Tax Aggressiveness and Tax Morale

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Abstract

This paper investigates the impact of social norms on the tax aggressiveness of firms. Social norms can incentivize owners and managers to be less tax aggressive. As these incentives can differ across different kinds of owners, the owner type is taken into account in the empirical analysis. The results show that family-owned firms react stronger to social tax norms than other firms. This can be interpreted as evidence that personal motives of owners play an important role in corporate tax decisions. These motives could include (1) the fear of reputational damage on a personal level and (2) personally held beliefs of the owners and the ability to apply these to the actions of firms. Using information on the direct ownership shares and the similarity between the owner's and the firm's name does not reveal which of the channels is predominant.

Keywords: Tax Aggressiveness, Family Firms, Ethics, Compliance

JEL classification: G32, H 25, H 26, H 32

1. Introduction

There is an increasing public interest in corporate tax strategies. Recent revelations of extremely low tax payments by firms such as Starbucks and Amazon caused public outrage and led to debates on tax policy reform. The public opinion can pressurize firms to change their behavior. Firms may react to this social pressure for several reasons. In addition to a direct effect on sales and stricter treatment by tax authorities and courts, the managers and the owners may have personal incentives to react. If they want to comply with social norms on taxation[1], share the beliefs of their fellow citizens or fear a loss of personal reputation, this may limit the aggressiveness of tax planning.

These personal incentives can vary with the type of the owner. This paper argues that family-owned firms will be more sensitive to tax norms. Firstly, the link between the owner and the firm's actions could be more visible in family-owned firms. It could be harder to identify responsible individuals in firms that are, e.g., owned by other firms or banks. If family owners fear stigmatization by their peers and the public in general, they may not be willing to engage in very aggressive tax strategies. Secondly, family owners could be engaged in the management of the firm. If societal norms on paying taxes are strict and family owners hold the same beliefs as society this can affect the firm's tax strategy.

There is some evidence on the tax aggressiveness in family firms in Chen et al. (2010). The authors use the Compustat dataset which covers American firms from the S&P 1500 and find that family-owned firms are less tax aggressive than non-family-owned firms. They mainly attribute this to agency problems but also mention the possibility that family owners have an additional incentive to be less tax aggressive as they want to "protect the family name". The degree of reputational damage when aggressive tax planning is revealed should depend on the society's views on aggressive tax planning. In order to test whether family firms are more sensitive to social norms it is therefore necessary to have some variation on tax norms. This paper extends the methodology of Chen et al. (2010) by using cross-country data. In this way national differences in tax norms can be used to shed more light on the tax planning of firms. To measure tax morale this paper uses household survey data, where respondents in different countries were asked whether they thought cheating on taxes was justifiable.

[1] In the following the terms "social norms on taxation" and "tax norms" refer both to the justifiability of aggressive tax behavior in a society. The term "strict norms" is used to describe the tax norms in a society where (most) citizens hold the view that it is not justifiable to cheat on taxes. For the exact measurement of tax norms see section 3.3.

By dividing the firms into groups according to their owners this paper adds to the literature on the determinants of tax aggressiveness that takes into account the characteristics of individuals within the firm. Dyreng et al. (2010) track the employment history of top executives across firms and time and find that they affect the effective tax rates of the firms. Joulfaian (2000) compares income tax returns of firms with the personal income tax returns of the managers. He finds that firms that were non-compliant are more likely to be managed by managers who also understated their personal income. Complementary results can be found in Chyz (2013) who finds that aggressive tax strategies could be associated with managers who manipulated the timing of stock option exercise in their own favor. Francis et al. (2014) find that female CFOs can be associated with less tax aggressive behavior. The authors argue that female CFOs might be more risk averse and also mention a potential role of reputational concerns. Overall, there seems to be support for the hypothesis that personal characteristics of managers matter for the tax strategy of firms. The attitude towards aggressive tax planning seems to differ among individuals which in turn affects corporate tax planning. There are good reasons to believe that the attitude towards aggressive tax planning and the responsiveness to societal norms differs across owner types.

Family firms are now widely researched and there are even economic journals dedicated to the topic. One reason for this is the immense importance of family firms for the economy. In the data set underlying this paper 51.2% of firms are owned by families or individuals. In the literature family firms were often found to act differently from other firms in several aspects. Reoccurring topics in this literature are governance and agency issues, as well as corporate social responsibility. There is now some evidence that family firms engage more often in socially responsible behavior (e.g. Dyer and Whitten, 2006; Berrone et al. 2010). Furthermore, the literature acknowledges that family firms can have different goals than other firms, e.g. Chrisman et al. (2010) use survey data from small businesses owners to find that the concern for the reputation of the family affects the decisions made in the firm. The present paper adds to the literature by investigating how the social environment affects economic outcomes in family firms differently than in non-family firms.

Another strand of the tax aggressiveness literature focusses on the incentives of different stakeholders within a firm that affect corporate actions and can lead to a deviation of pure profit maximization. Many recent contributions are based on Desai and Dharmapala (2006) who develop and test a theoretical agency problem in which tax aggressive behavior increases the ability of managers to deter profits from shareholders, e.g. through tax haven operations. The ability to deter

profits is enhanced when there is a lack of control. Thus, shareholders will punish tax aggressiveness in badly governed firms by selling stocks. The authors find that firms that are well governed, are indeed more tax aggressive. Hanlon et al. (2005) and Rego and Wilson (2011) find that compensation schemes that incentivize managers to take risks (e.g. through stock option), lead to a higher degree of tax aggressiveness. Chyz et al. (2013) find that power of labor unions decreases tax aggressive behavior which they attribute to increased monitoring and rent seeking ability of labor unions that decreases the returns from tax aggressiveness.

Besides the abovementioned conflicts of interest between different stakeholders, there can be another conflict between managers and owners that is based on who bears the responsibility for immoral corporate actions. In firms where ownership and management are separated owners may argue that the management is responsible for tax planning, while managers may argue that they tried to act in the best interest of the owners. In this way, both management and owners could try to shift the responsibility for tax aggressive behavior to the other side. This can become easier if the individuals who actually own the firm are hard to identify, e.g. in firms that are owned by another firm.[2] In family firms this shifting may be harder as the owners are easier to identify especially if the owners are engaged in the management. It actually may not always be in the best interest of the owner to implement an aggressive tax strategy if the owner holds the belief that paying taxes is justified and minimizing the tax burden is immoral. The concentration of ownership and management is typically high in family firms. Family owners may therefore have a higher ability to enforce their own moral beliefs.

In order to test for the channels described above it is differentiated between firms that are owned by families and firms that are not owned by families. The empirical analysis in this paper indicates that tax moral plays an important role in the tax aggressiveness of family-owned firms. Although family firms do not generally pay more taxes compared to non-family firms, their tax payments increase with tax morale. The less acceptable it is in a society to cheat on taxes, the more taxes family firms will pay. In specifications that consider whether the firm is named after its owners and whether the owner owns more than 90% of the shares, no evidence for additional effects is found.

[2] If the ownership structure is traced to the end one will in most cases find individuals and in some cases the public sector. The Amadeus database that is used below stops when an owner is identified who owns more than 25% of the firm. The owner shares of the sample used in this paper are much higher for the vast majority of firms. See section 3.4 for the details.

The paper is organized as follows. In the second chapter the empirical predictions are developed and put into context with the existing literature. The third chapter provides descriptions of the dataset, the measurement of the variables, and the empirical strategy. The fourth chapter presents the basic empirical results. Chapter five provides the analyses with name similarity and a high ownership share and further establishes robustness. Chapter 6 summarizes the results and points to possible lessons for tax policy. The appendix presents further robustness checks to rule out results that are driven by peculiarities of the data set.

2. Background and Empirical Predictions

Tax aggressiveness can cover a wide range of actions to decrease the tax burden of a firm. The common definition in the literature includes legal and illegal measures and all grey areas. Hanlon and Heitzman (2010) refer to tax avoidance as a "continuum" with perfectly legal actions on one side and tax evasion on the other side. This paper uses the term tax aggressiveness to describe where firms lie on this continuum. When the individuals in charge of the tax strategy of a firm make a decision about the tax aggressiveness they will take into account several costs and benefits. The optimal tax strategy will equalize marginal costs and benefits of being tax aggressive. This paper argues that the optimal tax strategy will be different for family-owned firms and non-family owned firms. The possible reasons include arguments that can be found in the classical literature on corporate decision making but also arguments that are derived from newer behavioral economics literature. In order to investigate the differences between family-owned and non-family owned firms, the following analysis makes use of the approach by Chen et al. (2010) that takes on the perspective of the individuals in charge of the tax strategy, i.e. families in family-owned firms and managers in non-family owned firms.[3]

The most obvious benefit of being tax aggressive are higher net profits. These have a direct benefit for the owners as profits increase firm value and/or the payoffs to owners. Managers will also benefit from higher net profits if their contracts include performance based payments.

The costs of being tax aggressive are more diverse. Firstly, being tax aggressive can impose direct costs, such as the services of tax consultants and concealment costs. While the services of consultants should be equally priced in family-owned and nonfamily-owned firms, the costs of concealment can differ. It may be the case that families have a higher ability to hide aggressive tax

[3] For the purpose of illustration the case where families delegate the tax strategy to managers is left out.

strategies from outsiders as they can possibly establish a higher degree of secrecy among family members.

Secondly, there are costs that occur when illegal activities are detected. Some of them can immediately monetarize such as penalties or costs for lawyers. Additionally, there may also be costs from a loss of reputation. These can include punishment by consumers but also loss of reputation in the private life of families and managers. If the families are directly linked to the actions of the firm these costs are potentially higher for family owners. Family owners may not be able to hold someone else responsible for aggressive tax strategies, especially if they are actively engaged in the management. On the other hand, manager in nonfamily firms may try to shift the responsibility to the owners of the firm while the owners try to shift the responsibility to the managers. In this way both parties may be able to decrease the loss of reputation, at least among their direct personal environment.

There may also be costs for owners that are based on the own moral code. If owners or managers think that everyone should pay a "fair share" of taxes, they may want to avoid tax strategies that they personally would perceive as too aggressive. The same is true if owners want to comply with the tax norms held in a society. If other firms and individuals are compliant with tax law, the owners and managers may be more likely to be compliant, too. Aggressive tax strategies can therefore come at the cost of a bad conscience. Arguably, these effects are more important for the tax planning in family-owned firms. It may not only be more difficult to shift the responsibility to another party in the eyes of the peers but also in their own perception. The principle of congruity dates back to a contribution of Osgood and Tannenbaum (1955) and is now widely applied to many fields in psychology and economics. It basically states that people try to conform their actions to their own belief system. It is closely related to the concept of cognitive dissonance (Festinger, 1957) that describes how deviations of behavior from the own attitude creates costs in the form of stress or bad conscience.

And of course there can be agency costs. There is a very active literature on how certain interest groups within firms can influence the tax strategy. Chen et al. (2010) argue that these agency costs are different in family and non-family firms. The agency costs occur since owners have differentiated degrees of control over the actions of the firm. In family firms the families have a high degree of control as they usually have a larger ownership stake and are often involved in the management of the firm. Other minority owners are afraid that families will divert profits.

Aggressive tax strategies could make it easier for the family owners to divert profits, e.g. when they include operations in tax havens. While the minority owners may not be able to observe the extraction of profits directly, they may be able to observe aggressive tax strategies. If they use aggressive tax planning as a signal for the extraction of profits, they will be more likely to sell their stocks. This in turn reduces the value of the firm which incentivizes family owners to be less tax aggressive. The conflict of interest Chen et al. (2010) describe is an application of a paper by Desai and Dharmapala (2006).

Table 1 summarizes the costs and benefits of being tax aggressive. It divides the costs into two sections. The first section presents the costs that have been already discussed in the context of family firms in the literature. The second section includes the costs that are investigated more closely in this paper. The table also summarizes the predictions about the effect of the benefits and costs on the behavior of family-owned firms compared other firms. While there is no clear prediction on how the first set of costs and tax savings will affect family firms, the second category seems to decrease the tax aggressiveness in family firms. This paper hypothesizes that this category will become more important when the social norms concerning taxes are strict. The first two hypotheses are therefore

Hypothesis 1: The ex-ante effect of family ownership is unclear. While tax savings and lower costs of secrecy may lead to higher aggressiveness in family firms, agency costs and costs in the case of detection may lead to lower aggressiveness.

Hypothesis 2: The aggressiveness in firms with family ownership will be more sensitive to social tax norms than in firms with other types of ownerships (the stricter the social norms, the less aggressive will be the tax strategy).

Table 1

Costs and Benefits of Being Tax Aggressive and their Effect on Family-Owned Firms Compared to Other Firms

Benefit and Costs	Expected Effect on Family Firms Compared to Others
Costs and Benefits that Are Discussed in the Literature	

+	Tax Savings	No clear prediction
-	Costs of being aggressive such as consultancy and the implementation of secrecy	Will make family-owned firms more aggressive than others
-	Costs in the case of Detection such as penalties and lawyers	No clear prediction
-	Agency costs as described in Chen et al. (2010)	Will make family-owned firms less aggressive than others
	Costs that Are Introduced in the Present Paper	
-	Costs in the case of detection from reputational loss	Will make family firms less aggressive than others
-	Psychological costs from being noncompliant with social norms	Will make family firms less aggressive than others

The second category of costs further depend on the connection the public makes between the owner of the firm and the actions of the firm. The connection is easier to make if the firm shares the name of the owner. Thus, a shared name should make the owner more cautious and be less tax aggressive. This is potentially true, not only for family firms, but for all kinds of other firms as well. Industrial firms could fear reputational damage if their subsidiary gets caught in illegal tax practices as well. Hypothesis 3 therefore states:

Hypothesis 3: If the firm shares the name of the owner, this will increase the sensitivity to tax morale. This may be true if the owner is an individual or another firm.

