

The Pricing of Engagement Partner Expertise

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ABSTRACT

This study examines how an engagement partner's reputation for expertise affects the pricing of audits. It employs an extensive, hand-collected sample of German publicly listed companies matched with unique data from the German CPA register for measuring the sources of reputation for expertise at the engagement partner level. High ability is assigned for auditors with a Ph.D. title, general experience is measured by the auditor's years of auditing experience, and industry experience is inferred from the auditor's prior experience with clients in the same industry. The empirical analyses uses the standard audit fee model augmented by measures of reputation for expertise at the engagement partner, audit office and audit firm level. The findings show that the different sources of engagement partners' reputations for expertise are important determinants for audit pricing. Theory-based investigations of the nature of expertise reveal complementary and substitutive relationships between these different sources. Overall, the study provides the first archival evidence that engagement partners have a reputation for their own individual expertise that is priced in the audit market.

I. INTRODUCTION

This study examines how engagement partners' reputation for expertise affects the pricing of audit engagements. Recent research has shown that a reputation for expertise embodied in larger audit offices and audit firms positively affects audit quality (e.g., Francis/Yu, 2009; Reichelt/Wang, 2010) and audit pricing (e.g., Francis/Reichelt/Wang, 2005; Choi et al., 2010). This study extends this research stream to the engagement partner level and provides the first empirical evidence on three important research questions: (1) Does engagement partners' reputation for expertise have an incremental effect on audit pricing; (2) Does a reputation for high ability matter for highly experienced auditors; (3) Is industry experience more valuable for an auditor with low or high general experience?

These research questions are important on several grounds. First, the investigation of the incremental effects of audit firm, audit office, and engagement partners' reputation for expertise constitutes a test for which level reputation is embodied in auditing. It investigates whether audit firms are successful in capturing the expertise of the engagement partner and transferring it across the audit office and audit firm through standardized training, audit programs and consultation, thus achieving an office-wide or firm-wide reputation.

Prior research finds that the audit quality and audit pricing differ across the offices of the same audit firm, implying limitations to firm-wide reputation formation (e.g., Francis/Reichelt/Wang, 2005). However, the research leaves it unresolved whether audit firms develop office-wide reputation for expertise or whether audit quality and audit pricing differs among engagement partners of the same audit office. For example, Francis et al. (2005) and Reichelt and Wang (2010) state that auditor expertise is tied to individual professionals and their deep personal knowledge of clients, and therefore cannot be captured and distributed by the firm to *other*

offices. The apparent related question is whether audit firms are successful in capturing and distributing expertise across the *same* office, thus achieving an office-wide reputation. The described tacit nature of expertise (Tan/Libby, 1997) suggests that already intra-office dissemination is difficult to achieve. This study therefore provides empirical evidence for this question, as very few studies have investigated how engagement partners' reputation for expertise affects audit quality, and none have investigated how it affects audit pricing. Chin and Chi (2009) provide related evidence from Taiwan. They find that audit partner industry expertise matters for the propensity of their audit clients to restate the financial statements. A limitation of their study, however, is that it does not encompass the office level, since almost all signing auditors of their sample are based in the capital, Taipei.

A second motivation concerns the investigation of the nature of expertise in auditing. This is an important topic, because expertise forms the essence of auditing and all other professions (Bédard, 1989, p. 113). The engagement partner is the appropriate unit of analysis for the phenomenon of expertise because expertise develops initially at the individual level before it can be shared across the audit office or the audit firm. The inputs of expertise are ability and experience (Libby/Luft, 1993), and can be most directly observed at the individual level. In the context of the literature, this study is the first to examine the impact of reputation for ability, general auditing experience and industry-specific auditing experience on audit pricing. Furthermore, it tests theories on the relationship between these different sources of reputation for expertise.

Expertise research suggests that the relationship between ability and experience depends on the type of skills needed to accomplish the task. It predicts a complementary relationship for more open-ended skills, such as those that are required in auditing in general, and it expects a

substitutive relationship for less open-ended skills, such as those required for industry experience. Moreover, cognitive psychology suggests a complementary relationship between different types of experience, because better developed knowledge structures acquired from general experience help to cluster specific knowledge, such as industry-specific knowledge, faster and in more meaningful ways (Glaser/Chi, 1988; Ericsson/Kintsch, 1995). However, prior research has provided very limited evidence of the validity of these theories in auditing. Wier et al. (2005), using a questionnaire study on the job performance evaluation of management accountants, provide some evidence in line with both the life-long learning and the lived-learning model without being able to discriminate between the two theories. In addition, two research studies using the experimental methodology offer some limited support for a complementary relationship between general experience and industry experience (Wright/Wright, 1997; Vera-Munoz, 2005). To the best of our knowledge, this study is thus the first to test whether these theories are reflected in patterns of pricing in the audit market.

A third motivation is that the research questions address the interest of policy makers to “understand how much of [the higher comfort associated with Big 4 audits] is attributable to ‘perceptions’ and how much to ‘merit’” (European Commission, 2010). This study therefore informs the debate by providing a deeper analysis of the question on whether reputation for expertise in auditing is really an audit firm level phenomenon or is rather driven by factors related to the characteristics of the audit office or the engagement partner.

The sample of this study includes 5,653 firm-year observations, with 1,865 firm-year observations usable in the audit fee model. The audit firm, audit office, and audit engagement partner, as well as further items were hand-collected from the financial reports and matched with financial data from Compustat Global and information on auditor characteristics from the

German register of certified public accountants (CPA). The CPA register provides information on auditors' academic titles and auditors' dates of CPA appointment, which provides the proxies for auditors' abilities and general experience. The collected data from the financial reports provides information on auditors' prior engagements, which is used to elicit auditors' industry experience. The measures of audit office and audit firm reputation for expertise are also constructed from these data sources: audit office and audit firm reputation for industry experience is measured based on the annual market city and national industry market share, and their reputation for general experience is inferred by audit office and audit firm size.

The findings suggest that engagement partners are able to develop a reputation for their own expertise that is priced in the audit market. The different sources of engagement partners' reputations for expertise are identified as important determinants for audit pricing. The investigation of the nature of expertise in auditing reveals the following relationships between the different sources of expertise. First, ability helps in life-long learning as it has a positive effect with general experience on audit pricing. Second, ability compensates for the lack of industry-specific experience, as it has the strongest impact on audit fees in a subsample of auditors without industry experience. Third, audit fees are highest for engagement partners with joint general and industry experience.

The structure of the paper is as follows. Section 2 outlines the German institutional background. Section 3 develops the research questions based on theory and prior literature. Section 4 presents the research model and provides descriptive statistics. Section 5 shows the main empirical tests. Section 6 establishes the robustness of the results by discussing alternative specifications and statistical tests. Section 7 concludes the study.

II. INSTITUTIONAL BACKGROUND

The German economy is the fourth largest in the world and the largest in Europe (CIA, 2010). Its financial regulations and institutions for publicly listed companies can be compared internationally. Consolidated financial statements have to be prepared according to International Financial Reporting Standards (IFRS), and are subject to both enforcement by the German Financial Reporting Enforcement Panel (FREP – DPR) and mandatory audits. In addition, auditors follow professional standards that are a transformation of International Standards on Auditing (ISA). Furthermore, audit firms with public clients have to undergo a peer review every three years and are monitored by the professionally independent Auditor Oversight Commission (AOC – APAK).

One distinctive institutional feature is the limitation of auditor liability. The liability of auditors for negligent behavior is capped at 4 Mio. € and the only beneficiary party is the audited firm (Sect. 323 HGB). Such a setting of low litigation risk provides a strong testing ground for the effects of auditor expertise on pricing. First, the benefits of engaging an auditor with a reputation for expertise are larger if alternative mechanisms for ensuring audit quality (e.g., litigation) are weaker (Kwon/Lim/Tan, 2007). Second, large audit fees are a cleaner proxy for high audit quality in a low litigation environment, because they are less likely to incorporate self-insurance for expected damages arising from low audit quality (Choi et al., 2008). Furthermore, the investigation of audit environments with low litigation risk is important and timely, because limitation of auditors' liability has recently been considered in the U.S. (Levitt Jr./Nicolaisen, 2008) and has been recommended by the European Union to all of its member states (European Commission, 2008).

