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# Tax Avoidance - Are Banks Any Different?\*

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## Abstract

While the public has noticed the need for the detection of potential tax loopholes and demands further improvement in the taxation of banks, there is scarce empirical evidence whether banks' degree of tax avoidance actually differs from that of non-banks. We try to close this gap by investigating U.S. banks' tax avoidance behavior for a sample period from 2004 to 2016. To identify banks' tax avoidance, we use annual Cash ETRs and GAAP ETRs and compare them to the tax avoidance behavior of non-banks. As there are various channels of tax avoidance, we account for differences in several areas such as corporate fundamentals, the degree of multinationality and regulatory scrutiny. We provide cautious evidence that banks have significantly higher Cash ETRs than non-banks. Using quantile regression, we find evidence that the association between banks and ETRs is not constant over the whole tax avoidance distribution, with banks reporting significantly higher ETRs compared to non-banks in those regions of the tax avoidance distribution which are regularly classified as "high tax avoidance". In line with recent research, we provide some evidence that the difference in Cash ETRs between banks and non-banks is more pronounced for worse-capitalized, than for better-capitalized banks.

JEL classification: G21, H26, M41

Key words: Tax avoidance, banks, non-banks, standardized coefficients, quantile regression

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# 1 Introduction

In this study we assess whether the overall degree of tax avoidance<sup>1</sup> of banks<sup>2</sup> is comparable to that of non-banks (holding all else constant) and whether we observe differences in frequently used tax avoidance variables (letting variables differ between bank and non-bank).

Our motivation stems from the fact that banks are still under a lot of public scrutiny due to the latest financial crisis. Politicians and the public wonder whether banks fairly make up for the public financial aid they received and whether they pay their fair share of taxes<sup>3</sup>. However, banks play a crucial role in a country's economy and taxes on the banking sector might distort banks' decision-making processes. Han, Park, and Pennacchi (2015), e.g., show that banks in high-tax regions with high loan demand and low deposit supply securitize more to serve loan demand. As large banks in general buy these securitized loans from smaller banks and hedge them further, smaller banks' incentives to monitor the securitized loans properly decreases, increasing the risk for financial instability. In addition, taxes are an expense item that decreases banks' available cash, resulting in fewer funds that could be invested. This in turn could curtail lending activities of banks and deteriorate the economic situation in a region.

Although banks are an integral part of the economy, tax avoidance studies generally exclude financial institutions and thus banks from their sample<sup>4</sup>. The scarce evidence of studies on banks' tax avoidance addresses two topics: banks as a channel for customers' tax avoidance (Gallemore, Gipper, and Maydew (2019)) and banks' involvement in profit shifting behavior (Meeks and Meeks (2014), Merz and Overesch (2016), Schandlbauer (2017), Langenmayr and Reiter (2017)).

We differ from the latter as a) banks' profit shifting provides one channel of how to target a high level of tax avoidance and b) they use separate bank samples for their analyses which makes direct comparisons between banks and non-banks difficult. We, on the contrary, are interested in whether banks' overall degree of tax avoidance differs from that of non-banks.

There are usually two arguments for excluding banks from empirical studies: differences in business models resulting in accounting differences and banks' being subject to industry-specific regulation that might cause differences in tax avoidance behavior. The first reason generally

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<sup>1</sup> We define tax avoidance in accordance with Dyreng, Hanlon, and Maydew (2008) as paying a low amount of (cash) income taxes compared to pretax income.

<sup>2</sup> Banks comprise of all firms with SIC codes 6020, 6021, 6022, 6035 and 6036. Credit unions (SIC codes 6061 and 6062) are excluded as they are non-profit and therefore treated differently than other banking institutions. Non-banks are all companies listed in Compustat NA except for other than above defined financial institutions, REITs, insurances and utilities.

<sup>3</sup> E.g., various OECD studies (OECD (2009)) as well as the latest introduction of the article 89 in the CRD IV show this concern.

<sup>4</sup> See, for example, Mills, Erickson, and Maydew (1998), Rego (2003), Hanlon and Shevlin (2005), Frank, Lynch, and Rego (2009), Dyreng, Hanlon, Maydew, and Thornock (2017), Gallemore, Mayberry, and Wilde (2017).

renders the problem for tax avoidance researchers that some control variables are not available for banks, leading to biased inferences. However, often included control variables such as research and development expense or tax loss carryforwards are often missing. To overcome this problem, researchers replace variables by adequate proxies or by setting missing values of the respective variable to zero.

Studies excluding banks seem to be particularly concerned with regulatory differences. Implicitly, those studies assume that regulatory oversight and regulatory requirements cause differences in tax avoidance behavior between banks and non-banks. Aside from complying with accounting regulations of the U.S. Financial Accounting Standards Board (FASB) and the supervision by the U.S. Securities and Exchange Commission (SEC), banks are additionally subject to regulation by either the U.S. Federal Deposit Insurance Corporation (FDIC) or the U.S. Federal Reserve (FED). The FDIC's and FED's main concern is whether banks are able to meet certain regulatory requirements (e.g., capital requirements, stress test simulation) to ensure financial stability of the economy.

From a theoretical point of view, the effect of regulation on the tax avoidance behavior of banks is not clear upfront. If a bank's tax strategy is not sustainable, resulting in additional tax payments upon audit and the bank has failed to create sufficient reserves in advance, bank's available cash decreases. This in turn might weaken reserves which originally should buffer capital ratios. Due to the fact of supervision and regulation, banks might therefore be less inclined to engage in aggressive or risky tax avoidance (e.g., aggressive profit or debt shifting) compared to non-banks<sup>5</sup>. Opposed to this scenario, banks are likely to try, within their regulatory boundaries, to increase after-tax cash flows<sup>6</sup>. In contrast to non-banks, banks might have other tax avoidance strategies at hand than non-banks. Langenmayr and Reiter (2017), for example, show that banks are able to shift proprietary trading gains to low-tax countries while still conducting the trades at the headquarters in a high-tax country. Especially banks with a sustainable capital ratio that are not prone to tight supervision could make use of more aggressive tax avoidance strategies (Scholes, Wilson, and Wolfson (1990), Collins, Shackelford, and Wahlen (1995)). Due to the contrasting, theoretical considerations above, it is an empirical question whether banks' degree of tax avoidance actually differs compared to non-banks and if banks have a higher or lower level of tax avoidance.

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<sup>5</sup> Hasan, Hoi, Wu, and Zhang (2014) provide evidence that banks charge higher risk premia on customers with a high degree of tax avoidance, indicating that banks view tax avoidance as risky and incorporate that into their prices.

<sup>6</sup> Implicit evidence can be found in Gallemore (2012) who assesses whether the inclusion of deferred tax assets (DTA) in a bank's capital ratio increases a bank's probability to default. He cites a comment letter of the banking industry to U.S. regulatory agencies which argues for the inclusion of DTAs as they want to be treated as a going concern.

To address our research question, we rely upon a U.S. sample of publicly listed banks and non-banks from 2004 to 2016. We choose a U.S. setting as it exhibits some advantages such as the huge amount of publicly listed banks, fewer regulatory differences than in cross-country studies and, for comparability reasons, the large amount of tax avoidance studies that focus on tax avoidance determinants<sup>7</sup>. Although prior studies, in general, exclude *all* financial institutions (one-digit SIC code=6), we focus on banks. First, they comprise the largest group (with about 79.78%) among the financial institutions. Second, we want to refrain from other regulations (e.g., different taxation rules with respect to REITs or credit unions/ trusts, supervision of insurance corporations), affecting inferences of our analyses<sup>8</sup>.

Methodologically, we first use graphical evidence, showing that, except for the financial crisis, banks seem to have similar levels of Cash ETRs and GAAP ETRs<sup>9</sup> compared to non-banks. Being a rather homogenous industry, banks' ETRs bulge close to the 35 % U.S. statutory tax rate and are less spread out than those of non-banks.

In our multivariate regressions, we first report unstandardized coefficients and show in a second step demeaned and standardized coefficients, respectively, to infer whether being a bank has a differential effect while holding other tax avoidance determinants fixed at their averages. In our main analyses, we provide evidence that being a bank coincides with a significantly higher Cash ETR, but not with a higher GAAP ETR. One explanation for this finding might be that banks view the reported non-banks' GAAP ETRs as the benchmark against which potential investors compare. Depending on the specification (unstandardized, demeaned or standardized), banks, on average, have a 4 to 5 percentage points higher Cash ETR than non-banks. In economic terms, this effect translates into about 16 % to 20 % of mean Cash ETR. Comparing the magnitude of frequently used tax avoidance variables in the combined and standardized regressions to the separate sample regression of non-banks, we find that average inferences stay qualitatively similar. This provides first evidence that including binary variables and standardizing variables are a potential tool to include banks in the sample. Nonetheless, we use interaction terms to analyze incremental effects to assess whether tax avoidance variables act differently for banks than for non-banks. We observe incremental differences for variables measuring financial constraint and operating expense in both ETR specifications.

As the difference between banks and non-banks is only significant for Cash ETRs, we use quantile regressions. With their help, we analyze whether there are regions in the tax avoidance distri-

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<sup>7</sup> See, e.g., Gupta and Newberry (1997), Mills et al. (1998), Rego (2003), Dyreng et al. (2008), Dyreng et al. (2017).

<sup>8</sup> Numbers and calculations are based on table 3:  $20.76\% = (5,678 / 26,203 + 1,148) * 100$ ; 79.78% is taken from Panel B.

<sup>9</sup> For the sake of brevity, we use the term "ETR" interchangeably for Cash ETR and GAAP ETR if not otherwise stated.

bution in which being a bank has a stronger association with ETRs in terms of significance and magnitude. In general, banks report higher ETRs in lower levels of the tax avoidance distribution indicating that they are relatively worse at keeping low levels of tax avoidance compared to non-banks. We observe further that the association between banks and GAAP ETRs is significant for below and above median quantiles, but not for the median itself. For above median quantiles (low degree of tax avoidance) banks depict lower GAAP ETRs than non-banks. As banks are a rather homogenous industry and concerned about investor reactions to their reported GAAP ETR, they might be inclined to report GAAP ETRs which are close to the industry-mean.

To assess whether regulatory differences between banks and non-banks might drive ETRs, we adapt an approach from prior literature, splitting banks into worse- and better-capitalized according to different thresholds of the combined capital ratio (Schandlbauer (2017), Giroud and Mueller (2015)). In line with Scholes et al. (1990) and Gropp and Heider (2010), we assume that banks with a sufficiently high capital ratio are less concerned about regulatory interventions and should therefore be interested in a similar degree of tax avoidance as non-banks. The opposite should hold for worse-capitalized banks. We find evidence that worse-capitalized banks pay a larger share of cash taxes paid than non-banks. Contrary to our predictions, we observe that better-capitalized banks still exhibit significantly higher Cash ETRs than non-banks. In terms of magnitude of about 4 percentage points, this effect is, however, smaller compared to the one of worse-capitalized banks of approximately 8 percentage points. With respect to GAAP ETRs, there is almost no significant difference between worse-capitalized/ better-capitalized banks and non-banks, except for when we split at the median. Here, worse-capitalized banks seem to report a higher share of income tax expense than non-banks.

We contribute to the literature by answering the call of Hanlon and Heitzman (2010) to sharpen the understanding of financial institutions' tax avoidance. We are the first<sup>10</sup> to thoroughly analyze banks' and non-banks' degree of tax avoidance in separate and joint samples and shed light on whether frequently used tax avoidance variables differ between banks and non-banks. In sum, we descriptively analyze whether the overall degree of tax avoidance is comparable to that of non-banks (holding tax avoidance determinants constant) and whether we observe differences in frequently used tax avoidance variables (letting variables differ between bank and non-bank). Implicitly, we contribute to the literature on methodological issues of tax avoidance studies. As few tax avoidance studies keep banks in their sample and account for differences across industries via the inclusion of, e.g., industry-fixed effects (e.g., Bird, Edwards, and Ruchti (2018)) we provide guidance on whether the inclusion of banks changes standard inferences.

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<sup>10</sup> As far as we know, there is no study that explicitly looks at the level of tax avoidance and tax avoidance determinants for banks and compares the outcomes to non-banks.

Our findings are particularly informative for researchers who are interested in how the inclusion of banks would alter their inferences. Furthermore, we show that the average bank pays a higher amount of cash taxes than the average non-bank. For that reason, our study is of interest as an isolated analysis of banks' tax avoidance might lead to biased inferences for curtailing suitable tax legislation.

The remainder of the paper is structured as follows: Section 2 contains our hypotheses development. Section 3 outlines our methodology, variables and sample selection. Section 4 contains results of our multivariate regression, quantile regression and the impact of capital ratio on tax avoidance. Section 5 present some robustness checks. Section 6 concludes the paper.

## 2 Hypotheses development and related literature

We define tax avoidance according to Dyreng et al. (2008) as paying a low amount of income taxes relative to pretax income<sup>11</sup>. Figure 2, Panel B shows a large amount of firms with an ETR lower than the U.S. statutory tax rate of 35 %. We therefore rely upon a relative comparison in distinguishing whether the firm avoids more or less taxes than another firm.

In general, tax avoidance studies exclude banks on the grounds of differences in their business model, accounting items and regulation. For that matter, we do not know to date whether the overall level of tax avoidance of banks differs compared to that of non-banks. A reasonable question is why banks would behave differently anyway.

On the one hand, several studies (e.g., Demirgüç-Kunt and Huizinga (2001), Merz and Overesch (2016), Langenmayr and Reiter (2017), Shaxson (2018)) and governmental reports (e.g., OECD (2009, 2010), OECD (2011)) emphasize that banks have either more or other possibilities at hand (like tax planning through financial derivatives, setting up special purpose entities in tax havens) to more effectively avoid taxes than non-banks. Additionally, Gallemore et al. (2019) provide implicit evidence in the same direction, showing that banks promote tax avoidance among their customers. While banks are interested in an optimal level of tax avoidance among their customers, they most likely favor a high level of tax avoidance for themselves. In sum, this would suggest at least an equal or even higher level of tax avoidance compared to non-banks.

On the other hand, banks are also heavily regulated and have to comply with a battery of rules. Banks' key concern is certainly maintaining adequate capital ratios and required reserve ratios<sup>12</sup>.

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<sup>11</sup> According to prior literature, we operationalize this construct by using annual Cash and GAAP ETRs. A high degree of tax avoidance corresponds to a low ETR. The opposite holds for a low level of tax avoidance.

<sup>12</sup> U.S. banks are subject to maintaining a Tier 1 capital ratio of 4 %, a total capital ratio of 8 % and a reserve ratio of 3 % and 10 %, respectively. The reserve ratio indicates the amount of cash reserves over specified deposits that banks are subject to hold in light of possible bank runs. (FED, <https://www.federalreserve.gov/monetarypolicy/reservereq.htm>, last accessed: 2019-07-09)

The adherence of those rules is supervised either by the FDIC or FED. The FED indicates on their website that they use “automated screening systems to conduct routine monitoring of the financial condition and performance [...]. This surveillance process ensures that these institutions receive timely supervisory attention and that examination resources can be directed to weak and potentially troubled institutions to supplement on-site examinations and inspections”<sup>13</sup>. If, e.g., tax-induced intra-group debt shifting (either across U.S. states or internationally) is excessive, supervisory authorities’ attention might be caught. This would be especially true for those cases where intra-group debt shifting to low-tax subsidiaries leads to increases in leverage ratios<sup>14</sup> and decreases in capital ratios. Like for non-banks (due to, e.g., covenants with banks), this situation would hinder banks to indefinitely shift debt. Additionally, aggressive tax strategies that might be threatened by the U.S. Internal Revenue Service (IRS) could cause a substantial cash outflow to a bank. This might deteriorate a bank’s reserve as well as capital ratio. For that reason, the FED and FDIC might be particularly attentive to those banks with relatively low reserve and capital ratios. When banks might fear timely regulatory interventions by the FED or FDIC due to, e.g., a non-sustainable capital ratio, banks might not be able to choose (tax) investment opportunities freely (Merz and Overesch (2016), Schandlbauer (2017)). In sum, regulatory intervention would decrease, *ceteris paribus*, a bank’s potential for tax avoidance in comparison to non-banks. Due to the two opposing arguments, it remains an empirical question of whether banks’ level of tax avoidance differs from that of non-banks.

We, however, assume that banks with a relatively high capital ratio (our proxy for regulatory oversight) have a similar degree of tax avoidance than non-banks. Our reasoning stems from Gropp and Heider (2010) who find evidence that banks with sustainable capital ratios depict a similar pattern in capital structures as non-banks. Gropp and Heider (2010)’s findings are in line with Scholes et al. (1990) who conclude that when regulatory costs are low, banks are regulatorily free and more likely to engage in tax-minimizing actions. As the banks in our sample are mainly above the capital ratio threshold of 8 %, we are only able to evaluate “being constrained” in relative terms. We predict that worse-capitalized banks weigh risky tax investments differently than those banks whose capital ratio is almost well above the 8 % cut points.

Prior tax avoidance studies (e.g., Gupta and Newberry (1997), Mills et al. (1998), Rego (2003), Dyreng et al. (2017)) show that the level of tax avoidance not only depends on a firm’s industry classification, but also on other factors such as a firm’s outcomes of its business model (i.e., profitability, depreciation expense, lease expense, employee intensity, loss history), size

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<sup>13</sup> <https://www.federalreserve.gov/supervisionreg/topics/surveillance.htm>, last accessed: 2019-05-10.

<sup>14</sup> In accordance with the tax accounting literature, leverage ratio is the ratio of total debt over total assets and not the leverage ratio as defined in Basel III requirements.



(i.e., exploitation of economies of scale) and foreign operations (i.e., a proxy for profit shifting opportunities). The aforementioned studies generally exclude financial institutions and, hence, banks from their sample. We therefore rely jointly upon findings from non-bank's and bank's tax avoidance studies to predict how frequently used tax avoidance variables might differ for banks. Since Modigliani and Miller (1963), a vast amount of studies assessed the relation between tax shield and capital structure of non-banks<sup>15</sup>. The underlying idea is that interest expense creates a tax shield if interest expense is deductible for tax purposes. Heckemeyer and de Mooij (2017) directly analyze whether banks use debt-financing to exploit the tax shield. They are interested in whether the incentive of debt bias is as pronounced for banks as it is for non-banks. Debt bias refers to the preference of debt-financing over equity-financing due to tax reasons. They find evidence for a positive effect of taxes on a bank's leverage ratio similar to that of non-banks. However, the tax responsiveness of non-banks and banks heavily depends on the size distribution as large banks seem to be less tax responsive than small banks while the reverse holds for large non-banks. In a similar vein, Schandlbauer (2017) shows in a bank-only setting that banks increase their non-depository debt around a state tax increase. This finding is driven by well-capitalized banks which are able to benefit from an enlarged tax shield. Schandlbauer (2017) also finds evidence that better-capitalized banks increase their loan supply while worse-capitalized banks decrease it. He argues that better-capitalized banks are able to trade off the increased costs of funding by the tax-deductibility of increased debt. Based on the findings above, we predict that leverage is negatively related to a bank's ETR. We further assume that there is no significant difference when we allow leverage to differ between banks and non-banks.

