

Does the Identity of Engagement Partners Matter to the Market? An Analysis of the Persistence and Economic Consequences of Audit Reporting Failures

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Abstract

This study examines the persistence and economic consequences of engagement partner reporting failures. Our results show that both aggressive and conservative audit reporting, which are measured by the frequency of historical Type 2 and Type 1 audit reporting error rates, respectively, persist over time and extend to other audits. Analyses of the earnings properties of client firms corroborate this finding. Importantly, our results show that the market penalizes client firms from the suspected low-quality audits. In particular, we find that the extent of engagement partner prior reporting failures is related to higher interest rates, worse credit ratings and less favorable forecasts of insolvency. Collectively, we provide evidence that engagement partner prior reporting failures are reflective of the auditor's "style" and the quality of audits that he or she will perform in the future. These results imply that the engagement partner identity affects audit quality and matters to the market, which would support the recent initiatives of regulators to disclose the name of the engagement partner in the audit report.

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1. Introduction

Recent studies have provided a growing amount of evidence supporting the view that individual auditor characteristics affect audit outcomes. For example, Gul et al. (2011) document significant variation in audit quality among individual auditors in addition to the variation explained by firm-wide effects. Zerni (2012) reports that engagement partner industry specialization and specialization in large public companies are recognized and valued by users of financial statements and/or corporate insiders resulting in higher fees within these engagements. These studies are a response to a call for (archival) research on audit quality at the level of the individual auditor as a relevant unit of analysis (Wallman 1996; DeFond and Francis 2005; Nelson and Tan 2005; Church, Davis and McCracken 2008; Francis 2011a; Gul, Wung and Yang 2011).¹

Similarly, regulators appear to have recently taken the perspective that engagement partners have an important role in the perceived audit quality by requiring the disclosure of the identities of the individual auditors who are actually carrying out the audits. For instance, the revised European Union's (EU's) 8th Directive (2006) requires disclosure of the identity of the engagement partner, and the Public Company Accounting Oversight Board (PCAOB) in the United States has recently proposed a similar requirement (PCAOB, 11 October 2011, http://pcaobus.org/News/Releases/Pages/10112011_OpenBoardMeeting.aspx).² According to the PCAOB

¹ The terms "auditor", "audit partner", "engagement partner", and "audit partner in charge" are used interchangeably in this study.

² This proposal is based on the final report of the U.S. Treasury's Advisory Committee on the Auditing Profession (ACAP), which recommends, among other things, the PCAOB to undertake a standard-setting initiative to

Release No. 2011-007, October 2011, p. 2-3:[...]it is the engagement partner who is at the center of the effort. He or she is responsible for the engagement and its performance”.] Hence, the rationale for these requirements is that disclosure of the auditor’s identity would encourage more transparency on the part of the stakeholders and more accountability in the auditing process from the perspective of the engagement partner (ACAP, 2008).

The purpose of this study is to further enhance our understanding of individual auditor effects on audit quality and the economic consequences of transparency on the engagement partner’s identity. Specifically, the first main objective of this study is to address the following question: Does the quality of an engagement partner’s previously conducted audits convey information about his or her “style” of auditing and the quality of his or her future audits?³ If the answer to this question is yes, then the identity of the engagement partner would be valuable to the users of financial statements, which supports the initiative of the regulators to mandate auditor disclosure.

In the present study, we measure the quality and style of engagement partners in previously conducted audits by the frequency of their prior audit reporting failures, i.e., whether the auditor has a history of misreporting.⁴ It is a priori not clear whether engagement

consider mandating the engagement partner’s signature on the auditor’s report” (ACAP Report, October 6, 2008, at VII:19). The amended proposal of the PCAOB does not require the engagement partner to sign the audit report but requires the name of the engagement partner to be disclosed in the audit report: “...which would make the engagement partner’s name readily available to the users of the audit report while mitigating concerns about minimizing the firm’s role in the audit.” According to the standard-setting agenda of the Office of the Chief Auditor, the status of the proposal is in phase: “Adopt final amendments or re-propose amendments for public comment”, in the 3rd quarter of the year 2012 (PCAOB 2011, November).

³ With the term “style” we refer collectively to all the individual auditor characteristics that may affect the audit outcomes of his or her engagements. These characteristics include, among others, competence, integrity, differences in risk preferences, problem-solving abilities, and cognitive styles.

⁴ There are only two primary observable outcomes of the audit process: the audit report and the client’s audited financial statements. While the latter are representations of company management affected by the audit process, the former is directly under the auditor’s control, which arguably allows it to be a less noisy proxy for individual auditor quality.

partners' reporting failures are persistent. On the one hand, engagement partners with a history of reporting failures are likely to continue to misreport due to the characteristics of the partner (e.g., risk preference, expertise, problem-solving abilities, and cognitive style). On the other hand, one would expect that audit firms have policies and procedures in place (e.g., reviews, demoting, re-training or even firing) to address misreporting behavior by engagement partners. To examine whether individual audit failures are persistent, we use the history of an individual auditor's misreporting as the variable of interest in explaining the audit quality of that individual auditor at the client-firm level. We use the following proxies to measure audit quality: the accuracy of the audit reports and the ability of the client firms' accrual-based current earnings to predict future performance (as proxied by one-year ahead operating cash flows). Following Lennox (1999), and as explained in Francis (2011a), auditors are considered to report accurately when a client failure is preceded by a going-concern opinion (GCO) and when a client that does not fail receives a clean opinion. Not issuing a GCO to a failing client is labeled as a Type 2 error, while issuing a GCO to a nonfailing client is a Type 1 error. We expect that the same type of failures persist over time, i.e. auditors that have made Type 1 (Type 2) errors in the past are more likely to repeat *similar*, i.e. Type 1 (Type 2) errors in the future. We use only first-time GCOs for a specific client to address the fact that audit opinions and poor financial performance tend to be persistent over time (e.g., Krishnan et al., 1996; Lennox, 2000).

Accrual persistence and cash flow predictability are considered to be two features of high quality earnings (FASB 1978, paragraphs 37-39; Barth, Cram, and Nelson 2001; Minnis 2011; Hope et al. 2012). High earnings quality is, in turn, commonly used in the auditing literature to measure audit quality (Francis 2011a). The auditors are expected to enhance the

credibility of the financial reporting and increase the precision of the information that is available to the investors (e.g., existence and precision of the accounting estimates), which reduces the companies' cost of capital (e.g., Lambert, Leuz and Verrecchia 2007). We expect that accruals are less persistent and accrual-based current earnings are less informative about future cash flows for clients firms of auditors with a history of misreporting.

The second main objective of our study is to empirically test whether the credit market penalizes client firms of engagement partners with a history of reporting failures. This may occur if lenders and/or credit raters consider prior failures to be indicative of low audit and financial reporting quality (i.e., low source credibility, see for instance, Beach et al. 1978 and Beaulieu 2001), which increases the firm-specific information risk. Beyer and Sridhar (2006) provide analytical evidence that the value of a given client firm depends on the publicly observable audit report for that client and on the audit reports of all the other client firms of the same auditor. This finding supports the assumption that the market's perception of the auditor's level of integrity and competence is influenced by all audit reports issued by a given auditor. Increased information risk pertaining to a client firm's operations is expected to raise the firm's cost of capital and in the worst case, may even prevent access to external capital (Jensen and Meckling 1976, Amihud and Mendelson 1986, Coles and Lowenstein 1988, Diamond and Verrecchia 1991, Botosan 1997). Evidence supporting that the market penalizes client firms of engagement partners with a history of misreporting, would imply that disclosure of the engagement partner identity contains information value to the market *over and above* other known factors that explain reporting failures.

Using panel data of entire client portfolios of individual Big 4 auditors in Sweden, we find considerable evidence that similar audit reporting failures persist over time. Specifically,

the frequency of both prior Type 2 and Type 1 errors, which are an indication of audit reporting aggressiveness and conservatism, respectively, are estimated to persist over time and extend to other audits. Therefore, prior audit reporting failures are informative about the quality of the audits he or she will perform in the future. The effects are highly statistically significant and economically large. For example, with all else equal, a shift of one standard deviation in prior Type 2 (Type 1) audit reporting error frequency results in a 2.2-fold (1.39-fold) increase in the predicted odds of a similar failure occurring in the future.⁵ Using earnings properties as an alternative proxy for audit quality, we find evidence suggesting that accruals are less persistent, and the accrual-based current earnings are less informative about future cash flows for client firms of auditors with prior reporting errors. The accruals are more strongly related to future cash flows for client firms of auditors without or with low frequencies of prior reporting errors compared with client firms of auditors with high frequencies of prior reporting errors. Hence, the empirical evidence from audit reports and earnings properties supports the same conclusion: the extent of prior audit reporting failures of engagement partners is related to lower quality audits in the future.⁶

⁵ It is important to note that the magnitudes of the effects in a logit model depend on the values of other predictors. Hence, the calculated magnitudes of the effects are not constant.

⁶ The empirical evidence strongly supports the view that disclosing the identity of the engagement partner provides incremental information about audit quality in addition to the conventional measures (used as control variables in our empirical models). Importantly, given that the deterministic model for audit quality and for any given audit quality proxy remains unknown, even the potential endogenous matching of auditors and clients do not confound the implications of our findings; the engagement partner identity continues to be informative about audit quality. Note also, that for the tests of outsiders perceived audit quality we perform a robustness test in Section 5.5. by adding firm fixed effects into our empirical analyses. Findings from these analyses are essentially similar to those without auditor dummies, suggesting that endogeneity due to omitted variables is not driving our findings. However, we are not able to test whether mandating the disclosure of the identity of the engagement partner has effects on auditor behavior (e.g., changes in professional conduct due to increased sense of accountability). A study to address this question would require data from before and after the mandated disclosure, which is not possible in the Swedish setting because of the long history of the disclosure requirement of the engagement partner identity.

Importantly, our results indicate that the market penalizes misreporting behavior. In particular, we find that the market recognizes and prices the differences in engagement partner quality by attributing higher implicit interest rates, worse credit ratings and less favorable forecasts of insolvency to client firms in the portfolio of auditors with a history of misreporting behavior. The above finding of negative perception of audit quality for audits performed by engagement partners with prior audit failures remain robust to using a firm fixed effects extension of our empirical model which reduces concern for a potential endogeneity bias due to omitted client characteristics. The findings that the market penalizes misreporting behavior are consistent with the position taken by PCAOB (2009, 2011) and analytical findings by Beyer and Sridhar (2006).

Overall, our study contributes to the emerging literature that attempts to understand the effects of individual auditors on audit quality. We use the rationale and provide consistent evidence that the existence of prior audit reporting failures may indicate a systemic problem due to the characteristics of individual auditors, which increases the likelihood of low audit quality in future audits.⁷ Our findings also add to the broader body of recent literature that links individuals, such as CEOs and CFOs, with a wide range of firm decisions and policies (Bertrand and Schoar 2003; Bamber, Jiang and Wang 2010; Dyreng, Hanlon and Maydew 2010; Kachelmeier 2010; Ge, Matsumoto and Zhang 2011; Cronqvist, Makhija and Yonker 2012). These studies, similar to our study, suggest that people, instead of firms, make the decisions and help to bridge the gap between archival and behavioral accounting research,

⁷ Francis and Michas (2011) employ a similar approach with office-level data from the U.S. and report evidence that local offices with at least one audit failure in a year are more likely to be associated with other concurrent and future audit failures.

which typically employs experimental research designs.⁸ Our archival evidence suggests that individual auditors have their own style, which systematically (and predictably) affects audit outcomes. Another main contribution of the current study is the analysis of whether the identity of the engagement partner and the accuracy of his or her prior audit reporting decisions in particular, matter to users of financial statements. By examining the perceptions of audit quality by the lenders and credit raters, this study enhances our understanding of auditor reputation and its implications on the debt contracting of client firms. Because auditor reputation is a central input for audit quality, the reported findings should be of interest to practitioners, regulators, academics and users of financial statements. Lenders, equity owners and other users of financial statements benefit when the audit quality can be determined at the level of the individual auditor, which consequently allows better assessment of the financial reporting quality. From the perspective of the audit firm and regulators, it is valuable if they can more efficiently allocate their quality-control resources to the auditors and engagements where lower quality audits are more likely to occur (Francis and Michas 2011).

The remainder of the paper is organized as follows: Section 2 reviews the relevant literature and develops the hypotheses. Section 3 describes the research design. Section 4 describes the data and presents descriptive statistics. Section 5 reports the results, and Section 6 concludes the study.

