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The effect of chief financial officers' expert power on tax avoidance – Empirical evidence from Germany

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Abstract

The goal of this paper is to investigate the relationship between the CFO as a tax planner and corporate tax avoidance behavior in Germany. In line with upper echelon theory, we examine the effect of CFO's expert power on tax avoidance, which is measured by the effective tax rate. CFO's tax-specific work experience is used to measure expert power. The dataset consists of the two biggest German indices, DAX and MDAX. The results of our Ordinary Least Square model indicate a negative effect of CFO's expert power on the effective tax rate, meaning that experienced CFOs are more engaged in tax avoidance. In contrast to previous assumptions that upper echelon theory is only limitedly applicable in collectivistic countries, our results support the applicability of the theory in collectivistic countries such as Germany. Our findings provide practical implications insofar as firms may use the information of CFO's impact on tax planning to recruit new managers according to the general company strategy. Conclusively, our study is the first quantitative study in Germany that analyzes the impact of CFO expert power on tax avoidance behavior.

Keywords: Tax avoidance, GAAP ETR, Upper Echelon Theory, CFO, Expert Power, Tax Affiliation

1 Introduction

Previous studies in accounting research mainly investigated the relationship between internal firm-/external market-characteristics and accounting practices (Klein, 2002). An alternative approach to explain variations in accounting practices across companies surged from the introduction of the upper echelon theory (UET) by Hambrick and Mason (1984). UET has been widely applied to accounting research and states that organizational strategic-choices are mainly influenced by top executives' characteristics (Hiebl, 2014). Traditionally, researchers focused on the influence of chief executive officer's (CEO) characteristics or the composition of top management teams (TMT) on financial and accounting strategies. Recently, more light is shed on the chief financial officer (CFO) as being the responsible officer for financial- and accounting decisions (Christensen et al., 2015; Naranjo-Gil & Hartmann, 2007; Pu et al., 2015). First investigations on CFO characteristics and management accounting systems indicate more consistent results compared to research on CEO characteristics (Hiebl, 2014). The relationship between the CFO's background and different accounting systems such as activity-based costing, balanced scorecard implementation, and accounting practices such as earnings management brought significant insights (McNichols, 2002).

A wide range of investigations focuses on tax avoidance (TA) as accounting practice. One reason is the high practical relevance of TA as it is a key value-driver and one of the highest expenses of a company (Dyreng et al., 2010; Kovermann, 2018; Pu et al., 2015). A firm that strives for value creation through TA, might search

for practices to reduce their tax burden. One practice is hiring tax experts such as a CFO with a background in this field. Tax-specific expert knowledge inside the firm gained relevance as regulators increasingly implement means to hinder firms from avoiding taxes too aggressively such as the "Base Erosion and Profit Shifting Project" (BEPS) and “International Financial Reporting Interpretation Committee” (IFRIC) 23.

Dyreng et al. (2010), (Blouin, 2014), and the OECD (2016) define TA as precisely planned legal actions to reduce the company's tax burden. The CFO is usually the responsible officer for tax planning. CFOs commonly possess deeper knowledge in accounting activities, as well as taxes and CEOs, do not have the resources to engage in complex tax planning strategies (Aier et al., 2005). Investigating the effect of the proper responsible officer of tax planning (CFO) is essential to comprehensively understand the mechanisms behind TA.

The majority of studies investigating the effect of CFO characteristics on TA were carried out in the United States (U.S.) (Christensen et al., 2015; Dyreng et al., 2010) and China (Pu et al., 2015). Feller and Schanz (2017) conducted expert interviews in Germany and found that the power of tax planning experts influences TA significantly. They call for empirical validation of their results. This paper responds to the call of Feller and Schanz (2017) and poses the question: *how is the CFO's expert power related to a firm's corporate tax avoidance?*

To study this effect, we designed a model closely linked to the upper echelon perspective. In contrast to previous upper echelon research, we analyze CFO's expert power as characteristic of interest and take a differentiated view on the influential effects of managerial discretion and executive job demands as proposed by Hambrick (2007). We use a German sample consisting of the constituent list of the two biggest German indices (DAX and MDAX). Archival financial data from Thomson Reuters Datastream is combined with hand-collected information on CFO characteristics. We consider a CFO to have expert power if he/she has previous work experience in the field of tax (at least one year). Consistent with prior studies, TA is measured with the General Accepted Accounting Principles Effective Tax Rate (GAAP ETR) (Blouin, 2014; Hanlon, 2005; Wilde & Wilson, 2018). Our Ordinary Least Square (OLS) model indicates a statistically significant effect of CFO's expert power on TA. The model remains valid after conducting a battery of robustness checks.

The remainder of this paper is structured as follows: Chapter 2 gives an introduction to UET, TA, and the current state-of-the-art in tax research. After the hypothesis development in Chapter 3, we describe our research design in Chapter 4. The results are reported in Chapter 5 and discussed in Chapter 6, which also provides our limitations and further research recommendations.

2 Theoretical Foundation

This chapter forms the theoretical framework of this study. First, UET is introduced as the meta-theory of the examination. Afterward, we provide an overview of recent research in UET and tax accounting.

