Tax Avoidance, Horizontal Agency Conflicts and High-Quality Auditing in Private Firms

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Abstract

In this paper we investigate whether horizontal agency costs associated with concentrated ownership, CEO ownership and family ownership affect tax avoidance in private firms and whether high-quality auditing ameliorates these agency costs thereby enhancing tax avoidance. We rely on the theoretical framework developed by Desai and Dharmapala (2006) that embeds the tax sheltering decision within an agency context, and emphasizes the importance of interactions between rent diversion and tax sheltering. We argue that horizontal agency conflicts arising from ownership patterns in private firms hinder tax avoidance, but that high-quality auditing can ameliorate these agency costs leading to more tax avoidance, ceteris paribus. We use a large sample of Norwegian firms from 2000-2014 and our results provide support for the hypotheses that horizontal agency costs associated with ownership patterns in private firms hinder tax avoidance but that high-quality auditing ameliorates these agency conflicts and enhances tax avoidance in private firms.

Keywords: tax avoidance, horizontal agency costs, audit quality, private firms

I. INTRODUCTION

In this paper we take an economic approach and study tax avoidance in private firms within an agency framework.[1] In particular, we investigate whether horizontal agency costs that may occur between owners affect tax avoidance in private firms and whether high-quality auditing mitigates these agency costs.[2] Desai and Dharmapala (2006) develop a simple theoretical framework that embeds the tax sheltering decision within an agency context, and emphasizes the importance of interactions between rent diversion and tax sheltering. As tax avoidance demands complexity it can become a shield for opportunism and hence increases agency costs. Corporate tax avoidance could enhance (managerial) opportunism or resource diversion if complex tax avoidance schemes are used to mask or justify opportunistic management behavior such as earnings manipulations, related party transactions and other resource diverting actions (Desai and Dharmapala 2006). Hence tax avoidance entails an agency cost and managers or controlling shareholders could be driven to refrain from it to signal credibility and avoid anticipation of such costs by other shareholders. Prior research on tax avoidance in publicly listed family firms has documented that high ownership family firms are found to engage in less tax avoidance (Chen et al. 2010). In the same vein, McGuire et al. (2014) examine whether agency conflicts inherent in a dual class ownership structure affect tax avoidance and find that dual class firms engage in less tax avoidance. To our

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[1] We follow Hanlon and Heitzman (2010: 137) and "define tax avoidance broadly as the reduction of explicit taxes. This definition … reflects all transactions that have any effect on the firm's explicit tax liability". At the one end of the tax avoidance continuum, tax avoidance may capture tax aggressive behavior that is tax evasion (and thus illegal) such as for instance deliberately classifying fixed assets in tax categories with higher depreciation rates or classifying entertainment expenses that are not tax deductible as tax deductible marketing expenses. At the other end, tax avoidance may reflect legal activities as investments in municipal bonds in the US or organizing R&D activities such that the firm maximize the credit in taxes that the Norwegian Government gives to firms that invest in research and development (https://www.skattefunn.no/prognett-skattefunn/English/1253989461805, visited August 21, 2017).
[2] Horizontal agency conflicts describe conflicts of interest that occur between different principals while vertical agency conflicts relate to conflicts of interest between principals and agents (Jensen-Meckling 1976; Demsetz and Lehn 1985, Shleifer and Vishny 1997; Roe 1994).

knowledge, no study has addressed whether agency costs arising from ownership patterns in private firms affect tax avoidance.

Agency conflicts in private firms often arise through ownership structures and family relationships (Hope et al. 2012). In this study, we take into account specific agency costs that could be relevant in a private firm setting and focus on three types of ownership structures that create horizontal agency conflicts in private firms: ownership concentration, CEO ownership and family ownership. While each of these three ownership patterns may ameliorate vertical agency problems (between manager and owner), they often create new horizontal agency problems (between different types of shareholders), in particular the expropriation of minority shareholders by the controller. We argue that horizontal agency conflicts arising from ownership patterns in private firms hinder tax avoidance.

Prior audit research has identified external auditing as a vehicle to mitigate agency problems in firms and to enhance the credibility of financial information to shareholders (Hay et al. 2014). Accounting systems play a crucial role in producing information for both investors as well as the tax authorities (Desai and Dharmapala 2007) and high-quality auditing enhances the trust in the accounting information system. We argue that external auditing could be useful in resolving the horizontal and family related agency conflicts in private firms with regard to tax management activities. By hiring a high quality auditor management/majority shareholders can signal that tax efficient (value enhancing) decisions will be made when it engages in tax avoidance and no resource diversion will take place (to avoid agency costs). When using a high quality auditor, management and majority shareholders will no longer be refrained to engage in value maximizing tax avoidance as agency costs will be neutralized.

To test our hypotheses we use a large sample of Norwegian private firms from 2000-2014, yielding 1,234,187 firm-year observations. Norway offers a valuable setting for our tests as it is possible to employ detailed (and unique) data on family relationships among shareholders and CEOs to measure agency conflicts (as in Hope et al. 2012). Tax avoidance is measured using two effective rates; the GAAP tax rate (the tax expense scaled by net income) and the cash tax rate (taxes payable scaled by net income). High quality auditor is proxed by having an audit firm that is a member of the Big-N group.[3] Our results suggest that horizontal agency costs arising from concentrated ownership, CEO ownership and family ownership are associated with less tax avoidance in private firms. However, we also find high-quality auditing ameliorates these horizontal agency conflicts and that firms audited by a high-quality auditor engage in more tax avoidance, ceteris paribus.

In all tests, we include firm-fixed effects that control for time-invariant unobservable variables. In addition, we include an extensive list of variables that are cross-sectionally associated with our measures of tax avoidance, as for example size, foreign ownership, firm performance, operating loss carry forward, tangible assets, growth, investments in subsidiaries and affiliated companies, foreign subsidiaries, board size, and fraction of independent board members. The use of firm-fixed effect and an extensive set of control variables alleviate the concern that omitted correlated variables and self-selection bias our results. Our results hold when we restrict the sample to firms that either use a non-Big 4 auditor or that have upgraded from a non-Big 4 auditor to a Big-4 auditor once, and if we split the sample large and small firms. We acknowledge, however, that firms' choice of high quality auditor is endogenous and that residual endogeneity may remain.

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[3] Our sample period covers 2000-2014. After the demise of Arthur Anderson, the Big N consist of EY, KPMG, PWC, and Deloitte.

Studying tax avoidance in private companies is useful for a number of reasons. First, private firms account for a significant part of the economic activity worldwide, and hence studying drivers of tax avoidance in private firms is economically meaningful. Second, private companies are typically very different types of companies compared to public companies and research findings from public company data may not be generalizable to private companies (Langli and Svanström, 2014). Third, Hope et al. (2012) point out that private firms exhibit heterogeneous ownership characteristics and family relationships and hence may offer a stronger test of agency conflicts related to ownership structure and family relationships. Public firms are typically more homogenous and exhibit often widespread ownership and relatively low CEO ownership and family relationships. This yields meaningful tests of the impact of agency conflicts among shareholders in private firms. Note further that private firms also offers greater variation in their choice of auditor.

The remainder of this paper is organized as follows. In the next section we briefly discuss the Norwegian institutional setting. Next, in Section 3 we discuss prior literature on drivers of tax avoidance and develop our hypotheses. In Section 4 we elaborate on the research design adopted in our study. Our sample and the results of our tests is the focus of Section 5. Finally we conclude in section 6.

II. NORWEGIAN INSTITUTIONAL SETTING

This section gives a brief overview over the tax, accounting and auditing regulation in Norway. Norway is not a member of the European Union (EU). However, through the European Economic Area (EEA) agreement, Norway is a member of EUs internal market and implements all EU-

directives that concern the free movement of goods, services, capital, and persons. The accounting and auditing regulation in Norway is therefore in most respects similar to the regulation found in the EU member states. EU directives do not govern taxation directly, only indirectly since the EU oversees that national tax rules comply with the goals of the single market (i.e., national tax rules should not discriminate between domestic and foreign companies). Thus, the Norwegian government decides how much taxes companies should pay. Importantly for our paper, the tax, accounting and auditing regulation does not discriminate between auditees of Big 4 and Non-Big 4 firms.

Norway introduced deferred taxes in 1992 in connection with a major tax reform. Since then Norway has been a low book-tax alignment country (Nobes and Schwencke, 2006). All companies are required to prepare annual accounts in accordance with the Accounting Act and tax statements in accordance with the tax regulation. Contrary to the accounting regulation, which allows the companies to use discretion and estimates and to choose between different accounting methods, the tax law contain very detailed rules regarding the timing of income and expenses and valuation of assets and liabilities. For limited liability companies the statutory tax rate was 28 percent from 1992 to 2013 and 27 percent in 2014 and 2015. Companies in oil, gas, and shipping is subject to special tax rules (our results do not depend on whether companies in oil, gas, and shipping are included or not).

Each limited liability company is treated as a separate tax unit. For firms with international operations, taxes is based on worldwide profit. An imputation system is in place to avoid double taxation. Companies with international operations or companies that are part of a group have better opportunities for tax planning activities. We include control variables that account for Norwegian and foreign subsidiaries.

The auditing standards in Norway are aligned with the international standards of auditing (ISAs) as issued by the International Assurance and Auditing Standards Board (IAASB). There are a few deviations from the ISAs due to special requirements in the Company Act and in the tax laws. However, these deviations applies to all auditors and their auditees.

All audit firms are subject to periodic reviews (FSAN 2009). Audit firms with no public clients are investigated at least every sixth year by the Norwegian Association of Auditors (Den norske Revisorforening; DnR) in collaboration with the Financial Supervisory Authority of Norway (FSAN). Audit firms with public clients are subject to inspections at least every third year by the FSAN. Audit firms with clients listed on the US stock exchanges are subject to inspections at least every third year by the PCAOB.

Until 2011, all limited liability firms, independent of size, were required to make their audited financial statements public by filing their annual report by the Brønnøysund Register Center (BRC).[4] New legislation introduced May 1st 2011, allowed small limited liability companies to decide not to have their financial statements audited. They are still required to file complete set of financial statements by the BRC. The option to opt out of auditing applies to firms with less than five million Norwegian crowns (NOK) in annual revenue (roughly $800,000), less than NOK 20 million in total assets, and fewer than 10 employees. In addition, the firm cannot be a parent company or have a license from the FSAN as for instance insurance companies, banks, real estate agencies.

