · M48

Introduction

Tax revenue consists of all the revenues collected from taxes imposed on income and profits, goods and services, ownership and transfer of property, as well as from various other types of taxes. Although taxes interest government and enterprises, these interests are in a way conflicting, as taxes consist a source of income for the country and a source that decreases the net income of a company (Mulyadi and Anwar 2015). Consequently, management has an incentive to engage in tax planning in order to keep its tax liabilities to the minimum level or even evade taxes using illegal practices. Recent research has showed that governance plays an important role in tax management, as companies with different governance structures follow different tax management strategies (Minnick and Noga 2010) and equity risk incentives are significant determinants of tax planning and are positively associated with greater tax avoidance (Rego and Wilson 2012).

The examination of the relationship between corporate governance and tax planning is therefore interesting because on the one hand tax planning can be complicated, allowing managerial opportunism; and on the other hand, it incorporates significant uncertainty which does not affect firm performance directly (Minnick and Noga 2010). Although several studies have been conducted on tax compliance, there is only a limited amount of research examining directly the

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influence of corporate governance on tax avoidance (Armstrong et al. 2015). As far as Greece is concerned, only a small amount of research on the association of corporate governance with tax avoidance has been conducted to the knowledge of the authors (i.e., Kourdoumpalou 2016; Chytis et al. 2018).

This paper aims to explore the relationship between corporate governance and tax planning among listed companies in Greece amidst the severe circumstances created by the economic recession. Effective tax rate (ETR) was selected as a proxy for tax planning and was applied on a sample of non-financial companies listed on the ASE for the period 2011–2015. This period is of particular interest for Greece as two significant events occurred at that time: the restructuring of Greek debt in 2011 (private sector involvement, known as PSI) and the imposition of capital controls in 2015. The study shows that corporate governance aspects do affect corporate tax planning. More specifically, tax planning was found to be significantly positively associated with board independence and significantly negatively associated with CEO duality. The results of the study contribute to the existing literature by reinforcing the existing evidence on the relationship between tax planning and corporate governance mechanisms, as well with the characteristic of firm size.

The remainder of the paper is organized as follows. Part two provides a literature review of tax planning and corporate governance, as well as of the results of prior research in these two areas. Hypotheses tested in the study are also developed in this section. The data, the tax planning measure and the research model employed in the study, as well as the definition of the variables are presented in part three. Descriptive statistics, the results of panel regression and of the hypotheses tested are presented and discussed in part six. The paper ends with a summary of the main findings and conclusions, as well as suggestions for future research.

Literature review

Tax planning

Modern literature on tax evasion stems from Allingham's and Sadmo's (1972) deterrence model, which defines three main factors that individuals consider when evading taxes: the chance of being caught, the size of the penalty and the degree of risk aversion. Although several scholars tend to use the terms of tax evasion and tax avoidance interchangeably, tax evasion refers to reducing tax payments illegally, contrary to tax avoidance which refers to reducing tax payments legally (Fisher 2014). Tax avoidance aims to accomplish one of three goals: paying less taxes than those needed by a county's legislation, paying tax on profits not in the country where they were earned but in another country, and paying tax at a time later than the time the profits were earned (Fisher 2014).

Most prior research on tax evasion followed Allighman's and Sadmo's model, approaching tax evasion decisions at the individual rather than at the corporate level (Crocker and Slemrod 2005). However, decision making at corporate level differs from individual level due to the agency problem (Chen and Chu 2005), as decisions are not made directly by the shareholders, but indirectly by their agents (Crocker and Slemrod 2005). The main stream of research on corporate tax has focused the interest on various tax avoidance measures such as effective tax rates and book to tax differences (for example Gupta and Newberry 1997), or tax shelters and unrecognized tax benefits (Lee et al. 2015).

Firms are inclined to employ tax planning if it is expected to be a value added activity despite the costs required for its implementation (Minnick and Noga 2010). There are many incentives why management may be willing to engage in tax planning. Desai and Dharmapala (2006) argue that incentive compensation is an important determinant of tax avoidance as higher powered incentives are linked with lower levels of tax sheltering, in a complementary relationship between diversion and sheltering. Hence, reducing tax planning can also reduce managerial diversion. Armstrong et al. (2015) question whether tax avoidance and rent extraction are indeed complementary, because contrary to Desai and Dharmapala (2006), they find corporate governance and manager's tax avoidance decisions to be related only when tax avoidance is high.