⁸ According to the neoclassical view of the firm, executive managers are considered homogeneous and are therefore perfect substitutes for one another (Bertrand and Schoar 2003, p.1173). Therefore, under the same circumstances exactly the same decisions would be made regardless of the identity of the executive in the position. In contrast, Hambrick and Mason's (1984) upper echelons theory postulates that managers are not effectively interchangeable. Instead, their theory argues that idiosyncratic differences in the managers' experiences are related to differences in personal values and cognitive styles, such as integrity and tolerance of ambiguity, which allows managers to choose different strategies and methods especially in complex situations lacking clear and computable solutions (Bamber et al. 2010). The audit process can also be characterized as consisting of inherently complex and ambiguous tasks that often lack clear and calculable solutions.

2. Literature Review and Hypotheses

2.1. Prior audit reporting failures and future audit quality

Individual auditors are constrained by the quality-control mechanisms of their firms. Auditors are required to follow auditing standards and highly standardized audit procedures. Furthermore, risk and materiality decisions are often centralized, and auditor decisions are subject to both internal and external reviews. All of these factors may limit the impact of individual auditors' characteristics on audit quality. The majority of prior audit quality research is thus also focused at the firm level.

In contrast to this firm-wide view of audit practice, a number of studies using office-level data from the U.S. have reported evidence that audit quality is affected by office-level characteristics. Specifically, there is evidence that audit quality is higher in relatively large offices (Francis and Yu 2009; Choi et al. 2010; Francis, Michas and Yu 2012) and offices with higher industry expertise (Reichelt and Wang 2010) and that the quality difference is also priced by the audit market (Francis et al. 2005). Francis and Yu (2009) propose that one reason for the higher quality audits provided by larger offices compared with smaller offices is that the large offices possess more collective human capital due to more extensive experience dealing with different types of companies. Large offices are also typically located in large metropolitan areas with larger pools of auditor candidates, which allows a more selective recruitment process compared with smaller regions. Hence, one explanation for the above findings is the higher overall quality and amount of human capital possessed by personnel in larger offices compared with smaller offices.

Based on these insights on audit quality using office-level data, a call was made to further push the archival analyses down at the individual auditor level (DeFond and Francis 2005; Nelson and Tan 2005; Church et al. 2008; and Francis 2011a). According to Knechel (2000), individual auditors differ in terms of incentives, risk preferences, expertise, problem-solving abilities, and cognitive styles. Because auditing is inherently a judgment and decision-making (JDM) process, the audit quality is ultimately dependent on the individual auditor's JDM abilities (Knechel 2000; Nelson and Tan 2005; and Nelson 2009). Arguably, the auditor JDM abilities are affected by the characteristics of the auditor. An increasing number of recent archival studies adopt this perspective and report evidence that individual auditor characteristics are essential determinants of audit outcomes and should therefore not be ignored (e.g., Carey and Simnett 2006; Chen, Lin, and Lin 2008; Chi et al. 2009; Gul et al. 2011; Zerni 2012).⁹

The emerging research on the individual auditor effects corresponds with a broader stream of literature that provide evidence that the styles of CEOs and CFOs affect the firm performance, strategic firm decisions and policies adopted (Bertrand and Schoar 2003; Bamber, Jiang and Wang 2010; Dyreng, Hanlon and Maydew 2010; Kachelmeier 2010; Ge, Matsumoto and Zhang 2011; Cronqvist, Makhija and Yonker 2012). The underlying rationale in these studies is based on the fact that people rather than corporations make the decisions (Bamber et al. 2010; Dyreng et al. 2010; Kachelmeier 2010). Bertrand and Schoar (2003) were the first to document that executive fixed effects explain a considerable portion of the variation in firms' strategic investment, financial, and organizational decisions. After the influential study by

⁹ It should also be noted that experimental audit research provides evidence that audit quality varies with individual auditor characteristics (see Nelson (2009) for a comprehensive review).

Bertrand and Schoar (2003), several other papers have adopted the fixed-effects methodology (allowing the disentanglement of the managerial and individual effects from the firm effects) and report evidence that corroborates the findings of Bertrand and Schoar. For example, top executives have been found to influence tax avoidance (Dyreng et al. 2010), features of management forecasts (Bamber et al. 2010) and financial reporting practices (Ge et al. 2011). Another recent study shows that CEO personal leverage (in their most recent home purchase) explains corporate leverage, which suggests that CEOs imprint their personal preferences on the firms they manage (Cronqvist et al. 2012).

Similar to the managerial fixed-effects literature, in this study, we focus on the effects of individual auditors on audit outcomes by examining whether the history of publicly observable outcomes of the engagement partners' prior audits conveys information about the style and quality of future audits conducted by the same individuals. Similar to the study of Francis and Michas (2011), which was conducted at the audit office level, we consider the possibility that a high frequency of prior audit reporting failures at the engagement partner level indicates a systemic problem due to the lack of integrity or competence of an auditor, which would increase the likelihood of similar failures in future audits. The above discussion leads to the following hypothesis:

H1a: The frequency of prior audit reporting failures of an engagement partner is positively related to the likelihood of similar reporting failures occurring in the future.

The most significant shortcoming of the use of issued audit reports as a proxy for firm-level audit quality relates to the low variation in the response variable (e.g., in the case of going concern opinions: accurate vs. not accurate). As an alternative audit quality proxy, we employ the properties of the client firms' earnings. With the downside of being a joint product of the

management and the auditor, the upside in the use of the client firms' earnings properties is that it provides an insight into the entire continuum of the audit quality spectrum from low- to high-quality audits (Francis 2011a). Hence, analyzing both audit reports and earnings properties most likely allows more robust inferences to be drawn. In particular, we use the methodology developed by Barth, Cram and Nelson (2001) to examine whether the frequency of the engagement partner's prior audit reporting failures relates to the earnings properties of the clients in the engagement partner's portfolio in terms of the ability of current net income, and its components (cash flows and accruals) to predict one-year ahead operating cash flows.

Reported earnings or the "bottom line" is arguably the single most important output of the accounting system (Dichev and Tang 2008). All rational and risk-averse agents desire, *ceteris paribus*, better predictability of firm performance. For example, lenders need to predict the expected future cash flows of the firm to assess the ability of the firm to repay the loan.¹⁰ The principle of accrual-based accounting, i.e., matching the expenses with the revenues, is deployed to allocate earnings to appropriate accounting periods, which facilitates the ability of the earnings to better forecast future cash flows (FASB 1978, paragraphs 37-39). External audits play an important role in the application of appropriate accrual-based accounting by enhancing the reliability (existence and precision) of the accounting estimates (Barth, Cram, and Nelson 2001; Maines and Wahlen 2006; Minnis 2011; Hope et al. 2012).

Accruals offer flexibility in financial reporting because by definition, accruals are estimates and are not observable cash outcomes at the time of reporting (Ball and Shivakumar 2005). Hence, a degree of judgment is required to estimate proper accrual amounts to allow

¹⁰ Another primary firm-specific feature that lenders need to analyze is the amount of assets in place, i.e., collateral in the event of default (for example, see Sinkey 2002, Chapter 10).

accruals and accrual-based earnings to be inherently subjected to measurement error (or deliberate manipulations). The audit process is expected to provide reasonable assurance that the financial reports are stated fairly and can be reliably used to assess the level and riskiness of the current and future cash flows of the firm. According to extant audit research, we expect higher quality audits to reduce the measurement error and prevent or at least decrease the likelihood of manipulations of accrual estimates. High quality audits are expected to increase the extent to which accruals map into cash flows, which increases the predictability of future cash flows. As discussed previously, the better the predictive ability of current accrual-based earnings with respect to future performance, the higher is the financial reporting (and audit) quality.

Based on the above discussion, we test the hypothesis that the ability of earnings to predict future earnings is inversely related to the existence of prior auditor reporting errors. Specifically, our next two hypotheses are formally stated as follows:

H1b: The accrual-based net income is less informative about future cash flows for client firms of engagement partners with prior audit reporting failures.

H1c: Accrual persistence is negatively related to the frequency of prior engagement partner audit reporting failures.

2.2. Prior audit reporting failures and market-assessment of audit quality

Financial theory suggests that financial information that is perceived to be more valid and reliable reduces the cost of capital by decreasing the investors' information risk (Jensen and Meckling 1976; Coles and Lowenstein 1988; Diamond and Verrecchia 1991; Botosan 1997; Sengupta 1998; Lambert et al. 2007). Thus, more credible financial reporting is expected to provide a tangible benefit for the audit client in the form of a lower cost of capital. Based on

this perspective, it can be argued that high quality audits of financial statements will, *ceteris paribus*, result in a higher stock price and lower the cost of debt. Thus, from the client firm's point of view, the appointment of an engagement partner with a good publicly observable "track record" of integrity and competence in prior audits can serve as a signal of enhanced quality of financial disclosure, which will potentially lead to greater value for the audit client by reducing some agency costs (Titman and Trueman, 1986).

Consistent with the view that more credible financial reporting reduces the cost of capital; survey and experimental research provides evidence that users of accounting information, such as bank loan officers, generally consider audited financial statements to be more credible and reliable than nonaudited financial statements (Reckers and Pany 1979, McKinley, Pany, and Reckers 1985; Pillsbury 1985; Strawser 1991). Archival research also reports similar findings; for example, the cost of debt capital is lower among clients of Big 4 audit firms and companies with voluntary audits than for companies without voluntary audits (e.g., Kim et al. 2011; Minnis 2011). We extend this line of research by investigating whether the market considers an engagement partner's "track record" of prior audits when assessing audit quality. Studies showing that the auditor's reputation is important to investors are specifically relevant to our research (e.g., Chaney and Philipich 2002, Weber, Willenborg and Zhang 2008). For example, Weber, Willenborg and Zhang (2008) examine the stock and audit market effects associated with an audit failure involving a public client of KPMG in Germany (ComROAD). They report evidence that KPMG's other German clients experienced an average of -3% cumulative returns during the ten days surrounding the event and that the returns were more negative for clients with higher agency problems. Furthermore, they report evidence that client firms were more likely to switch from KPMG to other audit firms in the year of the ComROAD scandal. These

findings suggest that one fraud case may have implications for an auditor's reputation among other clients and can undermine the credibility of their reported financial statements. Furthermore, because creditors, investors or other users of financial statements discount the assurance value of audited financial statements after auditor reporting failures, the auditor's ability to attract new and retain old alluring clients may be reduced (Weber et al. 2008).¹¹

These results are also consistent with the analytical findings of Beyer and Sridhar (2006) that the value of a given client firm depends on the publicly observable audit report for the client and on audit reports of all the other client firms of the same auditor. Beyer and Sridhar also report that the market's perception of the auditor's level of integrity is influenced by all the audit reports issued by a given auditor. In other words, it is assumed that the unknown competence and integrity of an auditor is gradually revealed to the audit market, and the number and accuracy of publicly observable audit reports issued to other clients affects the assurance value of an audit and the credibility of financial disclosures (Beyer and Sridhar 2006).

We study whether the auditor identity affects the users of the financial statements by examining whether there is an association between the engagement partner's prior audit reporting failures and the market assessment of the audit quality. More specifically, we focus on the market-perceived credit risk, which is a reflection of information risk, by considering firm-specific credit ratings, forecasts of insolvency and implicit debt rates. Since our empirical

¹¹ Clients may anticipate and respond to potentially increased agency costs by not appointing the auditor or choosing to switch auditors. Consistent with this view, Skinner and Srinivasan (2012) examine the events surrounding ChuoAoyama's (PwC's Japanese affiliate) failed audit of Kanebo in Japan and report that about 25 percent of ChuoAoyama's audit clients switched to other audit firms suggesting the importance of auditors' reputation on audit quality. However, it is also possible that there is a niche of client firms that seek and value low-quality audits. We consider this possibility in Section 5.5 by examining suspected opinion shopping attempts of some client firms.

analyses focus on privately held companies,¹² the choice of different credit risk measures as proxies of perceived audit quality is motivated by the central role of bank finance in the private firm segment (e.g., Berger and Udell 1998). According to Ou and Williams (2009), the U.S. debt market for private companies in 2007 represented about one-third of the total of the \$2 trillion of outstanding bank-financed debt. In an earlier study, Nair and Rittenberg (1983) postulate that there is a strong nexus between financial statements and the cost of debt because lenders are the primary external users of financial information from privately held firms. Hence, debt contracting is arguably a central determinant of the financial reporting quality for private firms.¹³

Credit rating agencies (CRAs) play an important role in the financial markets as they reduce the information asymmetry between lenders and investors facilitating debt contracting.

