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Original Article

Auditor Expertise in Initial Goodwill Recognition and Subsequent Impairment Outcomes

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Abstract

This study examines whether auditors' task-specific expertise acquired during the initial recognition and valuation of goodwill influences clients' subsequent goodwill accounting. Given the complexity of goodwill valuation, the high degree of managerial discretion involved, and the potential for auditor bias, we hypothesize that auditors-in-charge who serve during a client's acquisition year and thereby acquire client-specific expertise affect the timeliness and magnitude of subsequent goodwill impairments during their remaining tenure. Using data on Swedish auditors and their publicly-listed clients, we find that both the likelihood and magnitude of goodwill impairments increase with the client-level task-specific expertise of the auditor-in-charge. In contrast, evidence for portfolio-level or audit firm-level expertise is weaker and less consistent. However, portfolio-level and audit firm-level expertise are more relevant in homogeneous industries, within the largest audit firm, and among auditors with pre-IFRS regulatory experience. Overall, our findings suggest that audit quality in goodwill accounting is primarily driven by client-level skill acquisition of the individual auditor, whereas the transferability of task-specific knowledge across engagements depends on the industry structure, audit firm scale, and auditors' regulatory training.

Keywords

auditor expertise, goodwill accounting, impairments, individual auditors, task-specific expertise

Introduction

The auditing literature has long established that auditor expertise is an important determinant of audit outcomes. Although early research primarily focused on industry specialization, more recent studies examine how task-specific expertise in particular accounting domains that often

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transcend industry boundaries affects audit outcomes, including fair value accounting, multinational accounting, and taxation (e.g., Ahn et al., 2020; Christensen et al., 2015; Goldman et al., 2022; Gunn & Michas, 2018; Stein, 2019). A related and emerging strand of the literature investigates event-specific specialization, such as auditors' expertise in mergers and acquisitions, and how this expertise influences clients' accounting for acquisition-related transactions (Gal-Or et al., 2022; Mao & Yin, 2017). Across these settings, prior studies consistently find that aggregated expertise at the audit office or audit firm level is associated with beneficial audit outcomes. Reflecting this emphasis, the Public Company Accounting Oversight Board (PCAOB) in the United States (US) encourages audit clients to consider auditor expertise by asking, for example, "Does your auditor have the expertise necessary to address the audit issues that may arise from the reporting requirements related to business combinations as well as other effects of a business combination…?" (PCAOB, 2015b). Notably, however, the PCAOB does not specify whether this expertise should be assessed at the level of the individual auditor responsible for the engagement or at the level of the audit firm or office. Despite the growing interest in task-specific and event-specific specialization, audit research to date provides limited evidence on whether and how the expertise of individual auditors with complex accounting items or events translates into audit outcomes (Amel-Zadeh et al., 2023).

In this study, we investigate whether auditors' task-specific expertise influences clients' financial reporting outcomes. Specifically, we examine whether auditors-in-charge who serve during a client's acquisition year, thereby acquiring client-level expertise, influence the timeliness of subsequent goodwill impairments during their remaining tenure.[1] We also examine the effects of portfolio-level expertise of auditors-in-charge and the expertise of audit firms. Because the initial recognition and valuation of goodwill involve unverifiable assumptions and substantial audit effort, auditors who participate in acquisition-date discussions may be better positioned to evaluate subsequent goodwill valuations. At the same time, their prior involvement may shape later impairment assessments, analogous to evidence that managers responsible for acquisitions are more likely to delay subsequent goodwill impairments (Beatty & Weber, 2006; Ramanna & Watts, 2012). Although auditors do not share managers' bonus-related incentives, they may nonetheless face reputational concerns or dismissal risks associated with the recognition of goodwill impairments (Ayres, Neal, et al., 2019).

We use data on Swedish auditors and their publicly listed clients from 2005 through 2019. The Swedish setting is particularly well suited for these analyses because auditors-in-charge sign audit reports with their names and affiliations both before and after the adoption of International Financial Reporting Standards (IFRS) in 2005. This feature enables us to track individual auditors over time and examine how they develop task-specific expertise at both the client and portfolio level. To capture client-level expertise, we measure the cumulative amount of goodwill recognized during an auditor's tenure with a given client, scaled by the client's reported goodwill balance. For clients with goodwill, this measure equals zero if the auditor was not responsible at the time of the initial recognition. The measure increases with expertise and equals one if the auditor is in charge for all of the client's acquisition-related activities. We also capture task-specific expertise at the portfolio level based on an auditor's cumulative involvement in the initial recognition of goodwill across all other clients. These measures are constructed separately for auditors-in-charge and for audit firms. This design allows us to decompose task-specific expertise into two components that capture skill acquisition at the individual auditor level as well as knowledge dissemination across clients and within audit firms.

Our main results show that client-level task-specific expertise of the auditor-in-charge is positively associated with both the likelihood and the magnitude of goodwill impairments.

When restricting the sample to impairment-years, we also find that portfolio-level task-specific expertise of the auditor-in-charge and client-level task-specific expertise of the audit firm are positively associated with the magnitude of goodwill impairments. As such, we find broad evidence of skill acquisition at the individual auditor level, and some support for the view that client-level expertise acquired by an auditor-in-charge can be transferred to other clients. In addition, we find limited evidence of knowledge transfer within the audit firm influencing other clients' subsequent goodwill accounting. Cross-sectional analyses further indicate that the knowledge-sharing effect is stronger in more homogeneous industries. We also find that knowledge sharing within the audit firm is most pronounced in the largest audit firm, and that auditors who began their careers before IFRS adoption rely more on audit firm-level and portfolio-level knowledge. Collectively, these results indicate that, although client-level expertise of the auditor-in-charge is the dominant driver of goodwill impairments in our setting, the extent to which task-specific knowledge is transferred across clients and within audit firms depends on industry context, audit firm size, and the auditor's regulatory training background.

Our study makes several contributions to the accounting literature. First, we contribute to the growing literature on task-specific expertise in auditing by examining whether expertise in a complex accounting domain that transcends industries is primarily client-specific or is transferable across clients at the portfolio level. Recent studies document that auditors can develop expertise in domain-specific or event-specific accounting issues, such as fair value accounting, taxation, or mergers and acquisitions, and that this expertise is distinct from industry specialization (e.g., Ahn et al., 2020; Gal-Or et al., 2022; Goldman et al., 2022). Prior evidence generally suggests that this expertise is transferable across clients through knowledge sharing across client portfolios within the audit firm or audit office. We add to the literature by showing that goodwill impairment outcomes in the Swedish setting are primarily driven by the task-specific client-level expertise of the auditor-in-charge.

Second, we contribute to the literature examining whether audit quality is primarily driven by individual auditors or by collective expertise and knowledge spillovers within an audit firm. Much of the prior auditing literature measures expertise at the audit firm or office level and emphasizes the role of aggregated experience and organizational learning in improving audit outcomes (e.g., Shepardson, 2019). In contrast, more recent evidence highlights the importance of individual-level experience in enhancing monitoring effectiveness (e.g., Myers et al., 2023). Our results show that the individual auditor-in-charge is the dominant driver of audit quality in goodwill accounting, even after controlling for audit committee expertise. At the same time, consistent with Shepardson (2019), we find that collective expertise at the audit firm and portfolio level can matter in settings that facilitate knowledge sharing, such as larger audit firms and more homogeneous industries. Thus, we extend the literature by reconciling firm-level and individual-level perspectives, showing that audit firm expertise improves audit quality primarily through the expertise of individual auditors, with knowledge spillovers arising under specific organizational and institutional conditions.

Finally, we contribute to the literature on external monitoring of goodwill-related reporting decisions by highlighting the role of auditors. Prior studies show that institutional investors (Glaum et al., 2018), analysts (Ayres, Campbell, et al., 2019), and independent valuation experts (Gietzmann & Wang, 2020) can constrain managerial discretion in goodwill accounting, and analyst pressure may also induce opportunistic impairment behavior (Han et al., 2021). We show that incumbent auditors-in-charge with greater client-level involvement in the initial recognition of goodwill play a central role in mitigating managerial misuse of discretion in subsequent impairment decisions. Clients with auditors who possess greater client-specific goodwill expertise impair goodwill more frequently and in a timelier manner, underscoring the importance of auditor continuity and task-specific expertise in complex accounting judgments.

Setting and Hypotheses

The Swedish Institutional Setting and Goodwill Accounting

Our study focuses on Swedish firms listed on Nasdaq Stockholm from 2005 through 2019. A key advantage of this setting is that audit reports are personally signed by the auditor-in-charge, which allows us to track individual auditors and their goodwill-related expertise at both the client and portfolio level over an extended period, beginning with the adoption of the impairment-only approach. Although much of the audit work may be delegated, the auditor-in-charge retains full responsibility and legal liability for the engagement. In Sweden, both the auditor-in-charge and the audit firm are formally appointed at the client's Annual General Meeting, and most engagements are conducted by Big 4 audit firms. In addition, signing auditors are not necessarily partners (Sundgren & Svanström, 2014). Another distinctive feature of the Swedish audit market is that clients may, but are not required to, appoint two separate audit firms and two separate signing auditors. However, the prevalence of joint audits has declined over time. Finally, most publicly-listed firms have their headquarters in the Stockholm area, where the Big 4 maintain central offices that provide specialized support to local offices across the country.

In 2005, the European Union mandated the use of IFRS for all publicly-listed firms domiciled in its member countries.[2] As a consequence, listed firms in Sweden were required, in accordance with IFRS 3 and International Accounting Standard 36, to apply the acquisition method to business combinations and to annually test recognized goodwill for impairment. The process of identifying, recognizing, and subsequently testing goodwill for impairment relies heavily on managerial judgment, particularly with respect to valuation assumptions. Although standard setters' intention in allowing for managerial judgment was to make goodwill accounting more uniform and informative (Sundvik, 2019), inspections in the US by the PCAOB (2015a) indicate that auditors struggle with determining its fair economic value at the acquisition date. Specifically, auditors are required to evaluate the reasonableness of management's assumptions underlying goodwill valuations both at initial recognition and in subsequent impairment tests. Prior literature documents that goodwill valuations frequently reflect factors beyond underlying economic fundamentals, suggesting the presence of bias. For example, Shalev et al. (2013) finds that managers misuse discretionary judgment when recognizing goodwill following mergers and acquisitions to inflate goodwill balances, potentially enhancing future earnings and managerial compensation. Bartov et al. (2021) shows that the introduction of the impairment-only approach led to overbidding in mergers and acquisitions and inflated goodwill balances. However, using a sample of firms reporting non-GAAP (Generally Accepted Accounting Principles) earnings, Ashby et al. (2024) finds that firms excluding amortization from non-GAAP earnings recognize more of the purchase price as definite-lived intangible assets and less as goodwill. Other studies provide evidence that managers exercise discretion in goodwill impairment decisions for reasons unrelated to underlying economics (e.g., Glaum et al., 2018; Li & Sloan, 2017; Ramanna & Watts, 2012).

Development of Hypotheses

Audit verification relies on complex and subjective judgments that require auditors to assess both technical compliance with accounting standards and whether reported figures reflect a client's underlying economics (DeFond & Zhang, 2014; Nelson & Tan, 2005). A large body of archival research documents that auditors' industry specialization improves audit quality (e.g., Balsam et al., 2003; Bratten et al., 2020; Krishnan, 2003; Reichelt & Wang, 2010). However, because the

complexity of accounting standards increasingly transcends industry boundaries, expertise in specific accounting domains may also play an important role in improving audit quality.

Although the literature on task-specific expertise beyond industry specialization remains relatively sparse, prior studies show that auditors exert substantial influence over clients' accounting choices in domains aligned with their expertise, including taxation (Christensen et al., 2015; Goldman et al., 2022), research and development (Godfrey & Hamilton, 2005), mergers and acquisitions (Gal-Or et al., 2022), and reverse mergers (Mao & Yin, 2017). Ahn et al. (2020) further demonstrates that auditors' task-specific expertise related to fair value measurement is associated with higher audit quality. Collectively, these studies suggest that expertise in complex accounting domains may improve audit outcomes even when this expertise is not industry-specific.

