Essays on Corporate Tax Planning

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M. Sc. Alexander Norbert Schwäbe

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Prof. Dr. Kay Blaufus
Prof. Dr. Jost Heckemeyer

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Summary

Diese Dissertation beinhaltet drei Beiträge zur unternehmerischen Steuerplanung. Der erste Beitrag befasst sich mit den Kapitalmarktreaktionen auf Nachrichten über unternehmerische Steuervermeidung und Steuerhinterziehung. Durch eine Ereignisstudie wird gezeigt, dass sich Nachrichten über Steuerhinterziehung generell negativ auf den Kapitalmarkt auswirken, während Nachrichten über Steuervermeidung für Unternehmen mit geringem Steuerrisiko zu positiven Kapitalmarktreaktionen führen. Der zweite Beitrag untersucht die Auswirkungen von Verhandlungsstrategien von Betriebsprüfern und Steuerberatern auf die Anpassungen der steuerlichen Bemessungsgrundlage im Rahmen einer Betriebsprüfung. Ein dreistufiges Schätzmodell zeigt, dass Verhandlungsstrategien Einfluss auf diese Anpassungen haben. Betriebsprüfer können demnach die steuerlichen Anpassungen der Prüfung um zehn Prozentpunkte erhöhen, wenn die Prüfer eine kompetitive Verhandlungsstrategie statt einer neutralen Strategie wählen. Der dritte Beitrag beschäftigt sich mit der steuerlich induzierten Gewinnverlagerung von Kapitalgesellschaften. Die Ergebnisse implizieren, dass Kapitalgesellschaften Gewinne von Perioden mit hohen Grenzsteuersätzen in Perioden mit niedrigen Grenzsteuersätzen verlagern. Dieser Effekt ist bei Familienunternehmen besonders ausgeprägt. Zudem wird die Manipulation von realen Aktivitäten negativ durch den unternehmerischen Grenzsteuersatz beeinflusst.

This dissertation contains three contributions to corporate tax planning. The first article examines stock price reactions to news about corporate tax avoidance and tax evasion. An event study shows that tax evasion generally has a negative impact on the capital market, while news of tax avoidance leads for firms with a low tax risk to positive capital market reactions. The second article deals with the effects of negotiation strategies of tax auditors and tax advisers on tax base adjustments in the context of a tax audit. A three-step estimation model shows that negotiation strategies have a severe impact on tax base adjustments. Tax auditors can increase tax base adjustments by ten percentage points when opting for a competitive strategy instead of a neutral strategy. The third article deals with the tax-induced income shifting of corporations. The results imply that firms are shifting income from high marginal tax rate periods to low marginal tax rate periods. This effect is particularly pronounced for family firms. Furthermore, firms' real activities manipulation is negatively affected by firms' marginal tax rate.

Schlagwörter: Kapitalmarkt · Steuervermeidung · Steuerhinterziehung · Ereignisstudie · Steuerkonformität · Betriebsprüfung · Verhandlungsstrategien · Ertragsmanagement · Simulierte Grenzsteuersätze

Keywords: Stock Market · Tax Avoidance · Tax Evasion · Event Study · Tax Compliance · Tax Audit · Negotiation Strategies · Earnings Management · Simulated Marginal Tax Rates

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To Lisa Marie

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Chapter 1

Introduction

1.1 Motivation

Taxes are the main source of government revenue but from a firm's view taxes represent probably the most controversially discussed cost item that reduces after-tax profits. Corporate tax planning, and in particular of global players such as Apple Inc., is regularly in the headlines due to ever decreasing effective tax rates (European Commission 2016).[1] The most important question for managers might be: Is it worth investing in corporate tax planning? Since managers should act in the shareholders' best interests, it seems obvious that taxes should be minimized to increase shareholder value. However, expected tax savings are only one side of the coin because corporate tax planning may be accompanied by additional non-tax costs. Especially firms in the public eye bear the risk of being pilloried in the media as a "poor corporate citizen" for not paying their "fair share" of corporate taxes to ensure the financing of public goods (Lanis and Richardson 2012). This might lead to a consumer backlash (Hardeck and Hertl 2014; Antonetti and Anesa 2017), which would be reflected in decreasing sales and thus a decreasing firm value. In addition, agency costs between managers and shareholders could arise from tax avoidance (Desai et al. 2007; Kim et al. 2011; Mironov 2013). Shareholders might believe that managers are exploiting complex structures that are supposed to save taxes for managerial rent extraction. These costs might differ with regard to the legality of corporate tax planning, as tax evasion in particular is perceived as immoral (Kirchler et al. 2003). In Germany, (aggressive) tax avoidance is neither subject to civil nor criminal penalties as long as taxpayers do not provide imprecise or incomplete information to the revenue service (Brown 2011, p. 165). However, due to ambiguities in tax laws, tax avoidance bear the risk that a specific tax position could not be sustained in a future tax dispute (Blaufus et al. 2016a)

[1] The term "tax planning" in the sense of this thesis describes legal (tax avoidance) and illegal (tax evasion) corporate strategies that encompass ex ante legal and illegal tax planning, in which financing and investment are chosen based on an after-tax assessment, as well as ex post tax minimization, in which taxes are minimized for a given investment or financing alternative, retrospectively (Feller and Schanz 2017).

and thus additional costs in the form of back taxes and interest charges may occur. In the case of detected tax evasion, back taxes and interest charges may be accompanied by additional penalties. Even though criminal penalties in Germany are only imposed on natural persons (i.e., the responsible managers), regulatory fines can be imposed according to Section 30 of the German Act on Regulatory Offenses at the corporate level. Detected tax evasion in other countries may result in further penalty payments at the corporate level. Thus, the net value of corporate tax planning in Germany is still unknown and may strongly depend on arising non-tax costs.

In particular, risky tax planning[2], which is reflected in a high effective tax rate volatility might have a negative impact on overall firm risk (Guenther et al. 2017). (Risky) tax positions that cannot be sustained in subsequent tax audits, will result in back taxes and will therefore c.p. increase firms' tax rate volatility. In contrast, firms that can maintain most tax positions in future tax disputes will be able to report constant tax rates over the years. Thus, the result of a tax audit is of particular interest to investors as it can provide information on whether a firm is investing in risky or "reliable" tax planning. Furthermore, the result may signal if tax managers are able to defend their corporate tax strategy against the tax authority.

The relationship between corporate tax planning and the outcome of a tax audit in the form of tax base adjustments can be represented in a multi-stage model. First of all, firms will opt for tax planning with regard to their possibilities. For example, multinational firms can exploit differences in statutory tax rates between countries while domestic firms are limited to exploiting solely national "tax loopholes". In a next stage, tax planning has to be detected in the tax audit. The detection probability will depend on the skills and effort of the tax auditor. Since tax laws are often ambiguous, the final audit outcome in the form of tax base adjustments depends on the negotiation of tax auditors and firms' tax advisers. Thus, even if firms engage in (risky) tax planning, there is a chance that it will not be detected or that risky tax positions can be sustained in the negotiation with the tax auditor.

To avoid having to negotiate tax positions during a tax audit, firms may choose tax avoidance strategies that are less likely to increase the audit risk (e.g., Frank et al. 2009, p. 471). Tax avoidance can be separated into non-conforming and conforming avoidance. While non-conforming tax avoidance aims at reducing taxable income without affecting financial income, conforming tax avoidance reduces both financial and taxable income. There are different reasons to opt for non-conforming or conforming tax avoidance. For example, firms that are under high capital market pressure are less likely to engage in income decreasing activities. Therefore, these firms are more likely to engage in non-conforming tax avoidance (e.g., Penno and Simon 1986). However, non-conforming tax

[2] Risky tax planning in the sense of this thesis describes tax planning that contains tax positions that are not likely to be sustained in subsequent tax audits.

avoidance leads to positive book-tax differences, which might be interpreted as a signal of tax aggressiveness and thus the audit risk might increase (e.g., McGuire et al. 2011, p. 8). In contrast to non-conforming tax avoidance, there are no simple heuristics to measure a firm's level of conforming tax avoidance (Hanlon and Heitzman 2010). Thus, firms that do not place much importance on reporting financial profits and do not want to increase audit risk, might engage in conforming tax avoidance.

1.2 Contribution and Main Findings

The thesis consists of three essays. Table 1.1 gives an overview of the essays, the co-authors and the share of the own contribution.

Table 1.1: Essay Overview

Title	Co-Authors	Contr.	Ch.
Stock Price Reactions to News about Corporate Tax Avoidance and Evasion	Prof. Dr. Kay Blaufus *Leibniz University Hannover* Dr. Axel Möhlmann *Deutsche Bundesbank*	33%	2
Negotiating with the Tax Auditor: The Effect of Tax Auditors' Negotiation Strategy on Firms' Tax Adjustments	Prof. Dr. Kay Blaufus *Leibniz University Hannover* Prof. Dr. Daniela Lorenz *University of Würzburg* Dr. Benjamin Peuthert *Leibniz University Hannover*	25%	3
Conforming Tax Avoidance through Intertemporal Profit Shifting	-	100%	4

This table presents the essays of the thesis with title, co-authors as well as the own contribution and the corresponding chapter.

The first article *Stock Price Reactions to News about Corporate Tax Avoidance and Evasion* presented in Chapter 2 addresses the evaluation of corporate tax planning. In so doing, the article extends prior research by examining stock price reactions to news about corporate tax planning. While illegal tax planning is negatively affecting the stock market, tax avoidance can indeed create positive shareholder value as long as firms exhibit low tax risks.

Since tax risks matter, the second article *Negotiating with the Tax Auditor: The Effect of Tax Auditors' Negotiation Strategy on Firms' Tax Adjustments* presented in Chapter 3 takes a closer look at the relationship between corporate tax planning and tax base adjustments of subsequent tax audits. A report by PricewaterhouseCoopers (2004, p. 6) states that "*in a number of countries the final agreement of a tax return often ends in a 'horse trade' between the taxpayer and the relevant revenue authority.*". Thus, even after

ex ante and ex post tax minimization firms can still influence the outcome of tax audits. This is of major interest since the first study shows that tax avoidance is only assessed positively if firms' tax risks are low. The second article extends this barely explored field by focusing on the negotiation between tax auditors and tax advisers. By using a multi-stage model, it is shown that the choice of negotiation strategy may have severe impact on the final tax base adjustments. Tax auditors may increase tax base adjustments by about ten percentage points when choosing a competitive strategy over a neutral one.

However, there might be firms that try to keep the tax audit risk as low as possible. Since previous research mostly focuses on non-conforming tax avoidance (e.g., Rego 2003; Chen et al. 2010), the third article *Conforming Tax Avoidance through Intertemporal Profit Shifting* presented in Chapter 4 introduces a new method for measuring firms' engagement in conforming tax avoidance. Findings suggest that firms manage earnings from periods with high marginal tax rates to periods with low marginal tax rates. This effect is particularly pronounced for family firms. Thus, family firms might compensate their lower engagement in non-conforming tax avoidance (Chen et al. 2010) by engaging in the conforming variant.

Chapter 2

Stock Price Reactions to News about Corporate Tax Avoidance and Evasion*

Abstract

This study examines stock market responses to news on corporate tax strategies. Our hand-collected dataset includes 176 tax news items regarding listed German firms over the period from 2003 to 2016. In contrast to previous research, we explicitly distinguish between news about corporate tax strategies that are legal (tax avoidance) and illegal (tax evasion). We show that stock market responses differ significantly between news items concerning legal and illegal activities. We find negative abnormal returns only for tax evasion news, while we find positive stock market reactions to tax avoidance news for firms with low tax risk. We do not observe any evidence of reputation or agency costs exceeding the positive effect of legal tax planning. Our findings contribute to the ongoing debate among researchers, politicians, and corporate managers on the benefits and costs of corporate tax strategies.

* This chapter is a co-authered work with Prof. Dr. Kay Blaufus (Leibniz University Hannover) and Dr. Axel Möhlmann (Deutsche Bundesbank).

2.1 Introduction

Is it worth investing in corporate tax planning? This is an important question for investors and the financial management of a firm. In this paper, we use the term 'tax planning' to describe legal and illegal corporate strategies that encompass ex ante tax planning, in which the best investment and financing alternatives are chosen based on an after-tax assessment of the alternatives, and ex post tax minimization, in which tax implications from a given investment or financing alternative are minimized in hindsight (Feller and Schanz 2017).

At first sight, a negative effect on firm value may be surprising because corporate tax planning can lead to significant tax savings (Mills et al. 1998), and anticipated future tax savings should increase shareholders' wealth. However, there are also substantial costs associated with tax planning. Recent news concerning tax avoidance by multinational firms such as Amazon, Google, and Starbucks has sparked a public outcry. Several corporations have been publicly accused of not paying their fair share of corporate taxes. Being publicly regarded as tax aggressive may harbor reputation risks and potentially negative responses from customers and other stakeholders, which could negatively affect firm value. In line with this argument, Hardeck and Hertl (2014) as well as Antonetti and Anesa (2017) demonstrate that consumers' purchase intentions and willingness to pay are negatively affected by aggressive corporate tax strategies. In addition to potential reputation costs, significant planning costs may arise (Eichfelder and Schorn 2012). Furthermore, agency costs may result if one assumes that corporate tax sheltering and managerial rent diversion are complementary because the opaque practices related to corporate tax strategies enable managers to conceal their rent extraction (Desai and Dharmapala 2006). Moreover, if evasion is detected, subsequent payment of taxes and penalties has to be taken into account. For managers and shareholders, this raises the question whether these costs may exceed the tax saving benefit.

Prior empirical research has yielded mixed results regarding the effect of corporate tax strategies on firm value (see Hardeck and Hertl (2014) for an overview). Some studies provide evidence that aggressive corporate tax strategies negatively affect firm value (e.g., Desai et al. 2007; Hanlon and Slemrod 2009; Kim et al. 2011; Mironov 2013). However, there is also evidence for a positive market valuation of tax planning activities (Frischmann et al. 2008; Hill et al. 2013; Desai and Hines Jr. 2002; Huesecken et al. 2017), and a non-significant effect on firm value (Desai and Dharmapala 2009).

We contribute to the discussion whether tax planning affects firm value by analyzing the stock price reaction to news concerning tax avoidance or evasion by German listed firms over the period from 2003 to 2016. In contrast to previous research, we distinguish explicitly between news on legal tax planning (tax avoidance) and illegal tax planning (tax evasion) and we consider firms' tax risk.

The legality of tax planning could be an important determinant of the stock market response to tax minimization news. First, most countries apply criminal penalties only in the case of tax evasion. In contrast, tax avoidance is usually neither prohibited nor subject to criminal penalty. In particular, in Germany, there are neither civil nor criminal penalties for tax avoidance. Thus, avoidance and evasion differ in the risk of future penalty payments. Second, the moral perception and, therefore, potential reputation costs may differ between legal and illegal activities. Kirchler et al. (2003) demonstrate that business people associate tax avoidance with the terms "legal", "tax savings", and "cleverness" whereas tax evasion is associated with "illegal", "fraud", and "criminal prosecution".

Illegal tax strategies are obviously risky. However, due to the existing ambiguous tax laws, many tax avoidance strategies (albeit legal) are also risky because they are subject to the risk that a tax position cannot be sustained in a future tax dispute with the tax authorities. If a firm's tax position could not be sustained upon a tax audit, back taxes and interest charges must be paid. Thus, we also examine whether market responses to news on legal tax strategies depend on a firm's prior tax risk as measured by the volatility of the firm's tax burden.

Using a hand-collected dataset of 176 news items concerning corporate tax planning over the period from 2003 to 2016, we conduct an event study analysis. We calculate cumulative abnormal returns (CARs) and scrutinize these CARs through univariate and multivariate analyses. We find robust evidence that market reactions differ significantly between reports of legal and illegal activities. The response to tax evasion news is, on average, significantly negative. In terms of market capitalization, the average evasion firm loses about 182 million euros market value. In contrast, the market response to tax avoidance is, on average, weakly positive. Thus, the legality of tax planning should be considered when evaluating the effect of corporate tax strategies. Shareholders seem to differentiate with respect to legality. Spillover effects provide further evidence that legality matters. Whereas tax avoidance news concerning a particular firm does not spill over to other firms in the same industry, we provide evidence of an industry contagion effect in response to evasion news. In response to evasion news, we observe negative CARs not only for the specific firm but also for firms in the same industry.

The positive stock price reaction to tax avoidance news is mainly due to firms with low tax risk (low volatility of the firms' tax burden). For these low tax risk firms, we find significantly positive cumulative abnormal returns to tax avoidance news amounting to 1.29%, whereas we do not observe a significant stock market response to tax avoidance news for other firms. Interestingly, we do not find that the previous level of a firm's tax burden determines stock market response. This suggests that stock market participants do not punish "low-tax rate firms" for further investing into legal tax planning. A positive market response, however, only results if these firms had persistently constant tax rates (low tax risk) indicating that these firms were successful tax planners in the past.

Furthermore, our results suggest that, on average, possible reputation costs associated with tax avoidance news are not exceeding the benefit of tax savings, as we do not find a negative effect of proxies for reputation risks on stock price reactions. Conversely, the positive market reaction to tax avoidance news is associated with firms that exhibit high reputation risk (measured by high advertising expenses). Additionally, we find that also potential agency costs do not exceed average savings from tax avoidance because stock market responses do not differ between firms with high and low corporate governance (measured either by the corporate governance score provided by Datastream or the percentage of institutional ownership).

Our findings complement prior research on the effect of corporate tax strategies by demonstrating that legality and tax risk are important determinants of market response to corporate tax strategies. Moreover, we also contribute to the current discussion on corporate social responsibility and tax planning (Lanis and Richardson 2012; Davis et al. 2015) by demonstrating that, on average, stock market investors do not expect reputational costs of legal tax planning to exceed tax savings benefits.

The remainder of this paper is organized as follows. In Section 2.2, we present an overview of the relevant literature and derive our hypotheses. In Section 2.3, we describe the event selection, the variable measurement, and the sample. The results are provided and discussed in Section 2.4. Section 2.5 examines potential differences between different tax avoidance methods as well as intra-industry spillover effects in response to tax minimization news. We subject our results to several robustness tests that are presented in Section 2.6. Section 2.7 concludes.

2.2 Hypothesis Development

Prior studies on the effect of tax planning news on firm value do not explicitly distinguish between news about legal tax avoidance and illegal tax evasion. However, we believe that this distinction is important. The classical distinction between tax avoidance and tax evasion is that tax evasion is present only if the taxpayer provides intentionally inaccurate or incomplete information to the tax authorities to reduce the tax burden. Therefore, Germany and most other countries apply criminal penalties only when the taxpayer knew of his non-compliance or acted in gross negligence (Friese et al. 2008).[1] In contrast, tax avoidance as such is neither prohibited nor punishable as long as the taxpayer does not provide inaccurate or incomplete information to the revenue service (Brown 2011, p. 165). Of course, due to ambiguities in tax law and the resulting uncertainty in interpretation, tax avoidance is often subject to the risk that a specific tax position could not be sus-

[1] In Germany, criminal penalties are not imposed on a legal entity but only on natural persons, i.e., the responsible managers. However, in the event of detected evasion, a regulatory fine on corporations can be imposed according to Section 30 of the German Act on Regulatory Offenses. Moreover, evasion that is detected in other countries can also lead to penalties at the corporate level.

tained in a future tax dispute (Blaufus et al. 2016a). In this case, as with detected tax evasion, back taxes and interest charges must be paid. Nevertheless, in contrast to other countries such as France or the United States, in Germany, tax avoidance leads to neither civil nor criminal penalties. Thus, avoidance and evasion differ with respect to penalty risk. Moreover, the legality of tax planning may also affect potential reputational risks. According to the expressive law approach, law expresses social values (Cooter 1998, 2000) and legality may serve as a reference point when individuals make moral evaluations of a firm's tax planning strategy. In line with this, the survey of Bobek and Hatfield (2003) indicates that engaging in an illegal behavior leads to a "psychic cost" that influences taxpayers' attitude to a greater extent than concerns about penalties. Furthermore, the results of Kirchler et al. (2003) demonstrate that moral evaluations differ with respect to the legality of tax planning, with a positive (negative) perception of tax avoidance (evasion). In line with this, Blaufus et al. (2016b) present experimental evidence that the qualification of tax planning activities as illegal (versus legal) can reduce tax planning significantly and DeZoort et al. (2017) find that perceived legality affects perceived ethicality of corporate tax strategies. Nevertheless, even legal tax planning might result in significant reputational costs. Hardeck and Hertl (2014) find in an experiment that a corporate tax strategy that is described as legal but aggressive results in a lower willingness to pay and purchase intention regarding the products of the respective corporation. However, even if legal tax planning also leads to significant reputational and agency costs, it is an empirical question whether these costs may exceed the tax savings benefits.

Our setting allows us to investigate the market response to tax planning news that presumably bear no penalty risk.[2] We assume that in such case, i.e., tax avoidance news, adjusted market expectations of future tax savings, on average, outweigh the potential agency and reputation costs. Therefore our first hypothesis is:

Hypothesis 1 *The stock market price is positively affected by news about corporate tax avoidance.*

By contrast, we expect news about a reasonable suspicion of tax evasion to have a negative impact on stock market prices because of the likely payment of back taxes and penalties. Moreover, we expect the reputation costs of being declared a tax evader to be higher than those of being declared a tax avoider. This assumption is in line with previous psychological research on the perception of tax planning, as Kirchler et al. (2003) demonstrate that tax evasion is perceived negatively whereas tax avoidance is perceived positively. Thus, our second hypothesis is as follows:

Hypothesis 2 *The stock market price is negatively affected by news about corporate tax evasion.*

[2] In line with prior research (Hanlon and Slemrod 2009; Gallemore et al. 2014), our empirical analysis refers to the interpretation of the tax strategy given by the press outlets themselves.

Although we expect, on average, a positive market response to tax avoidance news, the market reaction could be moderated by a firm's reputation risk. In particular, firms in the public eye bear the risk of being publicly named and shamed as a "poor corporate citizen" for not paying their "fair share" of corporate taxes to ensure the financing of public goods (Lanis and Richardson 2012). Evidence regarding the reputational costs of corporate tax strategies is, however, mixed. First, Hanlon and Slemrod (2009) conduct an event study to examine stock price reactions to news concerning corporate tax shelter usage. Their sample includes 108 articles pertaining to 97 firms. Overall, they find negative stock market reactions, particularly for firms in the retail sector, which suggests that stock market participants anticipate a consumer backlash. However, using advertising costs as another proxy for a potential consumer backlash, they find no significant effect. Second, Graham et al. (2014) present survey evidence from corporate tax executives of U.S. firms and report that potential harm to firm reputation is the second-most important reason preventing firms from engaging in tax planning. Third, the experimental studies of Hardeck and Hertl (2014) and Antonetti and Anesa (2017) demonstrate that consumers' purchase intentions and willingness to pay are negatively affected by aggressive corporate tax strategies. Fourth, in contrast to the above-mentioned studies, Gallemore et al. (2014) find no evidence for significant reputation costs measured by increased CEO and CFO turnover, auditor turnover, lost sales, increased advertising costs and decreased media reputation. They extend the tax shelter sample of Hanlon and Slemrod (2009) to 118 firms and further show that the negative stock market reaction is only temporary in nature and reverses entirely within a few weeks. Fifth, Austin and Wilson (2013) find that firms with exposure to potentially significant reputation costs do not differ significantly in their tax avoidance level. In sum, it is an open empirical question whether legal tax avoidance result in reputation cost that are sufficiently large to exceed tax planning benefits.

Assuming significant reputation costs of tax avoidance, we would expect that stock market prices of firms with a high consumer backlash risk respond more negatively to news of corporate tax avoidance than otherwise comparable firms with lower consumer backlash risk:

Hypothesis 3 *The stock market reaction to news about corporate tax avoidance is negatively affected by a firm's reputation risk.*

In addition to reputation costs, also agency costs between managers and shareholders could arise from tax avoidance (Desai et al. 2007; Kim et al. 2011; Mironov 2013). Managers can use complex structures that are supposed to save taxes but, in fact, use these structures for managerial diversion. Previous research on tax avoidance and governance has, so far, found conflicting results (Bird and Karolyi 2016). Desai and Dharmapala (2006) find that incentive payments for managers decrease tax avoidance for firms with a weak corporate governance structure and Desai and Dharmapala (2009) demonstrate

that tax planning significantly improves firm value only for well-governed firms. Minnick and Noga (2010) provide evidence that governance is weakly associated with domestic and foreign tax avoidance. Armstrong et al. (2015) do not find a general relation between tax avoidance and governance, but find that governance is associated with the extreme levels of tax avoidance. Bird and Karolyi (2016) find that increasing institutional ownership (and thereby increasing governance) decreases effective tax rates and increases the use of tax haven subsidiaries. However, Hanlon and Slemrod (2009) find no conclusive evidence that market reactions to tax shelter news are moderated by the firms' corporate governance structure and Khurana and Moser (2012) show that increasing ownership by long-horizon institutional investors is associated with lower tax avoidance.

If stock market participants fear that increasing tax avoidance comes along with increasing managerial rent extraction opportunities, stock market responses to news on tax avoidance should be more negative in the case of firms with low corporate governance. In line with this reasoning, we state our fourth hypothesis:

Hypothesis 4 *The stock market reaction to news about corporate tax avoidance is positively affected by a firm's corporate governance quality.*

Due to difficulties in interpreting the existing ambiguous tax laws, many tax avoidance strategies (albeit legal) are subject to the risk that a tax position cannot be sustained in a future tax dispute with the tax authorities. If a firm's tax position could not be sustained upon a tax audit, back taxes and interest charges must be paid. It is, therefore, reasonable to assume that investors take into account tax risk when evaluation the effect of news regarding tax avoidance. Only if firms are able to reliably signal to investors that their tax managers are able to defend its corporate tax strategy against the tax authority in potential future tax disputes, one should expect a positive market response to tax avoidance news. Thus, we expect that stock market investors use proxies on the firms' past tax volatility to estimate future tax risk and that this tax risk will moderate the effect of tax avoidance news on market responses.

We are not aware of any previous study investigating this moderating effect on stock market responses to news on tax avoidance. However, recent evidence using panel data of US firms, is in line with this prediction. In particular, Drake et al. (2017) find that tax risk moderates the positive valuation of tax avoidance. Moreover, Dyreng et al. (2018) find that firms with relatively low cash effective tax rates bear significantly greater tax risk and Guenther et al. (2017) demonstrate that the volatility of cash tax rates is associated with future stock volatility, i.e., firm risk.

Hence, we expect that the stock market should respond more positively to news on tax avoidance in the case of low tax risk firms:

Hypothesis 5 *The stock market reaction to news about corporate tax avoidance is negatively affected by a firm's tax risk.*

The stock price reaction could also be moderated by the market's ex ante perceptions regarding the tax aggressiveness of the firm. Hanlon and Slemrod (2009) use the previous cash effective tax rate as a proxy for the market's expectations and find that firms with relatively high disclosed cash effective tax rates (signaling low previous tax aggressiveness) have a less negative market reaction. Hence, we expect that stock prices react more positively for firms, which are formerly not viewed as tax planners, and state the following hypothesis:

Hypothesis 6 *The stock market reaction is negatively affected by the market's ex ante perceptions regarding the level of the firm's previous tax planning.*

2.3 Event Selection, Variable Measurement, and Descriptive Statistics

2.3.1 Event Selection

The sample is obtained by broad news research in the news archive Genios.de.[3] We cover all important transregional newspapers (e.g., *Frankfurter Allgemeine Zeitung*, *Süddeutsche Zeitung*, *Frankfurter Rundschau*, *Die Welt*, *Die Tageszeitung*, and *Handelsblatt*), many regional newspapers, and weekly news magazines.[4]

The German language has a variety of terms to describe tax planning activities. We therefore developed a list that covers the most common descriptions, e.g., *"Steuersparmodell"* (tax relief scheme), *"Steueroase"* (tax haven) or *"Steuer sparen"* (saving tax).[5] To differentiate between tax avoidance and tax evasion, we add terms to our list that capture tax evasion (e.g., *"Steuerbetrug"* (tax fraud), *"Steuerhinterziehung"* (tax evasion) or *"Steuer hinterziehen"* (evading tax)).[6] The following criteria were used to select the tax avoidance articles in our sample:

- We always select the first published article that mentions a specific tax planning activity of a firm.
- The tax planning activity has to be the main focus of the article.
- The tax planning activity has to be linked to the reported corporation.
- We exclude private manager tax planning activities.
- We exclude articles including earnings reports to avoid confounding effects.

[3] Authorized to access by Stadtbibliothek Hannover. In addition, we used the FAZ-Online Archive.
[4] We have reported a list of newspapers included in the sample because the availability of sources depends on the specific licenses (see Table 2.7 in Appendix A).
[5] For the complete list of search terms, see Appendix B.
[6] See Appendix B for the added tax evasion terms.

- We exclude one article on cooperation between a firm and tax authorities.

For tax evasion events, we add two further criteria. First, we select only cases of suspected tax evasion, as a case of tax evasion resulting in a conviction with a stated fine could distort the results because a fine that is unexpectedly low could give a positive signal to the capital market. We furthermore exclude articles on firms that self disclose tax evasion.

Entering the search terms into the online news archive Genios.de limited to a research period from 2003/01/01 to 2016/06/30 produces a total number of over 200,000 potential news articles.

As we wish to examine abnormal returns, we limit our sample to listed firms. A list of potential firms is created by accumulating the index constituents of the CDAX from 2003/01/01 to 2016/06/30 in three-month steps using Datastream.[7] The CDAX is a German stock market index that contains all firms on the Frankfurt stock exchange that are listed in the General or Prime Standard. This list was completed by the historical index constituents list published by Deutsche Börse (2008). After cleaning this list to remove double entries caused by common stocks and preferred stocks, we ultimately have a total of 976 firms.[8]

After combining our lists and excluding articles because they violated selection criteria, we have a sample of 180 observations. We exclude four firms with missing data due to a delisting from the stock exchange, which produces a sample of 176 events. Some firms are related to more than one news article. Thus, we deleted avoidance (evasion) articles if a firm was mentioned in earlier tax avoidance (evasion) articles that dated back fewer than 120 days. Our final sample, therefore, results in 98 articles[9] containing 176 observations of 66 different firms including 32 tax evasion events. We find articles with a variety of avoidance activities as well as articles on tax evasion. Examples of tax evasion include the deduction of illegal payments (such as bribe payments) which is not allowed according to German tax law, illegal employment practices of foreign subsidiaries or VAT fraud. The tax avoidance articles refer to common strategies such as international profit shifting or the exploitation of local tax loopholes. See Table 2.1 for a categorization of legal tax avoidance events. Among our events, 97 are related to profit shifting to tax havens. Of these events, 77 concern international profit shifting by multinational corporations to low-tax countries; 36 events are classified as tax relief schemes, tax loopholes or tax dodges. In this category, we include tax planning strategies that use losses to offset taxable income, use group structures to avoid thin capitalization rules or shift equity to countries where

[7] We use 2003/01/01 as the starting date because some lagged variables (i.e., corporate governance and shareholder data) are first available in 2002.

[8] A complete list of potential firms is available on request.

[9] 66 articles mention only one firm and 32 articles address multiple firms.

Table 2.1: Tax Planning Categories

Tax avoidance Category	n
Profit shifting to tax havens	
National: Taking advantage of different levels of local trade tax rates.	20
International: Income shifting to low tax countries (e.g., Malta, Ireland).	77
Tax relief schemes / tax loophole / tax dodge	
Use of losses (group taxation, depreciation).	18
Income Taxes (e.g., interest on equity, usage of models to avoid thin capitalization rules).	14
Other taxes (land transfer tax, vehicle tax, nuclear fuel tax).	4
Low ETR-articles	11
Tax avoidance events total	144

interest on equity is tax deductible (e.g., Belgium). Our final category consists of articles which mention companies with particularly low ETRs in general.

2.3.2 Variable Measurement

2.3.2.1 Dependent Variable (Cumulative Abnormal Returns)

To study stock price reactions to news items concerning corporate tax planning, we use an event study methodology with a three-trading-day event window centered on the event date. News dates falling on non-trading days are re-dated to the next consecutive trading day. For returns, we use total shareholder returns obtained from Datastream.

To compute the abnormal returns, we use the market model (see, for example, Nelson et al. 2008; Fang and Peress 2009; Edmans 2011). We begin by estimating the parameters α and β for each day in the event window in linear regressions of the form[10]

$$\mathrm{R}_{i,t} = \alpha_i + \beta_i \mathrm{R}_{M,t} + \epsilon, \tag{2.1}$$

where $\mathrm{R}_{i,t}$ is the daily return of a sample firm i on day t and $\mathrm{R}_{M,t}$ is the stock market return on day t.[11]

Let $E[\mathrm{R}_{i,t}]$ be the expected return calculated using the parameters α, β and $\mathrm{R}_{M,t}$, and $\mathrm{AR}_{i,t} = \mathrm{R}_{i,t} - E[\mathrm{R}_{i,t}]$ the abnormal return of firm i on day t. The accumulated abnormal return (CAR) is defined as the sum of abnormal returns within the three-day event window centered on event date d.

$$\mathrm{CAR}_i = \sum_{t=d-1}^{d+1} \mathrm{AR}_{i,t}. \tag{2.2}$$

[10] We use an estimation window of 100 trading days beginning 107 trading days before day t.

[11] The market return is approximated by the index return of the CDAX, the performance index of all German stocks in the General Standard or Prime Standard listed on the Frankfurt stock exchange.

Previous research uses various methods to calculate expected returns. We use three additional established models to calculate expected returns. First, we compute the expected return based on the market-adjusted model (e.g., Hanlon and Slemrod 2009; Horton and Serafeim 2010; Kelly and Ljungqvist 2012). In this case, the expected return equals the market return.

$$E[\mathrm{R}_{i,t}] = \mathrm{R}_{M,t}. \tag{2.3}$$

We estimate further expected returns with the Fama-French three-factor and the Carhart four-factor models (see, for example, Fang and Peress 2009; Kelly and Ljungqvist 2012). The expected returns of the Fama-French three-factor model are calculated as follows:

$$E[\mathrm{R}_{i,t}] = \alpha + \beta_1 \mathrm{R}_{M,t} + \beta_2 \mathrm{SMB}_t + \beta_3 \mathrm{HML}_t + \epsilon, \tag{2.4}$$

where $\mathrm{R}_{M,t}$ is the total return of our market portfolio - the CDAX. *SMB* and *HML* are mimicking portfolios to account for size and book-to-market-equity-related risks (see Fama and French 1993). Carhart (1997) incorporated an additional momentum factor to take into account the premium for winners and losers. The expected returns of the Carhart four-factor model are calculated as follows:[12]

$$E[\mathrm{R}_{i,t}] = \alpha + \beta_1 \mathrm{R}_{M,t} + \beta_2 \mathrm{SMB}_t + \beta_3 \mathrm{HML}_t + \beta_4 \mathrm{WML}_t + \epsilon, \tag{2.5}$$

where $\mathrm{R}_{M,t}$ is the total return of the market portfolio - the CDAX. *SMB* and *HML* are mimicking portfolios to account for size and book-to-market-equity-related risks. The fourth factor is the momentum factor (WML).