¹² There are several reasons for why we focus solely on private firms. First, we note that combining public and private firms would expose the study for complexities arising from alternative information verification channels other than an audit. For example, financial theory suggests that the stock price summarizes all the financially relevant information and thereby serves as an external verifier of firm-specific information (e.g., Grossman and Stiglitz 1976; Verrecchia 1982; Holmstrom and Tirole 1993; Almazan, Banerji and De Motta 2008). By contrast, privately-held companies are subject to a much smaller publicly available information set (Ball and Shivakumar 2005; Burgstahler et al. 2006). For these reasons, we expect the private firm setting to be valuable in teasing out the potential engagement partner effects on (perceived) audit quality. Second, listed firms would represent only a very small fraction of the data. Finally, there are not enough GCO observations among publicly listed Swedish companies during the time period to allow a meaningful test of prior audit reporting failures of an engagement partner and audit quality.

¹³ Ball and Shivakumar (2005) argue that private companies communicate with lending banks on a more private, “insider” basis than public companies, which thereby reduces the demand for the financial reporting quality that is needed, e.g., to monitor managers. Even though banks would have “inside access” to firm-specific information, audited financial statements are still deemed to be important by banks and other creditors. For instance, in a survey of the Financial Executives International’s Committee on Private Companies entitled, “What do Users of Private Company Financial Statements Want?”, a majority of the participating banks required *audited* financial statements from their client companies applying credit (Sinnott and Graziano 2006). Moreover, Firth (1980) reports that UK bank loan officers grant significantly smaller loans to companies receiving going-concern audit opinions, while Bamber and Stratton (1997) find that clients receiving a GCO are less likely to be granted a loan, pay higher interest rates, and are assessed to be riskier. In a similar vein, Dúrendez Gómez-Guillamón (2003) finds that Spanish credit institutions consider the audit report to be crucial for loan decisions. They also report that audited financial statements and the audit report are considered to be among the most relevant sources of information used by credit institutions when making loan decisions (Dúrendez Gómez-Guillamón 2003).

CRA's are experts in processing and analyzing the information needed to predict the likelihood of future defaults. CRA's also often receive significant sensitive information from firms that enables more accurate assessments of creditworthiness.¹⁴ It benefits the firm to reveal sensitive information if it signals good future prospects and is rewarded in the form of a better credit rating and a lower interest rate.¹⁵ Cassar (2011) notes that research on private company lending suggests that third-party credit scores provide an alternative channel for reducing information asymmetries by offering lenders a cost-effective and timely means of monitoring borrowers (Petersen and Rajan 2002; Berger and Udell 2007). There is substantial evidence that credit ratings provide information about the value and creditworthiness of a firm. For example, Ederington and Goh (1998) show that credit rating downgrades result in negative equity returns. In another study, Hand, Holthausen and Leftwich (1992) report that companies experience statistically significant negative excess bond and stock returns upon the announcement of credit rating downgrades. Several recent studies have reported evidence that the credit default swap (CDS) spread for a company is negatively related to its credit rating (i.e., better credit ratings lower the CDS spread).¹⁶ Finally, Faulkender and Petersen (2006) and Sufi (2009) both find that firms with better ratings issue more debt or have more leverage.

Credit risk is the investor's risk of loss that arises from the likelihood that a borrower does not make payments in concurrence with the earlier agreement. According to the principle of risk-

¹⁴ Because there is much less publicly available information for private firms compared to public firms, banks and other stakeholders may demand additional private information tailored to their needs (Ball and Shivakumar 2005; Burgstahler, Hail et al. 2006). As noted previously, for private firms, there are no readily available markets in which investors value the firm. Private firms, in general, are not followed by sell-side analysts, the press, or other entities. The possibility of varying sets of information further motivates our choice to focus on private firms and employ several complementary proxies for the information portion of the overall credit risk instead of a single measure.

¹⁵ Obviously, the expected benefit of better credit terms (or access to credit capital) must also outweigh the expected cost of revealing sensitive information.

¹⁶ Credit default swaps are contractual agreements that provide a type of insurance against default by a borrower.

based pricing, creditors normally charge a higher interest rate from borrowers who are more likely to default. Moreover, lenders usually impose stipulations known as covenants on the borrower. Covenants may prevent the borrower from paying dividends, repurchasing shares or borrowing additional debt. Covenants may also specify certain conditions such as changes in the borrower's debt-to-equity ratio or interest coverage ratio, under which the borrower is obliged to repay the loan in full at the lender's request. From the lenders perspective, it is therefore highly relevant to monitor the compliance of covenants and changes in the value of collateral. Through monitoring of covenants, the bank or other creditors are able to observe the financial condition of the firm and decide whether to liquidate or let the firm continue. In the monitoring process, external auditors play an important role to enhance trust in the reported numbers.¹⁷ Recently, Kilgore et al. (2012) reported evidence based on Australian survey data that users of financial statements (audit committee members and chairs, financial analysts and fund managers) perceive engagement partner and other audit-team attributes as relatively more important than audit-firm attributes.

One theoretical mechanism through which the effect of perceived audit quality may be affected by audit partner disclosure requirement is source credibility.¹⁸ King, Davis and Mintchik (2012) argue that the disclosure of the engagement partner's identity will likely

¹⁷ We note that it is not clear whether under-qualifying or over-qualifying reporting failures are perceived differently by the audit market. Over-qualifying, i.e., over-conservatism, reporting failures may be perceived more favorably by the risk-averse users of financial statements; however, over-qualifying failures are still reporting failures and may indicate lower auditor competence. Moreover, a false GCO alarm may actually cause a wealth loss to a lender because the firm may have survived without the "false alarm".

¹⁸ The theory of source credibility has been employed in different prior studies. For example, Bamber (1983) finds evidence that audit managers adjust for source credibility of their subordinates when forming their judgments of seniors' work. Moreover, several prior studies have reported evidence that auditors are sensitive to the source credibility of audit evidence (Beaulieu 2001; Goodwin 1999; Goodwin and Trotman 1996; Hirst 1994a, 1994b), and the auditors' assessment of management credibility is the central factor in audit planning (e.g., Beaulieu 2001; Hirst 1994b; Kizirian et al. 2005; Shaub 1996). In general, information provided by non-credible sources is downplayed by the decision maker (Beach et al. 1978; Beaulieu 2001).

enhance audit quality in appearance and public confidence in the message content (audit report and associated financial statements). This expectation is based on the theory of source credibility predicting inherent and legitimate desire of people to reduce situational uncertainty to evaluate the message content. In other words, people desire to know the identity of the information source, or they will treat information skeptically and discount the message content.

Based on the above discussion, the relevant question is whether users of financial statements will place weight on the frequency of engagement partner's prior reporting errors in assessing the content of the audit report and audited financial statements. Accordingly, we test the following hypothesis examining whether the identity of an individual auditor in charge of an engagement affects the market perception of audit quality:

H2: The frequency of prior engagement partner reporting failures is positively related to the market-perceived credit risk of financial statement users.

3. Methodology

3.1. Empirical models that test whether audit reporting failures are systemic

Audit reports as a proxy for audit quality: Our first empirical model tests Hypothesis 1a, which addresses whether prior audit reporting failures predict similar failures in the future and implies that some individual auditors have systemic audit quality problems. To increase the power of our tests and as a first attempt to address the potential auditor self-selection problem, we also employ subsamples of high- and low-risk firms in estimating our model. In addition, we use only first-time GCOs and extensively control for client characteristics that are expected to affect default risk. To test the potential persistence of Type 2 audit reporting failures, we

employ a sample of companies filing for bankruptcy within 12 months of the issuance of financial statements. Formally, we estimate the following logistic regression model:

$$\begin{aligned}
 \text{PROB}(\text{FAIL}) = & a + \beta_1 \text{PRIOR_FAIL1} + \beta_2 \text{PRIOR_FAIL2} + \nu'X + \nu'Z \\
 & + \text{fixed effects} + \varepsilon
 \end{aligned}
 \tag{1}$$

where *FAIL* is either an indicator variable for a Type 1 or Type 2 audit reporting error in fiscal year *t*. *PRIOR_FAIL1* is the cumulative number of issued going concern reports for companies that *did not file for bankruptcy* within 12 months from the issuance of the financial statements divided by the number of all the auditor engagements (excluding bankruptcies) until the end of year *t-1*.¹⁹ *PRIOR_FAIL2* is the cumulative number of companies that *filed for bankruptcy* within 12 months from the issuance of the financial statements and for whom the auditor did not issue a going concern report divided by the number of all the auditor client companies that filed for bankruptcy within a timeframe of 12 months from the issuance of the financial statements until the end of year *t-1*.²⁰

The vector *X* includes firm-specific characteristics that have been reported to affect the auditor propensity to issue going-concern audit opinions in prior research (e.g., Dopuch et al. 1987; DeFond et al. 1999; Chen et al. 2001; DeFond et al. 2002; Geiger and Raghunandan 2001, 2002; Geiger et al. 2005; Knechel and Vanstraelen 2007; Wang et al. 2008; Li 2009;

¹⁹ We have also tested the following alternative specifications for the variable *PRIOR_FAIL1*: (i) the cumulative number of issued going concern reports for low-risk companies that did not file for bankruptcy within 12 months from the issuance of the financial statements divided by the number of all the low-risk auditor engagements for the period 2001-*t-1* and (ii) the cumulative number of issued going concern reports for financially distressed companies that did not file for bankruptcy within 12 months from the issuance of the financial statements divided by the number of all the financially distressed engagements for the period 2001-*t-1*. For the definitions of low-risk and financially distressed firms, we refer the reader to Section 5.1. In these untabulated analyses, our main findings remain qualitatively similar to those reported.

²⁰ The results are essentially similar if we use a time frame of 24 months or exclude observations that filed for bankruptcy after 12 months from the issuance of the financial statements (and before the end of 2008). Swedish liquidating bankruptcy is similar to Chapter 7 of the U.S Bankruptcy Code and the liquidation procedures in the U.K. (see Couwenberg 2001). Its purpose is to assemble the debtor's assets, sell the assets, and distribute the proceeds to creditors.

Feldmann and Read, 2010). Larger and older companies tend to have more stable operations. Hence, we include the natural log of total assets (*SIZE*) and the natural logarithm of firm age (*LOGAGE*) in our empirical model. Companies with better liquidity are less likely to become insolvent, while the opposite is true for high-risk companies. To control for liquidity and overall client risk, we add the ratio of cash to total assets (*CASH*), the percentage risk forecast of becoming insolvent during the next 12 months issued by a credit rating agency and varying from 0.01 to 99 percent (*RISK*), the ratio of debt to total assets (*DTA*), and an indicator variable with a value of one if the company's equity capital is less than half of the share capital (*EQ_HALF*) into Model (1). We also include the ratio of the inventories and receivables to the total assets because these accounts are subject to estimates and require judgments by auditors and are thus difficult to audit (e.g., Simunic 1980; Feroz, Park and Pastena 1991).

In vector *Z*, we add auditor-specific control variables that have been reported to affect audit quality in prior research. Several studies using office-level data from the U.S. have reported evidence that audit quality is affected by office-level characteristics (Francis and Yu 2009; Choi et al. 2010; Reichelt and Wang 2010; Francis et al. 2012). Hence, to control for the potential effects of the office size on the auditor reporting decisions, we include *OFFSIZE*, which is defined as the natural logarithm of the number of auditors in the audit office, in our empirical model. We also control for the effects of auditor tenure (*TENURE*) on audit quality even though prior literature has provided mixed findings. To control for heterogeneity in auditor experience, we include *CAREER* in the model, which is defined as the number of years since the auditor's certification date. Finally, we add dummy variables for different industries and years to control for potential industry and time effects on the auditor reporting failures.