Although much of the prior literature measures expertise at the audit firm or office level, several studies argue that the incentives, competencies, and judgments of the auditor-in-charge play a critical role in determining audit outcomes (e.g., Aobdia et al., 2015; Carcello & Li, 2013; DeFond & Francis, 2005; Reynolds & Francis, 2000). Although audit work is typically performed by teams, task-specific learning tends to be more pronounced among higher-ranked auditors (Bonner, 1990; Causholli, 2016). This is particularly relevant for goodwill accounting, which is highly material, judgment-intensive, and closely scrutinized at senior levels of the audit. The auditor-in-charge is responsible for planning the audit, interacting with client management, reviewing teamwork, and resolving complex accounting issues in coordination with a review partner (Emby & Favere-Marchesi, 2010). Given the complexity of goodwill valuation, the auditor-in-charge is likely to be directly involved in acquisition-date discussions and in evaluating management's assumptions regarding goodwill recognition and valuation. This direct involvement is most pronounced at the time of the acquisition, suggesting that client-specific expertise regarding goodwill is primarily accumulated by the auditor-in-charge rather than by junior team members. Despite extensive evidence that auditor expertise affects audit outcomes, limited research examines how individual auditors' task-specific expertise influences the audit of complex accounting items such as goodwill. Goodwill valuation involves substantial discretion and estimates that are difficult to verify efficiently (Griffith et al., 2015), suggesting that the expertise of the auditor-in-charge may be particularly important in constraining biased reporting and ensuring that impairments reflect underlying economic conditions.

At the same time, competing arguments exist. Although skilled auditors have incentives to deliver high-quality audits to protect their reputation and avoid penalties (Knechel et al., 2013), behavioral biases and independence concerns may reduce auditors' willingness to challenge goodwill valuations they were involved in initially recognizing. This concern is particularly salient given evidence that goodwill impairments are associated with an increased risk of auditor dismissal (Ayres, Neal, et al., 2019). Reflecting these concerns, the PCAOB has argued that mandatory auditor rotation may improve independence and audit quality, whereas the audit profession has emphasized the importance of client-specific knowledge and the potential costs of rotation (e.g., Rapoport, 2012). Consistent with these opposing views, the literature documents mixed evidence on the association between auditor tenure and audit quality where some studies find that client-level expertise, often proxied by tenure, improves audit quality (Chen et al., 2008; Chi et al., 2017; Gul et al., 2009; Myers et al., 2003), but others report lower audit quality (Carey & Simnett, 2006; Hamilton et al., 2005).

Furthermore, independence issues have been highlighted in the context of auditing goodwill. Carcello et al. (2020) shows that higher non-audit fees are associated with a lower likelihood of goodwill impairments. Lobo et al. (2017) finds that, in the French joint-audit setting, clients combining two Big 4 audit firms are less likely to impair goodwill and report smaller impairments than clients combining Big 4 and non-Big 4 auditors. Experimental evidence further suggests that auditors are more likely to accept a client's decision not to impair goodwill when the

Chief Financial Officer (CFO) has prior Big 4 audit experience (Favere-Marchesi & Emby, 2018). In a related vein, Beatty and Weber (2006) shows that managers responsible for the original acquisition are less likely to impair goodwill, presumably to avoid signaling a failed acquisition. Analogously, auditors-in-charge may be reluctant to require impairments that would signal that they had previously accepted inflated goodwill valuations. Although auditors do not share managers' compensation incentives, impairment decisions may still expose them to reputational costs and the risk of losing goodwill-intensive clients (Beatty & Weber, 2006; Ramanna & Watts, 2012). Accordingly, greater involvement in the initial recognition of goodwill could reduce auditors' willingness to require subsequent impairments, potentially lowering audit quality.

Taken together, these arguments yield conflicting predictions regarding the effect of auditor-in-charge client-level goodwill expertise on subsequent impairment outcomes. Skill acquisition and professional incentives suggest that greater expertise should lead to more timely and larger impairments when economically motivated, whereas behavioral biases and independence concerns suggest the opposite. Because we are unable to establish a clear directional expectation, we formulate our first hypothesis in null form as follows:

H1: Auditor-in-charge client-level goodwill expertise is not associated with a client's subsequent goodwill impairments.

Although H1 focuses on skill acquisition in the form of task-specific expertise through first-hand experience at the focal client, expertise may also develop and operate through broader learning and knowledge-sharing mechanisms. For individuals or groups to acquire expertise, learning can occur either through direct experience or through the transfer of others' experiences via formalized channels or informal spillovers within the organization. Research in cognitive psychology emphasizes the role of analogical reasoning in this process, whereby individuals organize prior experiences, recognize similarities between past and current decision environments, and evaluate current alternatives by applying accumulated knowledge (McDonald et al., 2008; Sternberg, 1977).

Consistent with this perspective, Shepardson (2019) shows that audit committee members' prior first-hand experience with goodwill impairments increases the likelihood of future impairments, suggesting that expertise in goodwill accounting can be abstracted into decision schemes that are applicable beyond a single firm or engagement. This evidence indicates that individuals with task-specific experience may disseminate abstract knowledge related to goodwill accounting and impairment testing to new contexts. At the same time, evidence from Myers et al. (2023) suggests that client-specific experience of individual monitors remains particularly important, because after controlling for general expertise, internally recruited audit committee chairs exhibit more effective monitoring than externally recruited chairs. Taken together, these studies suggest that although task-specific knowledge can be transferable, its effectiveness may depend on the nature of the expertise and the context in which it is applied.

As such, it remains unclear whether task-specific goodwill expertise acquired by an auditor-in-charge is primarily client-specific or whether it can be transferred to other clients through the auditor's portfolio or disseminated more broadly within the audit firm. Prior audit research provides mixed evidence. Some studies suggest that expertise is uniquely held by individual partners and cannot be uniformly distributed across offices or clients (Chi & Chin, 2011; Chin & Chi, 2009), implying limited spillovers. In contrast, other studies document that audit expertise developed at the firm or office level improves audit outcomes, indicating that audit firms can facilitate effective knowledge sharing across engagements and ranks (Ahn et al., 2020; Hux et al., 2023).

The efficiency of knowledge transfer may depend on whether the underlying expertise is primarily explicit or tacit. Explicit knowledge can be codified and disseminated through

documentation and training, whereas tacit knowledge is embedded in personal experience and is more difficult to transfer across individuals and engagements (Duh et al., 2020; Huang et al., 2023). Given the judgment-intensive and context-specific nature of goodwill valuation, task-specific goodwill expertise is likely to contain a substantial tacit component, potentially limiting its transferability across clients or within audit firms.

Because prior literature provides conflicting evidence regarding the extent to which task-specific audit expertise can be disseminated beyond the focal engagement, and because the complexity of goodwill accounting may constrain the transfer of tacit knowledge, we refrain from making directional predictions. Accordingly, we formulate the following hypotheses for the auditor-in-charge as well as the audit firm in the null form:

H2a: Auditor-in-charge portfolio-level goodwill expertise is not associated with a client's subsequent goodwill impairments.

H2b: Audit firm client- and portfolio-level goodwill expertise is not associated with a client's subsequent goodwill impairments.

Research Design

Measuring Task-specific Expertise at the Client and Portfolio Levels

To capture task-specific expertise of auditors, we introduce four variables representing expertise at different levels, where higher values indicate higher expertise. First, we test H1 with *TSE_CL_AIC* (task-specific expertise at the client level of the auditor-in-charge). This variable is defined as the cumulative amount of goodwill recognized by the focal client during the auditor-in-charge's tenure (τ), scaled by the client's reported goodwill balance in year t. Accordingly, *TSE_CL_AIC* ranges from zero to one.[3] A value of one indicates that the entire reported goodwill balance was initially recognized under the tenure of the current auditor-in-charge, whereas a value of zero indicates that none of the reported goodwill was recognized during that tenure. We express the variable in equation (1) as follows

$$TSE_CL_AIC_{i,t} = \frac{\sum_{\tau=t_0}^{t} Recognized\ goodwill_{i,\tau}}{Reported\ goodwill\ balance_{i,t}} \tag{1}$$

where t_0 is the first year of the auditor-in-charge's tenure at client i, and t is the focal year of measurement.

To capture portfolio-level expertise and examine H2a, we construct *TSE_PL_AIC* (task-specific expertise at the portfolio level of the auditor-in-charge), defined as the cumulative amount of goodwill recognized across all other clients (j) of the auditor-in-charge during their respective tenures, excluding the focal client i. We scale this cumulative amount by the total reported goodwill balances of those same clients in year t.[4] Accordingly, *TSE_PL_AIC* reflects the extent to which the auditor-in-charge has accumulated task-specific expertise from engagements with other clients. Higher values indicate greater exposure to goodwill recognition at the portfolio level, independent of the focal client. We express the variable in equation (2) as follows

$$TSE_PL_AIC_{i,t} = \frac{\sum_{j\neq i}\sum_{\tau=t_0}^{t} Recognized\ goodwill_{j,\tau}^{AIC}}{\sum_{j\neq i} Reported\ goodwill\ balance_{j,t}^{AIC}} \tag{2}$$

For audit firms, we test H2b using two measures constructed in direct analogy to the auditor-in-charge measures in equations (1) and (2). First, *TSE_CL_AF* is defined as the cumulative amount of goodwill recognized by the focal client during the tenure of its current audit firm, scaled by the client's reported goodwill balance in year *t*. This measure captures the extent to which the focal client's goodwill was recognized while being audited by the same firm, irrespective of which individual auditor-in-charge signed the engagement. Similarly, *TSE_PL_AF* mirrors the portfolio-level measure for the auditor-in-charge presented in equation (2). It is defined as the cumulative amount of goodwill recognized across all other clients of the audit firm during its respective tenures with those clients (excluding the focal client), scaled by the total reported goodwill balances of those clients in year *t*. Accordingly, *TSE_PL_AF* reflects the degree of task-specific expertise accumulated at the portfolio level by the audit firm. The construction of the task-specific expertise variables, especially *TSE_PL_AF*, follow the logic of the fair value expertise measures in Ahn et al. (2020) where expertise is fair value assets and liabilities under audit within an audit office's portfolio, divided by the fair value assets and liabilities within the office's city-industry market in the US setting.[5]

Appendix A illustrates how the auditor-in-charge variables are constructed during the sample period 2005–2019 for a focal client and its three different auditors-in-charge. In 2005, the first individual (AIC #1) has zero *TSE_CL_AIC* because no goodwill was recognized that year. If the full goodwill balance of the client would have been recognized this year, *TSE_CL_AIC* would be one. In 2006, goodwill is recognized at the client level which generates 0.150 in *TSE_CL_AIC*. For *TSE_PL_AIC*, the measure is still zero because we exclude the focal client and no other clients in the portfolio of the first individual has recognized goodwill. In 2010, the client changes its auditor-in-charge so that *TSE_CL_AIC* starts from zero. However, the new individual (AIC #2) has a broader portfolio which generates 0.219 in *TSE_PL_AIC*. Appendix B illustrates how the variables are constructed during the sample period 2005–2019 for the same focal client as in Appendix A but here the focus is on audit firms. We follow the same logic in the calculations for audit firms as with auditors-in-charge. In year 2010, we note that *TSE_CL_AF* remains at 0.150 for the client-level expertise of the audit firm because the new auditor-in-charge (AIC #2) was affiliated with the same audit firm as the previous auditor-in-charge (AIC #1). If task-specific expertise matters, there will be a difference in the outcomes of impairment tests between higher and lower values of the expertise measures.

Empirical Models and Control Variables

In our main tests, we augment established models predicting both the likelihood and the magnitude of goodwill impairments (e.g., Beatty & Weber, 2006; Ramanna & Watts, 2012) with variables capturing client-level and portfolio-level task-specific expertise. We first estimate the likelihood of goodwill impairment using the following multivariate logistic regression model

$$\text{Prob}(IMPAIR_{\text{i,t}}) = \frac{1}{1+\text{e}^{-\text{Z}}}$$

$$\begin{aligned}\text{where Z} = {} & \alpha_0 + \beta_1 TSE_CL_AIC_{i,t} + \beta_2 TSE_PL_AIC_{i,t} + \beta_3 TSE_CL_AF_{i,t} \\ & + \beta_4 TSE_PL_AF_{i,t} + \boldsymbol{\beta} CONTROLS_{i,t} + \varepsilon_{\text{i,t}}\end{aligned} \tag{3}$$

where *IMPAIR* is a dichotomous variable equal to one if the client records a goodwill impairment in year t, and zero otherwise. To test H1, we focus on the coefficient β_1, where a positive (negative) coefficient indicates a higher (lower) likelihood of goodwill impairment

associated with greater client-level expertise of the auditor-in-charge. Using the same logic, we test H2a by examining β_2, which captures portfolio-level expertise of the auditor-in-charge. The coefficients β_3 and β_4 are used to test H2b, capturing client-level and portfolio-level expertise of the audit firm, respectively.