2.3.2.2 Independent Variables

To test hypotheses 1 and 2, we separate tax avoidance news from tax evasion news. We set a dummy variable *AVOIDANCE* to one for avoidance articles, and otherwise zero. To measure reputation risk (hypothesis 3), we use two different variables. First, in line with Fombrun and Shanley (1990), we assume that advertising can help to present a firm in a favorable light and is used for image building. Thus, intense advertising is accompanied by higher firm reputation risk. Therefore, we expect that higher advertising expenses result in a higher consumer backlash risk and, thus, higher reputation risk. We use *ADVERTISING*, which measures the gross marketing expenses scaled by sales + 1 EUR provided by The Nielsen Company.[13] *HIGH_ADVERTISING* takes the value one if *ADVERTISING* is above the event sample median, and is zero otherwise. Nielsen collects data on companies' advertising activities (e.g., television commercials, radio commercials,

[12] The factor data for the Fama-French three factor model as well as the Carhart four-factor model may be found at http://www.wiwi.hu-berlin.de/professuren/bwl/bb/data/fama-french-factors-germany.

[13] Note that German accounting data do not usually include information on advertising expenses. Thus, we purchased data from Nielsen.

poster advertising, internet advertising or advertising on public transportation). Based on market prices, Nielsen estimates gross advertising expenses. Because of the widespread collecting techniques of Nielsen, we can reasonably assume that companies with missing values engage in virtually no advertising. Thus, we set missing values to zero. Second, we use a family firm dummy. In line with Chen et al. (2010), we assume that family firms bear a higher reputation risk than their non-family counterparts. *FAMILY* takes the value one if a firm is listed on the DAXplus family index, and zero otherwise. We therefore merge the index constituent lists of the DAXplus family index at 2010/12/03, 2013/10/16, 2015/02/01 and 2016/12/29. As listing requirement for the DAXplus family index, the founding family must hold at least 25% of the firm's shares. If a member of the founding family is on the supervisory board, the required shareholding is decreased to 5% (see Deutsche Börse 2013).

We use two different variables to measure a firm's corporate governance level (hypothesis 4). First, in line with Chung and Zhang (2011), we assume that a firm's corporate governance level is positively related to the amount of institutional ownership. The variable *INSTITUTIONAL* is the amount of shares that are held by investment companies.[14] Missing values are replaced with data from the following year. In bivariate analyses, we use the variable *INSTITUTION (NON-INSTITUTION)* which equals one for all firms with (without) institutional shareholders, and is zero otherwise. Second, we use the variable *GOVERNANCE* to measure a firm's corporate governance quality.

GOVERNANCE is a firm's Corporate Governance Score, which is set to zero for missing values. In these cases *NOSCORE* takes the value one, and is zero otherwise. The variable *GOVERNANCE_HIGH* (*GOVERNANCE_LOW*) equals one for all firms with a governance score above (below) the sample median, otherwise it is zero. The Corporate Governance Score is provided by Datastream. In detail, it describes a company's systems and processes that ensure that the executives act in the best interest of their shareholders and generate long-term shareholder value (see Datastream International 2013). The Corporate Governance Score consists of five categories: Board Structure, Compensation Policy, Board Functions, Shareholder Rights and Vision and Strategy. The score is calculated with respect to the composition of the board (e.g., size of the board, percentage of non-executive board members, experts on the board with a financial or industrial background) and monitoring (e.g., monitoring board functions due to an established corporate governance committee or the monitoring of senior executives by a compensation committee).

[14] Datastream reports the percentage of total shares in issue of holdings of 5% or more held by investment companies (pension funds). Hence, we probably underestimate the percentage of institutional shareholders as only those shareholders are considered whose interest exceeds the 5% threshold. We use the sum of pension fund and investment companies' holding shares. In the end, we use solely the amount of shares held by investment companies, because the percentage of shares held by pension funds never exceeds the 5% threshold.

To test hypothesis 5, firm's tax risk is measured as firm's volatility of total tax expense scaled by assets over the previous five years (e.g., Gallemore and Labro 2015; Guenther et al. 2017). *LOW_TAX_RISK* is 1 for firms with a scaled tax volatility below the event sample 0.25-quantile, and zero otherwise.

We use the effective tax rate (*ETR*) derived from the firm's consolidated financial statements as a proxy for the market's ex ante perceptions regarding the firm's previous tax planning level (hypothesis 6). The ETR is defined as taxable income divided by pre-tax book income. ETRs are winsorized at zero and one. ETRs of loss firms are set to zero. We will use alternative measures of tax aggressiveness perceptions in Section 2.6.2 ("Alternative Measures for Tax Aggressiveness").

2.3.2.3 Control Variables

As control variables, we add further firm and article characteristics. We include the dummy variable *LOSS*, which will take the value one for firms with negative pretax income, and zero otherwise. We use log(*ASSETS*), defined as the natural logarithm of total assets in EUR 1,000s, to control for the firm's size. Further, we use industry dummies in the form of one-digit SIC Codes. We combine SIC Codes 1, 5, 7 and 8 into a single category because of small group sizes. In addition to consolidated financial data, we add an article-specific variable. *SAMEARTICLE* counts the amount of sample firms mentioned in the article. We include this variable because stock market reactions may be less pronounced for articles mentioning several companies.

2.3.3 Descriptive Statistics

The sample includes many large German corporations such as Siemens, Daimler, and Deutsche Bank. Table 2.2 displays descriptive statistics for firm and article characteristics. The advertising expenses are higher in the tax evasion sample. This result is biased because one firm's (Travel24.com) *ADVERTISING* amounts to 0.824. Excluding this observation, the mean declines to 0.0138 for the evasion sample. However, the mean is still higher than in the avoidance sample. Similarly, the percentage of family firms (*FAMILY*) is slightly higher in the evasion sample (12.5%) than in the avoidance sample (8%). The mean value of *GOVERNANCE* is 31.678 (33.823) in the avoidance (evasion) sample. For firms with no available Corporate Governance Score (*NO_SCORE*=1), *GOVERNANCE* is zero. After removing these firms, the mean of *GOVERNANCE* is 40.368 in the avoidance sample and 47.058 in the evasion sample. These high corporate governance levels could be due to the fact that the Corporate Governance Score is positively correlated with a firm's size. In the avoidance sample, 4.7% of firms' shares are held by institutional shareholders (*INSTITUTIONAL*). In contrast, only 1.8% of firms' shares are held by institutional shareholders in the evasion sample. The percentage of firms with low tax volatility over the previous five years (*LOW_TAX_RISK*) in the avoidance (evasion) sample amounts to 0.264 (0.188). Thus the amount of low tax risk firms is higher in the avoidance sample.

Table 2.2: Descriptive Statistics

AVOIDANCE	n	mean	SD	median	min	max
ADVERTISING	144	0.003	0.008	0.001	0	0.061
HIGH_ADVERTISING	144	0.528	0.501	1	0	1
FAMILY	144	0.083	0.277	0	0	1
GOVERNANCE	144	31.678	25.450	29.420	0	91.890
NO_SCORE	144	0.215	0.412	0	0	1
INSTITUTIONAL	144	4.729	11.776	0	0	92
LOW_TAX_RISK	144	0.264	0.442	0	0	1
ETR	144	0.275	0.185	0.286	0	1
LOSS	144	0.118	0.324	0	0	1
log(ASSETS)	144	17.255	2.227	17.622	9.122	21.509
SAMEARTICLE	144	3.951	2.873	3	1	10
EVASION	n	mean	SD	median	min	max
ADVERTISING	32	0.039	0.160	0.0002	0	0.824
HIGH_ADVERTISING	32	0.375	0.492	0	0	1
FAMILY	32	0.125	0.336	0	0	1
GOVERNANCE	32	33.823	30.247	34.485	0	85.280
NO_SCORE	32	0.281	0.457	0	0	1
INSTITUTIONAL	32	1.750	2.951	0	0	10
LOW_TAX_RISK	32	0.188	0.397	0	0	1
ETR	32	0.285	0.208	0.277	0	1
LOSS	32	0.156	0.369	0	0	1
log(ASSETS)	32	16.786	3.104	17.382	8.508	21.364
SAMEARTICLE	32	1.312	0.644	1	1	3

This table presents the descriptive statistics. *ADVERTISING* are the gross advertising expenses in EUR scaled by sales + 1 in EUR. *HIGH_ADVERTISING* takes the value 1 if gross advertising expenses in EUR scaled by sales + 1 in EUR is above the event sample median, otherwise 0. *FAMILY* takes the value 1 for companies of the DAXplus Family Index, otherwise 0. *GOVERNANCE* is a firm's Corporate Governance Score. Missing values are set to 0 and *NOSCORE* to 1, otherwise 0. *INSTITUTIONAL* is the amount of shares held by institutional shareholders (investment companies) in percent. *LOW_TAX_RISK* is one if firms' volatility of tax expense scaled by total assets over the five prior years is below the 0.25-sample-quantile, and zero otherwise. *ETR* is a firm firm's effective tax rate. LOSS is set to 1 if a company has negative pretax income, otherwise 0. log(*ASSETS*) is the natural logarithm of assets in EUR 1,000s. *SAMEARTICLE* counts the number of sample firms within the same news article. Note that all firm characteristic variables are based on prior year values.

The median sample firm in the avoidance (evasion) sample has an effective tax rate of 0.286 (0.277). The median firm has total assets amounting to EUR 31 billion. Thus, our sample consists of particularly large firms. Moreover, 11.8% (15.6%) of tax avoidance (evasion) firms have negative pretax income (*LOSS*). In the following we compare our sample to the U.S. sample from Hanlon and Slemrod (2009). We face a higher amount of loss firms. 12.6% in our sample are loss firms compared to 6.5% in the U.S. sample. 0.5% of our sample firms are retail firms, that is why we do not control for retail firms in our analysis. In contrast, Hanlon and Slemrod (2009) have 15.8% firms in the retail

sector. Our scaled advertising expenses amount to 0.93% while the U.S. firms' expenses amount to 0.15%. Since Hanlon and Slemrod (2009) do not report descriptive statistics for size measures (e.g., log(assets)), we compare our sample to Gallemore et al. (2014) who use an extended sample of Hanlon and Slemrod (2009). We observe some differences in characteristics with respect to firm size. Their median firm has total assets of 9.21 billion USD, while our median firm (assuming an exchange rate of 1.1109 USD/EUR) is more than four times bigger with total assets of about 42 billion USD. In sum, compared to the previously used U.S. samples, our sample includes larger firms with higher advertising expenses, a higher percentage of loss firms and a lower percentage of retail firms.

2.4 Results

2.4.1 Univariate Statistics

Table 2.3 displays descriptive statistics of CARs both overall and separately for tax avoidance news and tax evasion news. We use three different measures for significance to test whether the CARs are different from zero. First, we report an unadjusted t-test. Second, we compute a forecast-error adjusted t-test as proposed by Patell (1976). Third, we employ a non-parametric approach, the generalized sign test (Cowan 1992). Finally, we report a t-test of CARs between groups.

Overall, we obtain an average CAR of 0.09% with a high standard deviation of 2.96%. This estimate is not significantly different from zero. Hence, on average, news on tax planning do not affect firm value. However, for tax avoidance news only, the CAR estimate is 0.42%, which is significantly different from zero (according to the unadjusted t-test). In contrast, for tax evasion news only, the CAR estimate turns negative to -1.41%, which is significant according to all measures of statistical significance. In terms of market capitalization, the average evasion firm loses about 182 million euros market value.

With respect to hypotheses 1 and 2, we provide initial evidence that stock prices react positively (negatively) to news concerning corporate tax avoidance (evasion). To summarize the first result, we observe that legality matters. However, the positive effect regarding tax avoidance news is only (weakly) significant if one applies the unadjusted t-test. Moreover, note that only half of all avoidance events lead to positive cumulative abnormal returns. Therefore, we now turn to the analysis regarding the expected moderating effects on market responses to tax avoidance news (hypotheses 3 to 6).

Regarding hypotheses 3 to 6, we use all avoidance events and explore the average CAR by firm-level subsamples. First, we investigate the moderating effect of reputation risk for tax avoidance events. For this purpose, we examine subsamples divided by the reputation proxies ADVERTISING and FAMILY. The idea is to determine whether, in line with hypothesis 3, stock price reactions differ between firms with high reputation risk and firms with low risk.

Table 2.3: Cumulative Abnormal Returns

	n	$\overline{\text{CAR}}_{MM}$	pos/neg	t	t_{patell}	Z_{sign}	t_{bet}
ALL	176	0.0009	79/97	0.3845	-0.1176	-0.9136	-
AVOIDANCE	144	0.0042	72/72	1.7656*	1.2468	0.4041	3.0905***
EVASION	32	-0.0141	7/25	-2.6011**	-2.9206***	-2.9997***	-
HIGH_ADVERTISING	70	0.0094	37/33	2.4874**	2.1309**	0.6448	2.0911**
LOW_ADVERTISING	63	-0.0009	30/33	-0.2774	-0.1975	-0.0883	-
FAMILY	12	0.0051	7/5	0.6797	0.195	0.7262	0.1240
NON-FAMILY	132	0.0041	65/67	1.6397	1.2434	0.2032	-
GOVERNANCE_HIGH	69	0.0046	34/35	1.4422	1.0149	0.0538	-0.1262
NON-GOVERNANCE_LOW	44	0.0053	22/22	1.2251	0.9571	0.2524	-
NO_SCORE	31	0.0016	16/15	0.2716	0.0327	0.4905	-
INSTITUTION	57	0.0041	29/28	1.1937	0.5376	0.3056	-0.0411
NON-INSTITUTION	87	0.0043	43/44	1.3147	1.1689	0.2725	-
LOW_TAX_RISK	38	0.0129	23/15	2.3441**	2.3021**	1.4965	-1.9574*
HIGH_TAX_RISK	106	0.0011	49/57	0.4277	0.0748	-0.425	-
HIGH_ETR	35	0.0079	18/17	1.9277*	1.5026	0.4581	1.4141
LOW_ETR	92	0.0010	44/48	0.3952	0.1058	-0.112	-
LOSS	17	0.0137	10/7	1.1838	1.2264	0.7794	-

The event sample (ALL) is split into legal (*AVOIDANCE*) and illegal (*EVASION*) tax planning. $\overline{\text{CAR}}_{MM}$ is the mean value of market model CARs for the specific sub sample. *HIGH_ADVERTISING* are firms with gross advertising expenses above the event sample median, otherwise *LOW_ADVERTISING*. FAMILY are firms listed in the DAXplus family index, otherwise NON-FAMILY. INSTITUTION (NON-INSTITUTION) are all firms with (without) institutional shareholders. *GOVERNANCE_HIGH* are all firms with a governance score above the sample median, otherwise *GOVERNANCE_LOW*. *LOW_TAX_RISK* are firms with a five year volatility of income taxes scaled by assets below the event sample 0.25-quantile, otherwise firms are classified as *HIGH_TAX_RISK*. *HIGH_ETR* are firms with an effective tax rate above the event sample 0.75-quantile, otherwise *LOW_ETR*. LOSS are all firms with a negative pretax income. Note that all firm characteristic variables are based on prior year values. The t-test (t), t-patell test (t_{patell}) and generalized sign test (Z_{sign}) are tested against 0. t_{bet} is a t-test between groups (e.g., HIGH vs LOW ADVERTISING or FAMILY vs NON-FAMILY. In case of AVOIDANCE t_{bet} is tested against EVASION). We report test-statistics with significance levels as follows: *** indicates significance at 0.01,** at 0.05, and * at 0.10, two-tailed.

We obtain higher positive CARs for firms with high advertising expenses and a positive but not significant mean for family firms. Thus, we cannot find any negative impact of reputation risks on stock price responses to tax avoidance news. In contrast, the difference in CARs between *ADVERTISING_HIGH* and *ADVERTISING_LOW* is significantly positive (t-test, two-sided, p-value < 0.1). Stock prices react more positively to news of corporate tax avoidance with increasing reputation risk. This contrasts with the idea that news of tax avoidance results in a significant reputation loss that reduces shareholder value (which motivated us to formulate hypothesis 3).

We neither find significant differences between CARs for *GOVERNANCE_HIGH* and *GOVERNANCE_LOW* nor between *INSTITUTION* and *NON-INSTITUTION*. Hence, we cannot find evidence for a moderating effect of corporate governance for tax avoidance news, and therefore, we obtain no support for hypothesis 4.

Furthermore, we observe positive significant abnormal returns (t-test, two-sided, p-value < 0.05) for firms with a low tax risk (*LOW_TAX_RISK*), while we find no reaction for high tax risk firms. Furthermore the difference between these groups is significantly different form zero. These results are in line with hypothesis 5.

Finally, we separate the sample into presumably tax-aggressive and presumably non-tax-aggressive firms based on their ETR. In detail, we consider two categories of firms: First, firms with ETR above the 0.75-quantile and, second, firms with ETRs below or equal the 0.75-quantile. We do not find any impact on stock prices for any group and thus, no evidence for hypothesis 6. The stock price reactions of non-tax aggressive firms do not differ from other firms. This result is in contrast to the findings of Hanlon and Slemrod (2009) who report that U.S. firms with relatively high disclosed cash effective tax rates have a less negative market reaction. One reason for this difference may be the different tax setting under which U.S. and German firms operate. For U.S. firms (before 2018), the U.S. worldwide tax system applies whereas Germany applies a territorial tax system. This might affect the usage of the ETR as a measure of tax aggressiveness by market participants which is more appropriate under the worldwide tax system. Note, however, that our results hold using a variety of other tax aggressiveness proxies (see Section 6). We always find that it is the tax rate volatility (tax risk) that matters, and not the level of the previous tax rate.

Our average CARs ranging from -1.41% for evasion events up to $+1.29\%$ for low tax risk avoidance events is quite similar to other tax- or accounting-related studies. Hanlon and Slemrod (2009) observe, on average, CARs for tax shelter events amounting to -0.53% for their whole sample and -2.6% for firms in the retail sector. Furthermore, Cummins et al. (2006) and Sturm (2013) find comparable magnitudes of CARs for loss announcements of banks ranging from -1.25% to -0.6%. Bartov et al. (1998) find negative stock price reactions in a four-day event window ranging from -0.75% for announcements of write-offs down to -2.1% for asset write-downs exclusively. Hammersley et al. (2008) observe negative stock price reactions to internal control and, especially, material weaknesses amounting to -0.54% and -0.95%, respectively. However, compared to accounting restatement studies, these effects are rather small. Palmrose et al. (2004) and Desai et al. (2006) find CARs between -9.2% and -11% over a two-day (three-day) event window surrounding a restatement announcement.

We abstain from analyzing the stock price reaction for tax evasion events at the firm-category level because of the small sample size. To enhance our understanding of the variation of CARs, we now turn to a cross-sectional analysis.

2.4.2 Cross-Sectional Analysis of Cumulative Abnormal Returns

To investigate the relationship between CARs and the type of news as well as firm characteristics, we estimate the following linear regression:

$$\begin{aligned} CAR_i =& \alpha + \beta_1 AVOIDANCE_i + \beta_2 FIRM_i + \beta_3 ARTICLE_i \\ &+ \sum_{k=4}^{Y} \beta_k INDUSTRY_{k,i} + \sum_{l=Y+1}^{Z} \beta_l YEAR_{l,i}, \end{aligned} \tag{2.6}$$

where $AVOIDANCE_i$ is a dummy variable taking value 1 for a tax avoidance event and 0 for a tax evasion event, $FIRM_i$ is a vector of firm characteristics, and $ARTICLE_i$ is a vector of article characteristics. As firm characteristics, we include *HIGH_ADVERTISING*, *FAMILY*, *GOVERNANCE*, *NO_SCORE*, *ETR*, *LOSS*, *LOW_TAX_RISK*, an article specific variable *SAMEARTICLE*, industry and year fixed effects. Note that all firm characteristic variables are based on prior year values.

We compute multiple regressions to investigate firms' CARs. Models (1) to (4) are linear regressions using the full sample. We use four different models to calculate abnormal returns. Models (1) to (4) use the market model, the market-adjusted, the Fama-French three-factor and the Carhart four-factor model, models (5) to (8) are defined analogously for the avoidance sample.

Using the full sample (columns (1) to (4) of Table 2.4), we find that CARs in the presence of tax avoidance events are significantly higher than those in the presence of tax evasion events. This result provides evidence that stock markets react differently to news concerning corporate tax planning depending on whether the strategy is legal (avoidance) or illegal (evasion). We find neither *FAMILY*, *GOVERNANCE* nor *INSTITUTIONAL* to negatively affect market responses to tax planning. In contrast, we find that reactions of family firms are more positive, when using the Fama-French model to calculate the abnormal returns. Furthermore we find a positive effect of *ADVERTISING* in models (2), (3) and (4). Hence, we find no evidence that reputation costs of firms with high reputation risk exceed average tax planning benefits.

We find a significantly negative effect of low tax risk firms (*LOW_TAX_RISK*) in models (3) to (4). Thus, the significant positive stock price reactions are more likely to be observed for firms with relatively low tax risks. Investors do account for the firm-individual tax risk level when evaluating the tax planning activity of a firm. However, we find again no effect of *ETR* on firms' CARs. Finally, there is a significantly negative effect of the number of firms mentioned in the article, meaning that the positive effect of the news decreases with number of firms mentioned in the same article.

A limitation of the previous regressions (models (1) to (4)) is that the effect of firm-level variables may be heterogeneous between tax avoidance news and tax evasion news. If, for example, a specific characteristic has a positive moderating effect on CARs for tax avoidance news but a negative moderating effect for tax evasion news, the overall effect will be unclear. Hence, we run the same regressions separately for tax avoidance news only. Columns (5) to (8) of Table 2.4 display the results. Return models are defined analogously to models (1) to (4). We do not run a separate regression of tax evasion news because of the small sample size. With respect to our reputation risk variables, we obtain a significantly positive effect of advertising expenses in models (5) to (8) but no significant effect for family firms (except for Fama-French three-factor model). This partly indicates that stock prices of firms with high reputation risks react more positively to tax avoidance

Table 2.4: Multivariate Analysis of Cumulative Abnormal Returns

	All				Avoidance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CAR_{MM}	CAR_{MA}	CAR_{3F}	CAR_{4F}	CAR_{MM}	CAR_{MA}	CAR_{3F}	CAR_{4F}
AVOIDANCE	0.023***	0.021***	0.020***	0.017**				
	(0.007)	(0.007)	(0.007)	(0.007)				
HIGH_ADVERTISING	0.008	0.008*	0.012**	0.011**	0.012**	0.013**	0.013**	0.013**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)
FAMILY	0.010	0.010	0.028**	0.022*	0.013	0.011	0.028*	0.022
	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.015)	(0.015)
GOVERNANCE	0.000	−0.000	0.000	0.000	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NO_SCORE	−0.011	−0.013	−0.016	−0.015	−0.018*	−0.018*	−0.022**	−0.021*
	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.010)	(0.011)
INSTITUTIONAL	0.000	−0.000	0.000	0.000	0.000	−0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LOW_TAX_RISK	0.010	0.010	0.016*	0.015*	0.016**	0.015*	0.020**	0.019**
	(0.008)	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)
ETR	0.012	−0.001	0.016	0.013	0.010	−0.009	0.009	0.006
	(0.015)	(0.015)	(0.017)	(0.017)	(0.016)	(0.016)	(0.018)	(0.018)
LOSS	0.010	−0.002	0.013	0.012	0.006	−0.009	0.007	0.006
	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)
log(ASSETS)	−0.001	−0.001	−0.002	−0.002	−0.001	−0.002	−0.001	−0.001
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
SAMEARTICLE	−0.002**	−0.002*	−0.002	−0.002	−0.002**	−0.002*	−0.001	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	−0.006	0.016	0.031	0.032	0.025	0.054*	0.048	0.044
	(0.027)	(0.027)	(0.030)	(0.030)	(0.029)	(0.029)	(0.032)	(0.032)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	176	176	176	176	144	144	144	144
R^2	0.201	0.171	0.275	0.246	0.248	0.223	0.315	0.285
Adjusted R^2	0.048	0.013	0.137	0.103	0.073	0.043	0.156	0.118

Notes: This table reports the regression results of model of our baseline models. Models (1) to (4) contain the whole sample, while models (5) and (8) are including solely avoidance events. CAR_X are the cumulative abnormal returns of sample firms using the market model (X=MM), the market adjusted model (X=MA), the Fama-French three-factor model (X=3F) or the Carhart four-factor model (X=4F). *AVOIDANCE* takes value one for firms in the tax avoidance sample and zero for firms in the tax evasion sample. HIGH_ADVERTISING is one if firm's gross advertising expenses scaled by sales + 1 is above the sample median and zero otherwise. *FAMILY* takes the value one for firms listed in the DAXplus family index and zero otherwise. *GOVERNANCE* is a firm's corporate governance score obtained by datastream and 0 for missing data. *NO_SCORE* takes the value one for firms with a missing corporate governance score and zero otherwise. *INSTITUTIONAL* is the amount of shares held by institutional shareholders (investment companies) in percent. *LOW_TAX_RISK* is one for firms with a volatility of firm's current tax expense scaled by total assets over the five prior years is below the sample 0.25-quantile and zero otherwise. *ETR* is the firm's effective tax rate defined as income taxes divided by pretax income. Cases with negative pretax income are set to zero. *ETR* is winsorized at zero and one. *LOSS* takes the value one for firms with a negative pretax income, and zero otherwise. log(*ASSETS*) is the natural logarithm of total assets in EUR 1,000s. *SAMEARTICLE* counts the number of sample firms within the same news article. Note that all firm characteristic variables are based on prior year values. Significance levels are as follows: *** indicates significance at 0.01,** at 0.05, and * at 0.10, two-tailed.

news than other firms, which contrasts with the idea that tax avoidance is accompanied by significant reputation losses. Thus, we do not confirm hypothesis 3 that legal tax planning is related to reputation costs that, on average, exceed tax planning benefits. Moreover, our results do not support hypothesis 4, as both measures of the level of corporate governance (*GOVERNANCE* and *INSTITUTIONAL*) remain insignificant in models (5) to (8). We find a positive effect of *LOW_TAX_RISK*, which supports our hypothesis 5 and suggests that market reactions to news about corporate tax avoidance are particularly pronounced for firms with low tax risks. Again, contrary to hypothesis 6, we find no effect of ETR on

CARs. Thus stock price reactions do not differ between presumably non-tax-aggressive and tax-aggressive firms.[15]

2.5 Additional Analyses

2.5.1 Tax Avoidance Classification

DeZoort et al. (2017) provide evidence that the perceived ethicality of corporate tax strategies depend on the used avoidance method. In contrast to accountants, the public does not focus on legality only, but also takes into account inequity judgments and economic patriotism. We, therefore, investigate cumulative abnormal returns with respect to their article categories of Table 2.1. We find no significant CARs for "tax haven"- and "low-ETR"-articles. In contrast, we find significant positive CARs for articles that deal with corporate tax relief schemes and the exploitation of tax loopholes ($\overline{\text{CAR}}_{MM}$=0.0103, t-test p-value: 0.08268). Furthermore, we test all article categories for differences in CARs. We find no significant differences in CARs between article groups except between CARs of "Tax Relief Schemes" and "Low ETR-Articles" (t-test p-value: 0.06753). However, we do not find significant differences between article categories in multivariate analyses. Moreover, we test within "tax haven"-articles if CARs are affected differently by national and international profit shifting due to the argument of economic patriotism. However, we find no significant differences in CARs.

2.5.2 Spillover Effects

In this section, we investigate the spillover effects of tax avoidance and evasion news on firms in the same industry. We believe that we may observe non-zero abnormal returns for industry peers when we observe non-zero abnormal returns for firms mentioned in tax avoidance and evasion news. The literature reports intra-industry spillover effects for other types of firm events that induce abnormal returns (e.g., Firth 1996; Gleason et al. 2008). However, we are unaware of any study investigating spillover effects with respect to tax planning news. Firth (1996) observes positive (negative) within-industry spillover effects for upward (downward) dividend adjustments, i.e., he finds positive abnormal returns for non-adjusting peer firms in the case of upward dividend adjustments and negative abnormal returns for downward adjustments. Gleason et al. (2008) find intra-industry contagion effects of accounting restatements. They observe negative abnormal returns of non-restating firms within the same industry.

In line with Gleason et al. (2008), we divide our sample into a subsample containing solely tax avoidance events with positive CARs of 0.1% or greater and tax evasion events

[15] We conduct additional regressions with different measures of tax aggressiveness. We find no significant effect of any measure. See Section 6 ("Alternative Measures for Tax Aggressiveness") for further details.

Table 2.5: Spillover Effect Analysis

		Dependent variable: CAR_{MM}					
		Event firms		Matched portfolio			
	n	mean	t	mean	t	t_{patell}	Z_{sign}
AVOIDANCE	49	0.025	5.8834^{t}	0.0112	1.4604	0.9185	-0.2548
EVASION	16	-0.0284	-4.011^{t}	-0.0278	-1.9589*	-1.9025*	-1.8529*

AVOIDANCE is a subsample of tax avoidance firms with CARs >= 0.1% and available matching firms. EVASION is a subsample of tax avoidance firms with CARs <= -0.1% and available matching firms. The t-test (t), t-patell test (t_{patell}) and generalized sign test (Z_{sign}) are tested against 0. Significance levels are as follows: *** indicates significance at 0.01,** at 0.05, and * at 0.10, two-tailed, # significant by construction.

with negative CARs below or equal to -0.1%.[16] In this subsample, we match peer firms based on a event firm's 4-digit SIC code (see, for example, Firth 1996). We drop 44 firms from the subsample because of missing 4-digit SIC code matches (i.e., there is no listed industry peer). In the event of more than one matching firm, we create a portfolio of matched firms weighted by prior year peer firms' market capitalization. The median matched portfolio for avoidance and evasion events consist of three peer firms. For these matched portfolios (firms), we calculate the abnormal returns within the event window in the same manner as in Section 2.3.2.1. The statistical significance is tested with an unadjusted t-test, an adjusted t-test proposed by Patell (1976) and a generalized sign test. We only report the unadjusted t-test for event firms because these CARs are significant by construction. The results are reported in Table 2.5. We find a negative significant spillover effect of tax evasion news, while we do not observe spillover effects in the tax avoidance sample. Thus, the legality of tax planning does not only determine the direction of the market response but also affects the likelihood of intra-industry spillover effects.

2.6 Robustness Checks

We next subject our analysis to a set of robustness tests regarding our reputation risk, tax aggressiveness, and tax risk measures as well as potential confounding events that may have affected our cumulative abnormal returns.

2.6.1 Alternative Measure for Reputation Risk

We use media coverage as an alternative measure of reputation risk as defined in Vega (2006):

$$\text{MEDIA\_COVER} = \sum_{k=2}^{41} \text{NEWS}_{i,t-k} \tag{2.7}$$

[16] Gleason et al. (2008) use a threshold of -1%; because of the smaller magnitude of CARs in our sample, we reduce this threshold to 0.1% and -0.1%, respectively.

MEDIA_COVER measures the media presence during a forty-day window beginning two days before the tax planning event. $\text{NEWS}_{i,t-k}$ is a dummy variable that equals one if firm i is mentioned in a news headline or lead paragraph of a trans-regional newspaper on day $t-k$.[17]

Table 2.6: Multivariate Analysis of CAR using Media Coverage as Measure of Reputation Risk

	All				Avoidance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CAR_{MM}	CAR_{MA}	CAR_{3F}	CAR_{4F}	CAR_{MM}	CAR_{MA}	CAR_{3F}	CAR_{4F}
AVOIDANCE	0.024***	0.022***	0.021***	0.018**				
	(0.007)	(0.007)	(0.007)	(0.008)				
MEDIA_COVER	0.004	0.004	0.019	0.016	0.019	0.016	0.027*	0.025
	(0.013)	(0.013)	(0.015)	(0.015)	(0.014)	(0.014)	(0.016)	(0.016)
FAMILY	0.011	0.011	0.030**	0.024*	0.016	0.013	0.032**	0.026*
	(0.012)	(0.012)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)
GOVERNANCE	0.000	−0.000	−0.000	−0.000	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NO_SCORE	−0.010	−0.012	−0.015	−0.014	−0.017*	−0.016*	−0.021**	−0.019*
	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
INSTITUTIONAL	0.000	−0.000	0.000	0.000	0.000	−0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ETR	0.014	0.000	0.018	0.015	0.015	−0.002	0.016	0.013
	(0.015)	(0.015)	(0.017)	(0.017)	(0.016)	(0.016)	(0.018)	(0.018)
LOSS	0.010	−0.003	0.011	0.010	0.005	−0.010	0.005	0.004
	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)
LOW_TAX_RISK	0.010	0.009	0.014	0.013	0.014*	0.014*	0.018**	0.017*
	(0.008)	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)
log(ASSETS)	−0.001	−0.001	−0.002	−0.002	−0.002	−0.003	−0.003	−0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
SAMEARTICLE	−0.002*	−0.002	−0.002	−0.002	−0.002**	−0.002*	−0.001	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	−0.008	0.014	0.039	0.039	0.033	0.058*	0.063*	0.058
	(0.030)	(0.030)	(0.033)	(0.034)	(0.032)	(0.032)	(0.035)	(0.036)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	176	176	176	176	144	144	144	144
R^2	0.188	0.156	0.260	0.231	0.226	0.188	0.302	0.271
Adjusted R^2	0.033	−0.005	0.119	0.084	0.046	−0.000	0.140	0.102

This table reports the regression results with MEDIA_COVER as alternative measure for *HIGH_ADVERTISING*. Models (1) to (4) contain the whole sample, while models (5) and (8) are including solely avoidance events. CAR_X are the cumulative abnormal returns of sample firms using the market model (X=MM), the market adjusted model (X=MA), the Fama-French three-factor model (X=3F) or the Carhart four-factor model (X=4F). *AVOIDANCE* takes value one for firms in the tax avoidance sample and zero for firms in the tax evasion sample. *HIGH_ADVERTISING* is one if firm's gross advertising expenses scaled by sales + 1 is above the sample median and zero otherwise. *FAMILY* takes the value one for firms listed in the DAXplus family index and zero otherwise. *GOVERNANCE* is a firm's corporate governance score obtained by datastream and 0 for missing data. *NO_SCORE* takes the value one for firms with a missing corporate governance score and zero otherwise. *INSTITUTIONAL* is the amount of shares held by institutional shareholders (investment companies) in percent. *LOW_TAX_RISK* is one for firms with a volatility of firm's current tax expense scaled by total assets over the five prior years is below the sample 0.25-quantile and zero otherwise. *ETR* is the firm's effective tax rate defined as income taxes divided by pretax income. Cases with negative pretax income are set to zero. *ETR* is winsorized at zero and one. *LOSS* takes the value one for firms with a negative pretax income, and zero otherwise. log(*ASSETS*) is the natural logarithm of total assets in EUR 1,000s. *SAMEARTICLE* counts the number of sample firms within the same news article. Note that all firm characteristic variables are based on prior year values. Significance levels are as follows: *** indicates significance at 0.01,** at 0.05, and * at 0.10, two-tailed.