With respect to size, profitability and losses, we do not assume that they differently affect banks' and non-banks' ETRs. On the one hand, larger banks should be able to exploit economies of scale fostering efficient tax planning while on the other hand, they are presumably more visible to the public and therefore might fear a tax scandal with negative feedback effects on their reputation (Gupta and Newberry (1997), Zimmerman (1983)). Hence, we make no prediction on the coefficient of size.

A more profitable firm should pay more taxes assuming a constant capital input (i.e., the firm is getting more efficient)<sup>16</sup>. We therefore assume a positive relation between profitability and ETRs.

Previous losses indicate the potential for tax loss carryforwards, reducing a firm's tax burden. We therefore predict a negative relation between losses and ETR. As banks suffered more from the financial crisis than non-banks and accumulated large losses during the financial crisis (OECD

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<sup>15</sup> See Heider and Ljungqvist (2015) for an overview.

<sup>16</sup> See Gupta and Newberry (1997) for the theoretical underpinning.

(2010)), we expect the impact of previously incurred losses on ETRs to be more pronounced for banks than for non-banks. This is in particular true, since U.S. banks' profitability between 2010 and 2013 sharply increased and almost returned to pre-crisis levels<sup>17</sup>.

[Figure 1 about here.]

Depreciation on property, plant and equipment, selling, general and administrative (SG&A) expense and partially intangibles cause operating expense which is generally tax deductible and should therefore negatively impact ETRs. As banks rely more heavily on SG&A expense (due to their high service orientation), we assume that the incremental effect of SG&A is stronger for banks. We make no predictions on the incremental differences of property, plant and equipment (PP&E) and the usage of intangibles.

Although we know from prior literature that banks seem to have similar capital structures as non-banks, we do not know whether banks optimize their tax structure when being in financial distress. There is recent evidence that non-banks which are in financial distress actually use more cash tax avoidance (Edwards, Schwab, and Shevlin (2016)). Banks themselves play down the relevance of their cash flow statements as the information provided herein would not be useful in valuing the firm. In contrast, Burke and Wieland (2017) find evidence that the information actually is value-relevant. As we are, however, interested in banks' financial constraint we do not use operating cash flow, but the cash flow from financing activities. We make no predictions on how financial cash flow is related to ETRs.

A key focus of tax avoidance studies is the reduction in the tax base via profit- or debt-shifting (see Dharmapala (2014) for an overview on non-banks). A few studies arose recently, assessing in a banks-only setting their inclination to engage in profit shifting. Demirgüç-Kunt and Huizinga (2001) provide first evidence in an international sample that multinational banks pass on fewer of the born tax burden to their customers compared to merely domestic banks. They assume that multinational banks have different channels at hand to circumvent taxation like the strategic set-up of intra-group transfer prices. In a small, one-country setting, Meeks and Meeks (2014) assess the factor that explain the discrepancies between Her Majesty's Revenue and Customs (HMRC) tax revenues from banks and tax expense recorded on banks' financial statements. The decrease in tax revenue from banks does not result from a decline in the UK statutory tax rate, reduced operating profits or tax-deductible impairments, but presumably from UK bank profits that are

<sup>17</sup>See, for example, the report of the Committee on the Global Financial System, assessing structural changes in banking after the crisis (Buch and Dages (2018)). Additionally, Figure 1 shows the development of average losses and return on assets (ROA) for banks and non-banks over time. Although non-banks have, on average, a higher frequency of losses, banks in the year 2010 surpassed them. The level of ROA stayed constant both for banks and non-banks. The higher frequency of losses in 2010 and the constant level of profitability suggest that banks are able to use the resulting tax loss carryforwards faster than non-banks.

earned overseas. While the decline in UK originated profits is rather substantial, the share of UK assets to total assets stays fairly constant over their sample period. Meeks and Meeks (2014) regard this as cautious evidence for multinational banks engaging in profit shifting. Merz and Overesch (2016) are the first to directly test banks’ profit shifting behavior in a large, cross-country setting. They measure profit shifting of multinational bank holding companies as the elasticity of net income to a one percent increase in the tax rate differential between home country and subsidiary. Their key findings are that banks’ response to taxation is stronger compared to a consensus estimate of studies, analyzing non-banks’ profit shifting and that trading gains are highly responsive. The latter finding is corroborated by Langenmayr and Reiter (2017). They show that German banks relocate their trading gains to low-tax countries to benefit from the low tax rate while the employees conducting the trade remain in the headquarter, i.e., the high-tax rate country. In sum, we predict a negative association between foreign operations and a bank’s ETR. It is, however, unclear whether banks are incrementally better in setting up international tax structures than non-banks. We therefore make no predictions concerning this relationship.

### 3 Methodology

#### 3.1 Variables and methodology

We calculate different models to appropriately compare banks’ and non-banks’ tax avoidance. In a first step, we regress ETRs on unstandardized variables in separate bank and non-bank samples to be able to compare the direction of the tax avoidance variable coefficients to prior studies. We then combine the bank and non-bank samples and include the binary variable *BANK* to analyze whether the inclusion of banks in the non-bank sample would yield different inferences. Third, we include interaction terms as they allow us to draw conclusions on which tax avoidance determinant incrementally differs between banks and non-banks. Essentially all estimated models are a variant of the following model:

$$\begin{aligned}
 ETR_{it} = & \alpha + \beta_1 \times BANK_{it} + \sum_k \beta_k \times X_{it} + \sum_m \beta_m \times BANK_{it} \times X_{it} \\
 & + \xi_t + \lambda_s + \varepsilon_{it}
 \end{aligned} \tag{1}$$

where  $ETR_{it}$  is either the annual CASH ETR or GAAP ETR for a bank or non-bank. CASH ETR is calculated as cash taxes paid over the sum of pretax income and special items. GAAP ETR is total income tax expense over the sum of pretax income and special items. We investigate both, GAAP ETR and Cash ETR, as we believe that the GAAP ETR is of interest to investors

and the public in general while the Cash ETR reflects the cash outflows of taxes from a firm (Dyreng et al. (2008)).

Our variable of interest,  $BANK_{it}$ , is a binary variable which takes the value of 1 if the firm has a SIC code of 6020, 6021, 6022, 6035, and 6036 and 0 otherwise. This variable indicates whether banks generally have different ETRs than non-banks. Our additional analyses focus on the interaction between  $BANK_{it}$  and the placeholder  $X_{it}$  which refers to our various tax avoidance variables.

The calculation and inclusion of standard tax avoidance variables is taken from prior research (see, e.g., Dyreng, Hanlon, and Maydew (2010), Kubick and Lockhart (2016), Bird et al. (2018)). To cope with the fact that banks are larger than non-banks, we calculate  $SIZE_{it}$  as the natural logarithm of total assets. Furthermore, we deflate all variables where indicated with total assets, accounting for heterogeneity due to size effects.  $ROA_{it}$  approximates a firm's profitability and is calculated as pretax income over total assets.

Unfortunately, we are not able to identify tax loss carryforwards for banks from the Compustat database as this item is neither filled in the industry nor bank format ( $indfmt=INDUSTRY/BANK$ ). Tax loss carryforwards show a firm's potential to offset losses from the past against future taxable income. We therefore approximate tax loss carryforwards for banks and non-banks with the binary variables  $LOSS_{i,t-1}$  and  $LOSS_{i,t-2}$ , indicating whether the firm incurred a loss in the previous year or the year before that.

According to Frank et al. (2009), there is generally no uniform measure of leverage in the non-bank literature. Gropp and Heider (2010) define a bank's leverage ratio as one minus the ratio of equity to the book value of assets. As this ratio also includes deposits which non-banks usually do not report, Gropp and Heider (2010) modify the leverage ratio to only include non-deposit liabilities which is comparable to long-term debt of non-banks. However, we define  $LEVERAGE_{it}$  according to Heckemeyer and de Mooij (2017) as total debt over total assets since we are interested in the tax shield of total corporate debt in relation to corporate equity and its impact on ETRs. While  $LEVERAGE_{it}$  is a proxy for a firm's capital structure, we use  $FINANCIAL\ CASH\ FLOW_{it}$  as an indicator of financial distress. The correlation between  $LEVERAGE_{it}$  and  $FINANCIAL\ CASH\ FLOW_{it}$  is low (correlation coefficient: 0.14 (bank), 0.03 (non-bank)), providing some certainty that those two items measure different concepts of financing (funding of capital vs. managing capital).  $FINANCIAL\ CASH\ FLOW_{it}$  is comprised of changes in common stock, in long-term debt and in current debt. For banks, the item also includes changes in deposits. We do not correct for this item as deposits in  $FINANCIAL\ CASH\ FLOW_{it}$  account for a large portion of banks' financial activities. The deletion of changes in deposits, hence, would make it difficult to

compare financial activities of banks to that of non-banks.

FOREIGN<sub>it</sub> accounts for potential channels of profit shifting. The variable turns 1 if the items “*Current foreign income tax*” or “*International sales*” gathered from Thomson Reuters Geographic Segments are neither missing nor zero.

NET PP&E<sub>it</sub>, INTANGIBLES<sub>it</sub> and SG&A EXPENSE<sub>it</sub> approximate operating expense which is tax deductible as well. NET PP&E<sub>it</sub> is calculated as net property, plant & equipment over total assets. INTANGIBLES<sub>it</sub> is the amount of intangibles reported on the balance sheet over total assets and includes among others, licenses, patents and goodwill. SG&A EXPENSE<sub>it</sub> is selling, general and administrative expense over net sales. This item includes personnel expense and other administrative expenses needed to secure operating income. Table 1 provides guidance on how we define and calculate our variables.

[Table 1 about here.]

To control for confounding effects such as the financial crisis or differences across U.S. states, we include year- and state-fixed effects ( $\xi_t, \lambda_s$ ) where indicated. Our standard errors are clustered at the firm level. As we are interested whether being a bank is differently associated with ETRs than being a non-bank, we do not control for industry differences via the inclusion of industry-fixed effects as we would test BANK<sub>it</sub> against the different industries rather than against non-banks as a whole.

In addition to the standard approach above, we demean and standardize, respectively, all non-binary control variables in the interaction regression model by subtracting the yearly, industry-specific mean from each variable and divide by the yearly, industry-specific standard deviation. Industry-specific refers to the split between bank and non-bank. The unstandardized approach helps us to assess whether average inferences in standard regressions would change upon the inclusion of banks. In our unstandardized regressions BANK<sub>it</sub> represents the partial influence of being a bank on tax avoidance when all other variables are at zero<sup>18</sup>. Opposed to that, the demeaned coefficient, BANK<sub>it</sub>, depicts the influence of being a bank on tax avoidance under the assumption that all other variables are fixed at their means. Standardization (dividing by the standard deviation) makes the assessment of changes in coefficients across specifications easier. A standardized OLS coefficient describes the average change in the dependent variable if the independent variable increases by one standard deviation. Normally, demeaning would suffice. However, some coefficients in our regressions like, e.g., the ROA of banks in the interaction regression model, are not directly comparable to that of non-banks. We therefore standardize

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<sup>18</sup> For further information refer to Afshartous and Preston (2017), Bring (1994).

coefficients in a last step to provide a better basis for interpretation. In sum, we are able to assess whether BANK is differently associated with ETRs while we control for the average impact of the tax avoidance variables and adjust the interpretation basis to one standard deviation.

To gain further insights in the differences between banks and non-banks, we apply quantile regression to our sample. With the help of this approach, we are able to analyze the extreme parts of the tax avoidance distribution. While OLS assesses the response of the dependent variable at the mean, quantile regression is a potent tool to assess the outcome of the dependent variable at different points of the underlying distribution. We therefore employ a conditional quantile regression model (Borah and Basu (2013)). In addition, we are able to investigate whether determinants, showing a significant/ insignificant influence on ETRs at the mean, do still significantly/not significantly influence ETRs at different quantiles.

To analyze whether banks' degree of tax avoidance differs upon regulatory intervention and hinders them from undertaking preferred tax investments, we use banks' most visible and important accounting item, the combined capital ratio, as a proxy. Scholes et al. (1990) indicate that banks behave in a similar way as non-banks when they have a sufficiently high capital ratio. Gropp and Heider (2010) find evidence that well-capitalized banks show a similar capital structure as non-banks. In order to identify potential differences between banks with relatively better and relatively worse capital ratios in comparison to non-banks, we rely upon the specification in Schandlbauer (2017)<sup>19</sup>:

$$\begin{aligned}
 ETR_{it} = & \alpha + \beta_1 \times BANK_{it} \times WORSECAPRATIO + \beta_2 \times BANK \times BETTERCAPRATIO \\
 & + \sum_k \beta_k \times X_{it} + \xi_t + \lambda_s + \varepsilon_{it}
 \end{aligned}
 \tag{2}$$

$ETR_{it}$  and  $X_{it}$  are defined as above.  $WORSECAPRATIO_{it}$  is one if the capital ratio of a bank is below a certain quantile threshold and zero otherwise<sup>20</sup>. The reverse holds for  $BETTERCAPRATIO_{it}$ . With this approach, we are measuring the relative regulatory constraint rather than actual constraint. The interaction between  $BANK_{it}$  and  $WORSECAPRATIO_{it}$  shows whether banks with a relatively lower capital ratio behave differently than non-banks. The same intuition applies to the interaction between  $BANK_{it}$  and  $BETTERCAPRATIO_{it}$ . In total, we are not testing whether worse-capitalized banks are different from better-capitalized banks, but the indicator variables split banks according to their capital ratio and analyze the difference between the respective banks and non-banks.

<sup>19</sup> We follow Schandlbauer (2017) in terminology of how we define banks that are below (worse-capitalized) and above a certain threshold (worse-capitalized).

<sup>20</sup> We use different cut points to assess whether we can observe a phase-in effect.

### 3.2 Sample selection

Table 2 shows our sample selection process. Our sample comprises of data from Compustat North America (NA), Compustat Bank and Thomson Reuters Worldscope and EIKON<sup>21</sup>. The sample ranges from 2004 to 2016. The year 2004 is a natural lower bound for our analysis as neither Compustat NA nor Compustat Bank cover cash taxes paid (item “txpd”) for banks before that point in time<sup>22</sup>. We therefore rely on the years 2004 to 2016 to have a similar time horizon for both, banks and non-banks. We drop all non-U.S. incorporated firms.

[Table 2 about here.]

We include those firms in our sample which have non-missing observations to construct our ETR measures. Hence, we drop observations if income taxes paid, income tax expense, pretax income or total assets are missing and common equity if either missing or negative<sup>23</sup>. As we would lose observations due to missing special items, we replace a missing special item with zero.<sup>24</sup> We add back special items due to their one-time character. We do not drop those observations where the negative value of pretax income is caused by special items. Firms with negative or zero common equity might be in financial distress and therefore might have different incentives than solvent firms. The same applies to banks whose capital ratio is missing. To have the same data basis and not confound our results with the inclusion of other financials (like insurance companies, brokerage firms), we drop all observations, except those for banks, with one-digit SIC code 6. The same argument holds for the exclusion of utilities (one-digit SIC code 4). We truncate Cash ETRs and GAAP ETRs at 0 and 1 as observations above and below this threshold are difficult to interpret. In our main analyses, we refrain from eliminating outliers in the control variables. We know that our internal validity might suffer from this decision. We believe, however, that for our research question generalizability of our results based on a broader set of observations is more important. To draw equal inferences on Cash ETR and GAAP ETR, we require that each firm-year observation has non-missing values of both Cash ETR and GAAP ETR. In a last step we delete observations that have missing values for our tax avoidance variables.

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<sup>21</sup> Thomson Reuters provides us with data to proxy for a bank’s degree of internationality. We delete those observations in the banking sample where the match was not successful.

<sup>22</sup> As also noticed in other studies (e.g., Burke and Wieland (2017)), Compustat only started to collect information from banks’ cash flow statements in 2004.

<sup>23</sup> Income taxes paid is equal to Compustat item TXPD (data317), income tax expense to TXT (data16), pretax income to PI (data170) and special items to SPI (data17).

<sup>24</sup> We randomly checked whether the firm reported special items as defined by Compustat and are fairly certain that the alterations we made are consistent with the reported items. The alterations apply to approximately 449 observations.

## 4 Results

### 4.1 Descriptive evidence

Figure 2, Panel A shows average Cash ETRs and GAAP ETRs of banks and non-banks. A first interesting finding is that average Cash and GAAP ETR of banks are almost identical, for GAAP ETRs being marginally lower than Cash ETRs. In comparison to non-banks, banks' average Cash ETR is substantially higher, while banks' GAAP ETR is similar. The fact that banks' Cash ETR and GAAP ETR are similar in terms of magnitude might be due to rather homogenous industry characteristics in comparison to the "potpourri" of non-banks. In Panel B, we split non-banks across one-digit SIC codes. All industries are, on average, well below the U.S. average corporate tax rate of around 39 % and the federal statutory tax rate of 35 %<sup>25</sup>. Non-banks' GAAP ETR is always substantially higher than Cash ETRs. The evidence in Figure 2, Panel B suggests that banks' Cash ETR and GAAP ETR are, compared to other industries, in the middle range when measured in terms of GAAP ETR and at the highest end when measured in Cash ETR terms.

[Figure 2 about here.]

[Table 3 about here.]

Figure 3 shows how average Cash ETRs and GAAP ETRs of banks and non-banks evolve over our sample period. While GAAP ETRs are less volatile, the large peak around 2008 in banks' Cash ETRs is striking. The spike probably represents the outbreak of the financial crisis causing pretax income to decline and special items to increase. This one-time effect leads to a larger Cash ETR than GAAP ETR as deferred taxes presumably absorb the shock and take tax loss carryforwards into consideration. Figure 4 provides evidence for our reasoning. Here, we observe that while income taxes are smaller in magnitude cash taxes paid slightly increase until 2009. With reference to Figure 3, non-banks' ETRs show some convergence in the financial crisis years, but not as large as banks. Banks and non-banks' ETRs seem to converge after 2012. Unfortunately, we are not able to infer whether this pattern was already existent in the years prior to our sample period.

