

The role of auditors and banks in restraining the tax aggressiveness in private firms

Abstract. This study examines the role of auditors and monitoring banks in restraining tax aggressiveness in private firms. We use a unique dataset of private SMEs in Finland where book-tax alignment is high and the litigation risk is low. We add to the existing literature by investigating small private firms and by using more detailed measures for bank monitoring. Our results suggest a positive association between tax aggressiveness and audit quality, implying that auditors play more of a role in providing tax-related planning services than restraining tax aggressiveness. Also, bank monitoring is positively associated with tax aggressiveness. This implies that lending banks are more interested in cash savings than in reducing tax aggressiveness. Finally, we do not find evidence of a joint effect of auditing and bank relationships. The results of this research will interest the owners and managers of private companies, tax authorities and banks, and the accounting and auditing profession.

Key words. Private firm, tax aggressiveness, audit, Big 4, bank lending.

1. Introduction

This study explores two alternative mechanisms in the association between auditors, bank monitoring and tax aggressiveness. In terms of auditing, we ask whether an auditor plays a role in restraining tax aggressiveness or operates as a specialist in tax consultancy, bearing in mind that an auditor should operate in the best interest of shareholders. In addition to auditors, lender banks may also have alternative incentives when monitoring a borrowing firm's tax aggressiveness-related actions. Banks may view tax savings as risky assets or additional cash flow benefitting the repayments of loans and interests. Finally, banks may rely on auditors' monitoring of borrowing firms and adjust their own efforts accordingly.

Desai et al. (2007, p. 592) argue that the tax administration is a quasi-stakeholder in companies of all sizes. This is because of the taxpayer's accountability to the tax authority. The importance of the tax authority as a stakeholder is more critical for small private companies than larger companies because of the formers' more limited access to external funding (Berger & Udell, 1998). Based on Hansson (2012) and Balamoune-Lutz and Garello (2014), tax-related issues can even be a decisive factor in becoming an entrepreneur.

Our focus is on Finnish private firms. Finland is a high tax alignment country where taxation is based on financial statements (Karjalainen et al., 2018). Our study compares Big 4 audited firms to firms audited by non-Big 4 auditors with regard to tax aggressiveness. Firms' tax aggressiveness can be seen as effective tax planning or tax avoidance (cf. Desai, 2005). Previously, audit quality has been seen as a controlling mechanism to attain correct payable taxes (Kanagaretnam et al., 2016). Broadly, we can see a lender as a competitor to the tax authorities and shareholders who share a firm's profits. Therefore, it is expected that, similarly to shareholders, it is of interest to a lender to control its client company's tax policy. Our measure for bank relations is based on the number of lender banks.

The role that auditors and lender banks play in terms of tax aggressiveness is under-researched in the context of private SMEs. Kanagaretnam et al. (2016) investigated the relationship between audit quality and tax aggressiveness in a sample of listed firms and found that audit quality is negatively associated with the likelihood of clients' tax aggressiveness. Ojala et al. (2020) examined private micro firms and found that voluntary auditing decreases audit clients' tax aggressiveness. To our knowledge, this study is the first to investigate the role that lending banks play with regard to tax aggressiveness. Previously, Kovermann (2018) found that tax aggressiveness impacts loan interest rates, but the literature is silent on the effects of bank relationships on tax aggressiveness.

We use a unique dataset collected using survey questionnaires complemented by financial information from the Voitto+ and Amadeus databases. Our results based on multivariate regression models imply that auditors and lending banks aim to increase cash flow via tax (aggressive) savings, with both resulting in a similar magnitude of tax savings.

We contribute to the previous literature in several important ways. First, we add to the findings of Kanagaretnam et al. (2016) by investigating the relationship between audit quality and tax aggressiveness in a sample of small private firms. Second, we extend the findings of Ojala et al. (2020) in three ways: (i) while the aforementioned research examined micro firms with voluntary audit options, this study includes SMEs; (ii) we also use a measure of audit quality; and (iii) we include a measure for bank monitoring in the models.

This study proceeds as follows. The second chapter develops the hypotheses. Chapter three presents the data and models. Chapter four discusses the results, and chapter five concludes the research.

