Family firms and tax aggressiveness in Greece

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Abstract

This dissertation was written as part of the MSc in International Accounting, Auditing and Financial Management at the International Hellenic University.

This study investigates whether family firms are more aggressive in terms of tax planning than non-family firms in Greece, based on a sample of firms listed on the ASE(Athens Stock Exchange) from 2011-2016. It is examined also the effect of companies' borrowing capacity on the level of tax aggressiveness. Also, I analyze the importance of tax aggressiveness in Greece which is a country with a high level of tax avoidance and also I summarize the literature on it focusing on the measurement, the decisive factors and the consequences of tax aggressiveness. In addition, I describe the agency theory in relation to tax avoidance and I examine the role of family ownership structure in tax aggressiveness. Using a sample of 81 Greek listed firms for the six-year period, 2011 to 2016, I find a significant relationship between classification as a family firm and tax aggressiveness, based on one metric, the effective tax rate which captures the actual taxes paid in relation to pre-tax earnings. The family firms in the sample were more tax aggressive than the non-family firms as ETR had a negative sign, identifying a tendency for family firms to pay lower taxes. On the other hand, regarding the second hypothesis, the coefficient of Coverage ratio is positive and this means that the borrowing capacity is negative associated with tax aggressiveness.

Keywords: (Tax aggressiveness, Family firms, Borrowing Capacity, Effective Tax Rate, Greek listed firms, Agency Theory)

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Preface

At this point I would like to thank Dr. Stergios Leventis, as my supervisor, and Dr. Alexandros Sikalidis, as my mentor, for their guidance in the realization of this dissertation. Also, I would like to thank the IHU administration for providing the databases I used to complete this study, as well as all the IHU staff that kindly assisted me during my thesis. Last but not least, I would like to thank my family, colleagues and friends for their help and support during the master period.

CONTENTS

1. Introduction

Corporate taxes represent a very important cost to all kind of businesses and their shareholders as government (federal, state, and local) takes a greater than one-third share of a firm's pre-tax profits. Consequently, undoubtedly, shareholders wish not to pay taxes and try to reduce them using different strategies. Therefore, shareholders as well as companies prefer tax aggressiveness. On the other hand, tax aggressiveness has a negative side as it provokes non-tax costs some of which are created by agency problems.

In this paper, we examine the influence of the family nature of a company on the level of tax aggressiveness under certain circumstances in Greece. In order to research the relationship between family firms in Greece and tax aggressiveness, we will test the following hypothesis: Greek family firms are more tax aggressive than non-family firms. We study the implications of non-tax cost considerations arising from the unique agency conflict in family firms for their tax management activities (Chen, Chen, Cheng and Shevlin, 2010). According to them, tax aggressiveness is the "downward management of taxable income through tax planning activities." These activities include both activities considered legal and illegal (as well as those in the inevitable gray area between the two). Corporate taxes, undoubtedly, represent a significant cost to businesses and their shareholders so actions to decline the tax burden are desirable. On the other hand, we are not able to assume that tax aggressive activities always lead to firm value maximization as there are potential costs related to methods to minimize taxes, such as implementation and transaction costs, possible penalties imposed by the tax authorities and reputation risks, that must be considered (Desai & Dharmapala, 2006; Hanlon & Slemrod, 2009).

We investigate also the relation between borrowing capacity and tax aggressiveness in Greek family firms estimated as a further hypothesis that coverage ratio is positively associated with tax aggressiveness. Prior studies assume that leverage and coverage, which are two solvency ratios and have to do with debt, are inversely related to ETR so they are positive connected with tax aggressiveness.

Earlier studies by Chen & Chu (2005),Crocker & Slemrod (2005) and Desai & Dharmapala (2006) established the bases for the relationship between tax aggressiveness and agency questions. Because of the fact that managers have the advantage to gather a lot of information on the extent of legally acceptable reductions of income taxes, they can also enhance the size of tax deductions through illegal measures that avoid taxes. Managers' inducements to expanse the limits of tax rules depend on the nature of their compensation mechanisms and the potential personal penalties that may be imposed on them.

In this study, we analyse particularly Greece for the following reasons. Firstly, the ownership of Greek listed firms is highly concentrated and more specifically family – controlled, while the ownership of the Anglo-Saxon (US, UK) listed firms is widely dispersed. According to La Porta, Lopez De Silanes, & Shleifer(1999), 65% of the 20 largest Greek companies are dominated by a few families, while 30% are controlled by the government and the remaining 5% are widely dispersed. On the other hand, 80% of the 20 largest US companies as well as 90% of the 20 largest UK companies have no controlling shareholder. Moreover, Greece has one of the largest numbers of SMEs (Small and medium-sized enterprises) businesses within the EU and most of them are family businesses (Spyros Vassiliadis and Achilleas Vassiliadis / Procedia Economics and Finance 9 (2014) 242 – 247). So the Greek market is appropriate so as to be examined family firms where ownership and control are not separated on the level of tax aggressiveness. In addition, according to Kapopoulos and Lazaretou (2007), the Greek economy has currently become more progressive and the financial system is less market-based than the E.E. average. Even though the difficult circumstances, for 2015, Greece is the 15th largest economy in the 28-member European Union. Greece is also the 46th largest economy in the world (World Bank, OECD, 2016). Furthermore, countries, like Greece, depends their macroeconomics and budgetary objectives on the decline of tax avoidance. We take into account the structure and function of the Greek tax system in accordance with the level of corporate tax rate. Many international institutions like International Monetary Fund (IMF) have detected tax avoidance in Greece. According to several studies, tax evasion in our country is substantially higher than in other developed countries. Bronchi C. (2001), characterizes the Greek tax system

as a complicated and non-transparent system, with a lack of strong tax imposition. It is also notorious for the corruption of state tax collectors and the complexity of Greek tax law. There is a huge debate about the stability and the competitiveness of corporate tax in Greece. In contrast to to other tax systems, taxes in Greece change regularly. In 2010 the corporate tax was 24% and 20% for 2011 and 2012 while in 2013 a new tax law set the corporate tax law at 26%. As a result, this instability and all these unique characteristics of Greek tax system make this research in Greece worthy.