Tax avoidance is a risky activity that can inflict important costs on the company and its management, which include tax expert fees, working hours allocated on the resolution of tax audits, reputational damage and tax penalties (Badertscher et al. 2013). Graham et al. (2014) investigated reputational influences and found that a potential adverse effect on corporate reputation constrains the engagement in tax planning strategies for publicly traded companies, larger and more profitable companies and companies in the retail industry. Moreover, financial accounting incentives are important parameters of tax planning, as companies consider it important for a tax strategy not to reduce earnings per share. Rego and Wilson (2012) have shown that managers are motivated by equity risk incentives to employ risky tax strategies in order to increase stock return volatility and portfolio value.

Dyreng et al. (2010) provide evidence that individual executives affect their firms' tax avoidance, as executives employed by tax aggressive firms appear to transfer this aggressiveness to their new employer. Robinson et al. (2012) find that accounting experts in the audit committees are associated with a greater level of tax planning, which is negatively associated with the possibility that the firm may pursue risky tax planning (i.e., tax heavens or tax shelters). Moreover, they argue that it is more probable that firms with

executives with financial but not accounting expertise will encourage the engagement in aggressive tax planning.

As far as Greece is concerned, research on the association of corporate governance with tax avoidance is limited. In particular, Kourdoumpalou (2016) found that tax evasion was significantly lower in firms where the chairperson of the board was also the owner, and identified a negative correlation between tax avoidance and the percentage of stock held by the owner and his/her family members and the percentage of stock held by board members. However, this study was conducted for the years 2000–2004, before the outburst of the economic crisis and the subsequent recession. Chytis et al. (2018) examined tax avoidance in a sample of non-financial listed companies for the year 2011, finding high levels of tax avoidance in firms with high ownership concentration. However, this study was limited to only one year.

Although literature provides insights into the relationship between corporate governance and tax avoidance, inferences are limited on whether and how corporate governance affects corporate tax avoidance (Armstrong et al. 2015).

Corporate governance

The study is limited to four key governance aspects: board of directors, ownership, chief executive officer duality and auditing.

Board structure

The board of directors is at the top of the internal control system and has the ultimate responsibility for the functioning of the firm (Jensen 1993). In addition, as an internal control mechanism, the board of directors is responsible to protect the interests of the shareholders (Minnick and Noga 2010). The board is also accountable to the stakeholders of the company for tax risk management, either for paying more taxes or for paying fewer taxes than those required by the law, and has the responsibility to develop an enterprise control environment with awareness of potential tax issues (Erle 2008). In addition, diverse board members are more concerned about company stakeholders and contribute to increased risk disclosures, which can be in stakeholders' long-term interest (Bravo 2018).

The board size is a value relevant dimension of board operations, as larger boards impede the free exchange of ideas between board members and cannot function as effectively as small boards (Vafeas 2000). In addition, larger boards are considered more vulnerable to control by the CEO, in contrast to smaller boards that are more effective in monitoring the CEO (Jensen 1993). The prevailing of management on the board of directors may encourage managers to exploit shareholder wealth through fraudulent and illegal activities (Lanis and Richardson 2011). On the other hand, companies with small boards and a high percentage of outside directors are more concerned about firm performance and shareholder welfare (Minnick and Noga 2010).

Results on the association between ETR and the board of directors are mixed. Some prior studies have found a negative relationship between ETR and board independence (i.e., Mulyadi and Anwar 2015), while other studies concluded that an insignificant association exists (Minnick and Noga 2010).

Considering the above, the following hypotheses are formulated:

H_1 ETR is associated with board independence.

H_2 ETR is associated with board size.

Ownership structure

The separation of ownership and control causes agency problems, which include managerial incentives for behaviors like shirking, perquisite consumption and rent extraction (Badertscher et al. 2013). Gupta and Newberry (1997) argue that the greater the manager's ownership in the share capital, the more aggressive they might get in tax reducing practices. On the other hand, Badertscher et al. (2013) argue that management-owned firms avoid less tax than private equity firms due to highly concentrated ownership, because according to Fama and Jemsen's theory (1983), when there is a concentration of ownership and decision making by a small number of decision-making owner–managers, the latter will likely be more risk averse and not willing to invest in risky projects such as tax avoidance.

Results on the association between ownership structure and tax planning are mixed. Khan et al. (2017) found that an increase in institutional ownership is associated with an increase in tax avoidance. On the other hand, Richardson et al. (2016) found a significant nonlinear relationship between ownership and tax avoidance. At lower level, ownership concentration was found to be positively associated with tax avoidance due to the entrenchment effect, but beyond the level necessary for effective control a negative association was found, attributed to the alignment effect. Based on the above theory and empirical evidence, the exact relationship between ETR ownership concentration cannot be predicted and therefore the following hypothesis is stated:

H_3 ETR is associated with ownership concentration.

