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Audit Staff Satisfaction and Audit Quality: Evidence from the Private Client Market Segment

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Abstract This study investigates the relationship between audit staff satisfaction (measured by crowd-sourced employer reviews) and audit quality in the private client setting. In this setting, extrinsic incentives to provide high quality audits – such as regulatory enforcement, reputational pressure, and litigation costs – are less pronounced than for listed client audits. We fnd audit staff satisfaction, an important intrinsic motivational factor, is positively and signifcantly associated with audit quality in the private client setting. Consistent with prior research, we fnd no signifcant association between staff satisfaction and audit quality for listed clients. The signifcant association in the private client setting primarily applies to non-Big 4 frms, for which extrinsic factors play a less infuential role than for Big 4 frms. Moreover, we show staff satisfaction moderates possible negative effects of conditions, such as the provision of non-audit services and longer audit tenure, which may pressure auditors to compromise audit quality. Overall, these fndings provide new insights about the infuence of audit input factors on audit quality.

1. Introduction

High quality audits are essential for public trust in fnancial statements. This is why audit quality has been extensively investigated by accounting scholars. DeFond and Zhang (2014) observe that demand for high quality audit services is determined by the level of agency conficts, as well as the level of client competence in providing fnancial reports. Incentives for auditors to provide high quality audits include potential regulatory enforcement, litigation costs, and reputational losses (see Che et al., 2020; DeFond & Zhang, 2014; Nelson, 2009). An auditor's ability to provide high-quality services is infuenced by input factors such as expertise and motivation (DeFond & Zhang, 2014). Relatedly, Francis (2011) identifes audit engagement team personnel as a key input infuencing audit quality and Christensen et al. (2016) fnd that investors' perceptions of audit quality are focused principally on the quality of inputs to the audit process.

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In our study, we examine the role of auditor inputs in determining audit quality, with a specifc focus on the infuence of audit staff satisfaction on audit quality in the private client setting in Germany. While there are many studies investigating the infuence of auditor characteristics on audit quality, most archival studies are limited by their reliance on indirect proxies from publicly available data (such as industry expertise measured using audit fee market share, and audit effort based on the level of audit fees), with the experience and composition of audit teams averaged across all engagements (Francis, 2011; Simnett et al., 2016). Due to the absence of direct measures of audit input factors – such as characteristics of audit staff – few studies have explored the role of input factors on audit quality. For example, Persellin et al. (2019), using survey data, fnd auditors' perceptions of the input factor 'high audit workload' are negatively associated with the quality of audit services. Similarly, Kallunki et al. (2019) fnd the input factor 'audit partners' IQ scores', obtained from psychological testing conducted during auditors' Swedish military service, is positively associated with going-concern audit reporting accuracy, and negatively associated with clients' abnormal accruals.

We use crowdsourced employee reviews from the website kununu.com to measure audit staff satisfaction and, by extension, to investigate its usefulness as an observable indicator of audit quality. Social psychology theory suggests that satisfaction leads to enhanced employee motivation and performance (e.g., Judge et al., 2001; Petty et al., 1984). Given that employees are the key organizational asset for professional services providers, such as audit frms, motivated employees should be essential to an effective audit process (Cheng et al., 2009). Hence, we conjecture that audit staff satisfaction should be positively associated with audit quality, in terms of the application of auditors' technical skills through greater motivation and commitment, as well as through strengthening auditor resolve in the application of independent judgement. Initial evidence from Khavis and Krishnan (2021), using employee reviews from audit frms and their US listed clients, does not support this prediction, with the authors fnding no signifcant association between audit employees' overall job satisfaction and audit quality.

In our study, we focus on the private client setting where audit employee satisfaction is more likely to play an important role for the quality of audit services than it does in the listed client setting. Private client audits differ signifcantly from audits for listed companies. For instance, incentives to provide high quality audits are lower for private client audits because reputational pressure and litigation risk play a less pronounced role in this setting (e.g., Langli & Svanström, 2014). Further, the private client setting is less regulated and subject to fewer fnancial intermediaries, such as analysts demanding high audit quality. The German setting of our study is also characterized by relatively low auditor litigation risk, especially in the private client setting (Hohenfels & Quick, 2020). Hence, in our study's private client setting, extrinsic factors supporting high audit quality are less pronounced than they are for listed clients, which leads to our prediction that employee satisfaction infuences audit quality in this setting.

To measure audit quality, we rely on commonly used proxies. We use discretionary accruals (e.g., Svanström, 2013) and abnormal working capital accruals (e.g., DeFond & Park, 2001) as measures for client earnings properties. Further, since fnancial accounting decisions for private frms are likely to be infuenced by tax considerations (particularly in Germany with a high book-tax alignment), we consider the effective tax rate as a measure for clients' tax aggressiveness, which has also been identifed as a proxy for audit quality (Kanagaretnam et al., 2016). To measure employee satisfaction, we use crowdsourced employee reviews from kununu.com, the largest employer rating website in the German-speaking world[1] (e.g., Hope et al., 2021; Huang et al., 2015, 2017; Ji et al., 2017; Khavis & Krishnan, 2021). Our fnal audit staff satisfaction measure is based on more than 4,500 manually collected reviews for 99 individual audit offces

[1] Kununu.com focuses on the German-speaking world which includes Germany, Austria, Switzerland.

in Germany.[2] Initial descriptive statistics show that audit frm employees particularly value teamwork, interesting and challenging tasks, and the image of their employer. They are dissatisfed with their work-life balance. We also show that satisfaction is higher, on average, in Big 4 offces (although non-Big 4 offces are rated signifcantly higher for work-life balance) and in smaller audit offces.

Using a sample of 4,425 client-year observations from 967 German private clients, we fnd support for our hypothesis that audit staff satisfaction is positively associated with audit quality. We conduct a variety of additional tests, which enhance our understanding of this relationship. For instance, we fnd employee satisfaction is not associated with audit quality within a listed company sample. For our private client sample, additional testing indicates that our fndings primarily apply to non-Big 4 audits – most likely because extrinsic factors, such as reputation incentives and internal quality controls, play a more important role in Big 4 audit frms (Che et al., 2020). Next, we investigate the role of audit staff satisfaction in mitigating the impact of auditor tenure and the provision of non-audit-services (NAS) on audit quality. For both issues, despite inconclusive empirical fndings, there is a strong theoretical argument that both long auditor tenure and high levels of NAS compromise audit quality. Our results show that high employee satisfaction moderates the negative impact of NAS and tenure on audit quality.

Our study contributes to the literature in important ways. We add substantial content to a hitherto scarce body of literature on the infuence of audit frm characteristics on audit quality. Francis (2011, p. 138) notes that

> research on the relation between accounting frms and audit quality is severely limited by the availability of data on characteristics of accounting frms. To date, research on this topic has relied on variables that can be constructed from public disclosure such as client-based measures of industry expertise or offce size. However, these measures do not go inside the 'black box' of the accounting f rm's organizational structure and operations.

Audit input factors have long been unobservable to outsiders, particularly in the less monitored private client setting. By using a measure of audit staff satisfaction derived from crowdsourced information, we can examine a key audit input factor and, together with many additional tests, provide useful new insights on the infuence of audit input factors on audit quality.

Moreover, we help fll gaps in the literature regarding relationships between auditors and private clients. Privately-owned companies generate about 50% of private sector GDP in the United States (Minnis, 2011), and represent more than 99% of European frms (Federation of European Accountants, 2016). Yet prior evidence on private client audits is scarce, which makes our research particularly relevant. Our study extends the research of Khavis and Krishnan (2021), who investigated whether auditors' job satisfaction impacts the quality of audits performed for publicly-listed clients in the US. However, as noted by Langli and Svanström (2014, p. 149), 'differences that exist between private and public companies are so large and fundamental that without careful consideration we cannot rely on fndings for public companies when we want to understand the role of auditing in private companies'. Thus, our research yields new evidence to support Langli and Svanström's proposition. Our fnding of a signifcant association between employee satisfaction and audit quality in the private client setting contrasts with Khavis and Krishnan (2021), who found no evidence of a link between auditors' overall job satisfaction and the quality of audits performed for publicly listed US clients.

The paper is organized as follows. The next section outlines relevant literature and specifes the testable hypothesis. Section 3 provides background information on the German setting of our study. Section 4 explains our research design and we report and discuss our results in Section 5. Section 6 concludes the paper.

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[2] Although we measure audit staff satisfaction at the offce-level, we cannot clearly disentangle effects at the audit offce level from frm-wide ef fects, as we have audit frms in our sample with one offce only.

2. Background and Hypothesis Development

Employees are key organizational assets, and there is empirical evidence supporting the social psychological theory that employee satisfaction leads to enhanced employee motivation and performance (see, for example, Petty et al., 1984; Iaffaldano & Muchinsky, 1985; Judge et al., 2001; Oswald et al., 2015; cited in Khavis and Krishnan (2021)).[3] Economic theory suggests that employee satisfaction, engendered by fair employee treatment, induces reciprocal behavior from employees, thus lowering frms' contracting costs with their employees (Rajan & Zingales, 2000). The intuition behind these theories is that more satisfed employees signify a better work environment, which positively infuences employee motivation and work performance. Capital markets research validates this argument, fnding that employee satisfaction in non-audit settings is positively associated with frm performance, measured by long-run stock returns (Edmans, 2011), Tobin's q and return on assets (Huang et al., 2015).[4] Edmans (2011, 2012), for example, uses survey data of the '100 Best Companies to Work for in America' to measure employee satisfaction, and fnds it is positively associated with shareholder returns. Similarly, employee satisfaction has been found to enhance the integrity and soundness of companies' accounting practices, being associated with a reduced incidence of material weaknesses in internal control (Guo et al., 2016) and required restatements (Kim et al., 2012). Research also fnds auditors identify employee satisfaction in client frms as an important factor that reduces their assessment of client risk (Huang et al., 2017).