Similarly, it may be easier for the public to make a connection between the owning family and the actions of the firm if the owners own a large share of the firm. In the analysis below it will be investigated whether the results change when the ownership share of the ultimate owner is high. It may also be the case that it gets easier for the owners to implement "morally good" tax practices when the ownership is large. This hypothesis is more convincing for family firms as a high owner share enhances the last two types of costs mentioned in table 1.

Hypothesis 4: A high ownership share will increase the sensitivity of family-owned firms to tax morale.

There are some other contributions that touch upon morale behavior of firms. Alm and McClellan (2012) try to identify the tax morale of firms by exploiting their responses to a survey on the tax environment. They find that their measure of a firm's tax morale has a significant impact on the tax reporting behavior of the firm. There are two studies that investigate the connection between measures for corporate social responsibility and tax aggressiveness. Lanis and Richardson (2012) show that those Australian firms that disclose little information on their corporate social responsibility are also more likely to be tax aggressive. A similar result is presented in Hoi et al. (2013) for U.S. firms that perform low on corporate social responsibility ratings. Dyreng et al. (2012) find, among other results, that firms located in U.S. counties with high religious norms are less likely to misrepresent corporate profits and are less likely to be involved in tax sheltering activities. Nur-Tegin (2008) investigates the effect of cultural aspects on tax evasion by firms. The author finds that especially the degree of corruption plays an important role. Kanagaretnam et al. (2013) show results that suggest that societal trust decreases the amount of corporate tax avoidance. It can also be noted that a large part of the literature on corporate taxation that does not take into account the morale dimension of tax planning uses a normative language. A prominent example is the term "tax aggressiveness" that actually gives the impression that a morale choice has been made.

This paper investigates the effect of societal tax morale and the incentives of owners to comply with them on the tax planning behavior of firms. The literature on personal income taxation has recognized that social norms affect individuals who report their personal income and there is broad empirical evidence (see, e.g. Alm and Torgler, 2011 for an overview). This paper can also be seen as an extension of this literature, as profits of firms are passed on to individuals in the end. In the case of firms that are owned by families this process will take a more direct route. The decision process of family owners thus might be similar to the decision process of individuals in their personal income statement.

3. Data Set and Empirical Specification

3.1 Sample

The firm data used in this paper is taken from the Amadeus data set. This data set provides balance sheet and profit and loss account information. The measures for tax morale are derived from the World Values Survey (WVS) and the European Values Study (EVS). These surveys are conducted for many countries on a regular but not on an annual basis. Observations for which no ultimate owner is reported, of firms that are listed (there are very few listed firms in the dataset), and of firms in the financial sector are excluded in this paper. Furthermore, no consolidated accounts are used to avoid distortions from imprecise financial reporting. Firms that have been active for five years or less are also excluded. Young firms can distort the results in several ways. Firstly, they often fundamentally differ in their financial characteristics. Many firms will not make profits in their first years of business. Secondly, their tax statements can be different due to a lack of experience. In order to control for outliers, the data is winsorized for the top and bottom 1% for each of the non-dummy control variables reported in table 1 at the end of this section. As a 5-year average of the effective tax rate will be used in the following empirical analysis, only firms with complete financial information for at least five consecutive years can be used (see section 3.2 for a discussion of the advantages of this averaging process). For firms with more than five years available the first five years[4] are used. The first sample at hand which is used for a cross-sectional analysis covers firm observations from years 2005-2013 and from 32 European countries. The exact composition is presented in appendix 7.3.

The Amadeus dataset also provides information on the ownership structure of firms. It indicates whether the ultimate owner of the firm is a family or another entity, such as a firm or a bank. The ultimate owner is identified as the shareholder who owns the most shares (direct or indirect, e.g. through firms) and at least 25%. The owner of a firm is only reported for the last year of available observations, in this case for the year 2014. This is a well-known problem of the Amadeus dataset. Many studies (e.g. Riedel and Dharmapala, 2013, and Budd et al., 2005) argue that ownership changes do not occur too often and thus should not bias the results in any direction. In order to avoid biased results, no data before 2005 will be used.

The following basic regression is estimated:

[4] The first five years are used to have more observations in those years where tax morale is observed. The main results do not change if the last five years are used, though.

$$TaxAgg_{i,t} = \beta_0 + \beta_1 Family_i + \beta_2 Family_i * Tax\ Morale_{j,t} + \beta_3 Financial_i + \beta_4 Financial_i * Tax\ Morale_{j,t} + \beta_5 Government_i + \beta_6 Government_i * Tax\ Morale_{j,t} + \sum_{k=7}^{K} \beta_k\ Firm\ Controls + CountryYear\ FE + Industry\ FE + \varepsilon_{i,t} \quad (1)$$

The main interest of this paper lies in the effect of social norms on taxation on the firms' tax behavior. In order to test for this impact the tax moral measure discussed in detail in section 3.3 is interacted with three different kinds of owners. The variable $Family$ indicates a firm with a family or an individual as the ultimate owner. The variable $Financial$ indicates a firm that has an owner from the financial sector, i.e. a bank, a financial company, an insurance company or a mutual or pension fund/nominee/trust/trustee. The variable $Government$ denotes ownership by public authorities, states or governments and research institutes and foundations[5]. The reference group are firms owned by industrial companies.

3.2 Tax Aggressiveness Measures

In order to investigate the effect of social norms on tax planning, a long-run measure for the effective tax rate is used, similar to the one presented in Dyreng et al. (2008). The use of annual effective tax rates to measure corporate tax aggressiveness can have several drawbacks[6]. They can vary considerably over years and thus reflect short-term adjustment of the firm instead of tax aggressiveness. E.g., there can be short-term incentives to manipulate the reported income in books such as a short-term need to borrow capital. Dyreng et al. (2008) find that annual effective tax rates are poor predictors for effective tax rates measured over a longer period. Furthermore, the short-run ability to decrease taxes can be different from the long-run ability. The long-run effective tax rate is computed as[7]: ${ETR_{i,t}}^{LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Corparate\ income_{i,t}}$. Corporate income can be defined in several ways. In this paper two alternative measures for corporate income are used. In order to compute the effective tax rate pretax income seems to be the natural choice and most studies actually use pretax income in the denominator. The first long-run ETR is computed by summing

[5] Research institutes and foundations are listed under the same owner type. There are 1149 observations that fall in this category. Excluding these observations has a negligible effect on the results presented below.
[6] For a more detailed discussion see Dyreng et al. (2008).
[7] Dyreng et al. (2008) use cash taxes instead of GAAP taxes in the numerator. Unfortunately, cash taxes are not reported in the Amadeus dataset.

pretax income in the denominator and is therefore a long-run version of the GAAP effective tax rate. The GAAP effective tax rate is used in most papers on tax aggressiveness. As a second choice for corporate income the sum of pretax income and extraordinary income is used. Extra-ordinary income can potentially be used to increase profits in the balance sheet without increasing the reported tax liability. It is therefore a possible source for manipulation. Since the long-run effective tax rate is constructed as the ratio between two sums and not as the average annual rates, a high impact of outliers of the annual rate is avoided. All firms for which at least five consecutive years of complete financial data (the effective tax rates and all control variables as in table 2) is available, are included in the sample. For firms which have more than five years available, the first five years of data are used to maintain comparability. For several reasons it can happen that the effective tax rate is below zero or above one. In line with the literature on tax aggressiveness, the effective tax rate is coded as missing when the denominator is below or equal to zero, truncated to zero when tax expenses are below zero, and to one when tax expenses are bigger than income before taxes.

There are other ways to approximate corporate tax aggressiveness than effective tax rates. Measures that are frequently used are book-tax differences. These measures are defined as the difference between reported pretax income and actual taxes paid divided by the actual corporate tax rate[8]. Often specifications with these measures are added to demonstrate robustness of the results, but the actual insights are low. Guenther (2014) examines the statistical properties of each measure and shows how they are connected. He concludes that *"if [the] effective tax rate is the correct theoretical measure, book-tax differences don't provide any independent information beyond that provided in ETRs"*. This paper follows this argument and does not present results with book-tax differences.

It has to be mentioned that information on taxes and corporate income are taken from cash flow statements, which will often differ from the information found in corporate income statements submitted to the tax authorities. Hanlon and Heitzman (2010) differentiate between "conforming" and "nonconforming" tax avoidance, where "conforming" refers to alignment between information in the income statement and information on cash flow statements. Studies using financial data might thus give only information about "conforming" tax avoidance, i.e. tax avoidance that can be traced in financial statements. The data used in this study has three advantages compared to the

[8] Using the same financial items as in the first ETR definition shown above, the book tax difference would be $BTD^{Pretax}{}_{i,t} = Pretax\ Income_{i,t} - \frac{Book\ Tax\ Expenses_{i,t}}{Corporate\ Tax\ Rate}$

American Compustat data used in most studies in this respect. Firstly, it exploits European data. The book-tax alignment is higher in most European countries compared to the U.S. (see e.g. Hung, 2001). Remaining differences between book and cash taxes are partly captured in country-wave fixed effects[9]. Secondly, the accounts used in this study are unconsolidated accounts (not group accounts). The regulatory requirements w.r.t. information about the tax liability are high and leave little room for manipulation (Goncharov and Werner, 2009). Thirdly, only companies that are not listed are investigated. Reporting incentives through pressure of capital markets can be lower for these firms.

As the main focus of this paper lies on the difference between family and non-family firms and the impact of social norms, remaining distortions through book-tax differences would have to be different for family-owned and non-family-owned firms, varying across countries and be correlated with social tax norms to bias the results. Wang (2006) investigates the effect of family ownership on the quality of financial statements. He mentions that family firms may report earnings more honestly because they have reputational concerns and are thus less likely to manipulate earnings upwards[10]. It is reasonable to assume that this effect is higher in countries with high tax morale. The quality of the data for family firms would be higher than for non-family firms for which the effective tax rate is potentially manipulated downwards[11]. The effect of this would likely go in the same direction as the effect of social norms on tax aggressiveness. What is observed in estimations shown below would then be an effect of tax morale on tax aggressiveness and on the degree of honesty of financial statements. Both effects would be caused by similar motives.

3.3 Tax Morale Measures

The measures for tax morale are derived from the World Value Survey (WVS) and the European Values Study (EVS) which are probably the most frequently used data sources in the literature on tax morale. These surveys cover a wide range of countries in Europe. In each wave more than 1000 households per country were interviewed. The surveys are conducted on a regular but not on an annual basis. In each survey wave the respondents were asked:

[9] The term wave refers to the five years over which the average is taken.
[10] Although the author refers to listed firms, it could also be argued that this applies to non-listed firms, too.
[11] Besides an upward manipulation of corporate income, a downward manipulation of the tax liability could also decrease the effective tax rate.

"Please tell me for the following statement whether you think it can always be justified, never be justified, or something in between: Cheating on taxes if you have the chance."

Respondents could answer on a scale from 1 (*never justified*) to 10 (*always justified*). Three measures for tax morale are derived from these responses. The first measure for tax morale (which is from now on called "TM_1") is the percentage of respondents who answered that it is never justifiable to cheat on taxes (who answered "1"). This measure is also used in previous contributions that made use of the WVS and the EVS (e.g. Doerrenberg and Peichl, 2013; or Torgler, 2006). As a second measure the percentage of answers that were equal to one or two ("TM_2") is taken. The third measure is constructed by taking the average response, subtract it from 10 and rescale it to range from 0 to 1 ("TM_avg").

In most studies the answers are used to proxy how likely respondents would evade taxes. The phrasing of the survey question can be easily read as how forgiving respondents would be if others cheated on taxes, too. And even if respondents interpreted the question as whether they found it justifiable for themselves to cheat on taxes, the response is likely to be highly correlated with the general justifiability of cheating on taxes, also in the corporate sector. Table 12 in the appendix shows the values for "TM_avg" for each country and year for which the survey data is available.

3.4 Firm Controls

To account for the characteristics of the firms several control variables are included in the regressions. As the ETRs are computed as a long-run measure the control variables are computed as long-run measures as well. Whenever the controls are a ratio of two firm variables the numerator and the denominator are the sums of the respective variables over the period of time. Other firm controls are computed as the average over the period of time. Appendix 7.3 gives a detailed overview on how the controls are computed. The firm control variables are the size of the firm, returns on assets, leverage, plant, property and equipment, intangible assets, return on shareholder funds, and the age of the firm. Furthermore, dummies for firms that have a foreign owner and for firms that have a foreign subsidiary to account for international tax avoidance opportunities are included.

The summary statistics of each of the firm control variables are reported in table 1. The statistics are reported for each of the owner types. Family and non-family firms differ in several respects.

Table 2

Summary Statistics of Firm Variables

Owner type / Variable	Family Firms	Industrial Firms	Financial Firms	Public Sector
Observations	88751	57955	18610	8129
ETR^{GAAP}	0.418	0.338	0.344	0.328
ETR^{Extra}	0.416	0.335	0.336	0.346
Size	15.297	15.926	15.834	16.483
Age	16.316	20.383	20.767	18.612
Returns on Assets	0. 105	0.106	0.104	0.097
Leverage	0.0785	0.0685	0.0929	0.0436
Plant, Property and Equipment	0.241	0.221	0.249	0.408
Intangible Assets	0. 016	0.025	0.025	0.015
Financial Profits	-0.0088	-0.0024	-0.0034	-0.0011
Dependence Indicator	0.999	0.995	0.995	0.999
Loss Carryforward Dummy	0.271	0.275	0.275	0.303
Foreign Owner	0.031	0.330	0.163	0.131
Foreign Subsidiary	0.036	0.074	0.073	0.027

Note: ETR^{GAAP} refers to the long-run measure of the effective tax rate that uses pretax income, ETR^{Extra} refers to the long-run measure that uses pretax income and extraordinary profits. *Size* is measured as the average of the log of total assets, *Age* gives the years since incorporation, *Returns on Assets* are measured as the sum of EBIT over five years scaled by the sum of total assets over the same period, *Leverage* is measured as the sum of long-term debt over five years scaled by the sum of total assets over the same period, *Plant, Property and Equipment* is measured as the sum of plant, property and equipment over five years scaled by the sum of total assets over the same period, *Intangible Assets* are measured as the sum of intangible assets over five years scaled by the sum of total assets over the same period, *Financial Profits* are measured as the sum of financial profits over five years scaled by the sum of total assets over the same period. The *Dependence Indicator* is set equal to one if the global ultimate owner owns more than 75% of the shares of the firm. *Loss Carryforward* is an indicator variable set to one if a firm had a negative income before taxes for one or more periods. *Foreign Owner* is an indicator set equal to one if the owner is located in another country, *Foreign Subsidiary* is an indicator if a firm has a subsidiary in a foreign country.