Using the same set of right-hand-side variables as in equation (3), we estimate the magnitude of goodwill impairments using the following linear regression model

$$IMPAIR\%_{i,t} = \alpha_0 + \beta_1 TSE_CL_AIC_{i,t} + \beta_2 TSE_PL_AIC_{i,t} + \beta_3 TSE_CL_AF_{i,t} + \beta_4 TSE_PL_AF_{i,t} + \boldsymbol{\beta} CONTROLS_{i,t} + \varepsilon_{i,t} \quad (4)$$

where *IMPAIR%* is defined as the amount of goodwill impairment recognized in year t divided by the opening goodwill balance. We test our hypotheses using the corresponding coefficients from equation (3). We estimate this regression with the full sample following prior research (e.g., Carcello et al., 2020) and within the impairment sample (i.e., when *IMPAIR* is equal to one). Based on prior literature, we control for other auditor-in-charge and audit firm characteristics, audit committee characteristics, executive incentives, goodwill flexibility, firm fundamentals, firm performance, and economic factors. As such, we control for tenure of the auditor-in-charge (*TENURE_AIC*) and the audit firm (*TENURE_AF*) following Chen et al. (2008) and Myers et al. (2003). We control for industry specialization by including dummy variables for an industry expert auditor-in-charge (*INDEXP_AIC*) and audit firm (*INDEXP_AF*) based on Chi et al. (2017). We also follow Lobo et al. (2017) by including an indicator for two auditors (*TWO_AIC*) and for a large audit firm (*BIG4*).[6] Furthermore, we follow Carcello et al. (2020) by controlling for the natural logarithm of audit fees (*AUDITFEE*) and nonaudit fees (*NAUDITFEE*). Based on Sundgren and Svanström (2014), we include auditor-in-charge age (*AGE_AIC*) and the receipt of a modified opinion (*MODIFIEDOP*). Following Shepardson (2019), we include variables for the audit committee, including an indicator for whether any audit committee member has experience in goodwill impairment decisions in the previous 3 years at any firm (*TSE_AC*), audit committee size (*SIZE_AC*), and the average tenure of the audit committee (*TENURE_AC*). With an indicator for incoming CEOs (*NEW_CEO*) and CFOs (*NEW_CFO*), we control for executive incentives to use big bath accounting (Beatty & Weber, 2006). We control for the number of business segments (*SEGMENTS*) because a greater number of reporting units is associated with greater goodwill flexibility (Ramanna & Watts, 2012). Furthermore, we follow Beatty and Weber (2006) by controlling for firm fundamentals—specifically, the standard deviation of daily stock returns (*STDRETURN*), debt-to-equity ratio (*LEVERAGE*), and the market to book ratio (*MTB*). To proxy for firm performance, we use changes in sales ($\Delta SALES$), operating cash flow (ΔOCF), earnings ($\Delta EARNINGS$), as well as the level of pre-impairment earnings scaled by assets (*ROA*). Finally, we add year and industry fixed effects. Appendix C provides full variable definitions. We winsorize all continuous variables at 1% and 99%.

Sample Selection

We analyze 4,191 annual reports of Swedish publicly listed firms from 2005 through 2019 to identify acquiring firms and their reporting on initially identified goodwill and impairments, as well as the audit fees paid, the identities of the signing auditor(s)-in-charge, and the audit firm. We also hand-collect information on audit committees from these reports. We exclude all clients in the following industry sectors: finance, insurance, real estate, or investments. After these adjustments, we identify 2,870 client-years with reported goodwill on the balance sheet. During the period 2005-2019, we identify 458 reported goodwill impairments. We retrieve all other client-level financial data from Compustat Global. Because some of the variables require more data and some

are measured in changes, we lose 812 observations. To focus on impairment decisions that are more likely to involve auditor scrutiny, we follow Carcello et al. (2020) by eliminating observations with pre-impairment goodwill lower than 0.5% of sales. Because of our small country setting, we follow Lobo et al. (2017) and do not include any other restrictive sample selection criteria such as limiting the sample based on market values (as in Carcello et al. (2020)). Our final sample consists of 2,017 client-year observations, including 330 observations with goodwill impairments. Panel A of Table 1 reports the sample distribution by year. Most impairments occur around the global financial crisis and impairments have become less prevalent over time. Panel B reports the sample distribution by industry and highlights that observations from manufacturing and services industries represent more than three-fourths of the sample.

Results

Descriptive Statistics

Table 2 reports descriptive statistics. Goodwill impairments (*IMPAIR*) occur in 16.4% of sample client-years, and the average magnitude of goodwill impairments (*IMPAIR%*) is 1.9% of the opening goodwill balance.[7] The average *TSE_CL_AIC* is 0.273 with a median of 0.110, suggesting that the average auditor has gained expertise. The mean is larger at 0.481 for the

Table 1. Sample Distribution

Panel A: Year	*IMPAIR* = 0	*IMPAIR* = 1	Total	% of full sample
2005	114	22	136	6.74 %
2006	105	29	134	6.64 %
2007	120	20	140	6.94 %
2008	115	25	140	6.94 %
2009	111	32	143	7.09 %
2010	114	21	135	6.69 %
2011	103	30	133	6.59 %
2012	122	23	145	7.19 %
2013	117	21	138	6.84 %
2014	108	30	138	6.84 %
2015	116	17	133	6.59 %
2016	110	18	128	6.35 %
2017	112	14	126	6.25 %
2018	112	16	128	6.35 %
2019	108	12	120	5.95 %
Full sample	1687	330	2017	100.00 %

Panel B: Industry	*IMPAIR* = 0	*IMPAIR* = 1	Total	% Of full sample
Construction	44	31	75	3.72 %
Manufacturing	894	134	1028	50.97 %
Transp., Comm., Electric, Gas, and Sanitary	65	48	113	5.60 %
Wholesale Trade	101	8	109	5.40 %
Retail Trade	136	27	163	8.08 %
Services	436	78	514	25.48 %
Public Administration	11	4	15	0.74 %

Note. Table 1 reports sample distribution by year and industry. *IMPAIR* is an indicator of goodwill impairments.

Table 2. Descriptive Statistics

Variable	Observations	Mean	St.dev	Min	Median	Max
IMPAIR	2017	0.164	0.370	0.000	0.000	1.000
IMPAIR%	2017	0.019	0.081	0.000	0.000	0.770
TSE_CL_AIC	2017	0.273	0.330	0.000	0.110	1.000
TSE_PL_AIC	2017	0.532	0.385	0.000	0.495	1.000
TSE_CL_AF	2017	0.481	0.386	0.000	0.482	1.000
TSE_PL_AF	2017	0.648	0.076	0.000	0.608	1.000
TENURE_AIC	2017	3.432	1.966	1.000	3.000	13.000
TENURE_AF	2017	7.520	4.533	1.000	7.000	19.000
INDEXP_AIC	2017	0.239	0.427	0.000	0.000	1.000
INDEXP_AF	2017	0.459	0.498	0.000	0.000	1.000
TWO_AIC	2017	0.237	0.425	0.000	0.000	1.000
BIG4	2017	0.969	0.174	0.000	1.000	1.000
AUDITFEE	2017	1.580	1.037	0.086	1.281	4.344
NAUDITFEE	2017	0.958	0.931	0.000	0.693	3.807
AGE_AIC	2017	50.809	6.387	34.000	51.000	68.000
MODIFIEDOP	2017	0.060	0.238	0.000	0.000	1.000
TSE_AC	2017	0.391	0.488	0.000	0.000	1.000
SIZE_AC	2017	4.275	1.974	0.000	3.000	11.000
TENURE_AC	2017	4.268	2.339	1.000	3.857	18.667
NEW_CEO	2017	0.149	0.356	0.000	0.000	1.000
NEW_CFO	2017	0.156	0.363	0.000	0.000	1.000
SEGMENTS	2017	3.005	1.710	1.000	3.000	12.000
STDRETURN	2017	0.024	0.010	0.011	0.021	0.088
LEVERAGE	2017	0.550	0.557	0.000	0.430	3.596
MTB	2017	2.483	2.011	0.255	2.021	16.417
ΔSALES	2017	0.094	0.292	−0.869	0.064	3.075
ΔOCF	2017	0.011	0.082	−0.332	0.009	0.469
ΔEARNINGS	2017	0.011	0.115	−0.470	0.008	0.734
ROA	2017	0.045	0.121	−0.726	0.058	0.396

Note. Table 2 reports descriptive statistics for the variables in the main analyses. See Appendix C for all variable definitions.

corresponding audit firm variable (*TSE_CL_AF*). The averages of portfolio-level expertise of the auditor-in-charge (*TSE_PL_AIC*) and audit firm (*TSE_PL_AF*) are ranging higher at 0.532 to 0.648, respectively. The average auditor-in-charge tenure (*TENURE_AIC*) is 3.4 years and as expected lower than the tenure of the average audit firm (*TENURE_AF*), which is 7.5 years. Regarding industry expertise, 23.9% employ the industry-expert auditor-in-charge (*INDEXP_AIC*) and 45.9% the audit firm (*INDEXP_AF*), on average. Joint-auditor engagements are relatively infrequent, representing 23.7% of the observations. By contrast, 96.9% of the client-years are audited by a Big 4 audit firm.[8] The task-specific experience measure of the audit committee (*TSE_AC*) is on average lower than that in Shepardson (2019).

Table 3 reports a Pearson correlation matrix and highlights a high correlation between the two dependent variables capturing goodwill impairments (*IMPAIR*) and impairment amounts (*IMPAIR%*). We also note positive univariate correlations between the impairment variables and higher values of all task-specific expertise variables, with the highest being for *TSE_CL_AF*.[9] In terms of auditor characteristics, we also observe a positive correlation between *TSE_CL_AIC*

and age and tenure. Despite the very high correlation between *AUDITFEE* and *NAUDITFEE* (0.84), we follow Carcello et al. (2020) and include both variables in the regressions.[10] There is also a high correlation between *AUDITFEE* and *SEGMENTS* (0.37), potentially due to both variables capturing elements of client size.[11]

Main Results

Column (1) of Table 4 reports the main regression results for the likelihood of goodwill impairment based on equation (3). We observe a positive and statistically significant coefficient on *TSE_CL_AIC* (coeff. 0.698, z-stat 2.24), indicating that greater client-level goodwill expertise of the auditor-in-charge is associated with a higher likelihood of subsequent goodwill impairments. Accordingly, we reject H1 in this specification. In contrast, the coefficients on *TSE_PL_AIC*, *TSE_CL_AF*, and *TSE_PL_AF* are positive but statistically insignificant, and we therefore fail to reject H2a and H2b. Regarding control variables, we observe a higher likelihood of impairments with higher values of *AUDITFEE*. This suggests that audit fees limit accounting discretion in the goodwill fair value measurement and that auditors with more resources result in higher audit effectiveness (Budescu et al., 2012). Consistent with the results in Shepardson (2019), we observe a positive effect from audit committee experience with impairments.[12] The positive coefficient on *NEW_CEO* is supporting the notion that the likelihood of impairment is higher for incoming CEOs than for their senior counterparts (Masters-Stout et al., 2008). Furthermore, the standard deviation of the client's stock returns (*STDRETURN*) is significantly and positively related to goodwill impairment, consistent with Beatty and Weber (2006). Firms with more segments also have a higher likelihood of impairment. Clients with positive trends in earnings, however, impair less.

Column (2) of Table 4 reports the main regression results for the magnitude of goodwill impairments based on equation (4). The coefficient on *TSE_CL_AIC* is positive and statistically significant at conventional levels (coeff. 0.013, t-stat 1.70), indicating that goodwill impairments are larger when clients engage auditors-in-charge with greater client-level goodwill expertise. Consistent with the results for impairment incidence, we find no statistically significant effects at the audit firm level or portfolio-level effects of the auditor-in-charge, providing no evidence of knowledge dissemination in this specification. The coefficient on *TENURE_AIC* is negative and statistically significant (coeff. −0.002, t-stat −1.79). This is consistent with consistent with Ferramosca et al. (2017) that the magnitude of goodwill impairments decreases with auditor tenure. The positive coefficient on *TSE_AC* (coeff. 0.007, t-stat 2.13) corresponds to the case in Shepardson (2019) and suggests that having audit committees with impairment experience is associated with larger impairments. We re-run the analyses of impairment amounts using a Tobit regression model because the dependent variable is bounded at zero and find consistent results (untabulated).

