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Is the Public Oversight of Auditors Effective?
The Impact of Sanctions on Loss of Clients, Salary and Audit Reporting

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Is the Public Oversight of Auditors Effective?

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Abstract

This study examines the consequences of sanctions against individual Swedish auditors issued by the Supervisory Board of Public Accountants (SBPA). The results provide no support for individual auditor client loss after receiving a sanction. However, we find that Big 4 auditors have a lower salary after the sanction than before. Finally, we do not find that auditors become more conservative in their reporting after being sanctioned. Collectively, our results support that public oversight sanctions have relatively limited consequences for auditors of private companies.

Keywords: *public oversight; disciplinary sanctions; individual auditors; client losses; salary; auditor reporting.*

1. Introduction

The purpose of this paper is to examine the consequences of sanctions against individual auditors issued by the Swedish public oversight body. Auditor sanctions are a key tool of public oversight and its effectiveness relates to how different parties react to the sanctions issued. We examine the impact of sanctions on the auditor client portfolio, auditor salary and auditor reporting behavior.

Auditor oversight is considered essential for enhancing audit quality (2014/56/EU). Despite significant investments in the quality and independence of oversight work, its effectiveness is still questioned (Carson, Simnett & Vanstraelen 2013). Existing research has (mainly) recognised the usefulness of self-regulated peer reviews and independent oversight inspections for signalling perceived and actual audit quality at the audit firm level (Hilary & Lennox 2005; Casterella, Jensen & Knechel 2009; Carcello, Hollingsworth & Mastrolia 2011). However, the wider consequences of the impact of auditor sanctions have not been investigated yet (see Maijor & Vanstraelen 2012).¹

We contribute to this literature by testing the behavioural responses of audit clients, audit firms and sanctioned auditors. First, we are interested in whether auditor sanctions matter to audit clients. Some audit clients ask for information about whether their auditor is sanctioned, but very little is known about the extent to which companies care about sanctions and whether they act on such information and replace their auditor. Second, we are concerned with audit firm management and whether sanctioned auditors are penalised by a reduction in salary (in comparison with non-sanctioned auditors). Third, we are interested in whether sanctioned auditors learn from this and change their reporting behaviour accordingly. Each of

¹ Research at the individual auditor level is particularly interesting considering the recent change in for example EU regulation to disclose the name of the engagement partner in the audit report.

these behavioural responses shed some light on the effectiveness of oversight, and by considering these in combination we are better able to draw conclusions about its overall effectiveness.

This study is conducted in Sweden for three main reasons. First, the Supervisory Board of Public Accountants (SBPA) issues a considerable number of disciplinary sanctions against auditors, including the withdrawal of licences, which should positively influence the incentives of auditors to provide high audit quality and, in particular, those of sanctioned auditors. In the sample period 2006-2009, 158 auditors received a warning or a reprimand.² Second, information about individual auditors' sanctions, client portfolios, salaries and audit reporting is publicly available. Third, most of the auditors studied only have assignments in private companies. Research on individual auditors of private companies is of interest because the incentives and concerns about reputation may differ from those individuals auditing public companies. Recent (Swedish) evidence suggests that auditor characteristics matter in the context of private companies, as they have an impact on auditor reporting (Sundgren & Svanström 2014) and the behaviour of market participants (Knechel, Vanstraelen & Zerni 2015).

Overall, our findings suggest that the impact of disciplinary sanctions on individual auditors in Sweden is relatively small. However, one important result is that the salaries of auditors at Big 4 firms are significantly lower after a disciplinary sanction than before. Thus, Big 4 firms seem to take failure to meet quality standards into account when setting salaries. The findings also suggest that the negative effects of a disciplinary sanction on salary are significantly greater for Big 4 auditors than for non-Big 4 auditors. These results are

² 29 certified auditors had their licences withdrawn during the same period. We are unable to research this group because they have left the profession, but the number of sanctions indicates that the risk of losing one's licence is not negligible.

consistent with the notion that Big 4 firms are more concerned about their reputation and therefore take firmer action when an auditor receives a sanction.