CEO duality

Although the CEO usually is not a tax expert, he/she can decisively influence the firm's operational and financial strategy and tax avoidance by setting the "tone at the top"

about the firm's tax activities (Dyreng et al. 2010). Moreover, top management is assumed to have access to private information relating to permissible reductions in taxable income and may inflate corporate tax shield through tax evasion (Crocker and Slemrod 2005). In addition, since management compensation is linked to the financial performance of the firm and/or its share price, there is an incentive to manipulate the financial statements in order to maximize compensation (Lanis and Richardson 2011). Prior research, such as the one conducted by Halioui et al. (2016) has identified a negative relationship between ETR and CEO duality, while other researchers, like Minnick and Noga (2010), found an insignificant association. Based on the above arguments, the following hypothesis is formulated:

H_4 ETR is associated with CEO duality.

Auditing firm

According to Jensen and Meckling (1976), auditing may be regarded as a mechanism that reduces agency costs. Big 4 auditing firms can exert a significant influence on the level of tax avoidance. Using enhanced monitoring and high quality audit services, auditing firms may reduce corporate tax aggressive practices (Richardson et al. 2013). On the other hand, McGuire et al. (2012) argue that the overall expertise of external auditors is generally associated with greater tax avoidance. Prior research has produced mixed results regarding the impact of auditing firms on tax avoidance. For instance, Crabbe (2010) found a negative relationship between ETR and auditing firm type, whereas other researchers, such as Pratama (2017), concluded that there is a positive association. Based on the above arguments, the following hypothesis is formulated:

H_5 ETR is associated with the type of auditing firm.

Firm characteristics

Several firm-level characteristics such as size, economies of scale through foreign operations as well as other factors, have been examined in prior research as determinants of tax avoidance (Dyreng et al. 2010). The firm characteristics of size, leverage and liquidity were selected for this study.

Larger firms are expected to exhibit higher ETRs, because—according to the political cost theory—larger firms are more visible and more exposed to scrutiny by public authorities (Watts and Zimmerman 1986). On the other hand, it can be argued that larger firms have the resources to influence the political decisions to their benefit. In addition, large firms have the resources and means to manipulate their taxes (Crabbe 2010). Prior research on the subject has not produced consistent findings (Nomura 2017). Several researchers identified a positive relationship (Nomura 2017; Ribeiro et al. 2015; Huang et al. 2013; Gupta and Newberry 1997, etc.) and others a negative association (Mulyadi and Anwar 2015; Gupta and Newberry 1997, etc.). Moreover, the tax behavior of a firm can be significantly affected by a high level of debt (Pratama 2017). Where interest expense is deductible for tax purposes, firms with higher leverage would have lower ETRs (Gupta and Newberry 1997). This can be explained by the agency theory because stronger business constraints due to debt contacts with lenders make managers more efficient, which in turn may reduce ETR (Nomura 2017). The majority of prior research has identified a negative association between ETR and leverage (Nomura 2017; Ribeiro et al. 2015; Huang et al. 2013; Minnick and Noga 2010, etc.).

Finally, firms in financial distress engage in riskier tax avoidance strategies and/or have the incentives to engage in short term tax strategies to enhance their liquidity (Saaverda 2013). During 2011–2015, Greek firms faced serious liquidity problems due to the financial crisis and the economic recession that followed. Prior research regarding the association between ETR and liquidity appears to be limited. Stanfield (2011) found that tax avoidance decreases in liquidity and increases in shortage of cash, without however, robust results.

Taking into account the above arguments, the following hypotheses are formulated regarding firm characteristics:

H_6 ETR is associated with firm size.

H_7 ETR is negatively associated with leverage.

H_8 ETR is associated with liquidity.

Data and research model

Sample

The sample of the study was selected among the population of non-financial companies listed on the ASE during the 2011–2015 period. Financial and asset management companies were excluded from the sample due to specific reporting requirements—an approach also followed by previous research (Nomura 2017; Ribeiro et al. 2015; Huang et al. 2013, etc.). In addition, their tax avoidance proxies may be affected by the specific government measures they face, differentiating them from the other firms of the sample (Halioui et al. 2016).