The most obvious difference between family-owned and nonfamily-owned firms is the difference in effective tax rates. Family firms have on average a higher effective tax rate than other firms. This can have several reasons and might not necessarily be driven by family ownership. The empirical analysis below will investigate the causes of this difference. Family-owned firms are on average younger and have higher financial expenses. The most significant difference between

family-owned and nonfamily-owned firms is the share of domestic owners and the number of foreign subsidiaries. In order to rule out that any results are driven by these differences section 5.4 provides robustness checks that include interaction terms between firm controls and tax morale measures.

3.5 Tax Differences

It may be the case that family firms have additional opportunities to manipulate tax payments. One possible way to save taxes is to decrease profits by increasing wages. This is attractive for owners if they also hold a position in the firm which should be more often the case in family firms. If personal income taxes are lower than corporate taxes this option becomes attractive. In the regressions below this might affect the results if there is progression in the corporate tax system. A progressive tax scale could reduce the tax liability to a higher degree than taxable income which in turn would reduce the effective tax rate. The regressions also include the difference between the top corporate and the top personal income tax, interacted with the owner type. The higher this difference becomes, i.e., the higher the corporate tax rate compared to the individual tax rate is, the more attractive it becomes for family owners to increase their own wage on the cost of decreasing corporate profits. The data for the corporate and the individual tax rate is taken from the KPMG online tax tool[12]. To account for the long-run nature of the regression the tax difference is also calculated as the average of the respective period.

4. Basic Empirical Results

4.1 Basic OLS and Tobit Specifications

Table 2 shows the results for two different long-run effective tax rates, three different measures of tax morale, and two specifications where tax morale is left out.

Table 3

Baseline OLS Specification

	(1) GAAP ETR	(2) Extra ETR	(3) GAAP ETR	(4) Extra ETR	(5) GAAP ETR	(6) Extra ETR	(7) GAAP ETR	(8) Extra ETR
Family	-0.0061	-0.0186*	-0.0877***	-0.133***	-0.126***	-0.195***	-0.295***	-0.442***
	(0.0074)	(0.0101)	(0.0181)	(0.0307)	(0.0299)	(0.0508)	(0.0625)	(0.0992)
Family*TM_1			0.160***	0.223***				

[12] http://www.kpmg.com/Global/en/services/Tax/tax-tools-and-resources/Pages/tax-rates-online.aspx, Access date 21 April 2015.

			(0.0346)	(0.0563)				
Family*TM_2					0.194***	0.284***		
					(0.0478)	(0.0813)		
Family* TM_avg							0.408***	0.597***
							(0.0889)	(0.140)
Government	0.0379***	0.0448***	-0.0179	-0.0215	0.0165	0.0236	-0.126	-0.0951
	(0.0106)	(0.0118)	(0.0607)	(0.0619)	(0.0698)	(0.0742)	(0.150)	(0.148)
Government* TM_1			0.112	0.132				
			(0.131)	(0.133)				
Government* TM_2					0.0315	0.0285		
					(0.123)	(0.131)		
Government* TM_avg							0.232	0.194
							(0.220)	(0.218)
Financial	-0.0008	-0.00265	0.0290	0.0243	0.0361	0.0345	0.0599	0.0379
	(0.0051)	(0.00602)	(0.0300)	(0.0322)	(0.0302)	(0.0340)	(0.0531)	(0.0582)
Financial* TM_1			-0.0515	-0.0477				
			(0.0551)	(0.0577)				
Financial* TM_2					-0.0536	-0.0554		
					(0.0462)	(0.0507)		
Financial* TM_avg							-0.0816	-0.0546
							(0.0743)	(0.0802)
Family*Tax Difference	-0.080	-0.179**	-0.0207	-0.0980*	0.0352	-0.0128	0.0340	-0.0129
	(0.055)	(0.0775)	(0.0444)	(0.0513)	(0.0489)	(0.0625)	(0.0439)	(0.0532)
Government* Tax Difference	0.206***	0.212***	0.241***	0.249***	0.214***	0.213***	0.252***	0.241***
	(0.059)	(0.0598)	(0.0712)	(0.0678)	(0.0741)	(0.0698)	(0.0693)	(0.0620)
Financial*Tax Difference	0.0253	0.00307	0.0382	0.0244	0.0202	0.00266	0.0235	0.0107
	(0.0245)	(0.0355)	(0.0259)	(0.0332)	(0.0215)	(0.0284)	(0.0228)	(0.0300)
Size	-0.00537*	-0.00585*	-0.00537*	-0.00585*	-0.00540*	-0.00588*	-0.00537*	-0.00584*
	(0.00286)	(0.00315)	(0.00284)	(0.00314)	(0.00284)	(0.00314)	(0.00284)	(0.00314)
Returns on Assets	-0.272***	-0.250**	-0.271***	-0.248***	-0.271***	-0.249***	-0.271***	-0.248***
	(0.0993)	(0.0907)	(0.0989)	(0.0904)	(0.0988)	(0.0904)	(0.0985)	(0.0902)
Leverage	-0.0680***	-0.0730***	-0.0670***	-0.0716***	-0.0672***	-0.0718***	-0.0672***	-0.0718***
	(0.0122)	(0.0128)	(0.0122)	(0.0126)	(0.0121)	(0.0126)	(0.0123)	(0.0130)
Plant, Property and Equipment	-0.0234*	-0.0309**	-0.0239*	-0.0316**	-0.0239*	-0.0316**	-0.0239*	-0.0317**
	(0.0132)	(0.0151)	(0.0129)	(0.0150)	(0.0130)	(0.0149)	(0.0129)	(0.0149)

Intangible Assets	0.0530	0.0658	0.0527	0.0654	0.0531	0.0660	0.0529	0.0659
	(0.0503)	(0.0525)	(0.0501)	(0.0526)	(0.0501)	(0.0524)	(0.0502)	(0.0527)
Financial Profits	-2.194***	-2.424***	-2.187***	-2.414***	-2.189***	-2.416***	-2.189***	-2.416***
	(0.709)	(0.747)	(0.708)	(0.746)	(0.708)	(0.746)	(0.709)	(0.747)
Age	0.000172***	0.0000428	0.000183	5.76e-05	0.000182	5.69e-05	0.000182	5.70e-05
	(0.000174)	(0 .000169)	(0.000160)	(0.000149)	(0.000162)	(0.000149)	(0.000164)	(0.000155)
Dependence Indicator	-0.00296	0.00585	-0.00345	0.00535	-0.00328	0.00558	-0.00320	0.00578
	(0.0137)	(0.0106)	(0.0138)	(0.0105)	(0.0137)	(0.0107)	(0.0140)	(0.0107)
Foreign Owner	0.0101*	0.0186***	0.0100*	0.0184***	0.00983*	0.0181***	0.0102*	0.0187***
	(0.00581)	(0.00642)	(0.00593)	(0.00660)	(0.00589)	(0.00649)	(0.00601)	(0.00663)
Foreign Subsidiary	-0.0181***	-0.0168***	-0.0174***	-0.0160***	-0.0175***	-0.0161***	-0.0174***	-0.0160***
	(0.00415)	(0.00342)	(0.00391)	(0.00315)	(0.00410)	(0.00331)	(0.00401)	(0.00332)
Loss Carryforward	0.0761***	0.0465***	0.0762***	0.0467***	0.0762***	0.0467***	0.0762***	0.0467***
	(0.0122)	(0.0105)	(0.0124)	(0.0104)	(0.0124)	(0.0105)	(0.0123)	(0.0105)
Country-Wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	173,445	171,320	173,445	171,320	173,445	171,320	173,445	171,320
Adjusted R-squared	0.49	0.48	0.49	0.48	0.49	0.48	0.49	0.48
Marginal Effects Family Owned — Upper Bound			0.0524	0.0735	0.0501	0.0733	0.0493	0.0721
Marginal Effects Family Owned — Lower Bound			-0.0384	-0.0632	-0.0409	-0.0653	-0.0374	-0.0561

Note: The regressions presented in this table are based on model (1):

$$
\begin{aligned}
ETR_{i,t}{}^{LR} = {} & \beta_0 + \beta_1 Family_i + \beta_2 Family_i * Tax\ Morale_{j,t} \\
& + \beta_3 Financial_i + \beta_4 Financial_i * Tax\ Morale_{j,t} \\
& + \beta_5 Government_i + \beta_6 Government_i * Tax\ Morale_{j,t} \\
& + \sum_{k=7}^{K} \beta_k\ Firm\ Controls + CountryYear\ FE + Industry\ FE + \varepsilon_{i,t}
\end{aligned}
$$

$ETR_{i,t}{}^{LR}$ are the long-run effective tax rates, defined as $ETR_{i,t}{}^{GAAP\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Income\ Before\ Taxes_{i,t}}$ and $ETR_{i,t}{}^{Extra\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5}(Income\ Before\ Taxes_{i,t} + Extraordinary\ Income)}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. Tax difference is the average difference between the top corporate and the top individual tax rate over the five year period. The control variable *Size* is measured as the average of the log of total assets, *Age* gives the years since incorporation, *Returns on Assets* are measured as the sum of EBIT over five years scaled by the sum of total assets over the same period, *Leverage* is measured as the sum of long-term debt over five years scaled by the sum of total assets over the same period, *Plant, Property and Equipment* is measured as the sum of plant, property and equipment over five years scaled by the sum of total assets over the same period, *Intangible Assets* are measured as the sum of intangible assets over five years scaled by the sum of total assets over the same period, *Financial Profits* are measured as the sum of financial profits over five years scaled by the sum of total assets over the same period. The *Dependence Indicator* is set equal to one if the global ultimate owner owns more than 75% of the shares of the firm. *Foreign Owner* is an indicator set equal to one if the owner is located in another country, *Foreign Subsidiary* is an indicator if a firm has a subsidiary in a foreign country. *Loss Carryforward* is an indicator variable set to one if a firm had a negative income before taxes for one or more periods. See the appendix for a more detailed

description of the measurement of the variables. Each regression includes industry fixed effects and country-wave fixed effects where wave refers to the five year period over which the averages are taken. For each variable the standard error is presented in parentheses. The standard errors are clustered across countries, waves and industries using the multiway cluster approach by Cameron, Gelbach and Miller (2011). ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\widehat{\partial ETR_{\iota,t}}}{\partial Family_{\iota}} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions. The highest and the lowest marginal effects for the given values of $Tax\ Morale_{j,t}$ and $Difference_{j,t}$ are reported for each regression with tax morale interaction terms.

In the specifications without an interaction term it can be seen that overall family-owned firms seem to pay a little less taxes than industry-owned firms, although this difference is only significant for the effective tax rate that accounts for extraordinary profits. Furthermore, we see that government-owned firms seem to pay more taxes than industry-owned firms, while there seems to be no significant difference between industry- and financial-owned firms.

In all specifications with interaction terms the coefficient on family-owned firms appears to be negative and significant, and the interaction term between tax morale appears to be positive and significant. On the one hand, there seems to be a negative base effect for family firms. This may be due to increased profits through aggressive tax planning and lower costs of concealing aggressive strategies. On the other hand, the data suggests that family firms are more sensitive to societal norms on taxation.[13] The coefficients on the family dummy and the family-tax morale interaction vary considerably across the specifications. In order to get a better intuition of the magnitude of the coefficients it helps to compute the actual range of the marginal effect of family ownership predicted by the regressions in the sample. The marginal effect of family ownership in country j is given by $\frac{\widehat{\partial ETR_{\iota,t}}}{\partial Family_{\iota}} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$.[14] The range of the marginal effect of family ownership is reported in the two bottom lines of table 2 and 3. The marginal effects seem to be particularly strong for the specifications that take extraordinary profits into account. The marginal effects reach from -6.5 to +7.4 percentage points across all regressions. In each regression with an interaction term, the marginal effects go from below zero to above zero. The results show that family-ownership does not necessarily lead to higher tax payments. However, family firms adjust more strongly to the normative environment concerning taxes. In the case when family firms pay more taxes than non-family firms this may be explained with fear of reputational damage of the owner and better ability of the owner to align corporate actions with her own moral