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[4] BRC (www.brreg.no/home/about-us) is a government agency that is responsible for the management of public registers and governmental systems for digital exchange of information. All annual reports filed by the BRC are electronically available for everyone at no charge.

III. RELATED RESEARCH AND HYPOTHESES

Prior empirical findings on the determinants of tax avoidance

Our study contributes to the literature on *determinants* or *drivers* of tax avoidance.[5] As tax avoidance is the result of tax decisions taken by firms and its management, prior research has documented firm-level as well as managerial and governance characteristics as drivers of corporate tax avoidance. Various firm level characteristics have been documented as drivers of tax avoidance including performance, size, operating costs, leverage, growth, the scale of international operations, industry (Rego 2003) as well as the fees spent for tax services (Armstrong et al. 2011; Mills et al. 1998; Omer et al. 2006). At the executive level, annual bonuses (Hanlon et al., 2007), equity-based incentives (Desai and Dharmapala 2006) and the compensation paid to CFOs and CEOs (Rego and Wilson 2012) are shown to enhance corporate tax aggressiveness. In addition, individual executives' characteristics also seem to affect corporate tax planning (Dyreng et al. 2010). Interestingly, the effects on GAAP and cash ETRs are not always the same. For example, tax director compensation contracts/incentives lead to lower GAAP ETRs, unlike their minimal impact on cash ETRs (Armstrong et al. 2011; Robinson et al. 2010).

In this section we will only zoom in on prior research findings that are of direct relevance to the main research question of this paper, namely whether high quality auditing mitigates horizontal agency conflicts in a tax avoidance setting in private firms. Since agency conflicts in private firms often arise through ownership structures (see, for example, Hope et al. 2012), we first focus on prior research on the relationship between ownership structure and tax avoidance. Desai

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[5] For comprehensive review articles on tax avoidance research see for example Shackleford and Shevlin (2001) and Hanlon and Heitzman (2010)

and Dharmapala (2008) point out that the direction of this relationship is ex ante not clear. Firms with concentrated ownership may exhibit more tax avoidance as the controlling owners benefit more from the tax savings (e.g. Chen et al. 2010). However, to mitigate concerns by minority shareholders of masked rent seeking behavior through tax avoidance activities, high ownership family firms are found to engage less in tax avoidance (Chen et al. 2010). In the same vein, McGuire et al. (2014) examine whether agency conflicts inherent in a dual class ownership structure affect tax avoidance and find that dual class firms engage in less tax avoidance. They explain this result by the agency conflicts inherent in a dual class ownership structure and depict voting rights as the agency costs associated with managerial entrenchment allowing managers to perform at a suboptimal level.

Although it is widely recognized that corporate governance can mitigate agency problems (Desai and Dharmapala 2008), the effect of external governance characteristics on tax avoidance has not yet been subject to much research and the results are mixed. Minnick and Noga (2010) hypothesize a positive effect of 'good corporate governance' on tax avoidance, as they consider tax avoidance to be value enhancing to shareholders. In particular they examine the effect of board size, independence, composition and overall corporate governance quality and only find results for staggered boards, i.e. staggered boards are associated with higher effective tax rates; no results are found for the number of board members, the percentage of independent directors, and corporate governance indexes. Prior research has also looked at the mediating effect of governance on tax avoidance. For example, Desai and Dharampala (2006) document that there is less tax avoidance in firms with strong equity incentives when the governance is weak.[6]

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[6] More recently there has also been some research on the effect of corporate social responsibility (CSR) on tax avoidance. Lanis and Richardson (2012) provide evidence showing that more socially responsible firms

Next to corporate governance, accounting systems also play a crucial role in mitigating agency conflicts by producing information for both investors as well as tax authorities (Desai and Dharmapala 2007). As auditing provides an independent assessment of the accuracy and fairness of the financial statements (Hope et al. 2012) and thus enhances the trust in the accounting information system, it is likely that (high-quality) auditing mitigates agency conflicts and hence potentially also affects tax avoidance. Studies about auditing effects on tax avoidance are scant, and almost all of the existing evidence about auditing related determinants of tax avoidance stems from studies focusing on the consequences of tax advisory services provided jointly with audit services by external audit firms in the U.S. The evidence generally supports the presence of knowledge spillovers between the audit and tax practices of the audit firms, resulting in higher levels of tax avoidance. For example, McGuire et al. (2012) document that audit firms that have a large market share of both audit and tax services within an industry (labeled as overall industry experts) are associated with lower client ETRs. A recent working paper by Bianchi et al. (2016) examines the effect of professional networks of individual auditors on tax avoidance in the Italian institutional setting where firms are required to appoint three or five auditors to a Board of Statutory Auditors. This setting where auditors are cross-appointed to the same audit engagements enables studying how professional accountants acquire and apply knowledge and expertise across shared audit engagements. As statutory auditors form ties over repeated interactions, this could create networks that can be a conduit of knowledge spillover. The study indeed documents that clients

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are less tax aggressive. Huseynov and Klamm (2012) further explore the relationship between CSR and tax avoidance by investigating whether this relationship is affected by auditor provided tax management services. They investigate three types of CSR measures: corporate governance, diversity and community. They find that (auditor provided) tax management fees are associated with lower GAAP ETR regardless of how well firms score regarding corporate governance or diversity, whereas the negative association between tax management fees and cash ETR is conditional on corporate governance strength and diversity. Interestingly, the effect of tax management fees on both GAAP and CASH ETR is positive for companies that do not score well on the community dimension of CSR.

with better-connected auditors have comparatively greater levels of tax avoidance. To our knowledge no study has investigated the role of high-quality external auditing in mitigating the agency costs of tax avoidance. This is what we do in our study.

Horizontal agency costs of tax avoidance in private and family firms

In the tax avoidance literature two alternative theories have been used as a basis to motivate drivers of tax avoidance: on the one hand a theory predicting that tax avoidance is value enhancing, and on the other hand a theory of corporate tax avoidance within an agency framework (Kim et al. 2011; Desai and Dharmapala 2009). The former theory argues that tax planning and tax avoiding activities reduce tax obligations and hence increase profits. Consequently managers should be motivated to engage in such activities and be rewarded accordingly. According to this view on tax avoidance only direct costs of tax avoidance are considered, such as managers' time and the potential risk of detection by the tax authorities (if the adopted schemes are 'unacceptable'), and the benefits of tax avoidance clearly outweigh the costs. The other adopted perspective on tax avoidance emphasizes the interaction between tax avoidance activities and agency problems between managers and investors. Slemrod (2004), Chen and Chu (2005) and Crocker and Slemrod (2005) lay the theoretical foundation for understanding corporate tax avoidance within an agency framework. In this view corporate tax avoidance could enhance managerial opportunism or resource diversion if complex tax avoidance schemes are used to mask or justify opportunistic management behavior such as earnings manipulations, related party transactions and other resource diverting actions (Desai and Dharmapala 2006). Hence tax avoidance entails an agency cost and managers could be driven to refrain from it to signal credibility and avoid anticipation of such costs by shareholders. We will rely on these theories to motivate our hypotheses about auditing effects

12

on tax avoidance in private firms and take into account the specific agency costs that could be relevant in a private firm setting.

Agency conflicts in private firms often arise through ownership structures and family relationships (Hope et al. 2012), and there are various ways to ameliorate these conflicts. First, ownership patterns such as concentrated ownership can ameliorate one type of agency problem, namely the vertical agency conflict between shareholders and managers. However, concentrated ownership gives rise to a different type of (horizontal) agency problem, namely the potential expropriation of minority shareholders by the controlling majority shareholder (Desai and Dharmapala 2007). Hence, as horizontal agency costs increase in private firms, we expect less tax avoidance to mitigate concerns by minority shareholders of masked rent seeking behavior through tax avoidance activities. This leads to the following hypothesis:

HYPOTHESIS 1A: *Tax avoidance and ownership concentration are negatively related in private firms.*

Second, another way to ameliorate vertical agency conflicts is managerial or CEO ownership. As CEO ownership increases, the CEO incentives are more aligned with those of the other shareholders and this then reduces the vertical agency conflict (Jensen and Meckling 1976). However, CEO ownership in private firms could also give rise to a horizontal agency problem with a dominant owner-manager and a few smaller other shareholders. Likewise, we expect that CEO-owners will refrain from tax avoidance activities in private firms to signal credibility and mitigate concerns by the other shareholders. This leads to the following hypothesis:

HYPOTHESIS 1B: *Tax avoidance and CEO ownership are negatively related in private firms*

Third, we look at potential agency conflicts and the link with tax avoidance in family firms. Family firms differ from non-family firms in two important ways: 1) they have greater owner-managers incentive alignment and thus a lower owner-manager or vertical agency conflict; 2) there are bigger horizontal conflicts between dominant and small shareholders (Chen et al. 2010). Chen et al. (2010) document indeed that publicly listed family firms in the U.S. are less tax aggressive than their non-family counterparts, ceteris paribus, which suggests that family owners are willing to forego tax benefits to avoid horizontal agency costs which can arise from minority shareholders' concerns with family rent-seeking masked by tax avoidance activities. We argue that such behavior can also be expected in private family firms. This leads to the following hypothesis:

HYPOTHESIS 1C: *Tax avoidance and family ownership is negatively related in private firms*.

The mitigating effect of high-quality auditing on horizontal agency costs of tax avoidance

Prior audit research has identified external auditing as a vehicle to mitigate agency problems in firms (agency demand), to enhance the credibility of financial information to shareholders and stakeholders (information demand) and to some extent to provide some insurance (insurance or deep pocket demand) (Wallace, 2004; Hay et al. 2014). As tax expenses and liabilities are items in the financial statements that are subject to verification by the external auditor as part of his/her attestation function, it is reasonable to expect that high quality auditing would also affect the tax related financial accounts. Consistent with this, Klassen, Lisowsky, and Mescall (2016) document that tax returns prepared by Big-4 accounting firms are less tax aggressive when the preparer of the tax returns is also the firm's auditor compared to when the preparer is not the firm's statutory auditor. Thus, Big-4 firms are less tax aggressive when they prepare tax returns for their clients compared to when they prepare tax returns for non-clients.