Next, we find no post-sanction effect on the size of the clientele, based on the number of clients and their total assets, which suggests that sanctioned auditors do not appear to have a significant client loss. One possible explanation is that private clients have a limited interest in audit quality and that audit firm management accordingly assumes that the behavioural response of audit clients to sanctions is likely to be minimal, implying little need to replace the sanctioned auditor. Clients and outside interested parties may not even be aware that an auditor has been sanctioned. Finally, we find little evidence of post-sanction changes in terms of an auditor's propensity to issue unclean audit opinions or going concern opinions prior to bankruptcy. Hence, auditors appear relatively insensitive to sanctions and it does not create pressure to change their (reporting) behaviour. Collectively, we find that Public oversight sanctions have relatively limited consequences for auditors of private companies. These findings provide new insights into the effectiveness of auditor oversight.

The paper proceeds as follows. Section 2 describes the Swedish institutional setting and section 3 presents the related literature and our hypotheses. Section 4 includes the description of the sample and the research design. Section 5 presents the main empirical results of the study and in section 6 conclusions are drawn.

2. Disciplinary sanctions in Sweden

Sweden, as a member of the European Union, follows the Eighth Directive, which states that the monitoring system of auditors must rest on two pillars: effective sanctions and public disclosure of sanctions (2006/43/EC). However, the regulation allows for national differences in monitoring. Different approaches have been taken by countries to develop

public oversight. Since 1995 SBPA has been responsible for monitoring certified auditors and audit firms in Sweden. As a governmental authority under the Ministry of Justice, SBPA arranges exams, issues approval or authorisation, supervises and decides on disciplinary sanctions. SBPA conducts quality control investigations, both on its own initiative and after having received complaints, with the purpose of ensuring a minimum level of audit quality. The investigations take two forms: regular quality inspection and inspections directed at high risk groups.

SBPA carries out regular inspections on certified auditors with public clients every third year. For practical reasons, the regular quality inspection of auditors without public assignments has been delegated to the professional institute, FAR,³ and takes place every sixth year. However, SBPA is involved in designing the investigations (including scope, orientation, methodology) and decides on the required qualifications for individuals conducting the inspections. SBPA also performs random checks on a sample of the inspections performed by FAR. FAR has to report to SBPA if major deficiencies are identified during an inspection, or if a member refuses an inspection.⁴ If any of the inspections performed by SBPA reveal substantial drawbacks, or if a major deficiency is reported by FAR a disciplinary investigation will be opened. Importantly, SBPA also receives complaints that lead to investigations and disciplinary cases.⁵ Independent of the initiator, SBPA administrates the investigation in the same manner.

Depending on the degree of seriousness, the possible sanctions are a (i) reprimand, (ii) warning and (iii) licence withdrawal. A reprimand means that the auditor has not followed

³ FAR is the professional institute for authorized auditors, approved auditors and other qualified professionals in the accountancy sector in Sweden.

⁴ The quality controls conducted by FAR should meet all the requirements stated by the EU.

⁵ In the period 2005-2009 a total of 674 disciplinary cases were opened: 177 (26.3%) were initiated as a result of inspections by SBPA or FAR, 145 (21.5%) as a result of tips from tax authorities, 169 (25.1%) based on tips from clients and 183 (27.2%) based on tips from others.

what is considered to be generally accepted auditing practice. Warnings are issued in more serious cases, and in the most serious cases SBPA can decide to withdraw the certificate. It should be noted that in Sweden, in contrast to for example the US, sanctions are not associated with paying a fine. Disciplinary cases in Sweden are decided on by a committee of nine members, with the chairman and vice chairman being the judges in the Court of Appeal. All the other members have professional experience of auditing. Current members include the legal counsel of the tax authorities, the administrative manager at the Financial Supervisory Authority, an experienced lawyer who works as liquidation trustee, an experienced lawyer at the Confederation of Swedish Enterprise and a former CEO of the Swedish Securities Dealers Association (SSDA). Decisions can be appealed via the Administrative Court. A leave of appeal is required in order to take the case to the Supreme Administrative Court. In the period 2005-2009, disciplinary sanctions were issued against approximately 6.9% of certified auditors and 41 auditors had their certificates withdrawn.⁶ Auditors are also subject to disciplinary sanctions if they fail to meet the quality requirements of the audit process, or if their professional conduct is under par. Sanctions are issued following a broad range of deviations from what are considered to be generally accepted auditing principles. The most frequent basis for sanctions are deficiencies in the audit process, auditor reporting, audit documentation and auditor independence (see Sundgren & Svanström 2013). Deficiencies reported in disciplinary sanctions often occurred in multiple assignments.