2. Hypothesis development

We argue that external auditors of private firms may have two distinct roles to play in small private firms. First, according to the tax regulation, they provide tax-related planning services to avoid unnecessary tax payments within what is acceptable. Second, in a high tax alignment country, such as Finland (cf. Karjalainen, 2011; Karjalainen et al., 2018), an external auditor monitors the accrual-based tax computation and reporting in financial statements, which are the basis of tax returns in high tax-aligned countries. Tax planning is a means of improving liquidity by avoiding or postponing tax payments. Such additional liquidity is necessary because SMEs have more limited access to finance than large firms (cf. Bongini et al., 2021).

Many prior studies recognise the importance of tax-related services to private companies, which typically lack in-house tax resources (Bennett & Robson, 1999; Gooderham et al., 2004; Jarvis & Rigby, 2010). For example, Ojala et al. (2016) found, using statistical analysis and interviews with owners of private companies, that such companies need tax reporting credibility, which can be achieved by hiring an auditor when auditing is voluntary. Indeed, the findings of Ojala et al. (2020) suggest that having financial statements audited reduces the likelihood of tax adjustments to micro companies by the tax administration. The above findings are consistent with an audit's role of increasing public confidence in the financial statements published by various organisations (Simnett et al., 2009).

In the Australian context, Leung et al. (2008) found that virtually all accountants provide regulatory advice, primarily in the areas of taxation, and that most of their business growth has come from the taxation area. However, tax planning may also play a vital role for a private company because competencies are needed to exploit tax incentives provided for the growth of companies. Tax incentives and direct funding through grants and loans are two policy instruments currently used in many countries to stimulate business R&D (Busom et al., 2014).

The above discussion leads to the first hypothesis:

H1a: Big 4 audit clients are more tax aggressive than non-Big 4 audit clients

In theoretical studies on tax evasion (Allingham & Sandmo, 1972; Chen & Chu, 2005), the risk of detection by the tax administration is seen as the main hindrance to tax aggressiveness. Under the theoretical model by Allingham and Sandmo (1972), the risk of being detected is the decision-maker's subjective view of the probability of detection. Auditors enhance contracting efficiency by minimising contracting and agency costs (Jensen & Meckling, 1976; Karjalainen, 2011; Watts & Zimmerman, 1986). Large auditors have more incentive to be accurate because an inaccurate report may lead to a loss of client-specific rents (DeAngelo, 1981). In addition, large audit firms should be more accurate because they have greater wealth at risk from litigation (Dye, 1993). We expect that the auditor also considers risks arising from a client's tax aggressive behaviour. This assumption is based on the finding from the prior literature that information asymmetries and conflicts of interest in a principal-agent relationship can be resolved cost-effectively through financial statements examined by an external auditor (Francis & Wilson, 1988; Watkins et al., 2004). Business risk auditing is a top-down analysis of a client's business risks. It is linked to the audit risks of engagement and conditions the audit plan based on the most critical of those risks (Niemi et al., 2018).

Prior literature suggests that in countries with high book-tax alignment, auditors restrain the aggressive reporting of private companies. Such effects can be seen in that private firms audited by a Big 4 auditor engage less in earnings management when such high tax-book alignment exists, for example, in Belgium, Finland, France and Spain (Van Tendeloo & Vanstraelen, 2008). Similarly, Sormunen et al. (2013) argue that the level of tax-book alignment in the Nordic countries suggests that auditors in Finland and Sweden, in particular, are motivated to report more accurately.

The above discussion leads to the positing of H1b:

H1b: Big 4 audit clients are less tax aggressive than non-Big 4 audit clients

In addition to auditors, lending banks may have an incentive to monitor and restrain borrowing firms' tax-related actions. For most small private firms, debt is a major source of funds. However, the interests of debtholders differ from those of equity holders in several ways. Instead of having residual claims, debtholders have fixed claims on the firm and consequently only bear the downside risk of tax aggressiveness (Shevlin et al., 2020). If a firm is successful at avoiding paying taxes, the potential benefits accrue to the shareholders. However, any risks that could be attached to tax aggressiveness are borne by both debtholders and equity holders. All this implies that tax aggressive behaviour is not necessarily in the best interest of debtholders. Therefore, debtholders can be expected to require higher interest rates for tax aggressive firms to compensate for the additional risk (Kovermann, 2018). Conversely, it is also in banks' best interest to restrain tax aggressive behaviour in borrowing firms. We also argue that this can lead to more extensive or intensive monitoring by banks. Alternatively, it can be argued that tax aggressive behaviour benefits debtholders because it saves cash that can be used to service debt (Kim et al., 2011). Kim et al. (2011) suggests that this "cash-substitution hypothesis" implies that debtholders do not require higher interest from firms that avoid taxes. Indeed, Kovermann (2018) finds that tax avoidance negatively affects the cost of debt, indicating that creditors generally view tax avoidance as positive.

