



Arbeitskreis Quantitative Steuerlehre
Quantitative Research in Taxation – Discussion Papers

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arqus Discussion Paper No. 204

April 2016

www.arqus.info

ISSN 1861-8944

Corporate Tax Minimization and Stock Price Reactions

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Abstract

Tax minimization strategies may lead to significant tax savings, which could, in turn, increase firm value. However, such strategies are also associated with significant costs, such as expected penalties and planning, agency, and reputation costs. The overall impact of firms' tax minimization strategies on firm value is, therefore, unclear. To investigate whether corporate tax minimization increases firm value, we analyze the stock price reaction to news concerning corporate tax avoidance or evasion. Our hand-collected dataset includes 139 tax news items regarding listed German firms over the period from 2003 to 2014. In contrast to previous research, we explicitly distinguish between news about legal tax minimization (tax avoidance) and illegal tax minimization (tax evasion). We show that stock market responses differ significantly between news items concerning legal and illegal activities. While we find negative abnormal returns for tax evasion news, we find positive abnormal returns for tax avoidance news. Our results do not indicate any reputation effect of legal tax minimization. Conversely, the positive market reaction to tax avoidance news is associated with firms that face high reputation risk.

JEL classification: G14, G30, H25, H26

Keywords: Tax avoidance, tax evasion, tax aggressiveness, tax risk, market reaction, event study

Acknowledgements: We thank Sebastian Eichfelder, Jost Heckemeyer, Martin Jacob, Michael Kleemann, Franz W. Wagner as well as the participants at the 2014 arqus-conference and 2014 ZEW workshop on empirical tax research.

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1. Introduction

Is it worth investing in corporate tax minimization? This is an important question for investors and the financial management of a firm. At first sight, a negative effect on firm value may be surprising because corporate tax minimization 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 addition to potential reputation costs, significant planning costs may arise. Furthermore, agency costs may result if one assumes that corporate tax sheltering and managerial rent diversion are complementary (Desai and Dharmapala 2006). Moreover, if evasion is detected, subsequent payment of taxes and penalties has to be taken into account. Thus, the overall effect of tax minimization on firm value depends on whether the costs outweigh the tax saving benefit. Prior empirical research has yielded mixed results. Some studies provide evidence that aggressive corporate tax minimization may 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).

We contribute to the discussion of whether it is worth investing in corporate tax minimization by analyzing the stock price reaction to news concerning tax avoidance or evasion by German listed firms. In contrast to previous research, we distinguish between legal tax minimization (tax avoidance) and illegal tax minimization (tax evasion). The legality of tax minimization 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. In an association study, Kirchler et al. (2003) demonstrate that tax avoidance is associated with the terms "legal", "tax savings", and "cleverness" whereas tax evasion is associated with "illegal", "fraud", and "criminal prosecution". Thus, in contrast to the public outcry in the media regarding the tax planning of multinational firms, tax avoidance

is mainly perceived positively while only evasion is perceived negatively. This would imply high reputation costs for evasion but leaves open the question of whether tax avoidance could also lead to reputation costs.

Using a hand-collected dataset of 139 news items concerning corporate tax minimization over the period from 2003 to 2014, 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. While we find, on average, a significantly positive market response for tax avoidance news, the response to tax evasion news is, on average, significantly negative. Thus, the legality of tax minimization is important and should be considered when evaluating the effect of corporate tax minimization. The mixed results from prior research may be at least partly driven by the failure to distinguish between legal and illegal tax minimization. Shareholders, however, 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.

Furthermore, our results suggest that tax avoidance does not lead to considerable negative reputation costs, as we do not find any negative impact of proxies for reputation risks on stock prices. Conversely, the positive market reaction to tax avoidance news is associated with firms that exhibit high reputation risk, measured by high advertising expenses or media coverage. Furthermore, we cannot confirm that tax minimization is moderated by the strength of the corporate governance structure (e.g., Desai et al. 2007; Kim et al. 2011; Mironov 2013). According to our data, corporate governance does not affect the market response to tax avoidance news, which suggests that managerial rent extraction may not be a particularly important driver of tax avoidance as has been assumed in prior studies. However, tax risk matters. In particular, there is no significant market response to tax avoidance news if the respective firm bears high tax risk (measured as the volatility of the firm's effective tax rate over the previous five years).

The remainder of this paper is organized as follows. In section 2, we present an overview of the relevant literature and derive our hypotheses. In section 3, we describe the event selection, the variable measurement, and the sample. The results are provided and discussed in section 4. Section 5 examines potential intra-industry spillover effects in response to tax minimization news. We

subject our results to several robustness tests that are presented in section 6. Section 7 concludes.

2. Literature review and hypothesis development

Tax planning activities lead to significant tax savings: For U.S. multinationals, Mills et al. (1998) find that one dollar of corporate investment in tax planning is associated with four dollars of tax savings. Therefore, shareholders may interpret information regarding a firm's tax minimization activity as a positive signal that firm management is acting in their best interest. Tax minimization strategies are, however, also associated with significant costs, such as expected penalties and planning, agency, and reputation costs. The overall effect on a firm's market value is, therefore, unclear. Hanlon and Slemrod (2009) develop a simple model of the market reaction to news of tax sheltering, which results in lost tax savings and penalties if detected. The market reaction depends on the characteristics of the firm: Increasing effective tax rates (ETRs) and the level of governance increases a potential positive reaction, while increasing contact with customers increases a potential negative reaction. Some papers use an event study methodology to study stock price reactions to news about corporate tax minimization. Frischmann et al. (2008) and Robinson and Schmidt (2013) study the market reaction of the unrecognized tax benefits according to FIN 48¹, which have been shown to be positively correlated with firms' tax sheltering activities (Lisowsky et al. 2013). Both studies report that the market seems to view the contingency account positively, which is consistent with a positive perception of tax planning activities. Moreover, Hill et al. (2013) find a negative relation between ETRs and the difference between the total market value and book value of the firm. By contrast, Hanlon and Slemrod (2009) and Gallemore et al. (2014) report negative short-term stock market reactions in response to news of a firm's tax sheltering activity.

A negative reaction is in line with the results of Desai et al. (2007) and Mironov (2013), who show that firm value can increase with increasing tax enforcement. These authors emphasize that firm structures used for tax planning are also used for managerial diversion. Moreover, Kim et al. (2011) find that aggressive tax planning could increase stock price crash risk. In addition, Guenther et al. (2016) find that tax risk is positively correlated with firm risk. Hence, high tax risk could negatively affect market reactions to news of tax avoidance. These findings, generally, demonstrate that the costs can outweigh the benefits of corporate tax minimization but leave open the question of which cost component is particularly important.

¹ FASB Interpretation No. 48: "Accounting for Uncertainty in Income Taxes", issued by the United States' Financial Accounting Standards Board (FASB).

Prior research does not distinguish between 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).² 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 sustained in a future tax dispute (Blaufus et al. 2015). 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, neither civil nor criminal penalties must be paid. Thus, avoidance and evasion differ with respect to penalty risk. Moreover, the legality of tax minimization 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. Moreover, 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).

Our setting allows us to investigate the market response to tax minimization news in the absence of a potential penalty risk. If corporate tax minimization is regarded as socially irresponsible, and the expected costs of the reputational damage outweigh the tax benefits, one might expect a negative market reaction. However, if the savings and adjusted market expectations of future savings outweigh the reputation costs, because the reputational damage is low or nonexistent, we would expect a positive market response.