This study and its expected outcomes contribute to the existing accounting and finance literature in Greece in several ways. First of all, although a few studies have been conducted concerning mainly US and UK data about the relation between corporate tax aggressiveness and family ownership, to our point of knowledge, there is no other study in Greece that examines this issue. Consequently, this fact will lead to the increase of knowledge regarding that issue and it will add to more new empirical evidence about this connection within a small European capital market such as Greece. Secondly, our evidence provides an essential step toward a better perceptive of the effect of firms' ownership structures in Greece, illustrating whether agency conflicts directly influence companies' tax aggressiveness. Thirdly, our research, focus ,except from the relation between family ownership and tax aggressiveness, on another important feature, borrowing capacity, which influences tax avoidance and it is not used in a wide extent in other studies. Lastly, the results of this survey could be useful for tax policymakers who seek to identify the companies in which the risk of corporate tax aggressiveness is higher.

The rest of the project proceeds as follows. In the next chapter we review related literature and the hypothesis development. The research design is explained in the third section while the main results and the data analysis are reported in the fourth section. Finally, the fifth section completes the study.

2. Literature Review and Hypothesis Development

In this part, I summarize the published work on tax aggressiveness. I also examine the relation between agency theory and tax aggressiveness. Subsequently, I develop my main hypothesis making the connection between family firms and tax aggressiveness as well as my supplementary hypothesis between firms' borrowing capacity and tax aggressiveness.

2.1 Tax Aggressiveness

Tax aggressiveness has been examined by a number of researchers (Dunbar, Higgins, Phillips, & Plesko, 2010). In literature it is easy to find many words that try to represent with different words tax behaviour. Some of these terms are tax aggressiveness, tax avoidance, tax evasion, etc. As mentioned, Chen et al. (2010) define tax aggressiveness as the use of tax planning actions for downward management of taxable income. In turn**,** Frischmann, Shevlin and Wilson (2008) define it as engaging in important tax positions with relatively uncertain supporting facts. Another definition is given by Lisowsky, Robinson, Schmidt (2010), as a set of tax avoidance activities falling along a continuum from legal tax planning to offensive use of offshore tax shelters. Dyreng et al. 2008 argue that tax avoidance discloses all the dealing that have an impact on the company's tax obligations. Specifically, they define tax avoidance as anything that declines the company's effective tax rate for a reasonable period of time. According to Chen et al (2010), companies determine the level of tax aggressiveness putting at risk the benefits over the costs in order to manipulate taxes. The profits contain greater savings from taxes, while in contrast the expenses include those for implementation (time and effort, transaction costs), the possible penalties from the tax authorities as well as the possible reputation cost and decline in stock price in reaction to news of tax avoidance. Rego (2003) suggests that corporations which regularly present low tax payments have higher cash flows. There is a lack of revealing in the financial statements regarding taxable income and the exact amount paid or deferred to be paid in the annual profits (Hanlon M., Heitzman S., 2010)**.** In addition, Hanlon & Slemrod (2009), analyzing the relation between stock prices and news of firms' tax aggressiveness

(involvement in tax shelters), discover that on average the stock price diminishes when there is news about participation in tax shelters, but the reaction is small related to other infractions.

2.1.1. Determinants of tax aggressiveness

Many papers study the connection between firm characteristics and tax aggressiveness. Gupta and Newberry (1997) propose that the effective tax rates are combined with the entity's capital structure and assets. Stickney and McGee (1982) argue that size and foreign operations are less essential decisive factors than capital intensity, debt, and financing activities that create alterations in the effective tax rates**.** Rego (2003) supports that economies of scale exist for tax avoidance, which means that a company bigger in size should have higher effective tax rates than a smaller one and firms with higher profitability would have lower effective tax rates from companies with lower profits. Slemrod (2004) submits that the motives of the managers to involve tax evasion are influenced by the relationship between the shareholders of a company and the manager responsible for the company's taxes and by the way the managers' agreement will adjust as a reaction to the policies forced by the tax authorities. Desai and Dharmapala (2006) show a negative relationship between managers' incentive compensation and tax aggressiveness measures. It is proved by them that higher incentives are related to lower levels of tax sheltering. Moreover, one crucial aspect that affects the phenomenon of tax aggressiveness is ownership structure. Desai and Dharmapala (2006) suggest that ownership structure can adjust as a response to problems that have to do with wider governance issues.

2.1.2 The effects of tax aggressiveness

The potential ramifications of tax aggressiveness can be various, both positive and negative. The most obvious advantage of avoiding paying taxes is the money entities save. As a result, high cash flows could be generated for the companies and consequently new investments could be made and firms' value could be increased. Furthermore, these savings are advantageous for both shareholders and managers who can benefit from it since they are rewarded through bonuses that are connected with

the tax management of the firm. In reality, the managers' reimbursements are motivations of tax avoidance practices in most cases. Undoubtedly, several studies have documented the links between tax aggressiveness and managers' inducements looking from different prospects. For instance, Phillips (2003) found that rewarding managers based on after-tax results is combined with lower effective tax rate (ETRs). In the same way, Slemrod (2004) established a model for the link between tax aggressiveness and manager remuneration. More empirically, Rego and Wilson (2012) reported a positive relationship between tax aggressive planning and managers. Furthermore, Robinson, Sikes, and Weaver (2010) documented that firms with tax departments treated as profit centres pay fewer taxes. This means that tax managers are compensated for tax avoidance. On the other hand, a study by Armstrong, Blouin, and Larcker (2012) proved no relationship between tax directors' compensations and tax avoidance. The authors concluded that tax matters are affected more by the top management team than the tax administrator as an individual. These aforementioned studies demonstrate that managers are being reimbursed for tax planning based on the tax savings from the taxes evaded. However, it has been supported that the nature of the compensation contracts between the fund providers and professional managers seems insufficient. This approach of personal interest of managers in tax planning was further searched in Desai and Dharmapala (2006). The authors supported that managers having high motives tend to avert more taxes without resources' diversion in the better governed companies.

Another potential gain from tax aggressiveness for the decision makers is rent seeking. Rent seeking deals with the maximization of activities which decision makers try to achieve at the cost of shareholders (Chen et al, 2010). Desai and Dharmapala (2004, 2006) also show the association between rent-seeking and tax avoidance. According to them, tax avoidance activities usually consist of very complex transactions that are designed to conceal the underlying intent and to prevent detection by the IRS. The obscure nature of such tax aggressiveness activities makes it easier for managers and family owners to disguise rent extraction activities. Crocker and Slemrod (2005) argue that the effect of tax aggressiveness depends on whether the corporation or the management is punished and the extent to which the firm can outweigh any punishment with the salary of the tax officer.