Previous literature seems to be undecided on whether debtholders view tax aggressive behaviour positively or negatively. On the one hand, Ayers et al. (2010) argue that, while banks have fixed claims against the firm, they do not benefit from tax avoidance and share only the downside risk of such actions.

Assuming that tax aggressiveness is risky from the banks' perspective, debtholders with monitoring power could influence firms to reduce aggressive tax behaviour. Based on this, we hypothesise as follows:

H2a: *Bank monitoring is negatively associated with tax aggressive behaviour*

On the other hand, tax aggressive behaviour creates cash savings, which can be in the lending bank's best interest. This situation, in turn, could lead to a scenario where debtholders with monitoring power can exert their influence to increase firms' tax aggressive behaviour or, alternatively, have no interest in subduing it. Therefore, we propose the following hypothesis:

H2b: *Bank monitoring is positively associated with tax aggressive behaviour*

In addition to banks' own monitoring efforts, previous literature also suggests that banks have an incentive to rely on auditors for the additional monitoring of borrowing firms. Audit audits are required for almost all Finnish firms, so audited financial information may constitute a credible source of relevant information in debt contracting. Therefore, banks may need to rely less on alternative information sources when assessing borrowing firms' credit risk *ex-ante* and monitoring debt contracts *ex-post*.

Several studies have found that auditing, and Big 4 auditing in particular, is associated with lower borrowing costs. Blackwell et al. (1998) and Kim et al. (2013) show that auditing, especially Big 4 audits,

is associated with decreased borrowing costs. Evidence from Spain further suggests Big 4 audits have a role in pricing debt for privately held firms. Finally, evidence from Finland shows that privately-held Finnish firms audited by certified auditors have higher credit ratings and lower borrowing costs compared with those audited by non-certified auditors (Hyytinen & Väänänen, 2004). Also, Karjalainen (2011) finds that the borrowing costs of private firms examined by Big 4 auditors are substantially lower than those investigated by non-Big 4 auditors. Based on this, we form the following non-directional argument:

H3: The role of bank monitoring in its clients' tax aggressive behaviour differs by audit firm size

3. Data and models

Data

Because the current study's hypotheses address the tax aggressiveness of private companies, we selected an appropriate set of data for that purpose. It consists of Finnish private firms operating in Eastern Finland that responded to a survey questionnaire on bank relations. Subsequently, the data were complemented by the Voitto+ and Amadeus databases provided by Bureau van Dijk. The data on bank relations are from two different questionnaires. The first questionnaire covered 2000–2005, and the second comprised the years 2006–2011. The surveys were sent to private limited companies with at least two employees. From 3,262 questionnaires, 756 responses were collected, resulting in a response rate of 23%; 414 of these responded to the bank relationship questions. In the empirical models explained below, we exclude observations with missing data on variables used in the empirical testing. Because the dependent variable is a ratio, it suffers from extreme values when its numerator or denominator is close to zero. Therefore, we trim the sample by removing 5% of both tails of the dependent variable. Because our hypotheses address the impact of auditing, we also remove the smallest firms with no audit obligation because including such firms would make it impossible to observe the impact of the auditors. Namely, from 2008 onwards, the smallest micro-companies became exempt from mandatory audits¹. The final sample includes 3,060 firm-year observations and 414 individual firms.

Models

¹ From 2008 onwards, a Finnish limited liability firm was within the voluntary auditing regime if only one of the following thresholds was met in two consecutive years: (1) a book value of assets of €100,000, (2) a turnover of €200,000 or (3) 3 employees (Ojala et al., 2016).