The incentive of auditors to avoid a sanction and take corrective action is likely to depend on whether the identity of sanctioned auditors is made publicly available. In Sweden,

⁶ SBPA opened a total of 674 disciplinary investigations from 2005 to 2009 (SBPA Annual Report, various issues). 295 or 44% of these cases led to the issuing of disciplinary sanctions. 13 auditors received multiple sanctions. From 2005–2009 the average number of qualified auditors was 4,083. These auditors are allowed to audit both private and public companies but not all of them are audit partners. In fact, only about 30% of qualified auditors working in the Big 4 audit firms in Sweden are audit partners. individual decisions in disciplinary cases can be found using the following link: <http://www.revisorsnamnden.se/rn/search/praxis.html>

the names of sanctioned auditors are made public shortly after the decision is made, but in contrast to PCAOB reports on settled disciplinary orders, this information has to be specifically requested from SBPA.⁷ SBPA publishes all disciplinary sanctions on its website, but does not reveal the name of the auditor or the audit firm. The media reports on cases of broader interest to society, primarily those related to audits of public companies.

3. Literature review and development of hypotheses

There is an emerging literature on the public oversight of auditors (Hilary & Lennox 2005; Lennox & Pittman 2010; Daugherty & Tervo 2010; Carcello et al. 2011; DeFond & Lennox 2011; Bankley, Kerr & Wiggins 2012; Gunny & Zhang 2013). This literature generally recognises the usefulness of self-regulated peer reviews and independent oversight inspections for signalling perceived and actual audit quality (Hilary & Lennox 2005; Casterella et al. 2009; Carcello et al. 2011). However, research provides somewhat mixed evidence on the effectiveness of public oversight (see Offermanns & Vanstraelen 2014 for a review). For example, Lennox and Pittman (2010) find audit firm market shares to be insensitive to the content of PCAOB reports, while Daugherty, Dickins and Tervo (2011) reveal that deficiency reports of triennially inspected auditors are associated with client losses.

Evidence relating to public auditor oversight in Europe is sparse and mainly consists of two working papers. Based on data from the Netherlands, Van Opijnen, Van de Poel and Vanstraelen (2011) find that companies audited by an audit firm with a positive inspection outcome have lower abnormal accruals than companies audited by an audit firm with a negative inspection outcome. De Fuentes Barbera, Illueca Muñoz and Pucheta Martinez (2010)

⁷ Receiving the name of sanctioned auditors is free of charge. By telephoning or emailing the SBPA, the names of sanctioned auditors are received within a short period of time. The Chief Legal Advisor at SBPA informed us that they receive telephone calls from clients weekly asking for this information. Typically, the request for this information peaks during periods when general meetings are held.

observe that sanctioned auditors in Spain perform audits of lower quality, measured as the likelihood of loss reporting and accruals levels, than non-sanctioned auditors. They also report that audit quality significantly increases after the start date of an external inspection ultimately leading to a sanction.

Prior research mainly focuses on how (negative) inspection outcomes at the audit firm level influences the behaviour of (all) auditors in a particular audit firm and whether or not an audit firm's market share is affected. In contrast, this study investigates the impact of inspection outcomes at the individual auditor level. Our hypotheses are developed in the next sections.

3.1 Loss of audit clients

The fact that an auditor receives a disciplinary sanction may negatively influence his or her market share for two main reasons. First, assuming that the client learns about the sanction, he or she may decide to replace the auditor with another auditor, presumably one of higher quality. However, the expected benefits must then exceed the cost associated with changing the auditor (Abdel-khalik 1990). Second, the audit firm is likely to perceive the auditor as risky and, due to reputation concerns, may therefore decide to reduce the portfolio size of the sanctioned auditor or remove him or her from key engagements.

In their study of audit market awareness of peer reviews, Hilary and Lennox (2005) find that reviewed audit firms gain clients after receiving clean opinions from their reviewers, but lose clients when modified or adverse opinions are issued. However, research on the perceived value of peer review reveals that the outcomes only seem to have a marginal effect. Woodlock and Claypool (2001) find that two thirds of the audit committees in public companies recommend the audit firm without considering the auditor's latest peer review

report. Approximately 90% of the audit firms enrolled in the quality review doubt that their clients are interested in review results, and only 20% believe that companies will use review outcomes when selecting an audit firm (Elsea & Stewart, 1995; Ehlen & Welker 1996).