2.1 Upper echelon theory

Contrary to neo-institutional theory (Meyer & Rowan, 1977) or contingency theory (Fiedler, 1964), UET argues that organizational outcomes and strategic decision-making can be partially explained by the characteristics of the firm's upper echelons (Hambrick & Mason, 1984). Hence, the strategic choice is not solely influenced by the change of environmental factors but also by the perception of the upper echelons of these environmental changes (Bertrand & Schoar, 2003; Fiedler, 1964). Interest in analyzing the relationship between upper echelons and organizational outcomes grew in recent years triggered by the fact that increasing organizational complexity might hamper rational decision-making (Finkelstein, 2008; Hambrick, 2016). Top executives' characteristics refer to their cognitive bases such as values and beliefs. These unobservable characteristics cannot easily be measured. Therefore, demographic variables of upper echelons such as age, education, or gender are commonly used proxies for the unobservable factors (Hambrick & Mason, 1984). Especially the power of top executives influences strategic choices (Eisenhardt & Bourgeois, 1988). Power is the ability of upper echelons to enforce their will (Finkelstein, 1992). Contemporary literature uses the executive's tenure, education, or work experience as proxies of power (Burkert & Lueg, 2013; Ge et al., 2011). Mentioned measures are not necessarily linked to TA which is why we use the tax specific background as expert power. Our independent variable expert power is measured by the CFO's work experience in a tax-related field. Previous studies either focused on the characteristics of single upper echelons, mainly the CEO, (Arena et al., 2018; Burkert & Lueg, 2013; Cormier et al., 2016; Hiebl, 2014), or on the composition of TMT (Bantel & Jackson, 1989; Finkelstein, 1992; Naranjo-Gil & Hartmann, 2007).

The explanatory power of UET is influenced by the variables managerial discretion and executive job demands (Hambrick, 2007). Managerial discretion describes the manager's extent of latitude for decision-making. Higher managerial discretion increases the explanatory power of UET (Hambrick & Mason, 1984). Executive job demands describe the manager's individual perception regarding the complexity of his/her job task (Hambrick, 2007). Higher job demands lead to less time available for decision-making and hence increase the likelihood of decisions that rely stronger on personal experiences and beliefs (Hambrick et al., 2005). It is important to consider

these effects. Our approach is to use tenure (managerial discretion) and the number of CFO's job titles (executive job demands) as control variables.

2.2 Tax avoidance

As stated earlier, we define TA as the precisely planned and legal reduction of a firm's income tax burden through corporate tax planning activities (Blouin, 2014; Dyreng et al., 2010; OECD, 2016). In contrast to TA, tax evasion and tax fraud are considered illegal tax accounting practices (OECD, 2016). It is important to distinguish TA from earnings management to understand its role and effectiveness. TA reduces the tax base and therefore focuses on practices, methods, and strategies to manipulate the tax balance sheet. Contrary, earnings management directly focuses on the adjustment of numbers within the income statement (Ronen & Yaari, 2008). Both practices affect a firm's tax expense but have different implications and consequences for firms and shareholders. In contrast to earnings management, TA decreases tax expense and leads to higher cash flow without affecting key performance indicators such as operating income (EBITDA) negatively. As a result, firms report higher financial performance, indicate lower risk, and are able to pay higher dividends to their shareholders due to relatively high cash flow compared to total profit. Therefore, investors tend to reward firms for TA and punish them for low earnings quality caused by earnings management (Blaylock et al., 2011).

Several studies indicate a growing interest in TA for researchers. Aspects such as ownership structure, managerial compensation, and corporate governance have been linked to TA (Wilde & Wilson, 2018). There is an existing need for research on this topic for understanding the causes, application, and consequences of TA comprehensively (Hanlon & Heitzman, 2010; Wilde & Wilson, 2018). First steps into the field of the effect of top executives' characteristics on TA have already been made by Law and Mills (2017), Pu et al. (2015), and Dyreng et al. (2008).

The high relevance of TA for firms and different stakeholder groups requires a comprehensive understanding of the mechanisms of TA. In respect to agency theory, managers act on behalf of shareholders to generate shareholder value (Jensen & Meckling, 1976). TA as a management practice affects shareholder value directly as taxes are one of the highest cash relevant expenses within an organization and therefore a key value driver for firms (Austin & Wilson, 2016; Kovermann, 2018). As a result, tax expenses have a strong impact on a firm's financial performance and its reduction generally leads to higher stock price performance and lower cost of equity (Cook et al., 2017; Desai & Dharmapala, 2009; Goh et al., 2016). On the one hand, higher stock price performance and lower cost of equity lead to additional shareholder value. An additional positive effect of TA on shareholder value is reflected by lower cost of debt but only if debt market participants perceive a degree of TA close to the industry median (Crabtree & Maher, 2009). On the other hand, if TA and earnings management are not clearly distinguished from each other, or equity and/or debt market participants perceive TA practices as too aggressive compared to peers, firm value and cost of capital are affected negatively (Ayers et al., 2010; Blaylock et al., 2011; Comprix et al., 2011; Inger, 2013). The firm´s benefit depends on transparency, methods, and the degree of TA. Other stakeholders seem to be interested in firms' TA practices as well. For instance, recent literature depicts reputational losses and negative effects on customer relations of firms through tax sheltering (Bird & Davis-Nozemack, 2018; Huseynov & Klamm, 2012). The reactions of customers can be explained by the negative effects of TA for society due to welfare losses and the debate on a firm's behavior in corporate social responsibility (Bird & Davis-Nozemack, 2018). Additionally, legislators show interest in this topic by implementing global convergence projects regarding tax statutes such as the BEPS. One major target of BEPS is the limitation of global tax evasion based on corporate tax sheltering (OECD, 2016).