Next, we restrict the sample to observations in which *IMPAIR* equals one, thereby excluding client-years without impairments and focusing on the subsample in which the magnitude of impairments is observed. Under this specification, we find positive and statistically significant coefficients on *TSE_CL_AIC* (coeff. 0.060, t-stat 2.22) and *TSE_PL_AIC* (coeff. 0.058, t-stat 2.32). Evaluated over the full range of auditor-in-charge expertise, these estimates imply that the magnitude of goodwill impairments increases by approximately six percentage points when expertise is derived either from the focal client or from the auditor's portfolio. Accordingly, we reject the null hypotheses H1 and H2a in this specification. At the audit firm level, the coefficient on *TSE_CL_AF* is positive and statistically significant (coeff. 0.013, t-stat 2.00), indicating that impairment magnitudes increase by 1.3 percentage points when client-level expertise is held at the audit firm level. In contrast, we find no statistically significant effect of portfolio-level audit firm expertise. Thus, although we reject H2b with respect to client-level

Table 3. Pearson Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
(1) *IMPAIR*	1.00																											
(2) *IMPAIR%*	0.53	1.00																										
(3) *TSE_CL_AIC*	0.06	0.12	1.00																									
(4) *TSE_PL_AIC*	0.06	0.06	0.09	1.00																								
(5) *TSE_CL_AF*	0.07	0.20	0.26	0.07	1.00																							
(6) *TSE_PL_AF*	0.12	0.06	0.01	0.22	0.01	1.00																						
(7) *TENURE_AIC*	0.00	−0.03	0.40	0.21	0.02	0.03	1.00																					
(8) *TENURE_AF*	0.00	−0.01	0.14	0.20	0.21	0.02	0.22	1.00																				
(9) *INDEXP_AIC*	0.09	0.01	−0.04	−0.04	0.03	0.03	0.00	−0.05	1.00																			
(10) *INDEXP_AF*	−0.04	−0.07	0.00	−0.04	0.02	0.22	0.06	0.13	0.07	1.00																		
(11) *TWO_AIC*	0.01	−0.02	−0.01	0.00	0.01	0.19	0.01	0.02	0.01	0.13	1.00																	
(12) *BIG4*	0.01	0.00	0.01	−0.03	0.04	0.08	−0.01	0.03	0.10	0.17	−0.01	1.00																
(13) *AUDITFEE*	0.15	−0.04	0.01	0.12	0.01	0.45	0.01	0.11	0.06	0.09	0.15	0.12	1.00															
(14) *NAUDITFEE*	0.11	−0.02	0.02	0.05	0.01	0.36	0.00	0.08	0.05	0.13	0.15	0.09	0.84	1.00														
(15) *AGE_AIC*	0.07	−0.01	0.06	0.30	−0.04	0.21	0.23	−0.07	0.05	−0.06	0.09	−0.07	0.19	0.13	1.00													
(16) *MODIFIEDOP*	0.02	0.06	0.05	0.03	0.02	0.00	−0.03	0.01	0.01	−0.01	−0.02	0.03	−0.03	−0.02	0.02	1.00												
(17) *TSE_AC*	0.23	0.11	0.01	0.00	0.01	0.10	−0.02	−0.01	0.07	−0.06	−0.03	0.02	0.21	0.16	0.06	0.00	1.00											
(18) *SIZE_AC*	0.04	0.03	0.07	−0.09	−0.02	0.00	0.01	−0.02	0.01	−0.02	0.01	−0.02	−0.15	−0.16	0.03	−0.02	0.06	1.00										
(19) *TENURE_AC*	−0.06	−0.08	0.02	0.22	0.07	0.05	0.03	0.31	−0.05	0.02	−0.07	−0.07	0.05	−0.01	−0.04	0.00	−0.08	0.06	1.00									
(20) *NEW_CEO*	0.08	0.08	−0.01	−0.01	0.03	−0.02	−0.01	−0.01	0.01	0.00	0.01	0.02	−0.05	−0.04	0.01	0.06	−0.04	0.00	−0.12	1.00								
(21) *NEW_CFO*	0.05	0.07	0.05	0.00	0.03	0.00	−0.03	−0.03	−0.02	−0.04	0.01	−0.03	−0.02	0.00	0.00	0.04	0.05	−0.02	−0.07	0.17	1.00							
(22) *SEGMENTS*	0.16	0.01	0.01	0.07	0.01	0.23	0.06	0.10	0.12	0.08	−0.03	0.08	0.37	0.28	0.07	0.01	0.20	0.00	0.09	−0.06	−0.04	1.00						
(23) *STDRETURN*	0.08	0.17	0.06	−0.07	0.14	−0.11	−0.06	−0.08	−0.03	−0.07	−0.07	−0.03	−0.29	−0.22	0.00	0.11	0.04	0.01	−0.09	0.07	0.06	−0.18	1.00					
(24) *LEVERAGE*	0.08	0.02	0.08	0.05	0.07	0.13	0.02	0.03	−0.05	0.12	0.08	0.10	0.21	0.16	0.10	0.05	0.02	−0.08	−0.01	0.00	−0.01	0.03	0.14	1.00				
(25) *MTB*	−0.06	−0.06	0.05	0.06	0.02	−0.03	0.03	0.04	−0.06	−0.09	−0.03	−0.06	0.02	0.01	−0.04	0.05	−0.06	−0.01	0.12	−0.03	−0.01	0.01	−0.12	0.03	1.00			
(26) *ΔSALES*	−0.08	−0.03	0.14	−0.02	0.00	−0.06	−0.02	−0.05	−0.02	−0.02	−0.01	0.01	−0.09	−0.06	0.02	0.01	−0.07	0.05	−0.05	−0.02	−0.02	−0.06	0.00	−0.04	0.06	1.00		
(27) *ΔOCF*	−0.07	−0.10	−0.01	0.01	−0.03	−0.03	0.00	−0.01	−0.01	−0.02	−0.01	−0.03	−0.05	−0.05	−0.01	−0.01	0.00	0.02	0.00	−0.03	−0.02	−0.03	−0.01	−0.04	0.02	0.25	1.00	
(28) *ΔEARNINGS*	−0.22	−0.40	−0.05	0.00	−0.05	−0.02	−0.03	−0.01	0.00	−0.01	−0.02	0.00	−0.05	−0.05	0.00	−0.01	0.08	0.00	−0.02	−0.04	−0.04	−0.02	0.03	−0.04	0.06	0.19	0.30	1.00
(29) *ROA*	−0.31	−0.55	−0.03	0.04	−0.14	0.00	0.05	0.02	0.02	0.01	0.01	−0.02	0.09	0.05	−0.01	−0.09	−0.13	0.01	0.15	−0.16	−0.13	0.05	−0.40	−0.17	0.19	0.15	0.18	0.43

Note. Table 3 reports correlations for the variables in the main analyses. See Appendix C for all variable definitions.

Table 4. Auditor Task-Specific Expertise at the Client and Portfolio Levels and Goodwill Impairments

	(1)		(2)		(3)	
	IMPAIR		*IMPAIR%*		*IMPAIR%*	
	Coeff.	z-stat	Coeff.	t-stat	Coeff.	t-stat
TSE_CL_AIC	0.698**	(2.24)	0.013*	(1.70)	0.060**	(2.22)
TSE_PL_AIC	0.236	(0.78)	0.009	(1.34)	0.058**	(2.32)
TSE_CL_AF	0.058	(1.17)	0.005	(1.19)	0.013**	(2.00)
TSE_PL_AF	0.923	(1.14)	0.018	(1.31)	0.053	(1.04)
TENURE_AIC	−0.074	(−1.41)	−0.002*	(−1.79)	−0.006	(−1.52)
TENURE_AF	0.011	(0.45)	0.000	(0.69)	−0.001	(−0.32)
INDEXP_AIC	0.100	(0.40)	−0.000	(−0.02)	−0.015	(−1.07)
INDEXP_AF	−0.173	(−0.87)	−0.008***	(−2.68)	−0.023*	(−1.75)
TWO_AIC	0.004	(0.02)	−0.002	(−0.44)	−0.014	(−1.11)
BIG4	−0.431	(−0.77)	0.001	(0.14)	−0.001	(−0.03)
AUDITFEE	0.546***	(3.12)	0.001	(0.24)	−0.029	(−1.60)
NAUDITFEE	−0.280	(−1.47)	−0.001	(−0.18)	0.023	(1.22)
AGE_AIC	0.016	(0.98)	−0.000	(−1.29)	−0.002*	(−1.95)
MODIFIEDOP	−0.303	(−0.95)	0.004	(0.39)	0.030	(0.81)
TSE_AC	0.650***	(3.90)	0.007**	(2.13)	−0.015	(−1.03)
SIZE_AC	0.025	(0.62)	0.001	(0.75)	0.002	(0.53)
TENURE_AC	0.000	(0.01)	−0.000	(−0.13)	−0.001	(−0.31)
NEW_CEO	0.533***	(2.94)	−0.000	(−0.03)	−0.015	(−0.98)
NEW_CFO	−0.100	(−0.54)	−0.002	(−0.31)	0.008	(0.37)
SEGMENTS	0.148***	(2.64)	0.000	(0.47)	−0.001	(−0.42)
STDRETURN	0.118	(0.01)	0.000	(0.00)	−2.098**	(−2.46)
LEVERAGE	0.054	(0.40)	−0.013***	(−3.11)	−0.016	(−1.21)
MTB	−0.016	(−0.34)	0.002**	(2.11)	−0.010	(−1.59)
ΔSALES	−0.198	(−0.69)	0.026**	(2.55)	−0.002	(−0.04)
ΔOCF	−0.396	(−0.46)	0.050*	(1.85)	−0.040	(−0.33)
ΔEARNINGS	−3.229***	(−3.33)	−0.171***	(−6.78)	−0.189**	(−2.51)
ROA	−5.365***	(−5.66)	−0.331***	(−7.61)	−0.506***	(−6.38)
CONSTANT	−2.745**	(−2.20)	0.053**	(2.11)	0.365***	(4.30)
INDUSTRY FE	YES		YES		YES	
YEAR FE	YES		YES		YES	
Pseudo/adj. R-sq	0.258		0.380		0.580	
N	2017		2017		330	

Note. Table 4 reports logistical regression results in Column (1) with an indicator of goodwill impairments (*IMPAIR*) as the dependent variable and linear regression results in Columns (2) to (3) with the value of goodwill impairments divided by the amount of goodwill at the beginning of the year (*IMPAIR%*) as the dependent variable. The results in Column (3) are based on the sample where *IMPAIR* is equal to one. See Appendix C for all variable definitions. *z*- and *t*-statistics, reported in the parentheses, are based on standard errors clustered at the client level. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

audit firm expertise in this specification, this result is sensitive to model choice. We fail to reject H2b for portfolio-level audit firm expertise.

Taken together, the evidence supports a skill acquisition effect across the specifications, whereby greater client-level expertise of the auditor-in-charge is positively associated with goodwill impairments. In addition, within the subsample of firms that recognize an impairment,

we find evidence consistent with a knowledge dissemination effect operating through both the auditor-in-charge's client portfolio and the audit firm's client-level expertise.[13,14]

Results from Cross-Sectional Analyses

Overall, our results provide consistent support for a skill acquisition effect at the client level among auditors-in-charge. In contrast, we find only limited evidence that this expertise is shared within the audit firm or transferred to other audit clients. We next examine cross-sectional settings to better understand the drivers of our main results. First, we consider industry homogeneity because firms operating in more homogeneous industries tend to face comparable business environments and follow similar operating practices. When industries are more homogeneous, expertise at the client level of the auditor-in-charge should continue to have a positive effect but task-related knowledge developed in one engagement should also be more easily transferable to others. To examine this possibility, we construct an industry homogeneity measure following Bills et al. (2015) and Huang et al. (2023), defined as the average correlation in percentage changes in operating expenses among firms within the same industry. We then split the sample at the median, classifying industries above the median as homogeneous and those below as heterogeneous. Table 5 reports the results of the analyses. The coefficients on *TSE_CL_AIC* continue to be positive and statistically significant, except in Columns (3) and (6). The coefficients on *TSE_PL_AIC* are not significant as such, the main result regarding task-specific expertise of the auditor-in-charge is fairly stable across subsamples. Meanwhile, we can reject the null H2b of no knowledge transfer within audit firms when it comes to homogenous industries because the coefficients on *TSE_CL_AF* are positive and statistically significant in two specifications and the coefficients on *TSE_PL_AF* are positive and statistically significant in all three specifications. Meanwhile, coefficients for audit firms in heterogeneous industries are not significant.