Lennox and Pittman (2010) analyse the association between identified weaknesses in the PCAOB report and the changes in the number of clients. As the results show no increase in market share after receiving favourable reports, they conclude that audit firm market shares appear to be insensitive to PCAOB reports. In contrast, recent evidence suggests that the market is actually aware of inspection reports and reacts to their outcomes. For example, Daugherty et al. (2011) find that listed US companies dismiss audit firms with deficiency reports and also that they are more likely to switch to an audit firm with clean reports. A similar switching pattern is reported by Abbott, Gunny, and Zhang (2013) for small audit firms with documented GAAP deficiencies.

The question of whether sanctions against individual auditors have an impact on the auditor client portfolio has not yet been researched. The outcome likely also depends on multiple factors related to the specific setting. A stronger negative impact can be assumed for sanctions against individual auditors compared to audit firm inspection outcomes like in the US, because clients can dismiss the auditor and switch to a non-sanctioned auditor at the same audit firm. On the other hand, the potential consequences of hiring a sanctioned auditor are likely to be smaller for private than for listed clients. In general, however, sanctions are assumed to affect an audit firm's reputation negatively, and we expect audit firm management to manage risk by taking sanctioned auditors off assignments. Based on the above, we formulate the following hypothesis:

H_{1a}: There is a positive association between receiving a disciplinary sanction and the loss of audit clients.

Audit clients of different types of auditors may be more or less sensitive to sanctions. Clients of large audit firms expect high quality, and if they become aware of sanctions being issued against their auditor they may respond by switching to another auditor in order to avoid loss of reputation. On the other hand, clients of small audit firms may be largely unaware or insensitive to information about auditor sanctions, because the choice of auditor is typically driven by price and not quality (see Beattie & Fearnley, 1998). Based on the above, we formulate the following hypothesis:

H_{1b}: The loss of audit clients is greater for sanctioned Big 4 auditors than sanctioned non-Big 4 auditors.

3.2 Auditors' salaries

The general concern is that financial incentives will negatively influence auditor decisions, such as pricing audits below cost or under-audits of own engagements (Liu & Simunic 2005). Knechel, Niemi and Zerni (2013) investigate compensation among Big 4 audit partners in Sweden and document significant variations in partner compensation in each audit firm. They find auditor compensation to be positively associated with the size of the client portfolio, the acquisition of new clients and auditor expertise (Knechel et al. 2013).

The consequences of disciplinary sanctions in terms of income and future career opportunities are largely debatable. According to SBPA chief Peter Strömberg, large audit firms have mechanisms in place that are supposed to ensure reduced compensation for an auditor subject to sanctions (Bursell 2010). The transparency report of EY states that “instances of non-compliance with quality standards results in remedial actions, which may include compensation adjustment...” (EY 2013; p.25). However, one of Sweden's major newspapers presents numbers showing that compensation (the sum of salary and capital income) to seven out of ten sanctioned auditors at Big 4 audit firms had increased with on

average 34% in the period 2005-2009 (Bursell 2010). In terms of empirical research, we know very little about auditor compensation in general and whether sanctions influence auditor compensation in particular. However, as we expect that a firm's management wishes to incentivise commitment to audit quality, the following hypothesis is formulated:

H_{2a}: There is a negative association between receiving a disciplinary sanction and an auditor's salary.

The factors driving auditor compensation are likely to differ between large and small audit firms. Whether sanctioned auditors receive a reduced income or not is associated with how the audit firm's management reacts to information about sanctions. As we expect large audit firms to be more likely than small audit firms to penalise audit failures in order to avoid future damage to reputation, we formulate the following hypothesis:

H_{2b}: There is a stronger negative salary effect for sanctioned Big 4 auditors than for sanctioned non-Big 4 auditors.

3.3 Auditor reporting

Numerous studies investigate inspection outcomes and different measures of audit quality (Krishnan & Schauer 2000; Casterella et al. 2009; Daugherty & Tervo 2010; DeFond & Lennox 2011; Gunny & Zhang 2013). A few studies investigate whether the inspection outcome affects going concern reporting. Gramling, Krishnan and Zhang (2011) find that triennial inspected audit firms in which inspectors identify deficiencies are more likely to issue going concern opinions for financially distressed firms after the inspection than before. In contrast, Gunny and Zhang (2013) find no association between inspection outcomes and the propensity to issue a going concern opinion. To conclude, from the existing evidence it is unclear whether inspection outcomes impact auditor reporting behaviour.