In order to ensure that the sample is representative, the firms included were randomly selected on a proportional basis per market capitalization of the ASE. Taking 2011 as base year, 72 firms were selected, amounting to 35% of the

total population of non-financial firms listed on the ASE in that year. Companies with missing data and companies that were delisted during the same period were excluded from the sample, leading to a final sample of 55 companies with 275 firm year observations.

Since the 2008 financial crisis and onwards, corporate tax avoidance has attracted public attention to calls for tax reform, increased regulation, and transparency (Oats and Tuck 2019). The 2011–2015 period was selected for the study, in view of the impact of the economic recession in Greece. Moreover, several significant facts occurred, such as private sector involvement (PSI) in 2011 and the implementation of capital controls in 2015, which had a severe impact on corporate liquidity.

Tax planning measurement

Tax planning is defined as all actions taken by management to reduce the tax liabilities of a firm, and it includes both legal tax strategies that conform with tax laws and aggressive tax strategies that derive from the ambiguous interpretations of tax laws (Edwards et al. 2016). The tax strategies and practices applied by a company are proprietary information and, therefore, tax researchers examine its tax policy indirectly, using proxies that derive from the financial statements (Lee et al. 2015). These proxies include total difference between book and taxable incomes (BTDs), annual effective tax rates (ETRs), long run cash ETR, discretionary total and permanent BTDs, temporary BTDs, tax shelter and unrecognized tax benefits (Lee et al. 2015). Prior research (Graham et al. 2014) has showed that GAAP ETR and cash taxes paid are valued by top management in their prioritization of tax and accounting goals.

In this study, GAAP ETR measured by tax expense divided by pretax income has been chosen as a proxy for tax management:

$$\text{ETR} = \frac{\text{GAAP Income Tax Expense}}{\text{Pre Tax Income}}$$

Applying ETR as proxy for tax avoidance is effective for several reasons (Halioui et al. 2016): it reflects permanent book tax differences (BTDs), it excludes the effect of temporary BTDs, and it captures the effect of foreign operations for tax planning purposes. A higher ETR reflects less tax aggressiveness and vice versa (Halioui et al. 2016).

However, significant ETR measurement issues arise for firms with negative income or tax refunds, as the ETRs of these companies are distorted, or in cases with relative small values in the denominator, which lead to ETRs of unreasonable magnitudes (Gupta and Newberry 1997). In order to deal with the above issues, the approach of Gupta and Newberry (1997) was followed by setting ETR to: (a) zero for companies with tax refunds, (b) 100% for companies with positive taxes and negative or zero income, and (c) constrained values between 0 and 100%.

Research model

The hypotheses of the study were tested using panel regression with fixed time effects. The estimated regression model employed in the study is presented below:

$$ETR = \beta_0 + \beta_1 fsize_{it} + \beta_2 lever_{it} + \beta_3 liq_{it} + \beta_4 owncon_{it} + \beta_5 afsize_{it} + \beta_6 bsize_{it} + \beta_7 bindep_{it} + \beta_8 ceodual_{it} + \beta_9 year + u_{it}$$

where *ETR:* the effective tax rate of each company; *Fsize:* firm size measured by the logarithm of total assets; *Lever:* leverage, measured by debt to equity ratio; *Liq*: liquidity measured by current assets to current liabilities ratio; *Owncon*: own ownership concentration, measured by the cumulative percentage of shareholders with more than 5% of issued share capital; *Afsize*: auditing firm size, a dummy variable that takes the value 1 if the company is audited by one of the big 4 auditing firms and 0 otherwise; *Bsize:* board size, measured by the number of directors of each board; *Bindep:* board independence, measured by the percentage of independent members of the board; *Ceodual:* chief executive officer duality, a dummy variable that takes the value 1 if the positions of the CEO and the president are held by the same person and 0 otherwise; *Year:* dummies for each year of the research period; *u:* the error term.

The data for the variables of size, liquidity and leverage were extracted from ICAP data base. Data concerning corporate governance variables were manually collected from the annual reports of each company.

The regression model of the study was estimated by STATA software. Based on the results of the Hausman test, the fixed-effects model was chosen over the random effects model (Prob > chi2 = 0.0319 < 0.05). The basic assumptions of the standard error component model are that the regression disturbances are homoskedastic and that no serial correlation is allowed (Baltagi 2005). Modified Wald test for groupwise heteroskedasticity showed the presence of heteroskedasticity (Prob > chi2 = 0.0000) and, therefore, heteroskedasticity robust standard errors, known as Huber White or sandwich estimators, were estimated.