Moreover, firm performance and creation of shareholder value by the management through TA highly depend on the perception of several stakeholder groups and therefore need precise tax planning and communication strategies. This is consistent with the stakeholder theory (Freeman, 1984), which states that a firm's performance is based on the satisfaction of all relevant stakeholder groups. Furthermore, market reactions proved the interest of several stakeholder groups in TA. Considering the ability to influence TA as an organizational outcome, firms, legislators, and other stakeholder groups need to understand the roots of TA. This has implications for our research. We assume that the characteristics - in particular, the power of upper echelons - is one important factor behind TA practices.

Different measures such as temporary book income to taxable income differences (BTD), proxies for tax shelter activities, or ETR are used to observe TA. BTD is the relation between cumulated deferred taxes and statutory tax rate (Ayers et al., 2010; Crabtree & Maher, 2009; Hanlon, 2005). ETR is the relation between tax burden and pretax income (Dyreng et al., 2008; Gupta & Newberry, 1997) and is the most used measure of corporate TA in recent literature (Blouin, 2014). GAAP ETR, Cash ETR, and Current ETR are common specifications of ETR in research. We use GAAP ETR as the most common measure of TA in research (Blouin, 2014; Dunbar et al., 2010). GAAP ETR is defined as the total tax expense divided by pretax income (Gupta & Newberry, 1997). It involves fewer measurement problems compared to Cash ETR on a static perspective (Dyreng et al., 2008) and only reflects actual avoided taxes by neglecting tax deferral strategies (Gupta & Newberry, 1997).

2.3 Upper echelon theory in tax accounting research

A wide range of upper echelon's characteristics has been investigated. Dyreng et al. (2010) highlight the influence of the firm's upper echelons on GAAP ETR and Cash ETR by excluding firm-specific causes of TA. However, they failed to identify specific observable management characteristics that are related to ETR. This could lead to the assumption that the effect of upper echelons on TA is not based on separate characteristics but rather on the comprehensive mindset of an executive. As addressed by several studies, it was found that CEO's narcissism positively affects TA (Chyz et al., 2014; Duan et al., 2018; Olsen & Stekelberg, 2015). Further studies investigated the CEO's political orientation (Christensen et al., 2015) or the effect of CEOs with a military background (Law & Mills, 2017). There is little investigation on the impact of CFOs on TA, even though the CFO is the responsible manager for tax planning (Francis et al., 2014; Pu et al., 2015). Francis et al. (2014) found that female CFO's are less tax aggressive than their male counterparts. Pu et al. (2015) found a significant effect of CFOs on TA, concluding that Chinese CFOs with high political power and/or high expert power are associated with lower ETR. Finally, based on the qualitative analysis of 19 interviews with German tax managers, Feller and Schanz (2017) indicate the importance of CFO's internal power for effective corporate tax planning. Due to the qualitative character of their research, generalizability is limited. Therefore, they highlight the importance of quantitative validation of their results.

As outlined, the CFO is the responsible person for tax planning. Therefore, this study adds to the sparse research on CFOs. Furthermore, previous studies on the CFO's power failed to recognize the importance of CFO's affiliation for specific strategies. For instance, a powerful CFO, who has a banking background is more aware of creditor specific investor relation issues. He/she is unlikely to focus on TA as much as a CFO with an affiliation for TA and vice-versa. It is important to analyze the CFO's background, interests, and expertise before looking at the CFO's internal power.

3 Hypothesis Development

UET highlights the importance of investigating the responsible officer of a certain practice to catch the effect of the firm's decision-making process correctly (Hambrick & Mason, 1984). The CFO is the responsible executive for tax planning and he/she has the greatest impact on TA (Duan et al., 2018; Francis et al., 2014; Hoseini et al., 2018; Koester et al., 2016). Furthermore, we assume that tax planning activities are not closely related to the CEO's scope of functions as to the CFO's functional area. This is mainly caused by the high requirements of tax specific financial expertise of effective tax planners due to the complexity of corporate tax strategy enforced by strong legal regulations for corporate tax accounting (Deutsch, 2018). Thus, we assume that CEOs do not have the resources (time, knowledge) to deal with the corporate tax strategy comprehensively and hence the CFO should be in charge of it. Therefore, we investigate the effect of CFO's expert power on TA. The following subchapters consist of the association between our measurement of CFO expert power and TA, the hypothesis development, and our control variables.

3.1 Expert power

Following Finkelstein's (1992) approach, we define expert power as the ability of a certain executive to cope with a specific task. Expert power depends on the manager's "contacts and relationships with elements of the task environment" (Finkelstein, 1992, p. 509) and therefore on their experience. We follow up on the research of Pu et al. (2015), who provide evidence that CFO's expert power leads to lower GAAP ETR in China. According to Finkelstein (1992), we measure expert power as CFO's work experience. We assume that CFO's expert power directly affects corporate TA for two reasons. First, TA is a highly complex practice caused by the intersections of various factors (e.g. local tax rate, local tax statutes, simultaneous earnings management). The CFO can rely on his/her experience when facing complex decisions. Second, we assume that experienced CFOs put a stronger weight on a corporation's tax strategy within their overall financial strategy, explained by greater tax affiliation. In sum, if the CFO has tax-related work experience or tax relevant titles, we expect him/her to be more aware of tax issues and further be more successful in decreasing corporate tax burden. Following, we come to the hypothesis:

H1: CFO´s expert power influences TA positively.