[Figure 3 about here.]

[Figure 4 about here.]

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<sup>25</sup>The average corporate tax rate approximately amounts to 39 % until the year 2018 and consists of federal taxes such as the corporate statutory tax rate and local taxes. For a detailed look at the combined statutory tax rate: OECD.Stats, Table II.1: Statutory corporate income tax rate. [https://stats.oecd.org/index.aspx?DataSetCode=TABLE\\_II1#](https://stats.oecd.org/index.aspx?DataSetCode=TABLE_II1#)



Figure 5 displays frequency distributions of annual Cash ETRs and GAAP ETRs for banks and non-banks. The shape of the frequency distribution of non-banks' Cash ETRs is similar to Dyreng et al. (2008). We observe a bunching in the bin between 0 and 10 % and a rather equal distribution for the bins up to the 35 % for non-banks. There are few observations with a Cash ETR over 40 %. The picture looks similar for banks, though the bunching occurs between 25 % and 30 %. Interestingly, banks' and non-banks' GAAP ETRs are skewed towards the 35 % corporate statutory tax rate. In sum, we cautiously conclude with regard to graphical evidence that banks are less able to keep lower levels (e.g., due to fewer observations in the lower tails of the distribution) of tax avoidance than non-banks, at least on average.

[Figure 5 about here.]

Table 4 shows summary statistics for banks (Panel A), non-banks (Panel B) and the combined sample (Panel C) for our main variables. Comparing Panel A and Panel B, it is evident that Cash ETRs and GAAP ETRs in the bank sample are very similar. Banks, on average, have a higher annual Cash ETR compared to non-banks. In terms of GAAP ETRs, banks and non-banks are on average fairly similar to non-banks, showing a larger standard deviation than banks. As mentioned before, we explain this by banks being a rather homogenous group compared to non-banks. Differences between Cash ETR and GAAP ETR in the non-bank sample might be driven by differences in business models (e.g., different depreciation rates, different usage of intangibles)<sup>26</sup>.

Banks are less profitable than non-banks when measured by ROA. Gallemore (2012) reports similar results of 2 % for banks. The lower profitability is also not surprising against the background of the financial crisis from which banks probably suffered stronger than non-banks. Negative values of ROA at the lowest end of the distributions are due to the fact that our ETR measures are not constrained to positive pretax income, but to a positive sum of pretax income and special items. A positive sum, e.g., can occur when the pretax income of a firm is negative and the firm additionally reports a large amount of negative special items. The general procedure in the literature is to add these negative special items back to pretax income (Dyreng et al. (2008)) to outweigh the loss<sup>27</sup>. As mentioned above, LOSS indicates whether the firms incurred a pretax loss in the previous year or the year before that. Surprisingly, we observe that a larger portion of the non-bank sample encountered some kind of losses in the past. We admit that this might result from a survivorship bias in our banking sample. Due to a bank's business model, banks

<sup>26</sup> Figure 2, Panel B shows splits of Cash ETRs and GAAP ETRs across industries.

<sup>27</sup> There are 561 loss observations in our sample. Their ETRs range from 1 % to 95 %. At the median they show ETRs which are well behaved (20 %). The corresponding special items are in a range which suggests that the pretax loss only occurred due to them.

are, on average, larger in terms of asset size than non-banks and their leverage ratio is close to 90 %. The low amount of intangibles to total assets and net property, plant and equipment in the banking sample is not surprising. Due to their business model banks have less licences or patents and machinery on their balance sheets. In contrast, banks rely more heavily on personnel expense than non-banks which shows in the larger ratio of SG&A expense to total sales of about 34 % compared to a non-banks' ratio of 25 %. About 2 % of the observations in the banking sample indicate some kind of multinationality against 50 % of the non-bank sample. As our banking sample seems highly domestic, our inferences are limited with respect to how foreign operations impact banks' ETRs compared to that of non-banks.

In Panel C of Table 4 we observe that the inclusion of banks in the sample does not severely change the distributional properties in comparison to the non-bank sample. Comparing means across the bank and non-bank sample (Panel D), we observe however that the mean difference for Cash ETRs is highly significant and rather large with 6 percentage points. The difference in GAAP ETRs, though also highly significant, seems to be in economic terms less pronounced with only 0.6 percentage points. In sum, descriptive evidence as well as graphical evidence suggests that banks pay a higher amount of taxes (GAAP and cash taxes) relative to their pretax income than non-banks.

[Table 4 about here.]

## 4.2 Multivariate analysis

In Table 5, we provide the findings of our main regressions for unstandardized variables. Tax avoidance studies normally rely on unstandardized OLS regression. For that matter, we first assess whether the inclusion of banks would substantially change average inferences of an unstandardized analysis. Our adjusted  $R^2$  is in a similar range of, e.g., Dyreng et al. (2010) or Dyreng et al. (2017). Our tax avoidance variables seem to explain a larger portion of the variation in the banking than in the non-bank sample, providing some confidence that our determinants also fit for banks' ETRs. The column *Hypothesis* provides predictions on the coefficients' signs.

In presenting our results, we start with the regression of Cash ETR (Table 5, Panel A). When comparing the outcomes of the separate samples (BANK and NON-BANK), we observe that, except for ROA and SIZE which are only significant in the non-bank specification, all variables are associated as predicted. The positive association of SIZE and Cash ETR might result from the public scrutiny of the IRS who investigate larger firms more regularly, resulting in higher cash taxes paid. Rather than with the prevalence of economies of scale this finding might be explained by the political cost theory (Zimmerman (1983)) and the findings in Hoopes, Mescall,

and Pittman (2012) who show that audit probability raises with firm size. The variables FINANCIAL CASH FLOW and Cash ETR show a different association in the bank and non-bank sample<sup>28</sup>. Table 4 already shows that banks' financial cash flow is positive while the one of non-banks is negative. Banks' revenues primarily result from financing activities. Hence, the positive association between Cash ETR and FINANCIAL CASH FLOW implicitly induces higher profits and therefore higher taxes that have to be paid. Non-banks' FINANCIAL CASH FLOW mostly consists of interest expense paid on debt which is probably offset against taxable income. The association between non-banks' Cash ETR and FINANCIAL CASH FLOW, for that matter, is negative.

[Table 5 about here.]

Column 3 (COMB.) and 4 (INTER.) in Panel A of Table 5 display the results of our main analysis. In Column 3, our coefficient of interest, BANK, is positive and highly significant corroborating our graphical evidence that banks, on average, have a higher Cash ETR than non-banks. In general, banks have a 4 percentage points higher Cash ETR which translates into an economic effect of about 16 %<sup>29</sup>.

Besides analyzing whether the business model of banks results in a different degree of tax avoidance, we are also interested in whether average inferences on the association of tax avoidance variables and ETRs would change once we re-introduce banks in the sample. For that matter, we compare the outcomes of the combined sample (Column 3) with those of the non-bank sample (Column 2), rather than with the bank sample. In this context, FINANCIAL CASH FLOW is worth mentioning whose positive effect in the banking sample is outweighed by the negative effects of the non-bank sample. As already mentioned further above, FINANCIAL CASH FLOW is positive for banks and negative for non-banks, explaining the adverse effects. In general, the direction of almost all coefficients, except for FOREIGN (insignificant), do not change. In terms of magnitude, the coefficients change slightly, especially for ROA, 2-year ahead losses and FINANCIAL CASH FLOW. The economic significance of ROA, LOSSES and FINANCIAL CASH FLOW, however, does not change strongly when increasing those variables by 1%<sup>30</sup>. In line with Heckemeyer and de Mooij (2017), we do not find that leverage is significantly associated with Cash ETRs of banks and non-banks.

<sup>28</sup> According to the Compustat Bank balancing models, FINCF consists of the change in deposits, sale and purchase of common stock, issuance and extinguishment of long-term debt, changes in current debt, receipt or payment of cash dividends, other financing activities and excess tax benefit of stock options. The industrial definition of FINCF is similar exclusive the change in deposits.

<sup>29</sup> We calculate the economic effect by  $0.04/0.25=0.16$  where 0.25 is the average Cash ETR from the joint sample.

<sup>30</sup> We exemplarily show the calculation of this change for ROA:  $(0.04*0.01)/0.24=0.002 \rightarrow 0.2\%$  (non-bank), 0.1 % (joint). The effect for the other variables are as follows:  $LOSS_{t-2}$ : 16.25 % (non-bank), 18 % (joint); FINANCIAL CASH FLOW: 0.5 % (non-bank), 0.3 (joint).

Although the inclusion of banks does not alter magnitude and direction of signs for the different kinds of operating expense in the joint sample, we observe significant incremental differences for  $LOSS_{t-2}$ , FINANCIAL CASH FLOW, NET PP&E, INTANGIBLES and SG&A EXPENSE in Column 4. In terms of magnitude and economic significance, only lagged losses seem to be important. If a bank has accumulated losses in  $t-2$ , this results in a 3.7 percentage points lower Cash ETR compared to non-banks. The overall effect amounts to 30 % of mean Cash ETR. The significant differences between banks and non-banks for the other variables are as expected. A bank's key operating expense is, besides their personnel expenses, the depreciation or leasehold expenses on buildings in which their branches are located<sup>31</sup>. The same argument holds for SG&A expense which includes personnel expense and is tax deductible.

Panel B of Table 5 shows the results for the GAAP ETR specification. Inferences on directions and magnitudes of coefficients are generally similar to those in Panel A. ROA, however, is now highly significant and seems to have a strong, positive (as predicted) association on GAAP ETRs. Again, FINANCIAL CASH FLOW exhibits a positive sign in the bank sample and negative sign in the non-bank sample.

Once more, Columns 3 and 4 contain our results of interest. Opposed to the findings in the Cash ETR specification, being a bank is not significantly differently associated with GAAP ETRs. There are two explanations for our findings. Either public banks do not want to differ strongly in terms of reporting behavior from their non-bank counterparts or deferred tax expense equalizes differences in business models. SIZE is now insignificant while FOREIGN enters the regression significantly and in the predicted way. The latter might provide evidence for the exploitation of tax rate differential which then decreases current and deferred tax expense. The effect seems stronger in the bank sample than in the non-bank sample. This finding is in line with Merz and Overesch (2016), Langenmayr and Reiter (2017) who suggest that banks with foreign operations exploit tax rate differentials to decrease their taxes due. The incremental difference between BANK and FOREIGN, though, is not significant, indicating no significant differential effect between banks and non-banks. As mentioned above, we acknowledge though that inferences with respect to how multinationality affects ETRs are restricted due to the limited amount of banks operating internationally.

All in all, the analysis in Table 5 provides evidence that banks seem to have significantly different Cash ETRs, but not GAAP ETRs. The inclusion of banks (i.e., the joint sample with unstandardized variables) would for most parts not significantly alter average inferences.

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<sup>31</sup>The numerator of NET PP&E includes banking companies' and savings and loan companies' office premises and equipment. INTANGIBLES includes leases and lease acquisition costs, leasehold expense when company is the lessee and operating rights.

To corroborate our findings, we show regression results based on demeaned and standardized variables. In Table 6, we observe that the association of BANK with CASH ETRs increases slightly while the effect for GAAP ETR is still insignificant. When accounting for the average influence of the other variables, banks have a 5.5 percentage points higher Cash ETR compared to non-banks and this amounts to 21.2 % of the mean Cash ETR. In Table 7, we report standardized coefficients which additionally facilitate the interpretation of changes in variables as the basis for interpretation is set to standard deviations. With respect to BANK, the results stay the same for both, Cash ETR and GAAP ETR. We observe differences between Table 5, 6 and 7 when considering the interaction of ROA and BANK in the GAAP ETR specification. While the large coefficient in Table 5 and 6 would indicate a strong, incremental effect of ROA, the coefficient in Table 7 accounts for the difference in variances between banks and non-banks. Table 7, Panel B, Column 4 shows that increasing ROA by one standard deviation, the GAAP ETR will increase by 1.9 percentage points when being a bank.

[Table 6 about here.]

[Table 7 about here.]

In sum, our main analyses provide cautious evidence that banks have higher CASH ETRs compared to non-banks, but that there is no difference between banks and non-banks for GAAP ETRs. The economic significance amounts to about one fifth of mean Cash ETR.

### **4.3 Similarities and differences across the response distribution**

Although the business model of banks seems to be significantly associated with Cash ETRs, but not with GAAP ETRs, the association might vary across the tax avoidance distribution. For that matter, we present results of quantile regressions in Table 9 and Figure 6. Quantile regression helps us to analyze whether the influence of being a bank is either weaker or stronger for specific quantiles of the tax avoidance distribution. In our calculations, we apply conditional quantile regressions as we are interested in whether banks exhibit different associations with certain quantiles of ETRs, holding the tax avoidance variables at their means. In Table 8, we separately outline the distribution of Cash ETRs and GAAP ETRs over different quantiles for banks and non-banks.

[Table 8 about here.]

[Figure 6 about here.]

Figure 6 and, in particular, Table 9 show a strong and positive association of BANK and ETRs in the lower parts of the tax avoidance distribution. This indicates that banks in relatively low areas of the tax avoidance distribution still have a significantly higher ETR compared to non-banks in the same region of the distribution. Our main analyses show that a bank has, on average, no significant association with GAAP ETRs. Interestingly, we see that there are significant differences across the tax avoidance distribution for GAAP ETRs. Taking Table 8 into consideration, we already observe that banks have a higher level of Cash ETR and GAAP ETR for *lower* quantiles of the tax avoidance distribution compared to non-banks.

For *higher* quantiles, the picture is not uniform for Cash ETRs and GAAP ETRs. The association between BANK and Cash ETR becomes insignificant while BANK and GAAP ETR are negatively correlated for quantiles above the median. The latter finding might be explained by banks, being a homogenous industry and having less dispersed GAAP ETRs than non-banks. At the median, banks' and non-banks' association with ETRs significantly differs in Panel A of Table 8, but not in Panel B. For a bank, the median Cash ETR is 7.7 percentage points higher compared to a non-bank. In economic terms, this increase amounts to 32 % of median Cash ETR and is substantially larger than the 20 % in our demeaned regressions.

[Table 9 about here.]

Briefly assessing the tax avoidance variables for different quantiles, Table 9 shows that SIZE and ROA depict similar patterns as BANK with a positive association in the lower parts of the tax avoidance distribution and a negative association in the higher parts. Losses are still negatively associated with ETRs over almost the whole response distribution. One explanation for the positive coefficient in the 90th quantile of GAAP ETRs might be that those firms are subject to other difficulties (financial distress) as LEVERAGE is significantly and positively associated with GAAP ETRs as well. The coefficient of FOREIGN seems to be positively correlated in lower parts of the Cash ETR specification and negatively associated in higher parts. A positive finding of FOREIGN in the lower parts might be explained by the presence of repatriated earnings. These are subject to taxation and would increase ETRs especially for those firms that strongly rely on decreasing their ETRs via the exploitation of tax rate differentials. In the GAAP ETR specification, FOREIGN shows the predicted negative sign for almost all quantiles, except for the lowest. Surprisingly, INTANGIBLES seem to increase ETRs, except for those observations which are in the upper part of the tax avoidance distribution. While the coefficient of FINANCIAL CASH FLOW is consistently negatively associated with Cash ETRs, the picture is mixed for GAAP ETRs.

In sum, the analysis shows that a bank is differently associated with ETRs in different regions of the response distribution. Furthermore, banks report significantly higher ETRs compared to non-banks in those regions of the tax avoidance distribution which are regularly classified as “high tax avoidance”<sup>32</sup>. This means that banks are, in relative terms, less tax avoiders than non-banks.

#### 4.4 Association of regulatory scrutiny and tax avoidance

In this subsection, we analyze the relation between regulatory oversight and tax avoidance. Regulatory differences are a key argument for excluding banks from the sample. Due to the lack of other publicly available information on the regulatory scrutiny to which banks are subject, we use the combined capital ratio as a proxy. Table 10 shows that our sample banks are all well above the 8% threshold and we are thus not able to sort out banks that are truly in distress. We therefore assess the relative constraint of a bank by splitting the sample at different quantiles of the capital ratio. Although our analysis is of relative nature, we believe that banks closer to the 8 % threshold react differently and are more concerned about keeping sustainable levels of capital ratios than those banks, being further away. With the help of this analysis, we assess whether banks, in anticipation of regulatory interventions, refrain from engaging in excessive tax avoidance. According to Scholes et al. (1990), Gropp and Heider (2010), Schandlbauer (2017), we assume that banks with a sufficiently high capital ratio should have similar investment possibilities as non-banks and that there should be no significant difference between banks and non-banks. Worse-capitalized banks should, however, display a different association with their ETRs compared non-banks.

[Table 10 about here.]

Table 11 reports results on the association of regulatory constraint and tax avoidance for different thresholds with “5” indicating a split of banks’ capital ratios at the median<sup>33</sup>. For consistency, we also report the cut points at quantiles 1 and 2 although there are only a few observations of worse-capitalized banks in these regions<sup>34</sup>. Consequently, we settle on interpreting the results of the 3<sup>rd</sup> to 5<sup>th</sup> quantile.

In Panel A, we observe that both, worse- and better-capitalized banks, have significantly higher Cash ETRs in comparison to non-banks. An interesting finding is though that the difference in

<sup>32</sup> See, for example, Dyreng et al. (2008) who classify all firms with an ETR of below or equal to 20 % as “low tax rate firm”. A “low tax rate firm” is then a firm with a high level of tax avoidance.

<sup>33</sup> In this analysis we exclude LEVERAGE as LEVERAGE and a bank’s capital ratio are strongly correlated (see Table 6) which would probably lead to multicollinearity issues.

<sup>34</sup> The bin “WORSECAPRATIO1” and “WORSECAPRATIO2” only comprises 4 and 12 observations, respectively, against 140 and 453 observations in “WORSECAPRATIO3” and “WORSECAPRATIO4”.

Cash ETRs between banks and non-banks is higher for worse-capitalized banks than for better-capitalized banks. A worse-capitalized bank has an about 8 percentage points higher Cash ETR compared to non-banks while better-capitalized banks only show an about 3 to 4 percentage points higher Cash ETR. This finding partially supports our hypothesis that worse-capitalized banks have some troubles in keeping lower levels of cash tax avoidance. However, also better-capitalized banks have higher Cash ETRs compared to non-banks, though not as pronounced as worse-capitalized banks.

Turning to Panel B of Table 11, we only find a significant difference for worse-capitalized banks when splitting at the median, yielding a 1.4 percentage point higher GAAP ETR. The economic significance (5 % of mean GAAP ETR) of this difference, however, is low compared to our findings in Panel A (32 % vs. 14 %).