Second, we reason that our results might depend on audit firm size. Although the auditor-in-charge effect does not necessarily differ between the largest and other audit firms, knowledge could more effectively be transferred in the largest audit firms through their scale, specialist resources, and standardized methodologies. Duh et al. (2020) also notes that large audit firms tend to have greater knowledge sharing than smaller firms. In our sample, PwC is the largest audit firm both in terms of number of clients and total client sales.[15] PwC's sales-based market share is more than twice that of the second largest audit firm, KPMG. Accordingly, we split the sample into PwC and others. Table 6 reports the results. We note that the significant results for *TSE_CL_AIC* are more prevalent in the sample audited by others than by PwC. The positive and statistically significant coefficient on *TSE_PL_AIC* in Column (1) suggests that auditors-in-charge at PwC can benefit from larger portfolios of comparable clients but the result is not present in other specifications. The positive and statistically significant coefficients on *TSE_CL_AF* in the specifications using the PwC subsample suggest that PwC has the scale and infrastructure to transfer client-level expertise across individuals. The coefficient on *TSE_PL_AF* is positive and statistically significant using the PwC subsample in Columns (1) and (3) but not in the others, suggesting that the knowledge transfer is most prevalent within the largest audit firm. Based on this, we can reject H2b for the PwC subsample.

Finally, we examine whether the effects of task-specific expertise differ between auditors who began their careers prior to the mandatory adoption of IFRS in Sweden and those trained exclusively under IFRS. The literature on organizational learning emphasizes that adapting to new institutional environments requires not only the acquisition of new knowledge and capabilities, but also the unlearning of outdated practices and mental models (Becker, 2018; Hedberg, 1981; Hislop et al., 2014). Evidence from professional settings suggests that

Table 5. Auditor Task-Specific Expertise and Goodwill Impairments: Homogeneous versus Heterogeneous Industries

	(1)		(2)		(3)		(4)		(5)		(6)	
	Homogeneous		Heterogeneous		Homogeneous		Heterogeneous		Homogeneous		Heterogeneous	
	IMPAIR		*IMPAIR*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*	
	Coeff.	z-stat	Coeff.	z-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
TSE_CL_AIC	0.672*	(1.73)	0.662*	(1.71)	0.015	(1.60)	0.019*	(1.94)	0.094**	(2.15)	0.081	(1.60)
TSE_PL_AIC	0.667	(1.56)	−0.023	(−0.05)	0.009	(1.07)	0.009	(1.00)	0.034	(1.23)	0.043	(0.90)
TSE_CL_AF	0.680***	(2.89)	0.020	(0.29)	0.031	(1.35)	0.000	(0.55)	0.017***	(4.18)	0.008	(1.23)
TSE_PL_AF	1.815**	(2.06)	0.313	(0.22)	0.014***	(6.28)	0.014	(0.45)	0.153**	(2.28)	0.073	(0.98)
TENURE_AIC	−0.170**	(−2.19)	−0.002	(−0.02)	−0.003*	(−1.75)	−0.000	(−0.05)	−0.016**	(−2.17)	0.004	(0.81)
TENURE_AF	−0.027	(−0.77)	0.019	(0.58)	−0.000	(−0.68)	0.000	(0.11)	0.001	(0.61)	0.000	(0.13)
INDEXP_AIC	0.113	(0.30)	0.061	(0.20)	0.001	(0.36)	−0.006	(−1.46)	−0.002	(−0.09)	−0.015	(−0.74)
INDEXP_AF	0.040	(0.12)	−0.454*	(−1.74)	−0.011***	(−2.78)	−0.006	(−1.37)	−0.026	(−1.38)	−0.023	(−1.17)
TWO_AIC	0.151	(0.54)	0.075	(0.25)	0.000	(0.04)	−0.005	(−1.17)	0.000	(0.00)	−0.052***	(−3.02)
BIG4	−0.076	(−0.11)	−1.376**	(−2.18)	0.004	(0.41)	−0.004	(−0.16)	−0.002	(−0.03)	0.086	(1.40)
AUDITFEE	0.746***	(2.98)	0.480*	(1.89)	0.003	(0.55)	−0.003	(−0.47)	−0.031	(−1.04)	−0.041**	(−2.03)
NAUDITFEE	−0.557**	(−1.99)	−0.067	(−0.23)	−0.003	(−0.51)	0.004	(0.52)	0.024	(0.77)	0.030	(1.53)
AGE_AIC	0.023	(1.13)	0.012	(0.52)	−0.001**	(−2.11)	0.000	(1.02)	−0.003	(−1.51)	0.000	(0.30)
MODIFIEDOP	−0.686	(−1.57)	−0.258	(−0.54)	−0.005	(−0.35)	0.014	(0.85)	0.012	(0.26)	0.048	(1.06)
TSE_AC	0.374	(1.56)	0.949***	(3.65)	0.003	(0.81)	0.007	(1.38)	−0.002	(−0.11)	−0.015	(−0.61)
SIZE_AC	−0.052	(−0.86)	0.116*	(1.79)	0.001	(1.35)	0.000	(0.33)	0.010**	(2.05)	0.001	(0.10)
TENURE_AC	0.041	(0.62)	−0.027	(−0.39)	0.000	(0.17)	0.000	(0.03)	−0.004	(−0.77)	0.003	(0.53)
NEW_CEO	0.282	(0.93)	0.949***	(3.64)	−0.001	(−0.19)	0.003	(0.49)	−0.002	(−0.08)	−0.020	(−0.83)
NEW_CFO	−0.210	(−0.83)	0.111	(0.40)	−0.000	(−0.07)	0.001	(0.07)	0.014	(0.53)	0.015	(0.71)
SEGMENTS	0.209***	(2.74)	0.070	(0.68)	0.001	(1.16)	−0.000	(−0.12)	0.003	(0.66)	−0.013	(−1.25)
STDRETURN	−17.135	(−0.74)	3.575	(0.23)	−0.251	(−0.57)	−0.094	(−0.27)	−1.135	(−0.94)	−3.419***	(−3.14)
LEVERAGE	−0.065	(−0.25)	0.173	(0.88)	−0.010	(−1.50)	−0.013**	(−2.14)	0.012	(0.45)	−0.038	(−1.64)
MTB	−0.014	(−0.15)	−0.041	(−0.54)	0.002	(1.08)	0.002	(1.19)	−0.004	(−0.59)	−0.011	(−1.47)

(continued)

Table 5. (continued)

	(1)		(2)		(3)		(4)		(5)		(6)	
	Homogeneous		Heterogeneous		Homogeneous		Heterogeneous		Homogeneous		Heterogeneous	
	IMPAIR		*IMPAIR*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*	
	Coeff.	z-stat	Coeff.	z-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
ΔSALES	−0.129	(−0.33)	−0.154	(−0.25)	0.026**	(2.53)	0.014	(1.08)	0.006	(0.12)	−0.078	(−1.40)
ΔOCF	0.380	(0.29)	−1.284	(−0.97)	0.101***	(3.15)	−0.001	(−0.02)	0.156	(1.21)	−0.227	(−1.44)
ΔEARNINGS	−5.464***	(−3.31)	−1.687	(−1.44)	−0.210***	(−6.42)	−0.123***	(−3.53)	−0.401***	(−2.84)	−0.019	(−0.23)
ROA	−5.390***	(−2.90)	−5.045***	(−4.67)	−0.307***	(−5.46)	−0.312***	(−4.95)	−0.248**	(−2.06)	−0.670***	(−6.24)
CONSTANT	−4.141***	(−2.61)	−2.041	(−1.17)	0.074**	(2.39)	0.031	(0.79)	0.302**	(2.31)	0.264***	(2.72)
INDUSTRY FE	YES		YES		YES		YES		YES		YES	
YEAR FE	YES		YES		YES		YES		YES		YES	
Pseudo/adj. R-sq	0.255		0.272		0.461		0.343		0.595		0.529	
N	1019		998		1019		998		170		160	

Note. Table 5 reports logistical regression results in Columns (1) and (2) with an indicator of goodwill impairments (*IMPAIR*) as the dependent variable and linear regression results in Columns (3) to (6) with the value of goodwill impairments divided by the amount of goodwill at the beginning of the year (*IMPAIR%*) as the dependent variable for subsamples based on high and low industry homogeneity groups. The results in Column (5) to (6) are based on the sample where *IMPAIR* is equal to one. See Appendix C for all variable definitions. *z*- and *t*-statistics, reported in the parentheses, are based on standard errors clustered at the client level. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6. Auditor Task-Specific Expertise and Goodwill Impairments: Largest Audit Firm versus Other Firms

	(1)		(2)		(3)		(4)		(5)		(6)	
	PwC		Others		PwC		Others		PwC		Others	
	IMPAIR		*IMPAIR*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*	
	Coeff.	z-stat	Coeff.	z-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
TSE_CL_AIC	0.927*	(1.77)	0.886**	(1.97)	0.011	(1.60)	0.019**	(2.16)	0.023	(1.51)	0.076*	(1.88)
TSE_PL_AIC	0.723*	(1.84)	−0.007	(−0.58)	0.000	(0.03)	0.013	(1.60)	0.041	(1.19)	0.067*	(1.71)
TSE_CL_AF	0.771***	(2.90)	−0.191	(−0.68)	0.013***	(3.44)	−0.000	(−0.22)	0.020***	(3.01)	0.003	(0.18)
TSE_PL_AF	1.729**	(2.47)	0.076	(0.97)	0.111**	(2.08)	0.019	(1.58)	0.251	(1.36)	−0.001	(−0.01)
TENURE_AIC	−0.027	(−0.28)	−0.145**	(−2.23)	−0.000	(−0.10)	−0.002	(−1.48)	−0.003	(−0.59)	−0.006	(−0.93)
TENURE_AF	−0.067*	(−1.64)	0.070**	(2.10)	−0.001	(−1.01)	0.001	(1.21)	0.001	(0.68)	−0.000	(−0.14)
INDEXP_AIC	−0.207	(−0.50)	−0.068	(−0.23)	−0.000	(−0.08)	−0.006	(−1.52)	0.034	(1.67)	−0.020	(−1.16)
INDEXP_AF	−0.445	(−0.86)	0.276	(0.75)	−0.010	(−1.60)	0.000	(0.10)	−0.027	(−0.62)	−0.043*	(−1.94)
TWO_AIC	−0.110	(−0.34)	0.287	(1.04)	−0.003	(−0.68)	0.002	(0.38)	−0.040*	(−1.88)	−0.019	(−1.01)
BIG4			−0.743	(−1.42)			0.004	(0.42)			−0.020	(−0.43)
AUDITFEE	−0.019	(−0.06)	0.761***	(3.42)	−0.007	(−0.94)	0.002	(0.26)	−0.057*	(−1.89)	−0.029	(−1.21)
NAUDITFEE	−0.139	(−0.46)	−0.341	(−1.53)	0.008	(0.88)	−0.001	(−0.21)	0.044	(1.64)	0.018	(0.78)
AGE_AIC	0.013	(0.40)	0.019	(0.97)	0.000	(0.72)	−0.001***	(−2.66)	0.002	(0.96)	−0.004***	(−3.18)
MODIFIEDOP	−0.274	(−0.52)	−0.797*	(−1.71)	0.004	(0.21)	0.002	(0.14)	−0.014	(−0.38)	0.029	(0.56)
TSE_AC	0.271	(1.02)	0.547**	(2.33)	0.005	(0.94)	0.003	(0.61)	−0.009	(−0.44)	−0.007	(−0.36)
SIZE_AC	0.071	(0.96)	−0.001	(−0.02)	0.001	(0.96)	−0.000	(−0.06)	−0.003	(−0.56)	0.004	(0.85)
TENURE_AC	−0.005	(−0.07)	−0.093	(−1.34)	−0.001	(−1.26)	0.001	(0.82)	0.003	(0.80)	−0.005	(−0.75)
NEW_CEO	0.793***	(2.78)	0.611**	(2.22)	0.008	(0.82)	−0.006	(−1.06)	0.015	(0.42)	−0.032*	(−1.92)
NEW_CFO	0.323	(0.96)	−0.078	(−0.28)	0.003	(0.32)	−0.004	(−0.47)	−0.021	(−0.58)	0.006	(0.19)
SEGMENTS	0.330***	(3.18)	0.120*	(1.79)	0.002	(1.46)	−0.000	(−0.36)	−0.001	(−0.17)	−0.002	(−0.39)
STDRETURN	16.460	(0.75)	−37.911**	(−2.13)	−0.154	(−0.34)	−0.329	(−0.84)	−3.153***	(−3.04)	−2.165	(−1.36)
LEVERAGE	−0.054	(−0.21)	−0.023	(−0.10)	−0.012***	(−2.79)	−0.017***	(−2.87)	−0.014	(−0.91)	−0.034	(−1.55)
MTB	0.086	(0.73)	0.005	(0.08)	−0.000	(−0.11)	0.003**	(2.45)	−0.010	(−0.86)	−0.004	(−0.53)