In addition, shareholders and managers are influenced by tax aggressiveness. If the corporation avoids taxes by investing in R & D, then implied taxes could have a negative effect on shareholders' wealth (Berger, 1993). If stockholders request from the decision makers to have higher cash flows, then if managers have the suitable motive, they decide for the evasion of taxes. If managers use the best solution to avoid taxes and investors have a reasonable opinion about the degree and benefit from tax avoidance, then the inevitable consequence is that no relation is about to arise between tax avoidance and firm value (Hanlon and Heitzman, 2010). An additional disadvantage is the possible discount in the price that is imposed by other stockholders if they realize that decision makers use tax aggressiveness to distract rents (Desai and Dharmapala, 2006**).** Finally, the firm's existence is influenced by the reputational risks of tax avoidance. According to Christensen and Murphy (2004), tax aggressiveness doubts the rightfulness of the corporation in the society. The public expects from a lawful corporation to be corporate responsible in ways that allow the firm to contribute to the prosperity of the society where it operates.

Concluding, according to Annual et al (2014), while the firm and shareholders gain by tax aggressiveness in form of tax savings, the possible non-tax costs combined with, they may also be huge depending particularly on the structure of corporate ownership and control. These non-tax costs include loss of efficiency in internal control, agency costs of rent extraction, potential penalty, possible price discount and corruption to organizational legality.

2.2. Agency Theory and Tax Aggressiveness

Various studies have empirically tested aspects of tax aggressiveness associated with questions involving agency conflict (Scholes, Wolfson, Erickson, Maydew, and Shevlin, 2005; Desai and Dharmapala, 2004, 2006**)**. Agency conflict is generally defined in line with the concept presented by Jensen & Meckling (1976), according to which the action that maximizes the utility of managers (agents) does not necessarily maximize the utility of stockholders (principals). Therefore, it is possible the decisions made by agents to be different than those considered perfect by the principals and as a consequence conflicts are caused between the two groups. Lanis & Richardson (2011) examine the

repercussion of the composition of the board of directors and tax aggressiveness and find that the involvement of a larger number of independent directors decreases the probability of aggressive tax planning. Chen et al. (2010) study the relationship between tax aggressiveness and agency conflicts present in family firms and non-family firms. Family firms are defined as those in which member of the establishing family continue to hold top and senior management positions, are members of the board of directors or hold appropriate stakes in the controlling block. The reason to deal with these two types of corporations separately is that according to the authors, the presence of members of the founding family in the ownership structure indicates a greater agency conflict between majority and minority shareholders and a lesser one between owners and managers in comparison to non-family firms. The nature and the intensity of agency conflicts can affect the level of tax aggressiveness.

2.3. Family Firms and Tax Aggressiveness

According to Bagnoli, Liu & Watts (2011), family firms are surprisingly frequent. Indeed, in Europe and Asia family firms are at least as common as non-family firms (La Porta, Lopez-de-Silanes, & Shleifer, 1999). Chen et al. (2010) define family firms as those "where members of the founding family continue to hold positions in top management, are on the board, or are blockholders of the company." They argue that the presence of the founding family leads to a different ownership structure than that in other companies. The typically larger equity holding of family owners provides greater gains from the savings obtained through tax avoidance actions, including transactions with related parties (Chen et al., 2010). Therefore, family firms should have higher incentives for tax aggressiveness. However, the costs are also possibly higher for family owners, because of the greater loss from the decline of the stock price caused by negative perceptions of tax aggressiveness and their less diversified wealth (Chen et al., 2010).

In addition, several literature mentions that family business affronts a reputation issue. Isakov and Weisskopf (2015) consider the decision making of a family firm will be influenced by the reputation they have as an asset and want to protect. Casson (1999) underlines that family owners have strong incentives to protect their family name, because they believe that firms must be handed down to their descendants rather than

be wasted as a fortune on theirs lifetime. These strong connections and thoughts are making families more preoccupied with their reputation risk from being part of a tax evasion scandal and facing with accusations from the tax authorities.

Overall, although the advantages of tax aggressiveness are expected to be higher for family owners than for managers in non-family firms, the repercussions are likely higher too. Consequently, It is not obvious whether family firms will be more or less tax aggressive than non-family firms. Therefore, in order to study the relationship between family ownership and tax aggressiveness, I test the following hypothesis:

Hypothesis 1: Greek family firms are more tax aggressive than non-family firms.

2.4. Borrowing capacity and Tax Aggressiveness

According to previous studies, debt can influence a company's level of tax aggressiveness. We express borrowing capacity by employing the financial expenses coverage ratio (Alexandros Sikalidis & Stergios Leventis , 2016). Coverage ratio is a solvency ratio that measures a company's ability to cover its debt-related payments or in other words to meet its financial obligations. The evidence regarding the relationship between debt and tax avoidance is mixed. Existing literature (Rego and Wilson, 2012) on the one hand supports that corporations with high leverage or coverage ratios are associated with lower effective tax rates, which is consistent with higher tax avoidance. On the other hand, Wilson (2009) and Lisowsky (2010) provide evidence that tax shelter firms are connected with lower coverage ratios. Stickney and McGee (1982) also argue that Lev and Cov are positively correlated with tax avoidance. So, it is an empirical question whether firms with a higher coverage ratio are more or less tax aggressive. Hence, we formulate our hypothesis as follows in order to examine this relationship:

Hypothesis 2 : Coverage ratio is inversely related to ETR so it is positively correlated with tax aggressiveness.

3. Methodology Research-Research Design

In this section, I indicate the research method for this dissertation. It consists of the samples, the variables' definitions and explanations for their choice.

3.1 Sample selection

The sample used in this dissertation consists of public companies listed in the Athens Stock Exchange (ASE) during the period 2011-2016. The initial sample that includes all non-financial companies which are listed in ASE through the period 2011-2016 concludes 192 firms. In the developing of the final sample, we exclude companies from the Alternative Market and from the banking, insurance and brokerage sector, since their unique characteristics will not make them appropriate for comparison as well as companies with missing data that are necessary for the development of our variables. Also, as I examine mainly the variable family in comparison with tax aggressiveness, all companies of the initial sample which do not have family ownership are precluded from my final sample. Consequently, my final sample focuses on 81 non-financial family companies.

Following prior research (e.g., Anderson and Reeb, 2003; Anderson, Mansi, and Reeb, 2003; Chen et al, 2010), family firms refer to those in which founders or their family members (by either blood or marriage) are key executives, directors, or blockholders. In order to identify family firms, we search for data regarding the voting rights which are available from the Athens Stock Exchange. Consistent with Faccio and Lang (2002), family ownership (FAM) is measured as the proportion of the company's stocks directly or indirectly owned by a family, an individual or an unlisted firm. All the selected family firms are controlled by the largest shareholder who holds at least 10 percentage of equity stakes or voting rights, in order to secure that a family controls the specific firm.