We expect that firms with a strong public presence will react more intensely to reputation damages. *MEDIA_COVER* is not significantly negative in any model (Table 2.6

[17] These data are obtained using Genios.de. The mean of *MEDIA_COVER* is 15.73 and has a minimum (maximum) value of 0 (39).

displays the results). Thus, in line with the previously reported results, we do not observe any negative effect of reputation risks. The overall negative effect of *LOW_TAX_RISK* in the full sample diminishes. However, *LOW_TAX_RISK* remains significantly negative in the avoidance sample, which is in line with the idea that tax risk is primarily taking into account in the case of corporate tax avoidance.

2.6.2 Alternative Measures for Tax Aggressiveness

So far, we used a firms effective tax rate as measure for the market's ex ante perceptions regarding the level of the firm's previous tax aggressiveness. We conduct additional regressions with multiple different measures of tax aggressiveness, including a common GAAP ETR, two-year GAAP ETR, CURRENT ETR, CASH ETR, ETR STR QUOTA and a tax rate differential. Because of missing data, we had to remove 21 observations when estimating models with the cash effective tax rate. Furthermore we use book-tax differences since this measure is accompanied by two advantages compared to conservative GAAP effective tax rate measures. First, the measure is also meaningful for loss firms. This is important because over one-tenth of our sample firms are loss firms. Second, it covers deferral strategies. *BTD* are calculated as the difference between pretax book income and taxable income scaled by lagged total assets.[18] Taxable income is estimated by current tax expense (total tax expense - deferred taxes) divided by the years statutory tax rate (*STR*).[19] Thus, a high value of BTD indicates a high level of tax avoidance. Our measures are defined as follows:

$$\text{GAAP ETR} = \frac{total\ tax\ expense}{pre\text{-}tax\ income} \tag{2.8}$$

$$\text{TWOYEAR GAAP ETR} = \frac{\sum total\ tax\ expense}{\sum pre\text{-}tax\ income} \tag{2.9}$$

$$\text{CURRENT ETR} = \frac{current\ tax\ expense}{pre\text{-}tax\ income} \tag{2.10}$$

$$\text{CASH ETR} = \frac{cash\ tax\ expense}{pre\text{-}tax\ income} \tag{2.11}$$

$$\text{ETR STR QUOTA} = \frac{GAAP\ ETR}{STR} \tag{2.12}$$

$$\text{TAX-RATE-DIFFERENTIAL} = GAAP\ ETR - StaturyTaxRate \tag{2.13}$$

$$\text{BTD} = \frac{pretax\ income_t - \frac{total\ tax\ expense_t - deferred\ taxes_t}{STR_t}}{total\ assets_{t-1}} \tag{2.14}$$

In line with our baseline results, we find no significant effect on stock market responses for any measure in our sample.

[18] We set three missing values of deferred taxes to zero.

[19] We obtain statutory tax rates to estimate taxable income as follows: German firms are subject to a corporate income tax, a solidarity surcharge (5.5% of the corporate tax) and a local business tax. The total statutory tax burden amounts to 38.9% for 2002, 40.7% for 2003, 38.9% for 2004-2007, and 30.2% since 2008 (OECD 2014).

2.6.3 Confounding Events

We use the online database of the Federal Gazette to obtain business disclosure data (e.g., dividend announcements, changes of supervisory board) for the sample firms.[20] Since 2003, listed firms have been obliged to file firm announcements required by company or capital market law to the Federal Gazette. We create a subsample and drop observations with announcements within the event window. We drop 17 events because of confounding events. The results (reported in Table 2.8 in Appendix C) remain qualitatively unchanged.

2.6.4 Low Tax Risk Firms

Guenther et al. (2017) find that low tax rates are more persistent than high tax rates. Therefore we test, in unreported results, if our finding that firms' CARs are negatively affected by firms' tax risk is driven by firms with relatively low or high levels of scaled taxes. We use the prior five year scaled tax mean value ($M.SCALETAX$), instead of the volatility. The correlation between LOW_TAX_RISK and $M.SCALETAX$ is relatively strong and amounts to -0.40, indicating that firms that are paying relatively low amounts of taxes with respect to their firm size can sustain a relatively low volatility, which is in line with Guenther et al. (2017). In contrast to our tax risk measure, we do not find a significant effect for any model for the five year mean value of scaled taxes. Thus our results are not driven by firms' scaled tax level of the previous years, but by the firms' respective scaled tax volatility. This confirms our baseline result that prior tax risk, but not prior tax rates, determine the market response to tax avoidance news. Other results remain qualitatively unchanged.

2.7 Discussion

By investigating short-term stock price reactions to news concerning corporate tax planning strategies, our study advances previous research on the effect of corporate tax strategies on firm value in three ways. First, we find that legality is an important determinant that moderates the effect of tax planning on firm value. We observe negative market responses to tax evasion news, while we find positive market reactions to avoidance news for firms with low tax risks. Moreover, we find significant and negative intra-industry spillover effects for tax evasion news, while we find none for tax avoidance news. Thus, the legality of tax planning matters and has to be considered if one is evaluating the consequences of tax planning for the firm's shareholders. Second, we find that prior tax risk determines market responses to tax avoidance news. Only if tax risk is low, i.e., past tax volatility is low, the stock market response to tax avoidance news are positive. This complements recent research regarding the relationship between tax risk and tax avoidance (Guenther et al. 2017; Drake et al. 2017; Dyreng et al. 2018).

[20] Data are collected from the official Federal Gazette's homepage www.Bundesanzeiger.de.

Third, while prior studies show that also legal tax planning can lead to reputational costs (Hardeck and Hertl 2014; Antonetti and Anesa 2017), we find that stock market participants do not expect that, on average, reputational and agency costs exceed legal tax planning benefits. This suggests that shareholders regard legal tax planning strategies as a positive signal that a firm's management acts in their best interest as long as the associated tax risk is considerably low.

Our results have implications for tax policy as well as practice. Regarding practitioners, our findings highlight the importance of firms' tax compliance management systems. These systems should ensure that firms are compliant with all legal tax requirements to reduce the risk of negative firm value effects caused by tax evasion. Moreover, our results suggest that the stock market considers tax avoidance as a positive net present value investment only if tax management is able to persistently reduce the tax burden which requires a professional tax risk management. Currently, an important issue for tax managers is to decide whether also legal tax planning bears significant reputational risks. Our result that we don't find a significant moderating effect of reputation risk on market responses to avoidance news is in line with the results of Gallemore et al. (2014). From a shareholder viewpoint, this result causes doubt on the justification of tax manager statements that potential harm to firm reputation is the second-most important reason preventing firms from engaging in tax planning (Graham et al. 2014).

From a tax policy perspective, our results reveal that the definition of the borderline between legality and illegality of tax planning has an important effect on corporate tax strategies. Law expresses social values and legality may act as a reference point when individuals rationalize tax planning decisions (Blaufus et al. 2016b). For example, in contrast to other countries such as Canada, in Germany even not complying with the general anti-avoidance rule is not under penalty. Moreover, governments may recognize that reputational costs of tax avoidance might not be as high as expected and, therefore, should not overestimate effects of new tax transparency rules that 'name-and-shame' tax avoiding firms.

In sum, the results of this paper provide new insights into the ongoing discussions among both academics and managers regarding whether tax planning strategies yield positive net shareholder value. Our findings suggest that tax avoidance, in contrast to tax evasion, is on average a positive net present value investment for those firms that do not exhibit particularly high tax risk. However, we are aware that our sample consists primarily of large, multinational companies. Therefore, we should be careful when transferring our results to SMEs. Moreover, any interpretation of our results must keep the German institutional and cultural context in mind. Prior research finds that national culture affects firm-level tax compliance (Alm and Torgler 2006). Additionally, there are also institutional differences across countries that could affect tax planning decisions. For example, in Germany, there are neither criminal nor civil penalties for legal tax avoidance

while in other countries penalties for legal (but aggressive) tax planning exist. Thus, an interesting task for future research would be to examine whether the costs of tax planning, especially reputation costs, differ between countries.

2.8 Appendix A

Table 2.7: Newspapers Included in Database Research

Aachener Nachrichten	Main-Taunus-Kurier
Aachener Zeitung	Märkische Allgemeine
Aar-Bote	Meininger Tagblatt
Alb Bote	Meller Kreisblatt
Allgemeine Zeitung Mainz	Meppener Tagespost
B.Z.	Metzinger Uracher Volksblatt
Badische Zeitung	Mittelbayerische Zeitung
Bayerische Rundschau	**Mitteldeutsche Zeitung**
Bayerische Staatszeitung	Münchner Abendzeitung
Bergedorfer Zeitung	Nassauische Neue Presse
Bergische Morgenpost	Neue Osnabrücker Zeitung
Berliner Kurier	Neue Presse
Berliner Morgenpost	Neue Westfälische
Berliner Morgenpost online	Neue Württembergische Zeitung
Berliner Zeitung	Neuss-Grevenbroicher Zeitung
Bersenbrücker Kreisblatt	Norddeutsche Neueste Nachrichten
Bild der Frau	Nordkurier
Bonner General-Anzeiger	Nürnberger Nachrichten
Börsen-Zeitung	Nürnberger Zeitung
Bramscher Nachrichten	Oberhessische Zeitung
Brigitte	Oeffentlicher Anzeiger
BUNTE	Oschatzer Allgemeine Zeitung
Bürstädter Zeitung	Osterländer Volkszeitung
chrismon	Ostthüringer Zeitung
Coburger Tageblatt	**Passauer Neue Presse**
Darmstädter Echo	Potsdamer Neueste Nachrichten
Der Prignitzer	Reutlinger General-Anzeiger
DER SPIEGEL	Reutlinger Nachrichten
Der Tagesspiegel	Rhein-Hunsrück-Zeitung
DIE KITZINGER	**Rheinische Post**
DIE WELT	Rhein-Lahn-Zeitung
DIE ZEIT	Rhein-Zeitung
DIE ZEIT online	Rundschau für den Schwäb. Wald
Döbelner Allgemeine Zeitung	Saale-Zeitung
Dresdner Neueste Nachrichten	Saarbrücker Zeitung
Ems-Zeitung	**Sächsische Zeitung**
Euro	Schwäbische Zeitung
EXPRESS	Schweriner Volkszeitung
FAZ.net	Solinger Morgenpost
Financial Times Deutschland	Sonntag aktuell
FTD online	**SPIEGEL ONLINE**
FOCUS	SPIEGEL Online International
FOCUS-MONEY	SPIEGEL special
Frankenpost	Sport Bild
Frankfurter Allgemeine Zeitung	Stern
Frankfurter Neue Presse	Straubinger Tagblatt
Frankfurter Rundschau	**Stuttgarter Nachrichten**
Fränkischer Tag	**Stuttgarter Zeitung**
Frau von Heute	Sublokalteile der Stutt. Zeitung
Freie Presse	**Süddeutsche Zeitung**
Freies Wort	Süddeutsche Zeitung Magazin

Table 2.7 continued from previous page

Funk Uhr	Süddeutsche Zeitung PRIMETIME
Gelnhäuser Tageblatt	Süddeutsche Zeitung WISSEN
Gießener Anzeiger	Südkurier
Hamburger Abendblatt	Südthüringer Zeitung
Hamburger Abendblatt online	SÜDWEST PRESSE
Hamburger Morgenpost	**sueddeutsche.de**
Handelsblatt	SUPERillu
Handelsblatt Live	tagesspiegel.de
Handelsblatt Magazin	Taunus Zeitung
Handelsblatt Newcomer-Zeitung	**taz**
Handelsblatt online	Thüringer Allgemeine
Harburger Anzeigen & Nachrichten	Thüringische Landeszeitung
Heilbronner Stimme	Torgauer Zeitung
Hochheimer Zeitung	Trierischer Volksfreund
Höchster Kreisblatt	UNISPIEGEL
Hofheimer Zeitung	Usinger Anzeiger
Hohenloher Tagblatt	WELT AKTUELL
Hohenzollersche Zeitung	WELT am SONNTAG
HÖRZU	WELT KOMPAKT
Idsteiner Zeitung	**WELT ONLINE**
Jüdische Allgemeine	Westdeutsche Zeitung
Kölner Stadt-Anzeiger	Westerwälder Zeitung
Kölnische Rundschau	Westfalen-Blatt
Kreis-Anzeiger	Wiesbadener Kurier
KulturSPIEGEL	Wiesbadener Tagblatt
Lampertheimer Zeitung	**WirtschaftsWoche**
Landshuter Zeitung	WirtschaftsWoche Green
Lausitzer Rundschau	**WirtschaftsWoche online**
Lauterbacher Anzeiger	Wirtschaftszeitung
Leipziger Volkszeitung	Wittlager Kreisblatt
Lingener Tagespost	Wormser Zeitung
Main-Post	ZEIT Campus
Main-Spitze	ZEIT Geschichte

The table contains all newspaper of our underlying database. Newspaper with articles in our sample are highlighted in bold characters.

2.9 Appendix B

For tax avoidance we used the following search terms:

$COMPANYNAME AND ((steuer OR steuern) ndj2 (sparen OR spart OR drückt OR drücken OR umgehen OR umgeht OR vermeiden OR vermeidet OR minimieren OR minimiert) OR steuerdumping OR steuerzuflucht OR steuerflucht OR steuerdeal OR steuerparadies OR steueroase OR steuerspar OR steuertrick* OR steuerloch OR steuerschlupfloch OR steuerloch OR steuerkniff OR steuerarbitrage OR steuervorteil*)*

For tax evasion, we used the following search terms:

*$COMPANYNAME AND ((steuer OR steuern) AND (hinterziehen OR hinterzogen OR hinterzieht OR hinterzog) OR *steuerbetrug* OR *steuerfahnd* OR *steuerhinterziehung* OR *steuerrazzi* OR *steuerstraftat* OR *steuervergehen OR *steuerdelikt*)*

$COMPANY$ is replaced with the company names from our potential firm list.

2.10 Appendix C

Table 2.8: Regression Results: No Confounding Events

	All				Avoidance			
	(1) CAR_{MM}	(2) CAR_{MA}	(3) CAR_{3F}	(4) CAR_{4F}	(5) CAR_{MM}	(6) CAR_{MA}	(7) CAR_{3F}	(8) CAR_{4F}
AVOIDANCE	0.020***	0.018**	0.020**	0.016*				
	(0.007)	(0.007)	(0.008)	(0.009)				
HIGH_ADVERTISING	0.009*	0.009*	0.014**	0.013**	0.014**	0.016***	0.016**	0.016**
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
FAMILY	0.009	0.009	0.031**	0.025*	0.016	0.014	0.035**	0.027
	(0.013)	(0.013)	(0.015)	(0.015)	(0.015)	(0.015)	(0.017)	(0.017)
GOVERNANCE	0.000	−0.000	0.000	0.000	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NO_SCORE	−0.007	−0.006	−0.012	−0.011	−0.015	−0.014	−0.020*	−0.019
	(0.009)	(0.009)	(0.011)	(0.011)	(0.010)	(0.010)	(0.011)	(0.011)
INSTITUTIONAL	0.000	−0.000	0.000	0.000	0.000	−0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LOW_TAX_RISK	0.012	0.011	0.020**	0.020*	0.020**	0.018**	0.026***	0.025**
	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.010)	(0.010)
ETR	0.015	−0.000	0.017	0.014	0.009	−0.010	0.009	0.006
	(0.015)	(0.015)	(0.018)	(0.018)	(0.017)	(0.017)	(0.018)	(0.019)
LOSS	0.010	−0.005	0.012	0.011	0.007	−0.009	0.008	0.008
	(0.009)	(0.009)	(0.011)	(0.011)	(0.010)	(0.010)	(0.011)	(0.011)
log(ASSETS)	−0.000	−0.000	−0.001	−0.001	−0.001	−0.002	−0.002	−0.001
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
SAMEARTICLE	−0.002**	−0.002*	−0.002*	−0.002*	−0.002**	−0.002	−0.002	−0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	−0.016	0.000	0.025	0.026	0.025	0.052*	0.054	0.050
	(0.028)	(0.028)	(0.032)	(0.032)	(0.031)	(0.030)	(0.033)	(0.034)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	159	159	159	159	133	133	133	133
R^2	0.206	0.164	0.269	0.239	0.259	0.228	0.331	0.300
Adjusted R^2	0.035	−0.016	0.111	0.076	0.068	0.029	0.159	0.120

This table presents the regression results with excluded potentially confounded events. Models (1) to (4) contain the whole sample, while models (5) and (8) are including solely avoidance events. CAR_X are the cumulative abnormal returns of sample firms using the market model (X=MM), the market adjusted model (X=MA), the Fama-French three-factor model (X=3F) or the Carhart four-factor model (X=4F). *AVOIDANCE* takes value one for firms in the tax avoidance sample and zero for firms in the tax evasion sample. HIGH_ADVERTISING is one if firm's gross advertising expenses scaled by sales + 1 is above the sample median and zero otherwise. *FAMILY* takes the value one for firms listed in the DAXplus family index and zero otherwise. *GOVERNANCE* is a firm's corporate governance score obtained by datastream and 0 for missing data. *NO_SCORE* takes the value one for firms with a missing corporate governance score and zero otherwise. *INSTITUTIONAL* is the amount of shares held by institutional shareholders (investment companies) in percent. *LOW_TAX_RISK* is one for firms with a volatility of firm's current tax expense scaled by total assets over the five prior years is below the sample 0.25-quantile and zero otherwise. *ETR* is the firm's effective tax rate defined as income taxes divided by pretax income. Cases with negative pretax income are set to zero. *ETR* is winsorized at zero and one. *LOSS* takes the value one for firms with a negative pretax income, and zero otherwise. log(*ASSETS*) is the natural logarithm of total assets in EUR 1,000s. *SAMEARTICLE* counts the number of sample firms within the same news article. Note that all firm characteristic variables are based on prior year values. Significance levels are as follows: *** indicates significance at 0.01,** at 0.05, and * at 0.10, two-tailed.

Chapter 3

Negotiating with the Tax Auditor: The Effect of Tax Auditors' Negotiation Strategy on Firms' Tax Adjustments*

Abstract

Due to considerable tax law ambiguity, the outcome of a tax audit depends on a negotiation between the taxpayer's advisor and the auditor. Using German tax audit data, we empirically investigate which negotiation tactics tax auditors use during tax audits, and we analyze the effect of their chosen tactics on audit adjustments. The results show that on average, auditors are able to push through approximately 40% of the detected pre-negotiation audit differences during tax audit negotiations. We find that competitive auditor negotiation strategies dominate more cooperative or neutral strategies. The use of a competitive instead of a neutral strategy increases the negotiation rate by ten percentage points, on average. Further analyses reveal that tax auditors' negotiation strategies are strongly affected by the perceived strategies of their opponents. Our results imply that firms' tax burden does not only depend on tax law facts, but also to a significant degree on firm and auditor characteristics as well as the negotiation skills of auditors and tax advisors. Moreover, the fact that tax auditors rely heavily on the use of competitive negotiation tactics is in opposition to the objective of cooperative tax compliance programs aiming at establishing a trustful relationship among tax administrations and taxpayers to increase voluntary tax compliance.

* This chapter is a co-authored work with Prof. Dr. Kay Blaufus (Leibniz University Hannover), Prof. Dr. Daniela Lorenz (University of Würzburg) and Dr. Benjamin Peuthert (Leibniz University Hannover).

3.1 Introduction

This study examines which negotiation strategies tax auditors use, how these strategies affect audit outcomes, and which factors determine the use of different tax auditor negotiation strategies. In financial accounting research, it is widely accepted that financial statements are, in part, a product of negotiations between the auditor and client management (Antle and Nalebuff 1991). However, prior tax research is almost silent with regard to negotiations on tax matters. We are aware of only one other study in this area. Bobek et al. (2018) examine persuasive tactics used between the tax preparer and the taxpayer to resolve contentious issues. Tax audit negotiations are not investigated yet. The lack of tax research on this topic strongly contrasts with observations from tax audit practice. Hoopes et al. (2012), for example, cite a report by (PricewaterhouseCoopers 2004, p. 6) on tax risk management which states that "*in a number of countries the final agreement of a tax return often ends in a 'horse trade' between the taxpayer and the relevant revenue authority.*" Accordingly, tax advisory firms regularly advertise their tax audit support services by highlighting their negotiation experience with the tax administration (e.g., Deloitte 2017; PricewaterhouseCoopers 2017). This suggests that negotiations play an important role in the assessment of a firm's final tax burden. In principle, tax auditors should thus be able to affect tax adjustments based on the negotiation strategy that they choose. However, to what extent the tax auditor is in fact able to push through pre-negotiation findings in an audit negotiation, how much this depends on the chosen negotiation strategy, and what drives the auditor's strategy choice is currently unknown.

To investigate these questions, we conduct a survey with 610 experienced German tax auditors. We ask auditors to describe their experiences in their last two cases. Using a survey design has advantages and disadvantages. In contrast to computer-based experiments, which dominate research on negotiations in financial auditing, we can rely on real cases and thus avoid artificial experimental settings. Moreover, a survey enables us to examine more variables than can usually be examined in experiments, and it allows us to draw quantitative conclusions on the effect size of negotiation strategies. However, while it is easy to make strong causal inferences with experiments, it is more complicated to do so using a survey study because the observed tax adjustments depend not only on the chosen negotiation strategies but also on firms' characteristics (which determine the aggressiveness of their avoidance strategies) and auditors' characteristics (which determine the auditors' detection ability). To separate the effect of tax auditors' negotiation strategy, we use a multi-stage maximum likelihood estimation that extends the detection-controlled model of Feinstein (1990, 1991). In the first stage, the firm is attributed a propensity for tax planning activities (based on specific observable firm characteristics). In the second stage, we model the detection process during the tax audit depending on observable auditor characteristics, such as professional experience. In the third stage, we

model the tax auditors' ability to negotiate based on the applied negotiation strategy. The advantage of the multi-stage model we use is that conclusions can be drawn for each stage separately. In particular, we are able to estimate the effect of different negotiation strategies on both the unobserved negotiation rate and the expected negotiation rate for each case described in our data set.

Our findings reveal that on average, auditors are able to push through approximately 40% of the detected pre-negotiation audit differences during tax audit negotiations. At first sight, this result might be surprising. Given that tax auditors hold a significant proportion of the negotiating power compared to taxpayers (i.e., the tax auditor has the authority to impose tax assessments on the taxpayer), one might have expected a higher negotiation rate of tax auditors. Instead, our findings reveal a rather equal distribution of negotiation power between tax auditors and firms. This can be explained by auditors who perceive implicit incentives towards avoiding litigation risk.

Regarding the use of negotiation strategies, we rely on prior psychological research (e.g., Pruitt 1981; Carnevale and Isen 1986) and elicit persuasion tactics that are typical of competitive negotiation and cooperative negotiation strategies. We find that in almost one third of the sample cases, tax auditors use a competitive negotiation strategy. They use a combination of competitive and cooperative tactics (mixed strategy) in 26% of all cases, and in 28% of the cases, they employ a neutral strategy that avoids using competitive and cooperative tactics. By contrast, they use a purely cooperative strategy in only 14% of all cases.

The use of a competitive instead of a neutral strategy increases the negotiation rate by an average of ten percentage points. Thus, if auditors' objective is simply to maximize short-term audit adjustments, it appears that a competitive negotiation approach dominates other strategies. Moreover, a mixed strategy also dominates a cooperative negotiation strategy. The observed dominance of competitive auditor tactics in real tax audits is in contrast to the objective of establishing a cooperative relationship between the tax administration body and taxpayers (OECD 2013). Cooperative compliance programs are based on the idea that trustful, cooperative relationships between taxpayers and revenue agencies help increase tax compliance. To this aim, auditors should make use of cooperative strategies to build or maintain a good relationship between the negotiating parties. Our results reveal, however, that auditors perceive implicit incentives towards a more competitive approach. These incentives need to be changed to ensure a successful implementation of cooperative compliance programs.

Furthermore, our results indicate that the effect of a negotiation strategy depends on the time frame of the respective adjustments. If we restrict our analysis to non-permanent (i.e., temporary) tax adjustments, we do not find a significant effect of auditors' negotiation strategy. This suggests that the strategy choice is most important if the negotiated

issue results in permanent tax revenue (tax burden) for the auditor (taxpayer) but may be neglected if additional taxes are only temporary.

In addition, using a multinomial treatment effects regression model, we demonstrate that tax auditors' strategy choice is not particularly affected by firm or auditor characteristics. One exception is that the likelihood of the use of a cooperative strategy increases if the firm is owned by a family or the firm is required to publish tax information. However, the most significant determinants of tax auditors' use of negotiation strategies are the perceived strategies of the advisor. If the auditor perceives that the advisor is at least partly competitive, the probability that the auditor will use a non-neutral auditor strategy (competitive, cooperative, or mixed) increases significantly. Interestingly, the perceived negotiation strategy of the advisor also affects tax adjustments. An advisor strategy that is perceived as neutral dominates all other advisor strategies. Thus, firms might encourage their tax advisors to use a more neutral negotiation approach, since any deviation from this strategy will result in significantly higher adjustments. Overall, our findings imply that firms' tax burden does not only depend on tax law facts but also on firm characteristics, auditors' detection ability and negotiation skills of auditors and tax advisors.

The remainder of this paper is organized as follows. In the next section, we discuss the background and related research, and we develop our research questions. In Section 3.3, we present the sample selection, estimation method, and variable measurement. The results are described in Section 3.4. Section 3.5 presents additional analyses, and Section 3.6 concludes.

3.2 Background and Research Questions

3.2.1 Tax Law Ambiguity

Financial accounting negotiations occur when guidance on generally accepted accounting principles is ambiguous or non-existent (Perreault and Kida 2011). Similar to financial accounting rules, the rules that determine a firm's tax income leave much room for discretionary decisions. For example, taxpayers must determine transfer prices for transactions between related companies according to the arm's length principle. This principle states that transactions should be valued as if they have been carried out between unrelated parties that act in their own best interest. However, as there is often no comparable market price for intra-group transactions, this definition gives both auditors and firms considerable room for interpretation in line with their own individual objectives. While the determination of transfer prices is most relevant for multinational firms, comparable rules also apply for national corporations if taxpayers have to determine whether a payment to a shareholder classifies as a constructive dividend. Other examples that might illustrate inherent tax law ambiguity include the determination of provisions for uncer-

tain liabilities, asset write-downs to fair value, and the differentiation between private and business expenses for sole proprietorships and partnerships, especially in cases where the expenses are related to both business and personal purposes. The vagueness of tax law, on the one hand, is necessary to cover a wide range of cases but, on the other hand, makes tax law to some extent always a matter of negotiation.

3.2.2 Motivation and Incentives of Negotiation Partners

Negotiation is a process by which at least two subjects make a joint decision concerning an issue about which there are initial differences in preference (Carnevale and Isen 1986). In a tax audit negotiation, the opponents are the taxpayer, usually represented by his or her tax advisor, and the tax auditor. The tax audit negotiation is a form of a pre-trial negotiation (Antle and Nalebuff 1991). If a firm files a tax return, the tax liability is usually subject to verification by a subsequent tax audit. In Germany, as in many other countries (such as the United States or Canada), the most severe type of audit is a field audit. Similar to a financial accounting audit by a public accountant, in a field audit, the revenue service conducts a detailed examination of a taxpayer's records, commonly at the taxpayer's place of business. During the audit process, the auditor usually identifies certain items he or she disagrees with the taxpayer's chosen tax treatment. In a final audit meeting, the auditor discusses with the taxpayer items where the respective tax treatment is unclear due to tax law ambiguity. In German tax audits, if the auditor and taxpayer do not reach an agreement during this negotiation, the German Revenue Agency will issue a tax assessment note based on the auditor's opinion regarding the correct tax treatment. The taxpayer has the right to appeal this tax assessment by filing an objection letter with the Appeals Department, a separate division of the German Revenue Agency. If the Appeals Department rejects the objection, taxpayers must file a lawsuit in tax court if they wish to contest the imposition of the additional tax payments. Usually, however, both negotiation parties are interested in reaching an agreement to avoid tax court disputes. This is because most tax court disputes are tedious and costly, and the result is often not easy to predict, especially if there is no relevant case law on the issue and ambiguity is high (Blaufus et al. 2016a). For taxpayers, the potential advantages of avoiding this litigation risk may be obvious, but this risk also affects tax auditors' behavior, as our pre-survey interviews reveal. The reasons are as follows:

(1) Tax auditors are usually required to conduct a certain number of tax audits in a year. Therefore, auditors are motivated to close their audit cases in a timely fashion and to avoid the additional effort that an appeal process would require.

(2) If a dispute leads to litigation and the German Revenue Agency loses in tax court, auditors' local tax office is charged with all legal expenses related to the litigation. This may harm the auditors' professional reputation; thus, they fear that litigation could indirectly affect their professional career.

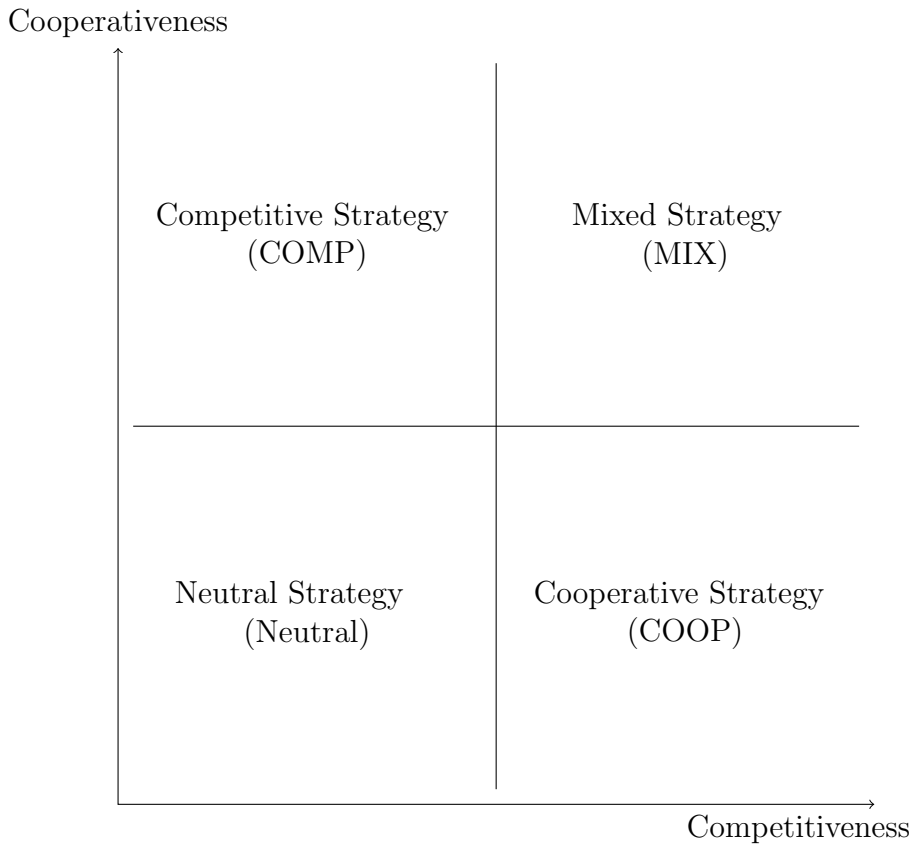
Therefore, most tax audits close with an agreement between auditors and taxpayers. In the current sample, for instance, the agreement rate is 80%. While both negotiation opponents may be interested in reaching an agreement, their individual negotiation objectives clearly differ. Taxpayers and their advisors aim at defending their initial tax positions to avoid any additional tax burden. In contrast, tax auditors are legally required to ensure the 'correct' application of the tax laws, irrespective whether this leads to positive or negative tax adjustments. In Germany and most other countries, there is no incentive pay for auditors as it is used, for example, in Brazil where auditors receive bonus payments for every dollar of fines collected (Kahn et al. 2001). However, even in the absence of explicit bonus payments, if auditors believe that actions consistent with organizational goals will improve their chances of promotion, they will respond to these implicit incentives (Klassen 2016). In Germany, the local tax offices are evaluated to some extent with respect to additional taxes 'earned' from tax audits since they must report to the German Revenue Agency the ratio of all cases with non-positive tax adjustments and with tax adjustments below a *de minimis* threshold. Thus, auditors may feel that they should help improve the performance of their own office in order to increase their likelihood of promotion; indeed, our pre-survey interviews reveal that auditors perceive that their performance evaluation and thus their potential career opportunities are correlated with assessed additional taxes during their audits. In line with these implicit incentives, the vast majority of audit cases lead to additional tax payments. In our sample, only approximately 12% of all cases result in non-positive tax adjustments.