The hypotheses of the current study address (i) whether tax aggressiveness differs between Big 4 and non-Big 4 audit clients (H1a and H1b), (ii) whether tax aggressiveness differs between firms with and without bank loans (H2a and H2b) and, finally, (iii) whether the role of bank monitoring in terms of its clients' tax aggressive behaviour differs by audit firm size. In our two regression equations, we follow the modelling of Frank et al. (2009, p. 473), who include a tax aggressiveness measure on the left-hand side of the regression equation. The first regression equation is an ordinary least squares (OLS) regression because the left-hand side variable—the effective tax rate (ETR)—is continuous. The ETR refers to a situation where the reported tax expense differs from the reported financial accounting earnings (cf. Graham et al., 2014). We measure the ETR as an inverse of the actual tax divided by earnings before tax. Using the inverse helps the interpretation of the results. Namely, when using that approach, higher values of the ETR are interpreted as more aggressive than lower values of the ETR. In addition, we further make the interpretation easier by deducting the annual tax rate from our ETR measure. After that adjustment, if our ETR measure obtains a positive value, a firm's tax behaviour is more aggressive than the tax rate in that year. On the other hand, if the ETR measure obtains a negative value, the firm is paying more taxes than expected based on the year's tax rate. The income tax rate in Finland was 29% in 2000–2005 and 26% in 2006–2011. Our first regression equation is as follows:

$$\begin{aligned}
TAXAGGR = & \alpha_0 + \alpha_1 BIG4 + \alpha_2 ONE_BANK + \alpha_3 SEVERAL_BANKS + \alpha_4 BIG4 \times ONE_BANK \\
& + \alpha_5 BIG4 \times SEVERAL_BANKS + \alpha_6 ROA + \alpha_7 LNASSETS + \alpha_8 LEV + \alpha_9 TANG \\
& + \alpha_{10} INTANG + \alpha_{11} LOSS + \alpha_{12} PRIOR_LOSSES + \sum \chi YEAR + \sum \delta INDUSTRY + \varepsilon.
\end{aligned} \tag{1}$$

We present the descriptions of the variables used in the equation (1) in Table 1. The main variables of interest are *BIG4* (H1a and H1b), *ONE_BANK* and *SEVERAL_BANKS* (H2a and H2b) and *BIG4* ×

ONE_BANK and *BIG4* × *SEVERAL_BANKS* (H3). If the coefficient α_1 is positive, H1a is supported, and H1b if it is negative. If the coefficient α_2 or α_3 is positive, H2a is supported, and H2b if they are negative. If α_4 or α_5 is not equal to zero, H3 obtains support. Our measure of audit quality is *Big4*, which is coded as ‘1’ if the firm is one of the Big 4 audit firms and ‘0’ otherwise. For bank relationships, we use the number of banks from which the firms have loans. Our alternative bank relationships are as follows: (i) no loan relations with a bank (*NO_LOANS*), (ii) loans from one bank (*ONE_BANK*) and (iii) loans from two or more banks (*SEVERAL_BANKS*). The independent variables in the model were derived from the determinants of tax aggressiveness, audit quality and bank relationships documented in prior literature (Lanis & Richardson, 2012; Niemi et al., 2012; Ojala et al., 2020; Steijvers & Niskanen, 2014).

Table 1 about here

We used the following control variables. We control for profitability measured as the return on assets (*ROA*), firm size calculated as the natural logarithm of the total assets (*LN_ASSETS*), leverage (*LEV*) calculated as the long-term debt to total assets and the assets structure measured by tangible assets (*TANG*), and intangible assets (*INTANG*). We also control for the loss for the period (*LOSS*) and previous losses in the balance sheet (*PRIOR_LOSSES*). Firms with negative profits for a period do not pay taxes, so it is crucial to control loss (Lanis & Richardson, 2012). Also, firms’ prior losses result in a lower effective tax rate.

Our second empirical model is a binary logit regression where the dependent variable takes the value of 1 when the respective firm belongs to the highest tax aggressiveness quartile and zero otherwise. Here,

we follow the idea of Donohoe and Knechel (2014), who use the tails of the ETR distribution to measure tax aggressiveness rather than the whole distribution. Our empirical logistic regression model is the following:

$$PROB(HIGH_TAXAGGR = 1) = \frac{1}{1 + e^{-Z}} \quad (2)$$

where

$$\begin{aligned} Z = & \beta_0 + \beta_1 BIG4 + \beta_2 ONE_BANK + \beta_3 SEVERAL_BANKS + \beta_4 BIG4 \times ONE_BANK \\ & + \beta_5 BIG4 \times SEVERAL_BANKS + \beta_6 ROA + \beta_7 LNASSETS + \beta_8 LEV + \beta_9 TANG \\ & + \beta_{10} INTANG + \beta_{11} LOSS + \beta_{12} PRIOR_LOSSES + \sum \phi YEAR + \sum \gamma INDUSTRY + \varepsilon. \end{aligned}$$

The independent variables and the interpretation of the signs of the coefficients in Eq. (2) are the same as in Eq. (1).