Earnings properties as a proxy for audit quality: Our next two models empirically test Hypotheses 1b and 1c, which address whether there is an association between the extent to which current accrual-based net income predicts future cash flows and prior auditor-conducted reporting errors. In particular, we estimate the following model based on Barth et al. (2001) and recently used by Minnis (2011) and Hope et al. (2012):

$$\begin{aligned}
 OCF_{j,t+1} = & a + \beta_1 NI_{j,t} + \beta_2 PRIOR_FAIL1_t + \beta_3 PRIOR_FAIL2_t \\
 & + \beta_4 NI_t \times PRIOR_FAIL1_t + \beta_5 NI_t \times PRIOR_FAIL2_t + \beta_6 SIZE_t \\
 & + \beta_7 DTA_t + \beta_8 GROWTH_t + \text{fixed effects} + \varepsilon_{j,t}
 \end{aligned} \tag{2}$$

where *OCF* is the operating cash flow component of the earnings, which is defined as the difference between accrual-based net income before extraordinary items (*NI*) and accounting accruals (*ACCR*). The accruals are calculated using the balance sheet approach²¹ and are defined as the change in the noncash current assets minus the change in the current noninterest bearing liabilities minus depreciation and amortization; *GROWTH* is the one-year growth in total assets, and the other variables are defined above. All the above identified variables are scaled by the opening total assets. We also include industry and year dummies to control for industry- and year-wide effects on the ability of accrual-based earnings to predict future performance.

To further determine whether the potential differences in the ability of reported earnings to predict future performance are due to cash flows, accruals or both, we further decompose the earnings into cash flow and accrual components and estimate the following model, which is also based on Barth et al. (2001):

²¹ We note that the dataset does not contain cash flow statement data.

$$\begin{aligned}
OCF_{j,t+1} = & a + \beta_1 ACCR_{j,t} + \beta_2 OCF_{j,t} + \beta_3 PRIOR_FAIL1_t + \beta_4 PRIOR_FAIL2_t \\
& + \beta_5 ACCR_t \times PRIOR_FAIL1_t + \beta_6 ACCR_t \times PRIOR_FAIL2_t \\
& + \beta_7 OCF_t \times PRIOR_FAIL1_t + \beta_8 OCF_t \times PRIOR_FAIL2_t + \beta_9 SIZE_t \\
& + \beta_{10} DTA_t + \beta_{11} GROWTH_t + fixed\ effects + \varepsilon_{j,t}
\end{aligned} \tag{3}$$

where all the variables are as defined above.

As noted by Hope et al. (2012), a major advantage of this test is that it explicitly controls for cash flow persistence. In essence, it provides a within-firm control for omitted variables that could affect the cross-firm heterogeneity in the persistence of accruals. Another advantage compared to other commonly used proxies for earnings (and audit) quality, such as abnormal accruals, is that the accrual persistence is (ex-post) directly observable and does not need to be estimated.

3.2. Empirical model that tests whether the market negatively perceives potential systemic audit reporting failures

Our fourth and final model tests Hypothesis 2, which addresses whether prior engagement partner reporting failures increase the financial statement users' information risk as proxied by the firm-specific credit ratings, risk forecasts of insolvency and implicit debt rates. Following prior research examining implicit firm-specific debt rates and credit ratings, we estimate the following model from our panel data (Mansi, Maxwell and Miller 2004; Ashbaugh-Skaife et al. 2006; Kim et al. 2011; Minnis 2011):

$$\begin{aligned}
CREDITRISK = & a + \beta_1 PRIOR_FAIL1 + \beta_2 PRIOR_FAIL2 + v'V + v'Z \\
& + fixed\ effects + \varepsilon
\end{aligned} \tag{4}$$

where the dependent variable *CREDITRISK* is one of the following: (i) *CRATE*, which is UC AB's²² credit rating variable for the client firm on an ordinal scale ranging from 1 to 5 with higher values indicating lower credit risk, (ii) *RISK*, which represents UC AB's risk forecast for a client firm on a scale ranging from 0.01 to 99 percent with higher values indicating a higher insolvency risk of the company within the next 12 months,²³ or (iii) *DEBTRATE*, which is defined as the firm *i*'s interest expenses paid to the financial institutions divided by the average amount of debt owed to financial institutions between the end of fiscal years *t-1* and *t*. As in prior research (e.g., Mansi et al. 2004; Pittman and Fortin 2004; Kim et al. 2011; and Minnis 2011), the interest rate (*DEBTRATE*) is not provided directly in the dataset; therefore, it must be estimated from financial statements. In particular, we divide the reported interest expense paid to financial institutions by the average of the opening and ending balances of debt. Similar to Model (1), the vectors *V* and *Z* include firm- and auditor-specific characteristics to control for the effects on the perceived risk of debt financing credit raters and lenders, respectively. Our test variables *PRIOR_FAIL1* and *PRIOR_FAIL2* and the auditor-specific control variables in vector *Z* are as defined above.

The firm-specific control variables are based on prior research and include the following: size (*SIZE*), leverage (*DTA*), interest coverage (*INT_COVER*), indicator variables for the

²² UC AB is the largest Swedish credit rating agency owned by major Swedish banks. For the discrete dependent variable, *CRATE*, we employ an ordered logit model to derive estimates, while for the two other specifications; we use the standard maximum likelihood estimation method.

²³ The UC AB considers a broad set of information on financial performance and condition when defining the credit rates/risk forecasts. According to the UC AB's description, "Risk Forecast states how great the probability is (in percentages) that a company will become insolvent within the next year, i.e., it states with great precision the risk that the company will be unable to fulfill its payment obligations". In forming the credit rating (risk forecast) for a limited liability company, UC AB considers the following aspects: accounting information, key ratios, payment complaints, board information and ownership structure, among others. For more details about credit ratings and risk forecasts, see https://www.uc.se/download/18.3f6e90a612edd46e57c80001426/UC+Riskf%C3%B6retag+Description_Eng.pdf.

presence of a controlling shareholder (*CONTROL*) and the existence of loan priority over other interested parties in case of bankruptcy (*PRIORITY*), firm age (*LOGAGE*), indicator variables for auditor going concern (*GCO*) and otherwise modified (*MODIF*) audit opinions, an indicator variable with a value of one if the company's equity capital is less than half of the share capital (*EQ_HALF*), and property, plant and equipment to total assets (*PPE*), which represents the extent of tangible assets in place (i.e., collateral) that could be liquidated to repay outstanding debts in the event of default (Mansi, Maxwell and Miller 2004; Kim et al. 2011; Chi et al. 2011; Minnis 2011). The model also includes industry and time effects.

4. Data Description

4.1. Sample

Information on the individual auditor identities is obtained from the annual insider files of *Finansinspektionen* (Swedish Financial Supervisory Authority).²⁴ The data includes all the auditors who act either as an auditor-in-charge of an engagement or as a deputy auditor for at least one listed company during the period from 2001-2008. The office locations of the individual auditors and the dates that they received their auditor certification are retrieved from the records of *Revisorsnämnden* (The Supervisory Board of Public Accountants, henceforth SBPA), a governmental authority under the Ministry of Justice that handles matters relating to chartered accountants. All the clients' financial information and information about bankruptcy filings, credit ratings and risk forecasts are retrieved from the files of UC AB, a leading business and credit information agency owned by the major Swedish banks. Based on this

²⁴ This information includes auditor social security numbers, which are needed to merge data from different sources.

information, we are able to construct a complete client portfolio for each auditor by including both publicly and privately held limited liability clients.²⁵ It is important to note that we require the auditor to appear at least in four consecutive years in the data to be included into the sample. In addition, for each auditor we use the first two years to “calibrate” the reporting error rates i.e., to calculate the prior error frequencies. Therefore, for an auditor appearing in four consecutive years in the data, we use only the last two years when estimating our empirical models.

In our sample, we exclude all clients of non-Big 4 auditors and clients employing joint auditors to rule out confounding audit firm type effects. This is because in the literature it is commonly argued that large audit firms have incentives to provide higher-quality audits (e.g., DeAngelo 1981; Teoh and Wong 1993). We also exclude all publicly listed firms because they are fundamentally different from private clients and because listed firms represent only a small fraction of the data.²⁶ In addition, there are not enough GCO observations among publicly listed Swedish companies during the time period to allow a meaningful analysis of audit opinions. We further exclude observations from finance and insurance industries due to their specific regulations. To ensure that our findings are not driven by a few extreme observations, we delete firm years with negative total assets or negative total liabilities.²⁷ The number of observations

²⁵ During our data period from 2001-2008, all public and private Swedish companies regardless of their size were required to be audited. In 2008, there were around 330,000 audits of limited liability companies conducted by a total of 4,108 individual auditors (SOU 2008:32, p.134). Effective in November 1, 2010, statutory audits are required for companies meeting at least two of the following criteria: (i) average number of employees more than 3, (ii) total assets of more than 1.5 million SEK, and (iii) sales of more than 3 million SEK. Company accounts must be filed annually within seven months of the year end and are available to the public when filed. Penalties for late filing are 5,000-10,000 SEK. If the accounts are not filed within 11 months, the Swedish Companies Registration Office can force liquidation of the company

²⁶ Note, however, that we use full clientele information in calculating the reporting error frequencies. Please, refer also to footnotes 12 and 14 for arguments excluding publicly listed firms from the analyses.

²⁷ As an additional check for sensitivity of our results to extreme values, we winsorize all firm-specific continuous variables at their 1 and 99 percentile levels (except for financial leverage, *DTA* that is winsorized only at 99th

varies among the different tests due to the use of different subsamples and limitations arising from the calculations of the dependent and explanatory variables. Table 1 summarizes the sample selection process.

<<<<< Insert Table 1 about here >>>>>

4.2. Descriptive statistics

Table 2 reports the descriptive statistics for the variables of interest among the sample companies. As shown in Table 2, the privately held firms are highly leveraged, which emphasizes the importance of access to debt capital for this segment of firms. Specifically, the liabilities represent on average about two-thirds of the total assets with a median as high as 71 percent. The high financial leverage provides further support to our choice of different credit risk measures as proxies of perceived audit quality. The typical (mean/median) client credit rating (4.021/4) indicates a low risk of insolvency, and the same conclusion can be drawn from the risk forecast with a mean (median) of 1.938 (0.490) percent risk of insolvency. However, both the credit ratings and risk forecasts range considerably from 1 to 5 and 0.01 to 99, respectively. The mean (median) debt rate during the sample period is 0.045 (0.033) with minimum and maximum values of 0.01 and 0.587, respectively.

There is, on average, a 4.2 percent likelihood of an auditor to erroneously issue a GCO opinion to a non-failing client. The figure is very close to the historical frequency of issued false GCO reports (4.1 percent). The 25th percentile value for the historical frequency of Type 1 reporting errors is zero, while the corresponding median value is 3.4 percent. Hence, the reporting failures seem to be clustered for a subset of auditors that represent approximately ten

percentile). In these untabulated analyses we find that all of our reported main findings remain qualitatively unchanged.

percent of the sample (the 90th percentile value for the *PRIOR_FAIL1* is as high as 12.7 percent). This initial observation is consistent with Hypothesis 1a, which predicts that the audit reporting failures would be systemic.

Among the subsample of bankrupt clients (N = 963), there is, on average, a 77.1 percent likelihood that an auditor does not issue a GCO opinion to a failing client. The average Type 2 historical error frequency is 66.8% and is thus also relatively high.

Regarding our control variables, the descriptive statistics indicate that 45.5 percent of the companies in the sample have an identifiable controlling owner that holds at least 25 percent ownership stake. In approximately 3.2 percent of the observations, the equity capital is less than half of the share capital, which indicates severe financial distress. The average (median) ratio of cash to total assets is 0.216 (0.090), while the mean (median) ratio of inventory and receivables to total assets is 0.254 (0.241). The mean (median) interest coverage, which is defined as the earnings before interests, taxes, depreciation and amortization divided by interest expense, is 7.44 (1.79).²⁸ Among the sample companies, the mean (median) engagement partner tenure is 5.87 (5) years and ranges from 1 to 18 years. The auditors that are included in the sample tend to be quite experienced with an average (median) of 18.6 (19) years since their certification. Overall, the descriptive statistics shown in Table 2 clearly indicate sufficient variation in our research variables, which permits an examination of whether individual auditor reporting failures are systemic and whether the market recognizes and prices the potential differences in audit quality.

<<<<< Insert Table 2 about here >>>>>

²⁸ Because of the very high number of observations with extreme values for the interest coverage variable (*INT_COVER*), we choose to winsorize the variable at the top and bottom 5 percent of its distribution. We also re-estimate our models after excluding these observations and find that the results are very similar.