3.2 CFO's additional job titles

Previous literature states that the effect of upper echelons' characteristics on their strategic choice is higher if executives perceive their job tasks as more complex and challenging (Hambrick et al., 2005). Hitherto, research failed to provide a best practice to catch the moderating effect of executive job demands (Hambrick, 2016). This insight has implications for our research. We believe that the explanatory power of our model increases by

controlling for a CFO's additional job titles. This assertion is based on the assumption that CFOs perceive their job task as more challenging when he/she is also CEO or responsible for other functional departments (e.g. human resources, marketing) beyond his/her typical tasks as CFO (e.g. finance, controlling, taxation). We hypothesize the following:

H2a: The significance and effect of CFO's expert power on TA increase when additionally controlling for the CFO's additional job titles.

3.3 Managerial discretion

Besides executive job demands, higher managerial discretion influences the effect of upper echelons' characteristics on their strategic choices (Hambrick, 2007). Again, there is no best-practice solution to catch the effect of managerial discretion. Our approach is to use CFO's power as an indicator of managerial discretion. Since the manager's external power is difficult to observe, contemporary literature describes the manager's tenure as a proxy for his/her internal power (Burkert & Lueg, 2013; Finkelstein, 2008). Long-tenured executives generally have higher power bases within the firm and therefore a higher degree of discretion is present (Hambrick, 2007).

Hence, we believe that the explanatory power of our model increases by controlling for the tenure of the CFO. We hypothesize the following:

H2b: The significance and effect of CFO's expert power on TA increase when additionally controlling for the CFO's tenure.

Based on the former hypotheses, we believe that the explanatory power of our model increases further when both UET specific control variables are incorporated simultaneously. We, therefore, hypothesize the following:

H3: The significance and effect of CFO's expert power on TA increase when additionally controlling for the CFO's additional job titles and CFO's tenure.

3.4 Control variables

We address omitted variable bias using traditionally inserted variables in upper echelon studies (Duan et al., 2018; Dyreng et al., 2010; Pu et al., 2015). Firm-specific variables such as the firm's capital structure (leverage), firm size (total assets), and industry are included for rational accounts. Furthermore, we consider the UET related effects of managerial discretion and executive job demands by controlling for CFO's additional job titles and tenure. Finally, we assume that a higher ratio of intangible assets to total assets of International Financial Reporting Standards (IFRS) reporting firms generally leads to a lower GAAP ETR because of the difference between IFRS and German tax law regarding regulations of capitalization and depreciation of intangible assets. In particular, the goodwill leads to higher depreciation in the tax balance sheet compared to the IFRS balance sheet. The goodwill represents usually the largest proportion of a German firm's intangible assets (Cappel & Hartmann, 2018).

4 Research design

4.1 Sample selection

To test our hypotheses, we choose a German sample for several reasons. To the best of our knowledge, there is hardly any quantitative study investigating the influence of upper echelons on TA in Germany. A possible explanation might be that UET is a fairly novel theory compared to other theories such as contingency theory (Fiedler, 1964) or neo-institutional theory (Meyer & Rowan, 1977). Another possibility is that Germany is considered a more collectivistic country compared to the U.S., which might restrict the manager's discretion inside a firm (Andersen & Lueg, 2017; Hofstede, 1980). Individualistic countries strive for personal independence and freedom, whereas collectivistic countries form a selfless society (Hofstede, 1980). However, we believe that Germany offers a suitable setting. We assume that the collectivistic character of Germany is negligible in the tax context because tax planners have a notable degree of freedom in deciding on the level of TA. Moreover, Pu et al. (2015) found a significant relationship of CFO's power on TA in China, which is presumably a more collectivistic regime than Germany (Hofstede-Insight, 2019). Furthermore, the last major German corporate tax reform was in 2008/2009 (Kraft, 2014). Therefore, Germany provides a relatively stable regulatory environment, which decreases the likelihood of one-time effects in our model caused by regulatory changes. Following, we ensure to provide current results with a low risk of one-time effects by choosing a period from 2010-2018.

Additionally, the effective corporate tax rate in Germany (approximately 30%) is fairly high compared to other developed countries, which might incentivize managers to reduce tax burden more aggressively (Bundesministerium der, 2017).

We collected a sample of 90 firms using the constituent list of the DAX and MDAX of May 18th, 2019. According to (Kraft, 2014), larger corporations have more opportunities to engage in TA compared to smaller ones because they can better exploit tax differences. To consider these structural diverging conditions between small and large firms, we provide a homogenous sample consisting of public interest entities (PIEs) listed in DAX and MDAX.

Table 1 displays the sample selection. The collected data set consists of 90 firms from 2010-2018 resulting in a sample of 810 firm-year observations. A total of 153 observations from financial institutions are excluded due to their specific industry regulations. The sample is further reduced by 93 observations because we exclude firm-years with a GAAP ETR greater equal ‘1' and lower equal ‘0'. Finally, we eliminate observations with missing data and therefore result in the final number of 553 firm-year observations.

Table 1: Development of sample size

	No. of firm-years
Total observations (9 years x 90 firms)	810
Less firm-years from financial institutions	153
Less firm-years with GAAP_ETR	93
Less firm-years with missing data	19
Final number of firm-year observations	553

Legend: GAAP_ETR = income tax/pretax income

4.2 Data collection and variable definitions

4.2.1 Independent variable

We use archival financial data from Thomson Reuters Financial Datastream, Hoppenstedt Company Database. Data on CFO characteristics are gathered from Thomson Reuters Eikon and corroborated by hand-collected data from audited annual reports, the top executive sections on company websites, and the business press.