Therefore, we assume that auditors are motivated to assess positive tax adjustments so that tax audit negotiations are, in principle, so-called distributive negotiations, which prior research has described as win-lose or zero-sum games (e.g., Walton and McKersie 1965; Kersten 2001). A gain for one party (one additional dollar in tax revenues for the auditor) is a loss for the other party (one additional dollar in taxes to pay for the taxpayer). However, note that gains and losses are not necessarily valued equivalently by both parties. For example, one can imagine that taxpayers place lower weight on issues that result in temporary adjustments than those that result in permanent adjustments. If tax auditors do not differentiate to the same extent between permanent and non-permanent adjustments (because they perceive that this differentiation is less relevant for their performance evaluation), logrolling could increase joint negotiation outcomes.

3.2.3 Negotiation Strategies

A negotiation strategy is goal-directed behavior that individuals use to reach an agreement (Brett and Thompson 2016). Negotiation research often differentiates between only two opposing strategies, competitive and cooperative; the former are also called distributive and the latter integrative (e.g., Brett and Thompson 2016). However, prior research shows that a unidimensional "cooperative-competitive" strategy classification is insuffi-

Figure 3.1: Negotiation Tactics



cient to explain negotiation behavior. Instead, a two-dimensional "dual-concern" model of strategy selection that extends Blake and Mouton's (1964) Managerial Grid to the analysis of negotiation (Filley 1975; Ruble and Thomas 1976) is regarded as appropriate. The dual-concern model distinguishes between concern about one's own outcomes (*competitiveness*) and concern about the other party's outcomes (*cooperativeness*) as two independent dimensions rather than as opposite ends of the same dimension. Thus, competition is not necessarily an alternative to cooperation. In line with this idea, we differentiate between the following four strategies, which are displayed in Figure 3.1: *Competitive strategy* (high competitiveness / low cooperativeness), *cooperative strategy* (low competitiveness / high cooperativeness), *mixed strategy* (high competitiveness / high cooperativeness) and *neutral strategy* (low competitiveness / low cooperativeness). The measurement of these strategies will be explained in detail in the subsection "Variable Measurement".

3.2.4 Research Questions

As we are not aware of any prior research that examines the tax auditors' use of negotiation strategies, our first research question refers to the distribution of the different negotiation strategies used by tax auditors in real audit cases. Prior auditing research reveals that auditors of financial accounting statements experience negotiations with their

clients about ambiguous accounting issues as a normal part of their practice (Gibbins et al. 2001, 2007) and that they use different negotiation strategies to persuade their clients. Therefore, we also expect that tax auditors are experienced negotiators and use a variety of negotiation tactics. Gibbins et al. (2010) report on an experiment with 140 experienced financial accounting auditors and reveal that these auditors generally favor the use of cooperative tactics over competitive ones when entering negotiations. Moreover, Bame-Aldred and Kida (2007), who surveyed 33 experienced auditors, find that financial accounting auditors are unlikely to use threats as a tactic, such as threats to qualify the opinion or to terminate the relationship. Similarly, Bennett et al. (2015), who collected data from 49 experienced auditors, report that it is very unlikely that these auditors would use threats to terminate the relationship during discussions regarding the disposition of audit differences. Furthermore they find, that auditors increase concessions when the deadline pressure increases.

However, this preference for cooperative negotiation strategies cannot simply be carried over to a tax audit setting. First, McCracken et al. (2008) report that financial accounting auditors are held accountable for maintaining good relationships with their clients but are not monitored closely for clients' financial accounting quality. This does not hold to the same extent for tax auditors because tax auditors do not bear a risk comparable to the risk of client loss. Tax advisors and auditors, plausibly, also have an interest in maintaining good relationships with one another because negotiations between tax professionals and tax auditors are not one-shot games but repeated games in which reputation-building may be important. Nonetheless, financial accounting auditors presumably depend on good relationships with their clients more than tax auditors do because tax auditors do not face direct monetary disadvantages from a bad relationship. In contrast, bad relationships increase the risk of client loss for financial accounting auditors. The high importance of relationship management for financial accounting auditors can affect their choice of negotiation strategies. In a meta-analysis of 34 negotiation studies, Hüffmeier et al. (2014) find that competitive strategies lead to higher economic outcomes, but cooperative strategies lead to higher socioemotional outcomes, e.g., regarding the perception of the relationship between the negotiating parties. As one of the goals of cooperative strategies is to build or maintain a good relationship with the client, one might expect that financial accounting auditors are motivated to use cooperative strategies more frequently than their tax counterparts. In line with this, Wang and Tuttle (2009) demonstrate that auditors negotiate less cooperatively if they depend less on client retention when mandatory rotation is imposed. Second, whereas financial accounting auditors usually negotiate directly with the firm's CFO, tax auditors mostly negotiate with an expert intermediary, the firm's tax advisor. Prior research finds that the competitiveness of the interaction can differ between direct and representative negotiations (Rubin and Sander 1988; Bazerman et al. 1992). The desire to please their clients may lead advisors to make high demands

and to be less willing to concede. For example, research finds that representatives are usually less cooperative and take longer to reach an agreement, and impasses occur more often (Mosterd and Rutte 2000). This competitive behavior may affect auditors' negotiation style; they may either increase their own competitiveness to mirror the behavior of the opponent, which aligns with the reciprocation model (Osgood 1962), or give more concessions, which is more cooperative behavior that aligns with the level-of-aspiration theory (Siegel and Fouraker 1960). According to the level-of-aspiration theory, negotiators make judgments of what they can get in negotiations, and the opponent's behavior can be a clue to this (Carnevale and De Dreu 2006): If the tax advisor is perceived as competitive (makes few or no concessions), this leads to a decrease in aspirations and thus to more cooperativeness of the tax auditor. In sum, whether tax auditors use more cooperative or competitive strategies is theoretically ambiguous and thus constitutes an empirical question. We therefore formulate our first research question as follows:

RQ1: Which negotiation strategies do tax auditors use?

Prior financial auditing research also examines the effect of different negotiation strategies and tactics on audit adjustments. In a study by Hatfield et al. (2008), 44 audit managers and partners participated in a computer-based experiment in which they negotiated with a competitive client. Auditors were assigned to two treatments: Either they were told that preliminary audit findings included only one significant item, or they were told that the preliminary audit findings also included three clearly inconsequential items that should be waived at the beginning of the negotiation. The authors find that the reciprocity-based waiving strategy increased the auditors' envisaged amount of adjustments, their minimum required adjustment, and their counteroffers to the client. Similarly, Sanchez et al. (2007) find, in an experiment with 124 controllers and CFOs, that their willingness to post income-increasing adjustments rises if auditors disclose inconsequential audit differences and subsequently waive these adjustments. Perreault and Kida (2011) report on a computer-based experiment with 147 practicing managers. They find that threatening to qualify the audit opinion or simply informing the client that other companies have handled the accounting issue in a way consistent with the auditor's preference both result in significant client concessions of approximately the same level. Perreault et al. (2017) perform a computer-based experiment with 263 business managers to examine the effectiveness of simultaneous and sequential negotiation strategies in multiple-item negotiations. They find that a simultaneous strategy leads to significantly greater total concessions from managers and that presenting the larger issues first also increases concessions.

Overall, financial auditing research provides convincing evidence that negotiation strategies significantly affect audit adjustments. Thus, we expect that negotiation strategies also affect tax audit adjustments. However, the effectiveness of negotiation strategies

may differ between the financial accounting and tax audit settings because the contexts differ in important aspects (see the above discussion relating to RQ1). For example, prior negotiation research demonstrates that the effectiveness of competitive tactics such as the use of threats strongly depends on the credibility of threats and threat capacity (Pruitt 1981, pp. 71, 85). Tax auditors can choose among a variety of different threat instruments, and their use is credible because they do not fear negative economic consequences comparable to the risk of client loss. Thus, we expect that competitive strategies could be highly effective in a tax audit setting. Moreover, because of the experimental nature of previous financial auditing studies, the size of the effect on real audit adjustments is unknown. This is of particular interest to us in our study. Our second research question is thus as follows:

> **RQ2:** To what extent are tax adjustments affected by a tax auditor's negotiation strategy?

Our last research question concerns the determinants of the negotiation strategy chosen by tax auditors. Again, we can draw on a number of financial auditing studies as well as general negotiation research. First, research suggests that negotiation strategies depend on the individual characteristics of the opponent. Hatfield et al. (2008) find that auditors are more likely to use a cooperative strategy when client retention risk is high, and Brown and Johnstone (2009) add that audit engagement risk increases the willingness of low-experienced auditors to make concessions. Gibbins et al. (2010) show that auditors who perceive the client to be inflexible in the initial accounting position are more likely to use competitive negotiation strategies. While company characteristics and circumstances (such as firm size, ownership structure, and financial position) are generally considered to be important in theoretical models of audit negotiations (e.g., Beattie et al. 2004), we are not aware of any study that empirically examines the link between firm characteristics and auditors' negotiation strategies in more detail.

In addition to firm characteristics, the perceived negotiation strategies of the taxpayers and their advisors may affect auditors' choice of negotiation strategy. On the one hand, reciprocation theory (Osgood 1962) suggests that auditors behave more cooperatively if they perceive that the taxpayer/advisor is adopting a cooperative negotiation strategy. On the other hand, the level-of-aspiration theory (Siegel and Fouraker 1960) predicts exactly the opposite. According to the level-of-aspiration theory, negotiators enter a negotiation with a certain level of aspiration. An initial cooperative behavior (i.e., a large concession) of the opponent should increase the negotiator's level of aspiration and thus cause him or her to respond more competitively (Lawler and MacMurray 1980). In an audit context, Hatfield et al. (2008) find that auditors are more likely to use a cooperative strategy when the firm's negotiation style is competitive and client retention risk is high. This is in

line with the level-of-aspiration theory while a soft stance should increase the bargainer's aspirations.

Regarding the individual characteristics of the negotiator, two studies demonstrate that audit experience is related to less concession-making behavior (Brown and Johnstone 2009; Trotman et al. 2009). In addition, general negotiation research suggests that gender (Walters et al. 1998) and personality traits (Antonioni 1998) may affect the choice of negotiation strategy. However, to our knowledge, no previous accounting study has empirically investigated these effects of individual auditor characteristics on negotiation outcomes.

Based on the discussion above, tax auditors' negotiation strategy could be affected by their gender, their professional experience, their attitude towards taxpayers' tax morale, the perceived negotiation strategy of the taxpayer/advisor, and firm size (as proxy for compliance risk). We therefore investigate the following:

> **RQ3:** Does the tax auditor's chosen negotiation strategy depend on firm characteristics, auditor characteristics, and the perceived negotiation strategies of the opponent?

3.3 Sample Selection, Estimation Method, and Variable Measurement

3.3.1 Sample Selection

We used an advanced tax law training course for tax auditors to conduct our survey.[1] The course was obligatory for all tax auditors working in Berlin, which is the capital and largest city in Germany. One of the authors taught this course and handed out the questionnaires to participants. The course occurred between October 2010 and February 2011. In sum, 646 tax auditors attended the course, of whom 610 participated in our survey. Thus, we achieved a high response rate of 94%. We asked auditors to report about their last two cases that they could describe in detail. Before developing the questionnaire, we conducted several pre-survey interviews to collect information about firm characteristics that auditors are usually aware of after having completed a case. We found that auditors generally remember central key characteristics of a case, e.g., the audit result (additional tax burden), the firm's size (profit and sales), the audited tax years, and the firm's industry. One reason why auditors generally remember this information is simply that auditors have to fill out several forms after completing a case in order to report these data to the German Revenue Agency. Another reason is that audit results may (at least indirectly) affect the personal performance evaluation of the auditors, which is why it is important

[1] The questionnaire is presented in Appendix B.

Table 3.1: Sample Selection

Sample selection step	Remaining number of cases
Original sample	1244
Less "non-business-cases"	1059
Less cases with missing data in all negotiation variables	931
Less cases without information on adjustments	879
Less cases without audit meeting	590
Less outliers (98% truncation)	575

The table reports the sample selection process.

that we assured auditors' anonymity. Therefore, we did not collect any identifying information, which officially prevented us from handing over non-aggregated data to the German Revenue Agency.

Our questionnaire consisted of two parts. In the first part, auditors reported on their last two audit cases. In the second part, they answered several socio-demographic questions. The questionnaire was pre-tested by two auditors who did not participate in the final survey and one head of a local tax audit department to ensure that all questions are understandable and that the questionnaire was feasible. On average, participants needed about thirty minutes to complete the questionnaire.

Altogether, we received information from approximately 1,244 unique audit cases; i.e., the data set is free of duplicate entries.[2] From these cases, we eliminated those that differed in their tax treatment from "normal" business income (e.g., nonprofit associations, charitable trust, agriculture and non-business income). Thus, we obtained 1,059 cases. We dropped 128 cases with missing data in all negotiation variables, 52 cases without information about adjustments, and 278 cases without final audit meetings (meetings in which the examination report is negotiated face-to-face). Moreover, due to some outliers in the dependent variable, we truncated our data set to 98% in each size category. The final sample included 575 cases. Table 3.1 displays the sample selection for our analyses. Note, that our sample does not neccessarily represent the population of firms in Germany. Thus, our interpretation of negotiation strategies is conditional on a firm being audited.

3.3.2 Detection- and Negotiation-controlled Estimation

We use a detection- and negotiation-controlled estimation model to examine the effect of negotiation strategies on audit adjustments. This model considers the continuous scale and the partial observability of our dependent variables; it also considers that the observable outcome is the product of three latent variables. The observed tax audit adjustments ($ADJUSTMENTS$) can be expressed as the product of a firm's tax planning amount T,

[2] Some auditors voluntarily reported information about further cases in an additional questionnaire that was provided on request by the author who taught the training course. Thus, we received slightly more than the expected 1,220 (=610·2) cases.

the auditor's detection rate D, and the auditor's negotiation rate N. To separate the effect of tax auditors' negotiation strategy on the unobserved negotiation rate N, we use a multi-stage maximum likelihood estimation (see Feinstein 1990, 1991).

Figure 3.2: Multi-Stage Model

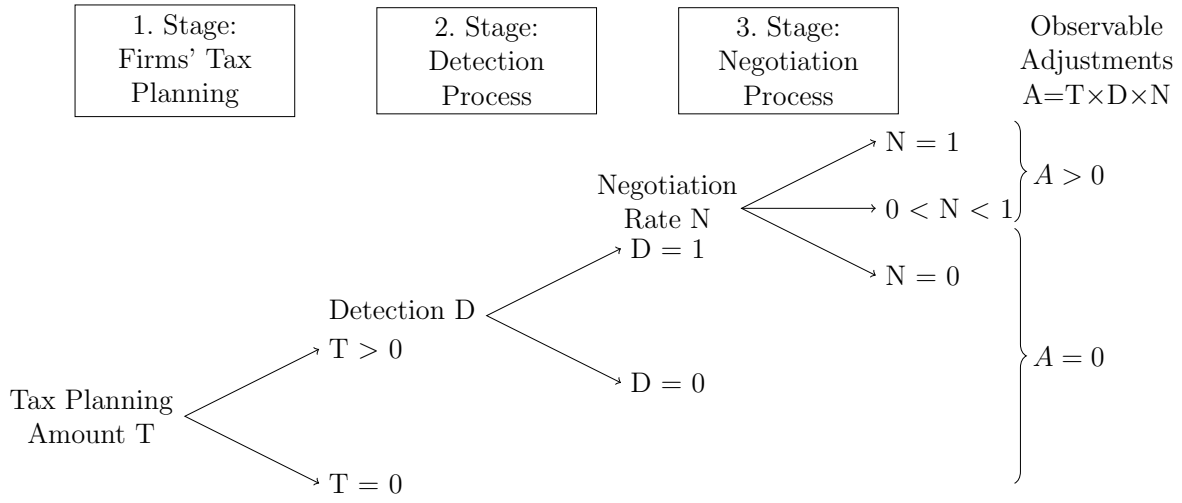


Figure 3.2 illustrates the estimation strategy. In the first stage, based on its characteristics, X_T, the firm is attributed a propensity for tax planning activities T^* that results in a positive or zero tax planning amount T, which we model as a Tobit specification (see equations (3.2) and (3.3) in Appendix A). The modeled log-normal specification allows a skewed distribution that "capture[s] the empirical fact that there is small proportion of taxpayers with very high levels of non-compliance" (Erard and Feinstein 2010, p. 8). Next, at stage two, we model the detection process during the tax audit. We assume the auditor assignment to be exogenous and random.[3] Based on their abilities and effort, X_D, tax auditors are either able to detect (D=1) or fail to uncover (D=0) firms' tax planning behavior.[4] Therefore, based on tax auditors' propensity to detect D^*, a Probit model is specified (see equations (3.4) and (3.5) in Appendix A). Finally, the third stage models the tax auditor's ability to negotiate, N^*. Based on the applied negotiation strategy, X_N, the tax auditor might be able to assert her objections to the firm's tax accounts in full (N=1), do so to some extent ($0<N<1$), or fail to do so ($N = 0$). Thus, $N \in [0, 1]$ represents the percentage of detected tax planning amount that the tax auditor is able to push

[3] Our data support this assumption, as there is no high correlation between auditor and firm characteristics. Most bivariate correlations do not exceed 0.25. The two exceptions concern a correlation between the auditor's SALARY and firm size (correlation with SIZE: 0.43 and GROUP: 0.3). We therefore repeated our analyses excluding SALARY, and the results reported in this paper remained unchanged. Furthermore, if tax auditors' assignment to firms is not exogenous, these assignments will most likely correlate with firm size. We thus run all estimations for subsamples of large and all other (non-large) firms separately. Results on the third stage remain qualitatively unchanged.

[4] Note that we do not allow for fractional detection as modeled in Feinstein (1991). This simplification is needed for the convergence of our estimation method. Thus, tax auditors are assumed to detect either all or nothing.

through in the negotiation process between the firm's tax advisor and the tax auditor. In line with Maddala (1999), we use a two-limit Tobit specification to model this stage (see equations (3.6) and (3.7) in Appendix A).

Note that we are able to measure variables X_T, X_D, and X_N, which might have an impact on the outcome of each stage; however, we observe neither latent variables T^*, D^*, or N^* nor variables T, D, or N. What we observe is the detected tax planning amount that the tax auditor is able to assert - that is, the tax adjustments A that can mathematically be expressed as the product $T \times D \times N$. The advantage of our multi-stage maximum likelihood estimation lies in the fact that conclusions can nevertheless be drawn for each stage separately. In particular, we will be able to estimate the effect of different negotiation strategies on unobserved negotiation rate N as well as the expected negotiation rate for each case described in our data set. According to Figure 3.2, the log likelihood function (see equation (3.1)) can be written as follows:

$$\begin{aligned} LL = & \sum_{A>0} \log\big[P(T>0)\cdot P(D=1)\cdot P(N=1) \\ & + P(T>0)\cdot P(D=1)\cdot P(0<N<1)\big] \\ & + \sum_{A=0} \log\big[P(T=0) + P(T>0)\cdot P(D=0) \\ & + P(T>0)\cdot P(D=1)\cdot P(N=0)\big]. \end{aligned} \tag{3.1}$$

Under the assumption that the three stages are independent of one another, i.e., the error terms do not correlate,[5] plugging in the path likelihoods yields a log likelihood function that allows estimation of parameters β_T, β_D, *and* β_N (see equation (3.8) in Appendix A).

3.3.3 Variable Measurement

3.3.3.1 Dependent Variable: Audit Adjustments

As a dependent variable, we use *ADJUSTMENTS*, which are the tax base adjustments assessed in the audit. For bivariate analyses, we alternatively use scaled adjustments, i.e., tax base adjustments divided by a firm's sales (*ADJUSTMENTS/SALES*). From our pre-tests, we know that auditors memorize the additional tax burden better than they memorize the adjustments to the tax base because after closing each audit case, auditors are required to separately document the additional tax burden for the statistical analyses of the tax administration. Thus, we determine the additional tax burden (in Euro) and, in cases of loss firms, the adjustments to the taxable loss. Tax base adjustments are

[5] Feinstein (1991) and Li (2013) also estimated similar models with an arbitrary correlation in a two-stage setting. However, the estimation results were similar to those without correlation.

calculated as the sum of the change in taxable loss and the quotient of the additional tax burden and the tax rate.[6]

3.3.3.2 Independent Variables: Tax Auditor Negotiation Strategies

To measure auditors' negotiation strategies, we decided not to ask for self-assessments regarding their negotiation strategy. Rather, assuming that negotiators choose their tactics consistent with their overall negotiation strategy, we asked whether they had used specific persuasion tactics. We expected that this method would reduce distortions linked with subjective self-assessments.

In line with psychological research (e.g., Pruitt 1981; Carnevale and Isen 1986), the following tactics are characteristic of competitive negotiation strategies: imposing time pressure on the other negotiator (e.g., by setting deadlines), making it seem that negotiation is likely to break down without agreement, minimizing concessions to the other negotiator to appear "tough", and using threats. In a negotiation setting, a threat means one party's communication of his intent to punish the other party if the latter does not concede (Pruitt 1981, p. 77; Sinaceur et al. 2011). Sanctions are a key component of threat (Sinaceur and Neale 2005). Within the context of a tax auditor/taxpayer negotiation, an auditor can use different sanctions. Most countries differentiate between administrative fines, coercive penalties, and other sanctions (Van der Hel 2011). In Germany, auditors can use their coercive power to compel action by threatening taxpayers to impose *coercive fines* or other coercive measures if taxpayers do not comply within a specific deadline. Moreover, auditors can impose penalties if taxpayers do not comply with information and documentation requests during tax audits in due time (*fine for delay*). In addition, if taxpayers do not cooperate, auditors are allowed to estimate the basis of taxation, and the estimated tax base may exceed the declared income. Finally, tax auditors can threaten to break off negotiations. If the negotiation discontinues without agreement, the tax administration will issue a tax assessment notice based on the auditor's tax adjustments, which implies the risk of litigation for both parties. Other instruments that the auditor may use to increase the time pressure on the taxpayer include imposing short deadlines or raising the frequency of reminders and requests.

To determine the use of competitive tactics, we asked auditors whether they had carried out one of the following actions to speed up the audit process (multiple answers possible): (1) Imposing short deadlines, (2) Threat of imposing a *fine for delay,* (3) Threat of coercive measures (coercive fine, substitutive execution, direct enforcement), (4) Threat of discontinuing negotiations without agreement, and (5) Other actions:_____.

[6] In Germany, the applied tax rate for corporations includes corporate income tax, local trade tax, and solidarity surcharge. We use a uniform tax rate of 35% for partnerships, which mirrors tax auditors' practice. In the case of sole proprietorships, the individual marginal income tax rate applies; a proxy for that rate was obtained from the German income tax statistics with respect to income category and industry classification.

In contrast to the above-described tactics, which aim at forcing one's own will on the other party, a cooperative negotiation strategy also considers how an action will affect the welfare of the other party. A cooperative negotiation strategy includes tactics such as exchanging truthful information about needs and priorities, seeking the other party's reaction to each offer and making larger concessions on items of lower priority (e.g., Carnevale and Isen 1986; Carnevale and Pruitt 1992). Within the context of a tax auditor/taxpayer negotiation, the tax auditor may, for example, offer to waive small audit adjustments or adjustments with high litigation risk in order to promote a cooperative environment that encourages the taxpayer to accept a larger audit adjustment. Such a concession tactic is based on the assumption of reciprocity as a general societal norm (Sanchez et al. 2007; Hatfield et al. 2008). Moreover, tax auditors may consider the taxpayer's welfare and waive adjustments that would result in an excessive additional tax burden on the firm. Alternatively, auditors could concede that the taxpayers' legal argumentation is superior to their own arguments and waive the corresponding adjustments. To determine the use of cooperative tactics, we asked subjects how they reached an agreement on the proposed audit adjustments. Possible answers were given as follows (multiple answers possible): (1) I waived small adjustments in favor of one large adjustment, (2) I waived adjustments because the firm's "pain threshold" was reached, (3) I waived uncertain adjustments to avoid the risk of litigation, (4) I waived adjustments because the other side convinced me. As explained above, we differentiate between the following four strategies, which are displayed in Figure 3.1:

- *Competitive strategy*, measured by the binary variable *COMP*, which is one if the auditor uses at least one of the competitive tactics and does not use any cooperative tactic.
- *Cooperative strategy*, measured by the binary variable *COOP*, which is one if the auditor uses at least one of the cooperative tactics and does not use any competitive tactic.
- *Mixed strategy*, measured by the binary variable *MIX*, which is one if the auditor uses at least one of the cooperative tactics and does also use at least one competitive tactic.
- *Neutral strategy*, measured by the binary variable *NEUTRAL*, which is one if the auditor avoids using cooperative as well as competitive tactics.

3.3.3.3 Control Variables

Tax Planning Stage Prior research shows a large cross-sectional variation in firms' tax avoidance (Hanlon and Heitzman, 2010). Thus, our first set of control variables consists of firm characteristics that may explain the extent of firms' tax planning activity. In line with

prior research we control for the following firm characteristics: *SIZE* (which is the natural logarithm of a firm's sales), and the binary variables *FAMILY* (equals one if a family holds more than 50% of the shares), *CORPORATION* (equals one for corporations), *GROUP* (equals one if the firm belongs to a group), *PUBLIC* (equals one if the firm is required to publish a profit and loss account), *FOREIGN* (equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations), *LOSS* (equals one for firms that suffered losses during the audit period), *EVASION* (equals one for firms that are suspected of tax evasion).[7]

Detection Stage In the second stage of our estimation model, we aim at explaining the auditors' ability to successfully detect necessary tax base adjustments. First, we control for the auditors' expertise by including their wage (*SALARY*), their years of experience (*EXPERIENCE*), i.e., years at the tax administration, their academic degree (*SCHOOL*), and the number of advanced training courses they have attended on average per year (*TRAINING*). Second, to take into account that auditors differ in their attitude towards taxpayers and their intrinsic motivation, we include the variables *ATTITUDE* and *MOTIVATION*. To measure *ATTITUDE*, we asked tax auditors whether they agreed or disagreed with the following question on a five-point scale: "Taxpayers seek to minimize their tax burden by all permitted means." *ATTITUDE* equals one if the auditor fully agreed (5 out of 5) and zero otherwise. To capture *MOTIVATION*, we asked auditors whether they agreed or disagreed with the following question on a five-point scale: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." *MOTIVATION* is one for auditors who fully disagree (1 out of 5) and zero otherwise.[8] Finally, we control for audits in which a section head actively participated in the final audit meeting (*HEAD*).

Negotiation Stage Our main interest is in the negotiation stage of our estimation model. In addition to our independent variables that measure the tax auditors' negotiation strategies, we include variables that control for the perceived negotiation strategy of the tax advisor and (in additional tests) the taxpayer. Similar to our measurement of auditors' negotiation strategy, we did not directly ask for the used strategy, but we asked for the specific tactics that the advisors and taxpayers had used. Our questionnaire contained items that characterized competitive or cooperative negotiation tactics and could be answered with "yes" or "no" or left unanswered. To determine the perceived tax advisors'

[7] We checked the variables for collinearity problems for each stage by means of variance inflation factors (VIFs), and can not detect any problems. All VIFs were below 2.6, which is far below the threshold of 10 suggested by Hair et al. (2013).

[8] About 50% of auditors fully (dis-)agreed with the statements related to ATTITUDE (MOTIVATION). Because of these heavy-tailed distributions, we include indicator variables instead of using continuous scales.

negotiation strategies, we use a binary full-information factor analysis (Reckase 2009).[9] We observe factor loadings that are at least 0.5 for one factor and not higher than 0.25 for the other. Furthermore, the items load as expected on a competitive and a cooperative factor.

Based on these factor loadings, we use an oblimin rotation to obtain the factor scores. To distinguish between high and low competitiveness and between high and low cooperativeness, we use median splits for both factor scores. Corresponding to the differentiation of the four auditor negotiation strategies, a competitive strategy means high competitiveness but low cooperativeness. Thus, the indicator variable *ADV.COMP* equals one if the competitive factor score is above the sample median value and the cooperative factor is below sample median value. Cooperative strategies (*ADV.COOP*) are defined vice versa (i.e., high cooperative factor scores and low competitive factors scores). Mixed strategies (*ADV.MIX*) have factor scores above the sample median value for both factors, while the factor scores for neutral strategies (*ADV.NEUTRAL*) are below the sample median for both factors.

3.4 Results

3.4.1 Tax Auditors' Negotiation Strategies

Table 3.2 displays the negotiation tactics used by the auditors. The most used tactic is to impose time pressure, e.g., by setting short deadlines. In 40% of all audit cases, the tax auditor imposed time pressure on the taxpayer. The second most used tactic (20% of all cases) consists of concession making - that is, the auditor waived an immaterial adjustment in order to agree on one large adjustment. Moreover, in approximately 12% of all cases, auditors threatened taxpayers with breaking up negotiations, and in another 12%, auditors waived uncertain adjustments to avoid the risk of litigation. As explained above, we use these tactics to measure auditors' negotiation strategies.

Figure 3.3 displays the distribution of negotiation strategies and realized adjustments. We find that in almost one third of all audit cases, tax auditors used a competitive negotiation strategy. By contrast, in only 14% of all cases did tax auditors prefer a cooperative strategy. A combination of competitive and cooperative tactics (mixed strategy) was used in 25% of all cases. In another 29% of the cases, auditors employed a neutral strategy, which avoids using competitive as well as cooperative tactics. Thus, the most preferred strategy is negotiating in a competitive manner, and a pure cooperative concession-making approach to negotiation is seldomly used. This partly conflicts with the results obtained

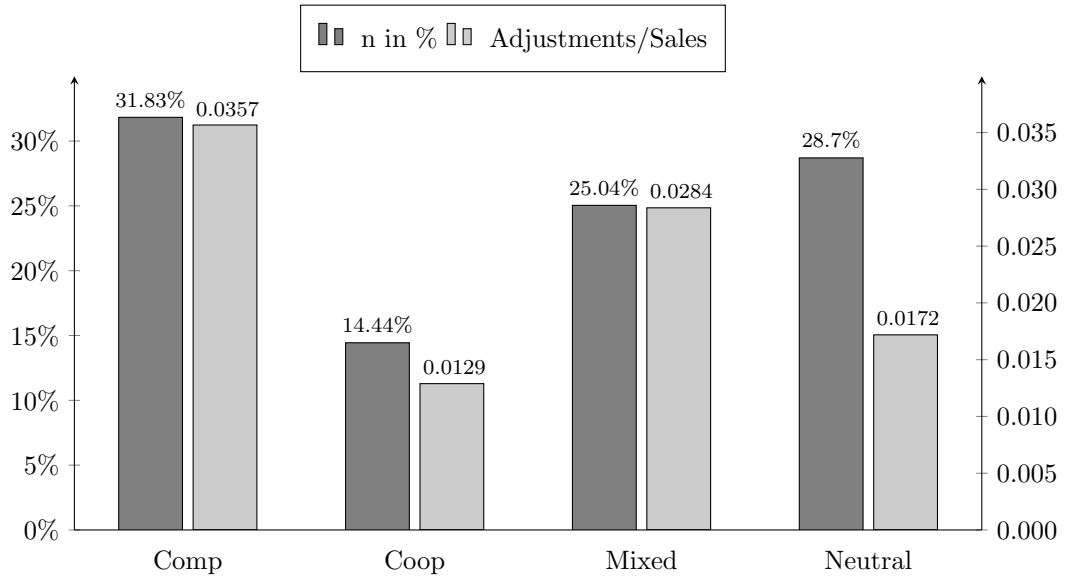
[9] We use a factor analysis for advisor strategies for two reasons. First, the items used to determine tax advisors' strategies are in contrast to those used to determine auditors' strategies, not mutually exclusive; therefore, the computation of common factors is feasible. Second, we are not interested in the distribution of tax advisor strategies. Thus, we can simply use a median split of factor scores to divide advisors into the four negotiation styles.

Table 3.2: Negotiation Tactics

Competitive	Percentage (N)
Imposing time pressure	40.06% (276)
Threat of discontinuing negotiations without agreement	12.48% (86)
Imposing sanctions / threatening with sanctions	5.95% (41)
Cooperative	
I waived small adjustments in favor of one large adjustment	19.88% (137)
I waived adjustments because the firm's "pain threshold" was reached	4.79% (33)
I waived uncertain adjustments to avoid the risk of litigation	12.48% (86)
I waived adjustments because the other side convinced me	4.35% (30)

The table reports the distribution of competitive and cooperative negotiation tactics.

Figure 3.3: Tax Auditors' Use of Negotiation Strategies and Median Scaled Adjustments by Strategy



for financial accounting audits. Gibbins et al. (2010) find that competitive strategies and more cooperative problem-solving approaches are equally likely to be used by financial accounting auditors. Moreover, Bame-Aldred and Kida (2007) and Bennett et al. (2015) report that financial accounting auditors are unlikely to use threats as a tactic, such as threats to qualify the opinion or to terminate the relationship. One potential reason for the observed difference between financial and tax accounting might be that maintaining good relationships with the firm is more important to financial accounting auditors than to tax auditors. For example, McCracken et al. (2008) report that financial accounting auditors are always 'relationship managers' tasked with ensuring that clients remain happy.

3.4.2 The Effect of Tax Auditors' Negotiation Strategies on Tax Adjustments

3.4.2.1 Descriptive Statistics and Bivariate Analysis

Table 3.3 gives an overview of descriptive sample statistics. The median audit adjustments amount to EUR 20,061. Approximately 72% of the audited firms are family firms, 16.7% have to publish profit and loss accounts (such that tax information is observable to the public), and approximately 7% have foreign activities. Additionally, 36% of firms are corporations, and 25% are members of a group. Eleven percent of firms are suspected of tax evasion. The median sales amount to EUR 625.000, and 12.87% of firms have losses. Thus, the audit sample is dominated by small and medium-sized family firms. Regarding auditor characteristics, the median auditor has a university degree, takes 2.6 advanced training courses a year and has 18.37 years of experience at the tax administration. Fifty percent of the auditors are intrinsically motivated, and 48% of the auditors fully agree that taxpayers are trying to minimize their tax burden by all permitted means. The percentage of negotiation strategies chosen by the tax auditors has already been discussed in the previous subsection. With respect to the perceived tax advisors' strategies, the auditors observe neither competitive nor cooperative advisor tactics (classified as NEUTRAL) in 23% of all cases. In another 23% of cases, the auditors' perception is that advisors mix competitive and cooperative tactics (classified as MIXED). In the remaining cases, the auditors perceive the advisor as negotiating either competitively or cooperatively (each 27%). Thus, the percentage of "pure" strategies (high cooperativeness and high competitiveness / low cooperativeness and low competitiveness) is slightly higher than the percentage of strategies that combine high with low values of competitiveness and cooperativeness.[10]

A bivariate analysis provides the first evidence of the effect of auditors' negotiation strategies on firms' tax adjustment. To control for size effects, we use adjustments scaled by sales. Since *ADJUSTMENTS/SALES* are not normally distributed, we use a non-parametric test to test for differences between the groups and report the median values by strategy. Figure 3.3 and Table 3.4 display the results. We find that competitive and mixed strategies yield statistically higher scaled adjustments than neutral and cooperative strategies. The effect is economically significant: scaled adjustments are doubled if auditors use competitive tactics only or mix them with cooperative tactics. Table 3.4 additionally reveals that scaled adjustments are significantly lower if auditors perceive the advisors' strategy as neutral.