Table 3 reports pair-wise correlations between variables employed in our empirical models. Panel A of Table 3 reports the Pearson correlations for the variables used to estimate Eq. (1), while Panel B presents the corresponding figures for the variables identified in Eq. (4). In Panel A, both the Type 1 and 2 audit reporting errors correlate positively with the frequency of similar errors in the past. These correlations provide preliminary support to Hypothesis 1a. Further, we observe that Type 1 reporting errors are negatively correlated with the company size, age, liquidity, profitability, auditor tenure, auditor career length and the presence of a controlling shareholder. Instead, financial leverage and equity capital less than half of the share capital are strongly positively correlated with Type 1 reporting errors. Correlations with Type 2 reporting errors resemble a mirror image of the correlations for Type 1 reporting errors, i.e., the signs of the correlations change.

In Panel B, the frequencies of both types of reporting errors are positively correlated with our proxies for information risk (i.e., credit ratings, risk forecasts, and implicit interest rates). This is consistent with our prediction made in Hypothesis 2. The implicit debt rates exhibit only very modest correlations with the credit ratings and risk forecasts. One plausible explanation for the low correlations is that the approximated interest rates calculated from the financial statement items suffer from substantial measurement errors. The correlations among the other variables are generally consistent with prior research and expectations.

The unconditional results from the univariate correlations should be interpreted cautiously because they do not control for cross-firm heterogeneity. Finally, even though few of the correlations are relatively high (~ 0.6), the analyses of the variance inflation factors (VIF) do not indicate any problems related to multicollinearity because all the VIF values are

below 5 (Judge et al. 1988). The highest VIF value occurs in estimating Model (3) with several interaction variables.

<<<<< Insert Table 3 about here >>>>>

5. Results

5.1. Persistence of auditor reporting failures

Table 4 presents the results of estimating Equation (1) in the different samples of companies with first-time GCOs. Column (1) presents the results for the full sample of non-bankrupt companies, Column (2) presents the results for the non-bankrupt economically viable firms (i.e., firm-years with no obvious signs of financial distress), and Column (3) presents the results for non-bankrupt financially distressed client firms. To be included in the subsample of low-risk or high-risk firms in Columns (2) and (3), we require the credit rating agency's issued risk forecast to be below or at least 3.05 percent, which represent normal-to-very-low or high-to-very-high risks of insolvency, respectively, within the following 12 months according to the UC AB's definition. Note that we have excluded all bankrupt companies from the estimations in Columns (1)-(3) because our focus is only on the determinants of Type 1 audit reporting failures.²⁹ Finally, Column (4) reports the results for the Type 2 audit reporting failures among the subsample of the companies that filed for bankruptcy within 12 months from the issuance of the financial statements.

The likelihood ratios indicate that all the models are statistically significant ($p < 0.001$). From the estimated results, it is evident that both Type 1 and Type 2 audit reporting failures are systemic, which supports Hypothesis 1a. In other words, individual auditors with higher frequencies of misreporting in the past are more likely to conduct similar reporting failures in

²⁹ However, the inclusion of these observations into the analysis does not alter the findings in any meaningful way.

the future. Notably, Type 1 reporting errors also tend to persist in the subsample of economically viable (among low-to-normal risk) companies in Column (2). As expected, among the financially distressed client companies in Column (3), the finding related to the persistence of over-conservative reporting is much stronger. Hence, the estimated results suggest that auditors who have previously issued erroneous going concern reports are inclined to continue reporting conservatively in the future i.e. issuing GCOs to viable firms. Interestingly, in the subsample of low-risk firms in Column (2), the prior Type 2 error reporting frequency is estimated to be significantly negatively associated with the decision to issue a going concern report. Hence, individual auditors with a history of over-aggressive reporting in the past are less likely to conduct Type 1 reporting errors (i.e., be over-conservative) among low-to-normal risk client companies. Among the high-risk sample, the coefficient on the prior Type 2 reporting error frequency is estimated to be insignificant. This implies that among the high-risk clients the reporting of auditors with prior Type 2 errors does not seem to differ from other auditors except from auditors who have previously conducted Type 1 reporting errors.

The fourth Column in Table 4 presents the results for predicting auditor Type 2 reporting errors for soon-to-be-bankrupt companies (within 12 months from the issuance of the financial statements). As shown in Column (4), the empirical evidence strongly supports the view that Type 2 reporting errors also persist over time and extend to future audits. In this analysis, the prior Type 1 error frequency is estimated to be significantly negative. Hence, one advantage of the over-conservative reporting style seems to be greater accuracy in issuing going concern reports for nonviable companies.

The documented effects regarding the Type 1 and 2 auditor reporting failures are also economically significant. In particular, the estimated results in Column (1) suggest that,

holding all other variables constant, a shift of one standard deviation in the prior Type 1 audit reporting error frequency (0.072) results in a 1.39-fold increase in the predicted odds of a future Type 1 reporting error. A similar calculation in Column (4) suggests that a shift of one standard deviation in the prior Type 2 audit reporting error frequency (0.334) results in a 2.2-fold increase in the predicted odds of a future Type 2 reporting error.

Coefficient estimates for the control variables suggest that auditors are less likely to conduct Type 1 reporting errors for large and more liquid companies. Consistent with expectations, high risk, which is measured by the degree of financial leverage, equity capital lower than half of the share capital, and the credit rating agency's issued risk forecast for insolvency, are all estimated to be highly significant and positive (i.e., increasing the likelihood of a Type 1 reporting error). For the other control variables, the estimated results do not reveal any consistent or robust pattern.

In Column (4), which presents the results for Type 2 reporting errors, we find that the large and old companies with better liquidity exhibit a higher probability of receiving an erroneous going concern report. Moreover, all three risk-related measures (risk forecast, financial leverage and equity capital lower than half of the share capital) are estimated to be significantly negative, reducing the likelihood of a Type 2 reporting failure.

To summarize, even after extensively controlling for other known risk factors and using different subsamples based on client risk for companies receiving first-time GCO, the empirical findings in Table 4 strongly support Hypothesis 1a, which states that both audit reporting aggressiveness and conservatism tend to persist over time and extend to future audits. These findings suggest that prior audit reporting failures are incrementally informative about the

quality of future audits and increase the likelihood of similar types of reporting errors in future audits.

<<<<< Insert Table 4 about here >>>>>

5.2. *Earnings properties and auditor prior reporting failures*

In this section, we empirically test whether there are systemic differences in the ability of the accrual-based earnings of firms to predict future performance that relates to differences in the frequencies of prior audit reporting failures.

The first Columns of both Panel A and B present the results for estimating the empirical models without our test variables so that it can be used as a benchmark for later analyses. As shown in Column (1) of Panel A, the level of the current year earnings is on average a strong positive determinant of one-year-ahead operating cash flows. More importantly, in Column (2) both the first-order interactions between earnings and the prior Type 1 and Type 2 error frequencies are estimated to be significantly negative. Thus, the empirical evidence is consistent with Hypothesis 1b, predicting that (the noise in) the forecasting ability of current accrual-based earnings decreases (increases) with the frequency of engagement partner prior audit reporting errors.

In Panel B, we examine whether the estimated lower ability of current accrual-based earnings to predict future performance is due to cash flows, accruals or both. If the observed difference in Panel A is entirely due to more persistent cash flows, the difference could be attributed to variations in the underlying business fundamentals rather than differences in the audit quality regarding accrual estimates.

Consistent with prior research (e.g., Sloan 1996), the estimated coefficient of the operating cash flow component of earnings is larger than the coefficient on the accrual

component of earnings (i.e., cash flows are more persistent than accruals). The estimated results in Column 2 of Panel B support Hypothesis 1c, which states that accounting accruals are less persistent for client firms of auditors with prior reporting errors. This finding is true for both Type 1 and Type 2 reporting errors. The empirical findings, thus, suggest that the precision of accrual estimates is negatively related to the engagement partner's prior reporting errors, which implies that the audits within these engagements were of lower quality. We also find that the cash flow component of the earnings is less persistent for the client companies of auditors with prior reporting errors. The frequency of prior audit reporting errors is thus, on average, associated with declining financial performance in terms of future operating cash flows.

Our findings in Table 5 indicate that the accrual-based net income of the current period is more informative to lenders and credit rating agencies in predicting the next year's cash flows when the financial statements have been externally verified by auditors without or with a low frequency of prior reporting errors.

<<<<< Insert Table 5 about here >>>>>

5.3. Economic consequences of prior engagement partner reporting failures

Table 6 presents the results of estimating Equation (4) to test Hypothesis 2, addressing whether the frequency of prior engagement partner reporting failures increases the information risk of financial statement users. Column (1) reports the results for estimating an ordered logit model with the firm-specific credit rating as a dependent variable, Column (2) presents the results for the credit rating agency's issued risk forecast for companies becoming insolvent as a dependent variable, and Column (3) presents the results for the model specification with a company's implicit debt rate as a dependent variable.

Because the measurement approach of the implicit interest rate results in substantial noise in the dependent variable, we follow prior studies and truncate the variable at the 5th and 95th percentiles (Mansi et al. 2004; Pittman and Fortin 2004; and Minnis 2011). Even after truncating at the 95th percentile, we note that the interest rates for some firms are still notably high (maximum value of the implicit interest rate is 0.587). Risk forecasts and credit ratings are not subject to similar noise, and we therefore rely more on the estimations reported in Columns (1) and (2) when testing Hypothesis 2.³⁰

The likelihood-ratio statistics indicate that all three models are highly significant ($p < 0.001$). All the estimated models provide support to Hypothesis 2, which states that the frequency of the prior engagement partner reporting failures is positively related to the market-perceived credit risk of the firm. In particular, even after extensively controlling for other known risk factors, the empirical findings in all three estimations indicate that prior Type 2 audit reporting errors negatively affect outsiders' perceptions of the client firm's creditworthiness. Quantitatively, a one standard deviation shift (0.334) in the prior Type 2 error rate increases the risk forecast of insolvency by approximately 84 basis points. It should also be noted that in the third column, with implicit debt rate as a dependent variable, the effect of prior error frequencies is incremental to the effect generated by the risk forecast variable because it is included as one of the explanatory variables.

³⁰ Furthermore, Cassar (2011) notes that implicit interest rates suffer from several important but unobserved loan-specific characteristics that are expected to affect the size of the credit spread. These characteristics include at least the following: the size of a given loan, loan maturity, type of interest rate (fixed or floating), use of collateral, guarantees, contingent provisions, covenants and inability to accurately identify arm's length liabilities of firm outsiders (Cavalluzzo, Cavalluzzo, and Wolken 2002; Cassar 2011). It is unclear how much of the variation in the cost of debt is driven by the potential measurement error in the numerator (interest expense) and denominator (debt capital). It is important to note that these unobserved characteristics do not (directly) confound the values of credit ratings or risk forecasts.

With one exception, the results regarding prior Type 1 audit errors yield the same general conclusion: credit risk increases by the auditor's prior propensity to issue false going concern reports. The exception occurs in Column (2), in which the firm-specific insolvency risk forecast issued by a credit rating agency is used as a dependent variable and the coefficient on prior Type 1 audit errors is estimated insignificant.³¹

In Column 4 of Table 6, we extend our empirical model with first-order interactions between current going-concern audit opinions and lagged error frequencies of issued false GCO opinions. With this extension, we are able to test whether the perceived assurance value of current GCO opinions varies among individual auditors depending on their historical reporting error rates. In other words, the extended model in Column (4) tests whether the perceived credibility of the issued current going-concern opinions is affected by the accuracy of the prior going-concern reporting decisions.

As can be seen in Column (4), both the Type 1 and Type 2 reporting error frequencies alone are estimated to be significantly positive, which suggests an increased average information risk regarding the degree of the financial statement verification. More importantly, the estimated coefficients of the first-order interactions between the current GCO opinions and the extent of the prior Type 1 or Type 2 errors are estimated to be significantly negative and positive, respectively. These estimates suggest that credit raters consider the prior reporting accuracy of the auditor when adjusting their risk estimates. Specifically, the credit raters place

³¹ One may find it counterintuitive that the debt rates increase with a conservative auditor. While some lenders may prefer over-conservative auditors, there are also arguments against over-conservative auditors. First, high prior Type 1 reporting error frequency may indicate lower auditor competence. Second, false positives may actually cause a wealth loss to the lender if the firm survives without the "false alarm".

less or greater weight on the issued current GCO opinion if the auditor exhibits a higher frequency of prior Type 1 or Type 2 errors, respectively.³²

Overall, the empirical evidence in Table 6 supports the joint hypothesis that the perceived assurance of the audits differs among the individual auditors and that credit raters recognize this variability in adjusting their credit risk estimates.