In theory, the sign of the total effect is undetermined. Our first hypothesis is, therefore, non-directional:

² 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.

Hypothesis 1 *The stock market price is 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 minimization, 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.*

Reputation costs could arise from 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). We have identified four studies that explicitly analyze potential reputation costs of corporate tax minimization. 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 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, 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. Fourth, 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 could result in reputation cost.

If a reputation costs exist, 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 *With increasing reputation risk, the probability of a negative stock market reaction in response to news of corporate tax avoidance increases.*

In addition to reputation costs, other costs could arise from tax minimization activities. Regarding the importance of specific cost components, Desai et al. (2007), Kim et al. (2011), and Mironov (2013) argue that the negative effect of tax aggressiveness results from agency costs between managers and shareholders. Managers can use complex structures that are supposed to save taxes but, in fact, use these structures for managerial diversion. In line with this, Desai and Dharmapala (2006) find that incentive payments for managers decrease tax avoidance for firms with a weak corporate governance structure. However, Hanlon and Slemrod (2009) find no conclusive evidence that market reactions to tax shelter news are moderated by the firms' corporate governance structure.

To test whether the effect of corporate tax minimization could be moderated by the firm's corporate governance structure, we state our last hypothesis:

Hypothesis 4 *With decreasing quality of corporate governance, the probability of a negative stock market reaction in response to news of corporate tax avoidance increases.*

In summary, research conducted thus far has provided conflicting results on the importance of the agency and reputation costs associated with corporate tax minimization. An important issue is to disentangle the various cost components that could explain negative market reactions. In particular, earlier archival studies do not differentiate between the penalty risk and other costs. This is surprising, as the penalty risk is assumed to be a major determinant of aggressive tax planning in theory (e.g., Beck et al. 2000) and practice (in the survey of Graham et al. (2014), it is cited as the third-most important reason for not engaging in tax sheltering). In the current study, we address this limitation.

3. Event selection, variable measurement, and descriptive statistics

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*,

³ Authorized to access by Stadtbibliothek Hannover. In addition, we used the FAZ-Online Archive.

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 Hanlon and Slemrod (2009) consider only tax sheltering activities; we extend this study by differentiating between tax avoidance and tax evasion, the legal and illegal components, respectively, of tax minimization activities. We therefore 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 minimization activity of a firm.
- The tax minimization activity has to be the main focus of the article.
- The tax minimization activity has to be linked to the reported corporation.
- We exclude private manager tax minimization activities.
- We exclude articles including earnings reports to avoid confounding effects.
- 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 and 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 2014/12/31 produces a total number of 204,169 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

⁴ We have reported a list of newspapers included in the sample because the availability of sources depends on the specific licenses (see Appendix A).

⁵ For the complete list of search terms, see Appendix B.

⁶ See Appendix B for the added tax evasion terms.

2014/12/31 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 949 firms.⁸

After combining our lists and excluding articles because they violated selection criteria, we have with a sample of 152 observations. We exclude four firms with missing data due to a delisting from the stock exchange, which produces a sample of 148 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 79 articles⁹ containing 139 observations of 64 different firms including 28 tax evasion events.

Table 1: Tax minimization categories

Tax avoidance Category	n
Profit shifting to tax havens	
National: Taking advantage of different levels of local trade tax rates.	22
International: Income shifting to low tax countries (e.g., Malta, Ireland).	50
Tax relief schemes / tax loop hole / tax dodge	
Use of losses (group taxation, depreciation).	15
Income Taxes (e.g., interest on equity, usage of subsidies or models to avoid thin capitalization rules).	12
Other taxes (land transfer tax, vehicle tax, nuclear fuel tax).	3
Low ETR-articles	9
Tax avoidance events total	111

We find articles with a variety of avoidance activities, such as international profit shifting or the exploitation of local tax loopholes, as well as articles on tax evasion. See Table 1 for our categorization of legal tax avoidance events. Among our events, 72 are related to profit shifting to tax havens. Of these events, 50 concern international profit shifting by multinational corporations to low-tax countries; 30 events are classified as tax relief schemes, tax loopholes or tax dodges. In this

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 54 articles mention only one firm, and 25 articles address multiple firms.

category, we include tax minimization strategies due the use of losses or group structures to avoid thin capitalization rules. Our final category consists of articles on companies with particularly low ETRs in general.

3.2. Variable measurement

3.2.1. Dependent variable (cumulative abnormal returns)

To study stock price reactions to news items concerning corporate tax minimization, 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 form¹⁰

$$R_{i,t} = \alpha_i + \beta_i R_{M,t} + \epsilon \quad (1)$$

where $R_{i,t}$ is the daily return of a sample firm i on day t and $R_{M,t}$ is the stock market return on day t .¹¹

Let $E[R_{i,t}]$ be the expected return calculated using the parameters α , β and $R_{M,t}$, and $AR_{i,t} = R_{i,t} - E[R_{i,t}]$ 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 .

$$CAR_i = \sum_{t=d-1}^{d+1} AR_{i,t} \quad (2)$$

3.2.2. Independent variables

We separate tax avoidance news from tax evasion news. We set a dummy variable AVOIDANCE to 1 for avoidance articles, 0 otherwise. The dummy variable RELIABLE AVOIDANCE takes value 1 for avoidance news that mention tax savings only in the past and a firm that has not been mentioned as a tax evader in a previous article. Otherwise, the variable is set to 0.

To measure reputation risk, 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

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.

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.¹² HIGH_ADVERTISING takes the value 1 if ADVERTISING is above the event sample median, 0 otherwise. Nielsen collects data on companies' advertising activities (e.g., television commercials, radio commercials or poster advertising). Nielsen receives additional information about corporations on gross advertising expenses (e.g., 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 0.

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 1 if a firm is listed on the DAXplus family index, 0 otherwise. We therefore merge the index constituent lists of the DAXplus family index at 2010/12/03, 2013/10/16 and 2015/02/01. 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. 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.¹³ Missing values are replaced with data from the following year.

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 0 for missing values. In these cases NOSCORE takes the value 1, 0 otherwise. 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

¹² Note that German accounting data do not usually include information on advertising expenses. Thus, we purchased data from Nielsen.

¹³ Datastream reports the percentage of total shares in issue of holdings of 5% or more held by investment companies (pension funds). We use the sum of pension fund and investment companies' holding shares. As the percentage of shares held by pension funds amounts to 0 for all sample firms, we use solely the amount of shares held by investment companies.

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).