German law prescribes that the auditor signs the audit opinion together with the place and date of signature (Sect. 322, Para. 7 HGB). Professional rules mandate that at least one auditor responsible for the conduct of the audit signs (Sect. 24 BS). In practice, the review partner signs on the lower left side, and the engagement partner signs on the lower right side of the audit opinion (Gelhausen, 2007; Lindscheid/Pott/Watrin, 2010). Both signing auditors are then fully responsible and liable for the audit, but their involvement differs considerably. While the engagement partner is regularly directly involved in the conduct of the audit, the review partner only evaluates its adequacy. The signature place is the location of the audit office (IDW Auditing Standard 400.83), and the signature date indicates the point in time when the audit procedures were materially completed (IDW Auditing Standard 400.81, ISA 700.41).

Disclosure of audit fees is mandatory for German publicly listed companies for annual statements with fiscal year-ends of December 31, 2005 or later. The disclosure shall disaggregate total audit fees into fees from mandatory audits, other assurance services, tax services and other services (Sect. 314, Para. 1, No. 9 HGB).

III. HYPOTHESES DEVELOPMENT

1. Reputation for expertise and audit pricing: The firm- and office-level perspective

Economic theory predicts that reputation for expertise is priced in the market for professional services (Tirole, 1990). Furthermore, it suggests that providing a uniform quality across the audit firm is vital to maintaining the associated price premium (Klein/Leffler, 1981; Shapiro, 1983). Consistent with this reasoning, audit firms take initiatives such as nation-wide training,

standardized audit programs and firm-wide shared databases and competence centers to ensure a comparable level of expertise across the firm.

Prior archival auditing research has tested whether reputation for expertise is really embodied at the firm-level or rather at the office-level. It argues that audit firms act through a network of semi-autonomous audit offices (e.g., Wallman, 1996). Audit offices have the autonomy to contract with clients, administer the audit engagement, and sign the audit opinion. Therefore, they can be considered to be the primary decision-making units. Furthermore, the size and the specialization of the audit office determines the experiences auditors have and the level of local support they receive (Francis/Yu, 2009). This implies that the reputation for expertise may differ among audit offices even within the same audit firm.

Research investigating the pricing of expertise and the associated audit quality regularly distinguishes between general expertise and industry expertise. General expertise is considered to increase with audit firm or audit office size, because larger firms or offices have “a larger pool of capable audit personnel who can share their understanding of, and knowledge about, business operations and internal control systems of existing and potential clients” (Choi et al., 2010). General expertise seems to be priced in the audit market given the large body of research documenting a fee premium for larger audit firms (Hay/Knechel/Li, 2006). Recent research extends this finding to the office level and shows that larger offices are associated with larger fees (Ferguson/Francis/Stokes, 2006). Furthermore, the effects of reputation for general expertise at the office level seem to be even more important for audit pricing than those at the firm level (Choi et al., 2010). For example, Francis and Yu (2009) find that larger offices do not only seem to enjoy a higher reputation for expertise evidenced by the fee premiums, but that they actually provide a higher audit quality.

Industry expertise is measured via the national (regional) industry market share at the firm (office) level. Audit units with a larger industry market share are expected to have invested more in industry-specific training, personnel or technology (Mayhew/Wilkins, 2003). The findings of previous studies indicate that reputation for industry expertise is priced, i.e. audit firms and audit offices with reputations for industry expertise are able to charge higher audit fees. This effect is strongest for auditors with joint expertise at both the firm and office level (Ferguson/Francis/Stokes, 2003; Francis/Reichelt/Wang, 2005). Further studies show that the measures for reputation for industry expertise are associated with higher audit quality (Reichelt/Wang, 2010).

2. Reputation for expertise and audit pricing: The audit partner perspective

Prior studies investigated the “national” and “local” dimension of reputation for expertise, but left the “individual” perspective largely unresolved. However, examining the individual level is important given that “the auditor’s individual industry knowledge at the local level may also play an essential role in the perceived audit quality of audit firms and thus should not be ignored” (Reichelt/Wang, 2010, p. 648). An antecedent for the presence of an individual effect is audit partners’ ability to develop and establish a reputation for expertise that is distinct from that of other partners in the same office. The following reasons suggest that audit partners have this ability. First of all, engagement partners have the personal responsibility for the performance of the audit (e.g., Sect. 43 WPO, ISQC 1.30). This suggests that they are often self-directed in their judgment and decision-making. Furthermore, Fiolleau et al. (2010) report that audit clients explicitly demand engagement partners with high levels of autonomy. Second, social learning theories imply that it is the engagement partner who develops expertise in the first place, because

only social beings can become an expert (Elkjaer, 2005). This view is shared by cognitive psychology, which considers the own practical experience of the individual as key for acquiring expertise (Bédard/Chi, 1993). Transferring this expertise across the audit office could be limited by its mostly tacit nature (e.g., Dreyfus/Dreyfus, 1986; Tan/Libby, 1997).

This study focuses on the engagement partners because it is they who are responsible for the direction, supervision and performance of the audit engagement and the appropriateness of the audit report (ISA 220.15). These responsibilities demonstrate the significant role of the engagement partner in the conduct of the audit. Studies on communication in auditing further corroborates this view, as they find that consultations within the audit team follow a hierarchical structure, and that the engagement partner is considered to be the most important source of consultation (Danos/Eichenseher/Holt, 1989). Audit clients also consider the engagement partner to be the most important figure within the audit team, because they consider items such as “active engagement partner” to be key factors for audit quality (Carcello/Hermanson/McGrath, 1992). In contrast, the role of the review partner is limited to evaluating significant judgments made by the engagement team (ISA 220.20). The review partner regularly interacts with the engagement partner in a professional, collaborative manner that only rarely focuses on disagreements. Other audit partners or audit team members are hardly ever involved in the engagement quality review (Emby/Favere-Marchesi, 2010).

3. Main effects of the sources of an engagement partner’s reputation for expertise on audit pricing

This study employs observable measures for ability, general experience and industry experience as proxies for an engagement partner’s reputation for expertise. This follows Libby and Luft

(1993), who consider ability and experience as the main inputs of expertise. Their model proposes that these two inputs determine the level of knowledge, and that ability and knowledge determine expertise. Bonner and Lewis (1990) elaborate on the different types of knowledge that could be acquired from experiences in auditing, and distinguish between general domain and sub-specialty knowledge. General domain knowledge encompasses the broad knowledge of auditing absorbed by longevity in the field. Sub-specialty knowledge is gained by auditors who work within a specific area, such as an industry setting.

An auditor's academic title is an observable signal for ability (Spence, 1973). Studies on career advancement of auditors suggest that academic title is associated with ability. For example, auditors with a post-baccalaureate degree advance more quickly through their career (Wright, 1988) and are more likely to attain partner level (Alford/Strawser, 1990). Furthermore, audit partners with graduate education are able to contribute to audit firm survival (Pennings/Lee/Van Witteloostuijn, 1998). In a study on managerial accountants, Wier et al. (2005) find that job performance is higher for managerial accountants that hold a Master's degree.

It is an open empirical question whether audit clients consider ability as a source of auditing expertise and whether they are willing to price it. Questionnaire studies on audit quality attributes provide some preliminary evidence, because audit clients consider items related to ability to be important (e.g., an auditor's professional competence) (e.g., Warming-Rasmussen/Jensen, 1998). The lack of data availability that this study overcomes has prevented prior studies from investigating the effects of engagement partners' abilities on audit pricing.

H1: The ability of engagement partners is priced.

General experience is observable by the number of years of practical experience a professional has. Some preliminary evidence from prior research suggests that audit clients consider general experience as an indicator for audit quality. In a case study on an audit engagement courtship, Fiolleau et al. (2010) observe that two of the audit firms emphasize the seniority of the proposed engagement partner in their engagement bid. Furthermore, one audit firm explicitly priced different levels of experience even within their ranks, including partners. Behavioral auditing studies offer support that it is reasonable to use general experience as an indicator for audit quality, because accumulated general experience helps to embody more total knowledge (e.g., about potential error causes) (Ashton, 1991; Tubbs, 1992), to develop a better knowledge of relationships (e.g., between control weaknesses and errors) (Frederick/Libby, 1986), and to integrate more abstract knowledge in problem representations (Christ, 1993). Meanwhile, the evidence on the effects of general experience on performance are weaker (Bonner, 1990; Bonner/Lewis, 1990), with some evidence for superior performance in unstructured tasks (Abdolmohammadi/Wright, 1987).

Previous research on the effects of audit partners' general experiences on audit pricing are missing, with the exception of Chi et al. (2010). Their study on the Taiwanese audit market demonstrates that auditors with longer general experience are associated with smaller positive discretionary accruals. The limitations of their study, however, are that it does not include the office level, and that their sample period ending in 2001 missed the post-Sarbanes-Oxley period of worldwide regulatory activity.