We argue that external auditing could be useful in resolving the horizontal and family related agency conflicts in private firms with regard to tax management activities. From a demand side perspective, by hiring a high quality auditor management/majority shareholders can signal that tax efficient (value enhancing) decisions will be made when/if it engages in tax avoidance and no resource diversion will take place (to avoid agency costs). When using a high quality auditor, management and majority shareholders will no longer be refrained to engage in value maximizing tax avoidance as agency costs will be neutralized. Note further that Desai and Dharmapala (2007/8) also identify accounting and information systems as a vehicle that interacts with taxation. They argue that accounting information play a crucial role in producing information not only for investors but also for the tax authorities. Based on this reasoning we argue that high-quality auditing is likely to add credibility to the accounting information system and hence may help mitigate/mediate the agency problems described above. Hence, one would expect that firms that have larger horizontal agency costs as described above could mitigate these by hiring a high-quality auditor, and this then enables them to engage in more tax avoidance than they would have been able or willing to engage in without such an auditor. This leads to the following set of hypotheses:

HYPOTHESIS 2A: *High-quality auditing mitigates the horizontal agency costs of tax avoidance associated with concentrated ownership*

HYPOTHESIS 2B: *High-quality auditing mitigates the horizontal agency costs of tax avoidance associated with managerial(CEO) ownership*

HYPOTHESIS 2C: *High-quality auditing mitigates the horizontal agency costs of tax avoidance associated with family ownership*

15

IV. RESEARCH DESIGN

We follow Hanlon and Heitzman (2010) and define tax avoidance as the reduction of explicit taxes by the corporation and it encompasses anything that reduces the firm's taxes relative to its pretax accounting income. We use two standard measures: *GaapETR* and *CashETR*. *GaapETR* is the firm's effective tax rate as defined under GAAP and we compute it as the total tax expense (current plus deferred tax expense) divided by pre-tax accounting income before special items. The second measure, *CashETR*, is the firm's cash taxes paid divided by pre-tax accounting income before special items. *CashETR* captures the firms' effort to reduce actual tax payments while *GaapETR* captures effort to reduce the tax expense for financial reporting purposes (Dyreng et al. 2010). Both measures are referred to as effective tax rates. We follow prior literature (e.g., Bianchi et al. 2014; Dyreng et al. 2010) and only include observations with positive pretax accounting income before special items. Furthermore, the tax effective rates are winsorized (reset) such that the values are between 0 and 1.

We test our hypotheses by estimating the following equation (subscript *i* for client firm and *t* for time is omitted if not necessary for the clarity):

$$
\begin{aligned}
ETR = \ & \alpha_1 1/Owners + \alpha_2 Fam\%Own + \alpha_3 CEO\%Own + \alpha_4 Big4\#1/Owners \\
& + \alpha_5 Big4\#Fam\%Own + \alpha_6 Big4\#CEO\%Own + \alpha_7 Big4 + \alpha_8 Foreign + \alpha_9 BoardSize \\
& + \alpha_{10} IndepBoard + \alpha_{11} IndSpec + \alpha_{12} LnTA + \alpha_{13} DiscAccr + \alpha_{14} Leverage + \alpha_{15} ROA \\
& + \alpha_{16} CashFlow + \alpha_{17} Growth + \alpha_{18} NOL + \alpha_{19} ChangeNOL + \alpha_{20} PPE \\
& + \alpha_{21} Depreciation + \alpha_{22} LnSubs + \alpha_{23} LnForeignSubs + \alpha_{24} Parent \\
& + \alpha_{25} GroupAccounts + \alpha_{26} DividensEarnings + \alpha_{27} EquityEarnings \\
& + \alpha_{28} Affiliated/TA + \alpha_{29} Subsidiary/TA + Firm\_FE + Year\_FE + \varepsilon
\end{aligned}
$$

All variables are defined in appendix A. *ETR* is effective tax rate, and we report results using both GAAP-tax rates (*GaapETR*) and Cash-tax rates (*CashETR*). To test hypotheses 1A, 1B and 1C, we

include variables measuring ownership concentration, family ownership and CEO ownership, respectively. Ownership concentration is measured by 1 divided by the number of shareholders (*1/Owners*). Family ownership (*Fam%Own*) is measured using the fraction of shares that are held by all families using ultimate ownership. *CEO%Own* is the fraction of shares held by the CEO. Consistent with H1A, H1B and H1C we expect that concentrated ownership, family ownership and CEO ownership will be negatively associated with tax avoidance and hence we expect a positive association with the effective tax rates; that is, we expect α_1, α_2, and α_3 to be positive. To test our second set of hypotheses related to the role of high-quality auditing in mitigating horizontal agency costs of tax avoidance, we use three interaction variables. In particular we interact a Big 4 auditor dummy variable with ownership concentration (*Big4#1/Owners*), the fraction of shares owned by families (*Big4#Fam%Own*), and the fraction of shares owned by the CEO (*Big4#CEO%Own*), respectively. The coefficients of the interaction variables α_4, α_5, and α_6 are predicted to be negative, indicating that the use of a high-quality auditors mitigates the horizontal agency costs of tax avoidance. We expect the coefficient of the Big4-variable (α_7) to be positive, in line with Klassen et al. (2016). This reflects that Big 4 auditors are more concerned with having their clients' tax positions overturned by the tax authority than non-Big 4 auditors due to the negative reputational effects of being overturned. Thus, clients of Big 4 firms are expected to be less tax aggressive.

We include an extensive set of control variables in line with previous literature (e.g., Manzon and Plesko, 2002; Mills et al. 1998; Rego 2003; Dyreng et al. 2010; Frank, Lynch, and Rego 2009; Chen et al. 2010). Owners may monitor the CEOs and majority shareholders by different mechanisms. Our focus is primarily the use of a high quality auditor, and we measure this as audit firms that are a member of the Big 4 group. Alternatively, or in addition, owners may also engage auditors that are industry specialists or appoint strong boards. We therefore include

BoardSize, IndepBoard, and *IndSpec*. *BoardSize* is the number of board members, *IndepBoard* is the fraction of board members that are not related by blood or kinship to the owners or being elected by the employees[7], and *IndSpec* is the audit firms market share in terms of number of clients within an industry using two-digit industry codes. As for the Big-4 variable, we have no expectation regarding the effect of *IndSpec*. For the two board variables, we expect the coefficients to be negative because they are better able to monitor the CEOs.

Larger firms may have economies of scale in tax planning and we use a number of variables to capture the effect of size: *LnTA, Foreign, LnSubs, LnForeignSubs, Parent, and GroupAccounts. LnTA* is the natural log of total assets. Since the literature provides mixed results regarding the effect of size (Armstrong, Blouin, and Larcker, 2012), we do not make predictions regarding the effect of size on the ETRs. For firms with foreign operations, Rego (2003) document results consistent with scale economics in tax planning since multinational firms have lower GAAP ETRs. Therefore, we expect the sign of *Foreign*, an indicator variable that is 1 if at least one of the owners are foreign, to be negative. The counterpart to foreign owned firms operating in Norway is Norwegian firms with investments in foreign firms. We therefore include the natural logarithm of the number of foreign subsidiaries, *LnForeignSubs*, and expect the effect to be positive. Groups of companies may have better ability to undertake transactions that lower taxes than independent companies because each company within the group is a separate taxable unit and they can do tax motived transaction with each other. To capture such abilities, we include the natural logarithm of the number of subsidiaries (*LnSubs*), an indicator variable for parent companies (*Parent*) and an indicator variable for parent companies that produce and disclose group accounts (*GroupAccounts*).

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[7] We use this definition for independent board members as our data does not allow us to identify whether to what board members are employed by the firm or not.

The requirement to disclose group accounts apply to only groups that exceed the threshold for using the "small companies" exceptions in the Accounting Act.[8] We expect that these three variables relate negatively to the ETRs.

More highly leveraged firms have stronger incentives to be involved in aggressive tax management that less leveraged firms due to the need to service the debt, and they also have greater benefit of the tax shield of debt. To control for these effects, we include *Leverage*, which is total debt scaled by total assets, and we expect the effect to be negative. Firm performance is measured by return on assets (*ROA*) and cash flow from operations scaled by total assets (*CashFlow*) and we have no predictions as to their effect on tax avoidance. To accounting for differences in growth, we include growth in sales (*Growth*) and expect the effect to be negative, reflecting that growth requires investments that may be expenses directly or depreciated using the declining balance method (the Tax Act requires the use of the declining balance method for most fixed assets).

A number of variables control for the differences in tax and accounting regulations that may affect the ETRs. Asset intensive firms should have better ability to be involved in tax planning activities, and we therefore include property, plant and equipment scaled by total assets (*PPE*). We therefor expect that the effective tax rate should be lower in firms with higher proportions of tangible fixed asset. We also include *Depreciation,* and expect higher depreciation to relate positively to the ETRs. Depreciation may lower net income before taxes, but have no effect on taxes payable. Higher depreciation is therefore expected to relate positively to the ETRs and

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[8] In our sample, 26.7 percent of the firm-year observations owns at least 50 percent of more of another company while only 2.3 percent of the firms disclose group accounts. Public limited liability firms (which we exclude from our sample) cannot be defined as a small company. The thresholds for being a small company is revenue not exceeding 70 million NOK, total assets not exceeding 35 million NOK, and the average number of man-year less than 50 in 2017 (Accounting Act paragraph 1-6). When the thresholds were introduced in 1998, the limits were 40, 20, and 50 respectively. The thresholds increased in 2004 and 2010.

particularly the effective cash ETRs. To control for earnings management, which mostly involve accruals and deferrals that have no impact on taxes, we include *DiscAcc*, the absolute value of the residual from the performance matched discretionary accruals model as per Kothari et al. (2005). We expect *DiscAccr* to relate positively to the ETRs.