We conjecture in this study – consistent with the proposition that human capital is the most important organizational asset for professional service frms (Cheng et al., 2009) – that satisfaction levels among audit frm employees should also be a crucial determinant of audit frm performance, as measured by audit quality. When audit frm employees are satisfed with their work environment, they will arguably be more motivated and engaged, and hence be more diligent in the application of appropriate audit techniques. Similarly, high employee satisfaction is likely to foster an environment of honesty and ethics, encouraging auditors to practice professional skepticism and independent judgement (e.g., Svanberg & Öhman, 2016). The fact that auditors work in teams, rather than individually, can help explain why a positive work environment – characterized by high employee satisfaction, with smooth communication and cooperation (both within and between different audit teams) – is crucial for an effcient, high-quality audit process (Cameran et al., 2018). It is also likely that audit frms or offces with contented employees are more likely to retain staff with appropriate knowledge and skills, and therefore retain client-specifc knowledge (e.g., Persellin et al., 2019). Hence, we posit that audit employee satisfaction should be a key driver of the quality of audit services provided.

Khavis and Krishnan (2021) produced the frst published study investigating the infuence on audit quality of accounting/audit frm employee satisfaction. They analyze 19,673 individual employee satisfaction reviews from 137 US accounting frms concerning job satisfaction, as reported at Glassdoor.com. Consistent with the proposition that heavy workload adversely impacts audit quality, the authors report that employee perceptions of a better work–life balance are associated with higher audit quality. However, contrary to theory and their hypothesis, the

[3] Researchers have long recognized that employee satisfaction can be an outcome of a frm's organizational culture (e.g., Lund, 2003). Corporate culture refects a set of norms and values that are widely shared and strongly held throughout an organization (O'Reilly & Chatman, 1996). While employee satisfaction likely refects the prevailing culture within an organization, corporate culture and employee satisfaction are distinct concepts within an organizational context. Corporate culture is a broader concept, which defnes the overall identity of a frm, often established at the leadership level. Employee satisfaction, in contrast, focuses on individual employees' perceptions of their work environment and other factors contributing to their overall job satisfaction (see, for example, Lund, 2003; Belias & Koustelios, 2014; Giberson et al., 2009).

[4] Hope et al. (2021) fnd that more satisfed analysts provide more accurate forecasts.

authors do not fnd a signifcant association between audit employees' overall job satisfaction and audit quality for their large sample of US publicly listed clients.

In our study, we extend the work of Khavis and Krishnan (2021) to the private client setting, where we predict employee satisfaction will translate into better auditor performance, measured by audit quality. Our prediction is based primarily on the unique characteristics of private companies (Langli & Svanström, 2014; Minnis, 2011), compared to listed public companies. Privately-owned frms are usually smaller in size, exhibit stronger ownership concentration, and are more likely to make fnancial reporting decisions infuenced by taxation policies, largely because their fnancial statements are not widely distributed to the public (e.g., Burgstahler et al., 2006; Chen et al., 2011; Hope et al., 2013). Since they do not participate in public stock markets, private frms are subject to much less stringent external regulations and enforcement than public frms (e.g., Minnis & Shroff, 2017). From a supply perspective, auditors have less incentive to provide high-quality audits to private clients because of the lower litigation and reputational risks associated with small clients with relatively low public attention (Langli & Svanström, 2014). Moreover, the threat or fear of losing individual audit clients due to low-quality audits is less pronounced because audit fees are typically lower for private clients and distributed across a larger portfolio of clients (Hope & Langli, 2010).

Hence, given the relatively lower extrinsic incentives to provide high quality audits in the private client setting, we posit that audit staff satisfaction – being an 'internal' or intrinsic motivational factor – is likely to play a prominent role for private company audits. Accordingly, we argue that audit staff satisfaction is likely to have a positive impact on the quality of audit services provided for our German private client sample. This leads to the following hypothesis:

H: Audit staff satisfaction is positively related to audit quality.

3. Specifics of the German Setting

Germany has a civil law legal system. It is characterized by a high book-tax alignment due to unconsolidated fnancial statements being used to determine taxable income (e.g., Blaylock et al., 2015). Financial accounting and auditing requirements for German private companies vary according to frm size. Under the German Commercial Code (GCC; section 267), a privately-owned company is defned as large (small) if it exceeds (does not exceed) more than one of the following thresholds in two successive years (with medium-sized companies between the thresholds): €20 million in total assets (€6 million), €40 million turnover (€12 million), and 250 employees (50). Medium-sized and large private companies, based on the GCC classifca - tion, are subject to mandatory audits. However, small private frms can opt for voluntary audits. Since 2009, it has been mandatory for large private companies to disclose fees for audit (and non-audit) services provided by external auditors in their fnancial statements.[5]

Auditors in Germany generally face lower litigation risks than their counterparts in some other major Western countries, such as the US and UK. For instance, auditor liability for negligent misconduct towards audit clients is capped at €1,500,000 for audits of non-listed frms (GCC section 323), and the scope for third parties to sue external auditors is also signifcantly limited (Hohenfels & Quick, 2020). In the German private client setting, the enforcement of clients' fnancial

[5]Fee disclosure has been mandatory for listed frms since 2005. From 2009, large private frms were required to disclose fee information because of the 'Accounting Law Modernization Act' (in German: 'Bilanzrechtsmodernisierungsgesetz'). With respect to the disclosure of non-audit fees, frms are only required to report fees from non-audit services provided by the current auditor, and not those provided by other accounting f rms.

reporting and auditor oversight is also less stringent than in the public client setting.[6] Hence, given the relative absence in Germany of the threat of litigation as a key motivator for auditors to provide high quality audits (Hope & Langli, 2010), we posit that audit staff satisfaction is likely to play a role in driving audit quality in this setting.

Like the audit markets in most major international jurisdictions, the German audit market for listed public companies is characterized by the oligopolistic dominance of the Big 4 audit frms. However, in the audit market for private clients, small audit frms and independent auditors have a considerable share (around 50%) of the audit market (Hartlieb & Eierle, 2019).

4. Research Design

4.1. Measurement of Audit Staff Satisfaction

Following contemporary research, we measure staff satisfaction based on crowdsourced employer reviews (e.g., Huang et al., 2017; Ji et al., 2017). These reviews consist of responses by employees to various questions about their employment experiences. As such, the reviews can serve as a comprehensive and direct measure of audit frms' employee satisfaction levels.

For our study, we manually collected almost 5,000 audit frm employer reviews from kununu.com, a German-language website providing a platform for current and former employees to anonymously rate employers. Founded in 2007, kununu.com is the largest employer rating website in the German-speaking world, having received more than fve million reviews for 560,000 frms.[7] Internationally, and especially in the US, Glassdoor.com is a much larger and more prominent platform, with more than 70 million reviews recorded. But for reviews of smaller and medium-sized frms in Germany, kununu.com is more pertinent, which is why we rely on its data for this study. To illustrate its dominance among smaller and medium-sized frms in Germany, the number of reviews recorded on kununu.com for the second-tier German accounting frm Rödl is almost double that on Glassdoor.com.[8] Online employer rating websites, such as kununu.com and Glassdoor.com, are primarily used by job seekers to gain information about potential employers. While providing free access to employees, these websites derive their revenue from companies for the provision of services, such as the inclusion of pictures or videos on their kununu.com profles, which make subscriber organizations more visible and, presumably, increase their chances of receiving employee applications. To counter the risk of companies incentivizing current employees or other individuals to provide positive reviews, kununu.com has a comprehensive quality assurance system. Kununu.com states on its website that each review should be made voluntary and refect the honest opinion and experience of the reviewer.[9] To mitigate the risk of fraudulent or 'spam' reviews, each reviewer is required to have a valid e-mail address from which only one review can be provided. Kununu.com also has an

[6]The Auditor Oversight Body (AOB; in German: Abschlussprüferaufsichtsstelle), which is responsible for monitoring the quality of statutory audits, only monitors audits of publicly-listed frms.

[7]Kununu.com also entered the U.S. market in 2015. The website used to be available in English and German, but now only focuses on the home market in the German-speaking world (Germany, Austria, Switzerland), which explains why the website is only in German. In Online Appendix C, we show an exemplary screenshot of a review from kununu.com.

[8]We compared the ratings for selected (accounting) frms using suffcient data from Glassdoor.com and kununu.com. The correlation is high (approx. 70%), demonstrating the comparability of the ratings. Further, we validated our kununu.com data, checking whether larger accounting frms are subject to more reviews. We fnd a high correlation between the number of reviews and number of employees in the audit f rm (approx. 94%).

[9]In contrast to Glassdoor.com, kununu.com does not have a give-to-get model (i.e., when you want to use Glassdoor.com, you frst need to make a review), which can help achieve a more balanced review subsample. However, this policy can induce potential bias as the website forces you to make a review (which might lead to less care when completing the review).

online filter screening reviews for inappropriate language, and a team of employees manually checking reviews. The quality assurance team also investigates suspected cases of abuse – for example, when becoming aware of payments made encouraging positive reviews.