H2: The general experience of engagement partners is priced.

Prior participation in the audits of clients in the same industry as the current client demonstrates industry experience. Audit clients seem to be interested in this information, because Fiolleau et al. (2010) report that in their case study a major part of the engagement proposal is devoted to detailed description of industry experience of the audit partner and other team members, including references from clients in the same industry. Another indicator is the structuring of most audit firms along industry lines (Solomon/Shields/Whittington, 1999). Experimental studies support the role of industry experience for achieving expertise in auditing. The findings are that auditors with greater industry-specific experience possess more accurate business-specific knowledge of potential error causes (Solomon/Shields/Whittington, 1999), and are therefore able to generate more industry-unique hypotheses for potential errors (Wright/Wright, 1997). They also show superior performance for auditors with greater industry-specific experience in risk assessment and audit planning tasks (Taylor, 2000; Low, 2004), as well as detecting more errors when reviewing working papers (Owhoso/Messier/Lynch, 2002).

Again, no prior archival study has investigated the effects of audit partners' industry experience on audit pricing, and Chin and Chi (2009) is one of the very few archival studies that consider engagement partners' industry experience. They find that the clients of industry-experienced auditors are associated with a lower likelihood of accounting restatements in Taiwan. In another study on Taiwan, Chi et al. (2010) report only weak effects on engagement partners' prior industry experiences on discretionary accruals. Data availability prevented the authors of both studies from investigating whether the apparently higher audit quality is priced.

H3: The industry experience of engagement partners is priced.

4. Interactive effects of the sources of an engagement partner's reputation for expertise on audit pricing

Cognitive psychology shows that people with high ability are quicker in adopting skills and knowledge from experience (Ericsson/Charness, 1994). The implications of this finding for the relationship between ability and experience depend on the type of skill needed for accomplishing the task (Ackerman, 1987). For closed-ended skills, highly able people excel in the beginning, but less able people acquiring skills at a slower pace will eventually catch up. In contrast, for open-ended skills, highly able people extend their advantage more and more over time. This means that experience can substitute ability in closed-ended skills, but is complementary in open-ended skills.

This study investigates whether the pricing of ability depends on the level of an auditor's experience. The complexity of auditing suggests that it requires open-ended skills. This suggests that general auditing experience complements auditor's ability. The prediction differs for industry experience, because it is built on sub-specialty knowledge that is more closed-ended in nature. This should facilitate it for all auditors regardless of their level of ability to achieve industry expertise.

H4: The pricing of the ability of engagement partners is especially pronounced for auditors with high general experience.

H5: The pricing of the ability of engagement partners is especially pronounced for auditors without industry experience.

Cognitive psychology suggests that expertise requires both general and task-specific experience. General experience brings along a better-developed knowledge structure that helps to organize the knowledge from new specific experiences more rapidly and more reliably (Ericsson/Kintsch, 1995). This implies that the effects of general and industry experience complement each other. Behavioral research provides some limited support for the presence of such a relationship in auditing. For example, Wright and Wright (1997) observe marginally significant interactive effects between general and industry experience in some of their experimental tasks. In addition, Vera-Muñoz et al. (2001) find that both general and specific experiences are needed to appropriately complete an audit task. Thus, general-domain experience helps to select the appropriate problem representation, and domain-specific experiences provide the necessary procedural knowledge. The following hypothesis tests this relationship empirically.

H6: The pricing of industry experience of engagement partners is especially pronounced for auditors with high general experience.

IV. RESEARCH DESIGN

1. Sample

The sample intends to include all German industrial consolidated companies listed in the regulated market between 1998 and 2009. The starting point for the sample selection is a

compilation of 1042 companies listed at least once in the regulated market between 2002 and 2009.¹ After deleting financial, foreign and unconsolidated firms and firms that became inactive prior to 2002, a total of 667 firms with 5,854 active firm-years remain (Table 1). From this set, 5,653 financial reports were retrievable using databases of financial reports (e.g., “HV-Info” and “Thomson One Banker”), the firm’s homepages and the electronic German company register.

--- Insert Table 1 here ---

The maximum sample of 5,653 firm-years is used as the starting point for eliciting industry experience of engagement partners, audit offices and audit firms (Table 2, Panel A). Three main exclusion criteria are then applied. First, observations for which Fama/French 12 industries assign to the “other” category are excluded, because this category is unable to capture industry experience. Second, only cities that constitute clearly defined city audit markets with the presence of at least three of the Big 4 audit firms (KPMG, PWC, EY, DEL) are included. Third, following prior literature, observations with less than two city-industry combinations are deleted (e.g., Francis/Reichelt/Wang, 2005).

The engagement partner measure is based on prior industry experience. It uses a maximum of 3,322 observations from the 1998 to 2008 period. The audit office and audit firm measure is based on the annual market share of the years with mandatory fee disclosure (2005-2009). This period encompasses a total of 1,592 observations.

¹ The compilation was created by hand collecting data from the hard-copy editions of the annually published “Hoppenstedt Aktienführer” published between 2004 and 2010 (referring to the years 2002 to 2008). This compilation was further supplemented by data on the composition of the regulated market for the years 2005 to 2009 from the German stock exchange (<http://deutsche-boerse.com>).

The construction of the fee models sample starts with the 5,476 observations with engagement partner information (Table 2, Panel B). It then excludes firm-years without mandatory fee disclosure (especially fiscal-year end before Dec. 31, 2005), abnormalities (e.g., non-IFRS firms, joint audits, shortened fiscal year) and missing data for control variables on auditee and auditor characteristics, resulting in 1,865 observations for the full fee model. Applying the restrictions for eliciting industry experience described above reduces the sample for fee models on industry experience to 1,279 observations.

--- Insert Table 2 here ---

Table 3 shows the distribution of the observations of the full fee model over the different cities, industries, fiscal years and audit firms. A city is generally defined as a two-digit zip code region where the audit office is located (Panel A).² The hand-collection of city information from the audit opinion avoids measurement errors inherent in studies relying on the headquarters of the audit client as a proxy (e.g., Francis/Reichelt/Wang, 2005). The Fama/French 12 industries definition is applied to group firms based on their SIC code (Panel B). Panel C shows the yearly distribution of observations for the sample period (2005-2009). Panel D indicates that the Big 4 audit firms conduct 58.4% (n = 1090) of all studied audit engagements.

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² Two cases are combined with two neighboring zip code regions: Eschborn (65) is added to Frankfurt (60), because it is the Frankfurt location of EY, and Leonberg (71) is added to Stuttgart (70), because it is the Stuttgart location of BDO. Both Eschborn and Leonberg are only about 15 km away from the respective main cities.

2. Reputation for expertise: engagement partner level

Sources of reputation for engagement partners' expertise are ability, general experience and industry experience. Auditors who hold a Ph.D. title are classified as having high ability. The Ph.D. title is a suitable signal for ability because it takes a significant time to attain and is, therefore, associated with large opportunity costs (Spence, 1973). Further, it is a very transparent signal, because it forms part of an auditor's name. Accordingly, auditors' signatures below the audit opinion conveys their experience level not only to the audit client, but also to the general public. Auditing research on career advancement investigates whether auditors with a Master's degree outperform those with a Bachelor's degree (e.g., Alford/Strawser, 1990). The German setting makes it impossible to use this measure, as universities used to only offer both degrees combined as a diploma degree.

General experience is measured by the number of years of experience as an auditor. This measure is regularly used in behavioral auditing research (e.g., Hamilton/Wright, 1982; Bonner, 1990). The prior study of Chin et al. (2010) infer this measure from the first appearance of the auditor in their study's sample. In this study, however, the availability of the date of auditors' appointments as CPAs in the German CPA register enables the exact measurement of auditors' general experience.

Industry experience is assigned to auditors that have previously audited at least one publicly listed firm in the same industry as the current client. This is based on the notion of behavioral auditing research that knowledge acquired from auditing experiences in a particular industry makes the auditor a specialist (e.g., Libby, 1995). The use of this measure is possible, because the hand-collected dataset starts in 1998, allowing the auditors to be followed for a total period

of 12 years. Chi et al. (2010) use a similar measure based on auditors' prior industry experiences. However, Chin and Chi (2009) use a different proxy. Their measure builds on prior archival research that uses annual national or city market shares. Accordingly, they classify auditors who audited the most clients as industry experts. This definition is not suitable for this study's sample, because an engagement partner regularly serves a maximum of one publicly listed client at a time (mean (SD) number of clients per year is 1.12 (0.36)). Furthermore, it neglects auditors' prior industry experiences, which contradicts behavioral auditing research.