4. Results

Descriptive statistics

Table 2 presents the descriptive statistics of our sample. The mean value of *TAXAGGR* is 0.062. This means that, on average, our sample firms have paid about 6.2% less income taxes than the official income tax rate. Big 4 auditors investigate 25.5% of our sample firms. About 20% of the sample firms have a lending relationship with one bank, and about 70% with several banks. About 11.4% of our firm-year observations yield negative profits, and about 9.4% have usable tax reductions from previous years' losses.

We begin our analysis by exploring how our sample firms are distributed within the sample categories (Big 4, bank relations and tax aggressiveness). Tables 3a–3c cross-tabulate our sample within these categories. In Table 3a, we observe that the number of bank relations does not differ between Big 4 and non-Big 4 audited firms. About 10% of firms have no bank loans, approximately 20% have loans from one bank and about 70% have loans from more than one bank. This is the case in both Big 4 and non-Big 4 audited firms. The Chi² test statistic (0.728) for the unequal distribution is insignificant ($p = 0.695$). Table 3b shows how the distribution of tax aggressiveness differs between Big 4 and non-Big 4 audited firms. About 22.8% of non-Big 4 audited firms fall into the most tax aggressive quartile. The share in the Big 4 audited group is 31.5%. This result is significant, with a Chi² of 23.616 and a p -value of less than 0.001. Table 3c shows that about 29.8% of the most tax-aggressive firms have loans from one bank. The corresponding shares for no loans and several banks are 14.2% and 25.2%, respectively. The result is significant, with a Chi² of 26.956 and a p -value of less than 0.001.

We next compare subsamples of Big4 and non-Big4 client companies using t -tests. Table 4 shows significant differences in every variable except for *ONE_BANK*, *SEVERAL_BANKS* and tangible assets (*TANG*). For example, non-Big 4 audited firms are less tax aggressive with regard to both tax

aggressiveness measures. The mean of *TAXAGGR* is 0.56 for non-Big 4 audited companies and 0.08 for Big 4 audited companies. The corresponding figures of *HIGH_TAXAGGR* are 0.228 and 0.315 for non-Big 4 and Big 4 audited firms, respectively. Compared to non-Big 4 audited firms, Big 4 audited firms are also more prominent in assets, have higher leverage levels, have more intangible assets and have more losses and previous losses. Correspondingly, non-Big 4 audited firms are more profitable. The *ROA* is 0.165 for non-Big 4 audited firms and 0.121 for Big 4 audited firms. The observed differences are significant at the 1% level.

We perform a one-way Anova test on the mean differences between the bank relations groups (Table 5) and find that all the variables differ concerning the ‘no loans’, ‘one bank’ and ‘several banks’ categories except for *BIG4* and *LOSS* (with *p*-values higher than 0.05). Firms with bank relations (loans from one or more banks) are more tax aggressive. *TAXAGGR* is 0.034, 0.073 and 0.063 for the ‘no loans’, ‘one bank’ and ‘several bank’ categories, respectively. The corresponding rates for *HIGH_TAXAGGR* are 0.142, 0.298 and 0.252, respectively. Compared to others, firms with no bank loans have a higher *ROA*, are less leveraged and have fewer tangible assets. Firms with bank loans have more previous losses than those with no bank loans.

Table 6 presents the correlation matrix. We observe that *BIG4* is significantly positively correlated with tax aggressiveness—*TAXAGGR* (correlation coefficient is 0.089) and *HIGH_TAXAGGR* (correlation coefficient is 0.088)—indicating that firms audited by the Big 4 are more tax aggressive. Also, *ONE_BANK* is positively correlated with *TAXAGGR* (correlation coefficient is 0.049), indicating that firms with one lending bank relationship are more tax aggressive. We also see that more profitable firms pay more taxes than less profitable firms, as the correlation between *TAXAGGR* and *ROA* is -0.415. Also, more leveraged firms and firms with losses pay fewer taxes. We do not observe any correlations indicating multicollinearity problems.