The estimated coefficients for the control variables are mainly consistent with the predictions or insignificant. Consistent with the results in Mansi et al. (2004), auditor tenure is associated with more favorable risk forecasts and better credit ratings. For the office size and auditor career length, the estimated results do not reveal any consistent or robust pattern. Of the client-specific control variables, company size, age, profitability and the presence of a controlling shareholder are all estimated to be negative and highly significant, while the financial leverage, equity capital lower than half of the share capital, existence of loan priority over other interested parties in the case of bankruptcy and modified audit opinions are estimated to have positive effects.³³ Regarding modified audit opinions, the estimated coefficients on the going concern opinions are significantly larger than for opinions modified for any other reason(s) than going concern problems (p-value of a Wald test $<.05$).

³² In some instances, the analyses of subsamples may provide more accurate inferences than the use of interaction variables. This is the case if the coefficients of the control variables differ between the different subsamples (e.g., Hardy 1993). To address this issue, we have also estimated the model reported in column (2) of Table 6 in the following subsamples (not tabulated): (i) for auditors with prior Type 1 errors, (ii) for auditors with no prior Type 1 errors, (iii) for auditors with prior Type 2 errors, and (iv) for auditors with no prior Type 2 errors. In these untabulated analyses, we also find that credit raters place significantly less (more) weight on the issued new going concern opinions in assessing the firm-specific insolvency risk if the auditor has (not) conducted prior Type 1 reporting errors. Moreover, this analysis also reveals that credit raters place greater weight on the issued new going concern opinions if the auditor has a history of prior Type 2 reporting errors compared with GCOs issued by auditors without prior Type 2 reporting errors. These additional tests provide further support for our finding that credit raters appear to consider the auditor prior reporting accuracy when adjusting their risk estimates.

³³ Note that regarding the credit rating variable, *CRATE*, higher values indicate lower assessed credit risk.

The only coefficients that are inconsistent with expectations are found in Column (3), which uses the implicit debt rate as a dependent variable. Specifically, the coefficients of financial leverage (*DTA*) and the ratio of cash to total assets (*CASH*) are estimated to be significantly negative and positive, respectively. The explanation for the unexpected coefficient estimates might be that most of the debt has been outstanding and negotiated under more favorable circumstances compared with the current situation (i.e., the economic condition of the company has deteriorated after loan rate negotiations).³⁴ Therefore, a considerable proportion of the inferred contemporaneous interest rate relates to debt contracting that was undertaken years earlier (Cassar 2011). Alternatively, the measurement approach of the implicit debt rates may still suffer from nontrivial measurement error. In this regard, we note that Minnis (2011) also reports a significantly negative coefficient on financial leverage.

Overall, the findings in Table 6 are consistent with Hypothesis 2, which suggests that the reputation of the engagement partner is important to credit raters and creditors and affects the assurance value of an audit and the credibility of the financial statements. These findings are also consistent with the analytical findings in Beyer and Sridhar (2006). Collectively, our results suggest that there is significant heterogeneity in the average audit quality among individual auditors and that these differences are also recognized and priced by lenders and credit rating agencies.

<<<<< Insert Table 6 about here >>>>>

³⁴ To address this concern, we re-estimate Model (4) among a subsample of firm years in which the interest bearing new debt to financial institutions increased from year t to $t+1$ (i.e., the reported amount of debt to the financial institutions has increased from the previous year). With the downside of a smaller sample size, an advantage of this subsample is that it is expected to more accurately link the current financial condition and other relevant factors with the loan rate negotiations. Note, however, that this subsample analysis does not eliminate the problem but merely mitigates it. The larger the portion of new debt from the total debt, the more effective this approach is in mitigating the timing error of debt contracting. In these (untabulated) analyses, we find that our main inferences remain unaffected, but the coefficient of the financial leverage remains significantly negative.

5.5. Additional analyses

We begin our additional analyses by addressing the potential endogeneity issue of auditor self selection, i.e. that auditor-client alignments are not random. It is possible that certain auditors have systematically more risky clients than certain other auditors (i.e. some auditors are so-called risk specialists and/or more prone to accept high risk clients). While our models include a wide variety of different client-specific measures affecting risk of insolvency, it is not possible to control for all the factors that affect the auditor's decision to issue a GCO. For example, the auditor's reporting decision may be affected by some unobservable covenant information or continuing past poor financial performance. We address this potential problem by using a model with firm fixed effects which are intended to capture unobservable firm-specific characteristics affecting risk of insolvency. Due to the binary or discrete nature of some of our dependent variables, it is not possible to re-estimate the models reported in Table 4 and columns (1) and (3) in Table 6 using firm fixed effects. Moreover, preliminary analyses guided us to use a slightly more parsimonious version of the model specified in Eq. (4).³⁵ We also exclude firms with only one usable observation, because for these firms the firm fixed effect model version is not suitable. This process leads to a sample of 18,773 firm-year observations. Results of this analysis are reported in Table 7.

As can be seen in Table 7 the estimated results indicate that even after controlling for unobservable risk factors, the empirical findings suggest that prior Type 2 audit reporting errors negatively affect outsiders' perceptions of the client firm's creditworthiness. Further, consistent

³⁵ In particular, most likely due to the huge amount of increased nuisance parameters (firm dummies), some explanatory variables seem to collide as they measure a similar dimension of the firm. To address this issue, we excluded variables *PPE*, *INT_COVER* and *EQUITY_HALF* from this estimation. In untabulated analyses the coefficients of the omitted variables were estimated significant but with opposite signs than predicted and reported in Table 6. However, including these variables into the estimation does not affect the inferences regarding our test variables *PRIOR_FAIL1* and *PRIOR_FAIL2*.

with the results in Table 6, prior Type 1 audit reporting errors do not seem to affect credit raters perceived insolvency risk. All of the included control variables are estimated significant with expected sign or insignificant. In conclusion, the results from the fixed effect extension further support our hypothesis 2 that the frequency of prior engagement partner reporting failures is positively related to the market-perceived credit risk of financial statement users.

In our second additional analysis, we extend our empirical models reported in Tables 4 and 6 by adding office-level dummies into the model and re-estimate the new models. The purpose of this analysis is to confirm that our findings are incremental to the office-level findings in Francis and Michas (2011). In these untabulated re-estimations, we find that our main empirical findings are qualitatively similar to those reported.

Next, we attempt to further control for the possibility that our findings in Table 5 would be driven by the accruals, which are inherently more uncertain for the clients of auditors with higher prior Type 1 and Type 2 reporting error frequencies. Note, however, that the model explicitly controls for within-firm cash flow persistence, which somewhat mitigates the concern that auditor self-selection drives the findings in Panel B. However, to further address the issue, we first exclude all bankrupt observations and observations with false going concern reports. Secondly, we further remove all the observations that are classified as high-risk according to the UC AB's definition (i.e., those with a risk forecast of at least 3.05). In these additional analyses (not tabulated), we find that our main results remain qualitatively unchanged. We conclude that our reported findings in Table 5 are robust to controlling for the potential differences in risk across clienteles of auditors with different frequencies of prior audit reporting errors.

Finally, we examine the issue of whether certain client companies try to engage in opinion shopping. In particular, we investigate whether the suspected opinion shopping attempts are successful and most importantly, whether the success is conditional on the differences in the prior audit reporting error frequencies between the old and incoming auditors. For the purposes of these tests, we select the client firms that have both (i) received a modified audit report (i.e., opinions modified for any reason including GCO) under their previous financial statement audit and (ii) changed their auditor after the modified report. The results from these analyses (not tabulated) do not suggest that some companies would engage in successful opinion shopping. Both test variables remain insignificant throughout the different specifications we analyzed.

7. Conclusion

A cornerstone of the value of an external audit is that users of the financial statements perceive the auditors as skilled professionals who do not have interests in the entities or other conflicts of interest. The purpose of this study is to further enhance our understanding of audit quality at the level of the individual auditor by examining whether an individual auditor's prior audit reporting failure(s) may indicate a systemic audit quality problem increasing the likelihood of similar failures occurring in their future audits. In this case, the auditor identity, and the frequency of his or her prior audit reporting failures, in particular, would convey information about future audit quality. Further, we examine whether the market penalizes a history of individual auditor misreporting by considering whether it affects firm-specific credit ratings, the issued risk forecasts of insolvency by credit raters and the implicit cost of debt capital.

Based on panel data of the entire client portfolios of individual Big 4 auditors in Sweden, our main findings can be summarized as follows. First, we find that both the audit reporting aggressiveness and conservatism (measured by the frequency of prior Type 2 and Type 1 audit errors, respectively) are estimated to persist over time and extend to future audits. The auditors tend to, hence, maintain their style and imprint their mark on future audit outcomes. Second, accruals are less persistent and accrual-based net income is less informative of future cash flows for client firms of auditors with a history of misreporting. These findings suggest that individual auditors differ systematically in terms of audit quality and that individual auditors influence the financial reporting process. Third, we find that the market recognizes and prices the differences in the audit quality among engagement partners.

Collectively, the findings of this paper emphasize the importance of analyzing audit quality at the level of the individual auditor and contribute to the limited but growing evidence that the characteristics of individual auditors affect the audit outcomes. Furthermore, this study provides insights into the economic consequences of transparency on the engagement partner's identity. Because the auditor's reputation is a central input for audit quality, the reported findings should be of interest to practitioners, regulators, academics and users of financial statements. Specifically, our results imply that the identity of the engagement partner matters to the market and would support the recent regulators' initiatives to disclose the engagement partner's name in the audit report (PCAOB 2011, November).

It should be noted that our study is subject to several limitations. First, because the mandatory disclosure of the engagement partner identity has existed for a long time in Sweden, we are not able to test whether mandating the disclosure of the identity of the engagement partner affects auditor behavior. Future research is warranted to investigate this matter by

examining changes in the professional conduct due to an increased sense of accountability and/or due to transparency of the auditor's actions to the users of the financial statements as suggested by regulators (e.g., ACAP 2008). Studies designed to investigate the impact of auditor identity disclosure would require data from before and after the disclosure of the engagement partner's identity became mandatory. A second limitation of the study is that, while we document the persistence of audit reporting failures and suggest that the disclosure of the identity of the engagement partner would therefore provide incremental information about the audit quality to the market participants, we do not study the underlying mechanisms of these repeated failures, which should be addressed in future research. That is, we do not for instance attempt to distinguish between competence and independence explanations; instead, we refer to the auditor style as being either over-conservative or over-aggressive. Third, our data relate to private companies because of the insufficient number of GCOs issued to listed companies, which limits the generalizability of our results. Finally, it is possible that our findings capture some unobservable differences in the innate firm characteristics that we fail to consider in our empirical tests. However, the numerous additional controls that we have included and the additional tests that we have performed provide us with sufficient confidence in the robustness of the results.

Future studies could focus on whether and how audit firms respond to repeated audit failures by an individual auditor. For instance, it could be examined whether they demote, fire or re-train these individuals, or alternatively examine under what conditions they potentially tolerate a lower quality audit.