On kununu.com, companies are rated on a scale of one to five across 13 different performance categories. The categories are: (1) Working atmosphere, (2) Support by management, (3) Teamwork, (4) Challenging tasks, (5) Communication, (6) Gender equality, (7) Attitude towards older colleagues, (8) Career development, (9) Fair compensation, (10) Workplace environment, (11) Social/environmental consciousness, (12) Work-life balance, and (13) Company image. We calculated an overall rating for each review by averaging scores across all criteria. In cases where audit firm employees responded to fewer of the 13 categories, we calculated an average rating based on the responses available.[10]

As there were few reviews available for smaller audit firms or independent auditors, data collection was confined to the largest audit firms in Germany.[11] Considering that employee satisfaction levels may differ between individual audit offices of large accounting firms (Jenkins et al., 2008), we created a more granular measure at the office-level.[12] Our final measure for audit staff satisfaction (*Staff_Satisfaction*) is based on more than 4,500 employer reviews and is calculated as the average across all reviews for each audit office so that it ranges from 1 (low satisfaction) to 5 (high satisfaction).[13]

We use a time-invariant measure for our main analyses – in part because kununu.com does not permit individuals to make multiple reviews over time. This means there are no data to capture changes in individuals' satisfaction over time. Moreover, for many of the smaller offices in our German setting, there are not enough reviews available to reliably measure shifts in overall or average satisfaction levels from year to year. Thus, with our time-invariant measure, we make an inherent assumption that staff satisfaction levels are relatively consistent over time. This assumption is broadly in line with prior literature, which argues that satisfaction levels, and their various underpinnings, tend to be characterized by some degree of path dependency and, thus, stability (Collis & Montgomery, 2008; Cronqvist et al., 2009; Edmans, 2012). Specifically, based on the composition of the '100 Best Companies to Work For in America' list over the period 1984–2011, Edmans (2012) argues that employee satisfaction levels, while not permanently fixed, are reasonably persistent over time. This is supported by our data, wherein the Pearson correlations of the annual satisfaction scores are consistently positive and relatively high (80% when comparing 2010 and 2018, 64% for 2012 and 2018, 16% for 2014 and 2018, 58% for 2016 and 2018, 71% for 2017 and 2018), suggesting that the variation in staff satisfaction between offices is relatively constant over time.[14]

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[10] Considering only reviews with scores for all 13 rating categories does not change our conclusions (see Online Appendix D). Also, we repeated our analyses without highly positive (mean rating: 5) and negative (mean rating: 1) reviews, because such ratings might bias our results (Khavis & Krishnan, 2021). Our results remain robust to this alteration (see Online Appendix E).

[11] This was based on the 'Lünendonk list', which lists the leading audit firms in Germany based on revenue and number of employees.

[12] We require a minimum number of 5 reviews for each audit office. When we alternatively require no minimum or a minimum number of, for instance, 3, 10, 15 or 20 reviews, our main conclusions are unchanged.

[13] We mean-center the variable before including it into the regressions. This procedure helps alleviate multicollinearity issues and concerns surrounding the use of an ordinal variable.

[14] We plot audit staff satisfaction over our sample period (2010-2018) in Online Appendix B, which shows a steady and moderate overall increase over time. There was a reduction in satisfaction in 2014. This followed, and therefore may have been associated with, the enactment of the EU Audit Reform – entailing stricter regulations and additional obligations for audit firms and their employees. In 2016, there was also a very minor reduction when the German Audit Reform Act ('Abschlussprüferreformgesetz') was enacted, which transferred the regulations of the EU Audit Reform into

4.2. Measurement of Audit Quality

Measuring audit quality is complicated because it cannot be directly observed, and there are also diverse and sometimes divergent defnitions (Knechel et al., 2013). This means there is no single optimal method of measurement (Francis, 2011). For our sample of German private frms, often-used proxies, such as restatements and going-concern opinions, are either not available or extremely rare. Accordingly, we follow prior studies of both public and private clients (e.g., Rajgopal et al., 2021; Svanström, 2013) and measure audit quality as clients' level of discretionary accruals. Discretionary accruals are a strong indicator of earnings management, resulting in low quality fnancial reporting, which should be prevented by high quality audits (DeFond & Zhang, 2014; Kinney et al., 2004). Although the fnancial statements of private frms are less widely distributed, and agency conficts are less pronounced, managers of private frms might engage in earnings management to meet the requirements of debt covenants, as banks are an important source of fnance for private frms (Svanström, 2013). Further, Germany has a relatively high alignment between fnancial and tax accounting, and private frms may use accruals to manage earnings for tax reasons (Blaylock et al., 2015; Burgstahler et al., 2006).

Discretionary accruals are estimated as the difference between total accruals and the estimated expected accruals. Using the performance-adjusted Jones model (1) (Jones, 1991; Kothari et al., 2005), we estimate discretionary accruals cross-sectionally by industry (Fama/French 48-Industry Classifcation) and year:[15]

$$TACC_{it} = \alpha + \beta_1 \left(\frac{1}{AT_{it-1}} \right) + \beta_2 \Delta Rev_{it} - \Delta Rec_i + \beta_3 PPE_{it} + \beta_4 ROA_{it} + \varepsilon \qquad (1)$$

TACC denotes total accruals, *ΔRev* is the change in sales revenue, *ΔRec* is the change in receivables, *PPE* is gross property, plant and equipment, *ROA* is return on assets and *AT* is total assets.[16] All variables are scaled by lagged total assets. As discretionary accruals can be employed to either increase or decrease reported income, we defne our audit quality measure as the absolute values of the residuals estimated with equation (1) for each industry-year (|*DA*|). Thus, higher values for |*DA*| denote higher accruals and, by extension, lower audit quality.

In addition to the Jones (1991) approach to measuring discretionary accruals based on industry-year regressions, we also follow DeFond and Park (2001) to estimate accruals based on the frm-specifc ratio of working capital to sales. More precisely, we calculate abnormal working capital accruals (*AWCA*) as follows:

$$AWCA_{it} = WC_{it} - \left[\left(\frac{WC_{it-1}}{S_{it-1}} \right) * S_{it} \right] \qquad (2)$$

WC is the working capital and *S* are sales. We again use absolute values as private clients might be engaged in downwards earnings management.

German law. We also show the number of reviews per year. The increase over time demonstrates the growing popularity of kununu.com.

[15] We require at least 15 observations for each cross-sectional regression (e.g., Loy, 2013). Our conclusions remain robust using alternative thresholds (e.g., 10 or 20 observations). As alternative tests, we have also calculated discretionary accruals based on three other approaches from Jones (1991), Dechow et al. (1995), and Ball and Shivakumar (2005). Our results are qualitatively similar (Online Appendix F).

[16] Total accruals are calculated as the residual of operating income and cash fow from operations. Operating cash fows for our private client sample are measured using the indirect approach, as suggested by German Accounting Standard (GAS) 21.38-40 (Loy, 2013): CFO = net income +/- write-downs/write-ups on non-current assets +/- increase/decrease of provisions +/- increase/decrease of inventories -/+ increase/decrease of trade receivables +/- increase/decrease of trade payables -/+ proft/loss on disposals of property, plant and equipment.

Since tax considerations play a crucial role in the private frm setting, we use the effective tax rate as an additional proxy. Kanagaretnam et al. (2016) argue that auditors moderate clients' tax aggressiveness, showing that higher audit quality is negatively associated with the level of tax avoidance. The effective tax rate (*ETR*) is a widely accepted measure of the aggressiveness of companies' tax management activities. We follow prior literature and measure the ETR by dividing the income tax expense by pre-tax income (e.g., Dyreng et al., 2010; Phillips, 2003). Like Dyreng et al. (2010), we remove observations where the ETR exceeds 100% or is lower than 0%.[17]

4.3. Model Specifications

To test our hypothesis, we estimate the following regressions that link our audit quality proxies to audit staff satisfaction, as well as other control variables:[18]

$$\begin{aligned}|DA| \text{ and } |AWCA| = {} & \alpha + \beta_1 Staff\_Satisfaction + \beta_2 Size + \beta_3 Size\_GCC + \beta_4 Change\_FY \\ & + \beta_5 LLoss + \beta_6 RoA + \beta_7 InvRec + \beta_8 Lev + \beta_9 Change\_Sales + \beta_{10} Single \\ & + \beta_{11} Firm\_Independence + \beta_{12} NBS + \beta_{13} Age + \beta_{14} CFO \\ & + \beta_{15} Lit\_Risk + \beta_{16} Busy\_Season + \beta_{17} Big4 + \beta_{18} Opinion \\ & + \beta_{19} Office\_Change + \beta_{20} Office\_Size + \beta_{21} Office\_Tenure \\ & + \beta_{22} Report\_Lag + industry\_dummies + year\_dummies + \varepsilon \end{aligned} \tag{3a}$$

$$\begin{aligned} ETR = {} & \alpha + \beta_1 Staff\_Satisfaction + \beta_2 Size + \beta_3 Size\_GCC + \beta_4 Change\_FY \\ & + \beta_5 LLoss + \beta_6 RoA + \beta_7 InvRec + \beta_8 Lev + \beta_9 Change\_Sales + \beta_{10} Single \\ & + \beta_{11} Firm\_Independence + \beta_{12} NBS + \beta_{13} Age + \beta_{14} CFO \\ & + \beta_{15} Lit\_Risk + \beta_{16} Busy\_Season + \beta_{17} Big4 + \beta_{18} Opinion \\ & + \beta_{19} Office\_Change + \beta_{20} Office\_Size + \beta_{21} Office\_Tenure \\ & + \beta_{22} Report\_Lag + \beta_{23} Provisions + \beta_{24} PPE + \beta_{25} Municipal\_Tax \\ & + industry\_dummies + year\_dummies + \varepsilon \end{aligned} \tag{3b}$$

Our dependent variables in the frst model specifcation (3a) are the absolute values of discretionary accruals ($|DA|$) and abnormal working capital accruals ($|AWCA|$). In the second model (3b), we use *ETR* as our dependent variable.