[Table 11 about here.]

#### **4.5 Exclusion of financial crisis years**

As our sample is prone to the financial crisis and the spike in Figure 3 already shows that Cash ETRs of banks are presumably affected by this event, we exclude observations of fiscal years 2007 to 2009. Although the financial crisis is a key event for banks in our sample, Table 12 shows that the results remain qualitatively almost the same. An exception is the relation between GAAP ETRs and BANK in the combined sample which now becomes significant at a 10 % significance level. The economic significance of this association, however, is low with only 3 %. Another interesting finding is that the incremental difference between banks, reporting report losses in previous years, and non-banks becomes weaker in terms of significance and magnitude indicating that the sample presumably becomes more profitable. Larger banks now seem to have an advantage in comparison to non-banks at keeping lower levels of Cash ETRs.

[Table 12 about here.]

#### **4.6 Robustness tests**

Tables 13 and 14 show that after truncating all continuous variables at the 1<sup>st</sup> and 99<sup>th</sup> percentiles our results stay almost qualitatively the same, at least with respect to the magnitude of the coefficients and economic significance of BANK. In addition, we also report winsorized results. Table 15 and 16 show that our results stay qualitatively the same. We, however, rely on truncation as the standard errors (provided in parentheses) are smaller and therefore suggest a better fit. Additionally, the coefficients in the truncated sample are smaller, providing a lower



threshold while the coefficients in the winsorized sample are slightly higher. Hence, the former are a more conservative estimate of banks' tax avoidance compared to that of non-banks.

[Table 13 about here.]

[Table 14 about here.]

[Table 15 about here.]

[Table 16 about here.]

## 5 Conclusion

To the best of our knowledge, we are the first to study whether banks' tax avoidance behavior differs from that of non-banks and whether re-introducing banks into the sample would affect average inferences with respect to the association of ETRs and frequently used tax avoidance variables.

The picture on whether banks exhibit a different degree of tax avoidance across our two measures, Cash ETR and GAAP ETR, is not uniform. While banks seem to have a substantially lower degree of cash tax avoidance compared to non-banks, we do not find evidence for a differential effect on GAAP ETRs. The inclusion of banks in a combined sample does not substantially change average inferences on how frequently used tax avoidance variables are associated with ETRs compared to a pure non-bank setting. In quantile regressions, we find that a bank shows different associations with ETRs across the tax avoidance distribution. In high tax avoidance regions (low ETRs) banks depict significantly higher ETRs than non-banks.

As regulatory differences are the key reason in tax avoidance studies to exclude banks, we try to analyze whether relatively worse-capitalized banks exhibit different degrees of tax avoidance compared to non-banks than relatively better-capitalized banks to non-banks. We find that there is a significant difference between worse-capitalized banks and non-banks as well as for better-capitalized banks and non-banks in our Cash ETR specification and almost no significant difference in the GAAP ETR specification. The effect, in terms of magnitude and economic significance, is more pronounced for worse-capitalized banks. These findings are partially in line with recent studies suggesting that banks in terms of capital structure decisions are not significantly different from non-banks when their financial flexibility allows them to invest as they please (Gropp and Heider (2010), Schandlbauer (2017)).

Although our setting presumably has some limitations as, e.g., the low amount of multinationality in the banking sample and the vague identification of regulatory differences, we believe that our

findings still provide some valuable first insights for researchers and policymakers alike. First, the re-introduction of banks into a non-bank sample does not substantially alter average inferences of tax avoidance variables. A possibility to keep banks in the sample is to use industry-fixed effects as some tax avoidance studies already did<sup>35</sup>. Second, the public usually wonders whether banks pay their fair share of taxes after receiving the public aids during the financial crisis. As banks are usually excluded from tax avoidance studies, policymakers might find it difficult to compare banks' tax avoidance to that of non-banks. Our results therefore contribute to this debate and provide some evidence that banks on average pay their fair share in taxes.

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<sup>35</sup> See, for example, Bird et al. (2018).

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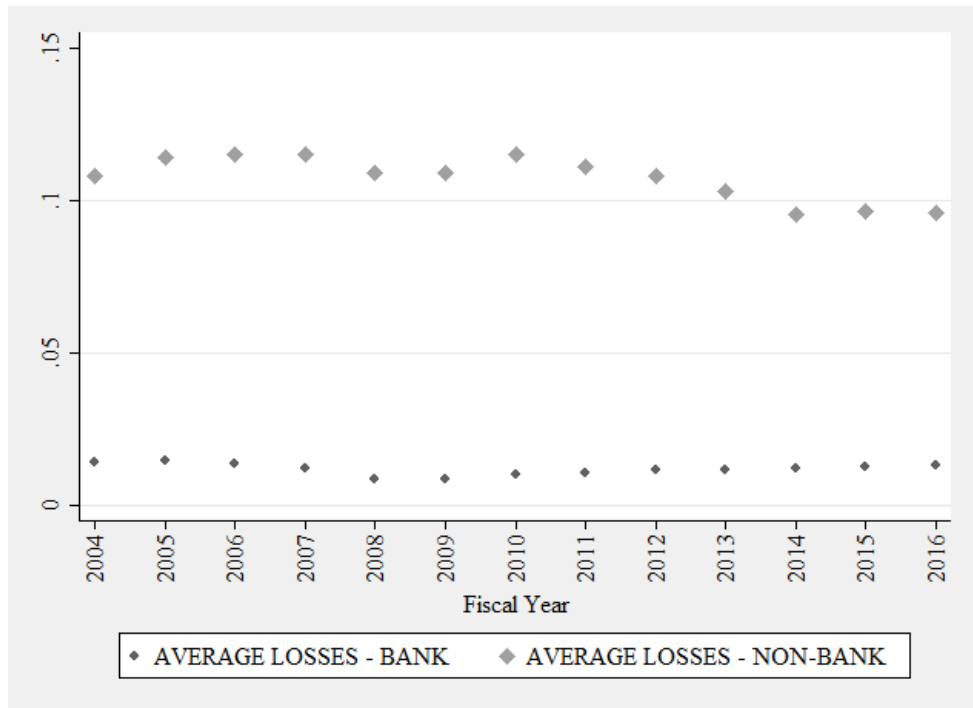
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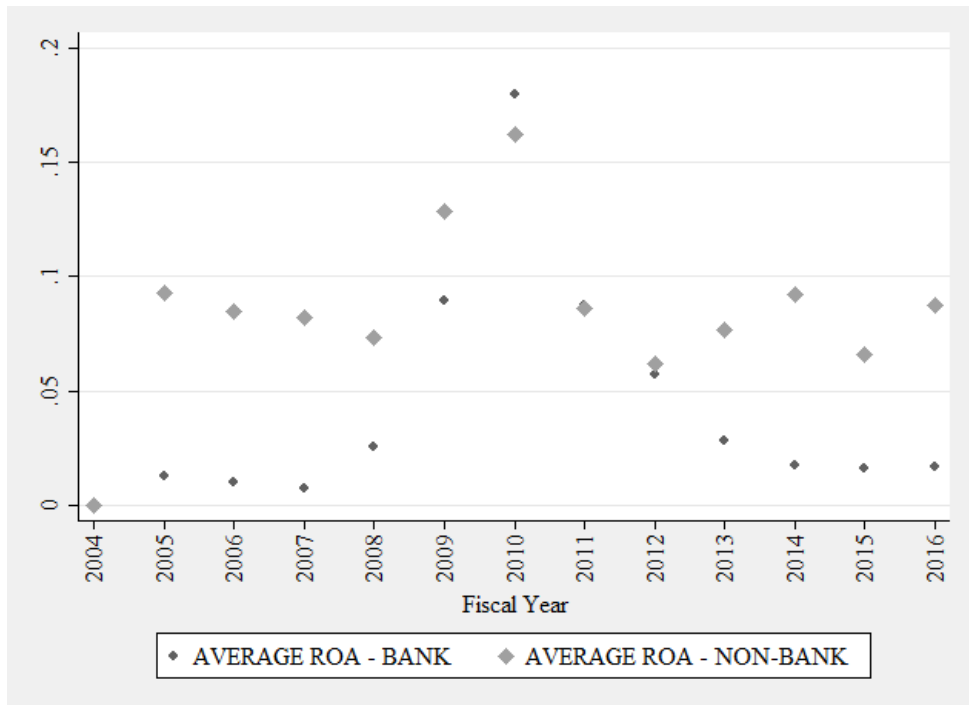
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Figure 1: Fundamentals over time

Panel A: Average ROA over time



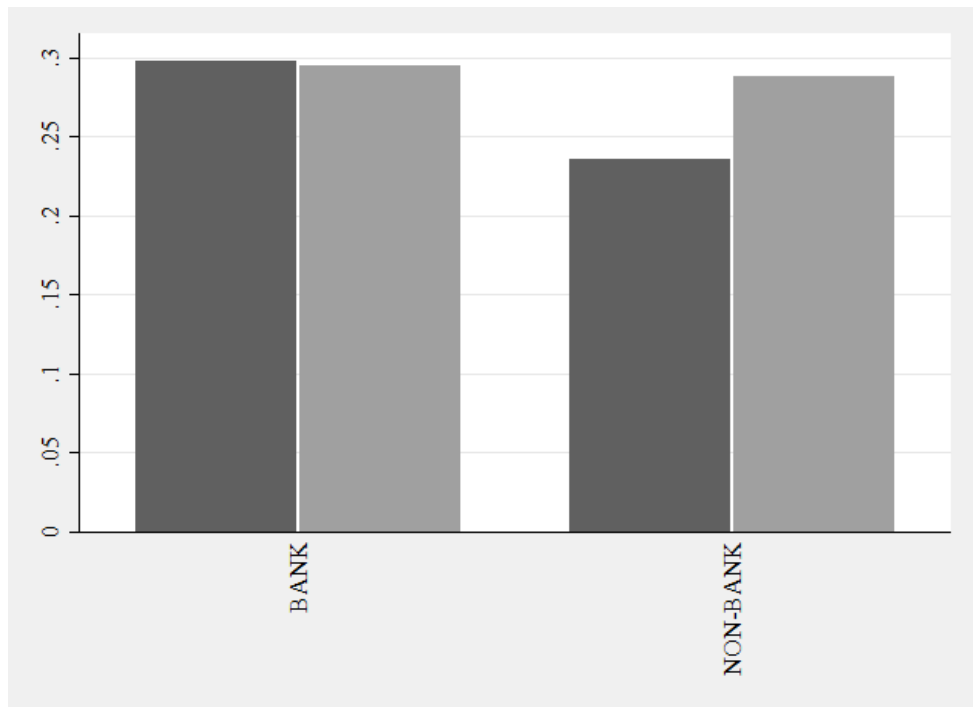
Panel B: Average losses over time



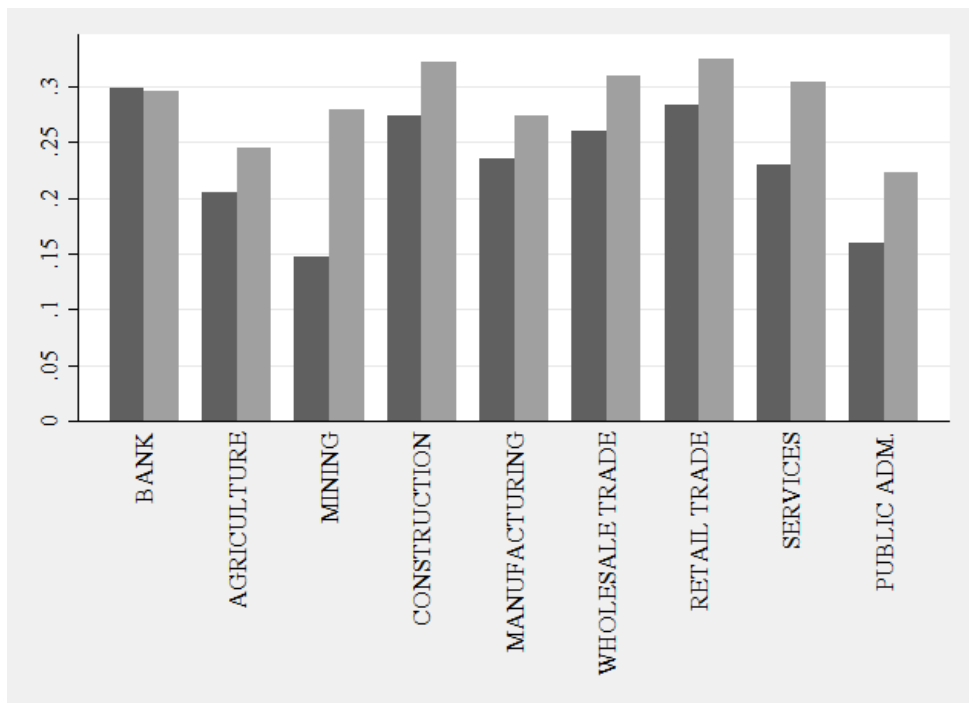
This figure shows the annual development of average ROA and losses for banks and non-banks over our sample period from 2004 to 2016.

Figure 2: Average Cash ETRs and GAAP ETRs over industries between 2004 and 2016

Panel A: Banks vs. non-banks (total)

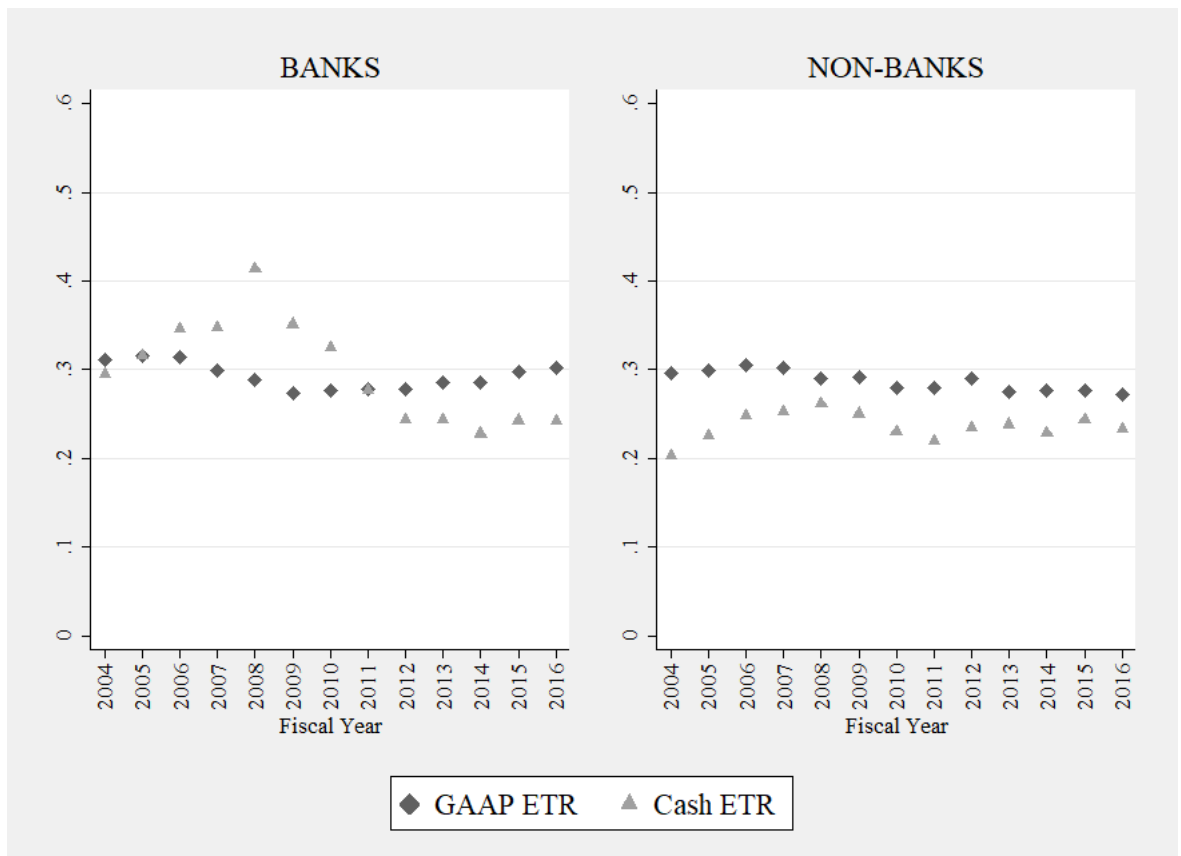


Panel B: Banks vs. non-banks (split by industries)



The dark grey bar indicates Cash ETRs. Conversely, the light grey bar indicates GAAP ETRs. **BANK** comprises 2-digit SIC code 60. **NON-BANK** comprises SIC codes 0 = Agriculture, forestry and fishing, 1 = Mining and construction, 2/3 = Manufacturing, 5 = Wholesale and retail trade, 7/8 = Services, 9 = Public administration.

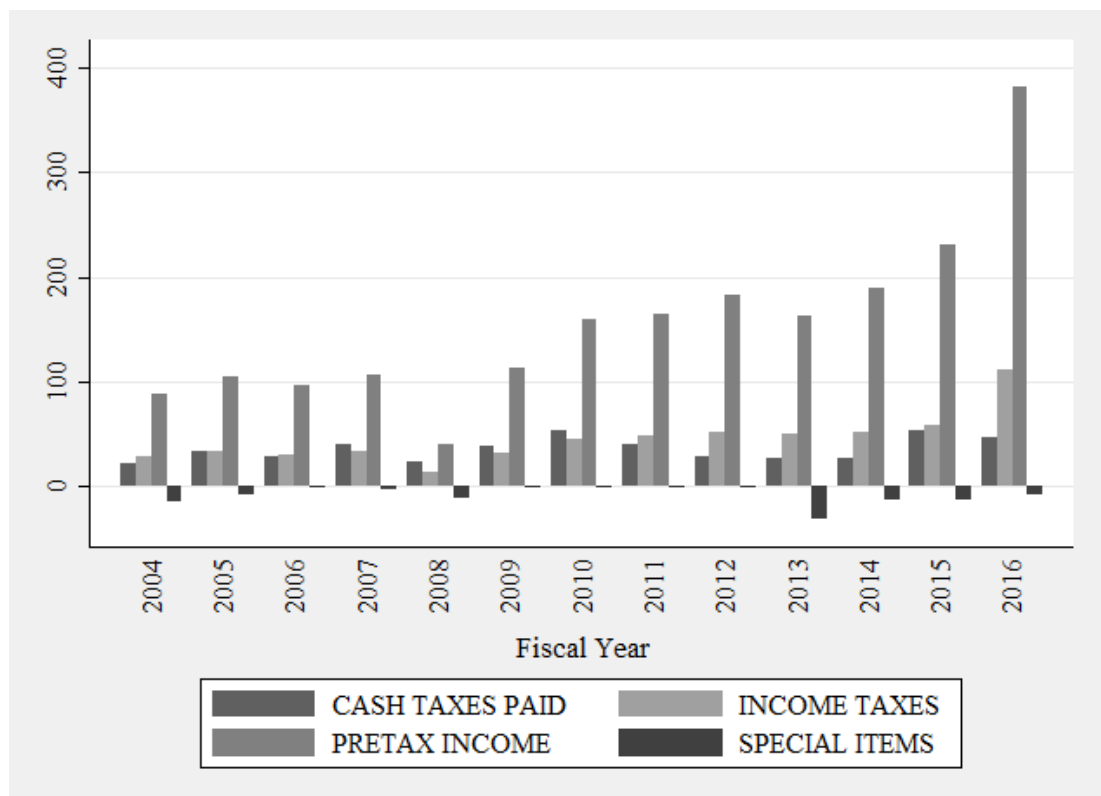
Figure 3: Cash ETRs and GAAP ETRs over time



This figure shows annual, average Cash ETRs and annual, average GAAP ETRs separately for banks and non-banks over our sample period from 2004 to 2016.