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Table 1. Sample selection criteria

	Total
Firm-year observations with engagement partner identified in insider files	113,426
Minus observations of non-Big 4 auditor clients, clients of auditors without data for four consecutive years, or clients employing joint audits	69,724
Less observations needed to “calibrate“ auditor reporting error frequencies	46,828
Minus public firms, observations from firms belonging to finance and insurance industries, observations with negative total assets (10,000 SEK), observations with negative total liabilities, observations with total liabilities more than twice the total assets, observations with cash flow from operations more or less than twice the total assets.	40,140
Minus observations excluded due to subsample restrictions or due to missing values for variables needed in the empirical model	963 to 29,610

Table 2 Descriptive statistics among sample companies

Variable	Mean	Std.	Min	25%tile	Median	75%tile	Max	N
PRIOR_FAIL2 ^a	0.668	0.334	0	0.524	0.743	0.815	1	963
FAIL2 ^a	0.771	0.420	0	1	1	1	1	963
FAIL1 ^b	0.042	0.200	0	0	0	0	1	29,610
PRIOR_FAIL1 ^b	0.041	0.046	0	0	0.031	0.059	0.333	29,610
EQ_HALF ^b	0.032	0.175	0	0	0	0	1	29,610
CASH ^b	0.216	0.269	-0.121	0.009	0.090	0.348	1	29,610
INVREC ^b	0.254	0.305	0	0.063	0.241	0.544	1	29,610
DEBTRATE ^c	0.045	0.054	0.010	0.021	0.033	0.047	0.587	12,850
RISK ^d	1.939	5.730	0.010	0.150	0.490	1.460	99.000	20,179
CRATE ^d	4.021	1.082	1	3	4	5	5	20,179
SIZE ^d	16.05	2.19	10.17	14.48	15.81	17.41	26.10	20,179
DTA ^d	0.663	0.275	0	0.480	0.710	0.876	1.98	20,179
LOGAGE ^d	2.646	0.836	0	2.079	2.708	3.135	4.710	20,179
CONTROL ^d	0.455	0.498	0	0	0	1	1	20,179
INT_COVER ^d	7.44	14.74	-25.90	-1.89	1.79	16.11	39.22	20,179
PPE ^d	0.378	0.332	0.000	0.074	0.274	0.661	1.095	20,179
GCO ^d	0.055	0.228	0	0	0	0	1	20,179
MODIF ^d	0.094	0.289	0	0	0	0	1	20,179
TENURE ^d	5.87	4.62	1	2	5	9	18	20,179
CAREER ^d	18.64	7.71	1	13	19	24	38	20,179
OFFSIZE ^d	2.694	1.673	0	1.609	2.639	4.248	5.384	20,179

Notes:

^a Conditional on the observation belonging to the subsample used in Column (4) of Table 4. ^b Conditional on the observation belonging to the subsample used in Column (1) of Table 4. ^c Conditional on the observation belonging to the subsample used in Column (3) of Table 6. ^d Conditional on the observation belonging to the subsample used in Column (1) of Table 6. PRIOR_FAIL2 is the cumulative frequency of prior Type 2 audit reporting errors for auditor i for the period 2001- $t-1$. PRIOR_FAIL2 is calculated by dividing the cumulative number of companies that filed for bankruptcy within 12 months from the issuance of financial statements *and* for whom the auditor i did not issue a going concern report by the number of all the auditor client companies that filed for bankruptcy within 12 months from the issuance of the financial statements for the period 2001- $t-1$. FAIL2 is an indicator variable if auditor i performs a Type 1 audit reporting error for client j in fiscal year t . FAIL1 is an indicator variable if auditor i performs a Type 1 audit reporting error for client j in fiscal year t . PRIOR_FAIL1 is the cumulative frequency of prior Type 1 audit reporting errors for auditor i for the period 2001- $t-1$; EQ_HALF is a dummy variable with a value of one if the amount of equity capital is less than half of the share capital for client j in fiscal year t ; CASH is the ratio of cash and cash equivalents to total assets; INVREC is the ratio of inventories and receivables to total assets; DEBTRATE is defined as the interest expenses paid to the financial institutions divided by the average amount of debt to financial institutions between the ends of fiscal years $t-1$ and t . RISK is the risk forecast issued for the client firm by the credit rating agency; CRATE is the credit rating issued for the client firm by the credit rating agency in which higher values indicate lower credit risk; SIZE is the natural logarithm of total assets in thousands of Swedish crowns; DTA is the ratio of debt to total assets; LOGAGE is the natural logarithm of the client firm j age in years in fiscal year t ; CONTROL is a dummy variable with a value of one if the firm has a controlling shareholder and is otherwise zero; PTI is the pretax income divided by the opening total assets; GCO is an indicator variable for the going concern audit opinions; MODIF is an indicator variable for the audit opinions containing an emphasis of matter paragraph; TENURE is the number of years the auditor i has been the auditor-in-charge for client firm j in fiscal year t . CAREER is the number of years since the auditor i certification date; OFFSIZE is the natural logarithm of the number of auditors in the audit office;

Table 3: Pearson's correlation coefficients

Panel A: Pearson's correlation coefficients among the variables used in Table 4

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FAIL1 (1) ^a	Na*	0.282	0.118	-0.003	-0.052	-0.021	-0.053	-0.169	0.205	0.602	-0.089	-0.112	-0.042	0.030
FAIL2 (2) ^b	1	-0.353	-0.188	0.101	0.130	0.114	0.138	0.290	-0.484	-0.687	0.244	0.237	0.153	-0.062
RISK (3) ^a		1	0.036	0.046	-0.076	-0.032	-0.120	-0.089	0.181	0.205	-0.144	-0.055	-0.110	0.081
PRIOR_FAIL1 (4) ^a			1	-0.051	-0.133	-0.186	-0.029	-0.255	-0.021	0.086	-0.097	-0.196	0.086	0.015
PRIOR_FAIL2 (5) ^a				1	0.008	0.079	-0.022	-0.032	0.010	-0.007	-0.014	0.029	-0.013	-0.006
CAREER (6) ^a					1	-0.001	0.317	0.119	-0.019	-0.048	0.160	0.087	-0.036	-0.018
OFFSIZE (7) ^a						1	-0.089	0.161	0.005	-0.027	0.021	0.159	-0.015	-0.056
TENURE (8) ^a							1	-0.017	-0.128	-0.048	0.393	-0.078	0.059	0.015
SIZE (9) ^a								1	0.224	-0.153	0.287	0.409	-0.346	0.003
DTA (10) ^a									1	0.283	-0.092	0.197	-0.392	0.221
EQ_HALF (11) ^a										1	-0.074	-0.083	-0.026	0.028
LOGAGE (12) ^a											1	0.172	-0.092	0.038
CONTROL (13) ^a												1	-0.250	0.018
CASH (14) ^a													1	-0.256
INVREC (15) ^a														1

Panel B: Pearson's correlation coefficients among the variables used in Table 6

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
RISK (1) ^c	-0.567	0.098	0.043	0.057	0.279	0.205	-0.098	0.213	-0.014	-0.139	-0.071	-0.121	0.136	0.246	-0.113	-0.080	-0.042
CRATE (2) ^c	1	-0.035	-0.081	-0.110	-0.295	-0.205	0.197	-0.327	0.063	0.300	0.097	0.188	-0.272	-0.233	0.209	0.110	0.053
DEBTRATE (3) ^d		1	0.035	0.041	0.051	0.043	-0.061	-0.082	0.054	-0.029	-0.095	-0.039	-0.062	0.049	-0.009	-0.005	0.011
PRIOR_FAIL1 (4) ^c			1	-0.042	0.081	0.063	-0.259	-0.034	-0.044	-0.093	-0.204	0.034	0.043	0.057	-0.007	-0.099	-0.239
PRIOR_FAIL2 (5) ^c				1	-0.014	0.012	-0.046	-0.011	-0.024	-0.023	0.012	-0.017	-0.012	-0.013	-0.023	0.013	0.063
GCO (6) ^c					1	-0.043	-0.144	0.230	-0.012	-0.064	-0.125	-0.179	0.054	0.651	-0.045	-0.052	-0.021
MODIF (7) ^c						1	-0.146	0.074	-0.015	-0.099	-0.125	-0.084	0.050	0.063	-0.062	-0.080	-0.035

Table 3: Panel B continued: Pearson's correlation coefficients among the variables used in Table 6

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SIZE (8) ^c							1	0.170	0.263	0.294	0.429	0.057	0.047	-0.138	-0.013	0.122	0.171
DTA (9) ^c							1		0.139	-0.102	0.209	-0.206	0.207	0.302	-0.142	-0.033	0.008
PPE (10) ^c								1		0.030	0.061	-0.153	-0.085	0.004	-0.014	0.038	-0.020
LOGAGE (11) ^c									1	0.181	0.022	-0.133	-0.069	0.394	0.157	0.029	
CONTROL (12) ^c										1	-0.001	0.026	-0.080	-0.067	0.083	0.159	
PTI (13) ^c											1	-0.039	-0.234	0.014	-0.001	0.021	
INT_COVER (14) ^c												1	0.072	-0.110	-0.058	-0.049	
EQ_HALF (15) ^c													1	-0.054	-0.052	-0.027	
TENURE (16) ^c														1	0.312	-0.083	
CAREER (17) ^c																1	0.005
OFFSIZE (18) ^c																	1

Notes:

*Not available. ^aConditional on the observation belonging to the subsample used in Column (1) of Table 4 (N = 29,610). ^bConditional on the observation belonging to the subsample used in Column (4) of Table 4 (N = 963). ^cConditional on the observation belonging to the subsample used in Column (1) of Table 6 (N = 20,179). ^dConditional on the observation belonging to the subsample used in Column (3) of Table 6 (N = 12,850). Bolded figures are significant at the 5 percent level (two-tailed).

Table 4 Logistic regression results of the Type 1 and Type 2 reporting errors of auditors among different samples of privately held client firms.

Dependent variable	FAIL1 All non-bankrupt companies		FAIL1 Non-bankrupt low-risk companies		FAIL1 Non-bankrupt high- risk companies		FAIL2 Bankrupt companies	
	Coef.	χ^2	Coef.	χ^2	Coef.	χ^2	Coef.	χ^2
PRIOR_FAIL1	4.543 ***	26.30	2.658 **	5.66	5.639 ***	19.94	-5.930 ***	11.87
PRIOR_FAIL2	-0.242	0.15	-8.639 ***	6.92	-0.152	1.25	2.385 ***	7.27
CAREER	0.002	0.07	-0.002	0.07	0.011	1.76	-0.001	0.01
OFFSIZE	0.091 ***	8.86	0.058	1.57	0.105 ***	7.32	-0.065	0.69
TENURE	-0.020 *	2.93	-0.006	0.12	-0.007	0.18	-0.032	-0.70
SIZE	-0.466 ***	154.55	-0.420 ***	38.25	-0.404 ***	88.33	0.317 ***	20.15
RISK	0.067 ***	88.33	0.845 ***	93.41	0.038 ***	46.34	-0.021 ***	7.60
DTA	1.441 ***	42.88	0.397	1.07	1.464 ***	32.98	-1.218 **	5.44
EQ_HALF	3.581 ***	604.05	-	-	2.542 ***	265.57	-3.227 ***	65.29
LOGAGE	-0.051	0.60	0.147	2.04	0.039	0.22	0.327 *	3.75
CONTROL	-0.788 ***	44.56	-1.045 ***	29.47	-0.651 ***	18.88	-1.476 **	5.53
CASH	-1.582 ***	60.58	-2.364 ***	41.14	-0.123	0.18	2.021 ***	7.61
INVREC	0.001	0.00	-0.154	0.83	-0.069	0.22	0.289	1.21
Intercept	2.327 ***	7.73	9.279	7.47	1.525 **	5.64	-0.365	0.10
Annual fixed effects?	Yes		Yes		Yes		Yes	
Economic sector fixed effects?	Yes		Yes		Yes		Yes	
LR-ratio (χ^2)	4,947.3 ***		688.9 ***		2,029.3 ***		1,107.0 ***	
Nagelkerke R ²	52.6 %		22.6 %		58.9 %		66.7 %	
Correctly classified	92.6 %		83.9 %		91.8 %		94.0 %	
N (# Events)	29,610 (1,234)		25,468 (294)		4,142 (940)		963 (742)	

Notes:

FAIL1 is an indicator variable if auditor i performs a Type 1 audit reporting error for client j in fiscal year t . FAIL2 is an indicator variable if auditor i performs a Type 2 audit reporting error for client j in fiscal year t . PRIOR_FAIL1 is the cumulative frequency of prior Type 1 audit reporting errors for auditor i for the period 2001- $t-1$; PRIOR_FAIL2 is the cumulative frequency of prior Type 2 audit reporting errors for auditor i for the period 2001- $t-1$. PRIOR_FAIL2 is calculated by dividing the cumulative number of companies that filed for bankruptcy within 12 months of the issuance of the financial statements and for whom the auditor i did not issue a going concern report by the number of all the auditor client companies that filed for bankruptcy within 12 months from the issuance of the financial statements for the period 2001- $t-1$. TENURE is the number of years the auditor i has been the auditor-in-charge for client firm j in fiscal year t . CAREER is the number of years since the auditor i certification date; SIZE is the natural logarithm of the total assets in thousands of Swedish crowns; OFFSIZE is the natural logarithm of the number of auditors in the audit office; RISK is the risk forecast issued for the client firm by the credit rating agency; DTA is the ratio of the debt to total assets; EQ_HALF is a dummy variable with a value of one if the amount of equity capital is less than half of the share capital for client j in fiscal year t ; LOGAGE is the natural logarithm of client firm j age in years in fiscal year t ; CASH is the ratio of cash and cash equivalents to the total assets; INVREC is the ratio of the inventories and receivables to the total assets. In Columns (1)-(3), the statistical significance is calculated by adjusting the standard errors for two-way clustering: i.e., within client firms (repeated measurement) and individual auditors (Petersen 2009). In Column (4), statistical significance is calculated by adjusting the standard errors for clustering within auditors (Rogers 1993; Petersen 2009). Asterisks ***, **, and *, denote two-tailed statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 5. Regression results for earnings properties