(continued)

Table 6. (continued)

	(1)		(2)		(3)		(4)		(5)		(6)	
	PwC		Others		PwC		Others		PwC		Others	
	IMPAIR		*IMPAIR*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*	
	Coeff.	z-stat	Coeff.	z-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
ΔSALES	−0.954	(−1.37)	−0.294	(−0.63)	0.023	(1.57)	0.021	(1.65)	−0.008	(−0.18)	0.009	(0.11)
ΔOCF	0.145	(0.08)	−1.271	(−1.03)	0.067	(1.39)	0.027	(0.82)	−0.288	(−1.21)	0.106	(0.82)
ΔEARNINGS	−1.468	(−0.97)	−3.861***	(−3.35)	−0.135***	(−2.92)	−0.170***	(−5.47)	−0.095	(−1.34)	−0.219**	(−2.06)
ROA	−4.366**	(−2.51)	−8.174***	(−6.22)	−0.229***	(−3.11)	−0.387***	(−8.90)	−0.596***	(−4.77)	−0.479***	(−4.13)
CONSTANT	−3.766*	(−1.68)	−1.917	(−1.31)	0.023	(0.64)	0.101***	(3.40)	0.229	(1.43)	0.485***	(5.07)
INDUSTRY FE	YES		YES		YES		YES		YES		YES	
YEAR FE	YES		YES		YES		YES		YES		YES	
Pseudo/adj. R-sq	0.278		0.352		0.394		0.428		0.573		0.540	
N	828		1189		828		1189		122		208	

Note. Table 6 reports logistical regression results in Columns (1) and (2) with an indicator of goodwill impairments (*IMPAIR*) as the dependent variable and linear regression results in Columns (3) to (6) with the value of goodwill impairments divided by the amount of goodwill at the beginning of the year (*IMPAIR%*) as the dependent variable for subsamples based on audit firm (PwC vs. Others). The results in Column (5) to (6) are based on the sample where *IMPAIR* is equal to one. See Appendix C for all variable definitions. *z*- and *t*-statistics, reported in the parentheses, are based on standard errors clustered at the client level. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

individuals trained under prior regimes may continue to rely on established practices even after new methods are introduced (e.g., Rushmer & Davies, 2004). In our setting, auditors with pre-IFRS experience may therefore be less able to fully unlearn practices in prior Swedish GAAP when applying IFRS-based goodwill accounting. As a result, these auditors may rely more heavily on institutionalized knowledge sharing and organizational support within the audit firm to navigate the transition to IFRS (Bills et al., 2016). This reliance on firm-level processes suggests that task-specific expertise held at the audit firm level may play a more important role for Swedish GAAP-trained auditors, consistent with stronger knowledge dissemination effects in this subsample. In contrast, auditors trained exclusively under IFRS develop their knowledge structures entirely within the current reporting regime (Tan & Libby, 1997) and therefore may benefit more directly from their own client-level experience rather than from firm-level or portfolio-level knowledge sharing. To examine these differences empirically, we split the sample based on whether the auditor-in-charge had audit clients prior to 2004 (GAAP Expertise), or not (IFRS Expertise). Table 7 reports the results. For auditors-in-charge with Swedish GAAP expertise, goodwill impairments are more strongly associated with portfolio-level expertise (*TSE_PL_AIC*) and audit firm-level expertise (*TSE_CL_AF* and *TSE_PL_AF*), consistent with greater reliance on knowledge sharing and institutionalized resources within the audit firm. In contrast, the main results for client-level expertise of the auditor-in-charge (*TSE_CL_AIC*) are driven primarily by auditors with IFRS Expertise, consistent with their training and cognitive schemas being fully aligned with the IFRS goodwill accounting framework.

Sensitivity Analyses

We conduct four additional sets of tests to investigate the robustness of our inferences and potential confounding factors. First, we recognize that establishing any causal relation is challenging due to unobserved omitted variables, reverse causality, and functional form misspecifications. Our main findings could, for example, be confounded if auditors-in-charge who remain with clients differ systematically from those who are replaced. To help to mitigate this concern, we account for innate heterogeneity of the auditors-in-charge by using alternative estimation models based on propensity score matching (PSM). Here, we form a dummy variable based on the median of *TSE_CL_AIC* to create a treatment group. We then use PSM to generate a control group based on all control variables in equation (2). We rely on one-to-one matching without replacement and a caliper of 0.01 but find similar results with a caliper of 0.005 (Rosenbaum & Rubin, 1983). The (untabulated) results indicate a positive and statistically significant coefficient on *TSE_CL_AIC*. The magnitude of the coefficients is larger than in the baseline regressions, mitigating the previously discussed concern.[16] Across all three specifications, we find that the coefficient on *TSE_CL_AIC* is positive and statistically significant, both for the likelihood of impairment and for the magnitude of impairments. We also find a positive and significant effect for *TSE_CL_AF* regarding the magnitude of impairments, suggesting that client-level expertise accumulated elsewhere within the audit firm also influences impairments. This latter finding provides some support for a knowledge dissemination effect regarding the audit firm's client-level expertise. Taken together, the main inferences are robust to matching.

Second, we test whether the inferences hold after excluding the global financial crisis of 2009, when most impairments occurred. With this reduced sample, we continue to find positive and statistically significant coefficients on *TSE_CL_AIC* in all (untabulated) specifications, whereas the coefficients on *TSE_PL_AIC* and *TSE_CL_AF* are only statistically significant and positive within the sample of impairments. The coefficients on *TSE_PL_AF* are always

Table 7. Auditor Task-Specific Expertise and Goodwill Impairments: Auditors' Regulatory Training Background

	(1)		(2)		(3)		(4)		(5)		(6)	
	GAAP expertise		IFRS expertise		GAAP expertise		IFRS expertise		GAAP expertise		IFRS expertise	
	IMPAIR		*IMPAIR*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*	
	Coeff.	z-stat	Coeff.	z-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
TSE_CL_AIC	0.751*	(1.70)	0.862**	(2.02)	0.009	(1.02)	0.016*	(1.92)	0.075	(1.35)	0.061**	(2.02)
TSE_PL_AIC	1.137**	(2.51)	0.090	(0.21)	0.012	(0.97)	0.012*	(1.85)	0.074	(1.62)	0.042	(1.55)
TSE_CL_AF	0.323*	(1.89)	0.040	(0.62)	0.012	(0.57)	0.000	(0.64)	0.057***	(4.16)	0.012*	(1.76)
TSE_PL_AF	1.624**	(2.23)	0.385	(0.44)	0.025***	(3.83)	0.015	(0.86)	0.052	(0.86)	0.101	(1.10)
TENURE_AIC	−0.097	(−1.19)	−0.114	(−1.41)	−0.001	(−0.66)	−0.001	(−0.79)	−0.017**	(−2.23)	−0.002	(−0.42)
TENURE_AF	−0.089*	(−1.70)	0.009	(0.33)	−0.002*	(−1.93)	0.000	(0.72)	0.000	(0.07)	−0.000	(−0.06)
INDEXP_AIC	−0.169	(−0.48)	0.090	(0.26)	−0.003	(−0.55)	−0.001	(−0.19)	−0.007	(−0.34)	−0.028*	(−1.67)
INDEXP_AF	−0.794***	(−3.09)	0.190	(0.65)	−0.001	(−0.13)	−0.008**	(−2.17)	−0.015	(−0.54)	−0.049**	(−2.48)
TWO_AIC	−0.279	(−0.85)	0.160	(0.63)	−0.006	(−0.99)	0.004	(0.79)	−0.057**	(−2.32)	0.006	(0.33)
BIG4	0.186	(0.25)	−1.067	(−1.32)	0.004	(0.28)	−0.006	(−0.43)	−0.030	(−0.27)	−0.020	(−0.29)
AUDITFEE	0.003	(0.01)	0.942***	(4.17)	−0.010	(−1.08)	0.006*	(1.68)	−0.093**	(−2.65)	−0.009	(−0.57)
NAUDITFEE	0.199	(0.70)	−0.644***	(−2.89)	0.010	(0.86)	−0.007*	(−1.94)	0.080**	(2.02)	0.003	(0.21)
AGE_AIC	−0.027	(−0.95)	−0.005	(−0.22)	0.000	(0.57)	−0.001**	(−2.34)	−0.001	(−0.49)	−0.004**	(−2.53)
MODIFIEDOP	−1.012	(−1.63)	0.089	(0.25)	−0.005	(−0.25)	0.014	(1.19)	0.019	(0.43)	0.013	(0.32)
TSE_AC	0.937***	(3.14)	0.320	(1.34)	0.014**	(2.52)	0.001	(0.17)	0.030	(1.11)	−0.031*	(−1.67)
SIZE_AC	0.084	(1.27)	0.022	(0.38)	−0.001	(−0.48)	0.002	(1.53)	−0.004	(−0.69)	0.007	(1.57)
TENURE_AC	−0.054	(−0.58)	0.035	(0.71)	−0.002	(−0.79)	0.000	(0.61)	0.000	(0.05)	0.002	(0.77)
NEW_CEO	1.254***	(3.87)	0.280	(1.01)	0.013	(1.63)	−0.005	(−0.85)	0.006	(0.26)	−0.021	(−0.94)
NEW_CFO	−0.080	(−0.23)	−0.232	(−0.90)	−0.014	(−1.61)	0.006	(0.88)	−0.006	(−0.23)	0.024	(0.79)
SEGMENTS	0.270***	(3.50)	0.178**	(2.33)	0.001	(0.38)	0.001	(0.99)	−0.005	(−0.57)	0.001	(0.29)
STDRETURN	0.232	(0.01)	−1.298	(−0.09)	−0.247	(−0.45)	−0.116	(−0.37)	−4.582***	(−2.97)	−1.550	(−1.52)
LEVERAGE	0.386	(1.64)	−0.071	(−0.40)	−0.007	(−0.74)	−0.017***	(−3.72)	−0.003	(−0.18)	−0.015	(−0.78)
MTB	−0.124	(−0.99)	−0.018	(−0.31)	0.003	(0.97)	0.002	(1.45)	0.001	(0.13)	−0.017*	(−1.94)

(continued)

Table 7. (continued)

	(1)		(2)		(3)		(4)		(5)		(6)	
	GAAP expertise		IFRS expertise		GAAP expertise		IFRS expertise		GAAP expertise		IFRS expertise	
	IMPAIR		*IMPAIR*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*		*IMPAIR%*	
	Coeff.	z-stat	Coeff.	z-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
ΔSALES	−1.265**	(−2.29)	0.089	(0.18)	0.006	(0.55)	0.036**	(2.56)	−0.184**	(−2.31)	0.101	(1.17)
ΔOCF	−1.735	(−1.09)	0.259	(0.22)	−0.045	(−0.80)	0.098***	(3.74)	−0.010	(−0.05)	−0.133	(−0.85)
ΔEARNINGS	−3.121**	(−2.45)	−3.211***	(−2.88)	−0.121***	(−3.76)	−0.190***	(−6.10)	−0.322**	(−2.31)	−0.115	(−1.59)
ROA	−2.557**	(−1.97)	−9.125***	(−5.14)	−0.219***	(−4.35)	−0.391***	(−6.78)	−0.281**	(−2.13)	−0.612***	(−6.85)
CONSTANT	0.384	(0.19)	−3.075	(−1.63)	0.027	(0.69)	0.071*	(1.93)	0.452**	(2.29)	0.459***	(2.86)
INDUSTRY FE	YES		YES		YES		YES		YES		YES	
YEAR FE	YES		YES		YES		YES		YES		YES	
Pseudo/adj. R-sq	0.230		0.260		0.344		0.460		0.530		0.544	
N	671		1346		671		1346		142		188	

Note. Table 7 reports logistical regression results in Columns (1) and (2) with an indicator of goodwill impairments (*IMPAIR*) as the dependent variable and linear regression results in Columns (3) to (6) with the value of goodwill impairments divided by the amount of goodwill at the beginning of the year (*IMPAIR%*) as the dependent variable for subsamples based on the regulatory training background of the auditor-in-charge (Swedish GAAP vs. IFRS). The results in Column (5) to (6) are based on the sample where *IMPAIR* is equal to one. See Appendix C for all variable definitions. *z*- and *t*-statistics, reported in the parentheses, are based on standard errors clustered at the client level. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

positive, but insignificant. Overall, our main inferences are not sensitive to excluding this specific year.