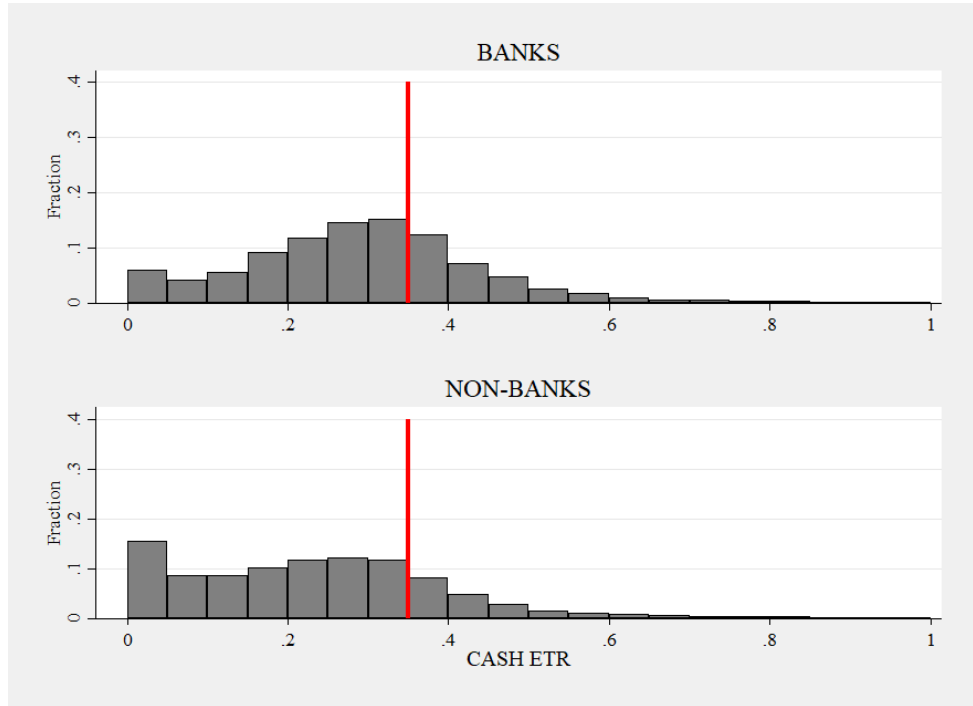
Figure 4: Cash taxes paid, income taxes, pretax income and special items over time



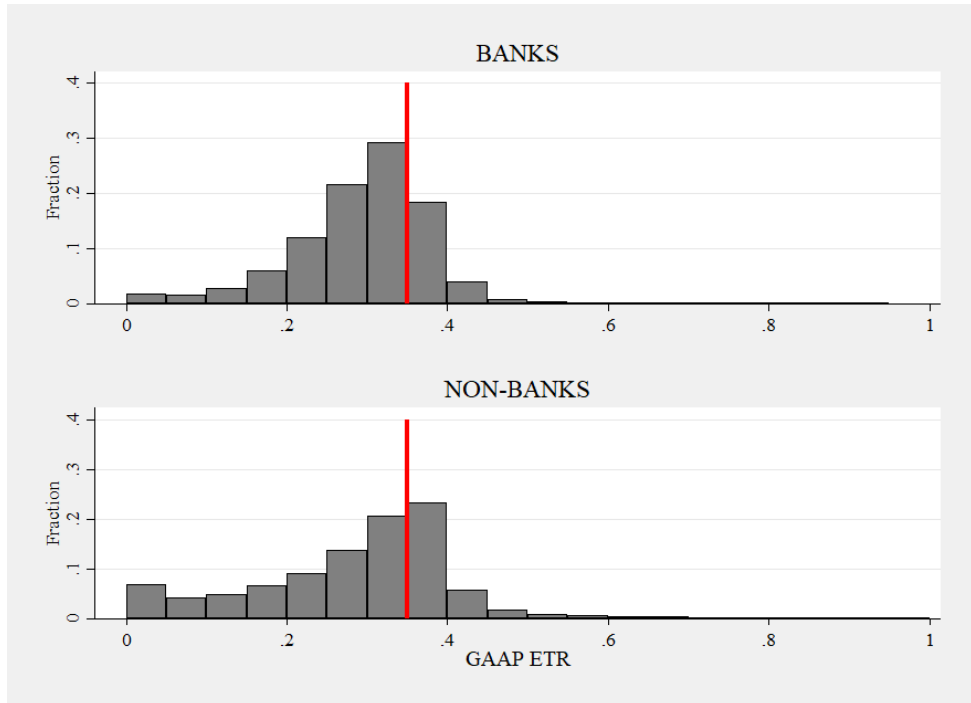
This figure shows annual averages for banks only of the Compustat items “Cash taxes paid”, “Income taxes”, “Pretax income” and “Special Items”.

**Figure 5: Histogram: Fractions of Cash ETRs and GAAP ETRs**

**Panel A: Cash ETR**



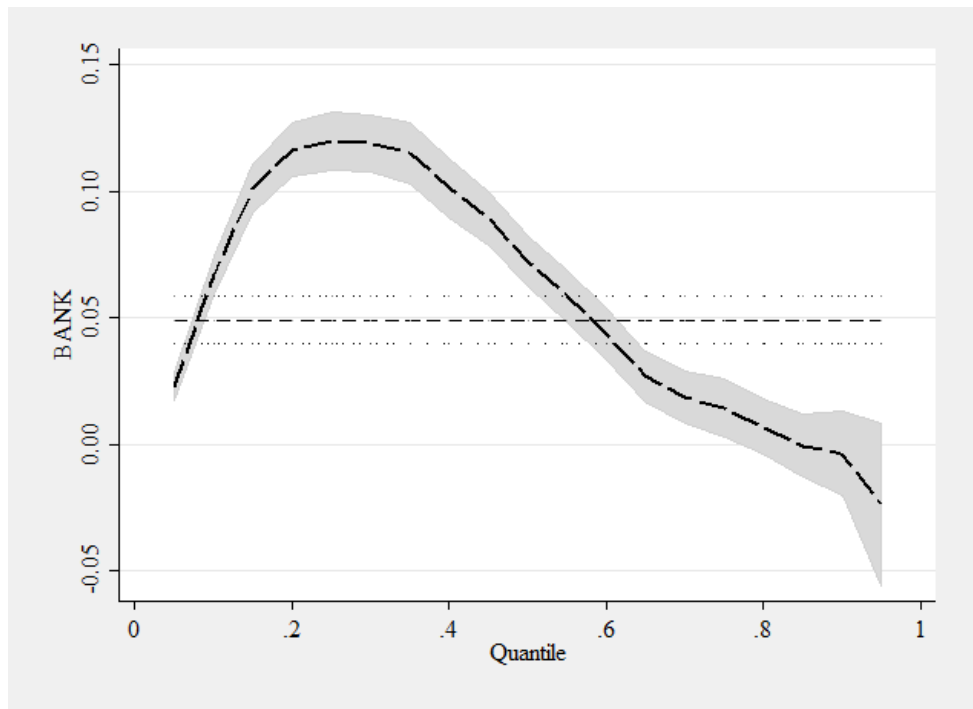
**Panel B: GAAP ETR**



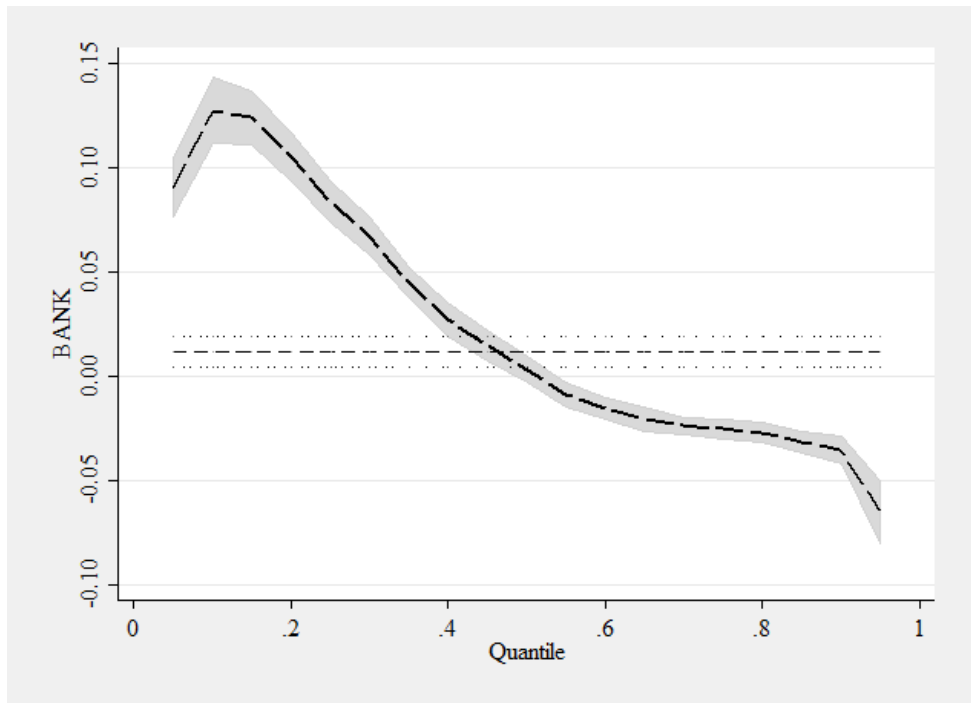
This figure shows fractions of Cash ETRs and GAAP ETRs separately for banks and non-banks. The red line indicates the U.S. statutory, corporate tax rate of 35 %.

Figure 6: Quantile regression: The coefficient of BANK over the tax avoidance distribution

Panel A: Cash ETR



Panel B: GAAP ETR



This figure graphically depicts the coefficients of BANK from the quantile regressions for the respective quantiles of the tax avoidance.

**Table 1: Variable description**

Name	Calculation
CASH ETR	Ratio of cash taxes paid (txpd) over sum of pretax income (pi) and special items (spi). Special items is set to 0 if missing.
GAAP ETR	Ratio of income tax expense (txt) over sum of pretax income and special items. Special items is set to 0 if missing.
BANK	Indicator variable set to 1 if SIC code (sic) is equal to 6020, 6021, 6022, 6035, and 6036, and 0 otherwise. Other financial institutions (one-digit SIC code=6) or utilities (one-digit SIC code=4) are not included.
SIZE	Natural logarithm of total assets (at)
ROA	Pretax income (pi) over total assets (at)
LOSS <sub>t-1</sub>	Indicator variable set to 1 if firm incurred a loss ( $pi_{t-1} < 0$ ) in t-1
LOSS <sub>t-2</sub>	Indicator variable set to 1 if firm incurred a loss ( $pi_{t-2} < 0$ ) in t-2
LEVERAGE	Ratio of total debt (lt) over total assets (at)
FINANCIAL CASH FLOW	In main analysis: Net cash flow from financing activities (fincf) over total assets. For banks, “fincf” also includes changes in deposits according to Compustat’s Balancing Models for banks.
FOREIGN	Indicator set to 1 if the items “Current foreign income tax” (item18187) or “International sales” (item7101) from Thomson Reuters Geographic Segments are neither missing nor zero.
NET PP&E	Net property, plant & equipment (ppent) over total assets (at)
INTANGIBLES	Intangibles (intan) over total assets (at)
SG&A EXPENSE	Selling, general and administrative expense (xsga) over net sales (sale)
CAPITAL RATIO	Combined capital ratio as reported by the banks (capr3)

This table depicts our variable description. The expressions in parentheses refer to the variable names that Compustat North America applies.

**Table 2: Sample selection**

	Observations	
	BANK	NON-BANK
All observations in Compustat Bank or NA between 2004 and 2016	9,313	158,956
Observations where merge was not successful (after merging Thomson Reuters to Compustat Bank)	6,340	/
Observations where txt, txpd, pi, at, lt, ceq and capr3 are missing	5,953	88,978
Firms that are not incorporated in the U.S. (fic!=USA) and if ceq is <=0	5,933	59,999
Observations with missings in determinants	5,676	46,943
Exclusive observations where Cash ETR or GAAP ETR <0 or >1 and where Cash ETR and/or GAAP ETR are missing	4,530	30,600
Exclusive other financials in Compustat NA	/	21,673

This table shows our sample selection process for banks and non-banks. “fic” refers to the Compustat NA item “foreign incorporation code”; “ceq” refers to “common equity”. All other abbreviated items are as defined in Table 1.

**Table 3: Frequency distributions of observations with meaningful Cash and GAAP ETRs**

<b>Panel A</b>	<b>Obs. subgroups</b>	<b>Percent subgroups</b>
BANK	4530	17.29
NON-BANK	21673	82.71
Total Observations	26203	100.00

<b>Panel B</b>	<b>Obs. subgroups</b>	<b>Percent subgroups</b>
BANK	4530	79.78
FINANCE (OTHER)	1148	20.22
Total Observations	5678	100.00

**BANK** comprises 2-digit SIC code 60. **NON-BANK** comprises SIC codes 0 = Agriculture, forestry and fishing, 1 = Mining and construction, 2/3 = Manufacturing, 5 = Wholesale and retail trade, 7/8 = Services, 9 = Public administration. **FINANCE** comprises 2-digit SIC codes as indicated above with 61 = Non-depository credit institutions, 62 = Security and commodity brokers, dealers, exchanges, and services, 63 = Insurance carriers, 64 = Insurances agents, brokers, and service, 65 = Real estate 67 = Holding and other investment of fices. SIC codes are taken from [https://www.osha.gov/pls/imis/sic\\_manual.html](https://www.osha.gov/pls/imis/sic_manual.html) (last accessed: 2020-03-09).

Table 4: Summary statistics

Panel A: BANKS										
	N	Mean	Std.D.	Min	p5	p25	p50	p75	p95	Max
CASH ETR	4530	0.30	0.16	0.00	0.04	0.20	0.29	0.38	0.57	1.00
GAAP ETR	4530	0.30	0.09	0.00	0.13	0.25	0.31	0.35	0.41	0.92
ROA	4530	0.01	0.01	-0.16	0.00	0.01	0.01	0.02	0.02	0.08
PRETAX INCOME	4530	150.84	1376.68	-707.98	1.76	5.69	13.65	39.92	242.20	34536.00
LOSS, t-1	4530	0.04	0.19	0.00	0.00	0.00	0.00	0.00	0.00	1.00
LOSS, t-2	4530	0.05	0.21	0.00	0.00	0.00	0.00	0.00	0.00	1.00
INCOME TAXES PAID	4530	35.34	317.40	0.00	0.22	1.44	3.80	11.89	76.03	9747.00
INCOME TAXES	4530	44.35	387.56	0.00	0.39	1.57	4.07	12.62	78.13	9803.00
SIZE	4530	7.35	1.36	4.29	5.63	6.42	7.09	8.05	9.75	14.76
LEVERAGE	4530	0.90	0.03	0.10	0.84	0.88	0.90	0.92	0.93	0.98
FINANCIAL CASH FLOW	4530	0.05	0.08	-0.55	-0.06	0.00	0.04	0.09	0.19	0.63
NET PP&E	4530	0.02	0.01	0.00	0.00	0.01	0.01	0.02	0.03	0.07
INTANGIBLES	4530	0.01	0.02	0.00	0.00	0.00	0.01	0.02	0.05	0.16
SG&A EXPENSE	4530	0.34	0.09	0.05	0.19	0.28	0.34	0.40	0.49	0.67
FOREIGN	4530	0.02	0.14	0.00	0.00	0.00	0.00	0.00	0.00	1.00
CAPITAL RATIO	4530	15.34	5.20	8.30	10.81	12.33	14.03	16.44	24.47	98.39
Panel B: NON-BANKS										
	N	Mean	Std.D.	Min	p5	p25	p50	p75	p95	Max
CASH ETR	21673	0.24	0.17	0.00	0.00	0.10	0.23	0.33	0.51	1.00
GAAP ETR	21673	0.29	0.13	0.00	0.03	0.22	0.31	0.37	0.45	1.00
ROA	21673	0.11	0.11	-2.83	0.01	0.05	0.09	0.14	0.27	4.87
PRETAX INCOME	21673	452.55	2024.59	-11933.00	0.74	11.42	51.32	208.54	1690.00	72515.00
LOSS, t-1	21673	0.08	0.28	0.00	0.00	0.00	0.00	0.00	1.00	1.00
LOSS, t-2	21673	0.08	0.28	0.00	0.00	0.00	0.00	0.00	1.00	1.00
INCOME TAXES PAID	21673	118.05	558.66	0.00	0.03	1.83	11.96	50.73	447.57	19130.00
INCOME TAXES	21673	133.74	617.84	0.00	0.15	3.27	16.15	64.88	508.00	20626.00
SIZE	21673	6.46	2.02	-3.08	3.03	5.14	6.52	7.80	9.77	13.59

Table 4: Summary statistics (continued)