According to Baltagi (2005) cross-sectional dependence is a problem in macro-panels (over 20–30 years) and it is not a problem in panels with few years and a large number of cases (Torres-Reyna 2007). This also applies to serial correlation, which is a problem in macro-panels with long time series and not in micro-panels with few years (Torres-Reyna 2007). In any case, Pesaran's test of cross-sectional independence and Wooldridge test for autocorrelation were estimated and showed no cross-sectional

dependence (pr = 0.8641) and no first-order autocorrelation (Prob > F = 0.2107). Finally, in order to examine whether time fixed effects are needed in the model, a test to see whether dummies for all years are equal to zero was performed. Results showed that time fixed effects are needed and therefore year dummies were retained in the model (Prob > F = 0.0343 < 0.05).

Results

Descriptive statistics

Table 1 illustrates the descriptive statistics of dependent and continuous independent variables for the period 2011–2015.

Average values per year are illustrated in Table 2.

According to the above table, mean ETR for the period amounts to 40.69%, higher than the mean nominal rate of the same period (24%). Average ETRs per year are also higher than the annual nominal tax rate. The financial crisis appears to have impacted significantly the operations of the listed firms on the ASE. More specifically, average leverage for the period was 1.51 and, although it decreased from 2.16 in 2011 to 0.97 in 2012, it followed an increasing trend in 2013 and 2014, indicating the financing of operations with debt. Average liquidity amounted to 2.15 and dropped from 2.32 in 2011 to 2.08 in 2015.

The high value of the effective tax rate (GAAP ETR), above the nominal rate, can be attributed to adverse and volatile conditions of the period of the study (2011–2015). During this period, Greece faced a severe economic crisis and a deep recession. As a result, many companies had operating losses. Following prior research, for the companies with losses and a tax burden (due to deferred taxation or other reasons, such as taxation of capitalized reserves), ETR was set to the maximum value of 1 (100%), which increased mean ETR value. Taxation papers by the European Commission on Aggressive Tax Planning Indicators (European Commission 2017) report for Greece, for 2010–2015, a mean ETR value of 32.6% for domestic groups and a mean ETR value of 37.9% for multinational groups. These values do not vary significantly from the mean ETR value by our study (40.69%).

As far as corporate governance is concerned, on average, board of directors consisted of 8 members, with a minimum number of 5 directors and a maximum number of 13, without significant fluctuations from year to year. On average, 30.72% of the members of the boards were independent, with the maximum percentage amounting to 72.72% and the minimum to zero independent members. Average concentration of the share capital was high (67.83%), confirming the "family" character of most listed companies on the ASE. Finally, 23% of the firm year observations of the sample were audited by one of the big 4 audit firms (59 observations) and CEO duality was observed on 39% of firm year observations (107 observations).

Regression results

Table 3 that follows illustrates the results of panel regression with time fixed effects and robust standard errors for the years 2011–2015.

As shown in the above table, F value indicates that the model used in the study is significant (prob > F = 0.0001). Regression results indicate that firm size and CEO duality had a significantly positive effect on the ETRs of listed on

Table 1 Descriptive statistics for the period 2011–2015. *Source*: Authors' estimations

	ETR	*Fsize*	*Lever*	*Liq*	*Owncon*	*Bsize*	*Bindep*
Mean	0.4069926	4.50e+08	1.517818	2.154182	0.6783011	7.803636	0.3072405
Median	0.2406127	9.76e+07	1.22	1.29	0.7132	7	0.2857143
St. dev.	0.4241883	1.23e+09	7.016889	3.585369	0.1444351	2.109586	0.1037926
Min	0	1867377	−77.01	0.02	0.3313	5	0
Max	1	7.76e+09	66.56	38.6	0.9388	13	0.7272727

Table 2 Average values per year. *Source*: Authors' estimations

Year	*ETR*	*Nominal Tax rate*	*Fsize*	*Lever*	*Liq*	*Owncon*	*Bsize*	*Bindep*
2011	0.4608814	0.20	4.68e+08	2.165273	2.32	0.6744251	7.8	0.3048432
2012	0.3487941	0.20	4.46e+08	0.971636	2.256909	0.6733074	7.781818	0.3054431
2013	0.4591577	0.26	4.37e+08	1.176182	2.068364	0.6770388	7.781818	0.3131181
2014	0.3264169	0.26	4.51e+08	1.836545	2.037636	0.6804172	7.854545	0.3017394
2015	0.4397128	0.29	4.49e+08	1.439455	2.088	0.686317	7.8	0.3110586
Total	0.4069926	0.24	4.50e+08	1.517818	2.154182	0.6783011	7.803636	0.3072405