3.2.3. *Control variables*

As control variables, we include further firm and article characteristics. We expect stock price reactions to be more pronounced for firms with a relatively high ETR because, in this case, the firm is not perceived as a tax planner prior to the arrival of news. Moreover, Armstrong et al. (2015) demonstrate that the net benefits of tax avoidance may differ at different levels of tax avoidance. We therefore include a variable indicating the level of general tax avoidance measured by firms' ETRs ETR_DIFF. Because of variations in statutory corporate tax rates during our sample period, we compare the individual firm tax rates with the statutory tax rate¹⁴. We thus define ETR_DIFF as the difference between the statutory tax rate and the individual ETR.¹⁵ Furthermore, we include the dummy variable LOSS, which will take the value 1 for firms with negative pretax income, 0 otherwise. For these firms, ETR_DIFF is set to 0. TAX_RISK measures a firm's tax risk in the form of a firm's ETR volatility over the previous five years (e.g., Gallemore and Labro 2015; Guenther et al. 2016). ETRs are again limited at 0 and 1 beforehand and set to 0 for loss firms. 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 collect article-specific data. We assign the events to different groups with respect to the timing of expected tax savings. PAST takes the value 1 for tax avoidance news addressing solely tax savings in the past, 0 otherwise. We expect stock price reactions to be less pronounced for firms with no further expected tax savings. FORMER_EVADER takes the value 1 for tax avoidance observations for firms that have a tax evasion observation on an earlier date in the sample, 0 otherwise. We expect positive market reactions for tax avoidance news to be less pronounced for these firms because market participants may doubt the legality

¹⁴ Statutory tax rates are obtained from Organisation for Economic Co-operation and Development (2014).

¹⁵ We use the Datastream variables Income Taxes (WC01451) and Pretax Income (WC01401). ETR is limited by 0 and 1.

of tax minimization activities of firms formerly known as tax evaders. RELIABLE measures the reliability of tax savings and is a combination of PAST and FORMER_EVADER. Therefore, RELIABLE takes the value 1 if potential future tax savings exist and if the tax savings are credible, which means that the firm was not formerly known as a tax evader, 0 otherwise (i.e., RELIABLE is 1 for PAST = 0 and FORMER_EVADER = 0, otherwise 0). 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.

3.3. Descriptive Statistics

The sample includes many large German corporations such as Siemens, Daimler, and Deutsche Bank. Table 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 0.0158 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 (10.7%) than in the avoidance sample (8%). The mean value of GOVERNANCE is 27.807 (34.231) 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 36.312 in the avoidance sample and 50.446 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, 4.6% of firms' shares are held by institutional shareholders. In contrast, only 1.8% of firms' shares are held by institutional shareholders in the evasion sample. The median firm in the avoidance and evasion samples has an asset value of EUR 37 billion. Thus, our sample consists of particularly large firms. The median sample firm in the avoidance (evasion) sample has an ETR of 0.038 (0.015) below the statutory tax rate. The median sample firm's ETR volatility over the previous five years (TAX_RISK) in the avoidance (evasion) sample is 0.117 (0.142). Moreover, 10.8% (7.1%) of tax avoidance (evasion) firms are firms with negative pre-tax income (LOSS). Regarding timing, 11.7% of events are classified as PAST, which means that no future tax savings are expected; 8.1% of firms in the avoidance sample were formerly known tax evaders.

Table 2: Descriptive statistics

AVOIDANCE	n	mean	SD	median	min	max
ADVERTISING	111	0.003	0.009	0.001	0	0.061
HIGH_ADVERTISING	111	0.523	0.502	1	0	1
FAMILY	111	0.081	0.274	0	0	1
GOVERNANCE	111	27.807	24.780	21.560	0	91.890
NO_SCORE	111	0.234	0.425	0	0	1
INSTITUTIONAL	111	4.586	10.620	0	0	89
log(ASSETS)	111	17.120	2.348	17.418	9.122	21.509
ETR_DIFF	111	0.042	0.166	0.038	-0.598	0.402
LOSS	111	0.108	0.312	0	0	1
TAX_RISK	111	0.140	0.106	0.117	0.005	0.515
HIGH_TAX_RISK	111	0.261	0.441	0	0	1
PAST	111	0.117	0.323	0	0	1
FORMER_EVADER	111	0.081	0.274	0	0	1
SAMEARTICLE	111	3.342	2.095	3	1	7
EVASION	n	mean	SD	median	min	max
ADVERTISING	28	0.045	0.171	0.0002	0	0.824
HIGH_ADVERTISING	28	0.393	0.497	0	0	1
FAMILY	28	0.107	0.315	0	0	1
GOVERNANCE	28	34.231	31.054	34.485	0	85.280
NO_SCORE	28	0.321	0.476	0	0	1
INSTITUTIONAL	28	1.821	3.044	0	0	10
log(ASSETS)	28	16.832	3.076	17.420	8.508	21.364
ETR_DIFF	28	0.006	0.182	0.015	-0.698	0.260
LOSS	28	0.071	0.262	0	0	1
TAX_RISK	28	0.154	0.107	0.142	0.022	0.387
HIGH_TAX_RISK	28	0.214	0.418	0	0	1
PAST	28	0	0	0	0	0
FORMER_EVADER	28	0	0	0	0	0
SAMEARTICLE	28	1.357	0.678	1	1	3

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. log(ASSETS) is the natural logarithm of assets in EUR 1,000s. ETR_DIFF is the difference between the statutory tax rate and the individual company's ETR. ETR_DIFF is set to 0 and LOSS to 1 if a company has negative pretax income, otherwise LOSS takes the value 0. TAX_RISK is the volatility of firm's ETRs over the five prior years. HIGH_TAX_RISK is 1 for firms with a TAX_RISK above the 0.75 quantile, otherwise 0. PAST takes the value 1 for tax avoidance news addressing solely tax savings in the past, otherwise 0. FORMER_EVADER takes the value 1 for tax avoidance observations for firms which have a tax evasion observation of an earlier date in the sample, otherwise 0. SAMEARTICLE counts the number of sample firms within the same news article.

4. Results

4.1. Univariate statistics

Table 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 0.22%. With a high standard deviation of 3.11%, this estimate is not significantly different from zero. Hence, on average, tax minimization does not affect firm value. However, for tax avoidance news only, the CAR estimate is 0.54%, which is significantly different from zero (unadjusted t-test). Regarding only RELIABLE AVOIDANCE, which are avoidance news items with expected future tax savings (PAST=0) for firms that are not formerly known as tax evaders (FORMER_EVADER=0), the CARs increase to 0.75%. In contrast, for tax evasion news only, the CAR estimate turns negative to -1.08%, which is significant according to all measures of statistical significance.

With respect to hypotheses 1 and 2, we provide initial evidence that stock prices react positively (negatively) to news concerning corporate tax avoidance (evasion). Prior tax compliance research frequently uses the term tax aggressiveness to distinguish between compliant and non-compliant firms. However, the degree of aggressiveness is “in the eye of the beholder” (Hanlon and Heitzman 2010) and thus difficult to define. In contrast, our result suggests that a clear boundary exists that is determined by the legality of the tax minimization strategy. To summarize the first result, we observe that legality matters.

In the next step, we explore the average CAR by firm-level subsamples. First, we investigate the intermediating 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.

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, $p = 0.044$).