<b>Panel B: NON-BANKS (cont.)</b>										
	N	Mean	Std.D.	Min	p5	p25	p50	p75	p95	Max
LEVERAGE	21673	0.46	0.21	0.00	0.13	0.30	0.46	0.61	0.83	1.02
FINANCIAL CASH FLOW	21673	-0.01	0.13	-2.10	-0.18	-0.07	-0.02	0.02	0.21	1.92
NET PP&E	21673	0.23	0.21	0.00	0.02	0.08	0.16	0.32	0.72	0.98
INTANGIBLES	21673	0.20	0.20	0.00	0.00	0.02	0.14	0.33	0.62	0.98
SG&A EXPENSE	21673	0.25	1.15	-3.89	0.04	0.11	0.21	0.33	0.57	163.97
FOREIGN	21673	0.58	0.49	0.00	0.00	0.00	1.00	1.00	1.00	1.00
<b>Panel C: JOINT SAMPLE</b>										
	N	Mean	Std.D.	Min	p5	p25	p50	p75	p95	Max
CASH ETR	26203	0.25	0.17	0.00	0.01	0.12	0.24	0.34	0.53	1.00
GAAP ETR	26203	0.29	0.13	0.00	0.04	0.23	0.31	0.36	0.44	1.00
ROA	26203	0.09	0.11	-2.83	0.01	0.02	0.07	0.13	0.25	4.87
PRETAX INCOME	26203	400.39	1931.56	-11933.00	0.93	9.18	39.18	169.00	1444.00	72515.00
LOSS, t-1	26203	0.07	0.26	0.00	0.00	0.00	0.00	0.00	1.00	1.00
LOSS, t-2	26203	0.08	0.27	0.00	0.00	0.00	0.00	0.00	1.00	1.00
INCOME TAXES PAID	26203	103.75	525.87	0.00	0.04	1.70	9.28	41.16	374.35	19130.00
INCOME TAXES	26203	118.28	585.52	0.00	0.19	2.59	12.31	52.22	429.11	20626.00
SIZE	26203	6.62	1.95	-3.08	3.21	5.44	6.67	7.85	9.77	14.76
LEVERAGE	26203	0.54	0.25	0.00	0.14	0.34	0.52	0.76	0.92	1.02
FINANCIAL CASH FLOW	26203	-0.00	0.13	-2.10	-0.16	-0.06	-0.01	0.04	0.20	1.92
NET PP&E	26203	0.19	0.21	0.00	0.01	0.03	0.12	0.27	0.68	0.98
INTANGIBLES	26203	0.17	0.20	0.00	0.00	0.01	0.08	0.28	0.59	0.98
SG&A EXPENSE	26203	0.27	1.05	-3.89	0.04	0.13	0.24	0.36	0.55	163.97
FOREIGN	26203	0.48	0.50	0.00	0.00	0.00	0.00	1.00	1.00	1.00
<b>Panel D: MEAN COMPARISON TEST</b>										
	BANK	NON-BANK	Diff.	t-value						
CASH ETR	0.298	0.236	-0.062	-23.094						
GAAP ETR	0.295	0.289	-0.006	-3.058						
Observations	26203									



Table 5: Banks, tax avoidance and tax avoidance determinants

Panel A: CASH ETR					
		BANK	NON-BANK	COMB.	INTER.
BANK	+/-			0.040*** (0.01)	0.37*** (0.09)
SIZE	-	0.00063 (0.00)	0.0032*** (0.00)	0.0028** (0.00)	0.0036*** (0.00)
ROA	+	-0.18 (0.46)	-0.040** (0.02)	-0.034** (0.02)	-0.042** (0.02)
LOSS, t-1	-	-0.092*** (0.02)	-0.057*** (0.00)	-0.060*** (0.00)	-0.058*** (0.00)
LOSS, t-2	-	-0.086*** (0.01)	-0.039*** (0.00)	-0.045*** (0.00)	-0.039*** (0.00)
LEVERAGE	-	-0.19* (0.11)	-0.010 (0.01)	-0.0019 (0.01)	-0.0069 (0.01)
FINANCIAL CASH FLOW	+/-	0.19*** (0.04)	-0.11*** (0.01)	-0.082*** (0.01)	-0.11*** (0.01)
FOREIGN	-	-0.0019 (0.02)	-0.00019 (0.00)	0.0035 (0.00)	0.0010 (0.00)
NET PP&E	-	-1.24*** (0.39)	-0.057*** (0.01)	-0.058*** (0.01)	-0.058*** (0.01)
INTANGIBLES	-	-0.89*** (0.23)	-0.0033 (0.01)	-0.0045 (0.01)	-0.0035 (0.01)
SG&A EXPENSE	-	-0.20*** (0.05)	-0.0023** (0.00)	-0.0030* (0.00)	-0.0024* (0.00)
BANK × SIZE					-0.0053 (0.00)
BANK × ROA					-0.75 (0.47)
BANK × LOSS, t-1					-0.017 (0.02)
BANK × LOSS, t-2					-0.037** (0.01)
BANK × LEVERAGE					-0.15 (0.10)
BANK × FINANCIAL CASH FLOW					0.34*** (0.04)
BANK × FOREIGN					0.020 (0.02)
BANK × NET PP&E					-0.98** (0.42)
BANK × INTANGIBLES					-0.71*** (0.23)
BANK × SG&A EXPENSE					-0.39*** (0.04)
Constant		0.60*** (0.09)	0.13*** (0.01)	0.26*** (0.01)	0.29*** (0.01)
YEAR-FIXED EFFECTS		Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS		Yes	Yes	Yes	Yes
Observations		4530	21673	26203	26203
Adjusted $R^2$		0.216	0.053	0.071	0.087

Table 5: Banks, tax avoidance and tax avoidance determinants (continued)

Panel B: GAAP ETR					
		BANK	NON-BANK	COMB.	INTER.
BANK	+/-			0.0094 (0.01)	0.13 (0.10)
SIZE	-	-0.0010 (0.00)	-0.00065 (0.00)	0.00010 (0.00)	-0.00051 (0.00)
ROA	+	3.97*** (0.96)	0.067*** (0.02)	0.075*** (0.02)	0.067*** (0.02)
LOSS, t-1	-	-0.024** (0.01)	-0.033*** (0.00)	-0.033*** (0.00)	-0.033*** (0.00)
LOSS, t-2	-	-0.025*** (0.01)	-0.026*** (0.00)	-0.026*** (0.00)	-0.026*** (0.00)
LEVERAGE	-	-0.15 (0.10)	-0.0014 (0.01)	-0.0016 (0.01)	-0.00019 (0.01)
FINANCIAL CASH FLOW	+/-	0.10*** (0.03)	-0.036*** (0.01)	-0.023* (0.01)	-0.037*** (0.01)
FOREIGN	-	-0.022* (0.01)	-0.011*** (0.00)	-0.011*** (0.00)	-0.011*** (0.00)
NET PP&E	-	-0.42 (0.33)	0.0075 (0.01)	0.0060 (0.01)	0.0080 (0.01)
INTANGIBLES	-	-0.38*** (0.15)	0.013 (0.01)	0.011 (0.01)	0.013 (0.01)
SG&A EXPENSE	-	-0.075** (0.04)	-0.0012 (0.00)	-0.0014 (0.00)	-0.0012 (0.00)
BANK × SIZE					0.0031 (0.00)
BANK × ROA					3.94*** (0.89)
BANK × LOSS, t-1					0.013 (0.01)
BANK × LOSS, t-2					0.0047 (0.01)
BANK × LEVERAGE					-0.19* (0.10)
BANK × FINANCIAL CASH FLOW					0.17*** (0.03)
BANK × FOREIGN					-0.0078 (0.01)
BANK × NET PP&E					-0.83** (0.35)
BANK × INTANGIBLES					-0.46*** (0.15)
BANK × SG&A EXPENSE					-0.021 (0.03)
Constant		0.44*** (0.09)	0.24*** (0.01)	0.32*** (0.01)	0.31*** (0.01)
YEAR-FIXED EFFECTS		Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS		Yes	Yes	Yes	Yes
Observations		4530	21673	26203	26203
Adjusted $R^2$		0.240	0.034	0.035	0.045

This table shows results for our main analyses of CASH ETRs and GAAP ETRs, respectively, with unstandardized coefficients. In the second column, predictions are inferred from prior literature. Variables are defined in Table 1. The model title “BANK” indicates that we run our regression on the separate bank sample, “NON-BANK” on the separate non-bank sample, “COMB.” on the joint bank and non-bank sample and “INTER.” refers to our interaction model. Year- and state-fixed effects are included where indicated. One-way clustered (firm level) standard errors are shown in parentheses. Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01

**Table 6: Banks, tax avoidance and tax avoidance determinants -  
Demeaned coefficients**

<b>Panel A: CASH ETR</b>					
		BANK	NON-BANK	COMB.	INTER.
BANK	+/-			0.053*** (0.01)	0.055*** (0.01)
SIZE	-	0.00063 (0.00)	0.0032*** (0.00)	0.0029*** (0.00)	0.0032*** (0.00)
ROA	+	-0.18 (0.46)	-0.040** (0.02)	-0.033** (0.02)	-0.041** (0.02)
LOSS, t-1	-	-0.092*** (0.02)	-0.057*** (0.00)	-0.060*** (0.00)	-0.058*** (0.00)
LOSS, t-2	-	-0.086*** (0.01)	-0.039*** (0.00)	-0.045*** (0.00)	-0.039*** (0.00)
LEVERAGE	-	-0.19* (0.11)	-0.010 (0.01)	-0.0056 (0.01)	-0.0072 (0.01)
FINANCIAL CASH FLOW	+/-	0.19*** (0.04)	-0.11*** (0.01)	-0.084*** (0.01)	-0.11*** (0.01)
FOREIGN	-	-0.0019 (0.02)	-0.00019 (0.00)	0.0034 (0.00)	0.0028 (0.00)
NET PP&E	-	-1.24*** (0.39)	-0.057*** (0.01)	-0.058*** (0.01)	-0.057*** (0.01)
INTANGIBLES	-	-0.89*** (0.23)	-0.0033 (0.01)	-0.0072 (0.01)	-0.0041 (0.01)
SG&A EXPENSE	-	-0.20*** (0.05)	-0.0023** (0.00)	-0.0027* (0.00)	-0.0024** (0.00)
BANK × SIZE					0.0013 (0.00)
BANK × ROA					0.077 (0.48)
BANK × LOSS, t-1					-0.018 (0.02)
BANK × LOSS, t-2					-0.050*** (0.01)
BANK × LEVERAGE					-0.25** (0.12)
BANK × FINANCIAL CASH FLOW					0.33*** (0.04)
BANK × FOREIGN					-0.0031 (0.02)
BANK × NET PP&E					-1.51*** (0.42)
BANK × INTANGIBLES					-0.97*** (0.24)
BANK × SG&A EXPENSE					-0.16*** (0.05)
Constant		0.35*** (0.01)	0.13*** (0.00)	0.25*** (0.01)	0.27*** (0.01)
YEAR-FIXED EFFECTS		Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS		Yes	Yes	Yes	Yes
Observations		4530	21673	26203	26203
Adjusted $R^2$		0.216	0.053	0.071	0.081

**Table 6: Banks, tax avoidance and tax avoidance determinants -  
Demeaned coefficients (continued)**

<b>Panel B: GAAP ETR</b>					
		BANK	NON-BANK	COMB.	INTER.
BANK	+/-			-0.0032 (0.00)	-0.0038 (0.00)
SIZE	-	-0.0010 (0.00)	-0.00065 (0.00)	0.000019 (0.00)	-0.00044 (0.00)
ROA	+	3.97*** (0.96)	0.067*** (0.02)	0.073*** (0.02)	0.066*** (0.02)
LOSS, t-1	-	-0.024** (0.01)	-0.033*** (0.00)	-0.033*** (0.00)	-0.033*** (0.00)
LOSS, t-2	-	-0.025*** (0.01)	-0.026*** (0.00)	-0.027*** (0.00)	-0.026*** (0.00)
LEVERAGE	-	-0.15 (0.10)	-0.0014 (0.01)	-0.0011 (0.01)	0.000039 (0.01)
FINANCIAL CASH FLOW	+/-	0.10*** (0.03)	-0.036*** (0.01)	-0.024** (0.01)	-0.037*** (0.01)
FOREIGN	-	-0.022* (0.01)	-0.011*** (0.00)	-0.011*** (0.00)	-0.011*** (0.00)
NET PP&E	-	-0.42 (0.33)	0.0075 (0.01)	0.0060 (0.01)	0.0078 (0.01)
INTANGIBLES	-	-0.38*** (0.15)	0.013 (0.01)	0.011 (0.01)	0.013 (0.01)
SG&A EXPENSE	-	-0.075** (0.04)	-0.0012 (0.00)	-0.0014 (0.00)	-0.0012 (0.00)
BANK × SIZE					0.0017 (0.00)
BANK × ROA					3.80*** (0.91)
BANK × LOSS, t-1					0.0071 (0.01)
BANK × LOSS, t-2					-0.000082 (0.01)
BANK × LEVERAGE					-0.18* (0.11)
BANK × FINANCIAL CASH FLOW					0.16*** (0.03)
BANK × FOREIGN					-0.0040 (0.01)
BANK × NET PP&E					-0.72** (0.34)
BANK × INTANGIBLES					-0.43*** (0.16)
BANK × SG&A EXPENSE					-0.061* (0.04)
Constant		0.32*** (0.01)	0.25*** (0.00)	0.33*** (0.00)	0.32*** (0.01)
YEAR-FIXED EFFECTS		Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS		Yes	Yes	Yes	Yes
Observations		4530	21673	26203	26203
Adjusted $R^2$		0.240	0.034	0.035	0.045

This table shows the results for our main analyses of CASH ETRs and GAAP ETRs, respectively, with demeaned coefficients. In the second column, predictions are inferred from prior literature. Variables are defined in Table 1. The model title “BANK” indicates that we run our regression on the separate bank sample, “NON-BANK” on the separate non-bank sample, “COMB.” on the joint bank and non-bank sample and “INTER.” refers to our interaction model. Year- and state-fixed effects are included where indicated. One-way clustered (firm level) standard errors are shown in parentheses. Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01

**Table 7: Banks, tax avoidance and tax avoidance determinants -  
Standardized coefficients**

<b>Panel A: CASH ETR</b>					
		BANK	NON-BANK	COMB.	INTER.
BANK	+/-			0.053*** (0.01)	0.056*** (0.01)
SIZE	-	0.0016 (0.00)	0.0057** (0.00)	0.0049** (0.00)	0.0055** (0.00)
ROA	+	0.0018 (0.00)	-0.0039** (0.00)	-0.0014 (0.00)	-0.0040** (0.00)
LOSS, t-1	-	-0.090*** (0.02)	-0.056*** (0.00)	-0.058*** (0.00)	-0.057*** (0.00)
LOSS, t-2	-	-0.086*** (0.01)	-0.038*** (0.00)	-0.044*** (0.00)	-0.038*** (0.00)
LEVERAGE	-	-0.0077** (0.00)	-0.0028 (0.00)	-0.0014 (0.00)	-0.0023 (0.00)
FINANCIAL CASH FLOW	+/-	0.015*** (0.00)	-0.015*** (0.00)	-0.0081*** (0.00)	-0.015*** (0.00)
FOREIGN	-	-0.0027 (0.02)	0.00079 (0.00)	0.0054 (0.00)	0.0039 (0.00)
NET PP&E	-	-0.011*** (0.00)	-0.013*** (0.00)	-0.016*** (0.00)	-0.013*** (0.00)
INTANGIBLES	-	-0.017*** (0.00)	-0.00026 (0.00)	-0.0045** (0.00)	-0.00038 (0.00)
SG&A EXPENSE	-	-0.013*** (0.00)	-0.0072*** (0.00)	-0.0092*** (0.00)	-0.0078*** (0.00)
BANK × SIZE					0.0012 (0.01)
BANK × ROA					0.0071* (0.00)
BANK × LOSS, t-1					-0.017 (0.02)
BANK × LOSS, t-2					-0.050*** (0.01)
BANK × LEVERAGE					-0.0080** (0.00)
BANK × FINANCIAL CASH FLOW					0.032*** (0.00)
BANK × FOREIGN					-0.0043 (0.02)
BANK × NET PP&E					-0.00069 (0.00)
BANK × INTANGIBLES					-0.018*** (0.00)
BANK × SG&A EXPENSE					-0.0026 (0.00)
Constant		0.35*** (0.01)	0.13*** (0.00)	0.27*** (0.01)	0.27*** (0.01)
YEAR-FIXED EFFECTS		Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS		Yes	Yes	Yes	Yes
Observations		4530	21673	26203	26203
Adjusted $R^2$		0.218	0.055	0.074	0.082

**Table 7: Banks, tax avoidance and tax avoidance determinants -  
Standardized coefficients (continued)**

<b>Panel B: GAAP ETR</b>					
		BANK	NON-BANK	COMB.	INTER.
BANK	+/-			-0.0031 (0.00)	-0.0035 (0.00)
SIZE	-	-0.0022 (0.00)	-0.0016 (0.00)	0.000060 (0.00)	-0.0012 (0.00)
ROA	+	0.028*** (0.00)	0.0084*** (0.00)	0.012*** (0.00)	0.0084*** (0.00)
LOSS, t-1	-	-0.019* (0.01)	-0.032*** (0.00)	-0.030*** (0.00)	-0.032*** (0.00)
LOSS, t-2	-	-0.023** (0.01)	-0.025*** (0.00)	-0.024*** (0.00)	-0.025*** (0.00)
LEVERAGE	-	-0.0057** (0.00)	-0.00043 (0.00)	-0.00039 (0.00)	-0.00019 (0.00)
FINANCIAL CASH FLOW	+/-	0.0084*** (0.00)	-0.0044** (0.00)	-0.00077 (0.00)	-0.0045*** (0.00)
FOREIGN	-	-0.019 (0.01)	-0.011*** (0.00)	-0.010*** (0.00)	-0.010*** (0.00)
NET PP&E	-	-0.0036 (0.00)	0.0011 (0.00)	-0.0018 (0.00)	0.0010 (0.00)
INTANGIBLES	-	-0.0070*** (0.00)	0.0032* (0.00)	0.00081 (0.00)	0.0031* (0.00)
SG&A EXPENSE	-	-0.0034 (0.00)	-0.0034** (0.00)	-0.0053*** (0.00)	-0.0038*** (0.00)
BANK × SIZE					0.0021 (0.00)
BANK × ROA					0.019*** (0.00)
BANK × LOSS, t-1					0.010 (0.01)
BANK × LOSS, t-2					0.0014 (0.01)
BANK × LEVERAGE					-0.0068** (0.00)
BANK × FINANCIAL CASH FLOW					0.014*** (0.00)
BANK × FOREIGN					-0.0017 (0.01)
BANK × NET PP&E					-0.0072** (0.00)
BANK × INTANGIBLES					-0.011*** (0.00)
BANK × SG&A EXPENSE					0.0012 (0.00)
Constant		0.32*** (0.01)	0.25*** (0.00)	0.32*** (0.01)	0.31*** (0.01)
YEAR-FIXED EFFECTS		Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS		Yes	Yes	Yes	Yes
Observations		4530	21673	26203	26203
Adjusted $R^2$		0.258	0.035	0.042	0.047

This table shows the results for our main analyses of CASH ETRs and GAAP ETRs, respectively, with standardized coefficients. In the second column, predictions are inferred from prior literature. Variable are defined in Table 1. The model title “BANK” indicates that we run our regression on the separate bank sample, “NON-BANK” on the separate non-bank sample, “COMB.” on the joint bank and non-bank sample and “INTER.” refers to our interaction model. Year- and state-fixed effects are included where indicated. One-way clustered (firm level) standard errors are shown in parentheses. Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01

**Table 8: Distribution of CASH ETR and GAAP ETR over different quantiles**

<b>Panel A: BANK</b>						
	N	p10	p25	p50	p75	p90
CASH ETR	4530	0.10	0.20	0.29	0.38	0.48
GAAP ETR	4530	0.19	0.25	0.31	0.35	0.38
<b>Panel B: NON-BANK</b>						
	N	p10	p25	p50	p75	p90
CASH ETR	21673	0.02	0.10	0.23	0.33	0.43
GAAP ETR	21673	0.09	0.22	0.31	0.37	0.40
<b>Panel C: JOINT SAMPLE</b>						
	N	p10	p25	p50	p75	p90
CASH ETR	26203	0.03	0.12	0.24	0.34	0.44
GAAP ETR	26203	0.10	0.23	0.31	0.36	0.40

This table shows the distribution of CASH ETRs and GAAP ETRs for the bank sample, the non-bank sample and the joint sample. We present those quantiles that are used in the quantile regression in Table 9.