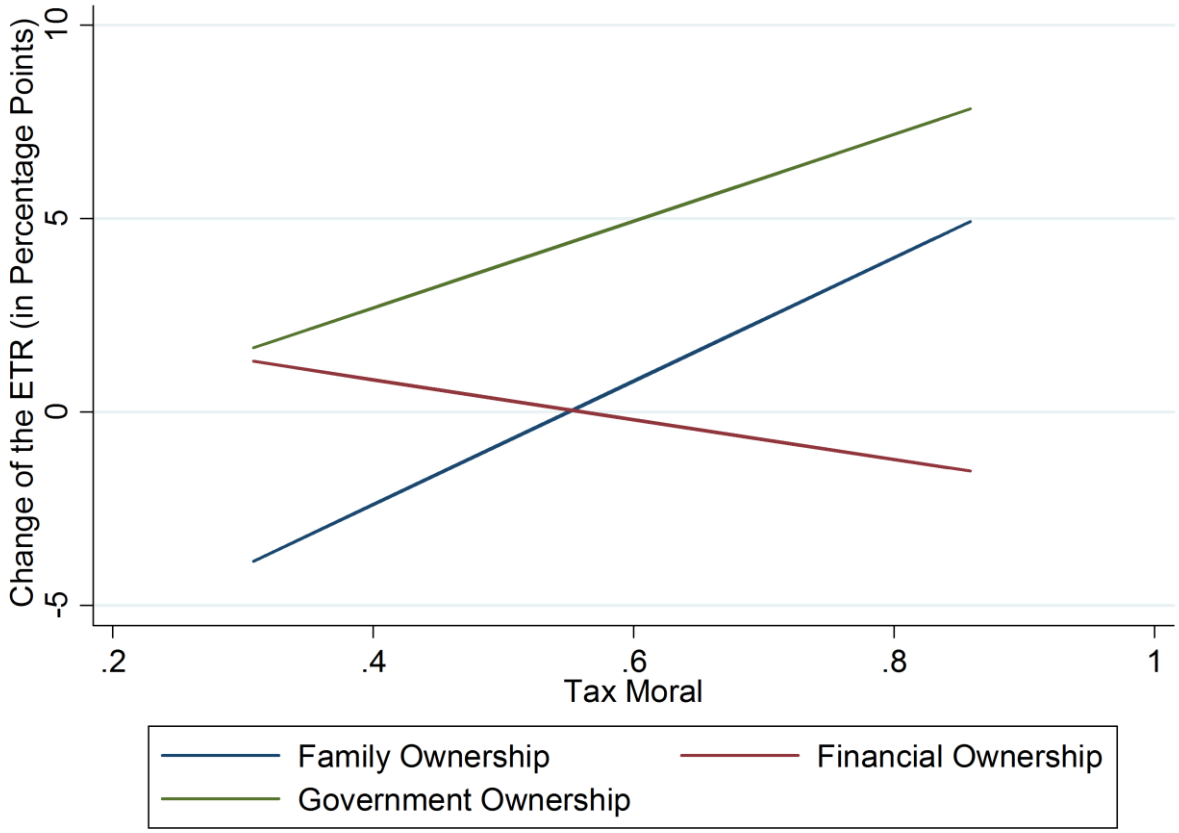
[13] To rule out that the results are driven by the fact that industrial firms more often have a foreign owner the same regression are conducted with purely domestic firms (domestic owner and no foreign subsidiary). The results are presented in appendix 7.4.1. They look very similar to the ones presented above.

[14] The marginal effects are computed for the ETR measure that is truncated. The effect on the ETR when no truncation is done can be different.

beliefs. To illustrate the predictions of the model concerning ownership and tax morale, figure 1 shows the predicted distribution of the marginal effects when the tax difference is fixed at zero, i.e. $\hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t}$. It is interesting to see that in countries with low tax morale, family firms pay less taxes.

Figure 1

Effect of Ownership and Tax Morale on Effective Tax Rates



The coefficients on the interaction terms between the tax difference and the ownership type reveal that firms that are owned by public authorities pay more taxes relative to industry-owned firms, the higher the difference between the corporate and the individual tax rate is. One interpretation of this result is that industry-owned firms (and also family- and financial-owned firms) increase wages when the corporate tax rate increases or the individual tax rate falls while government-owned firms (have to) stick to the previous wage level.

Most other contributions on tax aggressiveness use standard OLS techniques as those presented in table 2 to investigate the determinants of effective tax payments. As the LHS variable is truncated

from zero to one, OLS methods might not give a consistent estimator, especially when many observations are truncated. In order to avoid results that are driven by the observations on the upper and/or the lower limit of the effective tax rate measures, the estimations in table 3 are repeated using a Tobit model. The results are presented in table 4.

Table 4

Baseline Tobit Specification

	(1) GAAP ETR	(2) Extra ETR	(3) GAAP ETR	(4) Extra ETR	(5) GAAP ETR	(6) Extra ETR	(7) GAAP ETR	(8) Extra ETR
Family	-0.00736	-0.0202*	-0.0985***	-0.141***	-0.146***	-0.211***	-0.339***	-0.477***
	(0.00716)	(0.0111)	(0.0194)	(0.0314)	(0.0345)	(0.0517)	(0.0751)	(0.108)
Family*TM_1			0.178***	0.236***				
			(0.0336)	(0.0528)				
Family*TM_2					0.224***	0.308***		
					(0.0544)	(0.0804)		
Family*TM_avg							0.467***	0.645***
							(0.105)	(0.151)
Government	0.0394***	0.0460***	-0.0266	-0.0283	0.0163	0.0259	-0.147	-0.111
	(0.0140)	(0.0155)	(0.0951)	(0.0941)	(0.105)	(0.107)	(0.220)	(0.220)
Government* TM_1			0.133	0.148				
			(0.202)	(0.202)				
Government* TM_2					0.0336	0.0261		
					(0.183)	(0.187)		
Government* TM_avg							0.264	0.218
							(0.322)	(0.323)
Financial	0.00138	-0.00218	0.0310	0.0250	0.0380	0.0352	0.0616	0.0365
	(0.00486)	(0.00611)	(0.0215)	(0.0215)	(0.0250)	(0.0286)	(0.0496)	(0.0508)
Financial*TM_1			-0.0541	-0.0477				
			(0.0438)	(0.0422)				
Financial*TM_2					-0.0555	-0.0556		
					(0.0416)	(0.0454)		
Financial* TM_avg							-0.0830	-0.0516
							(0.0724)	(0.0733)
Family*Tax Difference	-0.103	-0.201**	-0.0368	-0.114**	0.0295	-0.0206	0.0275	-0.0212
	(0.0668)	(0.0954)	(0.0430)	(0.0561)	(0.0478)	(0.0619)	(0.0421)	(0.0528)
Government* Tax Difference	0.232***	0.236***	0.273**	0.279**	0.240*	0.234**	0.283**	0.269***
	(0.0934)	(0.0921)	(0.122)	(0.118)	(0.123)	(0.116)	(0.110)	(0.102)
Financial*Tax Difference	0.0308	0.00769	0.0455**	0.0304	0.0266	0.00831	0.0302	0.0168

		(0.0322)	(0.0447)	(0.0204)	(0.0321)	(0.0232)	(0.0332)	(0.0247)	(0.0370)
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-Wave FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations		173,445	171,320	173,445	171,320	173,445	171,320	173,445	171,320
Marginal Effect Family Owned	Upper Bound			0.0602	0.0791	0.0592	0.0804	0.0580	0.0790
	Lower Bound			-0.0433	-0.0674	-0.0465	-0.0706	-0.0413	-0.0606

Note: The regressions presented in this tables are based on model (1) and estimated using a Tobit approach. The dependent variables are the long-run effective tax rates, defined as $ETR_{i,t}{}^{GAAP\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Income\ Before\ Taxes_{i,t}}$ and $ETR_{i,t}{}^{Extra\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5}(Income\ Before\ Taxes_{i,t}+Extraordinary\ Income)}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. Tax difference is the average difference between the top corporate and the top individual tax rate over the five year period. The control variable *Size* is measured as the average of the log of total assets, *Age* gives the years since incorporation, *Returns on Assets* are measured as the sum of EBIT over five years scaled by the sum of total assets over the same period, *Leverage* is measured as the sum of long-term debt over five years scaled by the sum of total assets over the same period, *Plant, Property and Equipment* is measured as the sum of plant, property and equipment over five years scaled by the sum of total assets over the same period, *Intangible Assets* are measured as the sum of intangible assets over five years scaled by the sum of total assets over the same period, *Financial Profits* are measured as the sum of financial profits over five years scaled by the sum of total assets over the same period. The *Dependence Indicator* is set equal to one if the global ultimate owner owns more than 75% of the shares of the firm. *Foreign Owner* is an indicator set equal to one if the owner is located in another country, *Foreign Subsidiary* is an indicator if a firm has a subsidiary in a foreign country. *Loss Carryforward* is an indicator variable set to one if a firm had a negative income before taxes for one or more periods. See the appendix for a more detailed description of the measurement of the variables. Each regression includes industry fixed effects and country-wave fixed effects where wave refers to the five year period over which the averages are taken. For each variable the standard error is presented in parentheses. The standard errors are clustered at the country level. ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions. The highest and the lowest marginal effects for the given values of $Tax\ Morale_{j,t}$ and $Difference_{j,t}$ are reported for each regression with tax morale interaction terms.

As can be seen, the major findings remain unchanged when a Tobit specification is used. The coefficient on the family dummy is always negative and highly significant, the coefficient on the interaction term is always positive and highly significant. The result that family firms adjust stronger to the normative environment still holds. The marginal effects are given as the marginal effect on the latent variable, i.e. again $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$.The marginal effects of family ownership range from -7.1 to +8.0 percentage points, indicating an even stronger adjustment of family firms to norms on taxes.

4.2 Specification with Annual Data

The averaging over five years comes at a potential cost. Since the tax morale measures are not available at an annual basis, the averages might misrepresent potential developments. Therefore,

this section presents a specification where annual data is used. The ETRs are given as $ETR^{Pretax}{}_{i,t} = \frac{Book\ Tax\ Expenses_{i,t}}{Pretax\ Income_{i,t}}$ and $ETR^{Extra}{}_{i,t} = \frac{Book\ Tax\ Expenses_{i,t}}{Pretax\ Income_{i,t} + Extraordinary\ Income_{i,t}}$. The firm control variables are the size of the firm (measured as the logarithm of total assets), returns on assets (calculated as EBIT divided by lagged total assets), leverage (calculated as long term debt divided by lagged total assets), plant, property and equipment (scaled by lagged total assets), intangible assets (scaled by lagged total assets), financial profits (scaled by lagged assets), and the age of the firm. Again, dummies for firms that have a foreign owner and for firms that have a foreign subsidiary are included as well as a dummy that indicates whether a firm made a loss in the previous period. Furthermore, the same dependence measure as in the long-run specification is included. Only those country-year observations for which tax morale data is available are included. The tax difference is now calculated as the tax difference in the given year. In order to maintain comparability with the results from the long run sample only those firms that appeared in the long run sample are used. Table 5 and table 6 present the results for OLS and Tobit specifications that use annual data.

Table 5

Baseline OLS Specification with Annual Data

	(1) GAAP ETR	(2) Extra ETR	(3) GAAP ETR	(4) Extra ETR	(5) GAAP ETR	(6) Extra ETR
Family	-0.0569*	-0.149***	-0.0713*	-0.209***	-0.149	-0.479***
	(0.0310)	(0.0330)	(0.0398)	(0.0698)	(0.0900)	(0.137)
Family*TM_1	0.0954	0.255 ***				
	(0.0630)	(0.0632)				
Family*TM_2			0.101	0.305**		
			(0.0663)	(0.115)		
Family*TM_avg					0.199	0.650***
					(0.129)	(0.195)
Government	0.0124	-0.00794	0.0338	0.0127	-0.0482	-0.0883
	(0.0553)	(0.0616)	(0.0661)	(0.0666)	(0.127)	(0.119)
Government*TM_1	0.0347	0.0790				
	(0.115)	(0.130)				
Government*TM_2			-0.00885	0.0276		
			(0.112)	(0.113)		
Government*TM_avg					0.111	0.169
					(0.183)	(0.174)
Financial	-0.00665	0.0204	-0.0214	0.0128	-0.0446	0.00197
	(0.0160)	(0.0137)	(0.0209)	(0.0208)	(0.0451)	(0.0362)
Financial*TM_1	0.0156	-0.0386				
	(0.0329)	(0.0276)				

Financial*TM_2			0.0356	-0.0190		
			(0.0340)	(0.0341)		
Financial*TM_avg					0.0648	-0.00180
					(0.0645)	(0.0529)
Family*Tax Difference	-0.0901***	-0.173***	-0.0661**	-0.0793	-0.0705**	-0.0821
	(0.0204)	(0.0302)	(0.0317)	(0.0722)	(0.0300)	(0.0589)
Government*Tax Difference	0.173**	0.239***	0.154*	0.218***	0.186**	0.244***
	(0.0731)	(0.0653)	(0.0847)	(0.0742)	(0.0747)	(0.0638)
Financial*Tax Difference	0.0318	0.0259	0.0373	0.0137	0.03614	0.0173
	(0.0225)	(0.0214)	(0.0283)	(0.0295)	(0.0275)	(0.0280)
Country-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	215872	194107	215872	194107	215872	194107
Adjusted R-squared	0.33	0.33	0.33	0.33	0.33	0.33

Note: The regressions presented in this tables are based on model (1):

$$ETR_{i,t} = \beta_0 + \beta_1 Family_i + \beta_2 Family_i * Tax\ Morale_{j,t} + \beta_3 Financial_i + \beta_4 Financial_i * Tax\ Morale_{j,t} + \beta_5 Government_i + \beta_6 Government_i * Tax\ Morale_{j,t} + \sum_{k=7}^{K} \beta_k\ Firm\ Controls$$

$ETR_{i,t}$ are the annual effective tax rates, defined as ${ETR_{i,t}}^{GAAP} = \frac{Book\ Taxes_{i,t}}{Income\ Before\ Taxes_{i,t}}$ and ${ETR_{i,t}}^{Extra} = \frac{Book\ Taxes_{i,t}}{Income\ Before\ Taxes_{i,t} + Extraordinary\ Income}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. The firm control variables are the *Size* of the firm (measured as the logarithm of total assets), *Returns on Assets* (calculated as EBIT divided by lagged total assets), *Leverage* (calculated as long term debt divided by lagged total assets), *Plant, Property and Equipment* (scaled by lagged total assets), *Intangible Assets* (scaled by lagged total assets), *Financial Profits* (scaled by lagged assets), and the *Age* of the firm. Dummies for firms that have a *Foreign Owner* and for firms that have a *Foreign Subsidiary* are included as well as a dummy that indicates whether a firm made a loss in the previous period (*Loss Carryforward*). Furthermore, the same *Dependence Indicator* as in the long-run specification is included. Only those country-year observations for which tax morale data is available are included. For each variable the standard error is presented in parentheses. The standard errors are clustered across country-year observations. ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions.