Table 3.3: Descriptive Statistics

	n=575 Variable	Mean	SD	Percentiles 25^{th}	 50^{th}	 75^{th}
	ADJUSTMENTS (EUR)	197,184	1,034,857	8,086	20,061	60,241
TAX PLANNING STAGE	*FAMILY*	0.7115	0.4312	0.0000	10.000	10.000
	PUBLIC	0.1670	0.3733	0	0	0
	SIZE	137.665	19.392	126.115	133.455	148.271
	LOSS	0.1287	0.3352	0	0	0
	FOREIGN	0.0748	0.2633	0	0	0
	GROUP	0.2487	0.4326	0	0	0
	CORPORATION	0.3617	0.4809	0	0	1
	EVASION	0.1057	0.3032	0.0000	0.0000	0.0000
DETECTION STAGE	*EXPERIENCE*	18.370	43.670	17.500	18.370	22.500
	SALARY	57.748	14.772	57.748	57.748	60.000
	TRAINING	26.228	12.246	20.000	26.228	30.000
	SCHOOL	0.7792	0.4053	0.7792	10.000	10.000
	ATTITUDE	0.4833	0.4838	0.0000	0.4833	10.000
	MOTIVATION	0.5029	0.4763	0.0000	0.5029	10.000
	HEAD	0.2570	0.4362	0.0000	0.0000	10.000
NEGOTIATION STAGE	*COMP*	0.3183	0.4662	0	0	1
	COOP	0.1443	0.3517	0	0	0
	MIX	0.2504	0.4336	0	0	0.5
	NEUTRAL	0.2870	0.4527	0	0	1
	ADV.COMP	0.2661	0.4423	0	0	1
	ADV.COOP	0.2643	0.4414	0	0	1
	ADV.MIX	0.2330	0.4231	0	0	0
	ADV.NEUTRAL	0.2365	0.4253	0	0	0

The table reports the descriptive statistics of the dataset. *ADJUSTMENTS* is defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise.

Table 3.4: Scaled Adjustments (ADJUSTMENTS/SALES) by Negotiation Strategy

Panel A:	Auditor		Advisor	
Descriptive statistics	n	median	n	median
COMP	183	0.0357	153	0.0298
COOP	83	0.0129	152	0.0303
MIX	144	0.0284	134	0.0244
NEUTRAL	165	0.0172	136	0.0156

Panel B:	Auditor	Advisor
Statistical tests	Wilcoxon	Wilcoxon
COMP vs. NEUTRAL	0.0001	0.0010
COMP vs. COOP	0.0000	0.8192
COMP vs. MIX	0.2892	0.4019
COOP vs. NEUTRAL	0.2833	0.0026
COOP vs. MIX	0.0006	0.6440
MIX vs. NEUTRAL	0.0039	0.0095

The table presents the number of negotiation strategies and means in scaled adjustments (Panel A). Differences in means are tested (non-)parametrically (Panel B). We report the corresponding p-values for the significance test. In an unreported robustness check, we use a t-test as statistical test. The results remain qualitatively unchanged ADJUSTMENTS is defined as the tax base adjustments assessed in the audit. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise.

3.4.2.2 Results of the Detection- and Negotiation-controlled Estimation

The above bivariate analysis controls for neither firm nor auditor characteristics, which presumably also affect observed tax adjustments. In this section, we address this limitation using a detection- and negotiation-controlled estimation.

Table 3.5 presents the results, which demonstrate that considering a separate negotiation stage is economically important. On average, only 41.18% of detected pre-negotiation audit differences are assessed after tax audit negotiations.[11] Regarding the effect of auditors' competitive negotiation behavior, the findings of the bivariate analysis are confirmed. Auditors who use a competitive strategy instead of a neutral strategy achieve significantly higher audit adjustments. The average marginal effect amounts to 0.1035; i.e., using a competitive instead of a neutral strategy increases the negotiation rate by 10.35 percentage

[10] From the median split of the two factors used in defining the perceived advisor strategies, it follows that the percentage of competitive and cooperative strategies (mixed and neutral) must be identical. Thus, we abstain from further interpreting the distribution of perceived advisor strategies.

[11] To obtain this number, we average over all cases' unconditional expected negotiation rate, $E(N) = P(N = 0) \times 0 + P\,(0 < N^* < 1) \times E(N|0 < N^* < 1) \; + \; P(N = 1) \times 1$. For details, see (Maddala 1999, p. 160).

Table 3.5: Detection- and Negotiation-Controlled Estimation - Regression Results

1^{st} Stage		2^{nd} Stage		3^{rd} Stage	
Constant	5.9950***	*Constant*	0.1507***	*Constant*	0.2680***
	(0.5225)		(0.0144)		(0.0327)
FAMILY	-0.0069	*EXPERIENCE*	0.6218***	*AUD.COMP*	0.1091***
	(0.1206)		(0.022)		(0.0372)
PUBLIC	0.6242***	*SALARY*	0.4205***	*AUD.COOP*	-0.0317
	(0.1716)		(0.0237)		(0.0411)
SIZE	0.3543***	*TRAINING*	0.4408***	*AUD.MIX*	0.0726*
	(0.0393)		(0.0275)		(0.04)
LOSS	0.7459***	*SCHOOL*	0.1229***	*ADV.COMP*	0.1247***
	(0.1496)		(0.0136)		(0.0389)
FOREIGN	0.8141***	*ATTITUDE*	0.0812***	*ADV.COOP*	0.1212***
	(0.2129)		(0.0128)		(0.0361)
GROUP	0.6147***	*MOTIVATION*	0.0459***	*ADV.MIX*	0.1402***
	(0.0808)		(0.0119)		(0.0426)
CORPORATION	-0.5916***	*HEAD*	0.0727***		
	(0.1219)		(0.0125)		
EVASION	0.9722***				
	(0.1545)				
N	575	*SIG1*	1.0929***	*SIG3*	0.1951***
MEAN.LOG	-116.263		(0.0444)		(0.0146)

The table reports the results of the detection controlled estimation. *ADJUSTMENTS* is the dependent variable and defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise. The coefficients' standard errors are in brackets. *, **, and *** indicate significance at 10, 5, and 1 percent, respectively.

points.[12] In line with the bivariate analyses, we find that mixed strategies obtain significantly higher adjustments than neutral strategies. For further insight, we conduct Wald tests between negotiation style regression coefficients. We find that competitive (mixed) strategies significantly dominate cooperative strategies (Wald test p-value: 0.001 (0.016)). Moreover, we find that competitive strategies do not dominate mixed strategies (Wald test p-value: 0.3491). We further find that the advisor strategy that is perceived as neutral clearly dominates all other advisor strategies. Additional Wald-tests do not reveal any differences between competitive, mixed or cooperative advisor strategies.[13] Thus, companies should encourage their advisors to opt for a neutral negotiation approach, since any deviation from this strategy will result in significantly higher adjustments. In line with our expectations, the control variables in stage 1 reveal significant positive effects of firms' size, foreign activities, and membership of a group on their tax planning. We do not find a significant difference between family and non-family firms. A potential reason is that we measure overall tax avoidance, whereas prior research (Chen et al. 2010) relies on financial accounting proxies that measure only non-conforming avoidance activities (Hanlon and Heitzman 2010). If non-conforming and conforming avoidance are partly substitutive strategies, it could be that there is no overall difference in tax avoidance. For example, if family firms place less emphasis on financial accounting outcomes, they may use more conforming avoidance strategies while simultaneously reducing non-conforming strategies to decrease reputational risks. In contrast to our expectation, loss firms avoid more taxes despite having a lower tax benefit from avoidance. One potential explanation is that the loss variable also measures financial constraints. Prior research finds that increasing financial constraints increases tax aggressiveness (e.g., Edwards et al. 2015; Law and Mills 2015). Moreover, although we expected that firms with an obligation to publish a profit and loss account would have higher non-tax costs and thus conduct less conforming tax avoidance (Mills 1998; Mills and Newberry 2001), our results indicate that these firms avoid more taxes. Again, this could be due to a substitutive relation between conforming and non-conforming avoidance. Finally, firms that are suspected of tax evasion (corporations) are more (less) tax aggressive. Note that our results concerning firm characteristics should be interpreted with caution because we do not observe the total population of firms; the presented effects are conditional on a firm being audited.

The detection stage takes into account different auditor abilities, motivation, and attitudes, which could have an impact on the detection probability. We find that detection probability increases with an auditor's experience, salary and number of training courses. In addition, tax planning is more likely to be detected if a section head participates (*HEAD*), the auditor is intrinsically motivated (*MOTIVATION*), and the auditor is con-

[12] This average marginal effect is the difference in expected negotiation rates, E(N|COMP=1) - E(N|COMP=0), with all other dummy variables in the negotiation equation being zero.

[13] The corresponding p-values of Wald tests are: ADV.MIXED vs ADV.COMP, 0.74; ADV.MIXED vs ADV.COOP, 0.68 and ADV.COMP vs ADV.COOP, 0.93.

vinced that a taxpayer has done everything to reduce his or her tax burden (*ATTITUDE*). These results underline the importance of detection-controlled estimation (Feinstein 1990) in tax compliance research and highlight potential variables that governments can use to improve tax enforcement.

3.4.3 Determinants of Tax Auditors' Negotiation Strategies

Table 3.6: Multinomial Treatment Effects Regression

Variable	Selection equation			Outcome equation
	AUD.COMP	*AUD.COOP*	*AUD.MIX*	log(*ADJUSTMENTS*)
AUD.COMP				1.2427***
				(0.3219)
AUD.COOP				0.2129
				(0.3345)
AUD.MIX				-0.0614
				(0.4158)
FAMILY	0.4255	1.0107**	0.3669	0.3779*
	(0.3369)	(0.4243)	(0.3613)	(0.2256)
PUBLIC	0.5986	1.2871**	0.3224	-0.0422
	(0.5371)	(0.5922)	(0.5516)	(0.3351)
SIZE	-0.0741	0.1114	-0.0974	0.3495***
	(0.1083)	(0.1300)	(0.1135)	(0.0695)
LOSS	-0.4028	-0.8370	-0.8687**	0.2969
	(0.3892)	(0.5284)	(0.4275)	(0.2592)
FOREIGN	0.0930	-0.2336	-0.1460	1.2380***
	(0.5915)	(0.6441)	(0.6015)	(0.3643)
GROUP	-0.8021*	-0.6941	-0.0466	0.7471***
	(0.4301)	(0.4973)	(0.4328)	(0.2704)
CORPORATION	-0.7134**	-0.1494	-0.2862	-0.6499***
	(0.3515)	(0.4071)	(0.3613)	(0.2220)
EVASION	0.5465	-10.076	0.4467	0.5921**
	(0.4752)	(0.7604)	(0.5018)	(0.2959)
EXPERIENCE	-0.0659*	-0.0312	-0.0369	-0.0276
	(0.0370)	(0.0462)	(0.0387)	(0.0234)
SALARY	0.1030	0.1553	0.0471	0.1648**
	(0.1138)	(0.1465)	(0.1185)	(0.0738)
TRAINING	0.0778	0.1448	0.3216***	0.1303*
	(0.1201)	(0.1376)	(0.1192)	(0.0728)
SCHOOL	-0.1858	0.2186	-0.4564	-0.5773**
	(0.3583)	(0.4517)	(0.3739)	(0.2306)
ATTITUDE	0.5418**	0.1164	0.1481	-0.0508
	(0.2731)	(0.3313)	(0.2922)	(0.1770)
MOTIVATION	0.2064	-0.2079	-0.577*	0.3281*
	(0.2877)	(0.3454)	(0.3090)	(0.1881)
HEAD	-0.0448	-0.7037	0.0279	0.6329***
	(0.3329)	(0.4286)	(0.3446)	(0.2101)
ADV.COMP	2.0062***	1.7737***	2.3777***	0.4493*
	(0.3939)	(0.4952)	(0.4505)	(0.2653)
ADV.COOP	0.4233	1.1787***	1.4054***	0.7496***
	(0.3575)	(0.4319)	(0.4143)	(0.2461)
ADV.MIX	1.4567***	1.6137***	2.7278***	0.6584**
	(0.4087)	(0.5028)	(0.4487)	(0.2709)
Constant	0.3459	-4.8245**	-0.5833	3.1703***
	-15.218	-18.627	-16.121	-10.076

Table 3.6 continued from previous page

n	575
Log likelihood	-19.000.112

The table reports the results of the multinomial treatment effects regression. Dependent variables are displayed in the 2nd row. *ADJUSTMENTS* is the dependent variable and defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise. The coefficients' standard errors are in brackets. *, **, and *** indicate significance at 10, 5, and 1 percent, respectively.

In this section, we address our third research question and examine whether auditors' choice of negotiation strategy is affected by firm and auditor characteristics and by the perceived strategy of the tax advisor. Moreover, we test whether an endogeneity of auditor negotiation strategies affects our previously presented results.[14] With this aim, we conduct a multinomial treatment effects regression.

Table 3.6 displays the results. We find that tax auditors' strategies are not strongly affected by firm characteristics. One exception is that the likelihood of the use of a cooperative strategy increases if the firm is owned by a family or the firm is required to publish tax information. Regarding auditor characteristics, we observe that auditors who perceive taxpayers as subjects who seek to save taxes by all permitted means (*ATTITUDE*) are more likely to use a competitive instead of a neutral negotiation strategy. Moreover, the participation in advanced training courses (high intrinsic motivation) increases (decreases) the probability of the use of a mixed negotiation strategy.[15] However, the most significant determinants of tax auditors' chosen negotiation strategies are the perceived strategies of their opponents. Whenever the advisor is perceived as competitive or at least partly competitive (mixed strategy), this significantly decreases the use of a neutral auditor strategy.

[14] Since our sample also includes tax auditors who provided information on more than one case, we additionally investigate whether auditors tend to maintain a negotiation strategy or switch their strategy between audit cases. We find that 52.84% of tax auditors who filed in two cases used different negotiation strategies in each case. This indicates that personal characteristics alone do not determine the negotiation strategy choice.

[15] In unreported results, we also added an indicator variable in the selection and the outcome equation for firms that were audited for the first time by an auditor. We found neither an effect on the choice of negotiation strategies nor a direct effect on the adjustments.

Note that the results do not clearly favor either reciprocity theory or level-of aspiration theory. On the one hand, we observe that perceived competitive (cooperative, mixed) advisor behavior increases the probability that the auditor uses a competitive (cooperative, mixed) strategy, which is in line with the predictions of reciprocity theory. On the other hand, we find that a perceived competitive advisor strategy also increases the probability that auditor adopts a cooperative auditor negotiation strategy, which would be predicted by level-of-aspiration theory. Finally, the results presented in Table 3.6 demonstrate that the endogeneity of auditors' negotiation strategies does not affect our main result from the previous sections. Again, we find that a competitive auditor strategy leads, on average, to higher audit adjustments. However, we cannot confirm the slightly superior effect of a mixed strategy over a neutral strategy.

3.5 Additional Analyses

We subject our analyses to several robustness tests by conducting the following subsample analyses:

- To investigate whether the effect of negotiation strategies is affected by the legality of firms' tax planning activities, we exclude observations of firms that are suspected of tax evasion.

- The impact of auditor strategies could differ between cases without and with a final agreement of both parties. Thus, in another subsample analysis, we exclude all cases without final agreement.

- The auditor strategies' influence on audit adjustments could differ between small and large firms because only in large firms is each tax year subject to a field audit. Furthermore, if tax auditors' assignment to firms is not exogenous, these assignments will most likely correlate with firm size. It should be more likely for an experienced auditor to be assigned to a big firm than for an entrant. We thus repeat all estimations for two subsamples of firms: (i) firms that the tax administration has assigned to the largest size category and (ii) all other firms.

- Our final sample includes 575 cases from 399 unique auditors. To test whether our results are affected by auditors with more than a single case, we use a random subsample of 399 unique auditor-case observations.

- In our previous analyses, we exclude all cases without a final audit meeting to ensure that face-to-face negotiations between tax auditors and taxpayers/advisors actually occurred. In an additional test, we repeat our analysis with an extended sample, including cases without a final audit meeting.

In all these subsample analyses, we find a positive significant effect for competitive tax auditor strategies. All results are reported in Appendix C.

Furthermore, we examine whether negotiation strategies affect permanent and temporary adjustments in different ways. We calculate our baseline model with permanent (temporary) adjustments as dependent variable. We obtain similar results as before and observe no qualitative differences compared to our baseline model for permanent adjustments. For temporary adjustments, however, the results differ. In particular, we do not find any significant effect of auditors' negotiation strategy. This suggests that the strategy choice is most important if the negotiated issue results in permanent adjustments but may be neglected if additional taxes are only temporary. Results are reported in Appendix C.

3.6 Discussion and Conclusions

Similar to financial accounting, income tax law is often vague and ambiguous in order to cover a wide range of cases. However, this makes tax law to some extent always a matter of negotiation between taxpayers and revenue agents. In this paper, we focus on this negotiation process and empirically investigate three related research questions based on data collected from a survey of 610 tax auditors. First, we examine which negotiation strategies tax auditors usually apply. Our results indicate that the majority of tax auditors prefer competitive negotiation tactics (either purely competitive or competitive mixed with cooperative elements), whereas they rarely use purely cooperative or neutral negotiation strategies. Second, we assess whether and to what extent the chosen negotiation strategy affects tax adjustments. We are able to demonstrate that the negotiation outcome and thus the resulting tax liability for firms strongly depend on the auditor's choice of negotiation strategy. In particular, we find that a competitive negotiation strategy dominates other strategies and increases auditors' negotiation rate by ten percentage points. Third, we investigate which factors drive tax auditors' choice of negotiation strategy. Our analyses reveal that this choice is not strongly affected by firm or auditor characteristics; rather, it is determined by the opponents' negotiation strategy, as perceived by the tax auditor. If the auditor perceives that the opponent is (at least partly) competitive, the probability that auditor uses a neutral strategy decreases. Moreover, we also find that the perceived negotiation strategy of the advisor affects firms' tax adjustments. If the tax advisor is perceived as a 'neutral' negotiator this decreases significantly firms' tax liability. Overall, our results demonstrate that firms' tax burden does not only depend on tax law norms, but also on firm and auditor characteristics as well as negotiation strategies employed by tax advisors and auditors.

The effectiveness of the use of a competitive strategy on adjustments is in line with general negotiation research (Hüffmeier et al. 2014). However, the frequent use and effectiveness of a competitive strategy partly contrast with previous results in financial

auditing research, which shows a preference for cooperative tactics among auditors (Gibbins et al. 2010). This discrepancy suggests an important difference between tax and financial accounting audits. Due to risk of client loss, financial accounting auditors are always 'relationship managers' (McCracken et al. 2008). One objective of cooperative strategies is to build or maintain a good relationship between the negotiating parties. Thus, it seems reasonable that financial accounting auditors rely more on cooperative negotiations than tax auditors do. On the one hand, this may question the independence of financial accounting auditors; however, on the other hand, our results pose a challenge for governments that aim at introducing enhanced relationship programs. Such programs are based on the idea that trustful, cooperative relationships between taxpayers and revenue agencies help increase tax compliance (De Simone et al., 2013; OECD 2013). Prior research demonstrates that socioemotional outcomes can have a stronger impact on future relationships among negotiators than economic results (Curhan et al. 2006, 2010). Thus, our study reveals that an effective implementation of enhanced relationship programs would also require changing the implicit negotiation incentives of tax auditors towards more cooperative negotiation behavior.

Our study is a first attempt at understanding tax audit negotiations. Several open questions remain for future research. For example, studies could extend the number of possible auditor negotiation tactics. The study by Perreault et al. (2017), for instance, suggests that a simultaneous negotiation strategy may be more effective than a sequential strategy. Second, the effects of communication style (Perreault and Kida 2011) and emotions (Van Kleef et al. 2004) may also affect tax audit negotiations. Third, studies could examine the effects of taxpayers' negotiation strategies on audit outcomes. Fourth, countries differ in their tax audit environment (Van der Hel 2011). Future cross-country studies that examine the effect of the audit environment on tax audit negotiations may thus elucidate the effect of different incentives on tax audit negotiations. Fifth, we assumed implicitly that negotiators' strategy is constant during the negotiation process. Future research could examine negotiation strategies in a dynamic context and study, for example, whether tax auditors' negotiation strategies change over time in response to actions and counteroffers of the negotiation opponent (tax advisor).

3.7 Appendix A: Detection- and negotiation-controlled estimation

The first stage is modeled as a Tobit specification:

$$ln(T^* + h) = X_T\beta_T + \epsilon_T, \quad \text{with} \quad \epsilon_T \sim N(0, \sigma_T^2). \tag{3.2}$$

$$T = \begin{cases} T^* & \text{if} \quad T^* \geq 0 \quad \text{with} \quad P(T = T^*) = \frac{1}{\sigma_T(T+h)}\phi\left(\frac{ln(T+h) - X_T\beta_T}{\sigma_N}\right) \\ 0 & \text{if} \quad T^* < 0 \quad \text{with} \quad P(T = 0) = 1 - \frac{1}{\sigma_T(T+h)}\Phi\left(\frac{X_t\beta_T - ln(h)}{\sigma_N}\right). \end{cases} \tag{3.3}$$

ϕ and Φ are the standard normal density function and standard normal cumulative distribution, respectively. To extend the distribution of T^* below zero, we use h as a displacement parameter; see (Erard and Feinstein 2010, p. 9). In the context of our estimation, h=1 applies, which prevents cases with zero tax planning propensity to be dropped when logarithmizing.

At stage two, we model the detection process during the tax audit as a Probit model:

$$D^* = X_D\beta_D + \epsilon_D, \quad \text{with} \quad \epsilon_D \sim N(0, 1). \tag{3.4}$$

$$D = \begin{cases} 1 & \text{if} \quad D^* \geq 0 \quad \text{with} \quad P(D = 1) = \Phi(X_D\beta_D) \\ 0 & \text{if} \quad D^* < 0 \quad \text{with} \quad P(D = 0) = 1 - \Phi(X_D\beta_D). \end{cases} \tag{3.5}$$

Finally, the third stage models the tax auditor's ability to negotiate, N^*. We use the following two-limit Tobit specification to model this stage:

$$N^* = X_N\beta_N + \epsilon_N, \text{ with } \epsilon_N \sim N(0, \sigma_N^2). \tag{3.6}$$

$$N = \begin{cases} 1 & \text{if } N^* \geq 1 \qquad \text{with } P(N = 1) \quad = \Phi\left(\dfrac{X_N\beta_N - 1}{\sigma_N}\right) \\ N^* & \text{if } 0 < N^* < 1 \text{ with } P(N = N^*) = \dfrac{1}{\sigma_N}\phi\left(\dfrac{N - X_N\beta_N}{\sigma_N}\right) \\ 0 & \text{if } N^* \leq 0 \qquad \text{with } P(N = 0) \quad = 1 - \Phi\left(\dfrac{X_N\beta_N}{\sigma_N}\right). \end{cases} \tag{3.7}$$

Plugging in the path likelihoods yields a log likelihood function that allows estimation of parameters β_T, β_D, *and* β_N as well as σ_T and σ_N:

$$
\begin{aligned}
LL = \sum_{A>0} log\Bigg[& \frac{1}{\sigma_T(A+h)}\phi\Bigg(\frac{ln(A+h)-X_T\beta_T}{\sigma_T}\Bigg)\cdot\Phi(X_D\beta_D)\cdot\Phi\Bigg(\frac{X_N\beta_N-1}{\sigma_N}\Bigg) \\
& + \int_0^1 \frac{1}{N}\frac{1}{\sigma_T\left(\frac{A}{N}+h\right)}\phi\Bigg(\frac{ln\left(\frac{A}{N}+h\right)-X_T\beta_T}{\sigma_T}\Bigg)\cdot\Phi(X_D\beta_D)\cdot\frac{1}{\sigma_N}\phi\Bigg(\frac{N-X_N\beta_N}{\sigma_N}\Bigg)dN\Bigg] \\
& + \sum_{A=0} log\Bigg[1-\Phi\Bigg(\frac{X_T\beta_T-ln(h)}{\sigma_T}\Bigg)\cdot\Phi(X_D\beta_D)\cdot\Phi\Bigg(\frac{X_N\beta_N}{\sigma_N}\Bigg)\Bigg].
\end{aligned}
\tag{3.8}
$$

3.8 Appendix B: Tax Auditor Survey [Translated from German]

*Please think of your **last two** completed audit cases. Please answer the following questions.*

Case 1

Size group:	☐ Micro	☐ Small	☐ Medium	☐ L3	☐ L2	☐ L1	☐ Other
Legal form:	☐ sole proprietorship	☐ civil law partnership	☐ general partnership	☐ limited partnership	☐ partnership limited by shares		
	☐ GmbH & Co. KG	☐ non-typical silent partnership	☐ stock corporation	☐ corporation	☐ cooperative		
	☐ association	☐ foundation	☐ partnership	☐ _____			

Listed company / part of a listed group of affiliated companies:	☐ yes	☐ no	☐ not specified
Family firm (majority shareholding of one family):	☐ yes	☐ no	☐ not specified
Controlling owner-manager:	☐ yes	☐ no	☐ not specified

Determination of taxable income:			
☐ cash accounting	☐ financial balance sheet = tax balance sheet	☐ independent tax balance sheet	☐ § 60 II Income Tax Implementing Ordinance

Type of income:			
☐ commercial business	☐ self-employment income	☐ agriculture and forestry	☐ non-business

Industry:		
☐ construction	☐ banking and insurance	☐ accommodation and food services
☐ retail trade	☐ wholesale trade	☐ other services
☐ manufacturing	☐ information and communication	☐ transportation
☐ freelancer	☐ food industry and semi-luxury industry	☐ public utilities

Does the taxpayer belong to a group of affiliated companies?			
☐ no	☐ yes, to a:	☐ national group	☐ multinational group
	☐ as subsidiary company	☐ as controlling company	☐ as both

Represented in tax matters:	☐ yes ☐ no	taxpayer has an own accounting department:	☐ yes ☐ no
		<u>and</u> a separate tax department:	☐ yes ☐ no

Place of the field audit:	☐ at the company	☐ at the tax advisor's office	☐ in the tax office
Period of auditing:	from _____	to _____	

Follow-up audit:	☐ yes	☐ no	Number of examinations by you:	☐ 1x	☐ 2x	☐ 3x	☐ x

Highest sales in the audit period (€):					
☐ < 155k	☐ 155k-450k	☐ 450k-800k	☐ 800k-2M	☐ 2M-3.5M	☐ 3.5M-6.5M
☐ 6.5M-8M	☐ 8M-15M	☐ 15M-20M	☐ 20M-32M	☐ > 32M	☐ not specified
Highest taxable income in the audit period (€):					
☐ loss	☐ 0 < 32k	☐ 32k-50k	☐ 50k-115k	☐ 115k-250k	☐ 250k-500k
☐ 500k-1M	☐ 1M-5M	☐ 5M-10M	☐ 10M-20M	☐ > 20M	☐ not specified
Was the participation of other revenue agents or their support needed?				☐ yes	☐ no
☐ specialist for foreign relations		☐ specialist for reorganization		☐ specialist for auditing software	
☐ specialist for valuation		☐ building expert		☐ actuary	
Which result did you achieve in the audit?					
☐ without result	☐ additional tax assessment approx.: _____			☐ tax credit approx.: _____	
	☐ reduction accumulated losses carried forward approx.: _____			☐ increase accumulated losses carried forward approx.: _____	
If specialized revenue agents took part in the auditing, which share is allotted to their audit?					
☐ < 10%	☐ 10 < 25%	☐ 25 < 33%	☐ 33 < 50%	☐ 50 < 66%	☐ 66 < 75% ☐ 75 < 90% ☐ 100%
How high would you estimate the share of the audit adjustments that result in merely temporary income shifting?				ca._____%	
If audit adjustments result in temporary income shifting, will these reverse within 5 years after the last audited year?					
☐ yes	☐ no, but:	☐ within ___ years		☐ not at all	
How many days for auditing and reporting were required?				auditing:____	reporting:____
Which actions were necessary to accelerate the audit? (multiple answers allowed)					
☐ Imposing short deadlines	☐ Threat of imposing a fine for delay		☐ Threat of coercive measures		
☐ Threat of discontinuing negotiations without agreement		☐other actions:_____			

How long did the audit approximately last (from the preparation to the completion of the audit report)?

□ < 1 month □ 2 to 3 months □ 4 to 6 months □ 7 to 9 months

□ 10 months to 1 year □ 1 to 1.5 years □ 1.5 to 2 years □ > 2 years

How many weeks ago did you complete your tax audit report? _____ weeks ago.

Which were the key issues of the audit?

1. _____ 2. _____ 3. _____

4. _____ 5. _____ □ none

Which of them led to adjustments?

□ no. 1 □ no. 2 □ no. 3 □ no. 4 □ no. 5 □ not one

If further adjustments were made, please indicate them:

6. _____ 7. _____ 8. _____

9. _____ 10. _____ 11. _____

Has tax evasion been suspected, and if yes, in which case?

□ no □ yes: □ no. 1 □ no. 2 □ no. 3 □ no. 4 □ Nr. 5

□ no. 6 □ no. 7 □ no. 8 □ no. 9 □ no. 10 □ no. 11

Did a final audit conference take place? □ yes □ no

If yes, did the section head take part in it? □ yes □ no

How many participants were there altogether? tax office: ___ taxpayer: ___ tax advisor: ___

Did you come to an agreement on the adjustments? □ yes □ no

How did you agree on adjustments?

❑ I waived small adjustments in favor of one large adjustment	❑ No agreement on all adjustments.	❑ Agreement on all adjustments.
❑ I waived adjustments because the firm's "pain threshold" was reached.	❑ I waived uncertain adjustments to avoid the risk of litigation.	❑ I waived adjustments because the other side convinced me.

How would you describe the atmosphere?

❑ friendly	❑ cooperative	❑ unfriendly	❑ objective	❑ emotional
❑ constructively	❑ entrenched	❑ reproachful	❑ non-factual	❑ _____

Which statements describe the behavior of the taxpayer and the tax advisor? Please put a cross on yes or no!

		yes	no			yes	no
1. Appealed to the economic situation of the company	Taxp.:	❑	❑	2. Set deadlines but did not adhere to them	Taxp.:	❑	❑
	Adv:	❑	❑		Adv:	❑	❑
3. Threatened with tax court, disciplinary com-plaint, etc.	Taxp.:	❑	❑	4. Kept you waiting or disrupted meetings	Taxp.:	❑	❑
	Adv:	❑	❑		Adv:	❑	❑
5. Imposed time pressure	Taxp.:	❑	❑	6. Was authoritarian	Taxp.:	❑	❑
	Adv:	❑	❑		Adv:	❑	❑
7. Referred to an established system	Taxp.:	❑	❑	8. Was particularly friendly	Taxp.:	❑	❑
	Adv:	❑	❑		Adv:	❑	❑
9. Information was withheld/filtered	Taxp.:	❑	❑	10. Referred to actions of other auditors	Taxp.:	❑	❑
	Adv:	❑	❑		Adv:	❑	❑
11. Information was manipulated/extenuated	Taxp.:	❑	❑	12. Appeared self-confident	Taxp.:	❑	❑
	Adv:	❑	❑		Adv:	❑	❑
13. Frequently interrupted you while you were speaking	Taxp.:	❑	❑	14. Offered agreement on minor assessments	Taxp.:	❑	❑
	Adv:	❑	❑		Adv:	❑	❑
15. Said what you want to hear	Taxp.:	❑	❑	16. Offered agreement on major assessments	Taxp.:	❑	❑
	Adv:	❑	❑		Adv:	❑	❑

Finally, you are asked to answer a few questions regarding yourself, your personal valuation as well as training course A24a.

Please indicate on each scale to what extent the following statements apply to you!					
	disagree				agree
I felt exposed to a strong statistical pressure during my auditing.	☐	☐	☐	☐	☐
There is a statistical pressure, but it does not affect me since I regularly achieve my target.	☐	☐	☐	☐	☐
Due to the statistical pressure, I consider the audit target to be achieved by reaching the de minimis level.	☐	☐	☐	☐	☐
Taxpayers aim to declare everything correctly.	☐	☐	☐	☐	☐
Nearly every taxpayer would cheat on their tax declaration if there was no control by the tax authority.	☐	☐	☐	☐	☐
Taxpayers without a tax department/tax advisor are over-burdened by their tax obligations.	☐	☐	☐	☐	☐
Taxpayers seek to minimize their tax burden by all permitted means.	☐	☐	☐	☐	☐
Tax advice abates taxpayers' material and formal deficiencies reducing the number and amount of adjustments.	☐	☐	☐	☐	☐
Tax advice accelerates audit procedures.	☐	☐	☐	☐	☐
Supporting the audit, the tax advisor promotes the opportunity to settle an agreement.	☐	☐	☐	☐	☐
The clarification of facts by the tax advisor is only possible with difficulty.	☐	☐	☐	☐	☐

You are:	□ female			□ male		
You work at a:	□ tax office for individuals			□ tax office for corporations		
Your salary level is:	_____					
Highest education qualification:	□ University	□ University of applied science	□ University-entrance diploma	□ General Certificate of Secondary Education	□ Certificate of Secondary Education	□ other
Age (in years):	□ 20-30	□ 30-40	□ 40-50	□ 50-60	□ over 60	
revenue agent since (in years):	□ < 5	□ 5-10	□ 10-15	□ 15-20	□ over 20	
Working in the tax authority (in years):	□ < 5	□ 5-10	□ 10-15	□ 15-20	□ over 20	
You examine mainly:	□ micro/small/medium companies		□ large companies		□ groups	
	□ associations/nonprofit limited liability companies		□ public-law institutions		□ cooperatives	

3.9 Appendix C: Additional Analyses

Table 3.7: Detection- and Negotiation-Controlled Estimation - No Evasion Cases

1^{st} Stage		2^{nd} Stage		3^{rd} Stage	
Constant	6.0548***	*Constant*	0.1689***	*Constant*	0.2604***
	(0.5457)		(0.0166)		(0.034)
FAMILY	-0.0137	*EXPERIENCE*	0.6296***	*AUD.COMP*	0.1313***
	(0.138)		(0.0251)		(0.0409)
PUBLIC	0.6943***	*SALARAY*	0.4534***	*AUD.COOP*	-0.0161
	(0.2023)		(0.0279)		(0.0413)
LOG(SALES)	0.3476***	*TRAINING*	0.4971***	*AUD.MIX*	0.0687
	(0.0404)		(0.0335)		(0.0451)
LOSS	0.8229***	*SCHOOL*	0.1290***	*ADV.COMP*	0.1399***
	(0.1643)		(0.0156)		(0.0425)
FOREIGN	0.8579***	*ATTITUDE*	0.0944***	*ADV.COOP*	0.1237***
	(0.2311)		(0.0144)		(0.0386)
GROUP	0.6246***	*NOSTOP*	0.0553***	*ADV.MIX*	0.1473***
	(0.1729)		(0.0131)		(0.0469)
CORPORATION	-0.6204***	*HEAD*	0.0942***		
	(0.1324)		(0.0141)		
N	499	*SIG1*	1.0971***	*SIG3*	0.1939***
MEAN.LOG	-11.5566		(0.0482)		(0.0157)

The table reports the results of the detection controlled estimation for a subsample of non-evasion cases. *ADJUSTMENTS* is the dependent variable and defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise. The coefficients' standard errors are in brackets. *, **, and *** indicate significance at 10, 5, and 1 percent, respectively.