The results of the hypothesis testing

Table 7 provides the results of the hypothesis testing. Regarding H1a and H1b, models 1 (OLS regression) and 3 (logistic regression) have positive coefficients (0.011 and 0.524, respectively) for *BIG4*. The former coefficient has a *p*-value of 0.065, and the latter has a *p*-value of 0.028. These positive coefficients provide empirical support for H1a. The coefficients of *ONE_BANK* are positive (0.011 and 0.682 in models 1 and 3). The coefficients are either insignificant (*p*-value 0.107) or marginally significant (*p*-value is 0.052). The coefficients of *SEVERAL_BANKS* are positive (0.011 and 0.665 in models 1 and 3). The coefficients are either significant (*p*-value 0.036) or marginally significant (*p*-value 0.051). These consistently positive coefficients of the bank relationship variables (*ONE BANK* and *SEVERAL BANKS*) support H2a. The empirical examination of H3 takes place using models 2 (OLS regression) and 4 (logistic regression). The coefficients of the interaction variables $BIG4 \times ONE_BANK$ and $BIG4 \times SEVERAL_BANKS$ are all insignificant, with the smallest *p*-value of 0.592. Hence, we do not find empirical support for H3.

As a robustness check, we first rerun our models with the ETR, which is not adjusted according to the current tax rate in Finland. Second, we consider the two-tier auditor certification of Finland, described in Niemi et al. (2012), by including the higher certified auditor level as a categorical binary variable in our model. In both of the above analyses, our results remain qualitatively the same.

5. Conclusions

This study aims to increase our understanding of stakeholders' roles in private firms' tax aggressiveness. In particular, it focuses on Big 4 auditors' and lender banks' roles in firms' tax aggressiveness.

We find that Big 4 auditors and lender banks have more of an advisory capacity than a monitoring role in firms' tax aggressive behaviour. Compared to smaller audit firms, Big 4 auditors' client firms are more tax aggressive. On average, a Big 4 client firm's ETR is 1.1 percentage points lower than that of a client of a non-Big 4 firm. The difference in the ETR between firms with loans from more than one bank and those with no bank loans is the same (1.1 percentage points). Our empirical results do not support the idea of a joint or shared role of auditors and lending banks concerning tax aggressiveness. Instead, the advisory roles of these stakeholders seem to be independent of one another. Therefore, the presence of a Big 4 auditor does not affect banks' influence on debtholders' tax aggressiveness and vice versa. Our results are independent of either using the highest quartile of tax aggressive firms as a proxy for tax aggressiveness or a continuous measure of tax aggressiveness.

The results have implications for managers and owners of private companies because they suggest that tax savings can be achieved by using outside expertise. According to the Finnish Audit Law, auditor independency is not compromised when offering tax reporting alternatives. This study suggests that sharing such knowledge with the client firm yields clear tax-saving benefits even after controlling for the size and other known factors that affect tax reporting. These findings also have scientific implications as they highlight the fact that our results contradict those of previous studies by showing that the role of auditors facilitates tax savings as opposed to the monitoring role in listed firms.

This study has the following limitations. Our data only cover one country, which is characterised by high tax alignment, comprehensive audit requirements for private companies and concentrated banking

markets. The statistical method used in this study has the same limitation as to other statistical studies; namely, it is not powerful enough to reveal causal relationships. Future research would benefit from replicating the research design of the current study in a different institutional setting. Another potential avenue for future research is the examination of earnings management aspects within this research design.

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Table 1: Variable definitions

Variable	Definition
<i>TAXAGGR</i>	Effective tax rate calculated as income tax divided by P/L before tax $\times (-1)$.
<i>HIGH_TAXAGGR</i>	Coded as '1' if the firm belongs to the top 25% of firms in terms of tax aggressiveness and '0' otherwise.
<i>BIG4</i>	Coded as '1' if the firm is one of the Big 4 audit firms and '0' otherwise.
<i>NO_LOANS</i>	Coded as '1' if the firm has no bank loans and '0' otherwise.
<i>ONE_BANK</i>	Coded as '1' if the firm has bank loans with only one bank and '0' otherwise.
<i>SEVERAL_BANKS</i>	Coded as '1' if the firm has bank loans with more than one bank and '0' otherwise.
<i>ROA</i>	Return of assets calculated as EBIT/total assets.
<i>LN_ASSETS</i>	Natural logarithm of total assets.
<i>LEV</i>	Leverage calculated as long-term debt to total assets.
<i>TANG</i>	Tangible assets to total assets.
<i>INTANG</i>	Intangible assets to total assets.
<i>LOSS</i>	Coded as '1' if the firm has below 0 net income in the respective financial year and '0' otherwise.
<i>PRIOR_LOSSES</i>	Coded as '1' if the firm's retained earnings are below 0 in the respective financial year and '0' otherwise.