Table 6

Baseline Tobit Specification with Annual Data

	(1) GAAP ETR	(2) Extra ETR	(3) GAAP ETR	(4) Extra ETR	(5) GAAP ETR	(6) Extra ETR
Family	-0.0674**	-0.160***	-0.0900**	-0.230***	-0.184*	-0.520***
	(0.0325)	(0.0329)	(0.0433)	(0.0744)	(0.0983)	(0.146)
Family*TM_1	0.109*	0.270 ***				
	(0.0649)	(0.0615)				
Family*TM_2			0.126*	0.334***		
			(0.0713)	(0.122)		
Family*TM_avg					0.243*	0.703***
					(0.140)	(0.207)

Government	0.00468	-0.0232	0.0328	0.00147	-0.0702	-0.128
	(0.0683)	(0.0772)	(0.0799)	(0.0835)	(0.156)	(0.143)
Government*TM_1	0.0486	0.105				
	(0.141)	(0.161)				
Government*TM_2			-0.00931	0.0419		
			(0.135)	(0.140)		
Government*TM_avg					0.141	0.223
					(0.224)	(0.209)
Financial	-0.00665	0.0187	-0.0228	0.0105	-0.0476	-0.00645
	(0.0169)	(0.0142)	(0.0221)	(0.0203)	(0.0481)	(0.0360)
Financial*TM_1	0.0186	-0.0327				
	(0.0345)	(0.0283)				
Financial*TM_2			0.0402	-0.0135		
			(0.0358)	(0.0333)		
Financial*TM_avg					0.0712	0.0119
					(0.0688)	(0.0527)
Family*Tax Difference	-0.123***	-0.208***	-0.0887***	-0.101	-0.0957***	-0.107*
	(0.0219)	(0.0331)	(0.0335)	(0.0772)	(0.0324)	(0.0629)
Government*Tax Difference	0.205**	0.297***	0.181*	0.273***	0.220**	0.305***
	(0.0912)	(0.0772)	(0.105)	(0.0937)	(0.0917)	(0.0709)
Financial*Tax Difference	0.0416*	0.0354	0.0479	0.0245	0.0461	0.0279
	(0.0239)	(0.0224)	(0.0294)	(0.0289)	(0.0287)	(0.0278)
Country-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	215872	194107	215872	194107	215872	194107

Note: The regressions presented in this tables are based on model (1) and estimated using a Tobit approach. The dependent variables are the annual effective tax rates defined as $ETR_{i,t}{}^{GAAP} = \frac{Book\ Taxes_{i,t}}{Income\ Before\ Taxes_{i,t}}$ and $ETR_{i,t}{}^{Extra} = \frac{Book\ Taxes_{i,t}}{Income\ Before\ Taxes_{i,t}+Extraordinary\ Income}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. The firm control variables are the *Size* of the firm (measured as the logarithm of total assets), *Returns on Assets* (calculated as EBIT divided by lagged total assets), *Leverage* (calculated as long term debt divided by lagged total assets), *Plant, Property and Equipment* (scaled by lagged total assets), *Intangible Assets* (scaled by lagged total assets), *Financial Profits* (scaled by lagged assets), and the *Age* of the firm. Dummies for firms that have a *Foreign Owner* and for firms that have a *Foreign Subsidiary* are included as well as a dummy that indicates whether a firm made a loss in the previous period (*Loss Carryforward*). Furthermore, the same *Dependence Indicator* as in the long-run specification is included. Only those country-year observations for which tax morale data is available are included. For each variable the standard error is presented in parentheses. The standard errors are clustered across country-year observations. ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions.

The results from the long run data seem to be confirmed by the annual data. In the OLS specification the coefficients on the family dummy and the interaction term between family ownership and tax morale have the same signs as in the long run specification. However, the coefficient on the interaction term is only significant when the dependent variable is taking

extraordinary profits into account. This changes in the Tobit specifications where all family dummies and family-tax morale interaction terms are significant.

In the following the model that uses five-year averages will be used. This has the advantage of a better representation of long-run tax aggressiveness of firms and a higher degree of immunity to short-term fluctuations.

5. Extensions

In this section several extensions are presented and some robustness of the results is demonstrated. The analysis is extended in two dimensions. First, a closer look on firm and owner characteristics is taken. In particular the effect of name similarity, the importance of the total owner share, and the interaction of tax morale with other firm characteristics are investigated. Second, the efficiency of governments is taken into account. Tax morale may not only depend on inherited cultural norms and the behavior of other tax payers but also on the perception of government efficiency. For the sake of brevity only the results for OLS specifications are presented. The results presented below are very similar for Tobit specifications and are available upon request.

5.1 Name Similarity

There are at least two channels through which social norms on taxes can affect the decision of a manager. In general, the moral system of the manager could be affected by the belief system in the society. In this case the manager believes that tax avoidance is immoral when the society in general thinks that tax avoidance is immoral. In firms where ownership and management are separated this mechanism can be disturbed. Owners can argue that the management is responsible for socially responsible behavior, while the management argues that profit maximization is in the owner's best interest. This would lead to lower effective tax rates in non-family firms. The other channel works through social sanction mechanisms which lead to reputational damage on a personal level. When someone violates the moral code that is accepted by society, this can cause disappointment, anger or malice. The perceived link between the actions of the firm and the owner is possibly stronger in family firms. Therefore, the potential loss of reputation, too, could be stronger for owners of family firms. Loss of reputation imposes a punishment that managers want to avoid.[15]

[15] Evidence that reputational concerns matter for corporate tax planning is provided in Dyreng et al. (2014), Graham et al. (2014), and Austin and Wilson (2015). Dyreng et al. (2014) examine the effect of pressure from an activist group on large British firms to disclose the location of all their subsidiaries. The authors find that firms showed a higher ETR after the pressure was imposed. Graham et al. (2014) analyze responses from a survey conducted among corporate tax

The link between the owner of a firm and the firm's actions could even be stronger if the name of the owner appears in the name of the firm. Ms. Marie Smith may be more concerned about her reputation if her firm is called "Marie Smith Industries" than she would be if her firm was called "Future Industries". Arguably, the name of the firm and the moral beliefs of an owner are not, or at least to a lesser degree, correlated with the firm's name. In order to identify the effect of name similarity a dummy is created that is set to one whenever the owner's name can be found in the firm name[16]. This dummy is then interacted with the family ownership dummy. In a next step this interaction is interacted with tax morale. In order to capture any general effects of name similarity, it is also checked whether it has an effect for non-family firms.

The results are presented in table 6. As most coefficients on name similarity appear to be insignificant the reporting of the marginal effects is omitted.

Table 7

Name Similarity

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	GAAP ETR	Extra ETR	GAAP ETR	Extra ETR	GAAP ETR	Extra ETR
Family	-0.0931***	-0.133***	-0.135***	-0.201***	-0.308***	-0.446***
	(0.0200)	(0.0317)	(0.0305)	(0.0494)	(0.0640)	(0.0984)
Family*TM_1	0.172***	0.230***				
	(0.0381)	(0.0585)				
Family*TM_2			0.209***	0.299***		
			(0.0484)	(0.0791)		
Family*TM_avg					0.428***	0.608***
					(0.0905)	(0.139)
Government	-0.0109	-0.0116	0.0197	0.0248	-0.125	-0.0933
	(0.0548)	(0.0581)	(0.0666)	(0.0718)	(0.137)	(0.136)
Government*TM_1	0.101	0.119				
	(0.119)	(0.124)				
Government*TM_2			0.0285	0.0323		
			(0.118)	(0.125)		
Government*TM_avg					0.233	0.198
					(0.201)	(0.199)
Financial	0.0231	0.0225	0.0386	0.0416	0.0743	0.0701
	(0.0328)	(0.0333)	(0.0312)	(0.0310)	(0.0600)	(0.0576)

executives. The survey responses show that 69% of the respondents consider reputation an important factor in tax planning decisions. Austin and Wilson (2014) find that firms that have a valuable brand name show higher effective tax rates than firms from a control group.

[16] Deephouse and Jaskiewicz (2013) use the same dummy and find that firms that are named after their owner have on average a better reputation in public.

Financial*TM_1	-0.0416	-0.0441				
	(0.0624)	(0.0608)				
Financial*TM_2			-0.0591	-0.0666		
			(0.0504)	(0.0481)		
Financial*TM_avg					-0.103	-0.0996
					(0.0867)	(0.0816)
Family*Name Similarity	-0.0161	-0.0138	-0.0500	-0.0448	-0.131*	-0.117
	(0.0233)	(0.0247)	(0.0409)	(0.0442)	(0.0690)	(0.0823)
Government*Name Similarity	-0.0668	-0.0665	-0.0680	-0.0539	-0.119	-0.101
	(0.0760)	(0.0773)	(0.0542)	(0.0583)	(0.118)	(0.120)
Financial*Name Similarity	0.00649	0.00636	-0.0256	-0.0330	-0.0666	-0.0950
	(0.0259)	(0.0238)	(0.0399)	(0.0432)	(0.0772)	(0.0697)
Industry*Name Similarity	-0.0216	-0.00675	-0.0386*	-0.0277	-0.0760**	-0.0329
	(0.0153)	(0.0139)	(0.0230)	(0.0224)	(0.0375)	(0.0340)
Family*Name Similarity*TM_x	0.0328	0.0263	0.0751	0.0655	0.179*	0.158
	(0.0426)	(0.0464)	(0.0595)	(0.0650)	(0.0931)	(0.111)
Government*Name Similarity*TM_x	0.125	0.122	0.105	0.0807	0.163	0.137
	(0.155)	(0.150)	(0.0901)	(0.0901)	(0.171)	(0.169)
Financial*Name Similarity*TM_x	0.00859	0.0158	0.0563	0.0733	0.109	0.153
	(0.0512)	(0.0427)	(0.0664)	(0.0701)	(0.112)	(0.101)
Industry*Name Similarity*TM_x	0.0466*	0.0295	0.0630*	0.0552*	0.109**	0.0585
	(0.0258)	(0.0238)	(0.0330)	(0.0320)	(0.0501)	(0.0452)
Family*Tax Difference	-0.0254	-0.112**	0.0295	-0.0268	0.0266	-0.0284
	(0.0453)	(0.0501)	(0.0473)	(0.0592)	(0.0424)	(0.0500)
Government*Tax Difference	0.239***	0.242***	0.214***	0.207***	0.251***	0.235***
	(0.0705)	(0.0667)	(0.0727)	(0.0682)	(0.0689)	(0.0622)
Financial*Tax Difference	0.0554*	0.0411	0.0374*	0.0217	0.0410*	0.0300
	(0.0286)	(0.0331)	(0.0218)	(0.0271)	(0.0239)	(0.0290)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country-Wave Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	173,445	171,320	173,445	171,320	173,445	171,320
Adjusted R-squared	0.490	0.479	0.490	0.479	0.490	0.479

Note: The regressions presented in this tables are based on model (1). The dependent variables are the long-run effective tax rates, defined as ${ETR_{i,t}}^{GAAP\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Income\ Before\ Taxes_{i,t}}$ and ${ETR_{i,t}}^{Extra\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5}(Income\ Before\ Taxes_{i,t}+Extraordinary\ Income)}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. The same control variables as reported in table 3 are included in each regression but the coefficients are not reported for the sake of brevity. See the appendix for a more detailed description of the measurement of the variables. Each regression includes industry fixed effects and country-wave fixed effects where wave refers to the five year period over which the averages are taken. For each variable the standard error is presented in parentheses. The standard errors are clustered across countries, years and industries using the multiway cluster approach by Cameron, Gelbach and Miller (2011). ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions.

The basic effects that were found before still hold. The coefficient on the family dummy enters negatively while the coefficient on the interaction between the family dummy and the tax morale measure enters positively. The coefficients for almost all name similarity variables and all interaction terms with name similarity turn out to be insignificant[17]. A reappearing significant effect can only be found for the interaction term with industry ownership, name similarity, and tax morale. This may indicate reputational concerns in industrial firms that immoral actions of subsidiaries could affect the parent. The insignificance of all coefficients for family firms could be interpreted in different ways. It may be the case that name similarity is a poor instrument for the perception of the link between a firm's action and the owners. People may know that Marie Smith owns "Future Industries" although the firm's name does not include Marie Smith's name. Another possible interpretation would be that the tax strategies of family-owned firms are not driven by reputational concerns but the moral code of the owners.

5.2 Dependence

As mentioned above family owners may find it easier to apply their own moral code to the actions of the firm. This could become even easier the more shares they own as the pressure from other owners decreases. To test for this possibility a dummy is included in the following regressions that takes the value one if the owner owns more than 90% of the shares directly[18]. It should be noted that this dummy could also account for fears of reputation. This might be the case if the ownership share strengthens perception of the link between the firm's actions and the owner. Table 8 presents the results.

Table 8

Dependence OLS Specification

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	GAAP ETR	Extra ETR	GAAP ETR	Extra ETR	GAAP ETR	Extra ETR
Family	-0.0799***	-0.140***	-0.125***	-0.209***	-0.308***	-0.508***
	(0.0196)	(0.0350)	(0.0330)	(0.0609)	(0.0749)	(0.139)
Family*TM_1	0.144***	0.231***				
	(0.0374)	(0.0679)				

17 It can be seen that all interaction terms with tax morale have a positive coefficient, not only for family firms. With a less conservative clustering of the standard errors they might become significant.