Table 3.8: Detection- and Negotiation-Controlled Estimation - Big Firms

1^{st} Stage		2^{nd} Stage		3^{rd} Stage	
Constant	7.7451***	*Constant*	0.1820***	*Constant*	0.3468***
	(0.7095)		(0.0148)		(0.0464)
FAMILY	0.1165	*EXPERIENCE*	0.7595***	*AUD.COMP*	0.1171**
	(0.159)		(0.0313)		(0.0524)
PUBLIC	-0.6616	*SALARAY*	0.5318***	*AUD.COOP*	-0.0251
	(0.4329)		(0.0318)		(0.0662)
LOG(SALES)	0.1873***	*TRAINING*	0.5228***	*AUD.MIX*	0.0484
	(0.0537)		(0.0361)		(0.0557)
LOSS	0.4293**	*SCHOOL*	0.1133***	*ADV.COMP*	0.1390**
	(0.1881)		(0.0141)		(0.0569)
FOREIGN	0.5134	*ATTITUDE*	0.1032***	*ADV.COOP*	0.1384***
	(0.3765)		(0.0109)		(0.0531)
GROUP	0.5685***	*NOSTOP*	0.0872***	*ADV.MIX*	0.1188**
	(0.2112)		(0.0084)		(0.0605)
CORPORATION	-0.2419	*HEAD*	0.1832***		
	(0.1517)		(0.0101)		
EVASION	0.8493***				
	(0.1724)				
N	401	*SIG1*	0.8698***	*SIG3*	0.2373***
MEAN.LOG	-10.9549		(0.0585)		(0.0162)

The table reports the results of the detection controlled estimation for a subsample of big firms. *ADJUSTMENTS* is the dependent variable and defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise. The coefficients' standard errors are in brackets. *, **, and *** indicate significance at 10, 5, and 1 percent, respectively.

Table 3.9: Detection- and Negotiation-Controlled Estimation - Small Firms

1^{st} Stage		2^{nd} Stage		3^{rd} Stage	
Constant	8.9686***	*Constant*	0.1089***	*Constant*	0.2436***
	(1.5118)		(0.0162)		(0.0531)
FAMILY	-0.2782	*EXPERIENCE*	0.5291***	*AUD.COMP*	0.2218**
	(0.2448)		(0.0318)		(0.1038)
PUBLIC	0.7326**	*SALARAY*	0.2981***	*AUD.COOP*	-0.0503
	(0.2959)		(0.0268)		(0.0634)
LOG(SALES)	0.1907*	*TRAINING*	0.5296***	*AUD.MIX*	0.1871*
	(0.1012)		(0.0627)		(0.1117)
LOSS	1.1528***	*SCHOOL*	-0.0583***	*ADV.COMP*	0.1950**
	(0.3499)		(0.0104)		(0.0803)
FOREIGN	0.7654**	*ATTITUDE*	0.0868***	*ADV.COOP*	0.1172*
	(0.3455)		(0.0162)		(0.0684)
GROUP	0.5234**	*NOSTOP*	0.1557***	*ADV.MIX*	0.2001**
	(0.2438)		(0.0161)		(0.0871)
CORPORATION	-0.9365***	*HEAD*	0.0284***		
	(0.2323)		(0.0104)		
EVASION	1.4859***				
	(0.4127)				
N	174	*SIG1*	1.1334***	*SIG3*	0.2161***
MEAN.LOG	-12.9811		(0.1128)		(0.0223)

The table reports the results of the detection controlled estimation for a subsample of small firms. *ADJUSTMENTS* is the dependent variable and defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise. The coefficients' standard errors are in brackets. *, **, and *** indicate significance at 10, 5, and 1 percent, respectively.

Table 3.10: Detection- and Negotiation-Controlled Estimation - Unique Auditors

1^{st} Stage		2^{nd} Stage		3^{rd} Stage	
Constant	5.9587***	*Constant*	0.1404***	*Constant*	0.2448***
	(0.709)		(0.0132)		(0.0388)
FAMILY	0.1397	*EXPERIENCE*	0.6310***	*AUD.COMP*	0.2198***
	(0.1684)		(0.0285)		(0.0526)
PUBLIC	0.6384***	*SALARAY*	0.4265***	*AUD.COOP*	-0.0297
	(0.2274)		(0.0269)		(0.042)
LOG(SALES)	0.3453***	*TRAINING*	0.4272***	*AUD.MIX*	0.0853*
	(0.0539)		(0.0331)		(0.0484)
LOSS	0.7257***	*SCHOOL*	0.0602***	*ADV.COMP*	0.0827*
	(0.1928)		(0.012)		(0.0467)
FOREIGN	0.9789***	*ATTITUDE*	0.1057***	*ADV.COOP*	0.1024**
	(0.2398)		(0.0103)		(0.0443)
GROUP	0.8388***	*NOSTOP*	0.1428***	*ADV.MIX*	0.1809***
	(0.1929)		(0.0086)		(0.0601)
CORPORATION	-0.6721***	*HEAD*	0.1368***		
	(0.1527)		(0.0087)		
EVASION	0.7864***				
	(0.2043)				
N	399	*SIG1*	1.1359***	*SIG3*	0.1805***
MEAN.LOG	-11.6419		(0.052)		(0.0179)

The table reports the results of the detection controlled estimation for a subsample in which each auditor occur only once. If an auditor reported two or more cases, we randomly draw one case of them. *ADJUSTMENTS* is the dependent variable and defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise. The coefficients' standard errors are in brackets. *, **, and *** indicate significance at 10, 5, and 1 percent, respectively.

Table 3.11: Detection- and Negotiation-Controlled Estimation - with Cases without Exit Meeting

1^{st} Stage		2^{nd} Stage		3^{rd} Stage	
Constant	5.9701***	*Constant*	0.1425***	*Constant*	0.2760***
	(0.57)		(0.0161)		(0.0346)
FAMILY	0.1088	*EXPERIENCE*	0.6550***	*AUD.COMP*	0.0971**
	(0.1333)		(0.0259)		(0.0422)
PUBLIC	0.7358***	*SALARAY*	0.3950***	*AUD.COOP*	-0.0151
	(0.2079)		(0.0248)		(0.0446)
LOG(SALES)	0.3368***	*TRAINING*	0.4220***	*AUD.MIX*	0.0875*
	(0.0424)		(0.0293)		(0.0457)
LOSS	0.6405***	*SCHOOL*	0.1184***	*ADV.COMP*	0.1108**
	(0.1621)		(0.0154)		(0.0471)
FOREIGN	0.9565***	*ATTITUDE*	0.0764***	*ADV.COOP*	0.1528***
	(0.2499)		(0.0145)		(0.0408)
GROUP	0.5709***	*NOSTOP*	0.0369***	*ADV.MIX*	0.1305***
	(0.1772)		(0.0135)		(0.0468)
CORPORATION	-0.5209***	*HEAD*	0.0728***		
	(0.1335)		(0.0144)		
EVASION	0.8949***				
	(0.1982)				
N	470	*SIG1*	1.0497***	*SIG3*	0.1982***
MEAN.LOG	-11.4321		(0.0489)		(0.015)

The table reports the results of the detection controlled estimation for a sample including firms without an exit meeting. *ADJUSTMENTS* is the dependent variable and defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise. The coefficients' standard errors are in brackets. *, **, and *** indicate significance at 10, 5, and 1 percent, respectively.

Table 3.12: Detection- and Negotiation-Controlled Estimation - Permanent Adjustments

1^{st} Stage		2^{nd} Stage		3^{rd} Stage	
Constant	6.5732***	*Constant*	0.1704***	*Constant*	0.2652***
	(0.5619)		(0.0134)		(0.0346)
FAMILY	0.0145	*EXPERIENCE*	0.5650***	*AUD.COMP*	0.1050***
	(0.1113)		(0.014)		(0.0379)
PUBLIC	0.6306***	*SALARAY*	0.4306***	*AUD.COOP*	0.0178
	(0.1477)		(0.0137)		(0.0445)
LOG(SALES)	0.2998***	*TRAINING*	0.5226***	*AUD.MIX*	0.0765*
	(0.0411)		(0.0138)		(0.0417)
LOSS	0.8336***	*SCHOOL*	0.0582***	*ADV.COMP*	0.1242***
	(0.1162)		(0.0134)		(0.0429)
FOREIGN	0.8827***	*ATTITUDE*	0.0841***	*ADV.COOP*	0.0819**
	(0.2228)		(0.0134)		(0.0385)
GROUP	0.6223***	*NOSTOP*	0.0790***	*ADV.MIX*	0.1079**
	(0.1399)		(0.0133)		(0.0433)
CORPORATION	-0.7494***	*HEAD*	0.1941***		
	(0.114)		(0.0134)		
EVASION	1.2075***				
	(0.146)				
N	503	*SIG1*	1.0235***	*SIG3*	0.2124***
MEAN.LOG	-11.3184		(0.0435)		(0.0161)

The table reports the results of the detection controlled estimation. $\text{ADJUSTMENTS}_{permanent}$ is the dependent variable and is defined as the amount of ADJUSTMENTS that stems from permanent differences between tax and book values. *ADJUSTMENTS* is defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise. The coefficients' standard errors are in brackets. *, **, and *** indicate significance at 10, 5, and 1 percent, respectively.

Table 3.13: Detection- and Negotiation-Controlled Estimation - Temporary Adjustments

1^{st} Stage		2^{nd} Stage		3^{rd} Stage	
Constant	5.6682***	*Constant*	-1.7361*	*Constant*	-0.0007
	(1.1544)		(0.984)		(0.0013)
FAMILY	-0.2412	*EXPERIENCE*	-0.0466	*AUD.COMP*	-0.0014
	(0.2459)		(0.0442)		(0.0012)
PUBLIC	-0.0388	*SALARAY*	0.4316***	*AUD.COOP*	0.0000
	(0.3009)		(0.1412)		(0.0014)
LOG(SALES)	0.6267***	*TRAINING*	0.4679*	*AUD.MIX*	-0.0004
	(0.0739)		(0.2798)		(0.0012)
LOSS	1.0323***	*SCHOOL*	-0.1883	*ADV.COMP*	0.0025
	(0.3136)		(0.3926)		(0.0016)
FOREIGN	1.1118***	*ATTITUDE*	0.1453	*ADV.COOP*	0.0022
	(0.2896)		(0.3503)		(0.0014)
GROUP	0.6314**	*NOSTOP*	-0.3480	*ADV.MIX*	0.0024
	(0.2635)		(0.3551)		(0.0015)
CORPORATION	-0.3689*	*HEAD*	0.1105		
	(0.2121)		(0.3985)		
EVASION	0.6762*				
	(0.409)				
N	503	*SIG1*	1.1846***	*SIG3*	0.0061***
MEAN.LOG	-5.25803		(0.0865)		(0.002)

The table reports the results of the detection controlled estimation. $\text{ADJUSTMENTS}_{temporary}$ is the dependent variable and is defined as the amount of ADJUSTMENTS that stems from temporary differences between tax and book values. *ADJUSTMENTS* is defined as the tax base adjustments assessed in the audit. *FAMILY* equals one for firms that are held by at least 50% by one family and zero otherwise. *PUBLIC* is one if the firm is required to publish a profit and loss account and zero otherwise. *SALES* is the mid-value of the interval a firm was classified into, in EUR. The value for the last (open interval) is 48 EUR M. *SIZE* is the natural logarithm of *SALES*. *LOSS* equals one if the firm has suffered financial losses in the audit period and zero otherwise. *FOREIGN* equals one if the key audit areas include the term "foreign", the firm is a member of a foreign group, or the involved tax auditor is specialized in foreign relations and zero otherwise. *GROUP* equals one if the company is member of a group and zero otherwise. *CORPORATION* equals one for corporations and zero otherwise. *EVASION* equals one for firms that are suspected of tax evasion and zero otherwise. *EXPERIENCE* is the number of auditor years at the revenue agency. *SALARY* is the number of the pay bracket. *TRAINING* amounts to the number of advanced training courses per year. *SCHOOL* equals one for auditors with a university degree and zero otherwise. *ATTITUDE* equals one if tax auditors fully agrees with the following statement: "Taxpayers seek to minimize their tax burden by all permitted means." and zero otherwise. *MOTIVATION* equals one if tax auditors fully disagreed with the following statement: "Due to the statistical pressure I consider the audit objective to be achieved by reaching the *de minimis* threshold." and zero otherwise. *HEAD* equals one if a section head of the revenue agency participated in the final audit meeting and zero otherwise. *COMP (COOP)* equals one if the auditor used solely competitive (cooperative) tactics and zero otherwise. *MIX* equals one if the auditor did use cooperative and competitive tactics and zero otherwise. *NEUTRAL* equals one if the auditor did not use cooperative or competitive tactics and zero otherwise. *ADV.COMP (ADV.COOP)* is one if the factor score of the competitive (cooperative) component exceeds/equals the sample median value and the factor score of the cooperative (competitive) component is below the sample median value and zero otherwise. *ADV.MIX* equals one if each factor exceeds/equals the sample median value and zero otherwise. *ADV.NEUTRAL* equals one if each factor score is below the sample median value and zero otherwise. The coefficients' standard errors are in brackets. *, **, and *** indicate significance at 10, 5, and 1 percent, respectively.

Chapter 4

Conforming Tax Avoidance through Intertemporal Accrual Management

Abstract

This study examines conforming tax avoidance through intertemporal profit shifting of German firms, and in particular of German family firms. In contrast to previous research, this study investigates tax-induced profit shifting in periods without the influence of tax reforms, and thus firms' ordinary tax-induced income shifting behavior isolated from single-time effects. In so doing, I examine how firms shift income through discretionary accruals with respect to their marginal tax rates. I simulate a firm's marginal tax rate (MTR) using the procedure of Graham and Kim (2009) to measure their tax incentives. In contrast to previous studies, marginal tax rates are also calculated before accrual management (pre-managed MTR). Findings suggest that firms shift income from high marginal tax rate periods to periods with lower marginal tax rates. Regarding the pre-managed MTR, family firms are shifting more discretionary current accruals with respect to their marginal tax rate. This implies that family firms engage in more conforming tax avoidance than their non-family counterparts. I find no effect of multinational firms on tax-induced intertemporal profit shifting. Furthermore, firms' real activities manipulation is negatively affected by their marginal tax rates. This effect is again particularly pronounced for family firms.

4.1 Introduction

There is a vast amount of literature that examines corporate practices which reduce taxable income. This goal can be achieved by reducing taxable income without affecting financial income (non-conforming tax avoidance) or reducing taxable income and financial income at the same time (conforming tax avoidance). There are several reasons why firms opt for conforming over non-conforming avoidance and vice versa. For example, firms under high capital market pressure whose highest priority is to report profits will most likely not engage in conforming tax avoidance which will reduce their financial income (e.g., Penno and Simon 1986). In contrast, there might be firms that prefer to engage in conforming tax avoidance to avoid negative non-tax costs of non-conforming tax avoidance. Excessive non-conforming tax avoidance will lead to low effective tax rates or book-tax-differences. This could result in possible reputation costs as well as increased audit risks because tax authorities could see low effective tax rates as a signal of aggressive tax planning (e.g., Frank et al. 2009, p. 471). While there is much literature examining non-conforming tax avoidance (e.g., Chen et al. 2010; Rego 2003), previous research is almost silent when it comes to conforming tax avoidance. Most measures are just not a feasible measure for capturing conforming avoidance (Hanlon and Heitzman 2010). Thus, most researchers are solely examining non-conforming tax avoidance without taking the overall avoidance level into account. I am only aware of the paper of Badertscher et al. (2017) that introduces a general conforming tax avoidance measure. However, the authors acknowledge that they cannot exclude that their findings are caused by poor firm performance or other management incentives (e.g., big bath accounting, earnings smoothing). Furthermore, I describe scenarios in Section 4.2 in which the measure can fail to capture the real amount of conforming tax avoidance.

Prior literature examines earnings management in response to tax rate changes due to tax reforms. Evidence suggests that firms use accrual management to shift income from high tax rates assessment periods to lower tax rate periods (e.g., Scholes et al. 1992; Guenther 1994). However, these studies measure one-time effects. Less is known about tax motivated earnings management without the influence of tax reforms. Even in institutional settings with constant corporate tax rates, the nominal tax rate can differ from a firm's marginal tax rate because of the asymmetric treatment of gains and losses within the tax law. As a result, tax incentives arise to shift income from high to low marginal tax rate periods. This study focuses in particular on earnings management through accrual management. According to Jones (1991) the sum of a firm's annual income over all years must equal the sum of its annual cash flows over all years. Thus, beside the possiblity that earnings are managed downwards to avoid taxes (or for other non-tax incentives), income-decreasing accruals can also arise as an unavoidable consequence of previous (excessive)

upward earnings management (Jones 1991). In line with the latter, Badertscher et al. (2009) find no effect of a firm's tax status on downward earnings management.

I contribute to this research by examining German firms accrual management and control for tax and non-tax incentives. In contrast to previous literature, I use marginal tax rates before accrual management, since this reflects a manager's initial situation before downward or upward earnings management is conducted. I show that firms shift income from high to low marginal tax rate periods, even in the absence of tax reforms. Furthermore, I show that this tax-induced shifting behavior is particularly pronounced for family firms.

The remainder of this paper is organized as follows: Sections 4.2 and 4.3 give an overview on research about conforming tax avoidance and tax-induced earnings management. Section 4.4 addresses the special case of family firms' tax avoidance. Sections 4.5 and 4.6 describe empirical models to obtain accruals and marginal tax rates. Sections 4.7 and 4.8 present the empirical results. The last section concludes the paper.

4.2 Non-Conforming and Conforming Tax Avoidance

Tax avoidance can be separated into conforming and non-conforming avoidance. While non-conforming tax avoidance aims at reducing taxable income without affecting financial income, conforming tax avoidance reduces both taxable and financial income at the same time. Many researchers examining tax aggressiveness of corporations using a firm's effective tax rate, and thus solely non-conforming tax avoidance (e.g., Chen et al. 2010; Rego 2003). Non-conforming tax avoidance measures are accompanied by major restrictions. Upward earnings management of financial income (managing financial income upwards, while taxable income remains constant) is not distinguishable from non-conforming tax avoidance (managing taxable income downwards while holding financial income constant).[1]

However, assuming that all differences between taxable income and financial income arise from non-conforming tax avoidance, the financial income reflects a firm's income before avoidance. Measuring conforming tax avoidance is considerably more difficult. The earnings level before conforming avoidance cannot be observed because conforming avoidance affects taxable and financial income at the same time. I am only aware of one working paper that proposes a general measure for conforming tax avoidance. Badertscher et al.

[1] For anecdotal evidence, see the annual report of Lufthansa AG for the year 2015. Lufthansa initially recognized temporary valuation differences in carrying amounts for financial and tax purposes (Deutsche Lufthansa AG 2015). As a result, Lufthansa recognized deferred tax income and turned a pre-tax loss into an after-tax profit. This affects Lufthansa's effective tax rate, although the initial recognition of temporary valuation differences was most likely made for earnings management reasons and not for tax reasons.

(2017) use the residuals of the following regression to measure conforming tax avoidance:

$$\begin{aligned} TP_{i,t}/TA_{i,t-1} = \beta_0 + \beta_1 BTD_{i,t} + \beta_2 NEG_{i,t} + \beta_3 BTD_{i,t} \times NEG_{i,t} + \beta_4 NOL_{i,t} \\ + \beta_5 \Delta NOL_{i,t} + \beta_6 Sales_{i,t}/NOA_{i,t} + \epsilon_{i,t}, \end{aligned} \tag{4.1}$$

where $TP_{i,t}/TA_{i,t-1}$ is the ratio of cash taxes paid to lagged total assets, *BTD* are book-tax differences, *NEG* is an indicator variable for negative book-tax differences, *NOL* are net operating losses and ΔNOL reflects the change in *NOL*, and *Sales/NOA* is the ratio of sales to net operating assets. Badertscher et al. (2017) argue that cash taxes paid over assets reflects firms' overall (conforming and non-conforming) tax avoidance. They regress a non-conforming tax avoidance measure (i.e., firm's book-tax-differences) and further controls on this ratio and assume that the corresponding residuals reflect conforming tax avoidance. They argue that the engagement in conforming tax avoidance will result in a decrease of the ratio of cash taxes paid to lagged total assets, because lagged total assets are not affected by the current year's conforming tax avoidance.

However, this measure is also affected by last year's conforming tax avoidance engagement. I illustrate this problem for an example firm in Table 4.1: Income before tax avoidance, the statutory tax rate and other assets are constant over all periods for the sample firm. The firm does not engage in conforming tax avoidance in $t = 0$ and $t = 1$. In $t = 2$ and $t = 3$ the firm engages in conforming tax avoidance to the same extent. The corresponding ratios of cash taxes paid to lagged total assets amount to 2% in $t = 2$ and 2.17% in $t = 3$ respectively. Although conforming tax avoidance remains constant in both periods, the ratios differ as the lagged total assets are affected by last year's tax avoidance engagement. This could lead to false inferences because firms that continuously engage in conforming tax avoidance (t=3, conforming tax avoidance in prior year) will c.p. have higher ratios than firms not continuously engaging in conforming tax avoidance (t=2, no conforming tax avoidance in previous year).

Moreover, Chen et al. (2018) show that incorrect inferences of regression coefficients can be drawn if researchers use residuals of a first-step regression as a dependent variable in a second-step regression. Coefficients of the second-step regression can be biased and even switch signs, if the second-step regression does not include all independent variables of the first step. The bias of regression coefficients depends among other factors on the correlation of second-step regressors and first-step regressors that are not included in the second step. In the case of the conforming tax avoidance model of Badertscher et al. (2017) the first-step regression includes book-tax differences which are most likely correlated with family firms (the significant positive effect of family ownership on a firm's three-year cash effective tax rate suggests a negative correlation of family firms and non-conforming tax avoidance (Badertscher et al. 2017, Table 7). Thus, the positive significant effect of family firms on conforming tax avoidance can be caused by the omitted correlation of family and

Table 4.1: Illustration of Conforming Tax Avoidance Measurement Errors

Time	$t = 0$	$t = 1$	$t = 2$	$t = 3$
$Income\_before\_Tax\_Avoidance_t$	100	100	100	100
$Conforming\_Tax\_Avoidance_t$	0	0	-50	-50
$Pre\text{-}tax\_Income_t$	100	100	50	50
$Cash\_Taxes\_Paid_t$ (20%)	20	20	10	10
Net_Income_t	80	80	40	40
$Other\_Assets_t$	420	420	420	420
$Total\_Assets_t$	500	500	460	420
$Total\_Assets_{t-1}$	-	500	500	460
$TP_{i,t}/TA_{i,t-1}$	-	20/500	10/500	10/460
$TP_{i,t}/TA_{i,t-1}$ in %	-	4%	2%	2.17%

This table illustrates the bias in $Taxes\_Paid_t/Total\_Assets_{t-1}$ ($TP_{i,t}/TA_{i,t-1}$) that may occur when lagged total assets are used to scale cash taxes paid: *Income_before_Tax_Avoidance* amounts to 100, the statutory tax rate amounts to 20%, and *Other_Assets* amounts to 420 in all periods. In $t = 0$ (starting year) and $t = 1$ the sample firm is not engaging in any conforming tax avoidance. This results c.p. in *Cash_Taxes_Paid* of 20, *Total_Assets* of $420 + 80 = 500$ and in a $Taxes\_Paid_t/Total\_Assets_{t-1}$ ratio of 20/500 in $t = 1$. In $t = 2$ and $t = 3$ the firm is engaging in conforming tax avoidance and pre-tax income is reduced by 50. As a result, cash taxes paid amount to 10 and total assets amount to 460 in each year. The ratios of $TP_{i,t}/TA_{i,t-1}$ are c.p. 10/500 in $t = 2$ and 10/460 in $t = 3$, even though the firm engaged for the same amount in conforming tax avoidance in periods $t = 2$ and $t = 3$. The ratio amount to 2% in $t = 2$, while it is 2.17% in $t = 3$. Thus the ratio is dependent on the previous year's engagement in conforming tax avoidance.

book-tax differences in the second-step regression. Moreover, the authors also acknowledge that they cannot disentangle whether these accruals are related to firms conforming tax avoidance, are caused by poor firm performance or income decreasing decisions with non-tax reasons (e.g., income smoothing or big bath accounting). In summary, the conforming tax avoidance measure contains two problems: First, the identification of the amount of conforming tax avoidance, since the measure is affected by the previous year's conforming tax avoidance. Second, the authors cannot rule out that downward earnings management has non-tax reasons. I contribute to this problem and to previous literature by examining whether firms' direction and amount of accrual management is affected by their marginal tax rates.

4.3 Tax-Induced Earnings Management and Marginal Tax Rates

Policymakers change tax laws in the form of tax rate changes to address social needs, foster economic growth or attract business. In an international context, firms exploit tax rate differences between countries by shifting income from high tax rate countries to low tax rate countries (e.g., Klassen et al. 1993; Huizinga and Laeven 2008).

However, profit shifting between countries requires firms to operate internationally, so this option is not available for domestic firms. These reforms also offer incentives for firms to shift income within one country. In so doing, firms shift income from high tax rate assessment periods to low tax rate assessment periods. In past decades, several studies address earnings management in response to tax reforms. Numerous studies pay particular attention to the effect of the U.S. TAX Reform Act in 1986 (TRA86). Scholes et al. (1992)

observe that firms shift income by accelerating their expense recognition in years prior to the TRA86 to profit from the lower tax rate. Guenther (1994) finds significant negative accruals for U.S. firms prior to the TRA86. Maydew (1997) notes that firms with net operating loss carrybacks recognized nonrecurring losses that increased tax refunds in high-tax rate years. Previous findings suggest that firms use discretionary accruals to decrease financial as well as taxable income in high-tax rate assessment periods, which is in line with the definition of conforming tax avoidance. In terms of marginal tax rates, an exogenous tax rate cut will decrease the marginal tax rate of a profitable firm in future periods. Thus, firms will shift income from high marginal tax rate periods to low marginal tax rate periods. These effects are measured as a response to external tax rate cuts, but less is known about firms profit shifting behavior in the absence of tax reforms. Moreover, marginal tax rates may change even in a system with constant tax rates due to the asymmetric treatment of gains and losses within the tax law. As a result tax incentives arise to shift income from high to low marginal tax rate periods. I define my first hypothesis in line with earlier findings as follows:

Hypothesis 1 *Income decreasing earnings management is positively affected by firms' marginal tax rates.*

4.4 Tax Avoidance of Family Firms

Recent literature incorporates ownership and management structures into the investigation of corporate tax avoidance. Chen et al. (2010) establish that family firms engage in less non-conforming tax avoidance. However, assuming that effective tax rates are an appropriate measure for nonconforming tax avoidance, there is still a lack of knowledge concerning the overall avoidance of family firms. Chen et al. (2010) argue that family firms are generally less tax aggressive because of the unique manager-shareholder conflict. In line with that, Badertscher et al. (2013) ascertain that tax avoidance increases with the separation of ownership and control. Wilson (2009) finds that tax shelters are associated with larger book-tax differences. Thus, book-tax differences may be interpreted as a signal of tax aggressiveness and increase audit probability (e.g., McGuire et al. 2011, p. 8).[2] Anderson et al. (2012) find that family firms are generally more risk averse compared to their non-family counterparts. In addition, Ghosh and Tang (2015) find that family firms have a significantly lower audit risk. Thus, family firms could tend to engage in less non-conforming tax avoidance. Furthermore, family firms' risk aversion could be manifested in being more concerned about arising non-tax costs like reputation costs that may outweigh the tax benefits. These arguments are primarily related to non-conforming tax avoidance

[2] Even if firms are continuously subject to tax audits, the signal of being tax aggressive might increase the audit intensity.

and non-tax costs might differ from those accompanied by conforming avoidance.[3] Family firms could compensate the lower amount of non-conforming avoidance by engaging in more conforming tax avoidance. In contrast to non-conforming tax avoidance, conforming tax avoidance leads to lower net profit, which could have negative aspects for different reasons. (1) Costs may arise if specific accounting numbers are not met.[4] (2) In particular listed firms' profitability is under public scrutiny, thus those firms avoid any transactions which reduce their financial income (Cloyd et al. 1996; Mills and Newberry 2001). Those costs could be lower for family firms because they are less dependent on the capital market.[5] Yang (2010) finds that earnings management increases with an increasing level of insider ownership. Consequently, family firms are more flexible according to managing their income between periods. Thus, I define my second hypothesis as follows:

Hypothesis 2 *Family firms' earnings management is more sensitive to marginal tax rates than that of non-family firms.*

4.5 Accrual Management

The objective of accruals is to present a firm's performance with respect to revenues and expenses instead of yearly cash flows. Accrual-based earnings management is achieved by changing the accounting methods or estimates used when presenting a given transaction in the financial statements. For example, changing the depreciation method for fixed assets or the estimate for provision for doubtful accounts can bias reported earnings in a particular direction without changing the underlying real transactions. Thus, accrual management aims at manipulating the timing of income. By definition, the sum of accruals over all firm years will be zero (Jones 1991). The accrual model of Jones (1991) is the empirical baseline model for accrual management calculation. My dataset consists of relatively short time-series, which is why I use the cross-sectional modified Jones model of Dechow et al. (1995) for measuring earnings management. The model is estimated for every year and each industry measured by the two-digit SIC codes with at least 15 observations per year-industry cluster. Total accruals are defined as the change in non-cash current assets less the change in current liabilities, depreciation and the change in provisions. In line with Bigus and Hillebrand (2017), I omit short-term debt (STD) and taxes payable (TP) because the database $DAFNE$ of Bureau van Dijk generally lacks those data and include provisions as a possible source of accrual management. Hence, total accruals

[3] E.g., large firms that publish low effective tax rates due to intensive non-conforming tax avoidance bear the risk being publicly accused for not paying their "fair share" of taxes (Lanis and Richardson 2012). These (potential) reputation costs will not arise when firms engage in conforming tax avoidance, which is most likely the case, because there is no simple heuristic to determine a firm's level of conforming tax avoidance. Therefore, conforming tax avoidance is unlikely to be detected.

[4] E.g., costs due to the violation of debt convenants (DeFond and Jiambalvo 1994).

[5] Accordingly, Schmid (2013) finds that family firms in Germany rely less heavily on debt than non-family firms.

are defined as follows:

$$TAcc_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - \Delta CL_{it} - Dep_{it} - \Delta Prov_{it}, \tag{4.2}$$

where $TAcc$ = total accruals, CA = current assets, CL = current liabilities, $Cash$ = cash and cash equivalents, Dep = depreciation and $Prov$ = provisions. $TAcc$ is winsorized at the 1 percent and the 99 percent quantile. The residuals obtained from the following regression equation are the discretionary accruals:

$$\frac{TAcc_{it}}{TA_{i,t-1}} = \beta_0 \frac{1}{TA_{i,t-1}} + \beta_1 \frac{\Delta Sales_{it} - \Delta Rec_{it}}{TA_{i,t-1}} + \frac{\beta_2 PPE_{it}}{TA_{i,t-1}} + \epsilon_{it}, \tag{4.3}$$

where $TAcc$ = total accruals, TA = total assets, $Sales$ = sales, Rec = receivables and PPE = property, plant and equipment. As Dechow et al. (1995) suggest and in line with Chen et al. (2018) I adjust the change in sales for the change in receivables. Discretionary accruals are again winsorized at the 1 percent and 99 percent quantile. Teoh et al. (1998) decompose current accruals into short-term and long-term components. They argue that managers have more discretion over short-term than over long-term accruals. I am therefore examining whether firms use particularly discretionary current accruals for tax-induced income shifting. Following Guenther (1994), I define discretionary accruals as follows:

$$TCAcc_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - \Delta CL_{it} \tag{4.4}$$

Where $TCAcc$ = total current accruals, CA = current assets, CL = current liabilities, $Cash$ = cash and cash equivalents. $TCAcc$ is winsorized at the 1 percent and the 99 percent quantile. Since current accruals do not contain depreciation, I remove PPE from equation 4.3. Again I adjust for the change in Receivables (Dechow et al. 1995). Finally, I use the residuals of the following regression to obtain discretionary current accruals (DCA):

$$\frac{TCAcc_{it}}{TA_{i,t-1}} = \beta_0 \frac{1}{TA_{i,t-1}} + \beta_1 \frac{\Delta Sales_{it} - \Delta Rec_{it}}{TA_{i,t-1}} + \epsilon_{it} \tag{4.5}$$

Where $TCAcc$ = total current accruals, TA = total assets, $Sales$ = sales and Rec = receivables. Discretionary current accruals are again winsorized at the 1 percent and 99 percent quantile.