Table 2: Descriptive Statistics (n = 3,060)

Variable, n = 3,660	Mean	Std. Dev.	Min.	Max.
<i>TAXAGGR</i>	.062	.114	-.073	.290
<i>HIGH_TAXAGGR</i>	.250	.433	0	1
<i>BIG4</i>	.255	.436	0	1
<i>NO_LOANS</i>	.101	.302	0	1
<i>ONE_BANK</i>	.199	.400	0	1
<i>SEVERAL_BANKS</i>	.699	.459	0	1
<i>ROA</i>	.154	.230	-6.167	1.09
<i>LN_ASSETS</i>	6.408	1.514	2.163	12.203
<i>LEV</i>	.152	.219	-.003	1.954
<i>TANG</i>	.280	.244	0	.999
<i>INTANG</i>	.021	.068	0	.876
<i>LOSS</i>	.114	.318	0	1
<i>PRIOR_LOSSES</i>	.094	.292	0	1

Variable definitions in Table 1.

Table 3a: Cross-tabulation of *BIG4* and NUMBER OF BANKS (n = 3,600)

<i>BIG4</i>	NUMBER OF BANKS			
	0	1	>1	Total
0	225	453	1,601	2,279
	9.87	19.88	70.25	100.00
1	85	157	539	781
	10.88	20.10	69.01	100.00
Total	310	610	2,140	3,060
<i>Chi</i> ² = 0.728; <i>p</i> = 0.695	10.13	19.93	69.93	100.00

The first row gives the frequencies, and the second row shows the row percentages. Chi2-statistics.

Table 3b: Cross-tabulation of *BIG4* and *HIGH_TAXAGGR* (n = 3,600)

<i>BIG4</i>	<i>HIGH_TAXAGGR</i>		
	0	1	Total
0	1,760	519	2,279
	77.23	22.77	100.00
1	535	246	781
	68.50	31.50	100.00
Total	2,295	765	3,060
<i>Chi</i> ² = 23.616; <i>p</i> = 0.000	75.00	25.00	100.00

The first row gives the frequencies, and the second row shows the row percentages. Chi2-statistics.

Table 3c: Cross-tabulation of *HIGH_TAXAGGR* and NUMBER OF BANKS

<i>HIGH_TAXAGGR</i>	NUMBER OF BANKS			
	0	1	>1	Total
0	266	428	1,601	2,295
	85.81	70.16	74.81	75.00
1	44	182	539	765
	14.19	29.84	25.19	25.00
Total	310	610	2,140	3,060
<i>Chi</i> ² = 26.956; <i>p</i> = 0.000	100.00	100.00	100.00	100.00

The first row gives the frequencies, and the second row shows the row percentages. Chi2-statistics.

Table 4: Group statistics with t-tests for the Big 4 and non-Big 4 audited firms (n = 3,060)

	BIG4 = 0 (n = 2,279)		BIG4 = 1 (n = 781)		Test of differences	
	Mean	Std. Dev.	Mean	Std. Dev.	<i>t</i>	<i>p</i>
<i>TAXAGGR</i>	.056	.111	.080	.121	-4.95	<.001
<i>HIGH_TAXAGGR</i>	.228	.419	.315	.465	-4.90	<.001
<i>ONE_BANK</i>	.199	.008	.201	.014	-.150	.892
<i>SEVERAL_BANKS</i>	.703	.010	.690	.017	.650	.516
<i>ROA</i>	.165	.198	.121	.303	4.55	<.001
<i>LN ASSETS</i>	6.133	1.315	7.210	1.752	-18.05	<.001
<i>LEV</i>	.144	.211	.176	.239	-3.55	.001
<i>TANG</i>	.283	.243	.272	.246	1.15	.260
<i>INTANG</i>	.018	.058	.031	.091	-4.85	<.001
<i>LOSS</i>	.104	.306	.141	.348	-2.75	.005
<i>PRIOR LOSSES</i>	.080	.271	.135	.341	-4.55	<.001

Variable definitions in Table 1.