18 For some firms the directly owned shares are not reported. For this reason the number of observations in table 6 deviated from previous specifications.

Family*TM_2			0.191***	0.302***		
			(0.0532)	(0.0996)		
Family*TM_avg					0.424***	0.685***
					(0.108)	(0.199)
Government	-0.0403	-0.0745	-0.0147	-0.0375	-0.258	-0.316
	(0.108)	(0.111)	(0.108)	(0.114)	(0.278)	(0.280)
Government*TM_1	0.162	0.244				
	(0.232)	(0.238)				
Government*TM_2			0.0867	0.133		
			(0.192)	(0.202)		
Government*TM_avg					0.422	0.511
					(0.405)	(0.408)
Financial	0.0474	0.0395	0.0403	0.0342	0.0381	0.00212
	(0.0325)	(0.0378)	(0.0432)	(0.0517)	(0.0728)	(0.0834)
Financial*TM_1	-0.0846	-0.0762				
	(0.0575)	(0.0655)				
Financial*TM_2			-0.0574	-0.0534		
			(0.0651)	(0.0762)		
Financial*TM_avg					-0.0481	-0.00264
					(0.101)	(0.114)
Family*High Dependence	0.00146	0.0299	0.0212	0.0581*	0.0446	0.134**
	(0.0240)	(0.0374)	(0.0225)	(0.0327)	(0.0413)	(0.0592)
Government*High Dependence	0.0226	-0.0354	0.0148	-0.0653	-0.175	-0.314
	(0.111)	(0.136)	(0.139)	(0.167)	(0.319)	(0.417)
Financial*High Dependence	-0.0381	-0.0455	-0.0291	-0.0293	0.0219	0.0202
	(0.0397)	(0.0384)	(0.0729)	(0.0680)	(0.124)	(0.118)
Industry*High Dependence	-0.0252	-0.0345*	-0.0355	-0.0409*	-0.0707	-0.0923*
	(0.0196)	(0.0183)	(0.0244)	(0.0246)	(0.0445)	(0.0551)
Family*High Dependence*TM_x	-0.000413	-0.0455	-0.0283	-0.0780	-0.0581	-0.175**
	(0.0406)	(0.0641)	(0.0320)	(0.0475)	(0.0548)	(0.0799)
Government*High Dependence*TM_x	0.110	0.217	0.106	0.230	0.354	0.547
	(0.206)	(0.242)	(0.216)	(0.249)	(0.444)	(0.567)
Financial*High Dependence*TM_x	0.0760	0.0881	0.0452	0.0430	-0.0301	-0.0291
	(0.0812)	(0.0775)	(0.118)	(0.111)	(0.180)	(0.171)
Industry*High Dependence*TM_x	0.0621	0.0777*	0.0649	0.0715*	0.108*	0.137*
	(0.0411)	(0.0401)	(0.0407)	(0.0412)	(0.0657)	(0.0808)
Family*Tax Difference	-0.0213	-0.101*	0.0390	-0.00711	0.0443	0.00588
	(0.0505)	(0.0554)	(0.0537)	(0.0732)	(0.0501)	(0.0655)

Government*Tax Difference	0.253**	0.270***	0.237**	0.249**	0.297***	0.303***
	(0.102)	(0.101)	(0.104)	(0.103)	(0.109)	(0.105)
Financial*Tax Difference	0.0165	0.00394	0.00231	-0.0143	0.0157	0.00632
	(0.0383)	(0.0483)	(0.0297)	(0.0346)	(0.0305)	(0.0383)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country-Wave Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	132,338	130,741	132,338	130,741	132,338	130,741
R-squared	0.511	0.502	0.511	0.502	0.511	0.502

Note: The regressions presented in this tables are based on model (1). The dependent variables are the long-run effective tax rates, defined as $ETR_{i,t}{}^{GAAP\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Income\ Before\ Taxes_{i,t}}$ and $ETR_{i,t}{}^{Extra\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5}(Income\ Before\ Taxes_{i,t}+Extraordinary\ Income)}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. The same control variables as reported in table 3 are included in each regression but the coefficients are not reported for the sake of brevity. See the appendix for a more detailed description of the measurement of the variables. Each regression includes industry fixed effects and country-wave fixed effects where wave refers to the five year period over which the averages are taken. For each variable the standard error is presented in parentheses. The standard errors are clustered across countries, years and industries using the multiway cluster approach by Cameron, Gelbach and Miller (2011). ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions.

The specification in table 8 investigates the effect of an ownership share above 90%. While the negative base effect of family ownership and the positive interaction with tax morale are still existent, the dependence indicator seems to add little information. There are few significant additional effects for firms with a high ownership share. For the set of industrial firms there seems to be a negative base effect of high ownership that is diminished and eventually overcompensated by reputational concerns in high tax morale countries (as can be seen from the interaction between industry ownership, high owner share indicator, and tax morale). These reputational concerns are in line with the weak evidence on industrial firms when name similarity was included in the regressions.

5.3 Government Effectiveness

The emergence and change of social norms on taxation are a steady process and the literature on the determinants of tax morale is growing in recent years (see e.g. Kountouris and Remoundou, 2013, and Lago-Penas and Lago-Penas, 2010). For this analysis it is important that there is no underlying factor that drives tax morale and causes differences in the tax payments between different owner types. One factor that comes into mind is the effectiveness of governments. On the

one side ineffective governments can be bad in enforcing tax laws. This might bias the previous results if different types of firms benefit asymmetrically from ineffective governments. It could be the case that family firms are benefiting from ineffective government as they potentially have a higher degree of secrecy, e.g., when family members trust each other. When low government effectiveness lowers tax morale in general, this may cause a correlation between the payments of tax morale and the tax payments of family-owned firms that actually is a correlation between government effectiveness and the tax payments of family-owned firms (an omitted variable bias). In order to account for this possibility this section introduces government effectiveness.

There are other reasons why government effectiveness could have a different impact on the tax payments of firms with different owner types. It can be the case that ineffective governments are laxer in the control of certain types of firms, e.g. if politicians benefit from corruption in the industrial sector. Another interesting question is how the tax payment of government owned firms is affected by the effectiveness of governments. It is easy to imagine a positive or a negative effect on the effective tax rate of government owned firms. If the effectiveness of government owned firms is correlated with the effectiveness of the government, this may also be reflected in their tax strategy. Therefore, there can be a lack of tax planning in government owned firms if the government is ineffective which would lead to higher effective tax rates. On the other hand, ineffective governments could simply ignore the tax payments of government-owned firms, which would lead to lower effective tax rates.

The data to measure government effectiveness is taken from the Worldwide Governance Indicators[19]. The variable that is used in the analysis below is called government effectiveness and captures *"perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies."* (Kaufmann et al. 2010). The indicator is created by using household and firm surveys and expert opinions, e.g. from international organizations. The indicator is therefore based on the perception of government effectiveness rather than on objective numbers. As the intention is to rule out that government effectiveness determines tax payments of firms and the formation of tax morale, this is actually an advantage. The formation of tax morale should be driven by the perception of government effectiveness. The indicator is scaled to reach from -2.5 (low government effectiveness) to +2.5

[19] For a detailed description of the indicator see Kaufmann et al. (2010)

(high government effectiveness). In order to test whether government effectiveness has an impact on the previously observed results it is interacted with each ownership type. Table 9 presents the results.

Table 9

Government Efficiency OLS Specification

	(1) GAAP ETR	(2) Extra ETR	(3) GAAP ETR	(4) Extra ETR	(5) GAAP ETR	(6) Extra ETR
Family	-0.0994***	-0.156***	-0.130***	-0.203***	-0.298***	-0.457***
	(0.0189)	(0.0315)	(0.0281)	(0.0487)	(0.0519)	(0.0877)
Family*TM_1	0.182***	0.266***				
	(0.0311)	(0.0567)				
Family*TM_2			0.202***	0.299***		
			(0.0437)	(0.0784)		
Family*TM_avg					0.413***	0.619***
					(0.0723)	(0.124)
Government	-0.00311	-0.00940	-0.00187	-0.00288	-0.0735	-0.0432
	(0.0534)	(0.0503)	(0.0646)	(0.0631)	(0.125)	(0.118)
Government*TM_1	0.0938	0.121				
	(0.116)	(0.107)				
Government*TM_2			0.0746	0.0880		
			(0.114)	(0.109)		
Government*TM_avg					0.165	0.131
					(0.182)	(0.172)
Financial	0.0182	0.0243	0.0263	0.0307	0.0349	0.0291
	(0.0354)	(0.0413)	(0.0284)	(0.0342)	(0.0493)	(0.0600)
Financial*TM_1	-0.0355	-0.0484				
	(0.0594)	(0.0686)				
Financial*TM_2			-0.0433	-0.0518		
			(0.0409)	(0.0484)		
Financial*TM_avg					-0.0504	-0.0439
					(0.0653)	(0.0787)
Family*Government Effectiveness	0.00372	0.00977	-0.00469	-0.00252	-0.00313	-6.52e-05
	(0.00653)	(0.00742)	(0.00607)	(0.00720)	(0.00573)	(0.00626)
Government*Government Effectiveness	-0.0348***	-0.0406***	-0.0373***	-0.0437***	-0.0347***	-0.0410***
	(0.00864)	(0.00930)	(0.0103)	(0.0105)	(0.00854)	(0.00928)
Financial*Government Effectiveness	0.00496	0.00109	0.00649	0.00330	0.00577	0.00276
	(0.00714)	(0.00790)	(0.00634)	(0.00676)	(0.00677)	(0.00753)
Family*Tax Difference	0.000225	-0.0360	0.00390	-0.0286	0.0106	-0.0147
	(0.0343)	(0.0491)	(0.0371)	(0.0523)	(0.0353)	(0.0447)
Government*Tax Difference	0.0183	-0.00566	0.00685	-0.0241	0.0208	-0.0262

	(0.0492)	(0.0514)	(0.0470)	(0.0485)	(0.0472)	(0.0481)
Financial*Tax Difference	0.0653*	0.0288	0.0601	0.0237	0.0599	0.0274
	(0.0385)	(0.0445)	(0.0381)	(0.0433)	(0.0404)	(0.0480)
Controls	YES	YES	YES	YES	YES	YES
Country-Wave FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Observations	169,777	167,676	169,777	167,676	169,777	167,676
Adjusted R-squared	0.399	0.390	0.399	0.390	0.399	0.390

Note: The regressions presented in this tables are based on model (1). The dependent variables are the long-run effective tax rates, defined as $ETR_{i,t}^{GAAP\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Income\ Before\ Taxes_{i,t}}$ and $ETR_{i,t}^{Extra\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} (Income\ Before\ Taxes_{i,t} + Extraordinary\ Income)}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. The same control variables as reported in table 3 are included in each regression but the coefficients are not reported for the sake of brevity. See the appendix for a more detailed description of the measurement of the variables. Each regression includes industry fixed effects and country-wave fixed effects where wave refers to the five year period over which the averages are taken. For each variable the standard error is presented in parentheses. The standard errors are clustered across countries, years and industries using the multiway cluster approach by Cameron, Gelbach and Miller (2011). ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions.

The basic results do not change. It is still the case that family ownership has a negative base effect and that family-owned firms seem to be most sensitive to tax norms. There is no support for the hypothesis that omitting government efficiency caused the results in the previous regressions. Government efficiency enters significantly and with a negative sign when it is interacted with government ownership. This is a very interesting result. A possible interpretation is that efficient governments put more pressure on firms to be profitable which leads to decreased tax payments.

5.4 Additional Interaction Terms

In table 2 it can be seen that firms that differ in ownership also differ w.r.t. other characteristics. The interaction terms between the owner types and tax morale might actually capture the interactions of other variables with tax morale. For this reason table 10 shows the results if interaction terms of tax morale with other firm variables are included. The family dummy and the interaction between family ownership and tax morale keep the signs found in the previous regressions and are still significant. Of the other interaction terms the most interesting one is the interaction term between tax morale and size. With increasing size firms seem to care less about tax morale. As the visibility of firms should increase with the size (and therefore the fear of reputational damage) this result seems odd. One explanation is that reputational concerns are more important in the personal environment of managers and families. In bigger firms the responsibility

for a certain tax strategy might be divided between several managers and therefore be easier to hide from the personal environment. Overall, the preserved significance of the coefficients on family ownership and its interaction with tax morale support the previous findings. The type of ownership seems to have a direct effect on how firms react to tax morale. This may be caused by the personal reputational concerns of the family owners and their ability to direct the actions of the firm.