In all model specifcations, we include a comprehensive set of control variables that might affect the level of audit quality (e.g., Asthana et al., 2019; Choi et al., 2010; Krauß et al., 2015). The set of control variables captures various client-specifc attributes. *Size* controls for the client size effect (Dechow & Dichev, 2002). We additionally include a size indicator variable based on the German Commercial Code criterion (*Size_GCC*) to control for any effects caused by specifc regulations for clients of different sizes (such as mandating audit fee disclosures for large private frms only). Further, we control for a change in the fscal year end (*Change_FY*) because a short fscal year might infuence accruals and earnings/tax management activities. *Change_Sales* is

[17] For consistency with the accruals measure, we multiply the variable by -1 when estimating our regressions so that larger values denote lower audit quality.

[18] All variables are defned in Online Appendix A. Our unit of analysis is a client-year. The only variables that are time invariant are *Single*, *Firm_Independence*, *NBS*, *Lit_Risk*, and our audit staff satisfaction measure. We suppress subscripts for expositional ease.

included to control for frm growth, while the indicator variable *LLoss* is included to control for potential differences between loss making and proftable frms. *Lev* is included because highly leveraged frms may have greater incentives for earnings/tax management (e.g., Becker et al., 1998). *RoA* captures the effect of client proftability on audit quality. The number of business segments (*NBS*) and the ratio of total inventories and receivables to total assets (*InvRec*) are included to control for differences in client complexity and associated audit workload. We add *Age* to our regression models because mature frms are expected to have more sophisticated fnancial reporting systems (Johnson et al., 2002). *OCF* controls for the potential correlation between accruals and cash fows (Kothari et al., 2005). Next, we include a control variable for the level of frm independence from shareholders, which might affect managerial incentives to manipulate earnings (*Firm_Independence*), and we add a dummy variable to control for whether a client is a single frm or part of a corporate group (*Single*). We also control for the industry litigation risk (*Lit_Risk*) because this might affect clients' earnings/tax management activities, and auditors might be more inclined to provide high quality audits for clients operating in a high litigation risk environment to reduce their risk of being sued (e.g., Xu et al., 2019). Finally, we consider whether clients' fscal year end falls within the busy fnancial reporting season in Germany (*Busy_Season*), as this might affect the level of audit quality provided (López & Peters, 2012).

The models also contain auditor control variables. We include the indicator variable *Big*4 because larger audit frms are predicted to provide higher audit quality (DeAngelo, 1981). We also control for the size of the responsible audit offces (*Office_Size*) (Francis & Yu, 2009). Further, we consider whether the auditor issues a qualifed audit opinion indicating low fnancial reporting quality (*Opinion*). We control for audit offce change (*Office_Change*) and tenure (*Office_Tenure*) because these factors are also considered to have an impact on audit quality (e.g., Carey & Simnett, 2006). We include a variable measuring the audit report lag (*Report_Lag*) as a proxy for the level of effort spent by the auditor and the effciency of the audit process (e.g., Knechel & Sharma, 2012). Finally, we add year and industry (48-Frama/French classifcation) dummies to control for industry as well as time-fxed effects.

For simplicity, we use the same control variables in all models. For the ETR model, however, we include three additional controls for variations in corporate tax rates (e.g., Kovermann & Wendt, 2019). First, accelerated depreciation schedules under tax rules can cause (temporary) book-tax differences and may therefore affect frms' ETR, which is why we include property, plant and equipment (*PPE*) as a control variable. Another driver of differences between tax and fnancial reporting in Germany are provisions, for which we control in our model. Finally, the trade tax in Germany is a combination of a uniform tax rate and a varying municipal tax rate, which is dependent on the location of the client's headquarters. Since the level of the municipal tax rate should also affect the ETR, we control for this in our model (3b).

4.4. Data and Sample

The starting point for our sample selection is the Bureau van Dijk Dafne database, which provides fnancial data for all German companies. Our initial dataset includes non-consolidated single accounts of German private limited companies from 2010 to 2018. Using non-consolidated single accounts is in line with Loy (2013) and ensures that each frm (or account) is audited by one specifc audit offce. We start with 2010 because non-listed frms in Germany were required to disclose auditor fee information after 2009 under the 'Accounting Law Modernization Act'.[19] We retrieve data for clients disclosing key fnancial variables (i.e., total asset, net

[19]Our approach also avoids any potential initial adoption effects from this comprehensive accounting reform.

income, employees, sales) across our sample period. This leads to an initial sample of 102,246 client-year observations from 14,589 clients.

Next, we exclude financial firms, public utilities, and non-profit organizations due to their unique features precluding valid or meaningful comparisons with firms in our target sample group. Further, small clients (based on the size criteria of the GCC) are excluded because they are not subject to mandatory audits. This results in a pre-selected sample of 10,339 clients, for which we manually collate general auditor information (such as audit report lag, (non)-audit fees, audit firm/office, audit opinion) from financial statements published online in the *Bundesanzeiger* (Federal Gazette). Dafne does not provide comprehensive auditor data.[20]

As explained earlier, we further reduce the sample by focusing on client observations audited by larger audit firms in Germany to ensure the availability of sufficient employer review data. From the remaining sample, we exclude all observations from audit offices for which we could not access enough employer reviews on kununu.com. Finally, we require data for our other model variables (e.g., accruals, control variables), leading to a final sample comprising 4,425 firm-year observations from 967 clients audited by 99 different audit offices. For the ETR sample, which requires additional tax data and has additional sample restrictions, we have 2,898 observations from 760 clients of 93 audit offices.

Panel A of Table 1 summarizes the sample selection procedure. The annual distribution (Panel B) reveals an apparent absence of any significant clustering of observations around any specific sample year. Panel C presents the auditor distribution. We note that Big 4 clients dominate our study sample, representing more than 80% of sample observations. This is unavoidable; we exclude observations from the many private firms audited by small audit firms or independent auditors, where insufficient employer reviews are available to inform our audit staff satisfaction variable. Nevertheless, we consider our sample of observations from 99 offices of 25 different audit firms to be sufficiently large and diverse to draw meaningful conclusions.

5. Empirical Results

5.1. Descriptive Statistics

In Table 2, we show distributional properties of our variables.[21] The average audit staff satisfaction for the main sample (Panel A) is 3.63 in the range 1–5. For the smaller ETR sample (Panel B), the average satisfaction is 3.65. The median effective tax rate is 28%.

In Table 3, we report more detailed statistics for our audit staff satisfaction measure. Panel A shows the distributional properties for the individual categories of satisfaction ratings underlying our aggregate measure. Audit firms in our sample rank particularly high in the categories of teamwork (4.00), gender equality (3.93), image (3.87), and challenging and interesting tasks (3.81). Categories with lower rankings include work-life-balance (3.11) and communication within an audit office (3.37). The categories of communication, work-life-balance, and management support exhibit the highest standard deviations, signifying greater levels of discrepancy between audit offices for these categories than for others.

In Panel B, we report univariate t-tests to explore differences in employee satisfaction levels between Big 4 and non-Big 4 firms. Significant differences emerge, with the Big 4 firms, on average, scoring higher than non-Big 4 firms, both on aggregate levels (3.643 vs. 3.586) and on

[20] To ensure data reliability, all data were collected independently by the authors and double-checked by a student assistant. Any disagreements were examined and reconciled. The same applies to our manually-collected data for the audit staff satisfaction measure.

[21] All continuous variables are winsorized at 0.5% tails.

Table 1. Sample

Panel A: Sample selection

	Client-Years	Clients	Audit Firms	Audit Offces
Initial Sample: Private limited-liability clients with data for key fnancial variables during the period 2010–2018	102,246	14,589		
Less Financial Firms, Public Utilities and Non-Proft Or ganizations	77,722	11,319		
Only observations from medium-sized and large clients based on GCC criteria	70,837	10,339		
Clients with auditor information (i.e., audit frm/of fce, audit opinion, (non-)audit fees)	12,744	1,565		
Only clients from large audit frms (based on revenue and number of employees)	8,487	1,382	30	213
Only audit offces with suffcient employee reviews (at least 5 reviews per offce)	7,134	1,168	28	104
Main Sample*:* Non-missing values for other variables (e.g., abnormal accruals, control variables)	***4,425***	***967***	***25***	***99***
ETR Sample: Non-missing values for measuring frms' effective tax rate and additional controls (e.g., local municipal tax rate)	*2,898*	*760*	*23*	*93*

Panel B: Annual Distribution

Year	Freq.	%	Year	Freq.	%	Year	Freq.	%
2010	460	10.40	*2013*	437	9.88	*2016*	470	10.62
2011	486	10.98	*2014*	460	10.40	*2017*	471	10.64
2012	512	11.57	*2015*	675	15.25	*2018*	454	10.26
						Total	**4,425**	**100.00**

Panel C: Audit Firm Distribution

Audit Firm	Freq.	%	#Offces	Audit Firm	Freq.	%	#Offces
PwC	1107	25.02	13	RWT	32	0.72	1
KPMG	946	21.38	14	Fides	29	0.66	1
Deloitte	855	19.32	10	Kleeberg	29	0.66	1
EY	797	18.01	12	EbnerStolz	26	0.59	5
BDO	136	3.07	9	Bansbach	24	0.54	1
Mazars	71	1.60	4	PSP	17	0.38	1
Rödl	55	1.24	6	Möhrle	15	0.34	1
Curacon	47	1.06	2	RSM	11	0.25	2
PKF	43	0.97	3	Schüllermann	11	0.25	1
Solidaris	42	0.95	1	Dornbach	7	0.16	1
WarthKlein	40	0.90	3	dhpg	7	0.16	1
BakerTilly	38	0.86	4	Ecovis	5	0.11	1
Stückmann	35	0.79	1	**Total**	**4,425**	**100.00**	**99**

10 out of the 13 individual categories of employee satisfaction. The largest gap relates to the perceived image of the audit frm (3.939 vs. 3.545). However, non-Big 4 audit employees gave their employers higher rankings than Big 4 employees in three categories: working atmosphere, attitude towards older colleagues, and work-life balance. This is in accordance with evidence presented by Khavis and Krishnan (2021) for the US setting, supporting the notion that Big 4 frms have harmonized audit methodologies, leadership, and work structures for employees across their global networks (e.g., Barrett et al., 2005; Ege et al., 2020).