Table 3: Cumulative abnormal returns

	<i>n</i>	$\overline{\text{CAR}}$	<i>pos/neg</i>	<i>t</i>	<i>t_{patell}</i>	<i>Z_{sign}</i>	<i>t_{bet}</i>	
ALL	139	0.0022	65/74	0.8163	0.4795	-0.2943	-	
AVOIDANCE	111	0.0054	57/54	1.8524*	1.4601	0.7137	2.5769**	
RELIABLE AVOIDANCE	89	0.0075	51/38	2.1457**	1.9922**	1.8495*	2.7800***	
EVASION	28	-0.0108	8/20	-1.9375*	-1.8388*	-2.0764**	-	
AVOIDANCE	HIGH_ADVERTISING	58	0.0110	33/25	2.5308**	2.4477**	1.3359	2.0376**
	LOW_ADVERTISING	53	-0.0007	24/29	-0.1814	-0.4475	-0.3648	-
	FAMILY	9	0.0084	6/3	0.8728	0.5331	1.0961	0.3238
	NON-FAMILY	102	0.0052	51/51	1.6735*	1.3648	0.4189	-
	INSTITUTIONAL	38	0.0040	18/20	0.8353	0.2359	-0.0671	-0.3661
	NON-INSTITUTIONAL	73	0.0062	39/34	1.6609	1.6302	0.9285	-
	GOVERNANCE_HIGH	55	0.0070	29/26	1.7489*	1.2144	0.5548	-0.1881
	NON-GOVERNANCE_LOW	30	0.0083	17/13	1.5001	1.5388	1.0116	-
	NO_SCORE	26	-0.0014	11/15	-0.2077	-0.4024	-0.4195	-
	ETR < STR	69	0.0039	37/32	1.2229	1.0481	0.9559	0.2209
	ETR ≥ STR	30	0.0027	11/19	0.5940	0.1804	-1.2232	-
	LOSS	12	0.0207	9/3	1.2804	1.6421	1.8114*	-
	HIGH_TAX_RISK	29	0.0037	14/15	0.4902	0.3256	-0.0681	-0.2948
	LOW_TAX_RISK	82	0.0060	43/39	2.0270**	1.5052	0.8712	-
	PAST	13	-0.0019	4/9	-0.5502	-0.541	-1.3997	-1.7508*
	NON-PAST	98	0.0064	53/45	1.9501*	1.751*	1.2701	-
	FORMER_EVADER	9	-0.0042	2/7	-0.4586	-0.4868	-1.6224	-1.0791
NON-FORMER_EVADER	102	0.0063	55/47	2.0392**	1.6678*	1.2269	-	
EVASION	HIGH_ADVERTISING	11	-0.0096	4/7	-1.6591	-0.9746	-0.8624	0.1837
	LOW_ADVERTISING	17	-0.0115	4/13	-1.3549	-1.5759	-1.972**	-
	FAMILY	3	-0.0112	1/2	-0.3630	-0.5521	-0.5085	-0.0137
	NON-FAMILY	25	-0.0107	7/18	-1.9745*	-1.7547*	-2.0213**	-
	INSTITUTIONAL	8	-0.0054	2/6	-1.4849	-0.3549	-1.4307	0.8931
	NON-INSTITUTIONAL	20	-0.0129	6/14	-1.6880	-1.9512*	-1.5526	-
	GOVERNANCE_HIGH	15	-0.0070	5/10	-1.0662	-1.0447	-1.1711	0.9107
	NON-GOVERNANCE_LOW	4	-0.0182	1/3	-1.7355	-1.0123	-0.8881	-
	NO_SCORE	9	-0.0138	2/7	-1.0453	-1.2198	-1.5588	-
	ETR < STR	17	-0.0133	4/13	-2.2785**	-1.3721	-1.9957**	-0.5870
	ETR ≥ STR	9	-0.0049	3/6	-0.3724	-0.9129	-0.9845	-
	LOSS	2	-0.0155	1/1	-	-	-	-
	HIGH_TAX_RISK	6	-0.0096	1/5	-1.4897	-1.1561	-1.6384	0.1613
LOW_TAX_RISK	22	-0.0111	7/15	-1.6040	-1.4707	-1.4869	-	

The event sample (ALL) is split into legal (AVOIDANCE) and illegal (EVASION) tax minimization. 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. INSTITUTIONAL are all firms with institutional shareholders, otherwise NON-INSTITUTIONAL. GOVERNANCE_HIGH are all firms with a governance score above the median, otherwise GOVERNANCE_LOW. ETR ≥ STR are all firms with an effective tax rate above or equal to the statutory tax rate and ETR < STR are all firms with an effective tax rate below the statutory tax rate. LOSS are all firms with a negative pre-tax income. HIGH_TAX_RISK are firms with a five year ETR volatility above the event sample 0.75-quantile, otherwise LOW_TAX_RISK. PAST are all tax avoidance news addressing solely tax savings in the past, otherwise NON-PAST. FORMER_EVADER are all tax avoidance observations of firms which have a tax evasion observation of an earlier date in the sample, otherwise NON-FORMER_EVADER. 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 (RELIABLE_AVOIDANCE) *t_{bet}* is tested against EVASION). We report test-statistics with significance levels as follows: *** indicates significance at .01, ** at .05, and * at 0.10, two-tailed.

Stock prices react more positively to news of corporate tax avoidance with increasing reputation risk. This contrasts sharply with the idea that news of tax avoidance results in a reputation loss that reduces shareholder value (which motivated us to formulate hypothesis 3).

The CARs for GOVERNANCE_HIGH are significantly positive, but the difference between CARs of GOVERNANCE_HIGH and GOVERNANCE_LOW is not significantly different from zero. Hence, we cannot find evidence for a mediating effect of corporate governance for tax avoidance news, and therefore, we obtain no support for hypothesis 4.

Further, we separate the sample into plausibly tax-aggressive and plausibly non-tax-aggressive firms, based on their ETRs. In detail, we consider two categories of firms: First, firms with $ETR < STR$ (Statutory Tax Rate) and, second, firms with $ETR \geq STR$. We find no evidence that tax rates have an impact on corporate stock price reactions to news concerning tax avoidance. We test alternative measures of tax aggressiveness (e.g., the preceding (two) year's (years') corporate ETR and CASH ETR), the results (not reported) remain qualitatively unchanged. We do not find positive significant CARs for firms with a high tax risk (HIGH_TAX_RISK), but we observe positive significant abnormal returns (t-test, two-sided, $p=0.046$) for firms with a low tax risk (LOW_TAX_RISK).

The CARs of NON-PAST are positively significant, while the mean of PAST is negative. The difference between NON-PAST and PAST is significantly different from zero (t-test, two-sided, $p=0.088$). Thus, the existence of future tax savings is essential for positive stock price reactions.

NON-FORMER_EVADER is significantly positive, while the mean of FORMER_EVADER is negative. The difference between FORMER_EVADER and NON-FORMER_EVADER is not significantly different from 0, which could be caused by the low group size of FORMER_EVADER. However, a one-sided Wilcoxon rank-sum test leads to a weakly significant negative difference ($p=0.0659$). This difference could be explained by shareholders losing trust in the credibility of firms' tax avoidance activities if these firms were formerly known as tax evaders. Thus, future tax savings are less reliable for these firms than for non-former evader firms.

Our magnitude of average CARs ranging from -1.1% for evasion events up to $+1.1\%$ for high advertising avoidance events is quite similar to other tax-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.

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.

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:¹⁶

$$CAR_i = \alpha + \beta_1 AVOIDANCE_i + \beta_2 FIRM_i + \beta_3 ARTICLE_i \quad (3)$$

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_DIFF, LOSS, HIGH_TAX_RISK and industry dummies. As article characteristics, we include SAMEARTICLE, FORMER_EVADER and PAST.

We compute four different regressions. Models (1) and (2) are linear regressions using the full sample, and models (3) and (4) use tax avoidance events only. Furthermore, we dropped GOVERNANCE and NO_SCORE in models (2) and (4) because of the high multicollinearity between $\log(ASSETS)$ and GOVERNANCE ($r=57.4\%$).