We use the independent variable EXPERT_POWER to measure the CFO's experience. EXPERT_POWER is a binary variable that is coded ‘1' if the CFO has tax experience, otherwise ‘0'. We account for tax experience if the CFO has worked at least one year in an audit firm, a dedicated tax department in a corporation, or a tax office. Following Finkelstein (1992), the CFO's experience is a proxy for his/her power. Experienced executives are those who can react to environmental requirements more appropriately (Pu et al., 2015).

4.2.2 Dependent variable

GAAP_ETR is used as a proxy to measure TA. It is defined as the total tax expense divided by pretax income (Dyreng et al., 2008). The use of GAAP_ETR is consistent with contemporary studies (Christensen et al., 2015; Dunbar et al., 2010; Dyreng et al., 2010; Pu et al., 2015). A lower GAAP_ETR indicates more TA.

4.2.3 Control variables

Firm characteristics such as financial leverage (Ln_LEVERAGE: natural logarithm of total debts/total assets), intangible ratio (INTANGIBLES: intangible assets/total assets), and firm size (Ln_Total_Assets: natural logarithm of a firm's total assets) are incorporated as control variables. To consider confounding time- and industry effects, we include industry (INDUSTRY: SIC2 Codes) and years (Year: 2010-2018) in the model. The number of job titles (EJD = 1, if CFO has additional job titles, otherwise 0) is used to control for executive job demands. The timespan of the CFO being in his/her position (TENURE: number of years a CFO is in his/her position) is used to control for executive's managerial discretion (Hambrick, 2007; Hambrick et al., 2005).

4.3 Model

To test our hypotheses, we conduct several OLS regressions. We use the following model to test hypothesis H1 and analyze the effect of CFO's expert power on corporate TA.

$$GAAP_ETR = \beta_0 + \beta_1 EXPERT_POWER + \beta_2 Ln_LEVERAGE + \beta_3 Ln\ _Total_Assets + \beta_4 INTANGIBLES + \beta_5 Year + \beta_6 INDUSTRY + \varepsilon \quad (1)$$

To test hypothesis H2a and analyze whether the explanatory power of the effect of CFO's expert power on TA increases by controlling for CFO's additional job titles, the following model includes the control variable EJD.

$$GAAP_ETR = \beta_0 + \beta_1 EXPERT_POWER + \beta_2 EJD + \beta_3 Ln_LEVERAGE + \beta_4 Ln\ _Total_Assets + \beta_5 INTANGIBLES + \beta_6 Year + \beta_7 INDUSTRY + \varepsilon \quad (2)$$

The following model that tests hypothesis H2b analyzes whether the explanatory power of the effect of CFO's expert power on TA increases by controlling for CFO's tenure. Therefore, the control variable TENURE is included.

$$GAAP_ETR = \beta_0 + \beta_1 EXPERT_POWER + \beta_2 TENURE + \beta_3 Ln_LEVERAGE + \beta_4 Ln\ _Total_Assets + \beta_5 INTANGIBLES + \beta_6 Year + \beta_7 INDUSTRY + \varepsilon \quad (3)$$

The last model includes both UET related control variables EJD and TENURE to test hypothesis H3 and analyzes whether the effect of CFO's expert power on TA increases further.

$$GAAP_ETR = \beta_0 + \beta_1 EXPERT_POWER + \beta_2 EJD + \beta_3 TENURE + \beta_4 Ln_LEVERAGE + \beta_5 Ln\ _Total_Assets + \beta_6 INTANGIBLES + \beta_7 Year + \beta_8 INDUSTRY + \varepsilon \quad (4)$$

We use robust statistics to solve heteroskedasticity in the model after the Breusch Pagan test indicated the presence of heteroscedasticity. Furthermore, the model applies winsorized estimators to mitigate the effect of outliers in the data (Dixon, 1960).

5 Results

5.1 Descriptive analysis

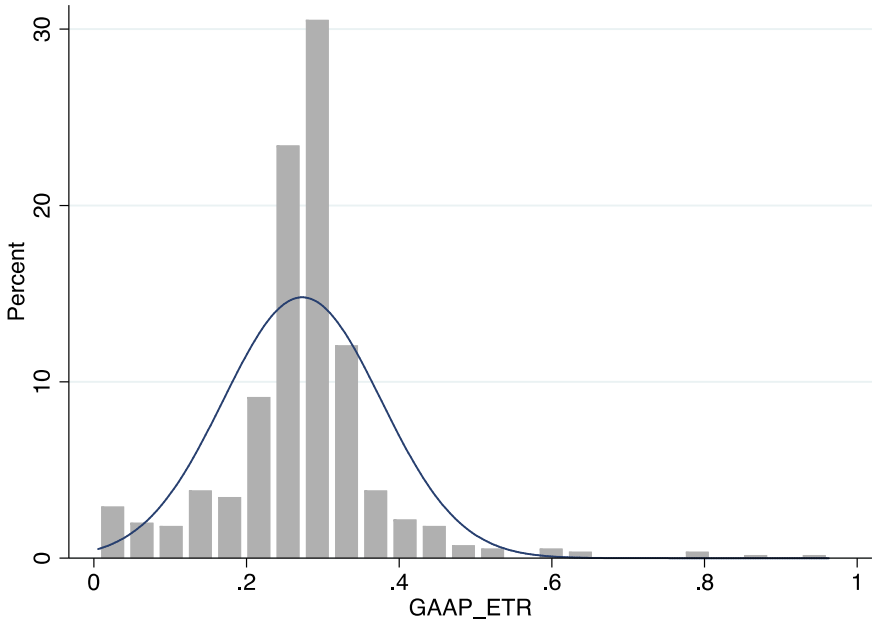
Table 2 shows the descriptive statistics of the investigated variables. Our dependent variable GAAP_ETR has a mean of 27.2% and a median of 27.8%, which suggests a normal distribution. Figure 1 also indicates strong tendencies of GAAP_ETR towards a normal distribution. We find values ranging from 1.3% to 61.8%. Firms with extremely low GAAP_ETR remain in a similarly low range of GAAP_ETR over the timespan. However, high GAAP_ETR observations are exceptions and firms fall back to values closer to the average.