Third, we examine the likelihood of goodwill impairments when economic conditions are indicative of impairment. Following prior literature (e.g., André et al., 2016; Carcello et al., 2020; Ramanna & Watts, 2012), we construct alternative measures of economic impairment at the client level and replace the dependent variable *IMPAIR* in equation (3) with a variable which equals one when a firm carries economically impaired goodwill and recognizes a goodwill impairment in the same year, and zero otherwise. As such, this dependent variable captures a subset of *IMPAIR*. The purpose of this analysis is to assess whether our main inferences are sensitive to restricting attention to economically meaningful impairment recognitions, while avoiding additional sample restrictions that would lead to sample attrition in our Swedish setting. Following Ramanna and Watts (2012) and Carcello et al. (2020), we first classify goodwill as economically impaired when *MTB* is below one. Using this definition, the mean of the dependent variable is 0.067 and the coefficient on *TSE_CL_AIC* (coeff. 0.554, z-stat 1.83) remains positive and statistically significant, indicating that greater client-level expertise is associated with a higher likelihood of impairing economically impaired goodwill. Next, consistent with EFRAG (2016), we define economic impairment based on negative Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA). Under this definition, the dependent variable has a mean of 0.060 and the association with *TSE_CL_AIC* (coeff. 0.687, z-stat 2.19) remains positive and statistically significant. We also consider negative operating cash flows as an indicator of economic impairment. Using this definition, the mean of the dependent variable is 0.088 and the coefficient on *TSE_CL_AIC* (coeff. 0.641, z-stat 1.93) continues to be positive and statistically significant. In addition, we find a positive and statistically significant coefficient on *TSE_CL_AF* (coeff. 0.092, z-stat 1.84), providing evidence of a knowledge dissemination effect at the audit firm level.

Finally, we re-estimate the main tests using client fixed effects following Minutti-Meza (2013). Including client fixed effects absorbs all time-invariant client characteristics, such that the coefficients are identified from within-client variation over time. The (untabulated) results show that the coefficients on *TSE_CL_AIC* remain positive and marginally significant both regarding the incidence and magnitude of clients' goodwill impairments, but the magnitude of the coefficients is reduced compared to the main results, and the effect is insignificant in the impairment subsample. For *TSE_CL_AF*, we find one marginally significant coefficient with *IMPAIR%* as the dependent variable in the full sample, suggesting that there is some evidence of knowledge transfer once time-invariant client characteristics are accounted for. The coefficients on the portfolio-level measures of the auditor-in-charge and audit firm are all positive but insignificant.

Conclusions

In this study, we investigate auditor task-specific expertise at the client and portfolio level. We posit that for complex accounting items such as goodwill, audit quality is influenced by the extent to which auditors-in-charge and audit firms possess task-specific expertise. Using data for Swedish publicly-listed firms, where auditors-in-charge have signed audit reports for decades, we construct measures that capture the proportion of the goodwill balance initially recognized during the tenure of the incumbent auditor-in-charge and the incumbent audit firm.

Our results show that client-level task-specific expertise of the auditor-in-charge is positively associated with both the likelihood and the magnitude of goodwill impairments. These findings indicate that client-specific expertise accumulated by the auditor-in-charge during the goodwill recognition year contributes to higher audit quality in subsequent goodwill accounting. Cross-sectional analyses further suggest that knowledge sharing and transfer of expertise occur under

specific conditions, such as in more homogeneous industries where expertise is more readily transferable across clients and within the largest audit firm.

This study contributes to auditing literature in several ways. First, we add to the literature on task-specific expertise by showing that specialization in complex accounting items that transcend industry boundaries improves audit quality, and that these effects are primarily driven by client-level expertise of the auditor-in-charge. Second, we extend the literature examining whether audit quality is primarily driven by individuals or by collective knowledge spillovers. We show that the client-level expertise of the auditor-in-charge is the dominant driver of audit quality in goodwill accounting, whereas audit firm- and portfolio-level expertise matter more in settings that facilitate knowledge sharing, such as larger audit firms and among auditors with pre-IFRS regulatory training. Finally, we contribute to the literature on external monitoring of goodwill reporting by showing that incumbent auditors-in-charge with client-level goodwill expertise are well positioned to constrain managerial discretion.

Our study is subject to several limitations. First, we are generally unable to link subsequent goodwill impairments to the specific goodwill initially recognized during the period in which the auditor-in-charge acquired expertise. This limitation arises when our expertise measure is below one and reflects the lack of sufficiently granular impairment disclosures by clients, rather than a constraint of the Swedish setting, which is otherwise advantageous due to the availability of individual auditor identifiers. Therefore, we cannot fully disentangle the underlying mechanisms through which auditor expertise affects impairment decisions. Second, we are only able to observe the signing auditors-in-charge and not the full audit team composition for each engagement. It is therefore possible that newly appointed auditors-in-charge already possess client-level expertise through prior involvement as team members. Nevertheless, given that auditing is a team-based activity, it is noteworthy that the signing auditor-in-charge continues to exert a pronounced influence on subsequent goodwill accounting outcomes.

These limitations point to several avenues for future research. One direction is to examine how audit firms allocate audit team members to goodwill-related tasks and how auditors-in-charge prioritize goodwill relative to other complex accounting areas. Another avenue is to study task-specific expertise in other domains, such as taxation or fair value accounting, to assess whether the limited evidence on knowledge transfer within audit firms is specific to goodwill or reflects features of our institutional setting. Future studies could also more directly examine the unlearning process among auditors that we discuss in one of our cross-sectional tests by combining archival data with survey or experimental approaches to capture how individual auditors adapt (or fail to adapt) to major accounting regime changes such as IFRS adoption. Finally, we encourage future studies to examine other institutional contexts, such as the US, where audit partners are now identifiable, to assess the generalizability of our findings of the importance of task-specific knowledge to larger economies and to further explore differences between auditor and managerial behavior across settings.

Appendix

Appendix A.

Construction of the Independent Variables of Interest for the Auditor-in-Charge

(1) Year	(2) CL recognized goodwill	(3) CL reported goodwill balance	(4) AIC	(5) CL recognized goodwill cumulative	(6) TSE_CL_AIC	(7) PL recognized goodwill	(8) PL reported goodwill balance	(9) PL recognized goodwill adjusted	(10) PL reported goodwill balance adjusted	(11) TSE_PL_AIC	(12) AF
2005	0	85	1	0	0/85 = 0.000	0	85	0-0 = 0	85-85 = 0	0/0 = 0.000	21
2006	15	100	1	15	15/100 = 0.150	15	100	15-15 = 0	100-100 = 0	0/0 = 0.000	21
2007	0	100	1	15	15/100 = 0.150	15	100	15-15 = 0	100-100 = 0	0/0 = 0.000	21
2008	0	100	1	15	15/100 = 0.150	15	100	15-15 = 0	100-100 = 0	0/0 = 0.000	21
2009	0	100	1	15	15/100 = 0.150	15	100	15-15 = 0	100-100 = 0	0/0 = 0.000	21
2010	0	100	4	0	0/100 = 0.000	45	305	45-0 = 45	305-100 = 205	45/205 = 0.219	21
2011	65	165	4	65	65/165 = 0.394	110	370	110-65 = 45	370-165 = 205	45/205 = 0.219	21
2012	35	200	4	100	100/200 = 0.500	170	430	170-100 = 70	430-200 = 230	70/230 = 0.304	21
2013	0	200	4	100	100/200 = 0.500	190	680	190-100 = 90	680-200 = 480	90/480 = 0.187	21
2014	0	200	4	100	100/200 = 0.500	200	690	200-100 = 100	690-200 = 490	100/490 = 0.204	21
2015	0	200	33	0	0/200 = 0.000	0	430	0-0 = 0	430-200 = 230	0/230 = 0.000	7

(continued)

Appendix A. (continued)

(1) Year	(2) CL recognized goodwill	(3) CL reported goodwill balance	(4) AIC	(5) CL recognized goodwill cumulative	(6) TSE_CL_AIC	(7) PL recognized goodwill	(8) PL reported goodwill balance	(9) PL recognized goodwill adjusted	(10) PL reported goodwill balance adjusted	(11) TSE_PL_AIC	(12) AF
2016	0	200	33	0	0/200 = 0.000	0	430	0-0 = 0	430-200 = 230	0/230 = 0.000	7
2017	0	200	33	0	0/200 = 0.000	20	450	20-0 = 20	450-200 = 250	20/250 = 0.080	7
2018	120	320	33	120	120/320 = 0.375	140	570	140-120 = 20	570-320 = 250	20/250 = 0.080	7
2019	210	530	33	330	330/530 = 0.622	350	780	350-330 = 20	780-530 = 250	20/250 = 0.080	7

Note. Appendix A illustrates how the main independent variables of interest are constructed for the auditor-in-charge (AIC) at an example focal client. Each year is a client-year of the focal client over the period 2005-2019. Column (2) reports whether there is goodwill recognized at the focal client level (CL), a non-zero amount means goodwill has been recognized for that year. Column (3) shows the outgoing goodwill balance as reported by the focal client. Column (4) reveals which AIC is signing the annual report for each client-year. Column (5) accumulates the recognized goodwill for each AIC and Column (6) includes the variable *TSE_CL_AIC* (task-specific expertise at the client level of the auditor-in-charge) which is calculated by dividing Column (5) with Column (3). In Column (7), all recognized goodwill at the portfolio level (PL) of the AIC is accumulated. In Column (8), the goodwill balances at the portfolio level (PL) of the AIC are accumulated. Column (9) and (10) adjust Column (7) and (8), respectively, so that the focal client is deducted from the PL measure of the AIC. Finally, Column (11) includes the variable *TSE_PL_AIC* (task-specific expertise at the portfolio level of the auditor-in-charge) which is calculated by dividing Column (9) with Column (10). The measure is further adjusted for reported divested goodwill and we use 100% as the cutoff for expertise, even though the measure technically can be above 100%. Appendix B illustrates how the main independent variables of interest are constructed for the audit firm (AF) for the same example focal client.