4.6 Simulated Marginal Tax Rates and the Institutional Setting

Prior literature finds evidence that firms manage income in response to tax rate cuts due to tax reforms from high tax rate periods to low tax rate periods (e.g., Lin et al. 2012). Less is known about tax-induced shifting with respect to firms' marginal tax rates and without the one-time effects of tax reforms. Due to limitations of direct loss utilization, as well as loss carry-forward and carry-backward regulations, the marginal tax rate is a

function of historical and future taxable income. Because of the asymmetric treatment of gains and losses within the German tax law, the nominal tax rate can differ from a firm's marginal tax rate. Thus, I can observe in-firm variation of marginal tax rates (i.e., tax incentives) even if the nominal tax rate is constant. I use this in-firm variation to examine the effect of taxes on inter-temporal corporate income shifting. Furthermore, the marginal tax rate is more precise in estimating the additional tax burden by a marginal increase in taxable income. The marginal tax rate in the sense of this paper is the net present value of income taxes when adding one unit of income.[6] The marginal tax rate cannot be directly observed because tax data in Germany is not publicly available. I simulate the marginal tax rate using a firm's financial unconsolidated data because the financial statement income forms the basis for firms' taxable income. In Germany, corporations are subject to corporate taxes, trade taxes[7] and the solidarity surcharge. The corporate tax including the solidarity surcharge amounted to 15.825% (15% · 1.055) during my whole investigation period from 2009 to 2015.[8] The trade tax rate is calculated as local trade tax base rate[9] times a trade tax multiplier which is set by the respective municipality. The multiplier ranges from 200 (which is prescribed by federal law since 2004) up to around 490% in large cities (e.g., Munich). This results in effective trade tax rates ranging from 7% (3.5% · 200%) to around 17.15% (3.5% · 490%). The trade tax rates may change over time since municipalities may change them each year. I consider loss carry-back and loss carry-forward regulations for corporate and trade taxes and take into account any changes since 2003. In Germany, taxable income may be carried back only one year and up to one million euros (511,000 euros before 2013) for corporate tax purposes. Loss carry-backs for trade taxes are prohibited by law. Under German tax law, there is no time limit restriction for tax loss carry-forwards but corporate profits are subject to a minimum taxation for corporate and trade tax purposes. Firms may offset profits of up to one million with losses without restriction; beyond that 60% of the amount exceeding one million may be offset with losses.[10] Furthermore, I consider that trade taxes were tax-deductible and thus decreased corporate taxes for years before 2008. Moreover, I take into account that 25% of interest expenses are added to taxable income for trade tax purposes. Taxable

[6] Simulated marginal tax rates and marginal tax rate will be used as synonyms in this paper.

[7] The German trade tax is raised by German municipalities. If a firm has establishments in different municipalities, the local trade tax base is usually apportioned with respect to sections 28 and 29 of the German Trade Tax Law. Since I have no data at the establishment level, I assume that the whole trade profit is raised at the municipality in which the firm has its registered office. I consider the bias by neglecting apportionments is rather small because the share of apportionments (due to multiple establishments in different municipalities) to all cases (pure tax assessements and apportionments) in 2013 amounted to only 16.3% (Statistisches Bundesamt 2017).

[8] The corporate tax amounts to 26.5% in 2003, 25% from 2004 to 2008. The solidarity surcharge amounts to 5.5% of corporate taxes.

[9] The trade tax base rate amounts to 3.5% since 2008. Before 2008 the trade tax base rate amounted to 5% for corporations and trade taxes could be deducted for income tax purposes.

[10] E.g., if a firm has losses brought forward amounting to EUR 2 million and a profit of EUR 2 million, the firm may offset EUR 1.6 million (1 million + 0.6 · (2 million - 1 million)) profits with losses.

income is approximated by net income before income taxes. Under German law, only 5% of box dividends are subject to corporate and trade taxes. I assume that income from participations stems from box dividends. Thus, I correct taxable income by subtracting 95% of income from participations.

Graham et al. (1996) finds that the simulated marginal tax rate is the best proxy for firms' marginal tax rates. To estimate the marginal tax rate the underlying process for forecasting future taxable income is crucial. Ball and Watts (1972) find that yearly income is a submartingale. Next year's income is thus most accurately predicted by the current period's income. Graham (1996, 2000) uses an unscaled random walk model with drift to model future income. Blouin et al. (2010) use a non-parametric approach to estimate a firm's future taxable income. They separate firms into bins based on the firms size and performance. Then, they use these bins to estimte firms' total assets as well as profitability (return on assets) growth. These forecast values are used to estimate firms' future taxable income. Graham and Kim (2009) argue that taxable income is mean-reverting, thus current-period loss firms have a non-zero probability to have a marginal tax rate which is greater than zero because an extra dollar today will reduce the future loss carry-forward to shield taxes. In addition, profitable firms may have marginal tax rates below the statutory due to the use of hisotric or future losses. Graham and Kim (2009) find that a first-order auto-regressive (AR(1)) process of scaled future taxable income is superior to the non-parametric as well as the random walk approaches. In contrast to a simple random walk approach the estimation of taxable income with the AR(1) process faces more data restrictions, which results in a smaller sample size. With respect to my research question, I consider estimation accuracy to be more important than the sample size and therefore use the AR(1) process. In line with Graham and Kim (2009), I use the following model to forecast future taxable income:

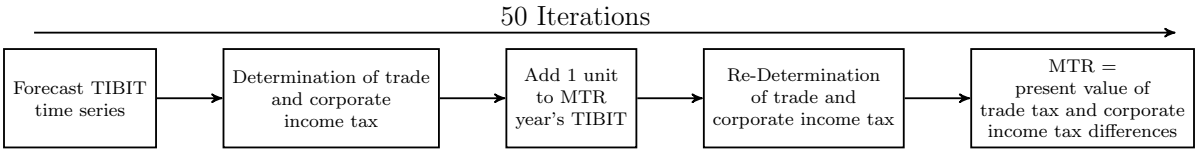
$$\begin{aligned} ROA_{i,t+1} &= \mu_i + \rho ROA_{i,t} + \epsilon_{i,t+1} \quad with \quad \epsilon_{i,t+1} \sim N(0, \sigma_i^2) \\ b.TA_{i,t+1} &= b.TA_{i,t} + (1 - \tau_{i,t})\, TI_{i,t} \times (1 - Div.Ratio_i) \\ TIBIT_{i,t+1} &= ROA_{i,t+1} \times b.TA_{i,t+1}. \end{aligned} \tag{4.6}$$

ROA is the return on assets defined as $TIBIT/b.TA$. *TIBIT* is the taxable income before interest expense, $b.TA$ is a firm's total assets at the beginning of the year. ρ is the first-order parameter, μ is the drift parameter and ϵ represents random shocks with variance σ_i^2. τ is a firm's statutory tax rate. *TI* is a firm's taxable income. *Div.Ratio* is the mean value of a firm's dividends divided by the preceding year's net income over all the years before the marginal tax rate is estimated.[11]

[11] In the case of limited liability companies, dividends had to be estimated. Appendix A gives a detailed explanation on the dividend estimation.

I use the two-step approach proposed by Graham and Kim (2009) to estimate a firm specific ρ. In a first step, I use an OLS approach to obtain ρ from the equation (4.6). I set estimates of the first step to missing values if one of the following conditions are met: (1) The absolute value of ρ exceeds or is equal to one because in those cases the process is non-stationary. (2) The variance is above 1 and/or (3) the long-term mean $\frac{\mu_i}{1-\rho_i}$ is above 0.6. In a second step, I create panels by scaled income[12] and two-digit SIC codes. Then, I apply the Blundell-Bond GMM estimator on each panel to estimate parameters for missing values of the first step (Blundell and Bond 1998). Afterwards, I set values again to missing values if they meet conditions (1), (2) and/or (3).[13]

Figure 4.1: Simulation Process



In line with Graham (1996), I use the following procedure for each firm to obtain the simulated marginal tax rates (see Figure 4.1). I use the historical data before the marginal tax rate year to determine firms tax loss carry-forwards. I assume that tax loss carry-forwards amount to zero at the starting date. Next, I simulate the future taxable income before interest expenses (*TIBIT*) using the above mentioned AR(1) process for the next 100 years after the marginal tax rate year. For each (historical and forecasted) year, I apply the regulations as stipulated in German trade tax law and German corporate tax law. I calculate the corresponding tax burden as well as potential loss carry-forwards and -backs.

Subsequently, one EUR is added to the firm's earnings in the MTR-year, while other *TIBIT* remain unchanged. Again, the firm's trade and corporate taxes together with potential loss carry-forwards and -backs are re-determined. The firm's MTR for the current year equals the present value of differences of corporate taxes after and before the addition of one Euro of income.[14] This procedure is repeated fifty times for each firm. Finally, the firm's final MTR is obtained by taking the mean value of the fifty trials.

Simulated marginal tax rates are usually estimated after earnings management (i.e., the reported income is used in the marginal tax rate year). Thus, these tax rates reflect the final result after income shifting is conducted without paying attention to the initial situation before earnings management. I will show that this aspect can produce contradictory

[12] I create four income groups for positive scaled income and two groups for negative scaled income.

[13] For reasons of future comparability, I use the same procedure and conditions as Graham and Kim (2009).

[14] To obtain the present value of the additional tax burden, I use the yield on non-financial industry bonds (Deutsche Bundesbank 2017).

results. Therefore, I estimate marginal tax rates before and after earnings management. To obtain marginal tax rates before earnings management, I use pre-managed *TIBIT* ($TIBIT^{PM}$) instead of *TIBIT* in the marginal tax rate year. $TIBIT^{PM}$ is defined as taxable income before interest and taxes before discretionary accruals: $TIBIT^{PM} = TIBIT - DA$. Consequently, the corresponding return on assets *ROA* in the forecast equation (see equation 4.6) is replaced by $ROA^{PM} = TIBIT^{PM}/b.TA$.

4.7 Empirical Analysis

4.7.1 Sample Selection

Germany is known for its high book-tax conformity (e.g., Hung 2000) and is therefore particularly suitable for examining conforming tax avoidance. According to Atwood et al. (2012) firms generally engage in less non-conforming tax avoidance if book-tax conformity is high and may thus substitute non-conforming by conforming tax avoidance. I obtain German firm level data from 2003 to 2015 from Bureau van Dijk's Database *DAFNE*. *DAFNE* is a German firm database that supplies researchers with financial data for private and public firms. I gather data for trade tax multipliers from the German Federal Statistical Office (*Deutsches Bundesamt*). Table 4.2 reports the data selection process.

Table 4.2: Sample Selection

Filter	Deleted firms	Remaining firms
All medium-/big-sized corporations (unconsolidated statements)		1,201,720
... less firms with a profit/loss agreement	./. 227,071	
... less firms with missing SIC codes	./. 7,696	
... less firms with a non-HGB accounting standard	./. 494	
... less observations with missing data for accrual calculation	./. 823,554	
Sample size for accrual calculation		142,905
... less firm-year observations with missing data for MTR simulation	./. 116,814	
Sample size for marginal tax rate calculation		26,091
... less firms with missing data on independent variables	./. 4,500	
Final sample		21,591

This table reports the sample selection process.

I assume that firms have to be at least medium-sized to be aware of tax-induced profit shifting. Therefore, I select unconsolidated statements of large and medium-sized corporations[15] (i.e., Public limited companies, limited liability companies and limited partnerships on shares), which have reported at least one loss or profit account during the years. I drop 227,071 firm-year observations of controlled firms with an available profit/loss agreement

[15] In line with Section 267 German Commercial Law, these firms have to fulfill at least two of the following three conditions: (1) A minimum staff of 50 individuals, (2) a turnover of at least EUR 9,680,000, and/or (3) total assets of at least EUR 4,840,000. I use the filter implemented in *DAFNE* to select these firms.

during the investigation period because these firms' profit is usually constant over time and thus not suitable for examining inter-temporal profit shifting. I further drop 7,696 firm-year observations of firms with missing SIC codes. In a last step, I drop 38 firms (494 firm-year observations) with at least one non-HGB accounting standard during the estimation period.

This leads to 966,459 firm-year observations. After removing 823,554 observations lacking data for accrual calculation, 142,905 firms remain in the sample. I calculate marginal tax rates for the years 2009-2015 and remove firm-year observations that do not have a time-series of at least four consecutive years of available income data. The period before the marginal tax rate year is crucial for the estimation of possible loss carry-forwards and thus for the estimation of firms' marginal tax rates. In addition, I remove observations for which dividends could not be calculated or missing data for MTR calculation. 21,591 firm-year-observations remain for my final analysis.

4.7.2 Research Design, Variable Measurement and Descriptive Statistics

I conduct the following fixed-effects regression analysis to test my hypotheses:

$$\begin{aligned}\frac{DA_{i,t}}{TA_{i,t-1}} = \beta_0 + \beta_1 MTR_{i,t} + \beta_2 Family_{i,t} + \beta_3 MTR_{i,t} \times Family_{i,t} \\ + \sum_{k=4}^{j} \beta_k Controls_{k,i,t} + \delta_t + \mu_i + \epsilon_{i,t}.\end{aligned} \tag{4.7}$$

The dependent variable is a firm's discretionary accrual obtained as described in Section 4.5. *MTR* is a firm's simulated marginal tax rate. *MTR* measures a firm's tax incentive to manage earnings because firms should c.p. shift income from high MTR periods to low MTR periods. *Family* is an indicator variable for family firms, which for reasons of comparability is defined in accordance with Bureau van Dijk's independence indicator. Thus, *Family* is one if all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*; otherwise family amounts to zero. The interaction term *MTR* × *Family* establishes whether family firms are managing more income with respect to inter-temporal changes in their marginal tax rate. Lastly, I add control variables to take into account firm characteristics and other earnings management incentives. In line with Lin et al. (2012), I control for the following firm properties: (*ROS*) is defined as net income scaled by sales and is included to account for the correlation between the firm's profitability and discretionary accruals; the firm's size defined as the logarithm of lagged total assets (*Size*), which is included to account for size effects. Further firm controls take firms' asset and capital structure into account: PPE intensity is defined as the firm's property, plant and equipment scaled by lagged total assets (*PPE*); inventory intensity is

defined as the firm's inventory scaled by lagged total assets (*Inventory*); intangibles intensity is defined as the firm's intangible assets scaled by lagged total assets (*Intangibles*) and the firm's debt ratio defined as long-term debt scaled by lagged total assets (*Debt*). μ_i controls for firm fixed while δ_t controls for year fixed effects.

I examine earnings management isolated from single-time effects of certain tax reforms, thus I have to control for other *earnings management incentives*. Burgstahler and Dichev (1997) find that firms' use earnings management to avoid earnings decreases. Moreover, there is evidence that firms use earnings management to meet certain forecasts (e.g., Gramlich and Sørensen 2004; Kasznik 1999). DeFond and Park (1997) observe that firms use accrual management to smooth earnings. Jung et al. (2013) show that firms smooth earnings through accrual management to improve their credit rating, which is negatively affected by earnings volatility. To take these incentives into account, I include a target earnings difference measure. In line with Tucker and Zarowin (2006) and Ghosh and Olsen (2009), I define pre-managed earnings as net income before discretionary accruals. Graham et al. (2005) find survey evidence that the most important earnings benchmark (85.1% of survey participants agreed or strongly agreed) of current quarterly earnings per share (EPS) are last year EPS of the same quarter. Consistent with their findings and because most sample firms lack analyst forecast data, I use last year's earnings as a current year's earnings target. Consequently, the target earnings difference is defined as the difference between pre-managed earnings and the earnings target (previous year's net income):

$$PNI_{i,t} = NI_{i,t} - DA_{i,t}, \tag{4.8}$$

$$Target^{DA}_{i,t} = (PNI_{i,t} - NI_{i,t-1}) / TA_{i,t-1}, \tag{4.9}$$

where *PNI* is a firm's pre-managed income, *NI* is a firm's net income, *DA* is a firm's discretionary accrual and *TA* is a firm's total assets. This measure especially captures firms' attempts to avoid earnings decreases and income smoothing. Negative values of $Target^{DA}$ indicate that firms' net income is below last year's net-income. Since firms try to avoid earnings decreases, I expect them to manage income upwards to meet last years earnings. In addition, if firms are beating the forecast (this year's net income exceeds last year's net income) I expect them to use discretionary accruals to manage income downwards. In so doing, they smooth earnings and lower income volatility. This way they save income-increasing accruals that they can use to manage income upwards in future "bad" years (years in which current year earnings are below last year earnings). Consequently, I expect $Target^{DA}$ to be negatively correlated with discretionary accruals. I also add *Loss* as a further incentive variable, which is an indicator variable for firms with non-positive net income. I include *Loss* to control for "big bath" accounting. I expect *Loss* to have a negative impact on discretionary accruals. Firms that can not or do not want to turn a loss into a profit, will manage earnings downward to increase profit in future

periods (e.g., Kirschenheiter and Melumad 2002). As a last control variable I include lagged discretionary accruals because negative accruals are likely to be followed by positive accruals and vice versa. All continuous variables are winsorized at the 1% and the 99% quantile.

Table 4.3: Descriptive Statistics

Variable	Obs	Mean	SD	Q1	Median	Q3
DA_t/TA_{t-1}	21.591	0.011	0.134	−0.038	0.012	0.065
DCA_t/TA_{t-1}	21.591	0.010	0.138	−0.043	0.008	0.064
MTR	21.591	0.273	0.051	0.261	0.283	0.304
MTR^{DA}	21.591	0.265	0.056	0.250	0.281	0.302
MTR^{DCA}	21.591	0.266	0.056	0.251	0.281	0.302
Family	21.591	0.306	0.461	0.000	0.000	1.000
ROS	21.591	0.061	0.093	0.018	0.042	0.084
Size	21.591	16.590	1.376	15.657	16.633	17.560
PPE	21.591	0.286	0.272	0.060	0.195	0.457
Intangibles	21.591	0.011	0.032	0.000	0.002	0.008
Inventory	21.591	0.220	0.224	0.032	0.160	0.342
Debt	21.591	0.122	0.187	0.000	0.033	0.179
Loss	21.591	0.099	0.299	0.000	0.000	0.000
$Target^{DA}$	21.591	−0.008	0.142	−0.066	−0.011	0.044
$Target^{DCA}$	21.591	−0.007	0.145	−0.064	−0.008	0.045

This table reports descriptive sample statistics. DA_t/TA_{t-1} is a firm's discretionary accruals scaled by lagged total assets. DCA_t/TA_{t-1} is a firm's discretionary current accruals scaled by lagged total assets. *MTR* is a firm's simulated marginal tax rate. MTR^{DA} (MTR^{DCA}) is a firm's simulated marginal tax rate before discretionary (current) accruals. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{DA}$ ($Target^{DCA}$) is the difference between net income before discretionary (current) accruals and last year's net income scaled by lagged total assets. DA_{t-1}/TA_{t-2} are lagged discretionary accruals scaled by double lagged total assets. Q1 is the 25%-quantile and Q3 is the 75%-quantile, respectively.

Table 4.3 reports descriptive statistics of the sample firms. The interquartile distance of scaled discretionary accruals ranges from -3.8% (Q1) to 6.5% (Q3), which is comparable to ranges of former studies (e.g., Zang 2011; Dechow et al. 1995). The interquartile distance of scaled discretionary current accruals is quite similar and ranges from -4.3% (Q1) to 6.4% (Q3). On average discretionary (current) accruals are positive and thus income increases. The mean marginal tax rate of sample firms amount to 27.3% while the marginal tax rate before discretionary accruals amounts to 26.5%, and 26.6% before current discretionary accruals respectively. Nearly one quarter of sample firms are family firms. The median firm's profitability amounts to 4.2% and has total assets of EUR 16.7 million. Firms have a mean PPE intensity of 28.6% and mean inventory intensity of 22%. Intangibles scaled by lagged total assets amount to 1.1%. Firms' mean debt ratio amounts to 12.2%. 10% of firm-year observations have negative pre-tax income. On average firms miss the preceding year's net income by 0.8% of their beginning year assets.

4.7.3 Regression Results

Table 4.4: Regression Results: Baseline Model

DA_t/TA_{t-1}	(1)	(2)	(3)	(4)
MTR	-0.229^{***}	-0.247^{***}		
	(0.053)	(0.061)		
MTR×*Family*		0.088		
		(0.080)		
MTR^{DA}			-0.579^{***}	-0.567^{***}
			(0.032)	(0.034)
MTR^{DA}×*Family*				-0.061
				(0.040)
ROS	0.419^{***}	0.420^{***}	0.422^{***}	0.422^{***}
	(0.039)	(0.039)	(0.037)	(0.037)
Size	-0.029^{***}	-0.029^{***}	-0.025^{***}	-0.025^{***}
	(0.007)	(0.007)	(0.006)	(0.006)
PPE	-0.128^{***}	-0.128^{***}	-0.099^{***}	-0.099^{***}
	(0.015)	(0.015)	(0.014)	(0.014)
Inventory	0.019^{**}	0.019^{**}	0.021^{***}	0.021^{***}
	(0.008)	(0.008)	(0.008)	(0.008)
Intangibles	-0.177^{**}	-0.176^{**}	-0.182^{***}	-0.184^{***}
	(0.076)	(0.076)	(0.067)	(0.067)
Debt	0.126^{***}	0.126^{***}	0.095^{***}	0.094^{***}
	(0.014)	(0.014)	(0.013)	(0.013)
Loss	-0.065^{***}	-0.065^{***}	-0.063^{***}	-0.064^{***}
	(0.004)	(0.004)	(0.003)	(0.003)
$Target^{DA}$	-0.758^{***}	-0.758^{***}	-0.698^{***}	-0.697^{***}
	(0.013)	(0.013)	(0.014)	(0.014)
DA_{t-1}/TA_{t-2}	-0.147^{***}	-0.147^{***}	-0.129^{***}	-0.129^{***}
	(0.008)	(0.008)	(0.007)	(0.007)
Firm fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
Observations	21,591	21,591	21,591	21,591
R^2	0.866	0.867	0.878	0.878
Adjusted R^2	0.796	0.796	0.814	0.814

This table reports regression coefficients and robust Huber-White standard errors in brackets. The dependent variable is DA_t/TA_{t-1}, which is a firm's discretionary accrual scaled by lagged total assets. *MTR* is a firm's simulated marginal tax rate. MTR^{DA} is a firm's simulated marginal tax rate before accrual management. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{DA}$ is the difference between net income before discretionary accruals less last year's net income scaled by lagged total assets. DA_{t-1}/TA_{t-2} are lagged discretionary accruals scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

Table 4.4 reports the regression results. I use a firm- and year-fixed effects model to examine intertemporal profit shifting of firms with respect to their marginal tax rates. In models (1) and (2) marginal tax rates are calculated based on reported earnings in the marginal tax rate year. In line with Hypothesis 1, I find a significant negative effect for all model specifications of firms' marginal tax rates on discretionary accruals. This

implies that firms manage income from high marginal tax rate periods to low marginal tax rates periods. The interaction term of *Family* and *MTR* is insignificant (Table 4.4, model (2)). However, this marginal tax rate is calculated after earnings management and does not reflect the initial manager's situation before earnings up- or downward management. Therefore, I replace the post-management marginal tax rate in models (3) and (4) by the marginal tax rates before discretionary accruals (before earnings management). In so doing, I replace *TIBIT* in the marginal tax rate year by $TIBIT^{DA}$ and recalculate marginal tax rates. I get quite a similar picture for the post-management MTR. The sign for the interaction term *MTR*×*Family* changes but the coefficient is still insignificant. Thus, I find no support for Hypothesis 2. According to model (4) a one percentage point increase of a firm's marginal tax rate will c.p. lead to scaled income-decreasing accruals of 0.567 percentage points.

Regarding firm characteristics, I find a positive effect of a firm's profitability on a firm's discretionary accruals. Moreover, accruals increase with inventory intensity and debt ratio. The latter is consistent with firms manage income upward if debt increases to meet potential debt covenants. Discretionary accruals are negatively affected by PPE intensity and firm size. I also find evidence for other earnings managing incentives: *Loss* is significantly negative, which implies that a firm is taking a "big bath". If managers cannot (or do not want to) turn the firm's loss into a profit by earnings management they will even increase the loss to be able to report higher income in future periods (for similar evidence see e.g., Kirschenheiter and Melumad 2002). In addition, I detect a negative effect of $Target^{DA}$ on discretionary accruals. This implies that firms use income increasing accruals when they are below their last year's earnings and that they use income decreasing accruals when they beat their last year's earnings. The coefficient of DA_{t-1}/TA_{t-2} is significantly negative, which implies that positive accruals are likely to be followed by negative accruals.[16]

I conduct the same regression as in Table 4.4 but I am using scaled discretionary current accruals as dependent variable. Managers have more discretion over short-term than over long-term accruals (Teoh et al. 1998). Thus, I expect that differences between firms' tax-induced intertemporal income shifting behavior are more likely to be found when examining their discretionary current accruals. Moreover, $Target^{DA}$ is replaced by $Target^{DCA}$ and thus reflects the difference between target earnings before discretionary current accrual management and last year's earnings:

$$Target_{i,t}^{DCA} = ((NI_{i,t} - DCA_{i,t}) - NI_{i,t-1})/TA_{i,t-1} \tag{4.10}$$

[16] I check the independent variables for each model specification for multicollinearity problems by means of variance inflation factors (VIFs), and could not detect any problems. I use mean-deviated independent variables for the calculation of VIFs (Allison 2009, pp. 17-18). All VIFs are below 2, which is far below the threshold of 10 suggested by Hair et al. (2013).

Table 4.5 presents the regression results. While most results remain qualitatively unchanged I find a significantly negative interaction $Family \times MTR^{DCA}$. Thus, family firms are especially using current accruals to manage earnings with regard to their marginal tax rates. This is in line with the fact that family firms are engaging in more conforming tax avoidance than non-family firms and supports Hypothesis 2. This way family firms might compensate their lower engagement in non-conforming tax avoidance (Chen et al. 2010).

Table 4.5: Regression Results: Discretionary Current Accruals

DCA_t/TA_{t-1}	(1)	(2)	(3)	(4)
MTR	-0.229^{***}	-0.253^{***}		
	(0.053)	(0.060)		
MTR×*Family*		0.125		
		(0.080)		
MTR^{DCA}			-0.538^{***}	-0.514^{***}
			(0.033)	(0.035)
MTR^{DCA}×*Family*				-0.123^{***}
				(0.041)
ROS	0.426^{***}	0.427^{***}	0.425^{***}	0.425^{***}
	(0.040)	(0.040)	(0.038)	(0.038)
Size	-0.031^{***}	-0.031^{***}	-0.027^{***}	-0.027^{***}
	(0.007)	(0.007)	(0.007)	(0.007)
PPE	-0.113^{***}	-0.113^{***}	-0.092^{***}	-0.091^{***}
	(0.016)	(0.016)	(0.015)	(0.015)
Inventory	0.023^{***}	0.023^{***}	0.023^{***}	0.023^{***}
	(0.008)	(0.008)	(0.008)	(0.008)
Intangibles	-0.099	-0.098	-0.124^{*}	-0.125^{*}
	(0.075)	(0.075)	(0.068)	(0.068)
Debt	0.117^{***}	0.117^{***}	0.091^{***}	0.090^{***}
	(0.014)	(0.014)	(0.012)	(0.012)
Loss	-0.066^{***}	-0.065^{***}	-0.064^{***}	-0.064^{***}
	(0.004)	(0.004)	(0.004)	(0.004)
$Target^{DCA}$	-0.776^{***}	-0.776^{***}	-0.715^{***}	-0.714^{***}
	(0.013)	(0.012)	(0.014)	(0.014)
DCA_{t-1}/TA_{t-2}	-0.136^{***}	-0.136^{***}	-0.122^{***}	-0.122^{***}
	(0.008)	(0.008)	(0.007)	(0.007)
Firm fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
Observations	21,591	21,591	21,591	21,591
R^2	0.870	0.870	0.879	0.879
Adjusted R^2	0.801	0.801	0.816	0.816

This table reports regression coefficients and robust Huber-White standard errors in brackets. The dependent variable is DCA_t/TA_{t-1}, which is firm's discretionary current accrual. *MTR* is a firm's simulated marginal tax rate. MTR^{DCA} is a firm's simulated marginal tax rate before discretionary current accruals. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{DCA}$ is the difference between net income before discretionary current accruals less last year's net income scaled by lagged total assets. DCA_{t-1}/TA_{t-2} are lagged discretionary current accruals scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

4.8 Additional Analysis

4.8.1 Germany's Company Tax Reform Act of 2008

Table 4.6: Regression Results: Accrual Management in Response to German TRA 2008

DA_t^{TS}/TA_{t-1}	(1)	(2)	(3)
Pre-Reform	-0.004^{***}	-0.004^{***}	-0.004^{***}
	(0.002)	(0.001)	(0.001)
Pre-Reform×*Family*			0.001
			(0.002)
ROS		0.330^{***}	0.330^{***}
		(0.014)	(0.014)
Size		-0.021^{***}	-0.021^{***}
		(0.002)	(0.002)
PPE		-0.056^{***}	-0.056^{***}
		(0.006)	(0.006)
Inventory		0.013^{***}	0.013^{***}
		(0.004)	(0.004)
Intangibles		-0.057^{*}	-0.056^{*}
		(0.032)	(0.032)
Debt		0.088^{***}	0.088^{***}
		(0.005)	(0.005)
Loss		-0.047^{***}	-0.047^{***}
		(0.002)	(0.002)
$Target^{TS}$		-0.711^{***}	-0.711^{***}
		(0.005)	(0.005)
DA_{t-1}^{TS}/TA_{t-2}		-0.160^{***}	-0.160^{***}
		(0.005)	(0.005)
Firm fixed effects	✓	✓	✓
Year fixed effects	-	-	-
Observations	65,425	42,821	42,821
R^2	0.010	0.733	0.733
Adjusted R^2	−0.121	0.685	0.685

This table reports regression coefficients and robust Huber-White standard errors in brackets. Model (1) just contains the pre-reform indicator variable, in model (2) control variables are added and in model (3) the interaction term of family and reform indicator is included. DA_t^{TS}/TA_{t-1} is scaled discretionary accruals of the Jones model using the Jones (1991) time series approach, *Pre-Reform* is one for years 2006-2007 and zero otherwise. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{TS}$ is the difference between net income before time-series discretionary current accruals less last year's net income scaled by lagged total assets. DCA_{t-1}/TS_{t-2} is lagged time-series discretionary accruals scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

Guenther (1994) shows that discretionary accruals are used to shift income between low and high tax rate periods for U.S. firms. I show that this finding holds for my German sample firms. I exploit the German tax reform, which came into force on January 2008 and reduced the combined corporate tax rate (corporate taxes, trade taxes and the solidarity surcharge) from 38.9% to 30.2% (OECD 2014), to examine firms' accrual based profit

shifting behavior. I use firm observations from 2003 to 2015. I include a pre-reform indicator in the regression equation: pre-reform is one for years 2006-2007 and zero otherwise. In 2007, the German government passed the bill on the reform but in 2006 the governing parties already agreed on a tax rate reduction. Thus, firms' incentives to manage income downwards already existed in 2006. The Jones model of Section 4.5 is no longer suitable for measuring the effect because discretionary accruals are calculated on a yearly base. Thus, by definition, the accruals for each year are zero in total. Therefore, I use the original time series approach of Jones (1991) to obtain discretionary accruals. Discretionary accruals are obtained by equation (4.3) on an individual base instead by year-industry clusters. All continuous variables are winsorized at the 0.01- and the 0.99-quantile. Regression results are presented in Table 4.6.

I find a significant negative effect of *Pre-Reform* on discretionary accruals, which is in accordance with firms shifting income through accrual management from high tax rate periods to low tax rate periods. Thus, tax-induced income shifting through accruals in response to tax rate cuts holds for my sample firms. This effect even holds after controlling for firm characteristics and other earnings management incentives (model (2)). However, I do not find a significant effect of the reform-family interaction terms (model (3)). Family firms are more risk-averse than their non-family counterparts (Anderson et al. 2012). They probably engage in less non-conforming tax avoidance, because intense non-conforming tax avoidance results in positive book-tax differences (Chen et al. 2010). These (large) positive book-tax differences may be interpreted by the tax authority and therefore could increase audit probability (e.g., Frank et al. 2009, p. 471).[17]

This signaling effect also applies to this setting. Since the tax rate cut will apply for all firms at the same time, intense profit shifting to save taxes will occur in the year before the reform was enacted. Tax authorities could anticipate such shifting behavior and as a consequence the audit risk could increase for firms that engage in intense income shifting in the year prior to the reform. Consequently, tax-induced income shifting behavior of family firms in response to tax rate cuts could deviate from their behavior in periods without a reform because they do not want to increase audit probability or intensity. In periods without tax reforms intense profit shifting may also have non-tax reasons and should not increase the audit probability or intensity to the same extent.

4.8.2 Changes in Local Tax Rates

Even though my sample firms are not subject to a tax reform act, I have variation in trade tax rates because municipalities may change tax rates on a yearly basis. Therefore,

[17] In Germany, companies are classified in size classes for the purpose of tax audits in accordance with Section 3 BpO 2000. E.g., trading firms that exceed EUR 7,300,000 sales or have taxable income above EUR 280,000 in 2013 are classified as large firms. The sample firms regularly meet the criterion of large firms and are thus audited continuously. However, even if firms are audited continuously, the signaling effect of tax aggressive behavior can increase the audit intensity.

I check whether my results are solely driven by changes in trade tax rates. I replace firms' marginal tax rates by corresponding statutory tax rates which are calculated as 15% (corporate tax rate) × 1.055 (incl. solidarity surcharge) + 0.035 × municipal multiplier (local trade tax rate). Table 4.8 in Appendix B reports regression results. While other effects remain qualitatively unchanged, I do not find a significant effect of *STR* or the interaction term *STR*×*Family*. Accordingly, the changes in statutory tax rates cannot explain my findings alone and firms' marginal tax rates do matter.

4.8.3 Multinational Firms

In contrast to domestic firms, multinational firms have the opportunity to exploit tax rate differences between countries. Thus, multinational firms might place less importance on tax-induced intertemporal profit shifting in a domestic context. I have no data for firms' foreign income, I therefore use an indirect approach to identify multinational firms. I classify firms as *Multinational* if the firm owns a foreign subsidiary and/or if the global ultimate owner is not resident in Germany. Since the multinational indicator is time-invariant in my sample and I am interested in the tax-induced shifting behavior, I include an interaction term of *Multinational* and firms' marginal tax rates.