Firms with tax loss carry forwards will have lower tax rates than firms with no tax loss carryforwards, but our data does not contain information about tax loss carryforwards. Consistent with prior literature (e.g., Chen et al. 2011), we therefore proxy tax loss carryforwards (*NOL*) by net deferred tax assets and change in net deferred tax assets (*ChangeNOL*).

Our last set of variables capture the taxation of investments in other firms. Dividends are tax exempted in Norway as long as the receiver of the dividend is a limited liability firm. Thus, dividend increases income before taxes but not the tax expense or taxes payable, and therefore we include dividends scaled by earnings before taxes (*DividendsEarnings*). Income from investments in affiliated companies or subsidiaries that are accounted for using the equity method may partly reflect preferential tax treatment (because it is taxed the same way as dividends) or be a proxy for size. We therefore control for earnings accounted for using the equity method (*EquityEarnings),* the book value of investments in affiliated companies scaled by total assets (*Affiliated/TA),* and the book value of investments in subsidiaries scaled by total assets (*Subsidiary/TA*). The coefficients on these four variables are expected to be negative.

Finally, in addition to these variables, which capture time varying effects for each firms, we control for stationary firm characteristics by including firm fixed effects. Firm fixed effects control for all unobservable variables that are time-invariant during the sample period.

V. DATA AND RESULTS

Sample

The sample period covers 2000-2014 (which means that the first year with observations is 1999 as we need observations from the previous year to compute some of the variables). We include all non-financial private limited liability companies (henceforth firms) with financial statement for at least two consecutive years. In addition to the financial statements, we also require information about industry affiliation, audit fee, audit firm affiliation, whether the firm is a parent company or a subsidiary.[9] As each firm is a separate tax unit, we include both parent and subsidiaries (while controlling for the preferential tax treatment of dividends). We exclude observations with negative pretax accounting income (as explained above). The sample consists of 1,234,187 firm-year observations. The data is provided by Center of Corporate Governance Research at the BI Norwegian Business School, Experian AS and the Brønnøysund Register Center (BRC). Using the Norwegian setting enables us to have access to valuable information for all private limited liability firms. For example, we have detailed information available to compute both direct and ultimate ownership for each owner and CEO. We also have detailed data on family relationships among all owners and CEOs (based on both marriage, adoption, and blood lines). We classify persons as member of the same family if they are related through their grandparents (that is, our family definition covers two generations and include parents, sisters/brothers, children, uncle/ants, nephews/nieces, and those married to these). Information on family relationship is obtained from

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[9] Information on subsidiaries is available for 2007 onwards. As the time series variation in the number of subsidiaries is low, we have imputed the values for 2007 for the previous years. We have also imputed preceding/succeeding year's information on the ownership variables when information is missing for some of the years the firm is included in the sample. The justification is that transfer of ownership and changes in board composition are rare events in private firms. The first-order serial correlation coefficient is 0.91 for the percentage of independent board members and 0.95 or 0.96 for CEO ownership, the ultimate ownership of the largest family owner, and direct ownership held by families. For the total ultimate ownership held by all families, the first order correlation coefficient is 0.83.

the National Register Office, and the information is highly confidential. CCGR has obtain special permissions from the Government store and handle this information, and to link the information to owners, CEOs, and board members of all limited liability firms in Norway. The identity of CEOs and board members are obtain from BRC through an agreement with Experian, while information on owners are obtained from notes to the financial statements. Based on information in the footnotes about direct ownership, CCGR has calculated ultimate ownership for all firms. We use information on ultimate owners in our tests.[10]

[Table 1 to be included here]

Descriptive Statistics and Univariate results

Table 2 provides some descriptive statistics of all variables used in our analysis. The median (average) *GaapETR* is 28.0% (24.0%) and the median (average) *CashETR* is 23.2% (21.2%) over our sample period. The median (average) measure for ownership concentration, *1/Owners,* is 0.50 (0.613) which is consistent with 2 (1.63) owners per firm. The median (average) fraction of shares owned by families, *Fam%Own,* is 100% (84.8%), and the median fraction of shares owned by the CEO, *CEO%Own*, is 33.4% (41.2%). 26% of our sample firms use a Big 4 auditor. For the median (average) values of the control variables in our model, we refer to Table 2.

[Table 2 to be included here]

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[10] The Accounting Act requires small firms to disclose the name of the 10 largest owners if they own 5 percent or more; for other firms the name and ownership must be disclosed for the 20 largest owners conditioned on the ownership being 1 percent or more. For CEOs and board members, ownership must be disclosed independent of the size of the ownership.

In Table 3 we report the outcome of univariate tests of equality of the means between Big 4 and Non-Big 4 audited firms in our sample. Not surprisingly, and reflecting that the decision to choose a Big 4 or a non-Big 4 auditor is non-random, there are significant differences among the two groups for all variables. The difference in *GaapETR* is statistically significant, but economically no different between the two subsamples. *CashETR* however, is 3.2 percentage points lower for the Big 4 sample. The auditees of Big 4 firms have more dispersed ownership (*1/Owner*), lower family ownership (*Fam%Own*) and lower CEO ownership (*CEO%Own*). Looking at the control variables, the sign of the difference between the two groups are in line with what audit choice-studies have found (Chow 1982; Abdel-Khalik 1993; Carey 2000; Collis et al. 2004, Niemi et al. 2012; Allee and Yohn 2009; Hay et al. 2014). As a few examples, the table shows that auditees of Big 4 firms more often are owned by foreigners (*Foreign*), have larger boards (*BoardSize*), has almost twice as high fraction of independent board members (*IndepBoard*), is less often audited by an industry specialists (*IndSpec*, using a Big-4 auditor reduce the need of having an industry specialist), and are larger (*LnTA*).

[Table 3 to be included here]

Multivariate results

In Table 4 we report a correlation matrix. The test variables for H2, *Big4#1/Owners*, *Big4#Fam%Own*, and *Big4#CEO%Own*, are by construction highly correlated with *Big4* (all correlation coefficients between 0.56 and 0.8), but importantly, less correlated with each other (the correlation coefficients are between 0.6 and 0.67).[11] As expected, we also find high correlation

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[11] We have tested all regression for multicollinearity using variance inflation factors (VIFs), and all VIFs are below 10. Hair et al. (1995) use a threshold of 10 to indicate problems with multicollinearity.

between number of subsidiaries (*LnSubs*) and number of foreign subsidiaries (*LnForeignSubs*). The other correlation coefficients are low and with few exemption significant. Note that some of the correlation coefficients relates positively to *GaapETR* and negatively to *CashETR* (*Foreign*, *LnTA*, and *PPE*) or vice versa (*1/Owners* and *ChangeNOL*).

[Table 4 to be included here]

Table 5, Panels A and B present the regression results to test our hypotheses about the effects of horizontal agency costs on tax avoidance and the mitigating effects of high-quality auditing. Note that we include both firm and year fixed effects in all models. Panel A uses *GaapETR* models whereas Panel B uses *CashETR* models. In each panel, Model 1 tests the three horizontal agency conflicts – i.e. concentrated ownership, CEO-ownership and family ownership – simultaneously, whereas Models 2, 3 and 4 test each of these effects separately. The results provide support for our hypotheses. As predicted by hypothesis 1A, we find that ownership concentration is positively and significantly associated with both the *GaapETR* as well as the *CashETR*, indicating that there is less tax avoidance the more concentrated ownership is in private firms, ceteris paribus. Similar results hold for family ownership and CEO ownership. *Fam%Own* is positively and significantly associated with either *GaapETR* and *CashETR* (hypothesis 1B) and so is *CEO%Own* (hypothesis 1C).

[Table 5 to be included here]

Turning to our second set of hypotheses, we find no significant effect of the interaction variable of ownership concentration and high-quality auditing (hypothesis 2A), i.e. *Big4#1/Owners* in the *GaapETR* model (Model 2 in Table 5, Panel A), or even a weak positive effect when all test

24

variables are combined in one model (Model 1, Table 5, Panel A). However, in the *CashETR* model in Panel B *Big4#1/Owners* is negative and significant. The latter finding is supportive of our hypothesis 2A which states that high-quality auditing mitigates the horizontal agency costs of tax avoidance associated with concentrated ownership. Hypothesis 2B is tested by the interaction variable *Bi4#CEO%Own* in Panels A and B of Table 5. In all models we report a negative and significant effect, which supports our hypothesis that high-quality auditing ameliorates the horizontal agency costs of tax avoidance associated with managerial (CEO) ownership. Finally, we also tested the interaction variable *Big4#Fam%Own* in Panels A and B of Table 5 which is a test of the hypothesis that high-quality auditing mitigates the horizontal agency costs of tax avoidance associated with family ownership. We find support for this hypothesis as well, as *Big4#Fam%Own* is negative and significant in all models of Table 5. Overall, we find strong support for our hypothesis that high-quality auditing mitigates the horizontal agency costs of tax avoidance in private firms.

Additional analyses

To add validity to our findings we run additional tests. In the tests reported above, the results may be influence by firms that (frequently) switch between the two categories. If tax avoidance are influenced by horizontal agency conflicts and firms choose Big 4 auditors to moderate the effect of these agency conflicts, it is less likely that firms will switch back and forth between Big-4 auditors (our test-variables are stable over time, see footnote 9). Thus, we rerun our tests on a subsample of firms that switched once from a non-Big 4 to a Big 4 auditor as well as firms that only use non-Big 4 auditors. Again we include firm fixed effects. Table 6 reports the results (Panel

A for *GaapETR* and Panel B for *CashETR*). A total of 12,059 unique firms have upgraded once, and these firms represent 13 percent (or 113,000 firm-year observations) of the sample in Table 6 (the rest of the sample, 762,340 firm-year observations, are from 122,670 unique firms that only have used non-Big 4 firms). The results reported above hold.

[Table 6 to be included here]

Next, we also run our tests for large and small client firm separately. The results of these tests are reported in Table 7 (test variables only), Panels A1 (small firms) and A2 (large firms) for the *GaapETR* models, and in Panels B1 (small firms) and B2 (large firms) for the *CashETR* models. Small firms are firms with total assets less than the median of total assets; others are labled large firms. We find that the earlier reported effects of family ownership and CEO ownership on tax avoidance hold for small as well as large firms across all models. In other words, both small as well as large firms engage in less tax avoidance when family ownership and CEO ownership larger (Hypothesis 1B and 1C). In addition, high-quality auditing seems to mitigate these agency costs of tax avoidance in both small and large firms (Hypothesis 2B and C). For the horizontal agency costs related to ownership concentration, the results are much weaker and do not hold consistently for large as well as small firms.