Table 4, Panel A summarizes descriptive statistics on engagement partners' reputations for expertise in the full audit fee model. The proportion of auditors that hold a Ph.D. is 8.1%, their average auditing experience since CPA appointment is 10.00 years (SD = 5.75 years), and they have previously audited a publicly listed client of the same industry in 17.7% of all cases.

--- Insert Table 4 here ---

3. Reputation for expertise: audit office and audit firm level

This study controls for reputation for expertise at higher levels by augmenting the standard fee model with measures for general and industry experience of audit offices and audit firms. General experience is based on audit office and audit firm size. This is done because larger audit units embody more human capital, provide better opportunities for knowledge sharing, have larger incentives to ensure a high level of qualification of their employees and can invest in audit technology more efficiently by making use of the economy of scale (Francis/Yu, 2009; Choi et al., 2010). Prior literature regularly measures office size by city-market share (e.g., Francis/Yu,

2009) and audit firm size by the Big 4 dichotomy (e.g., Hay/Knechel/Wong, 2006). In contrast, this study uses the number of registered CPAs in each office and firm as a more direct and more precise measure. The public German CPA register provides the necessary information. For an average observation of the full fee model, the audit office employs 52.3 (SD = 57.7) CPAs and the audit firm employs 494.1 (SD = 382.4) CPAs (Table 4, Panels B & C).

Industry experience is inferred from the city and national annual industry market share of audit offices and audit firms. The audit market size is based on the client company's sales. The advantage of clients' sales over auditors' fees is better data availability, which provides a more comprehensive picture of the audit market. This is especially relevant for the fiscal year 2005, because fee disclosure was not mandatory for fiscal year-ends before Dec 31, 2005. An audit firm (audit office) is designated as having industry expertise if its market share is 10 percentage-point higher than the second industry leader in a national (city) audit market (e.g. Reichelt/Wang, 2010). This shall identify dominant auditors that differentiate themselves from non-specialists by investing in industry-specific training, personnel or technology, and that have a competitive advantage due to superior industry knowledge and the ability to make use of the economy of scale (Mayhew/Wilkins, 2003). This definition classifies 28.5% (19.2%) of the audit offices (audit firms) as having industry experience (Table 4, Panels B & C).

4. Regression model

An ordinary least square (OLS) audit fee regression with two-dimensional clustering for company and fiscal-year is used in this study (Petersen, 2009). The audit fee regression model controls for factors that prior literature has identified as affecting audit fees, and adds tests variables of interest (Simunic, 1980). These models regularly have high explanatory power and

have proven to be very robust across different time periods and countries (Hay/Knechel/Wong, 2006). The basic regression model is specified as follows in Equation (1):

$$LAF_{i,t} = \alpha_0 + \sum \alpha_j \text{Control variables}_{i,t} + \sum \alpha_j \text{AF/AO reputation for expertise}_{i,t} \\ + \sum \alpha_k \text{AEP reputation for expertise}_{i,t} + \sum \alpha_i \text{Industry fixed effects}_i + \varepsilon_{i,t}$$

where $LAF_{i,t}$ is the natural log of audit fees in T€ The vector of *Control variables* $_{i,t}$ includes the following variables of the standard fee model (e.g., Ferguson/Francis/Stokes, 2003):

- LTA* = natural log of total assets, in Mio. €
- LSUB* = natural log of number of subsidiaries;
- CATA* = ratio of current assets to total assets;
- QUICK* = ratio of current assets (less inventories) to current liabilities;
- DE* = ratio of long-term debt total assets;
- ROI* = ratio of earnings before interest and tax to total assets;
- FOREIGN* = ratio of foreign subsidiaries and total subsidiaries;
- OPINION* = indicator variable, 1 = modified, qualified or adverse opinion;
- FYDEC* = indicator variable, 1 = Dec. 31 year end;
- LOSS* = indicator variable, 1 = negative income before extraordinary items;
- AF_SWITCH* = indicator variable, 1 = audit firm switch.

The expectation is that higher fees are associated with larger clients (*LTA*), higher audit complexity (*LSUB*, *FOREIGN*), and greater audit risk (*CATA*, *DE*, *LOSS*). A lower audit risk leading to lower audit fees is expected for more liquid companies with a higher quick ratio (*QUICK*) and more profitable companies (*ROI*). Prior studies observe higher fees for audit engagements resulting in a modified audit report (*OPINION*), probably due to higher audit effort.

Peak audits with fiscal year-ends in December (*FYDEC*) are expected to be higher priced. Furthermore, an indicator variable for audit firm switch (*AF_SWITCH*) is included based on the documented findings of initial fee discounting (Craswell/Francis, 1999).

The data source for financial items is Compustat Global. The SIC code used for industry categorization is also taken from Compustat Global, with missing data replaced by hand-collected information from “Hoppenstedt Aktienführer”. Data based on the number of subsidiaries (*LSUB*, *FOREIGN*) were directly collected from the 2006 and 2008 financial reports. Table 5 reports the descriptive statistics for all control and dependent variables.

--- Insert Table 5 here ---

The vector of AF/AO expertise controls for expertise at the audit firm and audit office levels, and the vector of AEP reputation for expertise tests the incremental effects attributable to engagement partner characteristics.

AF_LSIZE = natural log of the number of CPAs active in the audit firm (AF);

AO_LSIZE = natural log of the number of CPAs active in the audit office (AO);

AF_IE = AF has the largest annual national market share in the industry and its annual market share is at least 10 percentage-points greater than its closest competitor;

AO_IE = AO has the largest annual city market share in the industry and its annual market share is at least 10 percentage-points greater than its closest competitor;

AEP_PHD = Audit engagement partner (AEP) holds a Ph.D. title;

AEP_EXP = AEP’s number of years since the CPA appointment;

AEP_IE = AEP has audited at least one sample firm in prior years that is in the same industry as the current client.

The expectation is that reputation for expertise at the different auditor levels is associated with higher audit fees. Data on the incumbent audit firm, audit office and audit partner were hand-collected from financial reports and matched with the German CPA register from April 2009. This provides the number of CPAs in an office and an audit firm as a static variable.³ The register also contains the CPA appointment date for each auditor. The sales figures for calculating annual industry market share are taken from Compustat Global, with missing data complemented by hand-collected data from “Hoppenstedt Aktienführer”.

Table 6 shows the correlation matrix for the model’s variables. First of all, it is noteworthy that *LAF* is positively correlated with all variables measuring reputation for expertise. Second, engagement partners’ reputations for expertise correlate only weakly with the measures for reputation for expertise at higher auditor levels. This suggests that multicollinearity is not an issue. Third, engagement partners’ reputations for expertise correlate relatively weakly with client characteristics compared to the variables for reputation for expertise at the audit firm and audit office levels. Provided that auditor selection is based on client characteristics (e.g., Chaney/Jeter/Shivakumar, 2004), this suggest that endogeneity, if present, plays a less prominent role at the partner level than at the higher auditor levels.

--- Insert Table 6 here ---

³ The WPK continually updates the CPA register and does not store earlier versions.

V. RESULTS OF ENGAGEMENT PARTNER REPUTATION FOR EXPERTISE

1. Main effects of the sources of an engagement partner's reputation for expertise on audit pricing

The main effects of different sources of engagement partners' reputations for expertise are presented in Table 7 for both the full sample (Models I & II) and the Big 4 sample (Models III & IV). All models are highly statistically significant with adjusted R^2 s above 0.8. Most control variables are significant in the expected directions with the exception of *DE*, *FOREIGN*, and *FYDEC*. The proxies for expertise at higher auditor levels are consistent with the findings of prior auditing research. Audit office and audit firm industry experience (*AO_IE* and *AF_IE*) have incremental effects on audit fees (e.g., Francis/Reichelt/Wang, 2005). Furthermore, large audit offices (*AO_LSIZE*) are associated with larger audit fees, and this effect dominates the impact of audit firm size (*AF_LSIZE*) (e.g., Choi et al., 2010). These observations indicate that the German audit market shares its pattern of audit pricing with audit markets in other countries, such as the U.S.