Regression results are presented in Table 4.9 in Appendix B. Models (1) and (2) are based on a post-management MTR, while models (3) and (4) are based on a pre-mangement MTR. Moreover, an interaction term of *MTR* and *Family* is added in models (2) and (4).

The interaction term of *Multinational* and marginal tax rate is insignificant in each specification. This implies that multinational firms and national firms do not differ with respect to their tax-induced intertemporal profit shifting. The interaction of the pre-managed MTR and family becomes negative in model (4). Thus, the inclusion of *Multinational* may have added information regarding family firms. These findings match those of current accruals and again supports Hypothesis 2. Thus, family firms are shifting more income with respect to their marginal tax rates than non-family firms. However, these results should be considered with caution, since the identification of multinational firms does not take foreign establishments into account and neglects the actual amount of a firm's foreign income.

4.8.4 Controlling for First-Step Regressors

Chen et al. (2018) perceive that incorrect inferences may be drawn when residuals from a first-step regression are used as dependent variable in another regression. They show that, especially for the accrual models, incorrect inferences were drawn because the co-variance between the independent variables of the first step regression (the regression on total accruals to obtain discretionary accruals) and the second step regression (regression on discretionary accruals) is neglected. They argue that researchers should use a single regression and include explanatory variables of the second step into the first step. They

show that results significantly differ for the one-step approach and that previous findings in accounting research become insignificant or switch their sign. They also recommend an additional method for controlling the co-variance bias. They state that researchers could also include the independent variables of the first step into the second-step regression. I have to use the two-step approach because the residuals of the first-step regression are needed to calculate dependent variables of the second-step regression (i.e., *Target*, pre-managed marginal tax rates and lagged discretionary accruals). Therefore, I include $(\Delta Sales_{it} - \Delta Rec_{it})/TA_{i,t-1}$ into my regression model. The results are presented in Table 4.10 for discretionary accruals and in Table 4.11 for discretionary current accruals in Appendix B. The main results remain unchanged, thus my regression coefficients are not biased due to the omitted co-variances between first-step and second-step regressors.

4.8.5 Abnormal Discretionary Expenses

Discretionary accruals by definition reverse over time and thus reflect temporary conforming avoidance strategies. Each upward-management will reverse in future. In contrast, real activities management must not reverse over time (e.g., firms may use marketing expenses to lower this year's income). According to Roychowdhury (2006) real activities manipulation are management actions beyond normal business activities that are used to meet certain earning targets. He presents three methods to detect real activities manipulation: (1) cash flows from operations, (2) production costs and (3) discretionary expenses. The first method aims at detecting *sales manipulation*: Cash flow from operations is regressed on a firm's sales. The corresponding positive accruals are interpreted as sales acceleration. My sample firms lack cash flow statements, thus I cannot detect abnormal sales. The second measure detects *overproduction*: Firms may engage in excessive production to lower the per-unit production price because fixed costs are spread over a higher number of units. This way earnings are managed upwards. However, this method is only available for manufacturing firms. I examine the third method - the use of discretionary expenses. Graham et al. (2005) find survey evidence that managers would use discretionary expenses to meet earnings benchmarks. Roychowdhury (2006) uses the residuals of the following regression for each year and industry (two-digit SIC codes) cluster with at least 15 observations to determine abnormal discretionary expenses:

$$DisExp_t/TA_{t-1} = \alpha_0 + \alpha_1(1/TA_{t-1}) + \alpha_2(Sales_{t-1}/TA_{t-1}) + \epsilon_t, \tag{4.11}$$

where *DisExp* is firms' discretionary expenses defined as the sum of advertising expenses, research and development expenses, and selling, general and administrative expenses, *Sales* is firms' sales and *TA* is firms' total assets.

While U.S. firms are using the cost of sales method, most German firms employ the total cost method. Thus, I use other operating expenses to measure discretionary expenses.

Table 4.7: Regression Results: Abnormal Discretionary Expenses

ADE_t/TA_{t-1}	(1)	(2)	(3)	(4)
MTR	-0.223^{***}	-0.219^{***}		
	(0.039)	(0.044)		
MTR×*Family*		-0.021		
		(0.062)		
MTR^{ADE}			-0.471^{***}	-0.448^{***}
			(0.026)	(0.028)
MTR^{ADE}×*Family*				-0.097^{**}
				(0.047)
ROS	0.274^{***}	0.273^{***}	0.298^{***}	0.297^{***}
	(0.024)	(0.024)	(0.024)	(0.024)
Size	0.020^{***}	0.020^{***}	0.020^{***}	0.020^{***}
	(0.005)	(0.005)	(0.005)	(0.005)
PPE	-0.037^{***}	-0.037^{***}	-0.029^{**}	-0.028^{**}
	(0.013)	(0.013)	(0.013)	(0.013)
Inventory	-0.022^{***}	-0.022^{***}	-0.018^{***}	-0.018^{***}
	(0.007)	(0.007)	(0.006)	(0.006)
Intangibles	-0.122^{**}	-0.123^{**}	-0.139^{**}	-0.140^{**}
	(0.060)	(0.060)	(0.057)	(0.057)
Debt	0.0004	0.0004	-0.002	-0.003
	(0.006)	(0.006)	(0.006)	(0.006)
Loss	-0.043^{***}	-0.043^{***}	-0.045^{***}	-0.045^{***}
	(0.003)	(0.003)	(0.003)	(0.003)
$Target^{ADE}$	-0.569^{***}	-0.569^{***}	-0.539^{***}	-0.539^{***}
	(0.021)	(0.021)	(0.021)	(0.021)
ADE_{t-1}/TA_{t-2}	0.018	0.018	0.017	0.017
	(0.013)	(0.013)	(0.013)	(0.013)
Firm fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
Observations	23,094	23,094	23,094	23,094
R^2	0.968	0.968	0.970	0.970
Adjusted R^2	0.951	0.951	0.954	0.954

This table reports regression coefficients and robust Huber-White standard errors in brackets. The dependent variable is ADE_t/TA_{t-1}, which is a firm's abnormal discretionary expense. *MTR* is a firm's simulated marginal tax rate. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{\text{ADE}}$ is the difference between net income before abnormal discretionary expenses less last year's net income scaled by lagged total assets. ADE_{t-1}/TA_{t-2} are lagged abnormal discretionary expenses scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

Roychowdhury (2006) discovers evidence that managers manipulate real activities to avoid reporting losses. I analyze whether firms' use of discretionary expenses is affected by their marginal tax rate before real activities manipulation. I repeat the main regression of Section 4.7 and replace discretionary accruals by abnormal discretionary expenses. The marginal tax rates in models (3) and (4) are calculated before real activities manipulation. $Target^{ADE}$ measures the difference of current year's net income before abnormal discretionary expenses and the previous year's net income scaled by lagged total assets.

Table 4.7 reports regressions results. I find a significant effect of (pre-)manipulated marginal tax rates on abnormal expenses. This suggests that firms use discretionary expenses in high-MTR periods to decrease income and in low-MTR periods to increase income. In line with previous findings, family firms use significantly more abnormal discretionary expenses with respect to their pre-manipulated marginal tax rate and thus engage in more conforming tax avoidance.

4.9 Conclusion

My study sheds light on firms' tax-induced profit shifting behavior, which is consistent with firms engaging in conforming tax avoidance. Earlier studies examine corporate profit shifting as response to tax reforms, and thus single-event profit shifting (e.g., Guenther 1994). I extend former research by investigating firms general tax-induced profit shifting behavior by isolating one-time effects caused by tax reforms. While controlling for other earnings management incentives, I can show that firms shift income with respect to their marginal tax rates. Thus, firms are shifting income from periods with high marginal tax rates to those with low marginal tax rates. However, marginal tax rates are usually calculated on an after-earnings-management basis. I therefore introduce a pre-managed marginal tax rate, which is calculated before earnings management in the marginal tax rate year. The pre-managed marginal tax rate reflects managers' situations before engaging in any earnings management and is thus able to measure managers' tax incentives for earnings management. I show that using the pre-managed marginal tax rate captures effects that the post-managed marginal tax rate does not. According to pre-managed marginal tax rates and discretionary current accruals, I find that family firms are engaging in more tax-induced profit shifting than their non-family counterparts. Thus, it is crucial to regard the firm's initial marginal tax rate before earnings management when examining tax-induced profit shifting. Findings suggest that family firms are compensating their lower engagement in non-conforming tax avoidance (Chen et al. 2010) by engaging in more conforming tax avoidance. However, the overall effect is still unknown and should be subject to future research. Furthermore, I show that sample firms used discretionary accruals to manage taxable income downwards prior to the German tax reform act in 2008. Moreover, I show that my effects are not simply driven by the variation in local trade tax rates. Furthermore, findings indicate that multinational and national firms do not differ with respect to their tax-induced intertemporal profit shifting behavior. However, these findings should be considered with caution, since the identification of multinationality might be inaccurate. Chen et al. (2018) find that incorrect inferences may be drawn when residuals from a first-step regression are used as a dependent variable in another regression. I show in a robustness check that my results do not change when controlling for first-step regressors in the second-step equation. In a last step, I show that firms are engaging in real

activities manipulation in the form of discretionary expenses to manage income upwards in low marginal tax rate periods and downwards in high marginal tax rate periods. This shifting behavior is again particularly pronounced for family firms. An interesting task for future research is to evolve further conforming tax avoidance measures besides firms' accrual management and to focus on the calculation of pre-managed marginal tax rates.

4.10 Appendix A

I obtain total gross dividends for listed firms from Thomson Reuters' *EIKON* database. *EIKON* provides financial as well as stock data for publicly quoted firms. Neither *EIKON* nor *DAFNE* provide information on dividends of limited liabilities companies (LLC). I therefore use an indirect approach to estimate LLCs' dividends. Section 29 of the Law on Limited Liability Companies (*GmbHG*) regulates the appropriation of net income and thus the shareholders' right to dividends. The shareholders are entitled to the net income for the year plus a profit carried forward and less a loss carried forward, unless the resulting amount is excluded from distribution by law or articles of association. I assume that the additional costs from the appropriation are negligible and therefore do not include them in the further calculation. Shareholders may transfer (withdraw) profits to (from) revenue to decrease (increase) the distributable profit. Furthermore, they are allowed to release capital reserves to offset losses. In contrast to listed companies, LLCs are allowed to make advance distributions by law. All in one, the reconciliation from the current year's net income to the dividend distributed in the next year can be illustrated as follows:

$$
\begin{aligned}
&\text{Net income}_t \\
&+ / - \ \text{profit/loss carried forward from the previous year}_t \\
&+ \ \text{withdrawals from profit reserves}_t \\
&+ \ \text{withdrawals to capital reserves}_t \\
&- \ \text{transfer to profit reserves}_t \\
&- \ \text{advance distributions}_t \\
&- \ \text{profit carried forward to next year}_t \\
&= \ \text{dividend}_{t+1}.
\end{aligned}
\tag{4.12}
$$

According to equation 4.12, the preceding year's net income that remains in the firm will be contained in revenue reserves and/or profits/losses carried forward. Thus, a firm's dividend in t can be approximated by the following formula:

$$
\begin{aligned}
Dividend_{i,t} = NetIncome_{i,t-1} - (&\Delta RevenueReserves_{i,t} + \\
&\Delta ProfitsCarriedForward_{i,t} - \Delta LossCarriedForward_{i,t}),
\end{aligned}
\tag{4.13}
$$

where $\Delta RevenueReserves_{i,t}$ is the change in the firm's revenue reserves from year t to t-1, $ProfitsCarriedForward_{i,t}$ is the firm's profits carried forward and $LossCarriedForward_{i,t}$ is the firm's losses carried forward. $ProfitsCarriedForward$ will be a missing value if $LossCarriedForward_{i,t}$ is greater then zero and vice versa. Furthermore, both values may be missing, if firms transfer the whole profit to revenue reserves

or distribute it to shareholders. Therefore, I set missing values to zero. Furthermore firms may not have revenue reserves, thus I set missing values also to zero.

According to section 268 German Commercial Code firms have to report *retained profits/accumulated losses* instead of net income, if they decide to prepare the balance after partial appropriation of net income. If the balance sheet is prepared taking the partial appropriation of earnings into account or if reserves are released, the shareholders are entitled to the retained profits instead of net income. If firms use partial appropriation in t-1, I replace net income by *retained profits/accumulated losses* and add advance distributions in t-1 to dividend in t. If the balance sheet is prepared under full appropriation of net income, the dividend in t equals the advance distribution in t-1. If firms use the partial appropriation in t, $\Delta RevenueReserves_{i,t}$ can contain changes that are caused by net income in t; as a consequence the dividend obtained may be biased. In order to obtain an unbiased dividend estimate, I correct revenue reserves for changes caused by income in t (i.e., I add releases from revenue reserves in t and subtract transfers to revenue reserves in t to revenue reserves in t). I am aware of the fact that capital reserves may affect dividends. Thus dividends obtained by equation 4.13 could be biased. If a firm use capital reserves to offset negative net income $\Delta CapitalReserves_{i,t}$ will decrease while $NetIncome_{i,t}$ remains unchanged. Thus the estimated dividend will be underestimated. However, changes in capital reserves can also be caused by capital increases or decreases. I therefore decide to neglect the effect of possible withdrawals or transfers of capital reserves.[18] I assume dividends greater than -1,000 euros and smaller than zero euro to be zero, other negative dividends are set to missing values. Negative dividends can arise by rounding issues, data failure or lack of coverage.[19] Firms are not allowed to distribute dividends if the distributable profit is negative. Therefore, dividends are set to zero, if firms report an accumulated loss in the previous year. I define payout ratio as follows:

$$Div.Ratio_{i,t} = dividend_{i,t}/NetIncome_{i,t-1}. \tag{4.14}$$

[18] I conduct additional regression analyses and include the change in capital reserves from t-1 to t. In addition, I control for releases from capital reserves in t if the balance is prepared after partial or full appropriation of net income in t. Results remain qualitatively unchanged and are reported in Table 4.12 and Table 4.13 in Appendix B.

[19] Bias due rounding may arise, because some firms' reports (even for the same firm) are reported in one EUR or in thousands EUR. If the latter applies, unknown digits in *DAFNE* are set to zero. EUR 1 th will be converted to EUR 1000 while neglecting the real digits. As an example for a data failure: Hapag Lloyd's release from capital reserve in 2014 was erroneously classified as revenue release. As an example for a lack of coverage: Merck KGaA withdrew profits in 2013 from an non prescribed account position, which is not covered by *DAFNE*. According to section 265 German Commercial Code firms may create further (non-prescribed) positions in the balance sheet if prescribed positions do not cover their contents.

I replace negative values of $NetIncome$ by 0.06 $\times$ of firm's total assets.[20] In addition, I winsorize the $Div.ratio$ at 1.

[20] Graham and Kim (2009) use the same replacement, because Lee et al. (1999) find a long-run return on assets of about 6% for U.S. firms. For the sake of comparability and the lack of long time series, I use the same adaption.

4.11 Appendix B

Table 4.8: Regression Results: Statutory Tax Rate

	DA_t/TA_{t-1}	DA_t/TA_{t-1}	DCA_t/TA_{t-1}	DCA_t/TA_{t-1}
STR	0.116	0.020	0.112	−0.037
	(0.195)	(0.244)	(0.200)	(0.251)
STR×*Family*		0.338		0.526
		(0.336)		(0.346)
ROS	0.401***	0.401***	0.408***	0.408***
	(0.037)	(0.037)	(0.038)	(0.038)
Size	−0.032***	−0.032***	−0.033***	−0.033***
	(0.007)	(0.007)	(0.007)	(0.007)
PPE	−0.132***	−0.132***	−0.117***	−0.118***
	(0.016)	(0.016)	(0.016)	(0.016)
Inventory	0.017**	0.017**	0.021**	0.021**
	(0.008)	(0.008)	(0.008)	(0.008)
Intangibles	−0.170**	−0.170**	−0.092	−0.092
	(0.077)	(0.077)	(0.077)	(0.077)
Debt	0.130***	0.130***	0.121***	0.121***
	(0.015)	(0.015)	(0.014)	(0.014)
Loss	−0.053***	−0.053***	−0.054***	−0.054***
	(0.004)	(0.004)	(0.004)	(0.004)
$Target^{DA}$	−0.755***	−0.755***		
	(0.013)	(0.013)		
$Target^{DCA}$			−0.772***	−0.772***
			(0.013)	(0.013)
DA_{t-1}/TA_{t-2}	−0.150***	−0.150***		
	(0.008)	(0.008)		
DCA_{t-1}/TA_{t-2}			−0.138***	−0.138***
			(0.008)	(0.008)
Firm fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
Observations	21,591	21,591	21,591	21,591
R^2	0.866	0.866	0.869	0.869
Adjusted R^2	0.795	0.795	0.800	0.800

The table reports regression coefficients and robust Huber-White standard errors in brackets. Marginal tax rates are replaced by statutory tax rates. The dependent variable is DA_t/TA_{t-1}, which is a firm's discretionary accrual scaled by lagged total assets. In models (3) and (4), the dependent variable is DCA_t/TA_{t-1}, which is a firm's discretionary current accrual scaled by lagged total assets. *STR* is a firm's statutory tax rate. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{DA}$ is the difference between net income before discretionary accruals less last year's net income scaled by lagged total assets. $Target^{DCA}$ is the difference between net income before discretionary current accruals less last year's net income scaled by lagged total assets. DA_{t-1}/TA_{t-2} (DCA_{t-1}/TA_{t-2}) are lagged discretionary (current) accruals scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

Table 4.9: Regression Results: Multinational Firms

DA_t/TA_{t-1}	(1)	(2)	(3)	(4)
MTR	-0.229^{***}	-0.235^{***}		
	(0.078)	(0.079)		
MTR×*Family*		0.096		
		(0.086)		
MTR×*Multinational*	−0.002	−0.023		
	(0.088)	(0.093)		
MTR^{DA}			-0.609^{***}	-0.605^{***}
			(0.050)	(0.050)
MTR^{DA}×*Family*				-0.079^{**}
				(0.040)
MTR^{DA}×*Multinational*			0.046	0.064
			(0.048)	(0.050)
ROS	0.419^{***}	0.419^{***}	0.422^{***}	0.422^{***}
	(0.039)	(0.039)	(0.037)	(0.037)
Size	-0.029^{***}	-0.029^{***}	-0.025^{***}	-0.025^{***}
	(0.007)	(0.007)	(0.006)	(0.006)
PPE	-0.128^{***}	-0.128^{***}	-0.100^{***}	-0.099^{***}
	(0.015)	(0.015)	(0.014)	(0.014)
Inventory	0.019^{**}	0.019^{**}	0.021^{***}	0.021^{***}
	(0.008)	(0.008)	(0.008)	(0.008)
Intangibles	-0.177^{**}	-0.175^{**}	-0.182^{***}	-0.184^{***}
	(0.076)	(0.076)	(0.067)	(0.067)
Debt	0.126^{***}	0.126^{***}	0.095^{***}	0.094^{***}
	(0.014)	(0.014)	(0.013)	(0.013)
Loss	-0.065^{***}	-0.065^{***}	-0.063^{***}	-0.064^{***}
	(0.004)	(0.004)	(0.003)	(0.003)
$Target^{DA}$	-0.758^{***}	-0.758^{***}	-0.698^{***}	-0.697^{***}
	(0.013)	(0.013)	(0.014)	(0.014)
DA_{t-1}/TA_{t-2}	-0.147^{***}	-0.147^{***}	-0.130^{***}	-0.129^{***}
	(0.008)	(0.008)	(0.007)	(0.007)
Firm fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
Observations	21,591	21,591	21,591	21,591
R^2	0.866	0.867	0.878	0.878
Adjusted R^2	0.796	0.796	0.814	0.814

This table reports regression coefficients and robust Huber-White standard errors in brackets. The dependent variable is DA_t/TA_{t-1}, which is a firm's discretionary accrual scaled by lagged total assets. *MTR* is a firm's simulated marginal tax rate. MTR^{DA} is a firm's simulated marginal tax rate before accrual management. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{DA}$ is the difference between net income before discretionary accruals less last year's net income scaled by lagged total assets. DA_{t-1}/TA_{t-2} are lagged discretionary accruals scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

Table 4.10: Regression Results: Controlling First-Step Regressors

DA_t/TA_{t-1}	(1)	(2)	(3)	(4)
MTR	-0.245^{***}	-0.261^{***}		
	(0.053)	(0.061)		
MTR×*Family*		0.080		
		(0.079)		
MTR^{DA}			-0.572^{***}	-0.560^{***}
			(0.032)	(0.034)
MTR^{DA}×*Family*				-0.058
				(0.039)
ROS	0.423^{***}	0.424^{***}	0.424^{***}	0.424^{***}
	(0.039)	(0.039)	(0.037)	(0.037)
Size	-0.031^{***}	-0.031^{***}	-0.028^{***}	-0.028^{***}
	(0.007)	(0.007)	(0.006)	(0.006)
PPE	-0.130^{***}	-0.130^{***}	-0.102^{***}	-0.101^{***}
	(0.015)	(0.015)	(0.014)	(0.014)
Inventory	0.014^{*}	0.014^{*}	0.017^{**}	0.017^{**}
	(0.008)	(0.008)	(0.008)	(0.008)
Intangibles	-0.189^{**}	-0.188^{**}	-0.193^{***}	-0.195^{***}
	(0.077)	(0.077)	(0.068)	(0.068)
Debt	0.124^{***}	0.124^{***}	0.094^{***}	0.093^{***}
	(0.014)	(0.014)	(0.012)	(0.012)
Loss	-0.061^{***}	-0.061^{***}	-0.060^{***}	-0.060^{***}
	(0.004)	(0.004)	(0.003)	(0.003)
$Target^{DA}$	-0.766^{***}	-0.766^{***}	-0.707^{***}	-0.706^{***}
	(0.013)	(0.013)	(0.014)	(0.014)
$\Delta Sales - \Delta Receivables$	0.020^{***}	0.020^{***}	0.019^{***}	0.019^{***}
	(0.002)	(0.002)	(0.002)	(0.002)
DA_{t-1}/TA_{t-2}	-0.145^{***}	-0.145^{***}	-0.128^{***}	-0.127^{***}
	(0.008)	(0.008)	(0.007)	(0.007)
Firm fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
Observations	21,591	21,591	21,591	21,591
R^2	0.870	0.870	0.881	0.881
Adjusted R^2	0.801	0.801	0.818	0.818

This table reports regression coefficients and robust Huber-White standard errors in brackets when first-step regressors are included. The dependent variable is DA_t/TA_{t-1}, which is a firm's discretionary accrual scaled by lagged total assets. *MTR* is a firm's simulated marginal tax rate. MTR^{DA} is a firm's simulated marginal tax rate before accrual management. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{DA}$ is the difference between net income before discretionary accruals less last year's net income scaled by lagged total assets. $\Delta Sales - \Delta Receivables$ is the change in sales less the change in receivables scaled by lagged total assets. DA_{t-1}/TA_{t-2} are lagged discretionary accruals scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

Table 4.11: Regression Results: Controlling First-Step Regressors - Discretionary Current Accruals

DCA_t/TA_{t-1}	(1)	(2)	(3)	(4)
MTR	-0.245^{***}	-0.267^{***}		
	(0.053)	(0.060)		
MTR×*Family*		0.115		
		(0.079)		
MTR^{DCA}			-0.525^{***}	-0.501^{***}
			(0.033)	(0.035)
MTR^{DCA}×*Family*				-0.122^{***}
				(0.041)
ROS	0.429^{***}	0.430^{***}	0.427^{***}	0.426^{***}
	(0.040)	(0.040)	(0.038)	(0.038)
Size	-0.033^{***}	-0.033^{***}	-0.029^{***}	-0.029^{***}
	(0.007)	(0.007)	(0.007)	(0.007)
PPE	-0.118^{***}	-0.118^{***}	-0.097^{***}	-0.096^{***}
	(0.015)	(0.016)	(0.015)	(0.015)
Inventory	0.018^{**}	0.018^{**}	0.019^{**}	0.018^{**}
	(0.008)	(0.008)	(0.008)	(0.008)
Intangibles	-0.119	-0.118	-0.141^{**}	-0.142^{**}
	(0.076)	(0.076)	(0.069)	(0.069)
Debt	0.118^{***}	0.118^{***}	0.093^{***}	0.092^{***}
	(0.014)	(0.014)	(0.012)	(0.012)
Loss	-0.062^{***}	-0.061^{***}	-0.059^{***}	-0.059^{***}
	(0.004)	(0.004)	(0.003)	(0.003)
$Target^{DCA}$	-0.781^{***}	-0.780^{***}	-0.721^{***}	-0.720^{***}
	(0.012)	(0.012)	(0.014)	(0.014)
$\Delta Sales$-$\Delta Receivables$	0.024^{***}	0.024^{***}	0.022^{***}	0.022^{***}
	(0.002)	(0.002)	(0.002)	(0.002)
DCA_{t-1}/TA_{t-2}	-0.133^{***}	-0.133^{***}	-0.120^{***}	-0.120^{***}
	(0.008)	(0.008)	(0.007)	(0.007)
Firm fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
Observations	21,591	21,591	21,591	21,591
R^2	0.874	0.874	0.883	0.883
Adjusted R^2	0.808	0.808	0.821	0.821

This table reports regression coefficients and robust Huber-White standard errors in brackets when first-step regressors are included. The dependent variable is DCA_t/TA_{t-1}, which is a firm's discretionary current accrual scaled by lagged total assets. *MTR* is a firm's simulated marginal tax rate. MTR^{DCA} is a firm's simulated marginal tax rate before discretionary current accruals. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{DCA}$ is the difference between net income before discretionary current accruals less last year's net income scaled by lagged total assets. $\Delta Sales - \Delta Receivables$ is the change in sales less the change in receivables scaled by lagged total assets. DCA_{t-1}/TA_{t-2} are lagged discretionary current accruals scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

Table 4.12: Regression Results: Alternative Dividend Calculation

DA_t/TA_{t-1}	(1)	(2)	(3)	(4)
MTR	-0.214^{***}	-0.232^{***}		
	(0.052)	(0.059)		
MTR×*Family*		0.094		
		(0.079)		
MTR^{DA}			-0.580^{***}	-0.568^{***}
			(0.032)	(0.034)
MTR^{DA}×*Family*				-0.056
				(0.039)
ROS	0.417^{***}	0.418^{***}	0.421^{***}	0.421^{***}
	(0.039)	(0.039)	(0.037)	(0.037)
Size	-0.029^{***}	-0.029^{***}	-0.025^{***}	-0.025^{***}
	(0.007)	(0.007)	(0.006)	(0.006)
PPE	-0.128^{***}	-0.128^{***}	-0.099^{***}	-0.099^{***}
	(0.015)	(0.015)	(0.014)	(0.014)
Inventory	0.019^{**}	0.019^{**}	0.021^{***}	0.021^{***}
	(0.008)	(0.008)	(0.008)	(0.008)
Intangibles	-0.175^{**}	-0.174^{**}	-0.180^{***}	-0.182^{***}
	(0.076)	(0.076)	(0.067)	(0.068)
Debt	0.126^{***}	0.126^{***}	0.094^{***}	0.094^{***}
	(0.014)	(0.014)	(0.013)	(0.013)
Loss	-0.064^{***}	-0.064^{***}	-0.063^{***}	-0.064^{***}
	(0.004)	(0.004)	(0.003)	(0.003)
$Target^{DA}$	-0.758^{***}	-0.758^{***}	-0.698^{***}	-0.697^{***}
	(0.013)	(0.013)	(0.014)	(0.014)
DA_{t-1}/TA_{t-2}	-0.147^{***}	-0.147^{***}	-0.129^{***}	-0.129^{***}
	(0.008)	(0.008)	(0.007)	(0.007)
Observations	21,590	21,590	21,590	21,590
R^2	0.866	0.866	0.878	0.878
Adjusted R^2	0.796	0.796	0.814	0.814

This table reports regression coefficients and robust Huber-White standard errors in brackets when changes in capital reserves are included in the dividend calculation. The dependent variable is DA_t/TA_{t-1}, which is a firm's discretionary accrual scaled by lagged total assets. *MTR* is a firm's simulated marginal tax rate. MTR^{DA} is a firm's simulated marginal tax rate before accrual management. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{DA}$ is the difference between net income before discretionary accruals less last year's net income scaled by lagged total assets. DA_{t-1}/TA_{t-2} are lagged discretionary accruals scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

Table 4.13: Regression Results: Alternative Dividend Calculation - Discretionary Current Accruals

DCA_t/TA_{t-1}	(1)	(2)	(3)	(4)
MTR	-0.213^{***}	-0.238^{***}		
	(0.052)	(0.058)		
MTR×*Family*		0.128		
		(0.080)		
MTR^{DCA}			-0.538^{***}	-0.515^{***}
			(0.033)	(0.035)
MTR^{DCA}×*Family*				-0.116^{***}
				(0.041)
ROS	0.424^{***}	0.425^{***}	0.425^{***}	0.424^{***}
	(0.040)	(0.040)	(0.039)	(0.038)
Size	-0.031^{***}	-0.031^{***}	-0.027^{***}	-0.027^{***}
	(0.007)	(0.007)	(0.007)	(0.007)
PPE	-0.114^{***}	-0.114^{***}	-0.092^{***}	-0.091^{***}
	(0.016)	(0.016)	(0.015)	(0.015)
Inventory	0.023^{***}	0.023^{***}	0.023^{***}	0.023^{***}
	(0.008)	(0.008)	(0.008)	(0.008)
Intangibles	-0.098	-0.096	-0.122^{*}	-0.123^{*}
	(0.075)	(0.075)	(0.068)	(0.068)
Debt	0.117^{***}	0.117^{***}	0.090^{***}	0.089^{***}
	(0.014)	(0.014)	(0.012)	(0.012)
Loss	-0.065^{***}	-0.065^{***}	-0.064^{***}	-0.064^{***}
	(0.004)	(0.004)	(0.004)	(0.004)
$Target^{DCA}$	-0.776^{***}	-0.776^{***}	-0.716^{***}	-0.715^{***}
	(0.013)	(0.013)	(0.014)	(0.014)
DCA_{t-1}/TA_{t-2}	-0.136^{***}	-0.136^{***}	-0.122^{***}	-0.122^{***}
	(0.008)	(0.008)	(0.007)	(0.007)
Observations	21,590	21,590	21,590	21,590
R^2	0.870	0.870	0.879	0.879
Adjusted R^2	0.801	0.801	0.816	0.816

This table reports regression coefficients and robust Huber-White standard errors in brackets when changes in capital reserves are included in the dividend calculation. The dependent variable is DCA_t/TA_{t-1}, which is a firm's discretionary current accrual scaled by lagged total assets. *MTR* is a firm's simulated marginal tax rate. MTR^{DCA} is a firm's simulated marginal tax rate before discretionary current accruals. *Family* is one for firms for which all shareholders belong to categories *one or more individuals or families* or *Employees/Managers/Directors* as well as companies for which all shareholders with a stake greater than 25% belong to categories *one or more individuals or families* or *Employees/Managers/Directors*. *ROS* is defined as taxable income before interest divided by sales. *Size* is the natural logarithm of a firm's lagged total assets. *PPE* is defined as a firm's property, plant and equipment scaled by lagged total assets. *Inventory* is a firm's inventory scaled by lagged total assets. *Intangibles* is a firm's intangibles scaled by lagged total assets, missing values are set to zero. *Debt* is defined as long-term debt divided by a firm's lagged total assets. *Loss* is one for firms with negative or zero profit, and zero otherwise. $Target^{DCA}$ is the difference between net income before discretionary current accruals less last year's net income scaled by lagged total assets. DCA_{t-1}/TA_{t-2} are lagged discretionary current accruals scaled by double lagged total assets. *, **, *** indicates significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed test.

Chapter 5

Concluding Remarks

The empirical findings of this thesis shed light on different aspects of corporate tax planning. First of all, it addresses the evaluation of corporate tax planning activities and shows that corporate tax avoidance can increase firm value. It extends a largely unexplored field of research by examining tax audit negotiations. The results indicate that a firm's final tax burden significantly depends on chosen negotiation strategies of tax auditors and tax advisers. Finally, the last article shows that simulated marginal tax rates affect intertemporal intra-firm profit shifting decisions.

Regarding the second chapter, shareholders evaluate tax planning strategies with respect to its legality. While tax evasion has generally negative effects on firm value, the evaluation of tax avoidance depends on firms' tax risk. The findings suggest that investors are evaluating corporate tax avoidance positively if firms exhibit a low ex-post tax risk. Furthermore, there is no evidence for reputation or agency costs exceeding the net benefit of corporate tax avoidance. Countries differ with respect to their institutional setting. In Germany, aggressive legal tax planning is subject to neither civil nor criminal penalties. In addition, the evaluation of tax planning may differ between countries due to cultural differences (e.g., Alm and Torgler 2006). Therefore, cross-country analyses with regard to institutional settings as well as cultural aspects, and in particular their effects on reputation and agency costs, would be an interesting field for future research. Besides, the sample consists of relatively large German firms. Less is known about the effect of corporate tax planning on private firms' firm value. Thus, future research may investigate whether these findings differ for private firms.

The third chapter gives first insights into the use and impact of negotiation strategies in tax audit negotiations. Since it is a first attempt at understanding the influence of negotiation strategies on tax adjustments, this research area offers a large amount of unanswered research questions. For example, less is known about tax payers negotiation strategies and whether these are affecting the audit outcome. In addition the effect of communication styles (Perreault and Kida 2011) and emotions (Van Kleef et al. 2004) on tax adjustments may be considered. Moreover, future research should examine whether

and why negotiation strategies change during the tax audit and how these changes can affect the audit outcome. Moreover, countries differ with respect to their tax audit environment (Van der Hel 2011). Thus, cross-country analyses could examine the usage and effects of negotiation strategies in different audit environments.

The last article shows that firms are shifting profit from periods with high marginal tax rates to periods with low marginal tax rates, which is in line with conforming tax avoidance. This study makes a first attempt at determining pre-managed marginal tax rates to reflect managers' situations before profit shifting. The determination of simulation parameters may be refined in future work. Moreover, the field of conforming tax avoidance is still barely explored and should be subject to future research.

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