[Table 7 to be included here]

VI. CONCLUSIONS

In this paper we investigate whether horizontal agency costs arising from concentrated ownership, CEO ownership and family ownership affect tax avoidance in private firms and whether

26

high-quality auditing mitigates these agency costs. Prior research on tax avoidance largely focused on publicly listed firms and has documented that high ownership family firms (Chen et al. 2010) and dual class ownership firms (McGuire et al. 2014) engage in less tax avoidance. We use large sample of private Norwegian firms from 2000-2014 and our results provide support for the hypotheses that horizontal agency costs associated with ownership patterns in private firms hinder tax avoidance but that high-quality auditing ameliorates these agency conflicts and enhances tax avoidance in private firms.

Our results could be of interest to firms as well as tax authorities and policymakers as they provide insight into drivers of tax avoidance in private firms and in mechanisms that enhance such tax avoidance.

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Appendix A: Variable definitions

Variable		Label
1/Owners	=	Ownership concentration measured as 1 divided by the number of owners. For firms with more than 10 owners, the number of owners are set equal to 10.
Affiliated/TA	=	Book value of investments in affiliated companies divided by total assets.
Big4	=	1 if the audit firm is Deloitte, EY, KPMG or PWC, and 0 otherwise.
Big4#1/Owners	=	Interaction variable between Big4 and 1/Owners = Big4 x (1/Owners).
Big4#CEO%Own	=	Interaction variable between Big4 and CEO%Own = Big4 x CEO%Own.
Big4#Fam%Own	=	Interaction variable between Big4 and Fam%Own = Big4 x Fam%Own
BoardSize	=	Number of board members.
CashETR	=	Taxes payable divided by pretax accounting income before special items. Observations with negative pretax accounting income before special items are dropped.
CashFlow	=	Cash flow from operations scaled by total assets. Earnings – total accruals = cash flow from operations. Total accruals is computed as change in current assets - change in cash - change in short-term debt + change in short-term interest bearing debt + change in dividends + depreciation + amortization - change in net deferred taxes. Earnings is net income after taxes before special items and taxes on special items as reported in the financial statements.
CEO%Own	=	Fraction of shares held by the CEO, measured by ultimate ownership.
ChangeNOL	=	Change in net operating losses carryforward computed as $Ln(1 + DeferredTaxAssets_t - Ln(1 + DeferredTaxAssets_{t-1})$. Operating loss carryforward is not available. We therefore use deferred tax assets as a proxy variable as suggested by Bianchi et al. (2014).
Depreciation	=	Depreciation and amortization scaled by average total assets.
DiscAccr	=	The absolute value of the residual from the performance matched discretionary accruals model as per Kothari et al. (2005). The model is estimated for all firms at once as per Dechow et al. (2012).
DividendsEarnings	=	Dividends received scaled by income before taxes and extraordinary items.
EquityEarnings	=	Income from investments in affiliated companies and subsidiaries that

are accounted for using the equity method.

Fam%Own	=	Fraction of shares held by families using ultimate ownership.
Foreign	=	1 if there is at least one international owner, and 0 otherwise.
GaapETR	=	Taxes expense divided by pretax accounting income before special items. Observations with negative pretax accounting income before special items are dropped.
GroupAccounts	=	1 if the firm is required to disclose group accounts, and 0 otherwise. Only groups with sales, assets or employees above the thresholds that define small companies in the Accounting Act are required to disclose consolidated accounts. Note that taxation is based on individual accounts, and not for the group on a consolidated basis.
Growth	=	$LnSales_t - LnSales_{t-1}$ = growth in sales. *Sales* is total revenue.
IndepBoard	=	The fraction of board members that are unrelated to the firm. Unrelated is defined as board member not being employee elected, not being the ceo, not being an owner or not having family member as owners.
IndSpec	=	1 if auditor j is a market leader in industry k in year t, 0 otherwise. Market leader is measured using number of clients. The calculation is performed on two-digit industry codes. *IndSpec* is set to zero if the industry leader has less than 10 percent of the market.
Leverage	=	Long term and short term debt divided by total assets.
Listed	=	1 if the firm is listed, and 0 otherwise.
LnForeignSubs	=	Natural logarithm of (1 + number of foreign subsidiaries).
LnSubs	=	Natural logarithm of (1 + number of subsidiaries).
LnTA	=	Natural logarithm of total assets in NOK.
NOL	=	1 if the firm has deferred income tax assets, and 0 otherwise. We use deferred tax assets as an indicator variable because operating loss carryforward is not available.
Parent	=	1 if the firm is a parent company, and 0 otherwise.
PPE	=	Property, plant and equipment scaled by total assets.
ROA	=	Net income scaled by average total assets.
Subsidiary/TA	=	Book value of investments in subsidiaries divided by total assets.

Table 1: Sample size

Year	NonBig4	Big4	Total	%Big4
2000	53,384	14,958	68,342	21.9 %
2001	53,140	15,486	68,626	22.6 %
2002	54,095	15,895	69,990	22.7 %
2003	57,224	18,519	75,743	24.4 %
2004	61,749	20,046	81,795	24.5 %
2005	63,970	21,016	84,986	24.7 %
2006	68,232	22,409	90,641	24.7 %
2007	73,579	23,845	97,424	24.5 %
2008	65,423	23,460	88,883	26.4 %
2009	70,030	25,634	95,664	26.8 %
2010	71,332	25,818	97,150	26.6 %
2011	57,677	23,577	81,254	29.0 %
2012	54,803	23,738	78,541	30.2 %
2013	56,166	24,021	80,187	30.0 %
2014	52,735	22,226	74,961	29.7 %
Total	913,539	320,648	1,234,187	26.0 %

This table shows the total number of observations per year (Total) and the distribution between nonBig-4 auditors and Big-4 auditors. %Big4 is the percentage of firms audited by Big 4 audit firms. The sample consist of all public and limited liability firms with positive income before taxes that do not belong to the finance, shipping or oil extraction industry and with sufficient information to calculate the variables used in the main test.

Table 2: Descriptive statistics

	Mean	SD	p5	p25	Median	p75	p95
GaapETR	0.240	0.16	0.000	0.170	0.280	0.287	0.438
CashETR	0.212	0.22	0.000	0.000	0.232	0.297	0.625
Big4	0.260	0.44	0.000	0.000	0.000	1.000	1.000
Big4#1/Owners	0.154	0.32	0.000	0.000	0.000	0.100	1.000
Big4#Fam%Own	0.190	0.37	0.000	0.000	0.000	0.000	1.000
Big4#CEO%Own	0.077	0.23	0.000	0.000	0.000	0.000	0.700
1/Owners	0.613	0.34	0.125	0.333	0.500	1.000	1.000
Fam%Own	0.848	0.30	0.000	0.865	1.000	1.000	1.000
CEO%Own	0.412	0.40	0.000	0.000	0.334	0.800	1.000
Foreign	0.057	0.23	0.000	0.000	0.000	0.000	1.000
BoardSize	2.320	1.42	1.000	1.000	2.000	3.000	5.000
IndepBoard	0.221	0.34	0.000	0.000	0.000	0.333	1.000
IndSpec	0.056	0.23	0.000	0.000	0.000	0.000	1.000
LnTA	15.220	1.71	12.625	14.119	15.127	16.208	18.180
DiscAccr	0.191	0.23	0.008	0.039	0.103	0.241	0.775
Leverage	0.622	0.37	0.055	0.403	0.636	0.812	0.999
ROA	0.152	0.18	0.005	0.035	0.093	0.202	0.507
CashFlow	0.084	0.25	-0.311	-0.040	0.051	0.212	0.609
Growth	0.101	0.40	-0.563	-0.026	0.043	0.213	1.000
NOL	0.301	0.46	0.000	0.000	0.000	1.000	1.000
ChangeNOL	0.258	1.82	-2.005	0.000	0.000	0.000	1.976
PPE	0.257	0.32	0.000	0.001	0.091	0.441	0.942
Depreciation	0.030	0.04	0.000	0.000	0.016	0.041	0.118
LnSubs	0.172	0.41	0.000	0.000	0.000	0.000	1.099
LnForeignSubs	0.202	0.45	0.000	0.000	0.000	0.000	1.099
Parent	0.267	0.44	0.000	0.000	0.000	1.000	1.000
GroupAccounts	0.023	0.15	0.000	0.000	0.000	0.000	0.000
DividensEarnings	0.005	0.04	0.000	0.000	0.000	0.000	0.000
EquityEarnings	0.034	0.18	0.000	0.000	0.000	0.000	0.000
Affiliated/TA	0.028	0.12	0.000	0.000	0.000	0.000	0.171
Subsidiary/TA	0.009	0.07	0.000	0.000	0.000	0.000	0.004

This table shows mean, standard deviation (SD), 5 percentile (p5), 25 percentile (p25), median, 75 percentile (p75) and 95 percentile (p95) for the sample presented in Table 1. All variables are defined in Appendix A. *GaapETR* and *CashETR* is reset such that the values vary between 0 and 1. The following values are winsorized to vary between 0 and 1: *ROA*, *Growth*, and *PPE*. The following variables are winsorized with 1 percent in each tail: *Cashflow* and *Depreciation*. The following variables are winsorized with 5 percent in each tail: *DiscAcc* and *ChangeNOL*. *Leverage* is winsorized to vary between 0 and 3.

Table 3: T-tests for equality of means between Big4 and Non-Big-4 firms for the variables used in main tests.