Financial information on all the necessary variables is collected from Amadeus Database. Furthermore, information regarding family ownership structure is collected from the ASE's website (www.helex.gr).

3.2. Dependent Variable and Tax aggressiveness measure

In this study, the dependent variable is corporate tax aggressiveness. I will use a tax aggressiveness measure in order to triangulate my results. There is an excess of measures of corporate tax avoidance used in bibliography, such as the effective tax rate, cash effective tax rate, book tax difference measures, discretionary measures, unrecognized tax benefits etc. For my research, I use the Effective Tax Rate ($ETR_{i,t)}$ as a measurement of tax aggressiveness. This measure reflects aggressive tax planning through permanent book-tax differences and firms which are more tax aggressive have lower ETR than other firms (Chen et al, 2010). The effective tax rate is the average rate at which a company is taxed and demonstrates the average rate at which its pre-tax profits are taxed. According to IAS 12, Income Tax, it is calculated by dividing total income tax expense to the firm's pre-tax income. Particularly, total income tax expense is a sum of current tax and deferred tax. If two corporations also have the same pre-tax income but they are paying different taxes, this means that the company which pays less tax will be considered more effective in tax aggressiveness.

3.3 Independent Variable

It is believed that certain ownership structures have an outcome on tax avoidance. Specifically, I investigate family ownership structure (Family) and it is calculated as the rate of stocks owned by the founding family to the total shares of the company. According to Bauweraerts (2013), in order characterize a corporation as a family firm, it needs to fulfil certain criteria. For our study the criteria will be firstly the proportion of company's stocks directly or indirectly owned by a family must be at least 10% of equity stakes or voting rights and secondly the presence in the management of the firm.

3.4. Control Variables

Previous studies have shown that control variables like the size of the company, profits, debt, capital intensity, growth opportunities and liquidity can affect the

company's tax burden. COV, the coverage ratio, is a measure of a company's ability to meet its financial obligations to its lenders. More specifically, the interest coverage ratio is used to determine how easily a corporation can pay their interest expenses on outstanding debt and is defined as a company's earnings before interest and taxes (EBIT) divided by interest expense. LEV, the leverage, is measured as long term debt to total assets. COV and LEV are two primary solvency ratios which are used to evaluate the relative amount of debt in the company's capital structure and the adequacy of earnings and cash flow to cover interest expense and other fixed charges as they come due. ROA, the return on assets, is a ratio that shows the profitability of a company relatively to its total assets and is measured as operating income scaled by lagged assets (Chen et al, 2010). Tian and Estrin (2008) underline that ROA is a better measurement of profitability than return on sales as the periodic outcomes of sales can be important for the results' analysis. Another control variable is PPE, the plant, property and equipment scaled by lagged assets as capital intensive firms are affected more by the different treatments of depreciation expense for tax and financial reporting purposes (Chen et al, 2010). Furthermore, we include the variable INTANG, the intangible assets scaled by lagged assets to control for the differential book and tax treatments of intangible assets (Chen et al, 2010).Also, growth opportunities are measured by MB, the market-to-book ratio, which is calculated as market value of equity to book value of equity (Chen et al, 2010). SIZE is a proxy for firm size and is calculated either as the natural logarithm of a company's total assets or the natural logarithm of the market value of equity (Chen et al, 2010). For the purpose of our research, we calculate the size of each firm as market capitalization which is a synonym of market value of equity. Market capitalization is used to measure a company's size and helps investors diversify their investments across companies of different sizes and different levels of risk**.** Rego (2003) suggests that larger firms are more complicated in nature and are able to achieve economies of scale in tax avoidance to diminish their tax burden. CASH is the cash-to-asset ratio and is a proxy for free cash flow. The cash-to-asset ratio is used to measure a firm's liquidity or its ability to pay its short-term obligations. We include BIG4 as dummy variable; 1 if the auditor is one of the big 4 companies and 0 otherwise. According to earlier studies (e.g. Chi et al. 2011), Big 4 auditors are more likely to detect and record material errors and

inconsistencies in firms' financial statements. In addition, lower audit quality is related with a greater level of "accounting flexibility". Hence, a dummy variable, BIG4, is included in our survey to examine the effect of auditor quality in tax aggressiveness. Finally, dummies are involved to control for year fixed effects in corporate tax aggressiveness activities in Greece over the 2011–2016 financial years. The Year dummies are 1 if the year falls within a specific year**,** otherwise 0.

3.5 Presentation of Models

To examine the association between the family ownership structure and tax aggressiveness, we used a regression following mainly the model of Chen et al (2010) in order to perform an analysis regarding various parameters included in our model. We estimate the following regression model :

$$TaxAgg_{i\,t} = \alpha_i + \beta_1 FAMILY_{i,t} + \beta_2 ROA_{i,t} + \beta_3 LEV_{i,t} + \beta_4 PPE_{i,t} + \beta_5 INTANG_{i,t} + \beta_6 CASH_{i,t} + \beta_7 MB_{i,t-1} + \beta_8 SIZE_{i,t-1} + \beta_9 BIG4_t + \text{year dummies} + \varepsilon_{i,t} \quad (1)$$

The subscripts i and t denote firms and year respectively; α is the constant term, β1 to β9 are slopes and ε is the disturbance term of the model ; TaxAgg is the tax aggressiveness measure as discussed above

In addition, in order to analyze our second hypothesis and to test the effects of firms' borrowing capacity on tax aggressiveness we are employing the following supplementary regression model :

$$TaxAgg_{i\,t} = \alpha_i + \beta_1 FAMILY_{i,t} + \beta_2 COV + \beta_3 ROA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 PPE_{i,t} + \beta_6 INTANG_{i,t} + \beta_7 CASH_{i,t} + \beta_8 MB_{i,t-1} + \beta_9 SIZE_{i,t-1} + \beta_{10} BIG4_t + \text{year dummies} + \varepsilon_{i,t} \quad (2)$$

We apply our linear regressions to panel data for the suitable presentation of our data. Panel data are using both time series and cross-sectional elements. So we will include information across both time and space. This is essential because panel data contain observations of multiple phenomena obtained over multiple time periods for

the same firms or individuals. Brooks (2014) inform us about several advantages that panel data provide us. Firstly, it is easier to analyze a broader range of issues and be able to deal with more complex problems rather than would be possible with time series or cross-sectional alone. Secondly, we would face problems if we need to examine how variables, or the relationships between them, change over time, using either series data or cross sectional data. By using pure time series data we would often require a long run of data nothing more than to get a sufficient number of observations to be able to handle significant hypothesis tests. So, combining cross-sectional and time series data, we can increase the number of degrees of freedom, and therefore the force of the test, by using information on the behavior of a large number of entities at the same time. The extra variation presented by combining the data in this way can also help to decrease loss from the problems of multicollinearity that may occurs if time series are utilized separately. Thirdly, by designing the model in a suitable way, we can eradicate the impact of certain forms of omitted variables bias in regression results. Taking everything into consideration, it is logical to decide to use panel data for 81 entities during a six year period from 2011 to 2016. The method we will use for the panel analysis is the Ordinary Least Squares (OLS) method.