Table 3 Regression results. *Source*: Authors' estimations

Variable	Coef.	Robust Std. Err.	*t*	*P* > |*t*|
Fsize	0.3980896	0.1972552	2.02**	0.049
Lever	−0.0045912	0.0037931	−1.21	0.231
Liq	0.003294	0.0039761	0.83	0.411
Owncon	−0.4313194	0.5993764	−0.72	0.475
Afsize	0.1232711	0.2686209	0.46	0.648
Bsize	0.070389	0.0686541	1.03	0.310
Bindep	−1.365313	0.7119847	−1.92*	0.060
Ceodual	0.0831531	0.0400437	2.08**	0.043
Year				
2011	0 (base)			
2012	−0.0891727	0.0734086	−1.21	0.230
2013	0.048937	0.0802994	0.61	0.545
2014	−0.0943285	0.0757234	−1.25	0.218
2015	0.0479268	0.0653046	0.73	0.466
_cons	−7.018633	3.706685	−1.89*	0.064
Fixed-effects (within) regression		$F(12,54) = 4.25$ Prob > $F = 0.0001$ *R*-sq: within = 0.0986, between = 0.0013 corr (u_i, Xb) = −0.9431		
Number of obs = 275 Number of groups = 55 Group variable: COMPANY		sigma_u = 0.84925627 sigma_e = 0.36543298 rho = 0.84377073 (fraction of variance due to u_i)		

**Significant at 0.05 level of significance, *significant at 0.10 level of significance

the ASE companies, with a level of significance amounting to 5%. On the other hand, a significantly negative association between ETR and board independence was observed at the 0.10 level of significance. The remaining variables were not found to be significant explanatory factors of the tax planning of listed companies in Greece, during the period of 2011–2015. Results per hypothesis tested are the following:

Board independence (H_1) *Hypothesis not rejected.* The percentage of independent members in the board of directors is a significant explanatory factor of tax planning of firms listed on the ASE and negatively associated with ETRs. This indicates that firms with more independent members on the board have lower effective tax rates and thereby a higher level of tax planning.

Board size (H_2) *Hypothesis rejected.* The number of the members of the board is positively associated with the ETRs, but this relationship is not statistically significant.

CEO duality (H_3) *Hypothesis not rejected.* The assignment of the chairman of the board and chief executive officer roles to the same person is significantly associated with the ETRs. This relationship is positive and indicates that firms with CEO duality have higher ETRs and therefore engage less in tax planning practices.

Auditing firm size (H_4) *Hypothesis rejected.* The type of auditing firm was not found to be significantly associated with the ETRs of the firms of the sample.

Ownership (H_5) *Hypothesis rejected.* Ownership is not significantly associated with the ETRs and does not appear to exert a significant influence on tax planning.

Firm size (H_6) *Hypothesis not rejected.* The size of the firm is a significant explanatory tax avoidance factor of the ETRs of the companies listed on the ASE. This significant positive association indicates that firms that are larger in size have higher ETRs, and, consequently, engage less in tax planning.

Liquidity (H_7) *Hypothesis rejected.* No significant association was identified between ETR and liquidity.

Leverage (H_8) *Hypothesis rejected*. No significant association was identified between ETR and leverage.

Conclusion

This study examined the relationship between tax planning and corporate governance characteristics, controlling for firm specific attributes. For this purpose, the ETRs of

a sample of 55 non-financial companies listed on the ASE for the years 2011 to 2015 were calculated and regressed on board size, board independence, CEO duality, ownership concentration, audit firm size, firm size, leverage and liquidity.

The results of panel regression with fixed time effects showed that the ETR was significantly and positively associated with the characteristics of firm size and CEO duality. This indicates that firms that are larger in size and in which the roles of the chairman of the board and of the chief executive officer are assigned to the same person, have higher ETRs and therefore tend to engage less in tax planning practices. On the other hand, ETR was significantly and negatively associated with board independence, which shows that firms with more independent members on the board have lower effective tax rates and thereby a higher level of tax planning. The remaining corporate governance and firm characteristics were not found to be significantly associated with tax planning.

Future research could include examining the relationship between ETR and more corporate governance attributes, such as the effectiveness of audit committees, management equity incentives, and the overall corporate taxation expertise of the members of the board. In addition, more firm characteristics that could potentially influence tax avoidance and more proxies of tax avoidance, such as book tax differences and cash ETR, could be explored.

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