Table 2. Distributional properties

Panel A: Main sample ($N = 4{,}425$)

Variables	Mean	SD	P1	P25	P50	P75	P99
|DA|	0.09	0.11	0.00	0.03	0.06	0.12	0.54
|AWCA|	0.11	0.15	0.00	0.02	0.05	0.13	0.78
Staff_Satisfaction	3.63	0.28	2.91	3.53	3.66	3.79	4.36
Size	11.07	1.02	8.91	10.37	10.93	11.64	13.94
Size_Category	0.86	0.35	0.00	1.00	1.00	1.00	1.00
Change_FY	0.01	0.08	0.00	0.00	0.00	0.00	0.00
LLoss	0.18	0.39	0.00	0.00	0.00	0.00	1.00
RoA	0.07	0.12	− 0.26	0.01	0.06	0.12	0.46
InvRec	0.60	0.26	0.03	0.40	0.63	0.83	0.99
Lev	0.43	0.24	0.03	0.23	0.42	0.62	0.95
Change_Sales	0.06	0.45	− 1.74	− 0.05	0.05	0.19	1.58
Single	0.20	0.40	0.00	0.00	0.00	0.00	1.00
Firm_Independence	0.08	0.27	0.00	0.00	0.00	0.00	1.00
NBS	1.33	0.49	0.69	0.69	1.39	1.61	2.30
Age	35.87	26.55	5.00	18.00	28.00	46.00	113.00
CFO	0.08	0.18	− 0.52	− 0.00	0.08	0.16	0.60
Lit_Risk	0.07	0.26	0.00	0.00	0.00	0.00	1.00
Busy_Season	0.77	0.42	0.00	1.00	1.00	1.00	1.00
Big4	0.84	0.37	0.00	1.00	1.00	1.00	1.00
Opinion	0.01	0.11	0.00	0.00	0.00	0.00	1.00
Office_Change	0.08	0.27	0.00	0.00	0.00	0.00	1.00
Office_Size	11.07	0.41	9.89	10.83	11.15	11.35	11.86
Office_Tenure	3.98	1.37	1.00	3.00	5.00	5.00	5.00
Report_Lag	173.90	122.89	28.00	89.00	140.00	223.00	646.00

Panel B: Tax avoidance sample ($N = 2{,}898$)

Variables	Mean	SD	P1	P25	P50	P75	P99
ETR	0.24	0.19	0.00	0.07	0.28	0.33	0.95
Staff_Satisfaction	3.65	0.27	2.91	3.53	3.68	3.81	4.36
Provisions	0.19	0.16	0.01	0.07	0.13	0.25	0.78
PPE	0.20	0.22	0.00	0.02	0.11	0.31	0.90
Municipal_Tax	412.34	58.94	280.00	360.00	425.00	460.00	510.00

Note: All continuous variables are winsorized at 0.5% tails. The staff satisfaction variable is mean-centred before included into the regressions. Variables are defned in Online Appendix A.

In Panel C, we differentiate between large and small offces (with a median split of an offce size variable based on total audit fees) with reference to employee satisfaction. We fnd that smaller offces are consistently rated more highly by their employees across the various measurement categories for employee satisfaction (and the differences are insignifcant for fair career opportunities and social/environmental consciousness). The only exception is for image, which yields a signifcantly higher rating for large offces than smaller offces. [22]

[22] In Online Appendix G, we compare possible differences in satisfaction between offces of the same audit frm. We do not fnd consistent results. For instance, we fnd statistically higher scores for the PwC offce in Dusseldorf when compared to the offce in Frankfurt. When comparing the Deloitte offces in Frankfurt and Dusseldorf, we do not fnd a signifcant difference in the aggregate score (but do for some individual dimensions). Hence, while these results reveal some offce-level variations beyond the infuence of frm-wide factors, satisfaction levels can also be relatively constant across offces.

Table 3. Descriptive statistics for audit staff satisfaction

Panel A: Audit staff satisfaction dimensions

Dimensions	Mean	SD	P1	P25	P50	P75	P99
Working_Atmosphere	3.68	0.34	2.83	3.51	3.70	3.94	4.45
Support_Management	3.49	0.37	2.60	3.26	3.42	3.68	4.50
Teamwork	4.00	0.32	3.25	3.80	4.02	4.15	4.83
Challenging_Work	3.81	0.30	2.70	3.69	3.80	4.00	4.45
Communication	3.37	0.38	2.35	3.20	3.35	3.58	4.63
Gender_Equality	3.93	0.31	3.12	3.79	3.94	4.14	4.50
Older_Colleagues	3.77	0.37	2.71	3.57	3.74	3.98	4.78
Career	3.73	0.35	2.50	3.60	3.74	3.87	4.54
Compensation	3.37	0.31	2.47	3.22	3.35	3.53	4.16
Work_Environment	3.74	0.28	2.89	3.64	3.75	3.81	4.59
Social_Consciousness	3.46	0.29	2.40	3.38	3.50	3.60	4.00
Work_Life_Balance	3.11	0.38	2.00	2.88	3.05	3.32	4.13
Image	3.87	0.35	2.67	3.79	3.93	4.06	4.50

Panel B: Audit staff satisfaction Big 4 vs. non-Big 4

Dimensions	Big 4	Non-Big 4	Difference
Staff_Satisfaction	3.643	3.586	0.056***
Working_Atmosphere	3.671	3.714	– 0.043***
Support_Management	3.503	3.405	0.099***
Teamwork	4.006	3.986	0.020
Challenging_Work	3.809	3.804	0.005
Communication	3.389	3.277	0.112***
Gender_Equality	3.947	3.826	0.121***
Older_Colleagues	3.724	3.998	– 0.274***
Career	3.769	3.528	0.241***
Compensation	3.388	3.288	0.100***
Work_Environment	3.755	3.682	0.073***
Social_Consciousness	3.491	3.286	0.205***
Work_Life_Balance	3.063	3.354	– 0.291***
Image	3.939	3.545	0.394***

Panel C: Audit staff satisfaction based on offce s ize

Dimensions	Large Offce	Small Offce	Difference
Staff_Satisfaction	3.590	3.678	– 0.088***
Working_Atmosphere	3.601	3.755	– 0.154***
Support_Management	3.429	3.546	– 0.117***
Teamwork	3.950	4.055	– 0.104***
Challenging_Work	3.760	3.857	– 0.097***
Communication	3.324	3.418	– 0.094***
Gender_Equality	3.890	3.966	– 0.076***
Older_Colleagues	3.653	3.885	– 0.232***
Career	3.728	3.731	– 0.003
Compensation	3.331	3.414	– 0.083***
Work_Environment	3.724	3.763	– 0.039***
Social_Consciousness	3.459	3.456	0.003
Work_Life_Balance	2.993	3.228	– 0.235***
Image	3.922	3.827	0.095***

Note: ∗ ∗ ∗, ∗∗, ∗ indicate two-sided signifcance at the 0.01, 0.05 and 0.1 levels based on a t-test, respectively.

5.2. Main Results: Effect of Audit Staff Satisfaction on Audit Quality

Table 4 reports the results for all model specifcations to test our hypothesis. All reported t-statistics are corrected for heteroscedasticity and serial correlations by using Whites' (1980)

Table 4. Main analyses

Dep. Variable:	(1) |*DA*|		(2) |*AWCA*|		(3) *ETR*	
Staff_Satisfaction	−0.012*	(−1.86)	−0.014*	(−1.90)	−0.044**	(−2.05)
Size	−0.001	(−0.66)	−0.002	(−0.65)	−0.011	(−1.41)
Size_Category	−0.012*	(−1.84)	−0.023***	(−2.81)	−0.001	(−0.04)
Change_FY	−0.019	(−1.17)	0.056*	(1.81)	−0.043	(−1.25)
LLoss	0.008	(1.63)	0.025***	(3.36)	−0.075***	(−5.18)
RoA	0.076**	(2.06)	−0.045	(−1.29)	−0.233***	(−3.94)
InvRec	0.029***	(3.30)	0.052***	(3.88)	0.015	(0.57)
Lev	0.046***	(5.30)	0.036***	(2.99)	−0.128***	(−4.84)
Change_Sales	0.012**	(2.05)	0.027***	(3.16)	0.008	(1.19)
Single	−0.001	(−0.21)	0.005	(0.77)	0.004	(0.23)
Firm_Independence	0.003	(0.51)	−0.003	(−0.38)	0.052**	(2.17)
NBS	−0.006	(−1.23)	−0.003	(−0.55)	−0.001	(−0.12)
Age	−0.000**	(−2.19)	0.000	(0.47)	−0.000	(−1.63)
CFO	−0.066**	(−2.10)	0.019	(0.69)	−0.118***	(−4.64)
Lit_Risk	−0.019	(−1.28)	0.014	(0.71)	0.074**	(2.37)
Busy_Season	0.001	(0.09)	−0.001	(−0.19)	−0.005	(−0.37)
Big4	0.005	(0.86)	0.020**	(2.54)	−0.035*	(−1.68)
Opinion	0.014	(0.67)	−0.012	(−0.60)	0.030	(1.11)
Office_Change	0.012	(1.54)	−0.026**	(−2.56)	−0.025	(−1.56)
Office_Size	0.000	(0.06)	−0.004	(−0.56)	−0.015	(−0.84)
Office_Tenure	−0.001	(−0.69)	−0.007***	(−2.89)	−0.003	(−0.68)
Report_Lag	0.000	(1.21)	0.000	(0.77)	−0.000	(−0.81)
Provisions					−0.062	(−1.49)
PPE					0.048	(1.27)
Municipal_Tax					−0.000	(−1.16)
Year Fixed Effects	Included		Included		Included	
Industry Fixed Effects	Included		Included		Included	
N	4,425		4,425		2,898	
Adj. R^2 (in %)	9.50		12.85		15.32	