The issuance of a sanction represents a serious quality deficiency and is likely to put pressure on the auditor to perform according to standards for several reasons. First, by being subject to a disciplinary sanction, the auditor attracts the attention of SBPA. Second, the threshold level for another (more serious) sanction may be lower after being sanctioned for the first time. Third, superiors at the audit firm are likely to emphasise the need for quality improvement in order to avoid any further damage to the firm's reputation. Overall, this provides incentives for the auditor to meet (or exceed) SBPA expectations.

Considering that the reporting of auditors is a key area of concern for SBPA⁸, accurate (and possibly conservative) auditor reporting could prove important in order to avoid further disciplinary investigations with negative outcomes. However, changing auditor reporting behaviour may involve further education and a learning process, which could lead to conflicts with clients. In other words, it is not an instant process. Evidence also suggests that audit reporting behaviour tends to be persistent over time (Lennox 2000; Knechel et al. 2015). Based on the expectation that in general sanctioned auditors feel pressured to improve their performance, we formulate the following hypothesis:

H_{3a}: Sanctioned auditors report more conservatively after the sanction than before the sanction.

The incentives for auditors to change their reporting behaviour may vary with audit firm type. Knechel et al. (2013) find that reporting errors are associated with lower compensation to audit partners at Big 4 audit firms in Sweden supporting the reputational concern of large international firms. Considering the attention given to the clients of small audit firms and their expectations, one can assume that the incentive to start reporting more

⁸ Sundgren and Svanström (2013) investigated 267 out of a total of 274 disciplinary sanctions issued in the period 2005-2009 and showed that 68 sanctions (25%) were related to auditor reporting.

conservatively is much less for auditors working in small audit firms. Based on the above, we formulate the following hypothesis:

H_{3b}: There is a greater change in reporting behaviour after the sanction for Big 4 auditors than for non-Big 4 auditors.

4. Research design and data

4.1 Research design

Hypothesis 1a (H1a) predicts a positive association between the receipt of a disciplinary sanction and a loss of clients. We use two measures for client losses. The first one is calculated as the logarithm of aggregate assets of all clients per year (LnCumASSETS). The aggregate assets are the total assets of all the auditor's clients in the corresponding year. The values are inflated with the Consumer Price Index to reflect the price level in 2011. The second measure is the number of clients audited by the auditor (NoCLIENTS). We estimate the following regressions to test H1a:

$$\begin{aligned} \text{LnCumASSETS, NoCLIENTS} = & \beta_0 + \beta_1\text{SANCTION} + \beta_2\text{AfterSANCTION} + \beta_3\text{EXP} \\ & + \beta_4\text{LnOFF} + \beta_5\text{AvSOL} + \beta_6\text{AvASSETS} + \beta_7\text{FEMALE} + \beta_8\text{APPR}_2 + \beta_9\text{AUTH} \\ & + \beta_{10}\text{BIG4} + \beta_{11-15}\text{YEAR}_i + \varepsilon \end{aligned} \quad (1)$$

The regressions are estimated for a sample of auditor years before the sanction for sanctioned auditors, auditor years after the sanction and auditor years for unsanctioned auditors. SANCTION takes the value one if the auditor has received a sanction in any one year and AfterSANCTION takes the value one in years after the year the auditor received the sanction. Thus, a positive (negative) sign on SANCTION indicates that the sanctioned auditor has more (fewer) clients than unsanctioned auditors before receiving the sanction. AfterSANCTION shows the change in the client-base, thus, H1a predicts a negative coefficient of

AfterSANCTION. Hypothesis 1b predicts a larger loss of audit clients for Big 4 auditors than for non-Big 4 auditors, suggesting that the coefficient of AfterSANCTION is smaller for auditors at Big 4 firms than non-Big 4 firms. An OLS regression is used to estimate the model with LnCumASSETS. NoCLIENTS is a count variable and we use a negative binomial regression to estimate the model (Hilbe 1999).