Panel A: Tests of cash flow predictability (N = 19,470)					
<u>Dependent Variable</u>	<u>OCF_{t+1}</u>			<u>OCF_{t+1}</u>	
	<u>Pred.</u>	<u>Coef.</u>	<u>t-value</u>	<u>Coef.</u>	<u>t-value</u>
Intercept		-0.0171 *	-1.81	-0.0073	-0.69
NI _t	+	0.5761 ***	26.08	0.6588 ***	23.41
PRIOR_FAIL1 _t	?			0.0029	0.12
PRIOR_FAIL2 _t	?			-0.0621 ***	-3.00
NI _t × PRIOR_FAIL1 _t	–			-0.9696 ***	-2.67
NI _t × PRIOR_FAIL2 _t	–			-0.6282 ***	-3.39
SIZE _t	+	0.0011 **	2.39	0.0008 *	1.70
DTA _t	+	0.0146 ***	2.99	0.0137 ***	2.84
GROWTH _t	–	-0.0316 ***	-7.11	-0.0298 ***	-6.66
Annual fixed effects?		Yes		Yes	
Economic sector fixed effects?		Yes		Yes	
Likelihood ratio, χ^2		2,741.1 ***		2,787.8 ***	
-2 Res Log Likelihood		-13,547.0		-13,593.7	

Panel B: Tests of persistency in accruals and cash flows (N = 19,470)					
<u>Dependent Variable</u>	<u>OCF_{t+1}</u>			<u>OCF_{t+1}</u>	
	<u>Pred.</u>	<u>Coef.</u>	<u>t-value</u>	<u>Coef.</u>	<u>t-value</u>
Intercept		-0.0145	-1.53	-0.0051	-0.48
ACCR _t	+	0.5057 ***	21.20	0.5768 ***	17.88
OCF _t	+	0.5884 ***	26.23	0.6692 ***	23.74
PRIOR_FAIL1 _t	?			0.0048	0.21
PRIOR_FAIL2 _t	?			-0.0618 ***	-2.85
ACCR _t × PRIOR_FAIL1 _t	–			-1.0011 **	-2.41
ACCR _t × PRIOR_FAIL2 _t	–			-0.5355 **	-1.99
OCF _t × PRIOR_FAIL1 _t	?			-0.8952 **	-2.47
OCF _t × PRIOR_FAIL2 _t	?			-0.6415 ***	-3.29
SIZE _t	+	0.0011 **	2.40	0.0008 *	1.75
DTA _t	+	0.0117 ***	2.41	0.0110 **	2.29
GROWTH _t	–	-0.0420 ***	-8.59	-0.0402 ***	-8.16
Annual fixed effects?		Yes		Yes	
Economic sector fixed effects?		Yes		Yes	
Likelihood ratio, χ^2		2,782.1 ***		2,826.6 ***	
-2 Res Log Likelihood		-13,588.0		-13,632.5	

Notes:

OCF is the operating cash flow component of earnings, which is defined as the difference between the accrual-based net income before the extraordinary items (NI) and the accounting accruals (ACCR). The accruals (ACCR) are calculated using the balance sheet approach and are defined as the change in non-cash current assets minus the change in the current non-interest bearing liabilities minus depreciation and amortization; NI and ACCR are both scaled by the opening total assets; PRIOR_FAIL1 is the cumulative frequency of prior Type 1 audit reporting errors for auditor *i* for the period 2001-*t-1*; PRIOR_FAIL2 is the cumulative frequency of prior Type 2 audit reporting errors for auditor *i* for the period 2001-*t-1*. PRIOR_FAIL2 is calculated by dividing the cumulative number of companies that filed for bankruptcy within 12 months from the issuance of the financial statements *and* for whom the auditor *i* did not issue a going concern report by the number of all the auditor client companies that filed for bankruptcy within 12 months from the issuance of the financial statements for the period 2001-*t-1*. SIZE is the natural logarithm of the total assets in thousands of Swedish crowns; DTA is the ratio of the debt to total assets; GROWTH is the growth in the total assets over the prior year; statistical significance is calculated by adjusting the standard errors for clustering within firms. Asterisks ***, **, and *, denote two-tailed statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 6 Analyses of credit market-perceived audit quality

Dependent variable	CRATE		RISK		DEBTRATE		RISK	
	Coef.	χ^2	Coef.	t-value	Coef.	t-value	Coef.	t-value
PRIOR_FAIL1	-1.551 ***	14.60	1.025	0.92	0.0343 **	2.51	1.967 *	1.88
PRIOR_FAIL2	-0.798 ***	11.64	2.516 ***	3.92	0.0221 *	1.82	2.158 ***	3.51
GCO	-1.347 ***	490.41	4.447 ***	13.20	0.0075 ***	2.90	4.602 ***	13.67
MODIF	-0.966 ***	43.98	4.160 ***	4.11	0.0064	1.02	4.190 ***	4.14
GCO × PRIOR_FAIL1							-29.511 **	-2.14
GCO × PRIOR_FAIL2							18.130 *	1.80
SIZE	0.183 ***	216.30	-0.048 **	-2.07	-0.0001	-0.14	-0.040 *	-1.75
DTA	-2.036 ***	478.46	2.315 ***	11.45	-0.0216 ***	-6.43	2.191 ***	10.76
PPE	0.916 ***	191.71	-0.820 ***	-4.37	0.0149 ***	7.72	-0.932 ***	-4.77
LOGAGE	0.531 ***	383.63	-0.406 ***	-6.71	-0.0001	-0.12	-0.393 ***	-6.50
CONTROL	0.261 ***	39.21	-0.434 ***	-4.63	-0.0059 ***	-4.84	-0.472 ***	-5.01
CASH	1.993 ***	338.55	-1.984 ***	-9.19	0.0217 ***	5.12	-1.903 ***	-9.85
INT_COVER	1.220 ***	215.45	-0.723 ***	-5.14	-0.0439 ***	-12.43	-0.741 ***	-5.26
RISK	-	-	-	-	0.004 ***	3.46	-	-
PRIORITY	-0.780 ***	339.40	0.674 ***	5.35	-0.0036 ***	-3.15	0.629 ***	4.98
EQ_HALF	-0.086	0.47	3.472 ***	4.48	0.0120 **	2.21	3.630 ***	4.64
TENURE	0.042 ***	84.10	-0.051 ***	-4.47	-0.0002	-1.31	-0.050 ***	-4.40
CAREER	0.003	1.38	-0.006	-0.95	0.0001	0.68	-0.006	-0.87
OFFSIZE	0.004	0.15	-0.061 **	-2.40	-0.0003	-0.63	-0.055 **	-2.18
Intercept	-3.850 ***	369.92	2.547 ***	4.85	0.0315 **	2.38	2.547 ***	4.87
Intercept2	-2.242 ***	128.63						
Intercept3	-0.378 *	3.71						
Intercept4	1.114 ***	31.29						
Annual fixed effects?	Yes		Yes		Yes		Yes	
Industry fixed effects?	Yes		Yes		No		Yes	
Economic sector fixed effects?	No		No		Yes		No	
-2 Log Likelihood	53,176.7		123,636.2		-38,904.4		123,541.0	
Likelihood ratio, χ^2	9,774.4 ***		4,084.8 ***		399.6 ***		4,189.0 ***	
Correctly classified	79.3 %							
Nagelkerke R ²	41.4 %							
N	20,179		20,179		12,850		20,179	

Notes:

CRATE is the credit rating issued for the client firm by the credit rating agency in which higher values indicate lower credit risk; RISK is the risk forecast issued for the client firm by the credit rating agency in which higher values indicate a greater probability of becoming insolvent within next 12 months; DEBTRATE is defined as the interest expenses paid to the financial institutions divided by the average amount of debt to the financial institutions between the ends of fiscal years $t-1$ and t . PRIOR_FAIL1 is the cumulative frequency of prior Type 1 audit reporting errors for auditor i for the period 2001- $t-1$; PRIOR_FAIL2 is the cumulative frequency of prior Type 2 audit reporting errors for auditor i for the period 2001- $t-1$. PRIOR_FAIL2 is calculated by dividing the cumulative number of companies that filed for bankruptcy within 12 months from the issuance of financial statements *and* for whom the auditor i did not issue a going concern report by the number of all the auditor client companies that filed for bankruptcy within 12 months from the issuance of the financial statements for the period 2001- $t-1$. GCO is an indicator variable for the going concern audit opinions; MODIF is an indicator variable for the audit opinions containing an emphasis of matter paragraph; SIZE is the natural logarithm of the total assets in thousands of Swedish crowns; DTA is the ratio of the debt to total assets; PPE is the ratio of the property plant and the equipment to total assets; LOGAGE is the natural logarithm of the client firm j age in years in fiscal year t ; CONTROL is a dummy variable with a value of one if the firm has a controlling shareholder and is otherwise zero; CASH is the ratio of cash and cash equivalents to total assets; INT_COVER is the interest coverage, which is defined as the earnings before interests, taxes, depreciation and amortization divided by the interest expense; PRIORITY is an indicator variable for the existence of loan priority over other interested parties in case of bankruptcy; EQ_HALF is a dummy variable with a value of one if the amount of equity capital is less than half of the share capital for client j in fiscal year t ; TENURE is the number of years the auditor i has been the auditor-in-charge for client firm j in fiscal year t . CAREER is the number of years since the auditor i certification date; OFFSIZE is the natural logarithm of the number of auditors in the audit office. The statistical significance is calculated by adjusting the standard errors for two-way clustering: i.e., within-client firms (repeated measurement) and individual auditors (Peterson 2009). Asterisks ***, **, and *, denote two-tailed statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 7 Firm fixed effect analysis of credit raters' perceived audit quality

Dependent variable	RISK	
	Coef.	t-value
PRIOR_FAIL1	0.865	0.58
PRIOR_FAIL2	1.449 **	2.20
GCO	2.174 ***	9.56
MODIF	0.532 ***	5.35
SIZE	0.029	0.46
DTA	0.456 **	2.32
LOGAGE	-2.824 ***	-12.14
CONTROL	0.079	0.54
CASH	-0.582 ***	-3.45
PRIORITY	0.549 ***	5.54
TENURE	-0.021	-0.85
CAREER	-0.013	-0.98
OFFSIZE	0.073	1.11
Intercept	7.758 ***	5.48
Annual fixed effects?	yes	
Firm fixed effects?	yes	
-2 Log Likelihood	81,604	
Likelihood ratio, χ^2	26,717.5 ***	
N	18,773	

Notes:

RISK is the risk forecast issued for the client firm by the credit rating agency in which higher values indicate a greater probability of becoming insolvent within next 12 months; PRIOR_FAIL1 is the cumulative frequency of prior Type 1 audit reporting errors for auditor *i* for the period 2001-*t-1*; PRIOR_FAIL2 is the cumulative frequency of prior Type 2 audit reporting errors for auditor *i* for the period 2001-*t-1*. PRIOR_FAIL2 is calculated by dividing the cumulative number of companies that filed for bankruptcy within 12 months from the issuance of financial statements *and* for whom the auditor *i* did not issue a going concern report by the number of all the auditor client companies that filed for bankruptcy within 12 months from the issuance of the financial statements for the period 2001-*t-1*. GCO is an indicator variable for the going concern audit opinions; MODIF is an indicator variable for the audit opinions containing an emphasis of matter paragraph; SIZE is the natural logarithm of the total assets in thousands of Swedish crowns; DTA is the ratio of the debt to total assets; LOGAGE is the natural logarithm of the client firm *j* age in years in fiscal year *t*; CONTROL is a dummy variable with a value of one if the firm has a controlling shareholder and is otherwise zero; CASH is the ratio of cash and cash equivalents to total assets; PRIORITY is an indicator variable for the existence of loan priority over other interested parties in case of bankruptcy; TENURE is the number of years the auditor *i* has been the auditor-in-charge for client firm *j* in fiscal year *t*. CAREER is the number of years since the auditor *i* certification date; OFFSIZE is the natural logarithm of the number of auditors in the audit office. Asterisks ***, **, and * denote two-tailed statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.