**Table 9: Quantile regression**

<b>Panel A: CASH ETR</b>					
	0.1	0.25	0.5	0.75	0.9
BANK	0.067*** (0.01)	0.12*** (0.01)	0.072*** (0.01)	0.015 (0.01)	-0.0035 (0.01)
SIZE	0.0072*** (0.00)	0.0085*** (0.00)	0.0045*** (0.00)	-0.0027* (0.00)	-0.013*** (0.00)
ROA	0.036* (0.02)	0.17*** (0.03)	0.15*** (0.03)	-0.064*** (0.02)	-0.26*** (0.04)
LOSS, t-1	-0.026*** (0.00)	-0.050*** (0.00)	-0.094*** (0.01)	-0.068*** (0.01)	-0.011 (0.01)
LOSS, t-2	-0.020*** (0.00)	-0.041*** (0.00)	-0.061*** (0.01)	-0.049*** (0.01)	-0.015 (0.01)
LEVERAGE	-0.0049 (0.01)	-0.013 (0.01)	-0.013 (0.01)	0.0077 (0.01)	0.052*** (0.01)
FINANCIAL CASH FLOW	-0.028*** (0.01)	-0.073*** (0.01)	-0.10*** (0.01)	-0.084*** (0.01)	-0.078*** (0.02)
FOREIGN	0.027*** (0.00)	0.036*** (0.01)	0.0022 (0.01)	-0.016*** (0.00)	-0.0078 (0.01)
NET PP&E	-0.038*** (0.01)	-0.064*** (0.01)	-0.082*** (0.02)	-0.058*** (0.01)	-0.021 (0.02)
INTANGIBLES	0.023*** (0.01)	0.036*** (0.01)	-0.0017 (0.01)	-0.032*** (0.01)	-0.023 (0.02)
SG&A EXPENSE	-0.019* (0.01)	-0.064** (0.03)	-0.044 (0.04)	-0.0016 (0.02)	0.00018 (0.01)
Constant	-0.016*** (0.01)	0.024 (0.02)	0.19*** (0.02)	0.36*** (0.01)	0.50*** (0.02)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
Observations	26203	26203	26203	26203	26203



Table 9: Quantile regression (continued)

<b>Panel B: GAAP ETR</b>					
	0.1	0.25	0.5	0.75	0.9
BANK	0.13*** (0.01)	0.084*** (0.01)	0.0030 (0.01)	-0.025*** (0.00)	-0.035*** (0.01)
SIZE	0.010*** (0.00)	0.0027** (0.00)	-0.0027*** (0.00)	-0.0047*** (0.00)	-0.0082*** (0.00)
ROA	0.22*** (0.05)	0.30*** (0.03)	0.15*** (0.02)	0.033*** (0.01)	-0.061*** (0.02)
LOSS, t-1	-0.044*** (0.01)	-0.086*** (0.01)	-0.054*** (0.01)	-0.0020 (0.00)	0.036*** (0.01)
LOSS, t-2	-0.045*** (0.01)	-0.055*** (0.01)	-0.032*** (0.01)	-0.0032 (0.00)	0.015*** (0.01)
LEVERAGE	-0.039*** (0.01)	-0.025** (0.01)	0.0010 (0.01)	0.018*** (0.01)	0.029*** (0.01)
FINANCIAL CASH FLOW	-0.058*** (0.02)	-0.035** (0.02)	0.0088 (0.01)	0.0100 (0.01)	-0.000069 (0.01)
FOREIGN	0.024*** (0.01)	-0.0088 (0.01)	-0.027*** (0.00)	-0.019*** (0.00)	-0.0053** (0.00)
NET PP&E	-0.033 (0.02)	0.034* (0.02)	0.021** (0.01)	0.0063 (0.00)	0.0022 (0.01)
INTANGIBLES	0.053*** (0.02)	0.061*** (0.02)	0.018* (0.01)	-0.0024 (0.01)	-0.015*** (0.01)
SG&A EXPENSE	-0.053** (0.02)	-0.056* (0.03)	-0.0061 (0.02)	-0.00090 (0.00)	0.00081 (0.01)
Constant	0.028* (0.02)	0.20*** (0.02)	0.34*** (0.01)	0.40*** (0.00)	0.45*** (0.01)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
Observations	26203	26203	26203	26203	26203

The model titles “0.1” to “0.9” indicate the quantile of the tax avoidance distribution under assessment. Variable definitions are provided in Table 1. Year-fixed effects are included. Bootstrapped standard errors are shown in parentheses (Replication size = 500). Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01

**Table 10: Quantiles of capital ratio**

Quantile	Capital ratio
1 <sup>st</sup>	9.07
2 <sup>nd</sup>	9.90
3 <sup>rd</sup>	10.58
4 <sup>th</sup>	11.26
5 <sup>th</sup>	11.98
6 <sup>th</sup>	12.72
7 <sup>th</sup>	13.60
8 <sup>th</sup>	14.88
9 <sup>th</sup>	16.81

This table reports the magnitude of capital ratios for different quantiles. Quantiles 1 to 5 are used as cut points to distinguish worse- from better-capitalized banks in Table 11.

Table 11: Worse- and better-capitalized banks against non-banks

Panel A: CASH ETR					
BANK × WORSECAPRATIO1	0.043 (0.06)				
BANK × BETTERCAPRATIO1	0.039*** (0.01)				
BANK × WORSECAPRATIO2		0.10 (0.08)			
BANK × BETTERCAPRATIO2		0.039*** (0.01)			
BANK × WORSECAPRATIO3			0.083*** (0.02)		
BANK × BETTERCAPRATIO3			0.038*** (0.01)		
BANK × WORSECAPRATIO4				0.083*** (0.01)	
BANK × BETTERCAPRATIO4				0.034*** (0.01)	
BANK × WORSECAPRATIO5					0.073*** (0.01)
BANK × BETTERCAPRATIO5					0.031*** (0.01)
SIZE	0.0027** (0.00)	0.0027** (0.00)	0.0027** (0.00)	0.0027** (0.00)	0.0026** (0.00)
ROA	-0.033** (0.02)	-0.033** (0.02)	-0.033** (0.02)	-0.033** (0.02)	-0.034** (0.02)
LOSS, t-1	-0.060*** (0.00)	-0.060*** (0.00)	-0.060*** (0.00)	-0.060*** (0.00)	-0.060*** (0.00)
LOSS, t-2	-0.045*** (0.00)	-0.045*** (0.00)	-0.045*** (0.00)	-0.045*** (0.00)	-0.045*** (0.00)
FINANCIAL CASH FLOW	-0.082*** (0.01)	-0.082*** (0.01)	-0.082*** (0.01)	-0.083*** (0.01)	-0.084*** (0.01)
FOREIGN	0.0036 (0.00)	0.0035 (0.00)	0.0035 (0.00)	0.0035 (0.00)	0.0035 (0.00)
NET PP&E	-0.058*** (0.01)	-0.058*** (0.01)	-0.058*** (0.01)	-0.058*** (0.01)	-0.058*** (0.01)
INTANGIBLES	-0.0047 (0.01)	-0.0047 (0.01)	-0.0048 (0.01)	-0.0049 (0.01)	-0.0049 (0.01)
SG&A EXPENSE	-0.0030* (0.00)	-0.0030* (0.00)	-0.0030* (0.00)	-0.0029* (0.00)	-0.0029* (0.00)
Constant	0.26*** (0.01)	0.26*** (0.01)	0.26*** (0.01)	0.26*** (0.01)	0.26*** (0.01)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
Observations	26203	26203	26203	26203	26203
Adjusted $R^2$	0.071	0.071	0.071	0.072	0.072

**Table 11: Worse- and better-capitalized banks against non-banks (continued)**

<b>Panel B: GAAP ETR</b>					
BANK × WORSECAPRATIO1	-0.089***				
	(0.03)				
BANK × BETTERCAPRATIO1	0.0089				
	(0.01)				
BANK × WORSECAPRATIO2		-0.020			
		(0.06)			
BANK × BETTERCAPRATIO2		0.0089			
		(0.01)			
BANK × WORSECAPRATIO3			0.0050		
			(0.01)		
BANK × BETTERCAPRATIO3			0.0089		
			(0.01)		
BANK × WORSECAPRATIO4				0.012	
				(0.01)	
BANK × BETTERCAPRATIO4				0.0083	
				(0.01)	
BANK × WORSECAPRATIO5					0.014**
					(0.01)
BANK × BETTERCAPRATIO5					0.0074
					(0.01)
SIZE	0.000050	0.000049	0.000052	0.000048	0.000038
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ROA	0.075***	0.075***	0.075***	0.075***	0.075***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
LOSS, t-1	-0.033***	-0.033***	-0.033***	-0.033***	-0.033***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
LOSS, t-2	-0.027***	-0.026***	-0.026***	-0.026***	-0.026***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FINANCIAL CASH FLOW	-0.023*	-0.023*	-0.023*	-0.023*	-0.023*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
FOREIGN	-0.011***	-0.011***	-0.011***	-0.011***	-0.011***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
NET PP&E	0.0058	0.0058	0.0058	0.0058	0.0058
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
INTANGIBLES	0.011	0.011	0.011	0.011	0.011
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
SG&A EXPENSE	-0.0014	-0.0014	-0.0014	-0.0014	-0.0014
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.31***	0.31***	0.31***	0.32***	0.32***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
Observations	26203	26203	26203	26203	26203
Adjusted $R^2$	0.035	0.035	0.035	0.035	0.035

WORSECAPITALRATIO\* and BETTERCAPITALRATIO\* refer to the different quantiles that we use as cut points. For clarification, WORSECAPRATIO1 and BETTERCAPRATIO9, e.g., indicate that the cut point for the capital ratio is the first percentile (i.e., WORSECAPRATIO=1 if  $\text{capr3} < q1(\text{capr3})$  and BETTERCAPRATIO=9 if  $\text{capr3} \geq q1(\text{capr3})$ ). With this technique, we are able to directly infer the incremental impact of the lower part of the distribution on ETR and the higher part of the distribution. This is an advantage over splitting the sample as we do not have to test the coefficients for significance. Year- and state-fixed effects are included where indicated. One-way clustered (firm level) standard errors are shown in parentheses. Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01

**Table 12: Banks, tax avoidance and tax avoidance determinants -  
Crisis years excluded**

<b>Panel A: CASH ETR</b>				
	BANK	NON-BANK	COMB.	INTER.
BANK			0.030*** (0.01)	0.31*** (0.11)
SIZE	-0.0028 (0.00)	0.0030** (0.00)	0.0021* (0.00)	0.0033*** (0.00)
ROA	1.62** (0.63)	-0.014 (0.02)	-0.0031 (0.02)	-0.016 (0.02)
LOSS, t-1	-0.099*** (0.02)	-0.059*** (0.01)	-0.063*** (0.01)	-0.059*** (0.01)
LOSS, t-2	-0.070*** (0.01)	-0.040*** (0.01)	-0.045*** (0.01)	-0.041*** (0.01)
LEVERAGE	-0.18 (0.13)	-0.012 (0.01)	-0.0041 (0.01)	-0.0094 (0.01)
FINANCIAL CASH FLOW	0.19*** (0.04)	-0.099*** (0.01)	-0.069*** (0.01)	-0.10*** (0.01)
FOREIGN	-0.0055 (0.02)	-0.0011 (0.00)	0.0030 (0.00)	0.000038 (0.00)
NET PP&E	-1.26*** (0.43)	-0.064*** (0.01)	-0.066*** (0.01)	-0.066*** (0.01)
INTANGIBLES	-1.04*** (0.25)	-0.0044 (0.01)	-0.0039 (0.01)	-0.0044 (0.01)
SG&A EXPENSE	-0.19*** (0.05)	-0.018*** (0.01)	-0.026*** (0.01)	-0.019*** (0.01)
BANK × SIZE				-0.0082** (0.00)
BANK × ROA				1.34** (0.65)
BANK × LOSS, t-1				-0.019 (0.02)
BANK × LOSS, t-2				-0.017 (0.01)
BANK × LEVERAGE				-0.12 (0.12)
BANK × FINANCIAL CASH FLOW				0.32*** (0.04)
BANK × FOREIGN				0.019 (0.02)
BANK × NET PP&E				-1.14** (0.45)
BANK × INTANGIBLES				-0.88*** (0.26)
BANK × SG&A EXPENSE				-0.33*** (0.04)
Constant	0.56*** (0.11)	0.14*** (0.01)	0.24*** (0.01)	0.26*** (0.01)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes
Observations	3623	16521	20144	20144
Adjusted $R^2$	0.207	0.054	0.063	0.081

**Table 12: Banks, tax avoidance and tax avoidance determinants -  
Crisis years excluded (continued)**

<b>Panel B: GAAP ETR</b>				
	BANK	NON-BANK	COMB.	INTER.
BANK			0.013*	0.029
			(0.01)	(0.11)
SIZE	-0.0027	-0.00075	0.00012	-0.00060
	(0.00)	(0.00)	(0.00)	(0.00)
ROA	5.60***	0.082***	0.091***	0.082***
	(0.44)	(0.02)	(0.02)	(0.02)
LOSS, t-1	-0.021*	-0.036***	-0.036***	-0.036***
	(0.01)	(0.01)	(0.01)	(0.01)
LOSS, t-2	-0.020**	-0.027***	-0.027***	-0.027***
	(0.01)	(0.01)	(0.00)	(0.01)
LEVERAGE	-0.059	-0.0055	-0.0059	-0.0045
	(0.11)	(0.01)	(0.01)	(0.01)
FINANCIAL CASH FLOW	0.11***	-0.030**	-0.014	-0.030**
	(0.03)	(0.01)	(0.01)	(0.01)
FOREIGN	-0.023*	-0.012***	-0.012***	-0.011***
	(0.01)	(0.00)	(0.00)	(0.00)
NET PP&E	-0.54*	0.00081	-0.0017	0.00089
	(0.30)	(0.01)	(0.01)	(0.01)
INTANGIBLES	-0.28*	0.0037	0.0011	0.0028
	(0.15)	(0.01)	(0.01)	(0.01)
SG&A EXPENSE	-0.040	-0.014***	-0.017***	-0.015***
	(0.03)	(0.01)	(0.01)	(0.01)
BANK × SIZE				0.0019
				(0.00)
BANK × ROA				5.37***
				(0.46)
BANK × LOSS, t-1				0.019
				(0.01)
BANK × LOSS, t-2				0.0098
				(0.01)
BANK × LEVERAGE				-0.11
				(0.12)
BANK × FINANCIAL CASH FLOW				0.16***
				(0.03)
BANK × FOREIGN				-0.0084
				(0.01)
BANK × NET PP&E				-0.92***
				(0.32)
BANK × INTANGIBLES				-0.38**
				(0.16)
BANK × SG&A EXPENSE				0.019
				(0.03)
Constant	0.32***	0.25***	0.32***	0.31***
	(0.10)	(0.01)	(0.01)	(0.01)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes
Observations	3623	16521	20144	20144
Adjusted $R^2$	0.274	0.036	0.038	0.051

Variables and model titles are defined as in the tables before. Year- and state-fixed effects are included where indicated. One-way clustered (firm level) standard errors are shown in parentheses. Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01

**Table 13: Banks, tax avoidance and tax avoidance determinants - Truncation**

<b>Panel A: CASH ETR</b>				
	BANK	NON-BANK	COMB.	INTER.
BANK			0.050*** (0.01)	0.46*** (0.11)
SIZE	0.0036 (0.00)	0.0012 (0.00)	0.00088 (0.00)	0.0016 (0.00)
ROA	-0.24 (0.66)	0.0038 (0.02)	0.0086 (0.02)	-0.00090 (0.02)
LOSS, t-1	-0.088*** (0.02)	-0.056*** (0.01)	-0.057*** (0.01)	-0.057*** (0.01)
LOSS, t-2	-0.088*** (0.01)	-0.038*** (0.01)	-0.043*** (0.00)	-0.038*** (0.01)
LEVERAGE	-0.40*** (0.12)	-0.011 (0.01)	-0.0093 (0.01)	-0.0089 (0.01)
FINANCIAL CASH FLOW	0.22*** (0.04)	-0.12*** (0.01)	-0.086*** (0.01)	-0.12*** (0.01)
FOREIGN	-0.0040 (0.03)	-0.00085 (0.00)	0.0033 (0.00)	0.00039 (0.00)
NET PP&E	-1.44*** (0.45)	-0.056*** (0.01)	-0.065*** (0.01)	-0.059*** (0.01)
INTANGIBLES	-1.06*** (0.27)	-0.0052 (0.01)	-0.0059 (0.01)	-0.0055 (0.01)
SG&A EXPENSE	-0.19*** (0.05)	-0.044*** (0.01)	-0.078*** (0.01)	-0.050*** (0.01)
BANK × SIZE				-0.000021 (0.00)
BANK × ROA				-1.03 (0.67)
BANK × LOSS, t-1				-0.013 (0.02)
BANK × LOSS, t-2				-0.037** (0.02)
BANK × LEVERAGE				-0.30** (0.12)
BANK × FINANCIAL CASH FLOW				0.38*** (0.04)
BANK × FOREIGN				0.020 (0.02)
BANK × NET PP&E				-0.97** (0.47)
BANK × INTANGIBLES				-0.91*** (0.27)
BANK × SG&A EXPENSE				-0.37*** (0.04)
Constant	0.78*** (0.11)	0.15*** (0.01)	0.31*** (0.01)	0.33*** (0.01)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes
Observations	4040	19333	23373	23373
Adjusted $R^2$	0.225	0.048	0.068	0.082