We include the following control variables in the regressions. As more experienced auditors are likely to have more and larger clients, we include the time in years between the balance sheet date and the year of the CPA certification as a control variable (EXP). Studies suggest that audit office size is associated with audit quality and fees (Choi, Kim, Kim & Zang 2010), possibly because large offices disproportionately benefit from economies of scale (Knechel, Rouse & Schelleman 2009). If larger offices conduct higher quality audits, one would expect them to attract more clients, which means that the average clientele for each auditor at the office will be larger. We therefore include the natural logarithm of the office size measured by the number of CPAs at the office (LnOFF). Furthermore, we include measures of the average client risk and size in the regressions. Higher average client risk may suggest that the auditor is less selective when new assignments are accepted, which means that the auditor will end up with more assignments. However, more risky clients also require more work, which could be a reason why auditors with a high proportion of risky clients audit fewer and smaller clients. Client risk is measured as the average solvency of all the auditor's clients (AvSOLV). Client size is measured using the average assets of all the auditor's clients.

Swedish auditors have three different types of auditor qualifications: approved auditors without an exam, approved with an exam and authorised auditors. As the authorised auditor examination is more demanding, auditors with this qualification are likely to be given more responsibility in audit firms, and will therefore have a larger client portfolio. The

variable APPR_2 takes the value one for approved auditors with an exam and AUTH takes the value one for authorised auditors. Approved auditors without an exam are in the reference category (APPR_1). We also include BIG 4, FEMALE and year indicator variables in the regression.

Hypothesis 2a (H2a) predicts a negative effect of disciplinary sanctions on auditors' salaries. Following prior compensation studies (DeVaro & Valdman 2012; Smeets & Warzynski 2008; Ortín-Ángel & Salas-Fumás 2002), we use the logarithm of the real salary income (LnW). The salary is the total salary of the auditor inflated by the Consumer Price Index in order to reflect the price level in 2011. LnW does not include capital income, such as capital gains from sales of shares and dividends. The Swedish Auditor Act §12 requires that a certified auditor is employed by an audit firm. Thus, income from work other than that undertaken at the audit firm is probably limited and should have little impact on the salary level. We use the following model in our tests of H2a:

$$\begin{aligned} \text{LnW} = & \beta_0 + \beta_1 \text{SANCTION} + \beta_2 \text{AfterSANCTION} + \beta_3 \text{EXP} + \beta_4 \text{LnOFF} + \\ & \beta_5 \text{LnCumASSETS} + \beta_6 \text{AvSOLV} + \beta_7 \text{AvASSETS} + \beta_8 \text{FEMALE} + \beta_9 \text{STOCKH} \\ & \beta_{10} \text{APPR_2} + \beta_{11} \text{AUTH} + \beta_{12} \text{BIG4} + \beta_{13-17} \text{YEAR}_i + \varepsilon \end{aligned} \quad (2)$$

SANCTION takes the value one if the auditor has received a sanction in any one year and AfterSANCTION takes the value one for the years following the sanction. Thus, H2a predicts a negative coefficient of AfterSANCTION, which would suggest that the real salary (controlling for year effects and other variables in the model) is lower in the years after the sanction than in the years before the sanction. As described in more detail below, the average number of annual observations for each auditor is 2.4 before the sanction and 3.2 after the sanction. Thus, we compare the salary over relatively short periods before and after the sanction. In supplementary analyses, we use the change in salary as an alternative measure.

The following control variables are included in the regressions. The inclusion of EXPERIENCE follows prior studies (e.g., Knechel et al. 2013; Smeets & Warzynski 2008). Following Knechel et al. (2013), we also control for office size and client risk. Office size is measured with LnOFF and client risk is measured using the average solvency of the clients (AvSOLV). Furthermore, more talented auditors are likely to audit more and larger clients and receive a higher salary. We include the logarithm of the aggregate assets of all clients as well as the clients' average assets (LnCumASSETS, AvASSETS). As studies also suggest there are salary differences between men and women (e.g., Knechel et al. 2013), we include FEMALE to control for this possibility. APPR_2 and AUTH are included to control for possible salary differences between auditors with different types of certification. Furthermore, a salary indicator variable for the Stockholm region is included in order to control for possible differences between the largest city in Sweden and other areas. BIG 4 is included to control for salary differences between Big 4 and non-Big 4 auditors, while year indicator variables control for possible differences in real salaries between the years studied.