4. Empirical results

In this section, we present our findings of the empirical analysis (including descriptive statistics, Spearman correlations and regression results) and then we explain them.

4.1 Empirical Analysis

At the beginning of the empirical analysis, the descriptive statistics of our variables are presented below in Table 1.

Table 1: Summary of Descriptive Statistics

Variable	Mean	Median	Minimum	Maximum	St.Deviation	Skewness	Kurtosis
ETR	0.134764	0.090244	-38.01735	38.27907	3.240325	1.053070	109.6818
FAM	0.573490	0.607600	0.131650	0.956337	0.198877	-0.291232	1.959105
COV	5.457588	1.437789	-229.8000	177.2857	23.29719	2.097229	47.46183
ROA	-0.024753	-0.019300	-0.359800	0.260400	0.074504	-0.918543	6.358850
LEV	0.201274	0.166124	-0.157485	1.265189	0.172971	1.740694	8.618617
PPE	0.426835	0.421546	0.006321	0.932462	0.194070	0.235885	2.472639
CASH	0.293611	0.117062	0.000285	4.175076	0.523800	4.142674	24.24244
INTANG	0.040733	0.007524	0.0000	0.692245	0.075887	3.318095	18.66414
MB	1.987216	0.370000	-5.720000	587.1300	26.75401	21.64869	473.7582
SIZE	90.80828	9.179000	0.0000	1767.433	269.9074	4.197296	21.05028
Dummy Variable							
BIG4	0.138144	0.000000	0.000000	1.000000	0.345408	2.097401	5.399093

ETR, the effective tax rate; it is a tax aggressiveness measure as mentioned above; FAM, family ownership; COV, the coverage ratio, is measured as the EBITDA over interest paid; ROA, net income to total assets ratio; LEV, long-term debt to total assets ratio; PPE, the plant, property and equipment scaled by lagged assets; CASH, cash-to-asset ratio; INTANG, the intangible assets scaled by lagged assets; MB, market to book value ratio; SIZE, the natural logarithm of the market value of equity; BIG4, dummy variable (1 if a firm is audited by Big 4 auditors; 0 otherwise).

Number of observations: 485; Period : 2011-2016

The analysis of Table 1 indicates that the mean value of the dependent variable (ETR) is 0.134764 and the standard deviation is 3.240. Also, ETR ranges between -38.017 and 38.279. The mean (standard deviation) of the independent variable FAM is 0.57(0.20) as well as the mean (standard deviation) of COV is 5.46(23.30). Furthermore, the mean values (standard deviations) of control variables ROA, LEV, PPE, CASH, INTANG, MB, SIZE and the mean value (standard deviation) of the dummy BIG4 are -0.02 (0.07), 0.20 (0.17), 0.43 (0.19),0.29 (0.52), 0.041 (0.076), 1.98 (26.75), 90.81 (269.90) and 0.14 (0.35) respectively. Finally, ROA ranges between -0.3598 and 0.2604, LEV ranges between -0.1574 and 1.265, PPE ranges between 0.006321 and 0.932, CASH ranges between 0.00029 and 4.175, INTANG ranges between 0.0000 and 0.69, MB ranges between -5.720 and 587.13 and SIZE ranges between 0.0000 and 1767.43.

The next step of our empirical analysis includes the estimation of the correlation coefficients between the variables. Our findings are presented in the Table 2 below.

Table 2: Correlations

	ETR	FAM	COV	ROA	LEV	BIG4	PPE	MB	SIZE	INTANG	CASH
ETR	1.000000										
FAM	-0.005695	1.000000									
COV	0.009273	0.196237	1.000000								
ROA	0.011084	-0.026907	0.394243	1.000000							
LEV	0.006688	0.082370	-0.128154	-0.038094	1.000000						
BIG4	-0.063951	0.014415	0.110934	0.038788	0.039104	1.000000					
PPE	-0.031395	0.193356	-0.059396	-0.022616	0.278768	0.010031	1.000000				
MB	0.018275	-0.022143	-0.008275	-0.058877	0.005586	-0.015291	-0.038490	1.000000			
SIZE	-0.080607	-0.261693	0.156193	0.343252	0.025146	0.304023	-0.043488	-0.009367	1.000000		
INTANG	-0.069992	-0.208857	-0.020747	-0.067026	0.023411	0.029216	-0.335992	-0.022576	0.117679	1.000000	
CASH	-0.021713	0.066671	0.373575	0.373184	-0.122902	0.076423	-0.013750	-0.019773	0.354638	-0.065844	1.000000

ETR, the effective tax rate; it is a tax aggressiveness measure as mentioned above; FAM, family ownership; COV, the coverage ratio, is measured as the EBITDA over interest paid; ROA, net income to total assets ratio; LEV, long-term debt to total assets ratio; PPE, the plant, property and equipment scaled by lagged assets; CASH, cash-to-asset ratio; INTANG, the intangible assets scaled by lagged assets; MB, market to book value ratio; SIZE, the natural logarithm of the market value of equity; BIG4, dummy variable;

Table 2 shows the correlation coefficient between the variables in the model. The correlation is according to Spearman's correlation coefficient. An examination of table 2 shows a negative connection between FAMILY and ETR. Specifically, the correlation coefficient between the variables FAM and ETR is equal to -0.005695. Therefore, a positive (negative) alteration of one variable by one unit will cause a negative (positive) alteration of the other variable by 0.005 units. In addition, the correlation coefficient between ETR and COV is equal to 0.009273 which shows a positive relationship between these two variables. An increase (decrease) of one variable by one unit will cause a rise (decline) of the other by 0.0092 units. Also, FAM and COV are positively related since their correlation coefficient is equal to 0.196237. Hence, a positive (negative) alteration of one variable by one unit will cause a positive (negative) alteration of the other variable by 0.20 units. Moreover, ETR is negative associated with the control variables BIG4, CASH, INTANG, PPE and SIZE. On the other hand, the dependent variable ETR is positive correlated with LEV, MB and ROA.