	Mean NonBig4-sample	Mean Big4-sample	Differences in means	t-value
GaapETR	0.240	0.240	-0.001	-2.906***
CashETR	0.221	0.188	0.032	71.522***
1/Owners	0.620	0.594	0.026	37.403***
Fam%Own	0.890	0.730	0.160	270.943***
CEO%Own	0.452	0.298	0.154	192.208***
Foreign	0.035	0.119	-0.084	-179.607***
BoardSize	2.176	2.730	-0.554	-193.228***
IndepBoard	0.182	0.331	-0.149	-214.036***
IndSpec	0.061	0.041	0.020	42.667***
LnTA	14.956	15.972	-1.016	-299.313***
DiscAccr	0.195	0.180	0.015	30.687***
Leverage	0.627	0.606	0.021	27.322***
ROA	0.158	0.135	0.023	63.051***
CashFlow	0.087	0.076	0.012	22.299***
Growth	0.104	0.093	0.011	14.049***
NOL	0.278	0.366	-0.088	-93.557***
ChangeNOL	0.251	0.277	-0.026	-6.856***
PPE	0.256	0.259	-0.004	-5.798***
Depreciation	0.031	0.029	0.002	27.243***
LnSubs	0.151	0.233	-0.082	-97.087***
LnForeignSubs	0.180	0.264	-0.084	-91.506***
Parent	0.253	0.308	-0.055	-60.398***
GroupAccounts	0.016	0.044	-0.028	-91.828***
DividensEarnings	0.004	0.007	-0.003	-35.549***
EquityEarnings	0.029	0.047	-0.018	-49.114***
Affiliated/TA	0.023	0.042	-0.019	-77.366***
Subsidiary/TA	0.008	0.011	-0.003	-21.548***
Observations	1234187			

Note: This table presents the mean values for the NonBig4 and Big4 sample, the differences in the means between the two samples, and the t-value from t-tests of equality of means. * (**) [***] denotes a significant t-statistics with p-levels of 0.1 (0.05) [0.01] using two-sided tests. The variables are defined in Appendix A.

Table 4: Correlation coefficients

	GaapETR	CashETR	Big4	Big4#1/Owners	Big4#Fam%Own	Big4#CEO%Own	1/Owners	Fam%Own	CEO%Own	Foreign
GaapETR	1.00									
CashETR	0.54#	1.00								
Big4	0.00#	-0.06#	1.00							
Big4#1/Owners	-0.00*	-0.04#	0.82#	1.00						
Big4#Fam%Own	0.00*	-0.03#	0.86#	0.69#	1.00					
Big4#CEO%Own	0.00	0.02#	0.56#	0.60#	0.67#	1.00				
1/Owners	-0.03#	0.02#	-0.03#	0.28#	-0.04#	0.12#	1.00			
Fam%Own	0.04#	0.10#	-0.24#	-0.20#	0.14#	0.12#	0.08#	1.00		
CEO%Own	0.02#	0.12#	-0.17#	-0.05#	-0.03#	0.31#	0.40#	0.40#	1.00	
Foreign	0.01#	-0.05#	0.16#	0.13#	-0.04#	-0.05#	-0.05#	-0.42#	-0.19#	1.00
BoardSize	-0.01#	-0.07#	0.17#	0.04#	0.02#	-0.09#	-0.41#	-0.38#	-0.40#	0.17#
IndepBoard	-0.04#	-0.12#	0.19#	0.18#	-0.01#	-0.06#	0.07#	-0.52#	-0.27#	0.23#
IndSpec	-0.01#	-0.05#	-0.04#	-0.04#	-0.06#	-0.04#	-0.02#	-0.04#	-0.05#	0.04#
LnTA	0.05#	-0.07#	0.26#	0.19#	0.11#	-0.01#	-0.14#	-0.29#	-0.29#	0.19#
DiscAccr	-0.11#	-0.08#	-0.03#	-0.01#	-0.02#	-0.01#	0.06#	0.02#	0.03#	-0.01#
Leverage	-0.04#	-0.09#	-0.02#	-0.02#	-0.01#	-0.01#	-0.02#	0.02#	-0.01#	-0.01#
ROA	-0.22#	-0.14#	-0.06#	-0.03#	-0.03#	0.01#	0.06#	0.08#	0.09#	-0.03#
CashFlow	-0.03#	-0.03#	-0.02#	-0.01#	-0.01#	0.01#	0.01#	0.04#	0.04#	-0.01#
Growth	-0.01#	-0.08#	-0.01#	-0.02#	-0.01#	-0.01#	-0.03#	0.01#	-0.01#	-0.00#
NOL	0.13#	0.04#	0.08#	0.06#	0.04#	0.02#	-0.06#	-0.06#	-0.05#	0.07#
ChangeNOL	-0.04#	0.14#	0.01#	0.01#	0.01#	0.01#	-0.01#	0.00	0.00#	0.00#
PPE	0.05#	-0.02#	0.01#	-0.02#	0.01#	-0.03#	-0.07#	-0.02#	-0.10#	-0.04#
Depreciation	0.09#	0.11#	-0.02#	-0.03#	-0.02#	0.00#	-0.01#	0.04#	0.07#	-0.03#
LnSubs	-0.09#	-0.10#	0.09#	0.05#	0.05#	0.02#	-0.06#	-0.07#	-0.06#	0.05#
LnForeignSubs	-0.08#	-0.08#	0.08#	0.05#	0.05#	0.02#	-0.04#	-0.05#	-0.04#	0.02#
Parent	-0.10#	-0.08#	0.05#	0.03#	0.04#	0.03#	-0.03#	-0.01#	-0.00#	0.02#
GroupAccounts	-0.05#	-0.05#	0.08#	0.04#	0.05#	0.02#	-0.06#	-0.08#	-0.06#	0.04#
DividensEarnings	-0.07#	-0.04#	0.03#	0.02#	0.03#	0.01#	-0.01#	-0.01#	-0.02#	0.00
EquityEarnings	-0.14#	-0.10#	0.04#	0.03#	0.04#	0.02#	0.00#	-0.00#	-0.02#	0.02#
Affiliated/TA	-0.11#	-0.10#	0.07#	0.05#	0.05#	0.01#	-0.03#	-0.04#	-0.05#	0.04#
Subsidiary/TA	-0.08#	-0.05#	0.02#	0.02#	0.02#	0.01#	0.01#	0.01#	0.00	-0.01#

	BoardSize	IndepBoard	IndSpec	LnTA	DiscAccr	Leverage	ROA	CashFlow	Growth	NOL
IndepBoard	0.36#	1.00								
IndSpec	0.04#	0.07#	1.00							
LnTA	0.36#	0.26#	0.09#	1.00						
DiscAccr	-0.08#	-0.01#	-0.03#	-0.18#	1.00					
Leverage	-0.01#	-0.01#	-0.01#	-0.12#	0.12#	1.00				
ROA	-0.11#	-0.06#	-0.03#	-0.21#	0.40#	-0.03#	1.00			
CashFlow	-0.04#	-0.04#	-0.01#	-0.03#	0.02#	-0.07#	0.42#	1.00		
Growth	0.01#	-0.01#	-0.01#	0.00#	0.18#	0.09#	0.18#	0.13#	1.00	
NOL	0.11#	0.06#	0.01#	0.12#	-0.07#	0.01#	-0.06#	-0.02#	-0.03#	1.00
ChangeNOL	0.01#	-0.00#	-0.01#	0.02#	0.01#	-0.00*	0.01#	-0.01#	-0.00*	0.34#
PPE	0.04#	0.01#	0.02#	0.18#	-0.20#	0.16#	-0.26#	-0.13#	0.05#	-0.10#
Depreciation	0.01#	-0.03#	-0.02#	-0.09#	0.01#	0.16#	-0.06#	-0.19#	0.04#	0.06#
LnSubs	0.16#	0.07#	0.03#	0.37#	-0.02#	-0.09#	-0.01#	0.02#	-0.02#	0.03#
LnForeignSubs	0.15#	0.04#	0.01#	0.34#	-0.01#	-0.08#	0.01#	0.03#	-0.01#	0.02#
Parent	0.10#	0.02#	0.02#	0.31#	-0.01#	-0.12#	0.02#	0.03#	-0.02#	0.00*
GroupAccounts	0.18#	0.07#	0.02#	0.27#	-0.03#	-0.06#	-0.02#	0.00#	-0.02#	0.04#
DividensEarnings	0.04#	0.00#	-0.02#	0.09#	0.01#	-0.04#	0.04#	0.02#	-0.02#	0.01#
EquityEarnings	0.02#	0.02#	0.04#	0.14#	0.00	-0.11#	0.05#	0.03#	-0.05#	-0.03#
Affiliated/TA	0.07#	0.04#	0.03#	0.21#	-0.03#	-0.09#	-0.02#	0.02#	-0.03#	-0.01#
Subsidiary/TA	-0.01#	-0.01#	0.01#	0.06#	-0.01#	-0.08#	0.01#	0.02#	-0.02#	-0.03#

	ChangeNOL	PPE	Depreciation	LnSubs	LnForeignSubs	Parent	GroupAccounts	DividensEarnings	EquityEarnings	Affiliated/TA
PPE	-0.03#	1.00								
Depreciation	0.07#	0.27#	1.00							
LnSubs	0.01#	-0.08#	-0.11#	1.00						
LnForeignSubs	0.01#	-0.07#	-0.10#	0.76#	1.00					
Parent	0.01#	-0.08#	-0.11#	0.69#	0.75#	1.00				
GroupAccounts	0.01#	-0.05#	-0.05#	0.42#	0.36#	0.24#	1.00			
DividensEarnings	0.01#	-0.03#	-0.05#	0.22#	0.23#	0.15#	0.21#	1.00		
EquityEarnings	-0.00#	-0.09#	-0.11#	0.35#	0.24#	0.29#	0.21#	-0.02#	1.00	
Affiliated/TA	0.00	-0.12#	-0.12#	0.50#	0.37#	0.36#	0.33#	0.23#	0.40#	1.00
Subsidiary/TA	-0.01#	-0.08#	-0.07#	0.06#	0.16#	0.19#	0.02#	0.02#	0.15#	0.02#

This table presents Pearson correlation coefficients for the sample presented in Table 1. All variables are defined in Appendix A. * (#) denotes significant correlation coefficients with a p-value of 0.05 (0.01).

Table 5: Results from regressing measures of effective tax rates against test- and control variables using firm-fixed effects models.

Panel A: Effective GAAP-tax rates (*GaapETR*).