Note: ***, **, * indicate two-sided signifcance at the 0.01, 0.05 and 0.1 levels, respectively. Robust t-statistics, clustered at the client-level, are presented in parentheses. Variables are defned in Online Appendix A.

robust standard errors and the client-level clustering procedure (Petersen, 2009), respectively.[23]

For model (3a) with |*DA*| as dependent variable reported in the frst Column of Table 4, the coeffcient of our test variable *Staff_Satisfaction* is negative and signifcant. This is in line with our hypothesis and suggests that audit services provided by auditors from offces with high employee satisfaction levels are of higher quality (i.e., clients have lower discretionary accruals). This result is also supported by our other audit quality proxies. The negative coeffcient of *Staff_Satisfaction* in Column 2 suggests that clients of audit offces with high employee satisfaction levels have lower abnormal working capital accruals, indicating less earnings management. Further, our results in Column 3 for model (3b) indicate that private clients audited by audit offces with high employee satisfaction levels are less likely to engage in aggressive tax management. These results are both statistically signifcant and economically meaningful. A one standard deviation increase in audit staff satisfaction is associated with a decrease of 3.1 (2.6)% of a standard deviation in discretionary accruals (abnormal working capital accruals), ceteris paribus. *ETR* decreases by 1.2% (a change equal to 4.9% of mean *ETR*) when *Staff_Satisfaction* increases by one standard deviation.

[23] For all regression analyses, we calculate the variance infation factors (VIF). We fnd no value for our model variables greater than fve, suggesting that multicollinearity is not a problem in our regressions.

Table 5. Private vs. listed frm setting

Panel A: Discretionary accruals			
Dep. Variable: |*DA*|	(1) Private		(2) Listed
Staff _Satisfaction	− 0.012∗		− 0.000
	(− 1.86)		(− 0.02)
p-value Difference		0.58	
Control Variables	Included		Included
Year Fixed Effects	Included		Included
Industry Fixed Effects	Included		Included
N	4,425		447
Adj. R^2 (in %)	9.50		17.35
Panel B: Abnormal working capital accruals			
Dep. Variable: |*AWCA*|	(1) Private		(2) Listed
Staff _Satisfaction	− 0.014∗		0.012
	(− 1.90)		(0.91)
p-value Difference		0.08	
Control Variables	Included		Included
Year Fixed Effects	Included		Included
Industry Fixed Effects	Included		Included
N	4,425		447
Adj. R^2 (in %)	12.85		20.74
Panel C: Tax aggressiveness			
Dep. Variable: *ETR*	(1) Private		(2) Listed
Staff _Satisfaction	− 0.044∗∗		0.117
	(− 2.05)		(1.12)
p-value Difference		0.10	
Control Variables	Included		Included
Year Fixed Effects	Included		Included
Industry Fixed Effects	Included		Included
N	2,898		427
Adj. R^2 (in %)	15.32		3.58

Note: ∗∗∗, ∗∗, ∗ indicate two-sided signifcance at the 0.01, 0.05 and 0.1 levels. Robust t-statistics, clustered at the client-level, are presented in parentheses. Seemingly unrelated regressions are conducted to test for the equality of coeffcients (*p*-values based on z-statistics). Variables are defned in Online Appendix A.

5.3. Additional Analyses

5.3.1. Listed vs. Private Client Setting

Our main results support our hypothesis that staff satisfaction is positively associated with audit quality in a private client setting. These results are in contrast to the fndings for the US public company setting reported in Khavis and Krishnan (2021). To further explore whether the infuence of audit staff satisfaction on audit quality differs between the private and listed client settings, we have retrieved data for German listed frms and compare the results in Table 5.[24]

[24]Our listed client setting comprises 447 client-year observations from 91 different clients (and 427 observations from 87 clients for the *ETR* model). Compared to other countries like the U.S. or U.K., the number of listed frms in Germany is relatively low and we lose some observations due to our strict data requirements. If we only consider *AWCA* without simultaneously requiring available data for *DA* (with the strict restriction of 15 observations per industry-year), we still fnd no s ignifcant relationship (coef.: 0.016, t-stat.: 1.24) for this increased sample of 905 observations (175 clients).

In Column 1 we report results for private clients, and in Column 2 for listed clients. As previously reported, we fnd staff satisfaction is positively associated with audit quality for private clients. But within the listed client sample, the estimates of *Staff _Satisfaction* are not signifcant for all models (and the signs of the coeffcients are even reversed for |*AWCA*| and *ETR*). We also tested for the equality of coeffcients and fnd that the difference in coeffcients is statistically signifcant for the model with |*AWCA*| and *ETR* as dependent variables, while the difference in coeffcients is not statistically signifcant for the |*DA*| model. In sum, these results are generally consistent with our argument that audit staff satisfaction is more prominent for private client audits than for audits of listed clients. This also alleviates concerns that our contrasting results, compared to the US listed client study by Khavis and Krishnan (2021), stem from institutional differences. For example, the impact of intra-frm working conditions and work-life balance may vary depending on the strictness of employment protection legislation in a jurisdiction. We encourage future research to explore these questions in greater detail, using larger multinational samples.

5.3.2. Big 4 vs. Non-Big 4 and Office Size

In Table 6 we report results from our analysis, which differentiates Big 4 from non-Big 4 audit frms. We fnd a signifcant association between audit staff satisfaction and discretionary accruals for the non-Big 4 subsample. For |*AWCA*| and *ETR*, the estimates are signifcant based on a one-tailed test.[25] For the Big 4 subsample, the results are clearly insignifcant across all models (despite the larger subsample size, which naturally leads to higher t-values). While we fnd a statistically signifcant difference in the coeffcients only for the *ETR* model, this provides some evidence that staff satisfaction is important in non-Big 4 frms. Big 4 audit frms are expected to provide higher quality audits than non-Big 4 frms. This is because of the higher opportunity costs of audit failure (DeAngelo, 1981), a need to protect their reputations (Francis, 2011), and/or their greater monitoring ability and quality control systems (Che et al., 2020). Hence, one explanation for our fndings is that external factors are more infuential for Big 4 auditors, with employee satisfaction as an audit input factor being relatively less important for Big 4 than for non-Big 4 frms. [26]

5.3.3. Provision of Non-Audit Services and Auditor Tenure

In two additional tests, we explore the role of staff satisfaction on the relationship between non-audit services (auditor tenure) and audit quality. The effect of NAS on audit quality has been subject to longstanding debate. Two opposing arguments are discussed in the literature. On the one hand, increasing non-audit fees (economic bonding) and frequent social interactions related to NAS (social bonding) might compromise auditor independence, reducing audit quality (e.g., Francis, 2006; Svanström, 2013). On the other hand, client-specifc knowledge gained from NAS might result in knowledge spillovers and improved audit quality (e.g., Simunic, 1984). Regulators also have long held concerns that the provision of NAS to audit clients may threaten

[25] A one-tailed test is feasible as we formulate a directional hypothesis. This procedure is also in line with prior auditing literature (e.g., Carey & Simnett, 2006).

[26] An alternative explanation for this result might be that Big 4 offces are generally larger and that our Big 4 vs. non-Big 4 test captures an offce-size effect. In Online Appendix H, we therefore also differentiate between large and small audit offces (median split) for Big 4 frms. For *AWCA* we fnd that the relationship is signifcant for the small offce subsample, but for the *DA* and *ETR* models the coeffcient for *Staff _Satisfaction* is not signifcant (even based on a one-tailed test). We do not fnd any signifcant differences in the coeffcients between the subsamples. Hence, rather than offce size, systematic differences between Big 4 and non-Big 4 frms seem to be more important for the relationship between employee satisfaction and audit quality.

Table 6. Big 4 vs. non-Big 4.

Panel A: Discretionary accruals			
Dep. Variable: $\|DA\|$	(1) Big 4		(2) Non-Big 4
Staff _Satisfaction	− 0.009		− 0.016∗
	(− 0.89)		(− 1.81)
p-value Difference		0.53	
Control Variables	Included		Included
Year Fixed Effects	Included		Included
Industry Fixed Effects	Included		Included
N	3,705		720
Adj. R^2 (in %)	8.94		12.25
Panel B: Abnormal working capital accruals			
Dep. Variable: $\|AWCA\|$	(1) Big 4		(2) Non-Big 4
Staff _Satisfaction	− 0.005		− 0.015
	(− 0.53)		(− 1.57)
p-value Difference		0.36	
Control Variables	Included		Included
Year Fixed Effects	Included		Included
Industry Fixed Effects	Included		Included
N	3,705		720
Adj. R^2 (in %)	11.29		12.26
Panel C: Tax aggressiveness			
Dep. Variable: *ETR*	(1) Big 4		(2) Non-Big 4
Staff _Satisfaction	0.002		− 0.056
	(0.07)		(− 1.49)
p-value Difference		0.06	
Control Variables	Included		Included
Year Fixed Effects	Included		Included
Industry Fixed Effects	Included		Included
N	2,436		462
Adj. R^2 (in %)	15.39		39.53

Note: ∗ ∗ ∗, ∗∗, ∗ indicate two-sided signifcance at the 0.01, 0.05 and 0.1 levels. Robust t-statistics, clustered at the client-level, are presented in parentheses. Seemingly unrelated regressions are conducted to test for the equality of coeffcients (reported *p*-values based on z-statistics). Variables are defned in Online Appendix A.

both actual and perceived auditor independence. Despite mixed empirical evidence (DeFond & Zhang, 2014), European audit reforms have continued to tighten restrictions on auditor-provided NAS for public companies (Ratzinger-Sakel & Schönberger, 2015).