Table 10

Additional Interaction Terms

	(1) GAAP ETR	(2) Extra ETR	(3) GAAP ETR	(4) Extra ETR	(5) GAAP ETR	(6) Extra ETR
Family	-0.0488**	-0.0833***	-0.0892***	-0.150***	-0.216***	-0.332***
	(0.0213)	(0.0266)	(0.0253)	(0.0420)	(0.0517)	(0.0781)
Family*TM_1	0.0848**	0.129***				
	(0.0409)	(0.0483)				
Family*TM_2			0.138***	0.217***		
			(0.0404)	(0.0685)		
Family*TM_avg					0.298***	0.445***
					(0.0746)	(0.111)
Government	-0.0622	-0.0681	-0.0288	-0.0221	-0.219	-0.192
	(0.0709)	(0.0738)	(0.0754)	(0.0795)	(0.169)	(0.174)
Government*TM_1	0.199	0.224				
	(0.151)	(0.157)				
Government*TM_2			0.104	0.101		
			(0.132)	(0.140)		
Government*TM_avg					0.362	0.330
					(0.247)	(0.254)
Financial	0.0307	0.0284	0.0344	0.0366	0.0573	0.0516
	(0.0328)	(0.0351)	(0.0313)	(0.0355)	(0.0590)	(0.0641)
Financial*TM_1	-0.0555	-0.0559				
	(0.0602)	(0.0638)				
Financial*TM_2			-0.0515	-0.0588		
			(0.0476)	(0.0531)		
Financial*TM_avg					-0.0781	-0.0734
					(0.0824)	(0.0891)
Size*TM_x	-0.0438**	-0.0524**	-0.0330**	-0.0302*	-0.0721**	-0.0805**
	(0.0206)	(0.0265)	(0.0158)	(0.0180)	(0.0330)	(0.0400)
Age*TM_x	0.00161	0.00254	0.000357	0.00102	0.00162	0.00364
	(0.00152)	(0.00169)	(0.00128)	(0.00160)	(0.00283)	(0.00332)
Plant, Property and Equipment*TM_x	-0.180**	-0.262**	-0.212***	-0.305***	-0.410***	-0.545***
	(0.0863)	(0.117)	(0.0695)	(0.101)	(0.131)	(0.188)
Intangible Assets*TM_x	1.905***	1.977***	1.689**	1.759**	3.447***	3.621***
	(0.566)	(0.603)	(0.753)	(0.793)	(1.260)	(1.371)

Financial Profits*TM_x	-14.76**	-14.85*	-10.38*	-9.686*	-21.18*	-20.12*
	(7.528)	(7.939)	(5.615)	(5.804)	(11.22)	(11.59)
Foreign Owner*TM_x	0.0112	-0.0237	0.0136	-0.0254	0.0186	-0.109*
	(0.0367)	(0.0301)	(0.0474)	(0.0391)	(0.0727)	(0.0608)
Foreign Subsidiary*TM_x	0.0944**	0.0352	0.0677**	0.00997	0.211***	0.0755
	(0.0390)	(0.0341)	(0.0314)	(0.0312)	(0.0592)	(0.0464)
Leverage*TM_x	0.0249	0.153	-0.00626	0.144	-0.0518	0.305
	(0.100)	(0.126)	(0.0790)	(0.112)	(0.151)	(0.211)
Family*Tax Difference	-0.0209	-0.0958**	0.0337	-0.0128	0.0350	-0.00896
	(0.0444)	(0.0483)	(0.0472)	(0.0598)	(0.0450)	(0.0512)
Government*Tax Difference	0.263***	0.275***	0.236***	0.235***	0.266***	0.262***
	(0.0739)	(0.0698)	(0.0778)	(0.0737)	(0.0745)	(0.0678)
Financial*Tax Difference	0.0338	0.0202	0.0193	0.00219	0.0243	0.0110
	(0.0272)	(0.0351)	(0.0232)	(0.0298)	(0.0247)	(0.0316)
Size	0.0173*	0.0212*	0.0159	0.0136	0.0464**	0.0518*
	(0.0101)	(0.0125)	(0.00979)	(0.00963)	(0.0232)	(0.0272)
Age	-0.000628	-0.00126	-1.40e-05	-0.000584	-0.000959	-0.00256
	(0.000823)	(0.000946)	(0.000836)	(0.00108)	(0.00204)	(0.00242)
Returns on Assets	-0.268***	-0.245***	-0.268***	-0.246***	-0.268***	-0.246***
	(0.100)	(0.0905)	(0.100)	(0.0901)	(0.100)	(0.0895)
Leverage	-0.0835	-0.157**	-0.0642	-0.169**	-0.0321	-0.298*
	(0.0519)	(0.0703)	(0.0508)	(0.0777)	(0.107)	(0.155)
Plant, Property and Equipment	0.0769	0.113	0.117**	0.170**	0.276***	0.367***
	(0.0525)	(0.0693)	(0.0492)	(0.0714)	(0.0986)	(0.141)
Intangible Assets	-0.996***	-1.024***	-1.103**	-1.139**	-2.468***	-2.583***
	(0.311)	(0.330)	(0.511)	(0.537)	(0.915)	(0.994)
Financial Profits	5.738	5.570	4.788	4.101	13.31*	12.31
	(3.573)	(3.752)	(3.242)	(3.310)	(7.703)	(7.916)
Dependence Indicator	-0.00669	0.00254	-0.00567	0.00365	-0.00608	0.00344
	(0.0142)	(0.00974)	(0.0135)	(0.0107)	(0.0142)	(0.0102)
Foreign Owner	0.00461	0.0313*	0.00114	0.0351	-0.00328	0.0978**
	(0.0223)	(0.0185)	(0.0338)	(0.0275)	(0.0552)	(0.0460)
Foreign Subsidiary	-0.0680***	-0.0336*	-0.0626***	-0.0222	-0.172***	-0.0706**
	(0.0217)	(0.0181)	(0.0216)	(0.0210)	(0.0435)	(0.0335)
Loss Carryforward	0.0763***	0.0468***	0.0762***	0.0465***	0.0762***	0.0467***
	(0.0125)	(0.0105)	(0.0123)	(0.0104)	(0.0123)	(0.0105)
Controls	YES	YES	YES	YES	YES	YES
Country-Wave FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Observations	173,445	171,320	173,445	171,320	173,445	171,320
Adjusted R-squared	0.495	0.486	0.492	0.482	0.492	0.482

Note: The regressions presented in this tables are based on model (1). The dependent variables are the long-run effective tax rates, defined as $ETR_{i,t}^{GAAP\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Income\ Before\ Taxes_{i,t}}$ and $ETR_{i,t}^{Extra\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} (Income\ Before\ Taxes_{i,t} + Extraordinary\ Income)}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. The same control variables as reported in table 3 are included in each regression. See the appendix for a more detailed description of the measurement of the variables. Each regression includes industry fixed effects and country-wave fixed effects where wave refers to the five year period over which the averages are taken. For each variable the standard error is presented in parentheses. The standard errors are clustered across countries, years and industries using the multiway cluster approach by Cameron, Gelbach and Miller (2011). ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions.

Further robustness checks, including several sample restrictions, are presented in appendix 7.4.

6. Conclusion

This paper investigated the effect of tax morale on corporate tax planning. The empirical strategy exploited cross-country differences in tax morale obtained from the EVS and the WVS and differences in the type of ownership, in particular whether the firm was owned by a family, by an industrial company, by a public institution or a financial company. The results show that family firms do not necessarily pay more taxes but are more sensitive to the tax morale in a society. The negative base effect could be interpreted as evidence for a higher benefit of families from tax savings or enhanced ability to implement a high degree of secrecy. This benefits seem to be higher than costs of being tax aggressive such as costs from detection or agency costs. This is in contrast with the results from a previous contribution by Chen et al. (2010) who find that family firms are less tax aggressive. It should be noted that this difference could be caused by the different types of firms that are investigated (Chen et al., 2010, investigated firms from the S&P1500).

It was found that tax payments of family firms are increasing in tax morale. The results were confirmed in several specifications and were found to be rather robust to sample restrictions. These results indicate that reputational concerns and the moral code of the owning families or individuals matter for the decision on being tax aggressive. The results extend the evidence from the literature on the role of social norms in tax decisions to the corporate sector. It seems that family-owned firms act more like individuals in the sense that they take into account social norms on taxation in their tax strategy. This is in line with contributions that found evidence for the importance of other motives than profit maximization, e.g. protecting the family name or acting in a socially responsible behavior.

In a second step it was investigated whether firms react differently to social tax norms if the owner's name appears in the firm's name or the families own more than 90% of the shares. The results showed no significant evidence that name similarity or a high ownership share had an effect on the

tax payments of family-owned firms. It is therefore difficult to tell what causes the higher sensitivity of family-owned firms to tax morale. A significant effect of the similarity of the name could have supported the hypothesis that family firms are more sensitive because of reputational concerns while a significant effect of the ownership share would have pointed to an important role of control over the firm's actions. Distinguishing between motives for socially "good" behavior can be also hard in a personal interview, though, and in many cases both motives will be affected by each other.

Overall the results in this contribution suggest that moral considerations matter for corporate tax planning. While the importance of ethics is widely accepted in the determination of personal income tax reporting, further investigations on the corporate level should be conducted. If a robust effect of tax morale on corporate tax planning can be established this can have important policy implications. The results in this paper suggest that personal motives matter in corporate tax decisions. If governments want to increase tax payments without raising tax rates or increasing the tax base, they could try to increase the tax morale or try to change the way firms react to tax morale, e.g. by increasing the visibility of tax payments of corporations. However, governments should also keep in mind that increasing tax morale could come at a potential cost of discrimination against family firms. If these react stronger to tax morale this poses a disadvantage compared to other firms.

7. Appendix

7.1 Long Run Sample

Table 11

Long Run Sample

Year / **Country**	2009	2010	2011	2012	2013	**Total**
Austria	415	394	133	63	0	1005
Belgium	5472	458	253	235	45	6463
Bosnia and Herzegovina	424	170	405	13	0	1012
Bulgaria	1119	617	468	318	0	2522
Croatia	1812	112	97	77	0	2098
Cyprus	4	0	0	0	0	4
Czech Republic	2981	658	549	369	0	4557
Denmark	0	0	0	239	0	239
Estonia	278	11	4	7	0	300

Finland	267	42	33	37	25	404
France	21614	1605	1111	835	0	25165
Greece	2324	236	171	162	0	2893
Hungary	54	23	10	10	9	106
Iceland	38	3	5	5	0	51
Ireland	253	54	46	25	0	378
Italy	42506	4589	5012	3636	2462	58205
Latvia	463	74	44	27	0	608
Lithuania	164	43	38	28	0	273
Luxembourg	110	63	32	34	0	239
Malta	59	6	8	6	0	79
Netherlands	167	202	93	73	60	595
Norway	11797	1273	942	959	0	14971
Poland	2259	747	407	299	121	3833
Portugal	1085	657	242	173	0	2157
Russian Federation	14792	3401	3111	3108	11	24423
Slovakia	796	193	139	100	0	1228
Slovenia	0	771	115	61	0	947
Spain	5537	577	368	2067	554	9103
Switzerland	30	1	4	2	0	37
Turkey	11	15	20	10	10	66
Ukraine	2661	236	176	152	0	3225
United Kingdom	4191	697	512	488	371	6259
Total	123683	17928	14548	13618	3668	**173445**

Note: The year indicates the last year for which the five year measures are constructed. The data thus goes back until 2005.

7.2 Average Tax Morale Measure

Table 12

Average Tax Morale Measure

Year / Country	2005	2006	2007	2008	2009	2010	2011	2012
Austria				0.715				
Belgium					0.646			
Bosnia and Herzegovina				0.776				
Bulgaria	0.734			0.792				
Croatia				0.727				
Cyprus	0.672			0.641			0.773	
Czech Republic				0.733				
Denmark				0.799				

Estonia				0.747			0.749	
Finland	0.762				0.786			
France		0.686		0.726				
Germany		0.762		0.782				
Greece				0.731				
Hungary				0.819	0.776			
Iceland					0.780			
Ireland				0.743				
Italy	0.758				0.750			
Latvia				0.737				
Lithuania				0.646				
Luxembourg				0.701				
Malta				0.839				
Netherlands		0.749		0.749				0.788
Norway			0.746		0.741			
Poland	0.727			0.709				0.739
Portugal				0.762				
Russian Federation		0.662		0.646			0.666	
Slovakia				0.741				
Slovenia				0.779			0.805	
Spain			0.771	0.730			0.807	
Switzerland			0.769	0.759				
Turkey			0.851		0.857			0.859
Ukraine			0.636		0.734			0.716
United Kingdom	0.745				0.795			

7.3 Variable Measurement

Table 13

Variable Measurement

Variable	Measurement
Long Run GAAP Effective Tax Rate	$ETR_{i,t}{}^{GAAP\ LR} = \frac{\sum_{z=1}^{5} Book\ Taxes_{i,z}}{\sum_{z=1}^{5} Income\ Before\ Taxes_{i,z}}$
Long Run Effective Tax Rate with Extraordinary Profits	$ETR_{i,t}{}^{Extra\ LR} = \frac{\sum_{z=1}^{5} Book\ Taxes_{i,z}}{\sum_{z=1}^{5}(Income\ Before\ Taxes_{i,z} + Extraordinary\ Income_{i,z})}$
Family	=1 if the owner is a family or an individual, =0 otherwise
Financial	=1 , =0 otherwise
Government	=1, =0 otherwise

Tax Morale (average)	$$TM_{j,t}^{avg} = \frac{\sum_{z_j}^{Z_j}\left[\left(10 - \frac{\sum_{m_z=1}^{M_z} TM_{m_z}}{M_z}\right) * \frac{10}{9}\right]}{Z_j}$$ Where Z_j refers to all points in time in which survey data is available for a firm observation in t, M_z refers to the respondents of the survey and TM_{m_z} to their answer. $\left(10 - \frac{\sum_{m_z=1}^{M_z} TM_{m_z}}{M_z}\right) * \frac{10}{9}$ is the average rescaled survey response.
Tax Morale (share lowest response)	$$TM_{j,t}^{1} = \frac{\sum_{z_j}^{Z_j} \frac{\sum_{m_z=1}^{M_z} 1_{TM_{m_z}=1}}{M_z}}{Z_j}$$ Where Z_j refers to all points in time in which survey data is available for a firm observation in t, M_z refers to the respondents of the survey and TM_{m_z} to their answer. $\frac{\sum_{m_z=1}^{M_z} 1_{TM_{m_z}=1}}{M_z}$ is the share of respondents who gave the lowest possible answer (=1).
Tax Morale (share one of the two lowest responses)	$$TM_{j,t}^{1} = \frac{\sum_{z_j}^{Z_j}\left[1_{TM_{m_z}\leq 2}\right]}{Z_j}$$ Where Z_j refers to all points in time in which survey data is available for a firm observation in t, M_z refers to the respondents of the survey and TM_{m_z} to their answer. $\frac{\sum_{m_z=1}^{M_z} 1_{TM_{m_z}\leq 2}}{M_z}$ is the share of respondents who gave one of the lowest possible answer (=1 or =2).
Tax Difference	$Tax\ Difference_{j,t} = \frac{\sum_{z=1}^{5}\left(Top\ Corporate\ Tax\ Rate_{j,z} - Top\ Individual\ Tax\ Rate_{j,z}\right)}{5}$
Size	$Size_{i,t} = \frac{\sum_{z=1}^{5} \ln(Total\ Assets_{i,z})}{5}$
Age	Age of the firm
Returns on Assets	$ROA_{i,t} = \frac{\sum_{z=1}^{5} EBIT_{i,z}}{\sum_{z=1}^{5} Total\ Assets_{i,z}}$
Leverage	$LEV_{i,t} = \frac{\sum_{z=1}^{5} Long\ Term\ Debt_{i,z}}{\sum_{z=1}^{5} Total\ Assets_{i,z}}$