	(1) GaapETR	(2) GaapETR	(3) GaapETR	(4) GaapETR
1/Owners	0.003**	0.005***		
	(2.45)	(4.66)		
Fam%Own	0.004***		0.006***	
	(3.06)		(4.58)	
CEO%Own	0.007***			0.009***
	(3.17)			(4.81)
Big4#1/Owners	0.003*	0.000		
	(1.87)	(0.06)		
Big4#Fam%Own	-0.006***		-0.008***	
	(-2.93)		(-4.52)	
Big4#CEO%Own	-0.008***			-0.009***
	(-3.80)			(-4.56)
Big4	0.008***	0.002**	0.009***	0.006***
	(4.36)	(2.00)	(5.48)	(5.56)
Foreign	-0.002**	-0.002***	-0.002***	-0.002***
	(-2.34)	(-2.63)	(-2.70)	(-3.14)
BoardSize	-0.000	-0.001*	-0.001***	-0.001**
	(-1.61)	(-1.77)	(-2.84)	(-2.24)
IndepBoard	-0.002**	-0.002***	-0.001	-0.001*
	(-2.45)	(-3.06)	(-1.04)	(-1.68)
IndSpec	0.001*	0.001*	0.001*	0.001*
	(1.78)	(1.76)	(1.75)	(1.78)
LnTA	0.012***	0.012***	0.012***	0.012***
	(33.57)	(33.56)	(33.46)	(33.50)
DiscAccr	0.013***	0.013***	0.013***	0.013***
	(15.88)	(15.88)	(15.95)	(15.94)
Leverage	-0.030***	-0.030***	-0.030***	-0.030***
	(-34.63)	(-34.62)	(-34.68)	(-34.66)
ROA	-0.223***	-0.223***	-0.223***	-0.223***
	(-152.71)	(-152.72)	(-152.71)	(-152.71)
CashFlow	0.024***	0.024***	0.024***	0.024***
	(35.78)	(35.78)	(35.77)	(35.77)
Growth	0.008***	0.008***	0.008***	0.008***
	(19.63)	(19.61)	(19.58)	(19.59)
NOL	0.021***	0.021***	0.021***	0.021***
	(38.02)	(38.03)	(38.00)	(37.99)
ChangeNOL	-0.007***	-0.007***	-0.007***	-0.007***
	(-88.13)	(-88.14)	(-88.13)	(-88.12)
PPE	-0.050***	-0.049***	-0.050***	-0.050***

	(-37.30)	(-37.26)	(-37.29)	(-37.34)
Depreciation	0.272***	0.272***	0.272***	0.272***
	(33.81)	(33.81)	(33.77)	(33.78)
LnSubs	-0.008***	-0.008***	-0.008***	-0.008***
	(-4.54)	(-4.52)	(-4.55)	(-4.56)
LnForeignSubs	0.007***	0.007***	0.007***	0.007***
	(7.55)	(7.54)	(7.58)	(7.56)
Parent	-0.007***	-0.006***	-0.006***	-0.007***
	(-3.09)	(-3.07)	(-3.07)	(-3.11)
GroupAccounts	-0.003	-0.004*	-0.003*	-0.004*
	(-1.63)	(-1.68)	(-1.67)	(-1.70)
DividensEarnings	-0.171***	-0.171***	-0.171***	-0.171***
	(-35.37)	(-35.35)	(-35.34)	(-35.34)
EquityEarnings	-0.051***	-0.051***	-0.051***	-0.051***
	(-30.01)	(-30.04)	(-30.06)	(-30.03)
Affiliated/TA	-0.039***	-0.038***	-0.039***	-0.039***
	(-12.17)	(-12.16)	(-12.19)	(-12.19)
Subsidiary/TA	-0.045***	-0.045***	-0.045***	-0.045***
	(-9.96)	(-9.96)	(-9.97)	(-9.98)
Fixed effects for:				
Firm	Yes	Yes	Yes	Yes
Years	Yes	Yes	Yes	Yes
Constant	0.134***	0.139***	0.137***	0.139***
	(23.48)	(25.10)	(24.49)	(24.98)
Observations	1234187	1234187	1234187	1234187
Adjusted R^2	0.076	0.076	0.076	0.076

Panel B: Effective Cash-tax rates (*CashETR*).

	(1)	(2)	(3)	(4)
	CashETR	CashETR	CashETR	CashETR
1/Owners	0.003*	0.008***		
	(1.65)	(5.52)		
Fam%Own	0.014***		0.018***	
	(7.12)		(8.90)	
CEO%Own	0.019***			0.023***
	(6.44)			(8.45)
Big4#1/Owners	-0.003	-0.008***		
	(-1.44)	(-3.38)		
Big4#Fam%Own	-0.007**		-0.011***	
	(-2.43)		(-3.86)	
Big4#CEO%Own	-0.008***			-0.011***
	(-2.61)			(-4.07)
Big4	0.008***	0.002	0.007***	0.002
	(3.11)	(1.24)	(2.62)	(1.32)
Foreign	-0.008***	-0.009***	-0.008***	-0.009***
	(-7.02)	(-7.91)	(-7.04)	(-8.22)
BoardSize	-0.001**	-0.001**	-0.001***	-0.001**
	(-2.12)	(-2.49)	(-3.42)	(-2.35)
IndepBoard	-0.005***	-0.007***	-0.004***	-0.006***
	(-4.97)	(-6.71)	(-4.34)	(-5.94)
IndSpec	-0.002*	-0.002*	-0.002*	-0.002*
	(-1.67)	(-1.70)	(-1.70)	(-1.69)
LnTA	0.017***	0.017***	0.017***	0.017***
	(34.47)	(34.39)	(34.35)	(34.37)
DiscAccr	0.005***	0.005***	0.005***	0.005***
	(4.49)	(4.47)	(4.54)	(4.52)
Leverage	-0.054***	-0.054***	-0.054***	-0.054***
	(-47.44)	(-47.44)	(-47.49)	(-47.45)
ROA	-0.249***	-0.249***	-0.249***	-0.249***
	(-140.47)	(-140.47)	(-140.47)	(-140.45)
CashFlow	0.012***	0.012***	0.012***	0.012***
	(13.29)	(13.29)	(13.28)	(13.29)
Growth	-0.025***	-0.025***	-0.025***	-0.025***
	(-43.26)	(-43.28)	(-43.30)	(-43.28)
NOL	-0.031***	-0.031***	-0.031***	-0.031***
	(-38.00)	(-37.97)	(-38.01)	(-38.03)
ChangeNOL	0.015***	0.015***	0.015***	0.015***
	(114.59)	(114.56)	(114.58)	(114.60)
PPE	-0.118***	-0.118***	-0.118***	-0.118***
	(-57.66)	(-57.59)	(-57.61)	(-57.68)
Depreciation	0.671***	0.670***	0.670***	0.670***
	(58.30)	(58.26)	(58.24)	(58.27)
LnSubs	-0.015***	-0.015***	-0.015***	-0.015***

	(-7.00)	(-6.99)	(-7.00)	(-6.99)
LnForeignSubs	0.005***	0.005***	0.005***	0.005***
	(4.56)	(4.56)	(4.60)	(4.54)
Parent	-0.000	-0.000	-0.000	-0.000
	(-0.09)	(-0.04)	(-0.06)	(-0.11)
GroupAccounts	0.002	0.002	0.002	0.002
	(0.76)	(0.74)	(0.78)	(0.75)
DividensEarnings	-0.165***	-0.165***	-0.165***	-0.165***
	(-28.76)	(-28.71)	(-28.70)	(-28.74)
EquityEarnings	-0.041***	-0.041***	-0.041***	-0.041***
	(-22.12)	(-22.17)	(-22.19)	(-22.12)
Affiliated/TA	-0.078***	-0.078***	-0.078***	-0.078***
	(-20.63)	(-20.62)	(-20.66)	(-20.63)
Subsidiary/TA	-0.040***	-0.040***	-0.040***	-0.040***
	(-7.11)	(-7.07)	(-7.09)	(-7.12)
Fixed effects for:				
Firm	Yes	Yes	Yes	Yes
Years	Yes	Yes	Yes	Yes
Constant	0.096***	0.113***	0.104***	0.109***
	(12.29)	(14.98)	(13.57)	(14.35)
Observations	1234187	1234187	1234187	1234187
Adjusted R^2	0.105	0.105	0.105	0.105

Note: This table presents the regression results (coefficients and t-statistics in parenthesis) of regressing measures of effective tax rates (*ETR*) against test and control variables:

$$ETR = \alpha_1 Big4 + \alpha_2 Big4\#1/Owners + \alpha_3 Big4\#Fam\%Own + \alpha_4 Big4\#CEO\%Own$$
$$+ \alpha_5 1/Owners + \alpha_6 Fam\%Own + \alpha_7 CEO\%Own + \alpha_8 Foreign + \alpha_9 BoardSize$$
$$+ \alpha_{10} IndepBoard + \alpha_{11} IndSpec + \alpha_{12} LnTA + \alpha_{13} DiscAccr + \alpha_{14} Leverage$$
$$+ \alpha_{15} ROA + \alpha_{16} CashFlow + \alpha_{17} Growth + \alpha_{18} NOL + \alpha_{19} ChangeNOL + \alpha_{20} PPE$$
$$+ \alpha_{21} Depreciation + \alpha_{22} LnSubs + \alpha_{23} LnForeignSubs + \alpha_{24} Parent$$
$$+ \alpha_{25} GroupAccounts + \alpha_{26} DividensEarnings + \alpha_{27} EquityEarnings$$
$$+ \alpha_{28} Affiliated/TA + \alpha_{29} Subsidiary/TA + Firm\_FE + Year\_FE + \varepsilon$$

The dependent variable in Panel A is the effective GAAP tax rate (*GaapETR*) while Panel B presents results with the cash tax rate (*CashETR*) as the dependent variable. The sample is presented in Table 1. The variables are defined in Appendix A. The t-values (OLS) are adjusted for within-cluster correlation at the firm level using the Huber-White Sandwich Estimator. *** (**) [*] indicates significance at the 1 (5) [10] percent level using two-tailed tests.

Table 6: Results from regressing measures of effective tax rates against test- and control variables using firm-fixed effects models for firms that upgrade from non-Big-4 to Big-4 firms and firms that only use nonBig-4 firms.