We argue that satisfed audit employees will be more committed and motivated, and therefore more likely to identify knowledge spillovers from NAS, supporting audit quality. Further, satisfed audit employees might embody a work environment fostering honesty and ethics, making auditor employees less prone to compromising their independence due to economic or social bonding when providing NAS. Accordingly, we assume that audit staff satisfaction can have a moderating infuence on the relationship between NAS and audit quality.

To investigate this, we extend our regression models and include the non-audit service ratio (*NAS_Ratio*) as a stand-alone variable and interaction term with *Staff _Satisfaction*. We report the results in Panel A of Table 7. We fnd a negative and signifcant estimate for the interaction term for the *DA* model. For $|AWCA|$, the coeffcient of the interaction term is signifcant based on a one-tailed test – and even very close to being signifcant with a two-tailed test ($p = 0.109$).

Table 7. Audit staff satisfaction and the role of non-audit services and auditor tenure

Panel A: Non-audit services			
Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Staff _Satisfaction	0.006	0.001	− 0.037
	(0.63)	(0.04)	(− 1.08)
NAS_Ratio	0.005	0.027**	0.064***
	(0.57)	(2.11)	(2.94)
Staff _Satisfaction ∗ *NAS_Ratio*	− 0.075***	− 0.065	− 0.036
	(− 2.71)	(− 1.61)	(− 0.40)
Control Variables	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	4,425	4,425	2,898
Adj. R^2	9.64	13.02	15.81
Panel B: Audit offce tenure			
Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Staff _Satisfaction	0.021	0.009	− 0.155***
	(1.28)	(0.56)	(− 3.04)
Office_Tenure	− 0.001	− 0.002	− 0.003
	(− 0.65)	(− 1.15)	(− 0.82)
Staff _Satisfaction ∗ *Office_Tenure*	− 0.009**	− 0.004	− 0.028**
	(− 2.18)	(− 1.08)	(− 2.27)
Control Variables	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	4,425	4,425	2,898
Adj. R^2	9.58	12.88	15.57

Note: ∗ ∗ ∗, ∗∗, ∗ indicate two-sided signifcance at the 0.01, 0.05 and 0.1 levels, respectively. Robust t-statistics, clustered at the client-level, are presented in parentheses. Variables are defned in Online Appendix A.

This suggests that the effect of NAS on audit quality is conditional on employee satisfaction as a comprehensive auditor characteristic. High audit staff satisfaction mitigates a potential negative impact of NAS on audit quality, with positive knowledge-spillover effects appearing to play a more important role in settings where audit employee satisfaction is high. For the *ETR* model, the interaction effect is clearly insignifcant. However, as tax-related consultancy services form a major part of NAS provision, more motivated accounting frm employees might provide better tax advice leading to lower tax rates, which is arguably why we do not fnd a dominant relationship here.

Our next cross-sectional test investigates the role of auditor tenure on the relationship between audit staff satisfaction and audit quality. Despite ongoing concerns among regulators that long tenure may compromise audit quality, the extensive empirical evidence is mixed (c.f. González-Díaz et al. (2015) for an overview). Again, there are competing theoretical arguments as to the infuence of long tenure (client-specifc knowledge vs. social/economic bonding).

In Panel B of Table 7, we report the results for our models, including an interaction term with *Staff _Satisfaction* and *Office_Tenure*. While we do not fnd a signifcant estimate on the interaction term for the |*AWCA*| model, we report a negative and signifcant estimate for the interaction term for the models with |*DA*| and *ETR* as dependent variables. These results suggest that positive effects of longer auditor tenure are likely to be reinforced or enhanced with higher audit staff satisfaction – or, that high employee satisfaction mitigates the possible negative effects of auditor tenure on audit quality.

5.3.4. Individual Satisfaction Categories

Our main results suggest that audit staff satisfaction is positively associated with audit quality. We compute our aggregate employee satisfaction measure based on crowdsourced employer reviews, which include ratings across multiple categories. With the following additional test, we aim to explore which of these categories have the strongest associations with audit quality. We estimate our models for all 13 employee satisfaction categories separately (i.e., we run 13 different regressions for each model).

The results are reported in Table 8. For all 13 categories (except for older colleagues in the |*AWCA*| model), we consistently fnd negative coeffcients supporting the conclusion that the association between audit staff satisfaction and audit quality is clearly positive.

We fnd a consistently signifcant association across all models for the categories working atmosphere, management support, communication, and career. We do not fnd any signifcant estimates for gender equality, older colleagues, challenging work, and compensation. Working atmosphere can be reasonably considered a key driver in the context of this study. Kununu.com, in its guidance to users, states that workplace atmosphere measures whether there is a climate of fairness and mutual trust; key factors in employee motivation and collaboration. Communication is likely a key driver in our setting because audits are usually conducted in teams whose performance depends heavily on the maintenance of effective communication (e.g., Cameran et al.,

Table 8. Individual staff satisfaction dimensions.

Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Working_Atmosphere	−0.010∗	−0.013∗∗	−0.034∗
	(−1.88)	(−2.09)	(−1.89)
Support_Management	−0.010∗	−0.017∗∗∗	−0.031∗
	(−1.88)	(−2.83)	(−1.87)
Teamwork	−0.007	−0.016∗∗∗	−0.026
	(−1.18)	(−2.40)	(−1.35)
Challenging_Work	−0.008	−0.111	−0.030
	(−1.41)	(−1.54)	(−1.42)
Communication	−0.012∗∗	−0.014∗∗∗	−0.045∗∗∗
	(−2.57)	(−2.64)	(−2.82)
Gender_Equality	−0.010	−0.009	−0.027
	(−1.50)	(−1.18)	(−1.48)
Older_Colleagues	−0.004	0.001	−0.004
	(−0.78)	(0.22)	(−0.21)
Career	−0.014∗∗	−0.107∗	−0.034∗
	(−2.25)	(−1.70)	(−1.93)
Compensation	−0.009	−0.010	−0.029
	(−1.60)	(−1.39)	(−1.55)
Work_Environment	−0.007	−0.003	−0.038∗
	(−1.17)	(−0.40)	(−1.75)
Social_Consciousness	−0.005	−0.009	−0.042∗
	(−0.94)	(−1.32)	(−1.94)
Work_Life_Balance	−0.006	−0.014∗∗	−0.029∗
	(−1.33)	(−2.27)	(−1.79)
Image	−0.008	−0.004	−0.050∗∗∗
	(−1.40)	(−0.64)	(−2.81)

Note*:* This table presents results for our models with considering the individual employee satisfaction dimensions.We run each model for each individual dimension separately. Hence, the coeffcients presented in the cells are based on 39 seperate regressions with controls and fxed effects. ∗ ∗ ∗, ∗∗, ∗ indicate two-sided signifcance at the 0.01, 0.05 and 0.1 levels, respectively. Robust t-statistics, clustered at the client-level, are presented in parentheses. Variables are defned in Online Appendix A.

2018). Correspondingly, supportive management that sets clear goals and delegates tasks within a team in a comprehensible manner is also important. Career is also likely to be a signifcant category of employee satisfaction for audit offce members, particularly in relation to perceptions of fair career opportunities and prospects for growth and professional development. To address reverse causality concerns, it is noted that these dimensions refer to the audit offce level, not the client-level. Accordingly, communication, for instance, refects intra-offce communication, not communication with clients.[27]

In Online Appendix I, we report an additional test to differentiate our results from those reported by Khavis and Krishnan (2021), whose signifcant fnding for the association between employee satisfaction and audit quality was confned to the work-life balance dimension. If we adjust our aggregate audit staff satisfaction measure by excluding the work-life rating, we continue to fnd negative and signifcant estimates for this adjusted employee satisfaction measure across all models, demonstrating that our results, unlike those of Khavis and Krishnan (2021), are driven by more than just the work-life balance dimension.[28]

5.4. Sensitivity Tests

In this section, we discuss the results for a variety of sensitivity tests. For our main analyses we use a time-invariant staff satisfaction measure, incorporating all available employer reviews for each audit frm offce. Hence, we use crowdsourced information based on the largest possible number of reviews, given an underlying assumption that employee satisfaction is relatively stable over time. This approach, however, might raise some concerns, especially when we use 'future' reviews to investigate the relationship between employee satisfaction and audit quality in preceding periods. As shown in Table 9, we address this concern using two alternative time-variant variables that change from year to year, and that rely on preceding reviews. In Panel A, we use an annual measure based on a fve-year -rolling window (i.e., for each year we consider the reviews of the current year and the previous four years).[29] For this measure, we continue to fnd a signifcant association based on a two-tailed test for the $|AWCA|$ model, and results are signifcant using a one-tailed test for the models with $|DA|$ and ETR. For an alternative time-variant measure we consider all reviews relating to employee satisfaction dimensions, like career prospects and compensation, preceding the realization of the dependent variable (all reviews in 2015 and before for the year 2015 etc.). Here, the results remain robust for $|DA|$ and $|AWCA|$ models, but the coeffcient becomes insignifcant for the model with ETR. Hence, while the results are weaker for these time-variant measures – arguably because sample sizes decrease and satisfaction measures are based on fewer reviews (and probably less representative) – the weight of evidence suggests our main conclusions are unchanged.[30]

Table 10 shows results for additional sensitivity tests. First, in Panel A, we apply a measure considering reviews by current employees only (at the time of the review) to allow for the possibility that reviews by former employees might tend to be more negative. For this measure, we

[27] The same applies to the work environment dimension. In an auditing context, audit frm employees might rate the client environment where they spend a signifcant amount of their time during the audit, however, kununu.com explicitly states that the reviewers should evaluate the work environment in their frm.