First of all, the effects of engagement partners' abilities and general experiences are tested using the full fee model (H1 & H2). Model I reveal that engagement partners with a Ph.D. title (*AEP_PHD*) and with more general experience (*AEP_EXP*) are associated with significantly larger audit fees. The coefficients suggest an average fee premium of 14.6% for auditors that hold a Ph.D., and of 7.3% for a decade of additional auditing experience. Model II demonstrate that the results remain robust if controls for industry experience are included. This model still uses the full fee model and imputes the missing values for industry experience to "no industry experience", because missing values are largely from observation of cities or industries that prevent industry specialization (e.g., cities with only one city-industry observation and industries

classified as “other”). Only the smaller sample size of the industry experience sample used in Model III reduces the significance of the results for ability and general experience. Model II and III show a positive, but insignificant effect for engagement partners’ industry experiences (*AEP_IE*, H3). In the Big 4 sample, the findings are generally similar, but show a significant effect for engagement partners’ industry experiences (Models IV-VI).

The findings detailed above provide the first evidence that engagement partners have a reputation for their own expertise that is priced in the audit market. While they share the reputation for the expertise of their audit office and audit firm with their colleagues, their own reputation for expertise has an additional incremental effect on audit fees. This contradicts the notion that reputation for expertise is fully embodied at the audit office or audit firm level. It implies that sharing of expertise is not only limited at the audit firm level, as documented by prior studies, but that it is also limited at the audit office level.

--- Insert Table 7 here ---

2. Interactive effects of the sources of an engagement partner’s reputation for expertise on audit pricing

Table 8 shows the results of the regression model that includes interactions between sources of reputation for expertise for the complete sample (Models I) and the Big 4 sample (Model VI). The interaction effects are further explored in subsample analyses (Models II-V and Models VII-X). This investigates the validity of theories on the nature of expertise and auditing, and informs whether the main effects reported above need to be further qualified.

The complexity of auditing suggests that ability and general experience are complementary (H4). An observed significant positive interaction effects between these two sources of reputation for expertise ($AEP_PHD * AP_EXP$) on audit fees support this expectation. Subsample analyses show that only auditors with high general experience benefit from high ability (see Model II & III). This effect is stronger and significant in the Big 4 sample (see Models VII & VIII).

The more closed-ended nature of industry experience suggests industry experience can substitute for lower ability (H5). In line with this hypothesis, the interaction effect between ability and industry experience ($AEP_PHD * AP_IE$) is negative and marginally significant in the complete sample (see Model I). Subsample analyses illustrate the expected pattern: auditors benefit especially from their ability in a subsample of engagement partners without industry experience (see Models IV & V). While the interaction effect is not significant in the Big 4 sample (see Model VI), the analyses on the subsample split by engagement partners' industry experiences show the same expected pattern (see Models IX & X).

Cognitive research suggests that expertise requires both general and specific knowledge acquired from experience (H6). The positive interaction effects between general and industry experience ($AEP_EXP * AEP_IE$) provide evidence that this theory is also descriptive for expertise in auditing (see Models I & VI). Subsample analyses demonstrate that industry experience matters most for auditors with high general experience (see Models II & III), an effect that is significant in the Big 4 sample (see Models VI & VII).

--- Insert Table 8 here ---

VI. RESULTS OF ROBUSTNESS TESTS

1. Measures for reputation for expertise

The results reported in the previous section are robust for alternative specifications for engagement partners' reputations for expertise. First, the results are robust for restrictions of the measure for ability to auditors who attained their Ph.D. title in the management sciences. Second, the effects of general experience hold if classifying the top half or top quarter of auditors with the highest number of years of experience as highly experienced, thereby dichotomizing the continuous measure. Third, the effects of industry experience hold to several alternative specifications: requiring that prior industry experience is with large clients (e.g., total prior sales of clients are above 100 Mio. €); requiring at least two prior clients in the industry; counting only appearances as engagement partner instead of total appearances as signing partners; and using a continuous measure of the number of prior client appearances in the same industry or of the number of years since first appearance with clients of the same industry.

Alternative specifications of reputation for expertise at the audit office and audit firm levels do not affect the interpretation of the results. For example, this applies for classifying audit units that are among the top half or top quartile of all audit units in terms of size as having high expertise, for varying thresholds for market share differences between the industry-leader and the closest competitor (for 0%, 5%, 15%, and 20% instead of 10%) and for applying a threshold approach that defines all auditors with a large market share (e.g., >30%) as industry experts (Neal/Riley, 2004).

2. Review partners' reputations for expertise

This study focuses on engagement partners, because their impact on the audit is much larger than that of review partners. Accordingly, audit review partners' measures for reputation for expertise are largely insignificant with the exception of a positive effect for a review partner's high ability in the Big 4 sample. Including these measures into the reported audit fee models does not affect the results for the pricing of engagement partners' reputations for expertise.

3. Categorization of industries and cities, and singularity issues

The results are robust for the choice of alternative industry definitions. The results for the main effects of the sources of reputation for engagement partners' expertise are even somewhat stronger for the 14 industry definitions of Frankel et al. (2002), because it offers a higher number of useable observations by grouping all SIC codes into specific industries. The results for engagement partners' industry experiences are somewhat weaker for the two-digit SIC code industry classification, since this rather detailed classification scheme reduces the power of this study's industry experience measure.

The results from the study hold for alternative city definitions. First, cities are classified purely based on their two-digit ZIP code and all cities are included. Second, regions are formed that combine two-digit zip codes in close proximity.

To ensure that the results are not driven by singularities, sensitivity tests are conducted that drop a singly city, industry, audit firm, and fiscal year at a time. Overall, the results prove to be very robust across these tests. One exception is dropping KPMG, the leading audit firm in our sample, which lead to somewhat weaker effects for engagement partners' reputations for expertise.

4. Client size

The audit fee model controls for client size (*LTA*). However, it is still possible that the fee premium depends on client size. Following prior literature, a median split based on total assets is conducted and subsample analysis for small and large companies are performed. The results show that the reported results of engagement partner expertise appear in the subsample of larger clients, but not in the subsample of smaller clients. The larger fee premium for expertise for larger firms has regularly been observed in prior studies (Craswell/Francis/Taylor, 1995; Ferguson/Francis/Stokes, 2003). Craswell et al. (1995) speculate that larger firms benefit more from having auditors with industry experience and are also more willing to pay for it. The findings suggest that this reasoning can also be extended to engagement partners' expertise.

5. Self-selection and endogeneity

The correlation matrix shows that the correlation between client characteristics and sources of reputation for expertise at the engagement partner level is relatively low (Table 6). This renders endogeneity of audit partner characteristics unlikely. Among the sources of reputation for expertise, engagement partners' general experiences have the strongest correlation with client characteristics, although they are still much weaker than the correlation between higher auditor level expertise and client characteristics. To test the sensitivity to the potential endogeneity for general experience, the age of the engagement partner is used as an instrument. This is an appropriate instrument selection, as it is highly correlated with general expertise, but can be validly excluded from the fee model (Lennox/Francis, 2008). The results of the 2 SLS regression models are even stronger than the reported results.

6. Non-audit fees

Prior literature documents that audit fees and non-audit fees are co-determined, suggesting that non-audit fees are not a correlated omitted variable in the audit fee model (Whisenant/Sankaraguruswamy/Raghunandan, 2003). Nevertheless, since prior studies regularly find a significantly positive effect of non-audit fees on audit fees, two approaches are applied to ensure the robustness of results. First, the natural logarithm of non-audit fees is included as a further control variable. The results show that it has a significantly positive effect on audit fees without affecting the reported findings for expertise. Second, the dependent variable is replaced by the natural logarithm of total audit fees. Again, the results generally remain robust.

VII. CONCLUSION

This study investigates how engagement partners' reputations for expertise affect audit pricing using an extensive, hand-collected sample of German publicly listed companies matched with unique data from the German CPA register. The results provide the first empirical evidence that sources of reputation for expertise – engagement partners' ability, general experience, and industry experience – matter for audit pricing, even after controlling for the effects of audit office and audit firm reputations for expertise. Furthermore, they illustrate a complementary relationship between ability and general experience and general experience and industry experience, and a substitutive relationship between ability and industry experience.

The results have several implications. First of all, the findings suggest that engagement partners can have a reputation for their own expertise that is priced in the audit market. Accordingly,

audit offices and audit firms do not fully embody the reputation for expertise. This implies that expertise sharing is not only limited at the national level, as prior research has shown, but is also limited at the city level. Second, the results contribute to the literature on the nature of expertise in auditing. They provide support for the importance of the type of the required skill for the relationship between ability and experience, and for a complementary relationship between general and specific types of experiences.