Hypothesis 2b (H2b) predicts a stronger negative effect on the income of Big 4 auditors than non-Big 4 auditors. As in the tests of H1b, we study this by testing whether the coefficient of AfterSANCTION is more negative in the sub-sample of Big 4 audit firms than in the sub-sample of non-Big 4 audit firms.

Hypothesis 3a (H3a) predicts that sanctioned auditors report more conservatively after the sanction than before. We use the propensity to depart from a standard audit report and the likelihood of a going concern opinion before bankruptcy in our tests. The dependent variable in the first set of logistic regressions is an indicator variable taking the value one if a non-standard audit report is issued and zero otherwise (UNCLEAN). In the second set of

regressions, the dependent variable takes the value one if a going concern opinion has been issued and zero otherwise (GC). We use the following model in our tests of H3a:

$$\begin{aligned} \text{UNCLEAN, GC} = & \beta_0 + \beta_1 \text{BeforeSANCTION} + \beta_2 \text{AfterSANCTION} + \beta_3 \text{LOSS} \\ & + \beta_4 \text{PROBZ} + \beta_5 \text{LnASSETS} + \beta_6 \text{LnAGE} + \beta_7 \text{EXP} + \beta_8 \text{LnOFF} + \beta_9 \text{NoCLIENTS} + \\ & + \beta_{10} \text{BUSY} + \beta_{11} \text{FEMALE} + \beta_{12} \text{DELAY} + \beta_{13} \text{APPR_2} + \beta_{14} \text{AUTH} + \beta_{15} \text{BIG4} + \beta_{16} \\ & \text{YEAR}_i + \beta_{21-29} \text{INDUSTRY}_i + \varepsilon \end{aligned} \quad (3)$$

Following the practice reported in prior studies of audit reporting, we control for the incidence of losses, the probability of bankruptcy and the age and size of the company (e.g., Chen, Sun & Wu 2010; Reynolds & Francis 2000). The probability of bankruptcy (PROBZ) is measured with Shumway's (2001) estimate of Zmijewski's (1984) model.⁹ Sundgren and Svanström (2014) find that older auditors are less likely to issue a going concern opinion. We therefore include experience (EXP) to control for this possibility. Furthermore, as prior research suggests a positive association between audit office size and audit quality (e.g., Francis & Yu 2009), we include office size as a control variable (LnOFF). Sundgren and Svanström (2014) find that auditors with more clients are less likely to issue a going concern opinion, which is why we have included the number of clients in the regressions (NoCLIENTS). Studies suggest that a busy-season effect emerges from a concentration of auditees' balance sheet dates (e.g., Knechel & Payne 2001; Sweeney & Summers 2002). We therefore include an indicator variable taking the value one if the balance sheet date is at the end of December to control for this effect (BUSY). FEMALE is included to control for possible differences in the quality of audit reporting between men and women (e.g., Ittonen, Vähämaa, & Vähämaa 2013;

⁹ The model includes net income to total assets, total liabilities to total assets and the current ratio. The ratios include a number of observations with extreme values. We winsorised the ratios with 1 per cent in each tail before the probability was calculated.

Karjalainen, Niskanen & Niskanen 2013) and BIG 4 to control for possible differences in the reporting between auditors at Big 4 and non-Big 4 audit firms. Furthermore, we include year variables and industry variables measured at the one-digit level. Finally, following Li (2009), we include DELAY as a measure of the time between the balance sheet date and the bankruptcy filing. This variable is only included in our going concern tests. The exact calculations of the variables are presented in Table 1.

4.2 *Data*

We study the effects of disciplinary sanctions against auditors from 2006 to 2009. The total number of sanctions issued during this period was 158, of which 57 were reprimands and 101 were warnings. Three of the 158 auditors had also publicly listed clients. We use a sample of auditors for which the number of audit assignments and the sum of the sales of all clients, measured on an annual basis, is available. In order to have at least two years of observations after the sanction, this data covers 2006 to 2011. It includes 15,868 observations of 2,933 auditors, 147 of which received a sanction. Thus, the sub-sample includes data for 147 of the 158 auditors receiving a sanction from 2006–2009. Table 2 includes more information about the composition of the sample.