Table 2: Table of descriptive statistics

	Mean	*Median*	*σ*	*Min*	*Max*
GAAP_ETR	0.272	0.278	0.094	0.013	0.618
EXPERT_POWER	0.157	0.000	0.364	0	1
TENURE	5.441	5.000	3.727	1	17
EJD	0.313	0.000	0.464	0	1
Ln_Total_Assets	15.902	17,750	1.655	11.990	19.902
Ln_LEVERAGE	-2.038	-1.603	1.454	-9.752	-0.283
INTANGIBLES	0.285	0.211	0.208	0.000	0.948

Legend: σ = standard deviation; min = minimal value; max = maximal value; GAAP_ETR = income tax/pretax income; EXPERT_POWER = 1 if CFO has work experience in the tax field, otherwise 0; TENURE = # of years the CFO is in the position; EJD (Executive Job Demands) = 1 if CFO has additional job titles, otherwise 0; Ln_Total_Assets = natural logarithm of total assets; Ln_LEVERAGE = natural logarithm of total debt/total assets; INTANGIBLES = intangible assets/total assets

Figure 1: Distribution of GAAP_ETR



The independent variable EXPERT_POWER has 87 observations indicating a CFO with expert power and 466 without. The majority of firms do not have a CFO with expert power. The average TENURE is 5.4 years and 31.3% of observations show CFOs with high EJD, indicating that multiple job titles are not uncommon. The distribution of observations in different industries is as follows. As seen in table 3, the largest group is found in chemicals with 98 observations, the second largest group in transportation with 62 observations, and the third-largest group in business services with 61 observations. We observe little correlation (between 0.006 and 0.418) among the independent variable and the control variables as seen in the correlation matrix (table 4). The highest value is between Ln_LEVERAGE and the Ln_Total_Assets with 0.418.

Table 3: Number of observations per Industry

Industry	*Observations*	*Percent*
Mining & Quarrying	9	1.63
Heavy Construction	7	1.27
Apparel	9	1.63
Chemicals	98	17.72
Petroleum Refining	9	1.63
Rubber and Plastics Products	23	4.16
Leather and Leather Products	8	1.45
Stone, Clay, Glass, And Concrete Products	9	1.63
Metal Industries	9	1.63
Fabricated Metal Products	9	1.63
Industrial, Commercial Machinery and Computer Equipment	35	6.33
Electronic And Other Electrical Equipment	29	5.24
Transportation Equipment	62	11.21
Measuring, Analyzing, And Controlling Instruments	18	3.25
Postal Service	9	1.63
Transportation By Air	17	3.07
Communications	50	9.04
Electric, Gas, And Sanitary Services	16	2.89
Wholesale Trade Durable Goods	10	1.81
Wholesale Trade Nondurable Goods	9	1.63
Food Stores	5	0.9
Apparel And Accessory Stores	5	0.9
Miscellaneous Retail	12	2.17
Business Services	61	11.03
Health Services	18	3.25
Social Services	7	1.27
Total	553	100.00

Table 4: Correlation Matrix

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. GAAP_ETR	1.000								
2. EXPERT_POWER	-0.086	1.000							
3. TENURE	0.039	0.1780	1.000						
4. EJD	-0.096	-0.036	0.108	1.000					
5. Ln_LEVERAGE	0.029	0.009	0.055	0.080	1.000				
6. Ln_Total_Assets	-0.022	-0.031	-0.020	-0.028	0.418	1.000			
7. INTANGIBLES	-0.141	0.154	0.009	-0.027	0.200	-0.126	1.000		
8. Year	-0.035	-0.066	0.028	-0.011	-0.025	0.089	0.026	1.000	
9. SIC2	0.023	0.006	0.070	-0.088	-0.173	-0.021	0.368	0.016	1.000

Legend: GAAP_ETR = income tax/pretax income; EXPERT_POWER = 1 if CFO has work experience in the tax field, otherwise 0; TENURE = # of years the CFO is in the position; EJD (Executive Job Demands) = 1 if CFO has additional job titles, otherwise 0; Ln_LEVERAGE = natural logarithm of total debt/total assets; Ln_Total_Assets = natural logarithm of total assets; INTANGIBLES = intangible assets/total assets
Source Stata, own output