While the study includes all industrial, publicly listed German companies over a 12-year period, the limitation that it does not include private German companies remains. This reduces the power of the measure of industry experience and lowers the chances to observe significant effects, because it classifies auditors as having no industry experience even if they have audited a private client in the same industry. Accordingly, one would expect that including private firms would strengthen the measure of general experience and the significance of the reported results. However, private firms are not included in this study's sample because it is more difficult to retrieve their financial reports, their coverage in databases is less comprehensive, and audit fee information is not publicly available.

Another limitation is the low auditor litigation risk environment in Germany. However, this is a suitable setting for this study because it provides a strong testing ground for observing the effects of reputation for expertise on audit pricing. In addition, it is a relevant setting as the limitation of auditor liability is currently the subject of worldwide debate. Whereas the high similarity of the pricing of audit firm and audit office reputation for expertise to countries such as the U.S., the U.K. or Australia provides confidence that the results can be generalized to environments with high auditor litigation risk, one should be aware that this remains to be shown by future research.

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Table 1: Sample selection for data collection

Panel A: Firm selection		n
All German companies listed at least once at the regulated market between 2002 and 2009		1,042
Delete financials	-282	
Delete foreign headquarters	-3	
Delete insolvency prior to 2002	-23	
Delete squeeze-out prior to 2002	-12	
Delete unconsolidated companies	-55	
Sample firms		667
Panel B: Firm-year selection		n
Active firm-years of selected firms between 1998 and 2009		5,854
Delete financial reports not retrievable	-201	
Collected firm-years		5,653

Table 2: Sample selection for empirical models

Panel A: Industry experience sample	AF	AO	AEP
FY collected	5,653	5,606	5,476
Add multiple joint audit observations	45	43	42
Delete unspecified industries	-947	-942	-924
Delete regions < 3 Big4 AF	-605	-561	-558
Delete < 2 city-industry obs	-428	-428	-422
Delete FY 1998-2004	-2,126	-2,126	
Delete FY 2009			-292
Observations in industry experience sample	1,592	1,592	3,322
Panel B: Fee model sample			n
FY collected			5,476
Delete without mandatory fee disclosure (esp. FY before 2005)		-3,294	
Delete abnormal FY (No IFRS, joint audit, shortened FY)		-78	
Delete without control variables on auditee characteristics		-90	
Delete without control variables on auditor characteristics		-149	
FY in full fee models			1,865
Delete unspecified industries		-295	
Delete regions < 3 Big4 AF		-153	
Delete < 2 city-industry observations		-138	
FY in industry experience fee models			1,279

AF: audit firm; AO: audit office; AEP: audit engagement partner; FY: Firm-year

Table 3: Distribution of observations in the full fee model

Panel A: Cities	n	%
Berlin (10)	111	6.0%
Hamburg (20)	209	11.2%
Hannover (30)	83	4.5%
Duesseldorf (40)	167	9.0%
Koeln (50)	79	4.2%
Frankfurt/Eschborn (60 65)	230	12.3%
Stuttgart/Leonberg (70 71)	214	11.5%
Muenchen (80)	340	18.2%
Nuernberg (90)	47	2.5%
Dresden (01)	2	0.1%
Leipzig (04)	31	1.7%
Bremen (28)	25	1.3%
Bielefeld (33)	21	1.1%
Essen (45)	41	2.2%
Saarbruecken (66)	16	0.9%
Mannheim (68)	43	2.3%
Freiburg (79)	10	0.5%
Panel B: Industries	n	%
Consumer non-durables	99	5.3%
Consumer durables	63	3.4%
Manufacturing	413	22.1%
Extractives	10	0.5%
Chemicals	87	4.7%
Business equipment	526	28.2%
Telecommunication	53	2.8%
Utilities	34	1.8%
Retail	141	7.6%
Healthcare	144	7.7%
Other	295	15.8%
Finance	0	0.0%
Panel C: Fiscal-years	n	%
2005	324	17.4%
2006	379	20.3%
2007	397	21.3%
2008	400	21.4%
2009	365	19.6%
Panel D: Audit firms	n	%
KPMG	316	16.9%
PWC	286	15.3%
EY	352	18.9%
DEL	136	7.3%
BDO	136	7.3%
Other audit firms (90 AF)	639	34.3%

In each Panel, n (total) = 1,865

Panel A shows in parentheses the corresponding two-digit zip codes.

Panel B applies the Fama/French 12 industries definition

Table 4: Descriptive statistics of reputation for expertise in the full fee model

Panel A: AEP expertise						
	n	mean	sd	p10	p50	p90
AEP_PHD	1,865	8.1%	-	-	-	-
AEP_EXP	1,865	10.00	5.75	4	9	18
AEP_IE	1,279	17.7%	-	-	-	-
Panel B: AO expertise						
	n	mean	sd	p10	p50	p90
AO_SIZE	1,865	52.3	57.7	2	28	141
AO_IE	1,279	28.5%	-	-	-	-
Panel C: AF expertise						
	n	mean	sd	p10	p50	p90
AF_SIZE	1,865	494.1	382.4	8	711	933
AF_IE	1,279	19.2%	-	-	-	-

AF: audit firm; AO: audit office; AEP: audit engagement partner; FY: Firm-year

AEP_PHD: AEP holds a Ph.D. title; AEP_EXP: number of years of experience of AEP since CPA appointment; AEP_IE: AEP has previously audited at least one sample firm in prior years that is in the same industry as the current client.

AO_SIZE: number of CPAs active in the AO; AO_IE: AO has the largest annual city market share in the industry and its annual market share is at least 10 percentage-points greater than its closest competitor.

AF_SIZE: number of CPAs active in the AF; AF_IE: AF has the largest annual national market share in the industry and its annual market share is at least 10 percentage-points greater than its closest competitor.

Table 5: Descriptive statistics of dependent and independent variables in audit fee model

Panel A: Dependent variable	n	mean	sd	p10	p50	p90
AF	1,865	846	3,719	58	177	936

Panel B: Control variables	n	mean	sd	p10	p50	p90
TA	1,865	3,539	17,910	22	150	3,143
SUB	1,865	47.7	125.8	3.0	13.0	82.0
CATA	1,865	0.54	0.20	0.25	0.55	0.78
QUICK	1,865	1.63	2.22	0.52	1.13	2.78
DE	1,865	0.23	0.23	0.02	0.20	0.46
ROI	1,865	0.03	0.17	-0.08	0.05	0.15
FOREIGN	1,865	0.54	0.32	0.00	0.60	0.93
OPINION	1,865	9.2%				
FYDEC	1,865	87.6%				
LOSS	1,865	27.3%				
AF SWITCH	1,865	8.8%				

AF: audit fees in TEuro.

TA : total assets in Mio Euro; SUB: number of subsidiaries; CATA: ratio of current assets to total assets; QUICK: ratio of current assets (less inventories) to current liabilities; DE: ratio of long-term debt total assets; ROI: ratio of earnings before interest and tax to total assets; FOREIGN: ratio of foreign subsidiaries and total subsidiaries; OPINION: indicator variable, 1: modified, qualified or adverse opinion; FYDEC: indicator variable, 1: Dec. 31 year end; LOSS: indicator variable, 1: negative income before extraordinary items; AF_SWITCH: indicator variable, 1: AF switch.