**Table 13: Banks, tax avoidance and tax avoidance determinants - Truncation (continued)**

<b>Panel B: GAAP ETR</b>				
	BANK	NON-BANK	COMB.	INTER.
BANK			0.018** (0.01)	0.25*** (0.07)
SIZE	-0.0016 (0.00)	-0.0032*** (0.00)	-0.0022** (0.00)	-0.0031*** (0.00)
ROA	5.87*** (0.44)	0.18*** (0.02)	0.20*** (0.02)	0.18*** (0.02)
LOSS, t-1	0.0035 (0.01)	-0.027*** (0.00)	-0.025*** (0.00)	-0.027*** (0.00)
LOSS, t-2	-0.0035 (0.01)	-0.022*** (0.00)	-0.020*** (0.00)	-0.022*** (0.00)
LEVERAGE	-0.33*** (0.08)	0.0096 (0.01)	0.0071 (0.01)	0.010 (0.01)
FINANCIAL CASH FLOW	0.14*** (0.02)	-0.034*** (0.01)	-0.018* (0.01)	-0.035*** (0.01)
FOREIGN	-0.010 (0.02)	-0.012*** (0.00)	-0.012*** (0.00)	-0.012*** (0.00)
NET PP&E	-0.48 (0.32)	0.0058 (0.01)	0.0016 (0.01)	0.0050 (0.01)
INTANGIBLES	-0.55*** (0.16)	0.024*** (0.01)	0.021** (0.01)	0.023*** (0.01)
SG&A EXPENSE	-0.021 (0.03)	-0.017 (0.01)	-0.026*** (0.01)	-0.021* (0.01)
BANK × SIZE				0.0057** (0.00)
BANK × ROA				5.50*** (0.45)
BANK × LOSS, t-1				0.033*** (0.01)
BANK × LOSS, t-2				0.023** (0.01)
BANK × LEVERAGE				-0.38*** (0.08)
BANK × FINANCIAL CASH FLOW				0.20*** (0.02)
BANK × FOREIGN				0.0092 (0.01)
BANK × NET PP&E				-0.69** (0.33)
BANK × INTANGIBLES				-0.66*** (0.16)
BANK × SG&A EXPENSE				0.020 (0.03)
Constant	0.55*** (0.07)	0.25*** (0.01)	0.33*** (0.01)	0.31*** (0.01)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes
Observations	4040	19333	23373	23373
Adjusted $R^2$	0.297	0.042	0.042	0.055

Variables and model titles are defined as in the tables before. Year- and state-fixed effects are included where indicated. One-way clustered (firm level) standard errors are shown in parentheses. Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01



**Table 14: Worse- and better-capitalized banks against non-banks - Truncation**

<b>Panel A: CASH ETR</b>					
BANK × WORSECAPRATIO1	0.057 (0.06)				
BANK × BETTERCAPRATIO1	0.047*** (0.01)				
BANK × WORSECAPRATIO2		0.12 (0.08)			
BANK × BETTERCAPRATIO2		0.046*** (0.01)			
BANK × WORSECAPRATIO3			0.093*** (0.02)		
BANK × BETTERCAPRATIO3			0.045*** (0.01)		
BANK × WORSECAPRATIO4				0.092*** (0.01)	
BANK × BETTERCAPRATIO4				0.041*** (0.01)	
BANK × WORSECAPRATIO5					0.079*** (0.01)
BANK × BETTERCAPRATIO5					0.038*** (0.01)
SIZE	0.00058 (0.00)	0.00058 (0.00)	0.00059 (0.00)	0.00056 (0.00)	0.00051 (0.00)
ROA	0.014 (0.02)	0.014 (0.02)	0.014 (0.02)	0.014 (0.02)	0.013 (0.02)
LOSS, t-1	-0.057*** (0.01)	-0.057*** (0.01)	-0.057*** (0.01)	-0.057*** (0.01)	-0.057*** (0.01)
LOSS, t-2	-0.043*** (0.00)	-0.043*** (0.00)	-0.043*** (0.00)	-0.043*** (0.00)	-0.043*** (0.00)
FINANCIAL CASH FLOW	-0.086*** (0.01)	-0.086*** (0.01)	-0.086*** (0.01)	-0.087*** (0.01)	-0.088*** (0.01)
FOREIGN	0.0036 (0.00)	0.0036 (0.00)	0.0036 (0.00)	0.0035 (0.00)	0.0034 (0.00)
NET PP&E	-0.065*** (0.01)	-0.065*** (0.01)	-0.065*** (0.01)	-0.065*** (0.01)	-0.065*** (0.01)
INTANGIBLES	-0.0068 (0.01)	-0.0068 (0.01)	-0.0069 (0.01)	-0.0071 (0.01)	-0.0071 (0.01)
SG&A EXPENSE	-0.076*** (0.01)	-0.076*** (0.01)	-0.075*** (0.01)	-0.074*** (0.01)	-0.073*** (0.01)
Constant	0.30*** (0.01)	0.30*** (0.01)	0.30*** (0.01)	0.31*** (0.01)	0.31*** (0.01)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
Observations	23373	23373	23373	23373	23373
Adjusted $R^2$	0.068	0.068	0.068	0.069	0.069



SFB/Transregio 266

# ACCOUNTING FOR TRANSPARENCY

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## WORKING PAPER SERIES

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Gawehn, Vanessa | Müller, Jens

**Tax Avoidance – Are Banks Any Different?**

TRR 266 Accounting for Transparency

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**Table 14: Worse- and better-capitalized banks against non-banks - Truncation (continued)**

<b>Panel B: GAAP ETR</b>					
BANK × WORSECAPRATIO1	-0.072***				
	(0.03)				
BANK × BETTERCAPRATIO1	0.021***				
	(0.01)				
BANK × WORSECAPRATIO2		-0.025			
		(0.04)			
BANK × BETTERCAPRATIO2		0.021***			
		(0.01)			
BANK × WORSECAPRATIO3			0.022**		
			(0.01)		
BANK × BETTERCAPRATIO3			0.021***		
			(0.01)		
BANK × WORSECAPRATIO4				0.029***	
				(0.01)	
BANK × BETTERCAPRATIO4				0.020***	
				(0.01)	
BANK × WORSECAPRATIO5					0.028***
					(0.01)
BANK × BETTERCAPRATIO5					0.019***
					(0.01)
SIZE	-0.0020**	-0.0020**	-0.0020**	-0.0020**	-0.0020**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ROA	0.19***	0.19***	0.19***	0.19***	0.19***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
LOSS, t-1	-0.025***	-0.025***	-0.025***	-0.025***	-0.025***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
LOSS, t-2	-0.020***	-0.020***	-0.020***	-0.020***	-0.020***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FINANCIAL CASH FLOW	-0.018*	-0.018*	-0.018*	-0.019*	-0.019*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
FOREIGN	-0.012***	-0.012***	-0.012***	-0.012***	-0.012***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
NET PP&E	0.0020	0.0020	0.0020	0.0021	0.0022
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
INTANGIBLES	0.022**	0.022**	0.022**	0.022**	0.022**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
SG&A EXPENSE	-0.028***	-0.028***	-0.028***	-0.028***	-0.027***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	0.33***	0.33***	0.33***	0.33***	0.33***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
Observations	23373	23373	23373	23373	23373
Adjusted $R^2$	0.042	0.042	0.042	0.042	0.042

Year- and state-fixed effects are included where indicated. One-way clustered (firm level) standard errors are shown in parentheses. Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01

**Table 15: Banks, tax avoidance and tax avoidance determinants - Winsorization**

<b>Panel A: CASH ETR</b>					
		BANK	NON-BANK	COMB.	INTER.
BANK	+/-			0.067** (0.03)	0.53*** (0.10)
SIZE	-	0.0029 (0.00)	0.011*** (0.00)	0.0061*** (0.00)	0.011*** (0.00)
ROA	+	-0.51 (0.63)	-0.084*** (0.03)	-0.076** (0.03)	-0.079** (0.03)
LOSS, t-1	-	-0.094*** (0.02)	-0.056*** (0.00)	-0.059*** (0.00)	-0.057*** (0.00)
LOSS, t-2	-	-0.087*** (0.01)	-0.038*** (0.00)	-0.044*** (0.00)	-0.039*** (0.00)
LEVERAGE	-	-0.20* (0.11)	-0.0087 (0.01)	-0.0043 (0.01)	-0.0041 (0.01)
FINANCIAL CASH FLOW	+/-	0.18*** (0.04)	-0.10*** (0.01)	-0.075*** (0.01)	-0.10*** (0.01)
FOREIGN	-	-0.0050 (0.02)	0.0036 (0.00)	0.0075** (0.00)	0.0053 (0.00)
NET PP&E	-	-1.28*** (0.40)	0.028 (0.02)	0.032 (0.02)	0.028 (0.02)
INTANGIBLES	-	-1.07*** (0.23)	0.023*** (0.01)	0.025*** (0.01)	0.024*** (0.01)
SG&A EXPENSE	-	-0.21*** (0.05)	0.044 (0.03)	-0.071** (0.03)	0.046 (0.03)
BANK × SIZE					-0.010*** (0.00)
BANK × ROA					-1.11* (0.62)
BANK × LOSS, t-1					-0.020 (0.02)
BANK × LOSS, t-2					-0.039*** (0.01)
BANK × LEVERAGE					-0.16 (0.10)
BANK × FINANCIAL CASH FLOW					0.33*** (0.04)
BANK × FOREIGN					0.013 (0.02)
BANK × NET PP&E					-1.06** (0.43)
BANK × INTANGIBLES					-0.90*** (0.23)
BANK × SG&A EXPENSE					-0.46*** (0.05)
Constant		0.61*** (0.09)	-0.018 (0.04)	0.23*** (0.04)	0.14*** (0.04)
YEAR-FIXED EFFECTS		Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS		Yes	Yes	Yes	Yes
Observations		4530	21673	26203	26203
Adjusted $R^2$		0.217	0.054	0.070	0.088

**Table 15: Banks, tax avoidance and tax avoidance determinants - Winsorization (continued)**

<b>Panel B: GAAP ETR</b>					
		BANK	NON-BANK	COMB.	INTER.
BANK	+/-			0.11*** (0.02)	0.34*** (0.10)
SIZE	-	-0.0020 (0.00)	0.013*** (0.00)	0.011*** (0.00)	0.013*** (0.00)
ROA	+	5.94*** (0.42)	0.090*** (0.03)	0.10*** (0.03)	0.089*** (0.03)
LOSS, t-1	-	-0.018* (0.01)	-0.034*** (0.00)	-0.035*** (0.00)	-0.034*** (0.00)
LOSS, t-2	-	-0.021** (0.01)	-0.027*** (0.00)	-0.027*** (0.00)	-0.027*** (0.00)
LEVERAGE	-	-0.13 (0.10)	-0.0065 (0.01)	-0.0056 (0.01)	-0.0050 (0.01)
FINANCIAL CASH FLOW	+/-	0.11*** (0.02)	-0.052*** (0.01)	-0.038*** (0.01)	-0.053*** (0.01)
FOREIGN	-	-0.025** (0.01)	-0.015*** (0.00)	-0.014*** (0.00)	-0.015*** (0.00)
NET PP&E	-	-0.41 (0.34)	0.017 (0.02)	0.021 (0.02)	0.019 (0.02)
INTANGIBLES	-	-0.42*** (0.16)	-0.0010 (0.01)	0.00012 (0.01)	-0.00098 (0.01)
SG&A EXPENSE	-	-0.041 (0.03)	0.059* (0.03)	0.020 (0.02)	0.060** (0.03)
BANK × SIZE					-0.011*** (0.00)
BANK × ROA					5.63*** (0.42)
BANK × LOSS, t-1					0.020* (0.01)
BANK × LOSS, t-2					0.0095 (0.01)
BANK × LEVERAGE					-0.19* (0.11)
BANK × FINANCIAL CASH FLOW					0.19*** (0.03)
BANK × FOREIGN					-0.0050 (0.01)
BANK × NET PP&E					-0.83** (0.35)
BANK × INTANGIBLES					-0.53*** (0.16)
BANK × SG&A EXPENSE					-0.057 (0.04)
Constant		0.38*** (0.09)	0.0036 (0.04)	0.14*** (0.03)	0.067* (0.04)
YEAR-FIXED EFFECTS		Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS		Yes	Yes	Yes	Yes
Observations		4530	21673	26203	26203
Adjusted $R^2$		0.268	0.042	0.040	0.055

Year- and state-fixed effects are included where indicated. One-way clustered (firm level) standard errors are shown in parentheses. Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01

**Table 16: Worse- and better-capitalized banks against non-banks - Winsorization**

<b>Panel A: CASH ETR</b>					
BANK × LOWCAPRATIO1	0.096*** (0.03)				
BANK × HIGHCAPRATIO1	0.063** (0.03)				
BANK × LOWCAPRATIO2		0.096*** (0.03)			
BANK × HIGHCAPRATIO2		0.060** (0.03)			
BANK × LOWCAPRATIO3			0.094*** (0.03)		
BANK × HIGHCAPRATIO3			0.056** (0.03)		
BANK × LOWCAPRATIO4				0.089*** (0.03)	
BANK × HIGHCAPRATIO4				0.054** (0.03)	
BANK × LOWCAPRATIO5					0.083*** (0.03)
BANK × HIGHCAPRATIO5					0.051* (0.03)
SIZE	0.0060*** (0.00)	0.0059*** (0.00)	0.0059*** (0.00)	0.0058*** (0.00)	0.0058*** (0.00)
ROA	-0.075** (0.03)	-0.075** (0.03)	-0.075** (0.03)	-0.075** (0.03)	-0.075** (0.03)
LOSS, t-1	-0.059*** (0.00)	-0.059*** (0.00)	-0.059*** (0.00)	-0.059*** (0.00)	-0.059*** (0.00)
LOSS, t-2	-0.044*** (0.00)	-0.044*** (0.00)	-0.044*** (0.00)	-0.044*** (0.00)	-0.044*** (0.00)
FINANCIAL CASH FLOW	-0.076*** (0.01)	-0.076*** (0.01)	-0.077*** (0.01)	-0.077*** (0.01)	-0.077*** (0.01)
FOREIGN	0.0074** (0.00)	0.0074* (0.00)	0.0074* (0.00)	0.0074* (0.00)	0.0074** (0.00)
NET PP&E	0.032 (0.02)	0.032 (0.02)	0.031 (0.02)	0.032 (0.02)	0.032 (0.02)
INTANGIBLES	0.025*** (0.01)	0.025*** (0.01)	0.025*** (0.01)	0.025*** (0.01)	0.025*** (0.01)
SG&A EXPENSE	-0.066** (0.03)	-0.062** (0.03)	-0.060** (0.03)	-0.061** (0.03)	-0.062** (0.03)
Constant	0.23*** (0.04)	0.23*** (0.04)	0.24*** (0.04)	0.24*** (0.04)	0.24*** (0.04)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
Observations	26203	26203	26203	26203	26203
Adjusted $R^2$	0.071	0.072	0.072	0.072	0.072

**Table 16: Worse- and better-capitalized banks against non-banks - Winsorization (continued)**

<b>Panel B: GAAP ETR</b>					
BANK × LOWCAPRATIO1	0.12*** (0.02)				
BANK × HIGHCAPRATIO1	0.10*** (0.02)				
BANK × LOWCAPRATIO2		0.11*** (0.02)			
BANK × HIGHCAPRATIO2		0.10*** (0.02)			
BANK × LOWCAPRATIO3			0.12*** (0.02)		
BANK × HIGHCAPRATIO3			0.10*** (0.02)		
BANK × LOWCAPRATIO4				0.11*** (0.02)	
BANK × HIGHCAPRATIO4				0.10*** (0.02)	
BANK × LOWCAPRATIO5					0.11*** (0.02)
BANK × HIGHCAPRATIO5					0.10*** (0.02)
SIZE	0.011*** (0.00)	0.010*** (0.00)	0.010*** (0.00)	0.010*** (0.00)	0.010*** (0.00)
ROA	0.10*** (0.03)	0.10*** (0.03)	0.10*** (0.03)	0.10*** (0.03)	0.10*** (0.03)
LOSS, t-1	-0.035*** (0.00)	-0.035*** (0.00)	-0.035*** (0.00)	-0.035*** (0.00)	-0.035*** (0.00)
LOSS, t-2	-0.028*** (0.00)	-0.028*** (0.00)	-0.028*** (0.00)	-0.028*** (0.00)	-0.028*** (0.00)
FINANCIAL CASH FLOW	-0.039*** (0.01)	-0.039*** (0.01)	-0.039*** (0.01)	-0.039*** (0.01)	-0.039*** (0.01)
FOREIGN	-0.014*** (0.00)	-0.014*** (0.00)	-0.014*** (0.00)	-0.014*** (0.00)	-0.014*** (0.00)
NET PP&E	0.020 (0.02)	0.020 (0.02)	0.020 (0.02)	0.020 (0.02)	0.020 (0.02)
INTANGIBLES	-0.00040 (0.01)	-0.00041 (0.01)	-0.00041 (0.01)	-0.00040 (0.01)	-0.00039 (0.01)
SG&A EXPENSE	0.023 (0.02)	0.023 (0.02)	0.025 (0.02)	0.025 (0.02)	0.024 (0.02)
Constant	0.14*** (0.03)	0.14*** (0.03)	0.14*** (0.03)	0.14*** (0.03)	0.14*** (0.03)
YEAR-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
STATE-FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes
Observations	26203	26203	26203	26203	26203
Adjusted $R^2$	0.041	0.041	0.041	0.041	0.041

Year- and state-fixed effects are included where indicated. One-way clustered (firm level) standard errors are shown in parentheses. Significance levels are as follows: \* 0.1 \*\* 0.05 \*\*\* 0.01

## **TRR 266 Accounting for Transparency**

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