Using regression analysis has the advantage of obtaining conditional estimates of the effect of firm-level characteristics. One disadvantage, however, is that it is difficult to obtain precise estimates due to multicollinearity and the small sample size.¹⁷ Table 4 displays the results.

Using the full sample (columns (1) and (2) of Table 4), we find that CARs in the presence of tax avoidance events are significantly higher than those in the presence of tax evasion events.

¹⁶ In unreported results, we use a logistic regression approach to determine whether our results are driven by outliers. We therefore use a binary dependent variable that takes value 1 for positive CARs and 0 otherwise. The main results remain qualitatively unchanged.

¹⁷ See Appendix D for the correlation matrix.

Table 4: Multivariate analysis of cumulative abnormal returns

	<i>Dependent variable: CAR</i>			
	All		Avoidance	
	(1)	(2)	(3)	(4)
AVOIDANCE	0.022*** (0.008)	0.022*** (0.007)		
HIGH_ADVERTISING	0.010* (0.005)	0.011** (0.005)	0.012* (0.006)	0.012* (0.006)
FAMILY	0.018 (0.013)	0.017 (0.014)	0.019 (0.015)	0.021 (0.015)
GOVERNANCE	0.0001 (0.0002)		0.0001 (0.0002)	
NO_SCORE	-0.010 (0.009)		-0.015 (0.010)	
INSTITUTIONAL	0.0003 (0.0003)	0.0002 (0.0003)	0.0004 (0.0003)	0.0003 (0.0003)
ETR_DIFF	-0.024 (0.017)	-0.023 (0.017)	-0.022 (0.019)	-0.021 (0.020)
LOSS	0.015* (0.009)	0.015 (0.009)	0.017 (0.010)	0.017 (0.010)
HIGH_TAX_RISK	-0.018** (0.007)	-0.018** (0.007)	-0.022*** (0.008)	-0.022*** (0.008)
log(ASSETS)	0.002 (0.002)	0.004*** (0.001)	0.002 (0.002)	0.004*** (0.002)
PAST	-0.004 (0.012)	-0.003 (0.012)	-0.0005 (0.013)	0.002 (0.013)
FORMER_EVADER	-0.012 (0.012)	-0.012 (0.012)	-0.012 (0.012)	-0.012 (0.012)
SAMEARTICLE	-0.006*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)
Constant	-0.034 (0.029)	-0.064*** (0.023)	-0.014 (0.032)	-0.047* (0.027)
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Observations	139	139	111	111
R ²	0.333	0.313	0.354	0.326
Adjusted R ²	0.148	0.139	0.122	0.107

Note: Significance levels are as follows: *** indicates significance at .01, ** at .05, and * at 0.10, two-tailed

This result provides evidence that stock markets react differently to news concerning corporate tax minimization depending on whether the strategy is legal (avoidance) or illegal (evasion), and this is in line with hypotheses H1 and H2. In contrast to hypotheses H3 and H4, we find neither FAMILY, GOVERNANCE nor INSTITUTIONAL to significantly affect market responses to tax minimization. Regarding our control variables, we observe no significant effect of ETR_DIFF on CAR. Hence, we do not find an effect of a firm's ETR level on stock price reactions, but we observe a negative effect of firms with high tax risks (HIGH_TAX_RISK) in all model specifications. 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. Furthermore, we find a positive significant effect of log(ASSETS). A positive effect of the stock price is more pronounced for large firms.

A limitation of the previous regression 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 intermediating effect on CARs for tax avoidance news but a negative intermediating effect for tax evasion news, the overall effect will be unclear. Hence, we run the same regression separately for tax avoidance news only. Columns (3) and (4) of Table 4 display the results. 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 but no significant effect for family firms. This partly indicates that stock prices of firms with high reputation risks react more positively to tax avoidance news than other firms, which contrasts sharply with the idea that tax avoidance is accompanied by reputation losses. Thus, we do not confirm hypothesis 3 that legal tax minimization is related to reputation damages. Moreover, our results do not support hypothesis 4, as both measures of the level of corporate governance (GOVERNANCE and INSTITUTIONAL) remain insignificant in models (3) and (4). Again, we also find significant effects of log(ASSETS) and the number of firms in articles. In unreported results, we estimate further models with dummy variables that separate the sample into events before 2010 (2011, 2012 and 2013) and later years to account for a potential change in market reactions. The coefficients remain insignificant in all model specifications.

5. 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 minimization 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 with negative CARs below or equal to -0.1%.¹⁸ In this subsample, we match peer firms based on a event firm's 4-digit SIC code (see, for example, Firth 1996). We drop 33 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 3 peer firms. For these matched portfolios (firms), we calculate the abnormal returns within the event window in the same manner as in section 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 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 minimization does not only determine the direction of the market response but also affects the likelihood of intra-industry spillover effects.

6. Robustness checks

6.1. Return models

Previous research uses various methods to calculate expected returns. We use two additional models to calculate expected returns. First, we estimate the expected returns with the Fama-French

¹⁸ 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.

Table 5: Spillover effect analysis

		<i>Dependent variable: CAR</i>					
		Event firms		Matched portfolio			
	n	mean	<i>t</i>	mean	<i>t</i>	<i>t_{patell}</i>	<i>Z_{sign}</i>
AVOIDANCE	42	0.0257	5.2307 [#]	0.0120	1.3558	0.723	-0.7899
EVASION	12	-0.0281	-3.6203 [#]	-0.0342	-1.9362 [*]	-2.104 [*]	-2.1914 ^{**}

AVOIDANCE is a subsample of tax avoidance firms with CARs $\geq 0.1\%$ and available matching firms. EVASION is a subsample of tax avoidance firms with CARs $\leq -0.1\%$ 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 .01, ** at .05, and * at 0.10, two-tailed, # significant by construction.

three-factor model (see, for example, Fang and Peress 2009; Kelly and Ljungqvist 2012). We estimate the expected returns of the Fama-French three-factor model as follows¹⁹:

$$ER_{i,t} = \alpha + \beta_1 R_{M,t} + \beta_2 SMB_t + \beta_3 HML_t + \epsilon \quad (4)$$

Where $R_{M,t}$ 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). Second, 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.

$$ER_{i,t} = R_{M,t} \quad (5)$$

See Table 10 and Table 11 in Appendix E for regression results of the Fama-French three-factor model and the market-adjusted model. Tax avoidance being positive and significant is robust to changes in the estimation model. The results of the market-adjusted model are quite similar to those of the market model.

6.2. Alternative measure for reputation risk

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

$$MEDIA_COVER = \sum_{k=2}^{41} NEWS_{i,t-k} \quad (6)$$

¹⁹ The factor data may be found at <http://www.wiwi.hu-berlin.de/professuren/bwl/bb/data/fama-french-factors-germany>.