Table 6: Pearson and Spearman correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) LAF		0.86	0.76	-0.25	-0.31	0.40	0.18	0.12	-0.09	-0.01	-0.14	-0.12	0.43	0.42	0.23	0.41	0.11	0.11	-0.04
(2) LTA	0.88		0.78	-0.25	-0.27	0.42	0.24	0.15	-0.18	0.01	-0.24	-0.09	0.42	0.38	0.20	0.37	0.10	0.13	-0.05
(3) LSUB	0.81	0.82		-0.23	-0.28	0.37	0.21	0.17	-0.09	0.01	-0.18	-0.08	0.31	0.29	0.13	0.35	0.06	0.12	0.03
(4) CATA	-0.23	-0.24	-0.22		0.47	-0.51	0.08	0.25	0.01	-0.07	-0.02	0.02	-0.09	-0.13	-0.05	-0.14	0.01	-0.06	-0.01
(5) QUICK	-0.22	-0.17	-0.23	0.29		-0.37	0.09	0.16	-0.14	-0.01	-0.10	-0.01	-0.08	-0.10	-0.06	-0.22	-0.06	-0.02	0.02
(6) DE	0.21	0.19	0.20	-0.34	-0.20		-0.02	-0.14	0.06	0.02	0.00	-0.05	0.14	0.16	0.08	0.21	0.03	0.11	0.01
(7) ROI	0.16	0.26	0.20	0.00	-0.03	-0.30		0.18	-0.30	-0.01	-0.65	-0.09	0.06	0.04	0.05	0.05	0.01	0.05	0.03
(8) FOREIGN	0.16	0.18	0.19	0.27	0.04	-0.18	0.13		-0.09	-0.03	-0.07	-0.04	0.13	0.09	0.04	0.06	0.04	0.02	0.05
(9) OPINION	-0.09	-0.18	-0.09	0.00	-0.07	0.18	-0.37	-0.09		-0.04	0.34	0.06	-0.13	-0.11	-0.06	-0.01	-0.03	-0.03	0.02
(10) FYDEC	-0.01	0.00	0.01	-0.07	-0.03	0.04	-0.02	-0.04	-0.04		0.00	-0.04	0.03	0.03	-0.04	-0.04	0.03	-0.07	-0.12
(11) LOSS	-0.14	-0.23	-0.18	-0.01	0.03	0.08	-0.52	-0.08	0.34	0.00		0.09	-0.05	-0.05	-0.05	-0.06	0.01	-0.09	-0.01
(12) AF_SWITCH	-0.11	-0.09	-0.08	0.02	0.01	-0.02	-0.06	-0.04	0.06	-0.04	0.09		-0.02	-0.04	-0.02	0.00	0.01	0.00	0.01
(13) AF_LSIZE	0.38	0.40	0.28	-0.08	0.01	0.03	0.07	0.16	-0.13	0.02	-0.04	-0.02		0.67	0.43	0.35	0.02	-0.09	-0.06
(14) AO_LSIZE	0.40	0.39	0.30	-0.11	-0.05	0.06	0.08	0.09	-0.10	0.02	-0.05	-0.04	0.73		0.34	0.28	0.05	-0.10	-0.11
(15) AF_IE	0.30	0.24	0.17	-0.04	-0.04	0.05	0.04	0.06	-0.06	-0.04	-0.05	-0.02	0.39	0.32		0.31	0.04	0.01	0.04
(16) AO_IE	0.44	0.40	0.38	-0.14	-0.14	0.18	0.05	0.06	-0.01	-0.04	-0.06	0.00	0.33	0.27	0.31		0.06	0.07	0.05
(17) AEP_PHD	0.11	0.10	0.08	0.01	0.00	0.00	0.02	0.05	-0.03	0.03	0.01	0.01	0.01	0.05	0.04	0.06		0.06	0.01
(18) AEP_EXP	0.17	0.17	0.17	-0.07	-0.04	0.06	0.06	0.02	-0.04	-0.08	-0.10	-0.01	-0.15	-0.09	0.03	0.10	0.03		0.24
(19) AEP_IE	0.01	-0.03	0.04	0.00	0.03	0.01	-0.02	0.06	0.02	-0.12	-0.01	0.01	-0.05	-0.09	0.04	0.05	0.01	0.21	

The table shows the Spearman (upper triangle) and Pearson (lower triangle) correlations

LAF: natural log of audit fees in TEuro.

LTA : natural log of total assets in Mio Euro; LSUB: natural log of number of subsidiaries; CATA: ratio of current assets to total assets; QUICK: ratio of current assets (less inventories) to current liabilities; DE: ratio of long-term debt total assets; ROI: ratio of earnings before interest and tax to total assets; FOREIGN: ratio of foreign subsidiaries and total subsidiaries; OPINION: indicator variable, 1: modified, qualified or adverse opinion; FYDEC: indicator variable, 1: Dec. 31 year end; LOSS: indicator variable, 1: negative income before extraordinary items; AF_SWITCH: indicator variable, 1: audit firm switch.

AF_LSIZE (AO_LSIZE): natural log of the number of CPAs in the AF (AO); AF_IE (AO_IE): AF (AO) has the largest annual national (city) market share in the industry and its annual market share is at least 10 percentage-points greater than its closest competitor.

AEP_PHD: AEP holds a Ph.D. title; AEP_EXP: number of years of experience of AEP since CPA appointment; AEP_IE: AEP has previously audited at least one sample firm in prior years that is in the same industry as the current client.

Table 7: Main effects of AEP reputation for expertise (full and industry experience sample)

	Expected Sign	ALL			BIG4		
		(I)	(II)	(III)	(IV)	(V)	(VI)
		Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats
<i>Control variables</i>							
Intercept		2.172*** (8.48)	2.298*** (8.94)	2.586*** (8.32)	1.502** (2.07)	2.186*** (2.95)	3.217*** (3.16)
LTA	+	0.396*** (17.41)	0.392*** (17.78)	0.395*** (14.55)	0.368*** (13.24)	0.368*** (13.60)	0.364*** (11.49)
LSUB	+	0.251*** (6.70)	0.245*** (6.66)	0.214*** (5.16)	0.345*** (8.47)	0.339*** (8.52)	0.297*** (7.30)
CATA	+	0.198* (1.87)	0.194* (1.85)	-0.030 (-0.24)	0.275* (1.79)	0.298** (1.98)	0.108 (0.60)
QUICK	-	-0.040*** (-6.01)	-0.039*** (-5.73)	-0.034*** (-5.54)	-0.042*** (-4.32)	-0.041*** (-4.07)	-0.036*** (-3.85)
DE	+	0.045 (0.53)	0.033 (0.40)	-0.101 (-0.52)	0.076 (0.32)	0.062 (0.27)	0.070 (0.20)
ROI	-	-0.303*** (-2.64)	-0.289*** (-2.68)	-0.177 (-1.13)	-0.379** (-2.09)	-0.371** (-2.19)	-0.410 (-1.63)
FOREIGN	+	-0.081 (-0.98)	-0.079 (-0.98)	-0.034 (-0.38)	-0.195 (-1.62)	-0.195 (-1.62)	-0.138 (-0.96)
OPINION	+	0.098* (1.82)	0.096* (1.75)	0.136** (2.39)	0.072 (0.70)	0.075 (0.73)	0.075 (0.87)
FYDEC	+	-0.060 (-0.91)	-0.042 (-0.66)	-0.028 (-0.38)	-0.042 (-0.40)	0.001 (0.01)	-0.044 (-0.41)
LOSS	+	0.096*** (4.26)	0.097*** (4.27)	0.127*** (5.05)	0.100*** (3.20)	0.101*** (3.43)	0.117*** (3.05)
AF_SWITCH	-	-0.153*** (-3.06)	-0.152*** (-2.99)	-0.146** (-2.22)	-0.164*** (-2.74)	-0.171*** (-2.87)	-0.118*** (-3.56)
AF_LSIZE	?	0.018 (1.31)	0.009 (0.63)	-0.030 (-1.16)	0.109 (1.04)	0.014 (0.13)	-0.145 (-1.01)
AO_LSIZE	+	0.044*** (2.70)	0.034** (2.07)	0.062** (2.52)	0.033 (1.64)	0.019 (0.95)	0.072** (2.33)
AF_IE	+		0.180*** (2.98)	0.220*** (3.21)		0.163*** (2.84)	0.217*** (3.44)
AO_IE	+		0.109*** (2.76)	0.174*** (3.87)		0.059 (1.17)	0.134** (2.45)

(Table continuous on next page)

Table 7: Main effects of AEP reputation for expertise (full and industry experience sample)

	Expected Sign	ALL			BIG4		
		(I) Coef./t-stats	(II) Coef./t-stats	(III) Coef./t-stats	(IV) Coef./t-stats	(V) Coef./t-stats	(VI) Coef./t-stats
<i>Test variables</i>							
AEP_PHD	+	0.136** (1.97)	0.125* (1.88)	0.072 (0.87)	0.164* (1.68)	0.143 (1.45)	0.142 (1.14)
AEP_EXP	+	0.007** (2.45)	0.006** (2.20)	0.005 (1.35)	0.008* (1.75)	0.006 (1.33)	0.002 (0.50)
AEP_IE	+		0.042 (0.89)	0.062 (1.32)		0.164** (2.14)	0.183** (2.43)
Adj. R ²		0.819	0.823	0.821	0.830	0.834	0.824
N		1865	1865	1279	1090	1090	765

(Table continued from previous page)

All models include industry as fixed effects; robust standard errors are clustered two-dimensional by company and fiscal year.

LAF: natural log of audit fees in TEuro.