Appendix B.
Construction of the Independent Variables of Interest for the Audit Firm

(1) Year	(2) CL recognized goodwill	(3) CL reported goodwill balance	(4) AF	(5) CL recognized goodwill cumulative	(6) TSE_CL_AF	(7) PL recognized goodwill	(8) PL reported goodwill balance	(9) PL recognized goodwill adjusted	(10) PL reported goodwill balance adjusted	(11) TSE_PL_AF	(12) AIC
2005	0	85	21	0	0/85 = 0.000	0	155	0-0 = 0	155-85 = 70	0/70 = 0.000	1
2006	15	100	21	15	15/100 = 0.150	35	190	35-15 = 20	190-100 = 90	20/90 = 0.222	1
2007	0	100	21	15	15/100 = 0.150	105	260	105-15 = 90	260-100 = 160	90/160 = 0.563	1
2008	0	100	21	15	15/100 = 0.150	105	260	105-15 = 90	260-100 = 160	90/160 = 0.563	1
2009	0	100	21	15	15/100 = 0.150	135	290	135-15 = 120	290-100 = 190	120/190 = 0.632	1
2010	0	100	21	15	15/100 = 0.150	150	305	150-15 = 135	305-100 = 205	135/205 = 0.659	4
2011	65	165	21	80	80/165 = 0.489	215	370	215-80 = 135	370-165 = 205	135/205 = 0.659	4
2012	35	200	21	115	115/200 = 0.575	275	430	275-115 = 160	430-200 = 230	160/205 = 0.696	4
2013	0	200	21	115	115/200 = 0.575	295	680	295-115 = 180	680-200 = 480	180/480 = 0.375	4
2014	0	200	21	115	115/200 = 0.575	305	690	305-115 = 190	690-200 = 490	190/490 = 0.388	4
2015	0	200	7	0	0/200 = 0.000	0	890	0	690	0/690 = 0.000	33
2016	0	200	7	0	0/200 = 0.000	0	890	0	690	0/690 = 0.000	33
2017	0	200	7	0	0/200 = 0.000	50	940	50	740	50/740 = 0.068	33

(continued)

Appendix B. (continued)

(1) Year	(2) CL recognized goodwill	(3) CL reported goodwill balance	(4) AF	(5) CL recognized goodwill cumulative	(6) TSE_CL_AF	(7) PL recognized goodwill	(8) PL reported goodwill balance	(9) PL recognized goodwill adjusted	(10) PL reported goodwill balance adjusted	(11) TSE_PL_AF	(12) AIC
2018	120	320	7	120	120/320 = 0.375	170	1060	50	740	50/740 = 0.068	33
2019	210	530	7	330	330/530 = 0.622	500	1390	170	860	170/860 = 0.198	33

Note. Appendix B illustrates how the main independent variables of interest are constructed for the audit firm (AF) at an example focal client. Each year is a client-year of the focal client over the period 2005–2019. Column (2) reports whether there is goodwill recognized at the focal client level (CL), a non-zero amount means goodwill has been recognized for that year. Column (3) shows the outgoing goodwill balance as reported by the focal client. Column (4) reveals which the AF is of the auditor-in-charge who is signing the annual report for each client-year. Column (5) accumulates the recognized goodwill for each AF and Column (6) includes the variable *TSE_CL_AF* (task-specific expertise at the client level of the audit firm) which is calculated by dividing Column (5) with Column (3). In Column (7), all recognized goodwill at the portfolio level (PL) of the AF is accumulated. In Column (8), the goodwill balances at the portfolio level (PL) of the AF are accumulated. Column (9) and (10) adjust Column (7) and (8), respectively, so that the focal client is deducted from the PL measure of the AF. Finally, Column (11) includes the variable *TSE_PL_AF* (task-specific expertise at the portfolio level of the audit firm) which is calculated by dividing Column (9) with Column (10). The measure is further adjusted for reported divested goodwill and we use 100% as the cutoff for expertise, even though the measure technically can be above 100%. Appendix A illustrates how the main independent variables of interest are constructed for the auditor-in-charge (AIC) for the same example focal client.

Appendix C.
Variable Definitions

Variable	Definition
IMPAIR	A dichotomous variable equal to one if the client recognizes a goodwill impairment during the fiscal year, and zero otherwise.
IMPAIR%	The value of the goodwill impairment recognized during the fiscal year divided by the amount of goodwill at the beginning of the year.
TSE_CL_AIC	The value of accumulated goodwill at a client during the tenure of an individual auditor-in-charge divided by the total outgoing goodwill balance of the client.
TSE_PL_AIC	The value of accumulated goodwill at all clients (excluding the focal client) of an individual auditor-in-charge during the tenure of the individual auditor-in-charge divided by the total outgoing goodwill balance of all the clients (excluding the focal client).
TSE_CL_AF	The value of accumulated goodwill at a client during the tenure of an individual audit firm divided by the total outgoing goodwill balance of the client.
TSE_PL_AF	The value of accumulated goodwill at all clients (excluding the focal client) of an audit firm during the tenure of the audit firm divided by the total outgoing goodwill balance of all the clients (excluding the focal client).
TENURE_AIC	The number of years the individual auditor-in-charge has been the auditor of the client.
TENURE_AF	The number of years the audit firm has been the auditor of the client.
INDEXP_AIC	A dichotomous variable equal to one if the individual auditor-in-charge audits the largest number of clients in an industry in a year, and zero otherwise.
INDEXP_AF	A dichotomous variable equal to one if the audit firm audits the largest number of clients in an industry in a year, and zero otherwise.
TWO_AIC	A dichotomous variable equal to one if the client has appointed more than one auditor, and zero otherwise.
BIG4	A dichotomous variable equal to one if the audit firm is a BIG4 (EY, Deloitte, KPMG, or PwC), and zero otherwise.
AUDITFEE	The natural logarithm of 1 + audit fees.
NAUDITFEE	The natural logarithm of 1 + nonaudit fees.
AGE_AIC	The age of the individual auditor-in-charge.
MODIFIEDOP	A dichotomous variable equal to one if the client has received a modified audit opinion, and zero otherwise.
TSE_AC	A dichotomous variable equal to one if any audit committee member of the client has goodwill impairment experience in the last 3 years, and zero otherwise.
SIZE_AC	Number of individuals on the audit committee.
TENURE_AC	Average tenure on the board of directors of the audit committee.
NEW_CEO	A dichotomous variable equal to one if the client has a new chief executive officer, and zero otherwise.
NEW_CFO	A dichotomous variable equal to one if the client has a new chief financial officer, and zero otherwise.
SEGMENTS	The number of operating business segments reported by the client.
STDRETURN	The annualized standard deviation of the client's daily stock returns.

(continued)

Appendix C. (continued)

Variable	Definition
LEVERAGE	The debt-to-equity ratio of the client.
MTB	The market to book value of equity ratio of the client.
ΔSALES	The change in sales of the client.
ΔOCF	The change in cash flow from operations of the client.
ΔEARNINGS	The change in net income of the client.
ROA	The pre-impairment net income divided by total assets of the client.

Note. Appendix C defines the main variables used in this study.

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Notes

1. Following Sundgren and Svanström (2014, 2017), we use the term "auditors-in-charge" to refer to the individual signing auditor(s), who are not necessarily audit partners.
2. In 2003, the International Accounting Standards Board (IASB) changed goodwill accounting by introducing the acquisition method and the impairment-only approach, which is similar to goodwill accounting adopted in the US in 2001 by the Financial Accounting Standards Board (FASB).
3. Technically, the measure can be higher than one because we use the initial goodwill recognition amount as numerator and the outgoing goodwill balance (after impairment) as the denominator. However, in the main tests we use one as a cutoff based on the notion that maximum expertise is 100%. The results are not sensitive to using the variable without the cutoff or with the outgoing goodwill balance of the client plus the impairment amount as the denominator.
4. Because we want to test whether there is a spillover effect from the auditor-in-charge's portfolio-level task-specific expertise affecting the focal firm' subsequent goodwill accounting, we follow Ahn et al. (2020) and exclude the focal client's goodwill in the numerator and denominator when calculating portfolio-level measures. However, the inferences are robust to including the focal client goodwill in the calculation.
5. However, given the relatively small size of the Swedish audit market, with most clients headquartered in the Stockholm area, as discussed regarding the setting, we do not construct measures of city-industry audit office specialization and instead focus our analyses at the country level.
6. Recall that publicly-listed firms in Sweden can appoint two auditors to perform a joint audit, but it is not required.

7. The incidence of 16.4% in our sample corresponds to the 15.4% incidence reported for Sweden in Glaum et al. (2018) but is higher than the 12.9% reported for US firms in Sherpardson (2019) or 9.1% in Ayres, Neal, et al. (2019). The pre-impairment percentage of a firm's assets that is composed of goodwill is 16.0% in our setting (untabulated) compared with 11.5% reported for US firms in Carcello et al. (2020). Our statistic, however, corresponds to the 16.7% reported for European firms and 16.8% for US firms in André et al. (2016). We also note that the average magnitude of the impairment is 11.6% of the opening goodwill balance among the 330 goodwill impairments in our sample (untabulated).
8. Among the Big 4 audit firms serving publicly-listed clients in Sweden, PwC is the most prominent, with an average of 51.6 client engagements and 33.0 auditors-in-charge per year, compared to sample averages of 38.0 engagements and 23.1 auditors-in-charge per audit firm and year. On average, each PwC auditor-in-charge is responsible for 2.3 client engagements annually, compared to a sample average of 2.2. We also note that the relative market shares of the Big 4 firms are stable over time, with PwC as the largest audit firm in every sample year.
9. We note that there could be a mechanical relation between *IMPAIR* and the client-level expertise variables with goodwill balance in the denominator. However, the univariate correlations are low for *TSE_CL_AIC* (0.06) and *TSE_CL_AF* (0.07) so we conduct an untabulated test where we include the goodwill balance as an additional control variable to address this concern. The main inferences remain unchanged.
10. We alleviate concerns about multicollinearity by re-estimating our regressions without *NAUDITFEE* in untabulated tests and find that the main inferences hold.
11. We do not include a separate control variable for client size (e.g., the natural logarithm of total assets) because client size is highly correlated with *AUDITFEE* (0.93). Consistent with this, the variance inflation factor exceeds 5.0 when both client size and audit fees are included in the same specification, indicating substantial multicollinearity. Notably, Beatty and Weber (2006) does not include audit fees in the model. However, our inferences remain unchanged when we additionally control for firm size using either the natural logarithm of total assets or the natural logarithm of market value of equity (untabulated).
12. Our *TSE_AC* variable corresponds to the *TSE_Any* variable in Shepardson (2019). We find consistent results with a variable corresponding to *TSE_Mean* in Shepardson (2019) that captures the proportion of the audit committee members with any task-specific experience of goodwill impairments with a lookback period of 3 years.
13. When estimating equations (3) and (4) without the audit firm-level expertise measures (*TSE_CL_AF* and *TSE_PL_AF*), the positive coefficients on the auditor-in-charge measures (*TSE_CL_AIC* and *TSE_PL_ AIC*) remain similar in magnitude to those reported in Table 4, with *TSE_CL_AIC* continuing to be statistically significant. Conversely, when excluding the auditor-in-charge measures, the coefficient on *TSE_CL_AF* becomes positive and statistically significant at the 5% level across specifications. The coefficient on *TSE_PL_AF* is positive and statistically significant only when *IMPAIR%* is used as the dependent variable in the full sample (coefficient = 0.023, t-statistic = 1.66). These results suggest that although audit firm-level expertise is informative in isolation, its explanatory power is largely subsumed by individual auditor expertise when both are included in the same specification.
14. We further examine whether task-specific expertise at the client and portfolio levels functions as complements or substitutes by interacting these measures, separately for auditors-in-charge and audit firms. The (untabulated) results indicate that all standalone coefficients are positive. However, the only standalone coefficient that remains statistically significant in all specifications is *TSE_CL_AIC* (coeff. 0.518, t-stat 1.76 with *IMPAIR* as the dependent variable, coeff. 0.008, t-stat 1.72 with *IMPAIR %* as the dependent variable and the full sample, and coeff. 0.051, t-stat 1.71 with *IMPAIR%* as the dependent variable and the impairment sample). The interaction between *TSE_CL_AIC* and

TSE_PL_AIC is positive in all specifications but statistically significant only in the impairment sample (coeff. 0.025, t-stat 1.67). The interaction between *TSE_CL_AF* and *TSE_PL_AF* is positive in all specifications but statistically significant only in the impairment sample (coeff. 0.017, t-stat 1.90). Taken together, these results suggest that client- and portfolio-level expertise operate as complements rather than substitutes. However, we note that the statistical significance of these interaction effects is sensitive to the specification.

15. Before (after) restricting our sample, PwC is the audit firm in 37.7% (41.0%) of the observations, EY in 24.1% (23.4%), KPMG in 21.6% (19.9%), and Deloitte in 13.0% (12.6%). In terms of client sales, PwC accounts for 48.4% (49.3%) of total audited sales, and KPMG is the second-largest audit firm with 22.2% (21.3%). This is consistent with prior evidence from Sweden in Alexeyeva and Svanström (2015), which document that PwC is by far the largest audit firm in terms of both client sales and number of employees.
16. We obtain quantitatively similar results (untabulated) when generating the control group based on the lagged control covariates used in the main regressions including and excluding the absolute value of lagged total accruals or discretionary accruals estimated cross-sectionally following Kothari et al. (2005) and industry and year fixed effects. The inferences also remain the same if we include the natural logarithm of total assets as a proxy for client size because larger clients are more likely to require specialist auditors and often large audit firms, which could influence the main results (Minutti-Meza, 2013).

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