MEDIA_COVER measures the media presence during a forty-day window beginning two days before the tax minimization event. 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 $t - k$.²⁰

Table 6: Multivariate analysis of CAR using media coverage as measure of reputation risk

	<i>Dependent variable: CAR</i>	
	All	Avoidance
	(1)	(2)
AVOIDANCE	0.021*** (0.008)	
MEDIA_COVER	0.001*** (0.0003)	0.001** (0.0003)
FAMILY	0.016 (0.014)	0.021 (0.015)
INSTITUTIONAL	0.0001 (0.0003)	0.0002 (0.0003)
ETR_DIFF	-0.023 (0.017)	-0.026 (0.020)
LOSS	0.011 (0.009)	0.013 (0.011)
HIGH_TAX_RISK	-0.016** (0.008)	-0.020** (0.008)
PAST	-0.002 (0.013)	0.004 (0.013)
FORMER_EVADER	-0.012 (0.012)	-0.011 (0.012)
SAMEARTICLE	-0.004** (0.002)	-0.004** (0.002)
Constant	-0.008 (0.014)	0.015 (0.014)
Industry Dummies	Yes	Yes
Year Dummies	Yes	Yes
Observations	139	111
R ²	0.269	0.312
Adjusted R ²	0.108	0.120

Note: Significance levels are as follows: *** indicates significance at .01, ** at .05, and * at 0.10, two-tailed

In contrast to Vega (2006), we use MEDIA_COVER as a reputation risk variable. We expect

²⁰ These data are obtained using Genios.de. The mean of MEDIA_COVER is 14.86 and has a minimum (maximum) value of 0 (39).

that firms with a strong public presence will react more intensely to reputation damages. After removing highly correlated control variables from the model (i.e., GOVERNANCE, NO_SCORE, AND ADVERTISING) MEDIA_COVER is significantly positive in all models (Table 6 displays the results). Hence, in line with the reported results above, we do not observe any effect of reputation risk.

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.²¹ 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 10 events because of confounding events. The results (reported in Table 12 in Appendix E) remain qualitatively unchanged.

6.4. *Corporate Governance and the Effective Tax Rate*

The results of Armstrong et al. (2015) indicate that the corporate governance level may affect a firm's tax avoidance differently depending on the firm's general level of tax avoidance. In particular, they find a positive (negative) relationship with tax avoidance for low (high) levels of tax avoidance. Against this background, we compute, in unreported results, two additional regressions for model 3 in Table 3. In each regression, we include a different dummy variable D.STR_DIFF with an interaction term of D.STR_DIFF and GOVERNANCE. D.STR_DIFF takes value 1 for the top (bottom) 25% quantile of the STR_DIFF variable, 0 otherwise. The main effects and the interaction term are insignificant. Thus, for particularly (non-)tax-aggressive firms, the corporate governance level has no mediating effect. The results remain qualitatively unchanged.

7. **Conclusions**

Using a hand-collected sample of German media reports and stocks listed in Germany, this paper studies the short-term stock price reaction to news concerning corporate tax minimization strategies. In contrast to prior event-studies using U.S. data, we distinguish between news items reporting legal tax avoidance and illegal tax evasion. We expected that the legality of tax minimization is an important (but previously overlooked) determinant of stock market responses for

²¹ Data are collected from the official Federal Gazette's homepage www.Bundesanzeiger.de.

two reasons. First, tax avoidance and evasion differ with respect to penalty risk. The tax avoidance news in our sample implies neither a risk of criminal nor civil penalties. Second, in line with the expressive law approach (Cooter 1998, 2000) and prior research (Kirchler et al. 2003), we expect that tax avoidance and evasion differ in moral evaluation and thus in potential reputation costs.

We find that news of tax avoidance leads, on average, to positive CARs amounting to 0.54%. Moreover, if we focus on avoidance news with reliable tax savings, the CARs increase to 0.75%. This suggests that shareholders regard legal tax minimization strategies as a positive signal that a firm's management acts in their best interest. In contrast, news of involvement in tax evasion activities results in negative stock market reactions. 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 minimization matters and has to be considered if one is evaluating the consequences of tax minimization for the firm's shareholders. We are aware that our sample consists primarily of large, multinational companies. Therefore, we should be careful when transferring our results to SMEs.

Furthermore, we find that the positive reaction to tax avoidance news is particularly pronounced in the case of firms with high reputation (measured by advertising expenses and media coverage). This suggests that shareholders do not expect negative reputation effects from engaging in legal tax minimization. In addition, we do not find any evidence that legal tax avoidance bears significant agency costs. In particular, we do not find any mediating effect of corporate governance levels on stock price reactions to news of tax avoidance. However, we find that a firm's tax risk affects market responses to news on tax avoidance. If a firm's tax risk is very high, we do not observe a significantly positive market response.

In sum, the results of this paper provide new insights into the ongoing discussions among both academics and managers regarding whether tax minimization 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, at least for firms that do not exhibit particularly high tax risk.

Appendix A

Table 7: Newspapers included in database research

Aachener Nachrichten	Hamburger Morgenpost	Rhein-Hunsrück-Zeitung
Aachener Zeitung	Handelsblatt	Rheinische Post
Aar-Bote	Handelsblatt Live	Rhein-Lahn-Zeitung
Alb Bote	Handelsblatt Magazin	Rhein-Zeitung
Allgemeine Zeitung Mainz	Handelsblatt Newcomer-Zeitung	Rundschau für den Schwäb. Wald
B.Z.	Handelsblatt online	Saale-Zeitung
Badische Zeitung	Harburger Anzeigen&Nachrichten	Saarbrücker Zeitung
Bayerische Rundschau	Heilbronner Stimme	Sächsische Zeitung
Bayerische Staatszeitung	Hochheimer Zeitung	Schwäbische Zeitung
Bergedorfer Zeitung	Höchster Kreisblatt	Schweriner Volkszeitung
Bergische Morgenpost	Hofheimer Zeitung	Solinger Morgenpost
Berliner Kurier	Hohenloher Tagblatt	Sonntag aktuell
Berliner Morgenpost	Hohenzollersche Zeitung	SPIEGEL ONLINE
Berliner Morgenpost online	HÖRZU	SPIEGEL Online International
Berliner Zeitung	Idsteiner Zeitung	SPIEGEL special
Bersenbrücker Kreisblatt	Jüdische Allgemeine	Sport Bild
Bild der Frau	Kölner Stadt-Anzeiger	Stern
Bonner General-Anzeiger	Kölnische Rundschau	Straubinger Tagblatt
Börsen-Zeitung	Kreis-Anzeiger	Stuttgarter Nachrichten
Bramscher Nachrichten	KulturSPIEGEL	Stuttgarter Zeitung
Brigitte	Lampertheimer Zeitung	Sublokaleiteile der Stutt. Zeitung
BUNTE	Landshuter Zeitung	Süddeutsche Zeitung
Bürstädter Zeitung	Lausitzer Rundschau	Süddeutsche Zeitung Magazin
chrismon	Lauterbacher Anzeiger	Süddeutsche Zeitung PRIMETIME
Coburger Tageblatt	Leipziger Volkszeitung	Süddeutsche Zeitung WISSEN
Darmstädter Echo	Lingener Tagespost	Südkurier
Der Prignitzer	Main-Post	Südthüringer Zeitung
DER SPIEGEL	Main-Spitze	SÜDWEST PRESSE
Der Tagesspiegel	Main-Taunus-Kurier	sueddeutsche.de
DIE KITZINGER	Märkische Allgemeine	SUPERillu
DIE WELT	Meininger Tagblatt	tagesspiegel.de
DIE ZEIT	Meller Kreisblatt	Taunus Zeitung
DIE ZEIT online	Meppener Tagespost	taz
Döbelner Allgemeine Zeitung	Metzinger Uracher Volksblatt	Thüringer Allgemeine
Dresdner Neueste Nachrichten	Mittelbayerische Zeitung	Thüringische Landeszeitung