LTA : natural log of total assets in Mio Euro; LSUB: natural log of number of subsidiaries; CATA: ratio of current assets to total assets; QUICK: ratio of current assets (less inventories) to current liabilities; DE: ratio of long-term debt total assets; ROI: ratio of earnings before interest and tax to total assets; FOREIGN: ratio of foreign subsidiaries and total subsidiaries; OPINION: indicator variable, 1: modified, qualified or adverse opinion; FYDEC: indicator variable, 1: Dec. 31 year end; LOSS: indicator variable, 1: negative income before extraordinary items; AF_SWITCH: indicator variable, 1: audit firm switch.

AF_LSIZE (AO_LSIZE): natural log of the number of CPAs in the AF (AO); AF_IE (AO_IE): AF (AO) has the largest annual national (city) market share in the industry and its annual market share is at least 10 percentage-points greater than its closest competitor.

AEP_PHD: AEP holds a Ph.D. title; AEP_EXP: number of years of experience of AEP since CPA appointment; AEP_IE: AEP has previously audited at least one sample firm in prior years that is in the same industry as the current client.

* p<0.1, ** p<0.05, *** p<0.01.

Table 8: Interactive effects of AEP reputation for expertise

	Expected Sign	ALL					BIG4				
		Total (I)	AEP GE		AEP IE		Total (VI)	AEP GE		AEP IE	
			Low (II)	High (III)	No (IV)	Yes (V)		Low (VII)	High (VIII)	No (IX)	Yes (X)
<i>Control variables</i>											
Intercept		2.619*** (8.43)	2.820*** (5.23)	2.326*** (8.27)	2.878*** (8.93)	1.835*** (4.84)	3.126*** (3.40)	3.156*** (2.76)	3.324** (2.10)	4.163*** (3.63)	-2.505** (-2.36)
LTA	+	0.398*** (14.54)	0.363*** (12.31)	0.413*** (10.29)	0.374*** (13.56)	0.409*** (7.01)	0.370*** (11.87)	0.330*** (10.00)	0.401*** (8.12)	0.333*** (10.98)	0.485*** (4.01)
LSUB	+	0.208*** (5.07)	0.193*** (3.62)	0.218*** (4.01)	0.199*** (4.50)	0.355*** (4.29)	0.285*** (7.19)	0.238*** (4.61)	0.284*** (4.53)	0.281*** (6.67)	0.317** (2.29)
CATA	+	-0.013 (-0.10)	0.068 (0.49)	-0.165 (-0.80)	-0.009 (-0.08)	0.223 (0.81)	0.198 (1.06)	0.272 (1.58)	-0.118 (-0.35)	0.087 (0.51)	0.008 (0.04)
QUICK	-	-0.034*** (-5.88)	-0.035*** (-4.25)	-0.031* (-1.79)	-0.036*** (-4.95)	-0.003 (-0.21)	-0.036*** (-4.07)	-0.034*** (-3.50)	-0.045*** (-3.50)	-0.033*** (-3.39)	0.012 (0.82)
DE	+	-0.093 (-0.48)	0.132 (0.66)	-0.262 (-1.05)	0.007 (0.04)	-0.205 (-0.56)	0.129 (0.37)	0.387 (0.97)	-0.195 (-0.40)	0.159 (0.43)	-0.459 (-1.58)
ROI	-	-0.175 (-1.12)	-0.256 (-1.47)	-0.046 (-0.25)	-0.157 (-1.12)	0.198 (0.45)	-0.418 (-1.56)	-0.466 (-1.47)	-0.423 (-1.12)	-0.393 (-1.45)	-0.215 (-0.28)
FOREIGN	+	-0.024 (-0.27)	-0.076 (-0.44)	-0.037 (-0.24)	-0.001 (-0.01)	-0.300 (-1.45)	-0.139 (-0.98)	-0.082 (-0.30)	-0.217 (-0.97)	-0.108 (-0.70)	-0.173 (-0.74)
OPINION	+	0.133** (2.21)	0.151* (1.96)	0.075 (1.07)	0.159*** (2.61)	0.162 (1.45)	0.072 (0.83)	0.123 (1.37)	-0.124 (-0.77)	0.089 (1.12)	-0.074 (-0.23)
FYDEC	+	-0.034 (-0.47)	-0.092 (-0.93)	0.009 (0.09)	-0.059 (-0.72)	0.036 (0.31)	-0.059 (-0.58)	-0.106 (-0.82)	-0.013 (-0.09)	-0.125 (-1.07)	0.285** (2.24)
LOSS	+	0.126*** (5.05)	0.122*** (3.02)	0.123*** (3.25)	0.106*** (3.69)	0.270*** (2.89)	0.111*** (2.67)	0.131** (2.47)	0.085 (1.27)	0.086* (1.87)	0.260 (1.48)
AF_SWITCH	-	-0.148** (-2.31)	-0.176** (-2.57)	-0.138* (-1.70)	-0.144* (-1.78)	-0.156* (-1.95)	-0.130*** (-7.61)	-0.108 (-1.62)	-0.143 (-1.64)	-0.121** (-2.24)	-0.258*** (-2.66)
AF_LSIZE	?	-0.030 (-1.17)	-0.003 (-0.11)	-0.069 (-1.64)	-0.018 (-0.66)	-0.080*** (-2.69)	-0.137 (-1.01)	-0.048 (-0.28)	-0.239 (-1.23)	-0.196 (-1.34)	0.528*** (3.00)
AO_LSIZE	+	0.060** (2.52)	0.044 (1.44)	0.092*** (2.79)	0.062** (2.38)	0.087* (1.70)	0.070** (2.38)	0.096** (2.55)	0.103** (2.45)	0.065** (2.19)	0.213*** (2.85)
AF_IE	+	0.215*** (3.28)	0.143** (2.18)	0.263*** (2.67)	0.134 (1.58)	0.319** (2.06)	0.203*** (3.34)	0.127* (1.95)	0.233** (2.41)	0.163** (2.36)	0.142 (0.77)
AO_IE	+	0.165*** (3.80)	0.102* (1.87)	0.246*** (3.47)	0.150*** (3.09)	0.278*** (3.36)	0.115** (2.13)	0.070 (0.81)	0.181** (2.20)	0.133** (2.12)	0.152* (1.82)

(Table continuous on next page)

Table 8: Interactive effects of AEP reputation for expertise

	Expected Sign	ALL					BIG4				
		Total	AEP GE		AEP IE		Total	AEP GE		AEP IE	
		(I)	Low (II)	High (III)	No (IV)	Yes (V)	(VI)	Low (VII)	High (VIII)	No (IX)	Yes (X)
		Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats	Coef./t-stats
<i>Test variables</i>											
AEP_PHD		0.121 (1.46)	0.038 (0.31)	0.116 (1.32)	0.155* (1.86)	-0.076 (-0.47)	0.155 (1.46)	-0.004 (-0.03)	0.300** (2.07)	0.227** (2.04)	0.134 (1.19)
AEP_EXP		-0.001 (-0.19)			0.002 (0.76)	-0.003 (-0.34)	-0.008* (-1.75)			-0.002 (-0.53)	0.020** (2.25)
AEP_IE		0.040 (1.07)	0.050 (1.07)	0.091 (1.46)			0.058 (1.10)	-0.017 (-0.21)	0.292** (2.52)		
AEP_PHD * AP_EXP	+	0.020* (1.67)					0.032** (2.04)				
AEP_PHD * AP_IE	-	-0.205* (-1.81)					0.093 (0.44)				
AEP_EXP * AP_IE	+	0.022** (2.07)					0.057*** (4.68)				
Adj. R ²		0.823	0.749	0.852	0.799	0.925	0.832	0.745	0.854	0.791	0.967
N		1279	619	660	1053	226	765	392	373	656	109

All models include industry as fixed effects; robust standard errors are clustered two-dimensional by company and fiscal year.

LAF: natural log of audit fees in TEuro.

LTA : natural log of total assets in Mio Euro; LSUB: natural log of number of subsidiaries; CATA: ratio of current assets to total assets; QUICK: ratio of current assets (less inventories) to current liabilities; DE: ratio of long-term debt total assets; ROI: ratio of earnings before interest and tax to total assets; FOREIGN: ratio of foreign subsidiaries and total subsidiaries; OPINION: indicator variable, 1: modified, qualified or adverse opinion; FYDEC: indicator variable, 1: Dec. 31 year end; LOSS: indicator variable, 1: negative income before extraordinary items; AF_SWITCH: indicator variable, 1: audit firm switch.

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* p<0.1, ** p<0.05, *** p<0.01.