The third stage of our empirical analysis presents the results of the regressions. First, model (1), in which ETR is the dependent variable and FAM is the explanatory variable (as well as the rest of the variables mentioned in section three), is estimated. The coefficients are estimated with the ordinary least squares method (OLS) as demonstrated in Table 3 below.

Table 3: OLS Regression Results (1)

Dependent Variable : ETR Method : Panel Least Squares				
Variable	**Coefficient**	**Std. Error**	**t-Statistic(p-value)**	**Prob**
FAM	-4.575969	2.117442	-2.161083**	0.0313
ROA	0.877421	1.458544	0.601573**	0.0478
LEV	0.116865	0.736131	0.158756	0.8739
PPE	4.173738	2.915402	1.431617	0.1530
CASH	-0.132205	0.325104	-0.406656	0.6845
INTANG	0.052650	4.347152	0.012111	0.9903
MB	0.004582	0.000672	6.817789***	0.0000
SIZE	0.002952	0.002498	1.181671	0.2381
BIG4	0.363500	0.053239	6.827727***	0.0000
C	0.851721	1.815534	0.469130	0.6392
Year Dummies		Yes		
R-squared	0.210323	Mean dependent var	0.134764	
Adjusted R-squared	0.027472	S.D. dependent var	3.240325	
S.E. of regression	3.195506	Akaike info criterion	5.330410	
Sum squared resid	4013.025	Schwarz criterion	6.124104	
Log likelihood	-1200.624	Hannan-Quinn criter.	5.642258	
F-statistic	1.150242	Durbin-Watson stat	2.873709	
Prob(F-statistic)	0.185064			

Number of observations: 485; Period : 2011-2016; FAM, family ownership; ROA, net income to total assets ratio; LEV, long-term debt to total assets ratio; PPE, the plant, property and equipment scaled by lagged assets; CASH, cash-to-asset ratio; INTANG, the intangible assets scaled by lagged assets; MB, market to book value ratio; SIZE, the natural logarithm of the market value of equity; BIG4, dummy variable; year dummies

***, **, * Indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively

As we can notice from the table above variable FAMILY has coefficient -4.575969 and probability of 0.0313. Consequently, the coefficient of the independent variable FAM is statistically significant at the 5% level since the p-value of its coefficient is less than 0.05. In addition, we can conclude that as the Family variable is statistically significant, the characteristic of being a family firm has a relationship with tax aggressiveness. A positive coefficient when using the dependent variable ETR will show that family firms are less aggressive because it will indicate they pay a higher effective

tax rate in relation to non-family firms, while a negative coefficient with the same dependent variable will show they are more aggressive as they pay a lower effective tax rate. The negative sign of the coefficient shows that family firms tend to practice more aggressive tax planning than non-family firms according to the ETR indicator. Also, according to Chen et al (2010), firms which are more tax aggressive have lower ETR than other firms. In our research, the coefficient of FAM is negative, as we said above, and as a result it is expected that this variable will have a negative impact on the dependent variable of the model. Thus, an increase (decrease) of this variable (FAM) will cause a decrease (increase) to the depended variable ETR. Moreover, as the ETR increases (declines), tax aggressiveness of the firm declines (increases) accordingly. Furthermore, it is observed that the coefficient of the control variable ROA is positive and statistically significant at the 5% level as the p-value(0.0478) of its coefficient is less than 0.05 and therefore, it is expected a positive relationship between these variables (ROA, ETR). As a consequence, as ETR increases, firms become less tax aggressive with the increase of the independent variable ROA. In addition, the coefficients of the control variables MB and BIG4 are positive and statistically significant at the 1% level and thus we can underline a positive relationship between these variables (MB, ETR) & (BIG4, ETR). Consequently, tax aggressiveness decreases with the increase of market to book value ratio and with an increase in a Big 4 auditor engagement. We also notice that the coefficients of the independent control variables CASH, INTANG, LEV, PPE and SIZE are not statistically significant at the 5% level and as a consequence a possible change of their values will not cause any effect on the dependent variable ETR. At this point, it is worth mentioning that if we exclude these variables from the model (since they are not statistically significant) and re-estimate the coefficients of the remaining variables, the latter will not be statistically significant at the 5% level. We can assume that there is an interior relationship between all the variables which provides a path for further research. Finally, we can observe from our regression analysis that R-squared (R^2) is 0.210323(21%) and its explanation will be presented in the next part.

The final step of our empirical analysis includes the estimation of the coefficients of model (2) which includes additionally the variable COV. Again, the coefficients of the

model were estimated with the ordinary least squares method (OLS) and the results are presented in Table 4 below.

Table 4: OLS Regression Results (2)

Dependent Variable : ETR Method : Panel Least Squares				
Variable	**Coefficient**	**Std. Error**	**t-Statistic(p-value)**	**Prob**
FAM	-4.577269	2.116921	-2.162229**	0.0312
COV	0.869002	0.003436	0.252869***	0.0005
ROA	0.821575	1.528541	0.537490*	0.0812
LEV	0.113561	0.735070	0.154491	0.8773
BIG4	0.364104	0.054401	6.692936***	0.0000
PPE	4.181473	2.911867	1.436011	0.1518
MB	0.004580	0.000668	6.856622***	0.0000
SIZE	0.002938	0.002540	1.156499	0.2482
INTANG	-0.029048	4.466410	-0.006504	0.9948
CASH	-0.125639	0.348806	-0.360196	0.7189
C	0.846394	1.805739	0.468724	0.6395
Year Dummies		Yes		
R-squared	0.210334	Mean dependent var	0.134764	
Adjusted R-squared	0.025004	S.D. dependent var	3.240325	
S.E. of regression	3.199558	Akaike info criterion	5.334521	
Sum squared resid	4012.971	Schwarz criterion	6.136842	
Log likelihood	-1200.621	Hannan-Quinn criter.	5.649758	
F-statistic	1.134916	Durbin-Watson stat	2.873452	
Prob(F-statistic)	0.207422			

FAM, family ownership; COV, coverage ratio; ROA, net income to total assets ratio; LEV, long-term debt to total assets ratio; PPE, the plant, property and equipment scaled by lagged assets; CASH, cash-to-asset ratio; INTANG, the intangible assets scaled by lagged assets; MB, market to book value ratio; SIZE, the natural logarithm of the market value of equity; BIG4, dummy variable; year dummies