Ems-Zeitung	Mitteldeutsche Zeitung	Torgauer Zeitung
Euro	Münchener Abendzeitung	Trierischer Volksfreund
EXPRESS	Nassauische Neue Presse	UNISPIEGEL
FAZ.net	Neue Osnabrücker Zeitung	Usinger Anzeiger
Financial Times Deutschland	Neue Presse	WELT AKTUELL
FTD online	Neue Westfälische	WELT am SONNTAG
FOCUS	Neue Württembergische Zeitung	WELT KOMPAKT
FOCUS-MONEY	Neuss-Grevenbroicher Zeitung	WELT ONLINE
Frankenpost	Norddeutsche Neueste Nachrichten	Westdeutsche Zeitung
Frankfurter Allgemeine Zeitung	Nordkurier	Westerwälder Zeitung
Frankfurter Neue Presse	Nürnberger Nachrichten	Westfalen-Blatt
Frankfurter Rundschau	Nürnberger Zeitung	Wiesbadener Kurier
Fränkischer Tag	Oberhessische Zeitung	Wiesbadener Tagblatt
Frau von Heute	Oeffentlicher Anzeiger	WirtschaftsWoche
Freie Presse	Oschatzer Allgemeine Zeitung	WirtschaftsWoche Green
Freies Wort	Ostländer Volkszeitung	WirtschaftsWoche online
Funk Uhr	Ostthüringer Zeitung	Wirtschaftszeitung
Gelnhäuser Tageblatt	Passauer Neue Presse	Wittlager Kreisblatt
Gießener Anzeiger	Potsdamer Neueste Nachrichten	Wormser Zeitung
Hamburger Abendblatt	Reutlinger General-Anzeiger	ZEIT Campus
Hamburger Abendblatt online	Reutlinger Nachrichten	ZEIT Geschichte

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

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 steurdumping 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.

Appendix C

Table 8: Variance Inflation Factors of multivariate regressions

	(1)	(2)	(3)	(4)
AVOIDANCE	1.610	1.539		
HIGH_ADVERTISING	1.278	1.255	1.352	1.347
FAMILY	2.460	2.459	2.340	2.335
GOVERNANCE	3.063		2.944	
NO_SCORE	2.584		2.469	
INSTITUTIONAL	1.397	1.356	1.552	1.491
ETR_DIFF	1.404	1.402	1.490	1.488
LOSS	1.315	1.306	1.451	1.447
TAX_RISK	1.762	1.744	1.890	1.880
log(ASSETS)	2.539	1.621	2.585	1.809
PAST	2.165	2.148	2.404	2.364
FORMER_EVADER	1.482	1.415	1.630	1.545
SAMEARTICLE	2.102	2.022	1.925	1.845
SIC.CODE(3)	2.699	2.651	2.434	2.416
SIC.CODE(4)	2.704	2.595	2.892	2.736
SIC.CODE(6)	3.295	2.896	3.197	2.803
SIC.CODE(1,5,7,8)	2.982	2.900	3.187	3.057
YEAR(2004)	2.926	2.893	3.100	3.036
YEAR(2005)	1.679	1.666	1.614	1.587
YEAR(2006)	2.185	2.065	2.085	1.969
YEAR(2007)	1.750	1.725	1.825	1.804
YEAR(2008)	1.635	1.625	1.695	1.674
YEAR(2009)	2.213	2.095	2.083	1.937
YEAR(2010)	2.040	1.972	2.056	1.973
YEAR(2011)	1.279	1.255	1.196	1.184
YEAR(2012)	1.843	1.804	1.780	1.718
YEAR(2013)	2.858	2.538	2.608	2.203
YEAR(2014)	2.198	2.072	1.903	1.829

Note: Variance inflation factors for multivariate models of cumulative abnormal returns of Table 4

Appendix D

Table 9: Correlation matrix

	CAR	AVO.	INS.	GOV.	NOS.	ADV.	FAM.	MED.	ETR.	LOS.	TAX.	log(ASS.)	PAS.	F.E.	SAM.
AVOIDANCE	0.209	1	0.115	-0.099	-0.081	-0.215	-0.037	0.103	0.086	0.049	0.043	0.046	0.161	0.132	0.389
INST	-0.037	0.115	1	-0.067	0.093	0.006	-0.084	-0.048	0.071	0.069	0.024	-0.114	-0.022	-0.095	0.229
GOVERNANCE	0.086	-0.099	-0.067	1	-0.647	-0.143	-0.036	0.544	-0.096	-0.056	0.008	0.584	-0.012	0.265	0.115
NO SCORE	-0.126	-0.081	0.093	-0.647	1	0.213	0.058	-0.499	0.045	0.026	0.007	-0.541	-0.072	-0.085	-0.210
ADVERTISING	-0.102	-0.215	0.006	-0.143	0.213	1	-0.020	-0.155	-0.010	-0.039	-0.071	-0.386	-0.038	-0.035	-0.109
FAMILY	0.014	-0.037	-0.084	-0.036	0.058	-0.020	1	-0.203	-0.178	-0.103	-0.119	-0.204	-0.099	0.023	-0.091
MEDIA_COVERAGE	0.149	0.103	-0.048	0.544	-0.499	-0.155	-0.203	1	0.046	0.081	0.265	0.678	0.254	0.122	0.188
ETR_DIFF	-0.014	0.086	0.071	-0.096	0.045	-0.010	-0.178	0.046	1	-0.068	-0.207	-0.051	0.120	-0.113	-0.088
LOSS	0.144	0.049	0.069	-0.056	0.026	-0.039	-0.103	0.081	-0.068	1	0.246	0.042	-0.107	-0.088	0.044
TAX_RISK	-0.014	0.043	0.024	0.008	0.007	-0.071	-0.119	0.265	-0.207	0.246	1	0.311	0.212	-0.018	0.097
logASSETS	0.155	0.046	-0.114	0.584	-0.541	-0.386	-0.204	0.678	-0.051	0.042	0.311	1	0.182	0.191	0.193
PAST	-0.042	0.161	-0.022	-0.012	-0.072	-0.038	-0.099	0.254	0.120	-0.107	0.212	0.182	1	-0.085	0.154
FORMER_EVADER	-0.054	0.132	-0.095	0.265	-0.085	-0.035	0.023	0.122	-0.113	-0.088	-0.018	0.191	-0.085	1	0.079
SAMEARTICLE	-0.114	0.389	0.229	0.115	-0.210	-0.109	-0.091	0.188	-0.088	0.044	0.097	0.193	0.154	0.079	1

CAR are the cumulative abnormal returns of sample firms. AVOIDANCE takes 1 for firms in the avoidance sample, otherwise 0. INSTITUTIONAL is the amount of shares held by institutional shareholders (investment companies) in percent. GOVERNANCE is a firm's corporate governance score and 0 for missing data. NO_SCORE takes the value 1 for firms with a missing corporate governance score, otherwise 0. ADVERTISING are the gross advertising expenses in EUR scaled by sales + 1 in EUR. FAMILY takes the value 1 for firms listed in the DAXplus family index, otherwise 0. MEDIA_COVERAGE counts the number of days within a forty-day window starting 42 days before the event date in which a firm occurs in a headline or leading article of a transregional newspaper. ETR_DIFF is the difference between the statutory tax rate and the ETR of firm i . ETR. takes the value 0 and LOSS the value 1 for firms with a negative pretax income, otherwise 0. TAX_RISK IS THE VOLATILITY OF FIRM'S ETRS OVER THE FIVE PRIOR YEARS. . log(ASSETS) is the natural logarithm of total assets in EUR 1,000s. PAST takes the value 1 for tax avoidance news addressing solely tax savings in the past, otherwise 0. FORMER_EVADER takes the value 1 for tax avoidance observations for firms which have a tax evasion observation of an earlier date in the sample, otherwise 0. SAMEARTICLE counts the number of sample firms within the same news article.