5.2 Results of hypothesis testing

Table 5 contains the OLS regression analysis results to test all hypotheses. Model 1 contains the results to test hypothesis H1, model 2 and model 3 includes one UET specific control variable each to test hypotheses H2a and H2b, and model 4 contains both UET specific control variables to test hypothesis H3. The models are able to explain a considerable amount of variance. The explanatory power of model 1 (R2=0.194) increases by 0.6 percentage points in model 2 (R2=0.200) and by 0.2 percentage points in model 3 (R2=0.196). The explanatory power of the model 2 (and model 3) increases further by 0.3 percentage points (0.7) in model 4 (R2=0.203). The results of model 1 show that EXPERT_POWER is statistically significant on a 10%-level. EXPERT_POWER is negatively related to GAAP_ETR, which supports H1. This implies that corporations with powerful CFOs have lower ETR and therefore engage more in TA. The results of model 2 indicate that the coefficient of EXPERT_POWER (model 2: -0.0285) increases marginally compared to model 1 (model 1: -0.0279) and remains significant on a 5%-level when EJD is incorporated. The coefficient EJD is significant on a 5%-level. Thus, hypothesis H2a is accepted. The results of model 3 show that the coefficient of EXPERT_POWER (model 3: -0.0286) grows compared to model 1 (model 1: - 0.0279) and remains significant on a 10%-level when TENURE is included as a control variable. Despite insignificant results of the coefficient TENURE, we accept hypothesis H2b. The results of model 4 deliver the highest coefficient of EXPERT_POWER of all our models (model 4: -0.0296) and the model is significant on a 5%-level. Consequently, we accept hypothesis H3. The continuous increase of explanatory power and the significance of our variable of interest (EXPERT_POWER) across all models support the necessity to control for the influential effects of executive's job demands (EJD) and managerial discretion (TENURE) when UET is applied. Note that the coefficient of INTANGIBLES is significant on a 1%-level and is more negatively related to GAAP_ETR in all models than EXPERT_POWER is. This implies that the effect of the firm's goodwill - as the main part of the intangible assets - on TA is stronger than the effect of the CFO's expert power. In practice, the goodwill has a considerable impact on the ETR because of the impairment-only approach of the IFRS. In tax accounting, the goodwill depreciates yearly. This has arguably a bigger effect on ETR than most TA actions. The coefficients of all firm-specific control variables are presented in table 5.

Table 5: Results of robust OLS-regression

	Model 1	Model 2	Model 3	Model 4
EXPERT_POWER	-0.028*	-0.029**	-0.029*	-0.030**
EJD	-	-0.018**	-	-0.020**
TENURE	-	-	0.001	0.002
ln_LEVERAGE	0.006	0.007	0.005	0.006
ln_Total_Assets	-0.004	-0.004	-0.004	-0.004
INTANGIBLE	-0.142***	-0.145***	-0.142***	-0.145***
2011.Year	0.009	0.008	0.008	0.007
Year				
2011	0.008	0.007	0.007	0.006
2012	-0.006	-0.007	-0.006	-0.008
2013	0.003	0.002	0.002	0.001
2014	0.012	0.012	0.011	0.010
2015	0.007	0.006	0.006	0.005
2016	0.002	0.001	0.002	0.001
2017	-0.018	-0.018	-0.019	-0.020
2018	0.025	0.025	0.023	0.023
Industry				
Heavy Construction	0.025	0.025	0.023	0.023
Apparel	-0.029	-0.011	-0.028	-0.008
Chemicals	0.031*	0.038**	0.030*	0.038**
Petroleum Refining	0.058**	0.060**	0.049*	0.048*
Rubber and Plastics Products	0.034	0.048*	0.033	0.048*
Leather and Leather Products	0.086***	0.087***	0.077***	0.075***
Stone, Clay, Glass, And Concrete Products	0.002	0.021	-0.007	0.012
Metal Industries	-0.039*	-0.035*	-0.042*	-0.038*
Fabricated Metal Products	0.027	0.035	0.027	0.036
Industrial, Commercial Machinery and Computer Equipment	0.017	0.025	0.014	0.023
Electronic and other Electrical Equipment	-0.026	-0.021	-0.028	-0.023
Transportation Equipment	0.018	0.023	0.014	0.018
Measuring, Analyzing, And Controlling Instruments	0.056***	0.064***	0.055***	0.064***
Postal Service	-0.084***	-0.077***	-0.084***	-0.076***
Transportation by Air	0.005	0.011	0.003	0.009
Communications	0.059**	0.063**	0.057**	0.061**
Electric, Gas, And Sanitary Services	-0.048*	-0.040	-0.049*	-0.039
Wholesale Trade Durable Goods	0.133**	0.136**	0.132**	0.135**
Wholesale Trade Nondurable Goods	0.078***	0.082***	0.076***	0.080***
Food Stores	0.177***	0.176***	0.178***	0.178***
Apparel and Accessory Stores	0.036	0.056	0.031	0.052
Miscellaneous Retail	-0.023	-0.022	-0.030	-0.032
Business Services	0.055***	0.062***	0.052***	0.059***
Health Services	0.091***	0.094***	0.089***	0.091***
Social Services	0.011	0.018	0.006	0.012
constant	0.364***	0.371***	0.356***	0.360***
N	553	553	553	553
R^2	0.194	0.200	0.196	0.203

Legend: EXPERT_POWER = 1 if CFO has work experience in the tax field, otherwise 0; EJD (Executive Job Demands) = 1 if CFO has additional job titles, otherwise 0; TENURE = # of years the CFO is in the position; Ln_Total_Assets = natural logarithm of total assets; Ln_LEVERAGE = natural logarithm of total debt/total assets; INTANGIBLES = intangible assets/total assets. ***, ** and * denote statistical significance at the 1, 5 and 10% level, respectively.