[28] This also applies for a measure where we additionally exclude the ratings for working atmosphere and work environment, which arguably also capture aspects of work-life-balance (Panel B of Online Appendix I).

[29] We also use the current year because the audit process for a reporting period usually starts in the same year (planning and preaudit). The actual audit might take place in the following year, which is why we have alternatively also used lagged values of our dependent variables, but the conclusions do not change signifcantly .

[30] To avoid our sample size decreasing too drastically, we (slightly) alleviated our data requirements for the annual staff satisfaction measures, only requiring at least three reviews per offce-year .

Table 9. Time-variant audit staff satisfaction measures.

Panel A: Rolling 5-year window			
Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Staff_Satisfaction	−0.009	−0.020**	−0.030
	(−1.44)	(−2.06)	(−1.48)
Control Variables	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	2,333	2,333	1,581
Adj. R^2	7.89	13.39	12.85
Panel B: Only reviews from current and previous years			
Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Staff_Satisfaction	−0.008*	−0.009*	−0.012
	(−1.82)	(−1.68)	(−1.16)
Control Variables	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	3,427	3,427	2,295
Adj. R^2	9.62	11.46	14.34

Note: ***, **, * indicate two-sided signifcance at the 0.01, 0.05 and 0.1 levels, respectively. Robust t-statistics, clustered at the client-level, are presented in parentheses. Variables are defned in Online Appendix A.

continue to fnd a signifcant association for our |*DA*| model. For the *ETR* model, the estimate is marginally signifcant for a one-tailed test, but for |*AWCA*| there is no signifcant association.

Second, Panel B of Table 10 modifes our analysis to recognize a potential bias from the likelihood that some reviews of audit frms are made by employees from other departments (such as marketing, public relations/communication, or human resources/recruiting). For our main analyses, we consider all reviews for two reasons. First, we believe it can be reasonably assumed that audit outcomes are driven not just by audit-service team members, but all audit offce staff, including administrative assistants, human resources personnel, and others. Second, if we confned our study to reviews with available (non-mandatory) information regarding department, we would lose almost one third of our study sample, thus reducing its representativeness. Nonetheless, we repeat our analyses with an employee satisfaction measure confned to reviews by employees who declare their attachment to one of the following three department categories: legal, fnance, and 'others' (i.e., categories most likely to be nominated by audit-service-related employees). Almost three quarters of audit frm reviews that provided department-specifc information selected one of these three options. The results in Panel B show that our conclusions hold for this modifcation. We fnd a signifcant association for all our audit quality proxies, and the economic effect is also stronger for this measure.[31] As an additional falsifcation test (Online Appendix J), we compute a measure only considering reviews from 'non-audit' employees who declared their attachment to a department other than legal, fnance, and 'others'. This measure does not load on any of our audit quality proxies (only on |*AWCA*| based on a one-tailed test), which suggests that employees nominating as legal, fnance, and 'others' are infuencing results more than those from other employee categories.

[31] For one standard deviation change in employee satisfaction, |*DA*| (|*AWCA*|) changes by 3.5 (2.8) percent of a standard deviation, compared to 3.1 (2.6) percent for the original satisfaction measure. *ETR* changes by 5.1% of the mean, compared to 4.9% for the original measure.

Third, in our analyses to date, we use a granular audit office-specific staff satisfaction measure to allow for possible variations in satisfaction levels between offices of the same audit firm (Jenkins et al., 2008). In Panel C, we test whether our results also hold for a model with audit firm fixed effects for all firms with at least two offices in our sample (because firms with one office only would otherwise be removed). The results in Table 10 show that our results generally hold for this modification. We still find a significant association for |*DA*|, and the estimates are

Table 10. Other additional tests

Panel A: Exclude reviews from former employees			
Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Staff_Satisfaction	−0.014*	−0.003	−0.036
	(−1.71)	(−0.28)	(−1.38)
Control Variables	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	4,111	4,111	2,726
Adj. R^2	9.11	12.58	14.79
Panel B: Only reviews from audit-service-related employees			
Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Staff_Satisfaction	−0.015*	−0.018*	−0.049*
	(−1.82)	(−1.84)	(−1.90)
Control Variables	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	3,940	3,940	2,636
Adj. R^2	8.48	12.42	15.53
Panel C: Audit firm fixed effects			
Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Staff_Satisfaction	−0.014*	−0.014	−0.040
	(−1.81)	(−1.63)	(−1.61)
Control Variables	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
Audit Firm Fixed Effects	Included	Included	Included
N	4,425	4,425	2,898
Adj. R^2	9.41	12.84	17.69
Panel D: Audit staff satisfaction at firm-level			
Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Staff_Satisfaction	−0.012*	−0.003	−0.042*
	(−1.84)	(−0.32)	(−1.86)
Control Variables	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	4,425	4,425	2,898
Adj. R^2	9.46	12.79	15.23

(*Continued*)

Table 10. Continued.

Panel E: Lagged audit quality as additional control			
Dep. Variable:	(1) |*DA*|	(2) |*AWCA*|	(3) *ETR*
Staff _Satisfaction	− 0.009	− 0.013∗	− 0.014
	(− 1.41)	(− 1.78)	(− 1.33)
Control Variables	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	3,482	3,591	2,245
Adj. R^2	12.21	15.41	50.20

Note: ∗ ∗ ∗, ∗∗, ∗ indicate two-sided signifcance at the 0.01, 0.05 and 0.1 levels, respectively. Robust t-statistics, clustered at the client-level, are presented in parentheses. Variables are defned in Online Appendix A.

very close to being signifcant for |*AWCA*| ($p = 0.10$) and *ETR* ($p = 0.10$) models based on a two-tailed test (i.e., they would be signifcant based on a one-tailed test).

Fourth, we explore whether our results also hold for a less granular staff satisfaction measure at the frm level, rather than the offce level. In this case, we again fnd signifcant associations for |*DA*| and *ETR* models, which shows there are also systematic difference across audit frms in terms of employee satisfaction dimensions (and not only intra-frm offce variations).

In our fnal sensitivity test, we address concerns of reverse causality by controlling for clients' prior year audit quality. While the results are weaker, they hold for the model with *AWCA* and we still fnd signifcant associations for *ETR* and |*DA*| models based on a one-tailed test. This should alleviate concerns that reverse causality plays a crucial role in our analyses.

6. Concluding Remarks

In this study, we explore the relationship between audit quality and audit staff satisfaction for private clients in Germany. In this setting, where extrinsic incentives for providing high quality audits – such as regulatory enforcement, reputational pressure, and litigation costs – are less infuential than in the listed public company setting, employee satisfaction is predicted to play an important role. Consistent with our prediction, we fnd that audit staff satisfaction is positively associated with audit quality when measured using discretionary accruals, abnormal working capital accruals, and tax aggressiveness. Additional analysis corroborates prior research (Khavis & Krishnan, 2021), fnding that employee satisfaction is not associated with audit quality among listed public companies, contrary to our fndings for the private companies setting. We also fnd that the relationship between employee satisfaction and audit quality in the private client setting is more pronounced in the case of non-Big 4 audits. This is consistent with the notion that Big 4 audit quality is more infuenced by external factors, such as reputational pressure, than internal staff satisfaction. We also demonstrate in the private client setting that, under conditions of greater pressure to compromise audit quality (higher levels of NAS and longer auditor tenure), audit staff satisfaction moderates potential negative effects on audit quality of NAS and auditor tenure.

Our study is subject to potential limitations. First, the documented statistical associations do not necessarily imply causal relationships. Second, our sample of German private frms is limited, due, in part, to the challenges of having to collect primary source data manually from crowdsourced online employer reviews. The sample size was necessarily constrained by the fact that

only private clients that meet specifc size criteria are subject to mandatory audits or auditor fee disclosures in Germany, and that employer reviews for smaller audit frms were not available in suffcient numbers to be validly included in our study sample. The resulting sample group, which excludes smaller private clients and smaller audit frms/of fces, limits the scope for our results to be generalized. Third, as with most empirical studies on audit quality, we acknowledge that we are not directly measuring audit quality. Also, we have not used all possible proxy measures because of data limitations in the private client setting (i.e., restatement data are not available for our sample). Finally, our audit staff satisfaction measure is subject to certain limitations. For instance, we measure audit staff satisfaction at the offce level, but cannot clearly disentangle an audit offce effect from a frm effect. Our employer rating data are also subject to inherent limitations, such as a possible non-random sample bias (i.e., a high proportion of reviews from overly satisfed or dissatisfed employees) and concerns regarding their representativeness. It is also important to note that we use a time-invariant measure and cannot clearly identify audit-related employees due to data restrictions. Although we conduct a variety of additional tests to address some of these limitations, our results should be interpreted with caution.

Despite these limitations, our fndings convey potentially important insights and implications for regulators, researchers, practitioners, and prospective audit clients in the under-researched private frm setting. Specifcally, audit frms and offces can infer from our results a strong need to cultivate a positive work environment to engender high levels of employee satisfaction. Further, our study contributes to ongoing discussions regarding the regulation of auditing, particularly in the private client setting (e.g., Minnis & Shroff, 2017). Our results indicate that when employees in audit frms are treated fairly, and are satisfed with their employment, they are more likely to provide higher quality service. Hence, while stricter regulations are one way to secure auditor independence, our study suggests the importance of cultivating audit employee satisfaction. We leave it to future research to investigate possible determinants of audit staff satisfaction in greater detail, and to explore further audit input factors infuencing the audit process.

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Data Availability

Data are available from the public sources cited in the text.

Supplemental Data

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