Appendix E

Table 10: Regression Results: Fama French three-factor model

	<i>Dependent variable: CAR_{FF3}</i>			
	All		Avoidance	
	(1)	(2)	(3)	(4)
AVOIDANCE	0.022** (0.009)	0.022** (0.009)		
HIGH_ADVERTISING	0.015** (0.006)	0.016** (0.006)	0.015** (0.007)	0.015** (0.007)
FAMILY	0.034** (0.016)	0.033** (0.016)	0.036** (0.016)	0.038** (0.016)
GOVERNANCE	0.0002 (0.0002)		0.0002 (0.0002)	
NO_SCORE	-0.013 (0.010)		-0.015 (0.011)	
INSTITUTIONAL	0.0004 (0.0003)	0.0004 (0.0003)	0.0003 (0.0003)	0.0002 (0.0003)
ETR_DIFF	-0.023 (0.020)	-0.023 (0.020)	-0.011 (0.021)	-0.009 (0.022)
LOSS	0.013 (0.011)	0.013 (0.011)	0.019* (0.011)	0.019* (0.011)
HIGH_TAX_RISK	-0.016* (0.009)	-0.017** (0.009)	-0.019** (0.009)	-0.019** (0.009)
log(ASSETS)	0.001 (0.002)	0.003** (0.001)	0.002 (0.002)	0.004*** (0.002)
PAST	-0.011 (0.014)	-0.008 (0.014)	-0.008 (0.014)	-0.004 (0.014)
FORMER_EVADER	-0.011 (0.014)	-0.011 (0.014)	-0.016 (0.013)	-0.016 (0.013)
SAMEARTICLE	-0.004** (0.002)	-0.003* (0.002)	-0.003* (0.002)	-0.003 (0.002)
Constant	-0.003 (0.033)	-0.044 (0.027)	0.002 (0.035)	-0.039 (0.030)
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Observations	139	139	111	111
R ²	0.339	0.314	0.397	0.363
Adjusted R ²	0.171	0.154	0.201	0.175

Note: Significance levels are as follows: *** indicates significance at .01, ** at .05, and * at 0.10, two-tailed

Table 11: Regression Results: Market-adjusted model

	<i>Dependent variable: CAR_{MA}</i>			
	All		Avoidance	
	(1)	(2)	(3)	(4)
AVOIDANCE	0.020** (0.008)	0.021*** (0.008)		
HIGH_ADVERTISING	0.013** (0.006)	0.014** (0.005)	0.017*** (0.006)	0.017*** (0.006)
FAMILY	0.016 (0.014)	0.016 (0.014)	0.013 (0.014)	0.014 (0.014)
GOVERNANCE	0.0001 (0.0002)		0.0001 (0.0002)	
NO_SCORE	-0.009 (0.009)		-0.012 (0.009)	
INSTITUTIONAL	0.0001 (0.0003)	0.0001 (0.0003)	0.0002 (0.0003)	0.0001 (0.0003)
ETR_DIFF	-0.016 (0.017)	-0.016 (0.017)	-0.012 (0.019)	-0.011 (0.019)
LOSS	0.008 (0.009)	0.008 (0.009)	0.008 (0.010)	0.008 (0.010)
HIGH_TAX_RISK	-0.020*** (0.007)	-0.021*** (0.007)	-0.026*** (0.008)	-0.026*** (0.008)
log(ASSETS)	0.002 (0.002)	0.004*** (0.001)	0.002 (0.002)	0.004*** (0.001)
PAST	-0.007 (0.012)	-0.006 (0.012)	-0.004 (0.012)	-0.001 (0.012)
FORMER_EVADER	-0.011 (0.012)	-0.012 (0.012)	-0.013 (0.012)	-0.013 (0.012)
SAMEARTICLE	-0.006*** (0.002)	-0.006*** (0.002)	-0.006*** (0.002)	-0.005*** (0.002)
Constant	-0.037 (0.029)	-0.064*** (0.023)	-0.017 (0.031)	-0.049* (0.026)
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Observations	139	139	111	111
R ²	0.334	0.320	0.441	0.415
Adjusted R ²	0.164	0.162	0.259	0.243

Note: Significance levels are as follows: *** indicates significance at .01, ** at .05, and * at 0.10, two-tailed

Table 12: Regression Results - no confounding events

	<i>Dependent variable: CAR</i>			
	All		Avoidance	
	(1)	(2)	(3)	(4)
AVOIDANCE	0.022*** (0.008)	0.022*** (0.008)		
HIGH_ADVERTISING	0.011* (0.006)	0.011** (0.006)	0.013** (0.007)	0.013** (0.007)
FAMILY	0.022 (0.016)	0.023 (0.015)	0.026 (0.018)	0.029 (0.017)
GOVERNANCE	0.0001 (0.0002)		0.0001 (0.0002)	
NO_SCORE	-0.005 (0.009)		-0.008 (0.010)	
INSTITUTIONAL	0.0003 (0.0003)	0.0003 (0.0003)	0.0003 (0.0003)	0.0003 (0.0003)
ETR_DIFF	-0.026 (0.017)	-0.025 (0.017)	-0.020 (0.020)	-0.019 (0.020)
LOSS	0.015 (0.009)	0.015 (0.009)	0.017 (0.010)	0.017 (0.010)
HIGH_TAX_RISK	-0.021*** (0.008)	-0.022*** (0.008)	-0.025*** (0.009)	-0.025*** (0.009)
log(ASSETS)	0.003* (0.002)	0.004*** (0.001)	0.003 (0.002)	0.004*** (0.002)
PAST	-0.005 (0.012)	-0.004 (0.012)	0.001 (0.013)	0.004 (0.013)
FORMER_EVADER	-0.011 (0.013)	-0.011 (0.012)	-0.012 (0.013)	-0.013 (0.013)
SAMEARTICLE	-0.006*** (0.002)	-0.006*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)
Constant	-0.050 (0.030)	-0.066*** (0.023)	-0.028 (0.034)	-0.050* (0.028)
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Observations	129	129	104	104
R ²	0.344	0.339	0.406	0.394
Adjusted R ²	0.160	0.171	0.195	0.200

Note: Significance levels are as follows: *** indicates significance at .01, ** at .05, and * at 0.10, two-tailed

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Impressum:

Arbeitskreis Quantitative Steuerlehre, arqus, e.V.

Vorstand: Prof. Dr. Ralf Maiterth (Vorsitzender),
Prof. Dr. Kay Blaufus, Prof. Dr. Dr. Andreas Löffler
Sitz des Vereins: Berlin

Herausgeber: Kay Blaufus, Jochen Hundsdoerfer,
Martin Jacob, Dirk Kiesewetter, Rolf J. König,
Lutz Kruschwitz, Andreas Löffler, Ralf Maiterth,
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ISSN 1861-8944