***, **, * Indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively,

Table 4 indicates that the coefficient of the explanatory variable FAM is negative and statistically significant at the 5% level, which leads us to consider that the relationship between FAM and ETR is negative. This fact justifies the results of the first regression. Furthermore, according to the findings of the second regression we can deduct that the coefficients of the independent variable COV is positive and statistically

significant at the 1% level since the p-value of its coefficient is 0.0005 and as a result we expect that this variable will have a positive impact on the dependent variable ETR. More accurately, a positive (negative) alteration of its value will cause a positive (negative) alteration of the dependent variable ETR and consequently an effect on tax aggressiveness. In addition, table 4 shows that the coefficient of the control variable ROA is statistically significant at the 10% level while the coefficients of BIG4 and MB are statistically significant at the 1% level. Specifically, the coefficient of the three control variable is positive and this means that an increase (decrease) of the variable will cause a rise (decline) of the dependent variable's value. Finally, according to the results of the second model, LEV, PPE, SIZE, INTANG and CASH are not statistically significant at the 5% level. Hence, a change of these variables will not cause a statistically significant change of the dependent variable. However, it should be underlined that these variables are not excluded from the model (although they are not statistically significant) because we assume that there is an endogenous relationship between all the variables, as mentioned previously. Lastly, it is underlined in our second regression model that R-squared (R2) is 0.210334(21%), a number very close to R-squared of the first regression.

4.2 Analysis of Results

The empirical analysis of Table 1 shows that the mean value of the FAM variable is 0.57 which indicates that 57% of a random Greek listed firm is expected to belong to a family. With the ETR average at 13% as we said above this means that the average is smaller in contrast with the average corporate tax rate (24.44 %) during this period. As a consequence, in average Greek listed companies pay less than the average rate. In addition, we notice from our sample that some companies have ETR=0 or a price very close to zero. This means that either these companies have experienced managers and consultants who are experts in tax avoidance techniques or that these firms avoid taxes. In addition, the mean of BIG4 is equal to 0.14, indicating that a percentage of 14% of Greek listed firms are audited by a Big 4 company. So, the aforementioned data reflect the controlling existence of family ownership, suggesting that the vast majority of listed firms in Greece have family investors.

The examination of Table 2 illustrates that there are some particularly important correlations between the variables. Specifically, the correlation coefficient between the independent variable FAM and the dependent variable ETR is -0.005695, suggesting that an 1% increase in a firm's family ownership will cause an -0.0057 decrease in the Effective Tax rate which means that tax aggressiveness increases. As a consequence, this indicates that firms with family ownership are more tax aggressive while they pay less Effective Tax Rate. A positive correlation COV and ETR (0.009) shows that as the firm's ability to repay its financial obligations increases by 1%, the Effective Tax Rate rises by 0.009% and simultaneously tax aggressiveness decreases. This illustrates that firms which have a higher coverage ratio, namely a better borrowing capacity, are less tax aggressive. Moreover, FAM is positively correlated with COV variable with a correlation coefficient (0.196237) which suggests that a 1% increase in a firm's family ownership could cause a 0.20% increase in the borrowing capacity of companies. The sign of the correlation between effective tax rate and the independent variables generally follows our regressions' results. Last but not least, we could mention that as the correlation coefficients are, generally, below the 0.9 threshold, there are no severe statistical problems regarding multicollinearity.

Table 3 points out the results from the regression model of tax aggressiveness with independent and control variables. As we can notice from the table variable FAMILY has coefficient -4.575969 and probability of 0.0313. So the coefficient of the independent variable FAM is negative and statistically significant. More accurately, this fact indicates that the higher family ownership in a firm, the lower the ETR and consequently the higher the magnitude of firms' tax aggressiveness. Consistent with our family entrenchment effect hypothesis (*Hypothesis 1*), the findings of some given prior studies are confirmed. However, our results are contradictory with that found by Chen et al. (2010) for American firms according to which family firms exhibit lower tax aggressiveness. We can suggest two possible explanations for this. Firstly, in Greece taking an aggressive attitude towards taxes is not viewed by the public in such an adverse light as in the United States, given the much higher rate of tax avoidance by companies and people in general, particularly because of the large informal economy, which is favorable for underreporting of income. This at least mitigates the fear of the

negative effects on stock prices because of news about aggressive tax planning. The other possible explanation is the fact that many other taxes at the federal, state and municipal level that weigh heavily on firms' results are not captured by the measure of tax aggressiveness applied here (ETR). Moreover, the coefficient of ROA variable is positive and statistically significant and as a result, it is concluded that the higher the profitability of a Greek listed firm the higher the level of Effective Tax Rate and the lower the tax aggressiveness. In addition, the coefficients of MB and BIG4 are positive and consequently the higher the growth of a firm and the engagement of the four largest audit companies, the higher the dependent variable ETR and the lower the tax aggressiveness. Furthermore, it is observed that the coefficients of LEV, PPE, INTANG, CASH and SIZE are not statistically significant indicating that the level of leverage, the tangible and intangible assets, the level of liquidity and the size of a firm do not affect the magnitude of tax aggressiveness according to our research. Finally, as we said above R-squared has a value of 0.210323 and this means that our basic model (1) explains 21% of the variability of the response data around its mean. R-squared indicates the percentage, which is 21% in our research, of the variance in the dependent variable (tax aggressiveness) that the independent variables explain collectively. In general, the higher the R-squared, the better the model fits our data.

Table 4 demonstrates the results of the second model (2) which examines additionally our second hypothesis and the relation between COV and ETR. As we can observe from the table, the coefficient of variable FAM is like the model (1) negative and statistically significant at 5%. More specifically, it is found again a significant negative relationship between the two variables (FAM and ETR). Moreover, COV has coefficient 0.869002 and probability 0.0005. As a consequence the coefficient of COV is positive and statistically significant. Particularly, this fact points out that the higher the coverage ratio, namely a company's ability to cover its debt-related payments, the higher the Effective Tax Rate that the company pays and consequently the lower the tax aggressiveness. These results are inconsistent with our coverage hypothesis (*Hypothesis 2)* and the findings of Rego and Wilson (2012) and Stickney and McGee (1982) which assume a positive relation between the coverage ratio and the tax aggressiveness. However, our outcomes corroborates the findings of some other prior studies such as

Wilson (2009) and Lisowsky (2010) which support an opposite relation between tax aggressive firms and coverage ratios. Also, the coefficients of the control variables, ROA, BIG4 and MB are also positive and statistically significant which could be interpreted just like in model (1). More specifically, it is found again a significant positive relationship between ROA and ETR, BIG4 and ETR and MB and ETR. Consequently, as in model (1), as the profitability of a Greek listed firm rises, the level of Effective Tax Rate increases and the tax aggressiveness declines. In addition, the engagement of a Big 4 auditor has a positive effect on ETR which indicates that an increase in a Big 4 auditor engagement increases the level of ETR and diminishes the level of tax aggressiveness. Also, the higher the growth of a firm(MB), the higher the ETR and subsequently the lower the tax aggressiveness. In conclusion, R-squared of the second model is 0.210334(21%) and this means that, like the first regression, R^2 explains 21% of the variability of the response data around its mean.