Plant, Property and Equipment	$PPE_{i,t} = \frac{\sum_{z=1}^{5} Plant, Property\ and\ Equipment_{i,z}}{\sum_{z=1}^{5} Total\ Assets_{i,z}}$
Intangible Assets	$ROA_{i,t} = \frac{\sum_{z=1}^{5} Intangible\ Assets_{i,z}}{\sum_{z=1}^{5} Total\ Assets_{i,z}}$
Financial Profits	$ROA_{i,t} = \frac{\sum_{z=1}^{5} Financial\ Profits_{i,z}}{\sum_{z=1}^{5} Total\ Assets_{i,z}}$
Dependence	=1 if the ultimate owner owns at least 75% of the firm, 0 otherwise
Foreign Owner	=1 if the owner of the firm is from another country, 0 otherwise
Foreign Subsidiary	=1 if the firm has a foreign subsidiary, 0 otherwise
Loss Carryforward	=1 if the firm had made losses in at least one year over the five year horizon

7.4 Robustness Checks

In this section further robustness checks are presented. The measurement of some of the variables and the construction of the sample are investigated. The same OLS regressions as presented in table 3 are run with changes in the sample. In particular, in separate steps, only firms that have owners from the same country and no foreign subsidiaries are used, only firms that did not make any losses are used, and Italian firms is excluded. The results presented below are very similar for Tobit specifications and are available upon request.

7.4.1 Purely Domestic Firms

In all specifications dummies indicating whether the firm's owner is foreign and whether the firm has a foreign subsidiary were used. This might be a rather rough approximation for transactions between firms and their foreign counterparts. In order to rule out that the results are biased because of an incomplete representation of firms' international structure, table 14 presents the results only for firms that have a domestic owner and no foreign subsidiary. The main results do not change compared to the previous specifications.

Table 14

Purely Domestic Firms

	(1) GAAP ETR	(2) Extra ETR	(3) GAAP ETR	(4) Extra ETR	(5) GAAP ETR	(6) Extra ETR

Family	-0.0823***	-0.132***	-0.139***	-0.214***	-0.333***	-0.475***
	(0.0219)	(0.0333)	(0.0376)	(0.0629)	(0.0863)	(0.130)
Family*TM_1	0.145***	0.212***				
	(0.0430)	(0.0633)				
Family*TM_2			0.212***	0.310***		
			(0.0622)	(0.102)		
Family*TM_avg					0.458***	0.638***
					(0.124)	(0.185)
Government	-0.0562	-0.0743	-0.0301	-0.0408	-0.339	-0.298
	(0.0920)	(0.0899)	(0.101)	(0.101)	(0.244)	(0.228)
Government*TM_1	0.199	0.248				
	(0.196)	(0.191)				
Government*TM_2			0.115	0.141		
			(0.177)	(0.177)		
Government*TM_avg					0.541	0.489
					(0.356)	(0.333)
Financial	0.0486	0.0552	0.0570	0.0726*	0.0960	0.114
	(0.0382)	(0.0415)	(0.0381)	(0.0414)	(0.0662)	(0.0729)
Financial*TM_1	-0.0855	-0.101				
	(0.0699)	(0.0757)				
Financial*TM_2			-0.0828	-0.110*		
			(0.0583)	(0.0626)		
Financial*TM_avg					-0.130	-0.157
					(0.0937)	(0.102)
Family*Tax Difference	-0.0300	-0.107**	0.0488	0.00829	0.0490	0.00338
	(0.0503)	(0.0497)	(0.0613)	(0.0751)	(0.0565)	(0.0646)
Government*Tax Difference	0.258**	0.278***	0.249**	0.267***	0.321***	0.309***
	(0.105)	(0.0914)	(0.113)	(0.0992)	(0.112)	(0.0905)
Financial*Tax Difference	0.0508	0.0461	0.0270	0.0126	0.0311	0.0199
	(0.0394)	(0.0429)	(0.0338)	(0.0362)	(0.0357)	(0.0386)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country-Wave Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	140,796	139,164	140,796	139,164	140,796	139,164
Adjusted R-squared	0.501	0.501	0.501	0.492	0.492	0.492

Note: The regressions presented in this tables are based on model (1). The dependent variables are the long-run effective tax rates, defined as ${ETR_{i,t}}^{GAAP\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Income\ Before\ Taxes_{i,t}}$ and ${ETR_{i,t}}^{Extra\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5}(Income\ Before\ Taxes_{i,t}+Extraordinary\ Income)}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. The same control variables as reported in table 3 are included in each regression but the coefficients are not reported for the sake of brevity. See the appendix for a more detailed description of the measurement of the variables. Each regression includes industry fixed effects and country-wave fixed effects where wave refers to the five year period over which the averages are taken. For each variable the standard error is presented in parentheses. The standard errors are clustered across countries, years and industries using the multiway cluster approach by Cameron, Gelbach and Miller (2011). ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal

effects are computed as $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_t} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions.

7.4.2 Firms without Losses

Another source for potentially biased results is the rather crude approximation for losses. Losses can have an important impact on the tax burden in the following years. In most countries losses can be carryforward or backwards. Unfortunately, the Amadeus dataset does not report loss carryforward or backwards. As national regulations vary with respect to losses carryforward this lack of data makes a precise estimation of a firm's tax burden difficult. To minimize the bias of misrepresenting losses carry-forward a sample with firms that were profitable for all observed years is used. Table 15 summarizes the results.

It can be seen that results presented before are not too sensitive to the exclusion of firms that made losses. The coefficients on family ownership and the interaction between family ownership and tax morale even become more significant in some of the regressions.

Table 15

Firms without Losses

	(1) GAAP ETR	(2) Extra ETR	(3) GAAP ETR	(4) Extra ETR	(5) GAAP ETR	(6) Extra ETR
Family	-0.0699***	-0.125***	-0.0995***	-0.185***	-0.232***	-0.403***
	(0.0217)	(0.0320)	(0.0336)	(0.0515)	(0.0720)	(0.101)
Family*TM_1	0.118***	0.200***				
	(0.0453)	(0.0616)				
Family*TM_2			0.145***	0.261***		
			(0.0559)	(0.0836)		
Family*TM_avg					0.312***	0.535***
					(0.104)	(0.143)
Government	-0.0320	-0.0177	-0.00351	0.0154	-0.186	-0.0960
	(0.0595)	(0.0603)	(0.0695)	(0.0693)	(0.137)	(0.137)
Government*TM_1	0.129	0.113				
	(0.126)	(0.128)				
Government*TM_2			0.0553	0.0333		
			(0.120)	(0.120)		
Government*TM_avg					0.310	0.188
					(0.200)	(0.199)
Financial	0.0232	0.0268	0.0293	0.0351	0.0567	0.0546
	(0.0281)	(0.0271)	(0.0300)	(0.0286)	(0.0529)	(0.0500)
Financial*TM_1	-0.0459	-0.0529				
	(0.0535)	(0.0508)				

Financial*TM_2			-0.0471	-0.0565		
			(0.0469)	(0.0443)		
Financial*TM_avg					-0.0810	-0.0782
					(0.0744)	(0.0706)
Family*Tax Difference	-0.0292	-0.117**	0.0121	-0.0392	0.0126	-0.0417
	(0.0426)	(0.0507)	(0.0505)	(0.0621)	(0.0446)	(0.0518)
Government*Tax Difference	0.192***	0.213***	0.173**	0.186***	0.216***	0.211***
	(0.0644)	(0.0639)	(0.0700)	(0.0675)	(0.0617)	(0.0578)
Financial*Tax Difference	0.0332*	0.0352	0.0192	0.0157	0.0204	0.0198
	(0.0195)	(0.0226)	(0.0170)	(0.0197)	(0.0172)	(0.0219)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country-Wave Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	125,850	125,219	125,850	125,219	125,850	125,219
R-squared	0.482	0.476	0.482	0.476	0.482	0.476

Note: The regressions presented in this tables are based on model (1). The dependent variables are the long-run effective tax rates, defined as ${ETR_{i,t}}^{GAAP\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Income\ Before\ Taxes_{i,t}}$ and ${ETR_{i,t}}^{Extra\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5}(Income\ Before\ Taxes_{i,t}+Extraordinary\ Income)}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. The same control variables as reported in table 3 are included in each regression but the coefficients are not reported for the sake of brevity. See the appendix for a more detailed description of the measurement of the variables. Each regression includes industry fixed effects and country-wave fixed effects where wave refers to the five year period over which the averages are taken. For each variable the standard error is presented in parentheses. The standard errors are clustered across countries, years and industries using the multiway cluster approach by Cameron, Gelbach and Miller (2011). ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\widehat{\partial ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions.

7.4.3 Exclusion of Italian Firms

As can be seen in table 11 the sample contains a large number of Italian firms. This possibly creates an overrepresentation of Italian firms. To make sure that the results are not driven by this overrepresentation, a sample is constructed where Italian firms are left out. Table 16 presents the results for a sample without Italian firms.

Table 16

Exclusion of Italian Firms

	(1) GAAP ETR	(2) Extra ETR	(3) GAAP ETR	(4) Extra ETR	(5) GAAP ETR	(6) Extra ETR
Family	-0.0409**	-0.0614***	-0.0647***	-0.107***	-0.171***	-0.262***
	(0.0167)	(0.0214)	(0.0228)	(0.0325)	(0.0504)	(0.0726)
Family*TM_1	0.0600*	0.0721*				

	(0.0330)	(0.0376)				
Family*TM_2			0.0885**	0.135***		
			(0.0355)	(0.0508)		
Family*TM_avg					0.228***	0.337***
					(0.0721)	(0.104)
Government	0.0568	0.0657	0.101**	0.123**	0.0516	0.114
	(0.0401)	(0.0419)	(0.0512)	(0.0563)	(0.124)	(0.108)
Government*TM_1	-0.0670	-0.0774				
	(0.0832)	(0.0870)				
Government*TM_2			-0.131	-0.162*		
			(0.0856)	(0.0951)		
Government*TM_avg					-0.0390	-0.124
					(0.180)	(0.157)
Financial	-0.00525	-0.00983	0.00492	0.00334	-0.0108	-0.0363
	(0.0246)	(0.0289)	(0.0229)	(0.0281)	(0.0360)	(0.0403)
Financial*TM_1	0.0253	0.0297				
	(0.0455)	(0.0538)				
Financial*TM_2			0.00340	0.00207		
			(0.0338)	(0.0419)		
Financial*TM_avg					0.0256	0.0587
					(0.0491)	(0.0545)
Family*Tax Difference	-0.0694*	-0.160***	-0.0378	-0.106**	-0.0272	-0.0920**
	(0.0370)	(0.0412)	(0.0341)	(0.0443)	(0.0358)	(0.0459)
Government*Tax Difference	0.210***	0.209***	0.165**	0.152**	0.220***	0.202***
	(0.0613)	(0.0581)	(0.0668)	(0.0624)	(0.0735)	(0.0657)
Financial*Tax Difference	0.0514**	0.0376	0.0459**	0.0309	0.0499**	0.0411
	(0.0211)	(0.0278)	(0.0211)	(0.0273)	(0.0219)	(0.0268)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country-Wave Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	115,241	113,682	115,241	113,682	115,241	113,682
R-squared	0.148	0.140	0.148	0.141	0.148	0.141

Note: The regressions presented in this tables are based on model (1). The dependent variables are the long-run effective tax rates, defined as ${ETR_{i,t}}^{GAAP\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5} Income\ Before\ Taxes_{i,t}}$ and ${ETR_{i,t}}^{Extra\ LR} = \frac{\sum_{t=1}^{5} Book\ Taxes_{i,t}}{\sum_{t=1}^{5}(Income\ Before\ Taxes_{i,t}+Extraordinary\ Income)}$. $Family_i$ indicates family ownership, $Financial_i$ indicates ownership by a financial institution, $Government_i$ indicates ownership by a public institution. The control group are therefore firms that are owned by other industrial firms. $Tax\ Morale_{j,t}$ is measured in three ways as described in sections 3.3 and 7.3. The same control variables as reported in table 3 are included in each regression but the coefficients are not reported for the sake of brevity. See the appendix for a more detailed description of the measurement of the variables. Each regression includes industry fixed effects and country-wave fixed effects where wave refers to the five year period over which the averages are taken. For each variable the standard error is presented in parentheses. The standard errors are clustered across countries, years and industries using the multiway cluster approach by Cameron, Gelbach and Miller (2011). ***,**,* next to the coefficient estimates indicate a 1%, 5%, 10% significance level. The reported marginal effects are computed as $\frac{\partial \widehat{ETR_{i,t}}}{\partial Family_i} = \hat{\beta}_1 + \hat{\beta}_2 * Tax\ Morale_{j,t} + \hat{\beta}_7 * Difference_{j,t}$ where the $\hat{\beta}$s are the estimated coefficients from the respective regressions.

It can be seen that the coefficients on the family dummy and the family-tax morale interaction term keep the signs from the previous analysis. All coefficients are further statistically significant.

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