Panel A: Effective GAAP-tax rates (*GaapETR*).

	(1)	(2)	(3)	(4)
	GaapETR	*GaapETR*	*GaapETR*	*GaapETR*
1/Owners	0.003***	0.006***		
	(2.77)	(5.01)		
Fam%Own	0.005***		0.007***	
	(3.30)		(4.66)	
CEO%Own	0.007***			0.010***
	(3.13)			(4.81)
Big4#1/Owners	0.000	-0.004*		
	(0.07)	(-1.90)		
Big4#Fam%Own	-0.007***		-0.013***	
	(-2.67)		(-4.80)	
Big4#CEO%Own	-0.012***			-0.015***
	(-4.30)			(-5.80)
Big4	0.019***	0.011***	0.019***	0.014***
	(7.30)	(6.74)	(8.27)	(10.82)
	-0.042***	-0.042***	-0.042***	-0.042***
Controls	Yes	Yes	Yes	Yes
Fixed effects for:				
Firm	Yes	Yes	Yes	Yes
Years	Yes	Yes	Yes	Yes
Constant	0.133***	0.140***	0.138***	0.139***
	(19.92)	(21.45)	(20.97)	(21.30)
Observations	874513	874513	874513	874513
Adjusted R^2	0.078	0.078	0.078	0.078

Panel B: Effective Cash-tax rates (*GaapETR*).

	(1)	(2)	(3)	(4)
	CashETR	CashETR	CashETR	CashETR
1/Owners	0.005***	0.011***		
	(2.76)	(6.50)		
Fam%Own	0.013***		0.017***	
	(5.98)		(7.69)	
CEO%Own	0.019***			0.025***
	(6.04)			(8.30)
Big4#1/Owners	-0.014***	-0.019***		
	(-3.66)	(-5.23)		
Big4#Fam%Own	-0.010**		-0.016***	
	(-2.25)		(-3.77)	
Big4#CEO%Own	-0.010**			-0.018***
	(-2.27)			(-4.64)
Big4	0.023***	0.014***	0.016***	0.009***
	(5.50)	(5.35)	(4.20)	(4.51)
Controls	Yes	Yes	Yes	Yes
Fixed effects for:				
Firm	Yes	Yes	Yes	Yes
Years	Yes	Yes	Yes	Yes
Constant	0.094***	0.112***	0.106***	0.108***
	(10.32)	(12.60)	(11.73)	(12.08)
Observations	874513	874513	874513	874513
Adjusted R^2	0.111	0.110	0.110	0.110

Note: This table presents the regression results (coefficients and t-statistics in parenthesis for test variables only) of regressing measures of effective tax rates (*ETR*) against test and control variables:

$$ETR = \alpha_1 Big4 + \alpha_2 Big4\#1/Owners + \alpha_3 Big4\#Fam\%Own + \alpha_4 Big4\#CEO\%Own$$
$$+ \alpha_5 1/Owners + \alpha_6 Fam\%Own + \alpha_7 CEO\%Own + \alpha_8 Foreign + \alpha_9 BoardSize$$
$$+ \alpha_{10} IndepBoard + \alpha_{11} IndSpec + \alpha_{12} LnTA + \alpha_{13} DiscAccr + \alpha_{14} Leverage$$
$$+ \alpha_{15} ROA + \alpha_{16} CashFlow + \alpha_{17} Growth + \alpha_{18} NOL + \alpha_{19} ChangeNOL + \alpha_{20} PPE$$
$$+ \alpha_{21} Depreciation + \alpha_{22} LnSubs + \alpha_{23} LnForeignSubs + \alpha_{24} Parent$$
$$+ \alpha_{25} GroupAccounts + \alpha_{26} DividensEarnings + \alpha_{27} EquityEarnings$$
$$+ \alpha_{28} Affiliated/TA + \alpha_{29} Subsidiary/TA + Firm\_FE + Year\_FE + \varepsilon$$

The dependent variable in Panel A is the effective GAAP tax rate (*GaapETR*) while Panel B presents results with the cash tax rate (*CashETR*) as the dependent variable. The sample consists of all firms that (i) only use non-Big e4 firms or (ii) upgrade from a non-Big 4 firm to a Big-4 firm once during the sample period. The variables are defined in Appendix A. The t-values (OLS) are adjusted for within-cluster correlation at the firm level using the Huber-White Sandwich Estimator. *** (**) [*] indicates significance at the 1 (5) [10] percent level using two-tailed tests.

Table 7: Results from regressing measures of effective tax rates against test- and control variables using firm-fixed effects models for small and large firms.

Panel A1: Effective GAAP-tax rates (*GaapETR*) for firms with total assets less than median total assets.

	(1)	(2)	(3)	(4)
	GaapETR	*GaapETR*	*GaapETR*	*GaapETR*
1/Owners	0.008***	0.011***		
	(4.05)	(6.29)		
Fam%Own	0.005*		0.008***	
	(1.82)		(3.25)	
CEO%Own	0.009***			0.015***
	(2.85)			(5.45)
Big4#1/Owners	0.000	-0.003		
	(0.06)	(-1.04)		
Big4#Fam%Own	-0.007		-0.010**	
	(-1.64)		(-2.40)	
Big4#CEO%Own	-0.006			-0.007**
	(-1.62)			(-2.33)
Big4	0.012***	0.005**	0.012***	0.006***
	(2.78)	(2.02)	(2.94)	(3.09)
Observations	617143	617143	617143	617143
Adjusted R^2	0.087	0.087	0.087	0.087

Panel A2: Effective GAAP-tax rates (*GaapETR*) for firms with total assets greater than median total assets.

	(1)	(2)	(3)	(4)
	GaapETR	*GaapETR*	*GaapETR*	*GaapETR*
1/Owners	0.001	0.002		
	(0.42)	(1.43)		
Fam%Own	0.004**		0.005***	
	(2.15)		(2.94)	
CEO%Own	0.005*			0.007**
	(1.75)			(2.25)
Big4#1/Owners	0.004**	0.002		
	(1.99)	(1.08)		
Big4#Fam%Own	-0.005**		-0.007***	
	(-2.30)		(-3.33)	
Big4#CEO%Own	-0.008***			-0.008***
	(-2.74)			(-3.19)
Big4	0.006***	0.001	0.008***	0.004***
	(2.85)	(0.75)	(3.99)	(3.81)
Observations	617044	617044	617044	617044
Adjusted R^2	0.068	0.067	0.067	0.067

Panel B1: Effective Cash-tax rates (*CashETR*) for firms with total assets less than median total assets.

	(1) CashETR	(2) CashETR	(3) CashETR	(4) CashETR
1/Owners	0.014***	0.021***		
	(5.61)	(9.36)		
Fam%Own	0.018***		0.025***	
	(5.45)		(7.54)	
CEO%Own	0.019***			0.031***
	(4.62)			(8.60)
Big4#1/Owners	-0.009**	-0.013***		
	(-2.03)	(-3.18)		
Big4#Fam%Own	-0.009		-0.013**	
	(-1.44)		(-2.33)	
Big4#CEO%Own	-0.006			-0.012***
	(-1.17)			(-2.59)
Big4	0.018***	0.010***	0.014***	0.008***
	(3.21)	(3.33)	(2.62)	(2.80)
Observations	617143	617143	617143	617143
Adjusted R^2	0.118	0.118	0.118	0.118

Panel B2: Effective Cash-tax rates (*CashETR*) for firms with total assets greater than median total assets.

	(1) CashETR	(2) CashETR	(3) CashETR	(4) CashETR
1/Owners	-0.006***	-0.002		
	(-2.78)	(-1.11)		
Fam%Own	0.012***		0.014***	
	(4.81)		(5.37)	
CEO%Own	0.016***			0.015***
	(3.40)			(3.32)
Big4#1/Owners	0.001	-0.003		
	(0.34)	(-0.90)		
Big4#Fam%Own	-0.007**		-0.011***	
	(-2.14)		(-3.35)	
Big4#CEO%Own	-0.013***			-0.015***
	(-3.15)			(-3.92)
Big4	0.004	-0.003	0.004	-0.000
	(1.37)	(-1.46)	(1.35)	(-0.12)
Observations	617044	617044	617044	617044
Adjusted R^2	0.093	0.093	0.093	0.093

Note: This table presents the regression results (coefficients and t-statistics in parenthesis for test variables only) of regressing measures of effective tax rates (*ETR*) against test and control variables:

$$ETR = \alpha_1 Big4 + \alpha_2 Big4\#1/Owners + \alpha_3 Big4\#Fam\%Own + \alpha_4 Big4\#CEO\%Own$$
$$+ \alpha_5 1/Owners + \alpha_6 Fam\%Own + \alpha_7 CEO\%Own + \alpha_8 Foreign + \alpha_9 BoardSize$$
$$+ \alpha_{10} IndepBoard + \alpha_{11} IndSpec + \alpha_{12} LnTA + \alpha_{13} DiscAccr + \alpha_{14} Leverage$$
$$+ \alpha_{15} ROA + \alpha_{16} CashFlow + \alpha_{17} Growth + \alpha_{18} NOL + \alpha_{19} ChangeNOL + \alpha_{20} PPE$$
$$+ \alpha_{21} Depreciation + \alpha_{22} LnSubs + \alpha_{23} LnForeignSubs + \alpha_{24} Parent$$
$$+ \alpha_{25} GroupAccounts + \alpha_{26} DividensEarnings + \alpha_{27} EquityEarnings$$
$$+ \alpha_{28} Affiliated/TA + \alpha_{29} Subsidiary/TA + Firm\_FE + Year\_FE + \varepsilon$$

The dependent variable in Panel A is the effective GAAP tax rate (*GaapETR*) while Panel B presents results with the cash tax rate (*CashETR*) as the dependent variable. The sample consists of the pooled sample divided into small and large firms based on the median of total assets. The results for small (large) firms are presented in panels A1 and B1 (A2 and B2). The variables are defined in Appendix A. The t-values (OLS) are adjusted for within-cluster correlation at the firm level using the Huber-White Sandwich Estimator. *** (**) [*] indicates significance at the 1 (5) [10] percent level using two-tailed tests.