5. Conclusions

The aim of this study is to examine the effect of family ownership structure on tax aggressiveness in Greece. As an additional intent we studied the influence of companies' borrowing capacity in the level of how tax aggressive they are. Through this study, we tried to investigate the range of tax aggressiveness, from the determinants to the consequences that the phenomenon is characterized. We analysed the tax aggressiveness of family firms, relative to their non-family counterparts. For this purpose we selected a sample of 81 Greek listed firms for a six-year period, 2011 to 2016 (485 observations). We used one tax rate measure to capture tax aggressiveness and different proxies for founding family presence to triangulate our results. The empirical findings indicate that the family ownership structure of these companies have an impact on the level of tax aggressiveness that firms exhibit. By focusing also on the impact of firms' borrowing capacity on tax aggressiveness, we examine the conditions under which firms try to deviate from tax laws.

Extant literature states two opposing views on the effects of family ownership structure on corporate tax aggressiveness. The first argues that family firms could exhibit a higher level of tax avoidance. On the other hand, the second view argues that controlling families could inhibit tax aggressiveness. Specifically, our research shows that Greek family firms are more tax aggressive than non-family firms. This result is consistent with some given prior studies' results that family firms would expose a higher level of tax aggressiveness as family owners will benefit more from tax savings. However, our findings are contrary to the results of Chen et al (2010) which show that family firms exhibit lower tax aggressiveness. Furthermore, our findings also reveal that firms are less tax aggressive as the ETR is higher when a firm's profitability is high as well as when a company's market-to-book ratio is high or when there is an engagement of a Big 4 auditor. Finally, the rest of the control variables are not statistically significant and as a result they do not affect the dependent variable.

Regarding our supplementary hypothesis between tax aggressiveness and coverage ratio, we concluded that as the firm's ability to fulfil its obligations towards its lenders increases, Effective Tax Rate also rises and consequently tax aggressiveness declines while there is a positive relation between COV and ETR.

The findings of this study could contribute to the existing literature by concluding that, on average, family ownership exacerbates tax aggressiveness as it provokes an increase on it. Moreover, the results may be relevant for countries with highly family concentrated ownership similar to that of Greece. This dissertation adds to the continuous debate about tax avoidance and the reason that create the phenomenon. Particularly, the new regulations about double taxation and the arrival of Base Erosion and Profit Shifting (BEPS) in the following years make the research of taxation issues demanding. According to OECD, BEPS is a framework that refers to "tax avoidance measures that exploit gaps and mismatches in tax rules to artificially shift profits to low or no-tax locations". It consists of 100 countries and jurisdictions. Furthermore, in June 2015, OECD proposed its Action Plan involving 15 different actions and in January 2016, the Anti-Tax Avoidance Package was released by the European Union. This Package contained strict measures to inhibit aggressive tax planning, boost tax transparency and

establish equal conditions for all businesses in the EU. It will be quite appealing for future researchers to analyse the results of these actions in the near future. Shackelford and Shevlin (2001) suggest a continuous inspection on the determinants of tax avoidance and Weisbach (2002) inquires why there are not more legal ways to protect investors from taxes. Hanlon and Heitzman (2010**)** request a greater extend of investigation in the factors that examines the ways taxes are avoided. Labelle et al (2014), wonder if business ethics is the ‘‘Last Rampart’’, the last defence against tax aggressiveness. In the same way, Lanis and Richardson (2012, 2013) agree that we need to check thoroughly the participation of business ethics in leading corporate tax policy.

However, this research is subject to several limitations. First, similar to other studies, our sample refers to firms in a single country. Second, a limitation of this research is the relatively small sample size. Because of the global financial crisis of the last eight years, many companies are either delisted within the six-year period we examine (2011-2016) or their shares trading is under temporary suspension. Furthermore, companies whose share trading is under surveillance are excluded. Third, our models consist of control variables most of which are included in a large number of similar studies. Nevertheless, there are probably more alternatives which would be worth investigating as they could control for the impact of more or completely different aspects of family ownership structure and tax aggressiveness. Additionally, another limitation could be the fact that tax aggressiveness is measured in our survey with one measure (ETR) while additional measures like book-tax difference could be utilized to capture it. The results and limitations provide avenues for further research. Future studies could conduct research testing more years and probably using a larger sample size. The investigation of family ownership and tax aggressiveness could be extended to include samples from other European or international domains. Finally, future research should take into account several other categories of ownership structure (such as institutional ownership), while the family ownership could be measured considering the number of generations and individuals of family members who are included in family business in order to evaluate the depth and width of dedication of these members (Astrachan et al. 2002).

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Appendix

Variable Definitions	
Variable	Definition
TAXAGG	Dependent variable-Tax aggressiveness measure
FAMILY	Independent variable. Family ownership which is measured as the proportion of company's stocks directly or indirectly owned by a family, an individual or an unlisted firm that possesses at least 10 percent of equity stakes or voting rights.
ROAi,t	Control variable. Return on assets for firm i, year t, measured as operating income scaled by total assets.
LEVi,t	Control variable. Leverage for firm i, year t, measured as long-term debt scaled by total assets.
PPEi,t	Control variable. Property,plant and equipment for firm i, year t, scaled by lagged assets.
INTANGi,t	Control variable. Intangible assets for firm i, year t scaled by lagged assets.
SIZEi,t-1	Control variable. Natural logarithm of the market value of equity for firm i, at the beginning of year t
MBi,t-1	Control variable. Market-to-book ratio for firm i, at the beginning of year t, measured as market value of equity scaled by book value of equity
CASH	Control variable. Cash and cash equivalents over current liabilities
BIG4	Control variable.Dummy variable: 1 if the auditor is one of the big 4 companies and 0 otherwise.
D2012 D2016	Year Dummies to control for year fixes effects in corporate tax aggressiveness in Greece. They are 1 if the year falls within a specific year, otherwise 0.
COV	The coverage ratio is measured as the EBITDA over interest paid