Table 5: Group statistics with one-way Anova tests for the number of banks with loans (n = 3,060)

	No loans (n = 310)		One bank (n = 610)		Several banks (n = 2,140)		Test of differences	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	F	p-value
<i>TAXAGGR</i>	.034	.091	.073	.120	.063	.114	12.56	<.001
<i>HIGH_TAXAGGR</i>	.142	.350	.298	.458	.252	.434	13.58	<.001
<i>BIG4</i>	.274	.447	.257	.438	.252	.434	.36	.695
<i>ROA</i>	.204	.185	.128	.217	.154	.239	11.49	<.001
<i>LN ASSETS</i>	6.426	1.503	6.225	1.262	6.457	1.576	5.62	.004
<i>LEV</i>	.035	.102	.213	.238	.152	.219	70.93	<.000
<i>TANG</i>	.211	.190	.326	.254	.277	.246	23.33	<.000
<i>INTANG</i>	.012	.039	.031	.098	.019	.061	9.73	<.001
<i>LOSS</i>	.081	.273	.125	.331	.115	.320	2.07	.126
<i>PRIOR LOSSES</i>	.032	.177	.123	.329	.094	.292	10.02	<.001

Variable definitions are in Table 1.

Table 6: Pairwise correlations (n = 3,060)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) <i>TAXAGGR</i>	1.000											
(2) <i>HIGH_TAXAGGR</i>	0.975*	1.000										
(3) <i>BIG4</i>	0.089*	0.088*	1.000									
(4) <i>ONE_BANK</i>	0.049*	0.056*	0.002	1.000								
(5) <i>SEVERAL_BANKS</i>	0.012	0.007	-.012	-.761*	1.000							
(6) <i>ROA_EBIT</i>	-.415*	-.413*	-.082*	-.056*	0.000	1.000						
(7) <i>LN_ASSETS</i>	-.105*	-.110*	0.310*	-.060*	0.050*	-0.029	1.000					
(8) <i>LEV</i>	0.317*	0.322*	0.064*	0.139*	-.003	-.298*	0.091*	1.000				
(9) <i>TANG</i>	0.081*	0.082*	-.020	0.093*	-.019	-.024	0.131*	0.354*	1.000			
(10) <i>INTANG</i>	0.171*	0.175*	0.088*	0.072*	-.032	-.133*	-.024	0.207*	-.096*	1.000		
(11) <i>LOSS</i>	0.570*	0.556*	0.050*	0.017	0.008	-.518*	-.129*	0.161*	-.019	0.090*	1.000	
(12) <i>PRIOR_LOSSES</i>	0.488*	0.485*	0.082*	0.050*	0.003	-.220*	-.096*	0.402*	0.030	0.214*	0.217*	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 7: OLS and logit regression results

	(1)	(2)	(3)	(4)
	TAXAGGR	TAXAGGR	HIGH_TAXAGGR	HIGH_TAXAGGR
<i>BIG4</i>	.011*	.006	.524**	.468
	(.065)	(.503)	(.028)	(.435)
<i>ONE_BANK</i>	.011	.010	.682*	.683*
	(.107)	(.165)	(.052)	(.081)
<i>SEVERAL_BANKS</i>	.011**	.009	.665*	.637*
	(.036)	(.122)	(.051)	(.095)
<i>BIG4*ONE_BANK</i>		.001		-.023
		(.954)		(.973)
<i>BIG4*SEVERAL_BANKS</i>		.006		.090
		(.592)		(.890)
<i>ROA_EBIT</i>	-.046*	-.046*	-7.441***	-7.437***
	(.058)	(.059)	(.000)	(.000)
<i>LN_ASSETS</i>	-.003	-.003	-.189*	-.191*
	(.249)	(.237)	(.083)	(.079)
<i>LEV</i>	.031**	.03**	.625	.628
	(.034)	(.035)	(.208)	(.206)
<i>TANG</i>	.026**	.026**	.886*	.892*
	(.038)	(.039)	(.093)	(.095)
<i>INTANG</i>	.022	.023	1.607	1.595
	(.579)	(.568)	(.234)	(.238)
<i>LOSS</i>	.149***	.149***	2.797***	2.795***
	(.000)	(.000)	(.000)	(.000)
<i>PRIOR_LOSSES</i>	.118***	.118***	3.878***	3.876***
	(.000)	(.000)	(.000)	(.000)
<i>_cons</i>	.015	.016	-2.41**	-2.401**
	(.507)	(.496)	(-2.491)	(-2.416)
Observations	3,060	3,060	2,972	2,972
Pseudo R ²	.530	.530	.524	.524
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes

The dependent variable is *TAXAGGR* in columns 1–2 and *HIGH_TAXAGGR* in columns 3–4. Regression coefficients and *p*-values. Standard errors are clustered at the firm level. *p*-values are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$