5.3 Robustness

We conduct a battery of robustness checks. The awareness of addressing endogeneity concerns increased in recent years (Antonakis et al., 2010; Mertens et al., 2016). First, we test for a potential omitted variable bias using the Ramsey RESET Test. The results indicate no evidence of an omitted variable bias and the assumption of a linear model holds. Second, we control for multicollinearity by calculating the variance inflation factor (VIF). The average VIF of 2.92 shows no presence of multicollinearity. Third, adding variables step-by-step throughout model 1-4 is a robustness check itself because the models remain significant while variables are added or removed. Last, common solutions to deal with endogeneity typically involve methods using instrumental variables that are far from straightforward (Larcker & Rusticus, 2010). Instead, recent studies employed a two-way clustering method of the standard errors to control for measurement errors (Gow et al., 2010; La Rosa et al., 2018). Based on (Yoo, 2017), we use a one-stop solution for two-way clustered standard errors controlling for cross-sectional correlations. We cluster by year (Year) and industry (SIC2). The procedure comes to similar results as our OLS regression. Therefore, we conclude that our findings are robust after addressing different endogeneity concerns.

6 Discussion and Conclusion

This study analyzes the impact of CFO's expert power on TA. The driving force behind this analysis is the high practical relevance for firms and stakeholders along with the lack of tax research conducted in Germany.

We find a positive effect of CFO's expert power on TA. Pu et al. (2015) suggest that experienced CFOs obtain a broader knowledge of accounting- and tax regulations. We think that executives with deeper experience in a particular field have a greater affiliation for topics that are related to their field of expertise. Consequently, a CFO with tax knowledge is more interested in using his/her extended knowledge to reduce taxes and is capable of engaging in TA strategies more efficiently than the CEO. The explanatory power grows by controlling for UET related control variables. The results indicate that the control of influential effects (managerial discretion and executive job demands) is necessary to provide valid results when UET is applied. Furthermore, the analysis showed that the negative effect of the firm's goodwill is greater than the negative effect of CFO's expert power on the GAAP ETR. According to Huelsbeck et al. (2011), who found that for small- and medium-sized effects compared to large-size effects, the null hypothesis is more likely to be rejected if it is indeed false, we assume an increase in the significance of expert power with bigger sample size. To show the significance of small- and medium-sized effects, larger sample sizes with more variation in the data are needed (Huelsbeck et al., 2011). The presence of the upper echelon specific control variables (tenure and job titles) partially strengthens the effect of CFO's characteristics. This indicates the importance of including these variables in upper echelon research. Our findings provide practical implications insofar as firms may use the information of CFO's impact on tax planning to recruit new managers according to the general company strategy. For instance, companies that are striving for greater TA behavior are more interested in recruiting an experienced CFO. A CFO´s background might be a piece of crucial information for certain stakeholder groups when evaluating a firm. If a firm hires a CFO with a tax background, investors may assume higher financial performance and higher dividends in future periods whereas business partners may fear potential reputational losses when TA is perceived negatively.

We contribute to the existing literature in several ways. First, we expand the still sparse research of CFO characteristics on strategic decision-making (Burkert & Lueg, 2013; Dyreng et al., 2010; Ge et al., 2011; Naranjo-Gil & Hartmann, 2007; Pavlatos, 2012; Pu et al., 2015; Robinson & Hsieh, 2016). This relatively unexplored field of research offers a lot of research potential. Second, we provide a practice to consider executive job demands and managerial discretion when UET is applied. There is room for advancement to establish a best practice to take these influential effects into account. For instance, we encourage further research to insert managerial discretion and executive job demands as moderator variables by analyzing their interaction with CFO's characteristics on strategic choices. Third, to the best of our knowledge, this is the first quantitative study investigating the effect of upper echelons on TA in a German field. Our results indicate that UET has high explanatory power, even in collectivistic countries. We motivate to further investigate UET in countries that are considered as collectivistic. Finally, in contrast to previous studies, we shed light on the actual driving force (CFO's background, interests, and expertise) behind TA by extracting the effect of CFO's expert power on TA. We are able to reduce the confounding effects of interdependencies that might occur when several different factors such as firm-, environmental-, and manager's characteristics are analyzed simultaneously. We argue that CFOs with a particular experience prioritize decisions in their specific field of competence. The CFO's experience, therefore, highly influences the scope of a strategic choice.

We encourage further researchers to improve our initial evaluation to overcome our limitations. We are careful to generalize our results to non-listed corporations for two reasons. First, listed corporations report according to IFRS whereas non-listed German corporations mostly report according to the German Commercial Code. Second, structural differences between listed and non-listed companies may hamper the generalizability of the results. For instance, smaller corporations do not always have a tax planner. However, we expect that our results are generalizable to different countries. Prior studies found that TA is associated with CFO characteristics

in different countries. For example, Duan et al. (2018) found that TA behavior is influenced by CFO's hubris using a U.S. sample. Dyreng et al. (2010) conclude that TA behavior changes when hiring a new executive in U.S. corporations. The influence of CFO power on TA in China is investigated by Pu et al. (2015). We find similar results indicating that TA is influenced by the executive's characteristics and, therefore, assume the generalizability of upper echelons' influence on TA across different countries.

We propose further research to control for foreign operations because foreign engagement of firms varies across different DAX and MDAX corporations. The regulatory environment might affect TA behavior at least to some extent. For example, TA behavior might be stimulated in countries with higher tax rates. But, large companies with many subsidiaries operating abroad are more likely to shift their profits between subsidiaries in different countries compared to companies that solely operate in Germany, which is also a form of TA.
We hypothesize that companies that are charged disproportionally for tax consultant service might be more likely to engage more heavily in TA strategies. Therefore, the amount of paid consulting fees might indicate engagement in TA strategies. This question should be further investigated in detail.

This study has contributed to the sparse research on TA in Germany. Additionally, the upper echelons' background and characteristics are meaningful in the decision-making processes in accounting. This quantitative study responds to the call of Feller and Schanz (2017) by providing empirical evidence that expert power of tax planners increases TA.

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