We received data concerning the total number of audit assignments, total sales and total assets for all auditors in Sweden from Upplysningscentralen (UC), a Swedish credit and business agency.¹⁰ The regressions include the experience, type of certification and audit firm affiliation as control variables. Auditors with a warning or reprimand and auditors' experience and type of certification were identified from documents received from SBPA. Data

¹⁰ A company can appoint a person or an audit firm as its auditor. The data only includes observations when a person is hired as the auditor. We do not have any information about the auditor-in-charge of an assignment if an audit firm is formally hired. A person is appointed by on average 87.0% of the companies over the 2006 to 2012 period. Large clients more commonly appoint an audit firm.

concerning the employers of individual auditors was retrieved from the files received from UC.

The sample used to test H1 was composed as follows. We started with a sample of 20,604 observations for audit engagements covering the period 2006-2011. First, we excluded 218 observations for which auditors had received a sanction between 2000 and 2005. Next, we excluded 161 observations for which any of the variables in model (1) were missing¹¹, leaving 14,868 observations.

The analyses to test H2 are based on 12,701 observations for the annual salary of 2,598 auditors. The salary income and total income for each person active as a CPA at the end of 2011 were received from Ratsit. Ratsit is a business and credit information company that receives the information used in this study from the taxation authorities. Income data was received for 4,003 individuals and covers a 10-year period. Control variables are taken from the registers of all active CPAs in 2009 or 2013. These registers were received from SBPA and 3,957 of the 4,003 auditors were found in the registers. The sample used for H2 is composed as follows. The total sample for the 10-year period includes 39,562 observations, but we exclude 330 observations where auditors received a sanction before 2006 and 7,220 income observations for years before an auditor received his or her CPA certification. Next, in order to avoid the results being affected by a lower income after retirement, we exclude an observation if the auditor is over 63, which results in an omission of 1,548 observations. The common retirement age in Sweden is 65 years, but at the Big 4 firms it is relatively common to retire at around 63 years of age. The income of auditors is likely to differ between Big 4

¹¹ Publicly available databases do not include audit firm affiliation on an annual basis. However, based on the sample used to test hypothesis three, we constructed a file with the auditor's identity and audit firm for the years 2006 to 2011. This data included 16,273 auditor years. In 120 of these, the auditor had signed reports for two or more audit firms. In those cases, we assumed the auditor to be affiliated to the firm at which the majority of the reports had been signed. 13 auditor years were excluded because the majority rule was not applicable.

audit firms, second tier audit firms and smaller audit firms. We received details of the auditors' employers for the random sample of 14,770 observations described below. This data covers the period 2006-2011, which means that we exclude all income observations before 2006. This results in an exclusion of 16,953 observations, leaving 13,511 observations. Finally, we exclude 357 observations if the log of the salary is not available, and 453 observations where any of the other control variables were missing, leaving 12,701 observations.

We use unclean opinions and a going concern opinions to test H3. The unclean opinion tests are based on a sample of 59,116 firm years from 2006 to 2011 audited by 2,949 auditors. Fifty-three of these auditors received a reprimand and 97 a warning. This sample is composed as follows. We start with a sample of 76,679 firm years for 14,770 randomly selected companies. The data was received from UC and includes information about the identity of the audit firm and the auditor. First, we exclude 859 firm years audited by auditors who had received a sanction in the period 2000–2005. Clients typically appoint the auditor-in-charge in Sweden but it is also possible to appoint the audit firm and leave the choice of the auditor-in charge to the audit firm. The identity of the auditor-in-charge is not available in the data received if the audit firm has formally been appointed and we therefore omit 5,844 observations. We then drop 116 observations with zero assets and 6,739 observations with zero sales, leaving 63,121 observations. Finally, we exclude 4,007 observations for which any of the control variables are missing, leaving 59,114 observations.

The data for the going concern tests consists of 3,139 companies that filed for bankruptcy within 12 months of the balance sheet date. This sample is composed as follows. We started with 3,963 observations of companies having filed for bankruptcy within 365 days after the balance sheet date. In order to reduce the risk of the bankruptcy filing being made before the auditor signed the audit report, we excluded 32 observations for which the time

between the bankruptcy date and balance sheet date was less than 90 days.¹² Data on going concern opinions was hand-collected from annual reports produced in pdf format. However, we had to exclude 159 observations because pdf files were not available. Next, we excluded 42 observations that were audited by auditors receiving a sanction before 2006, 413 observations for which the total number of assignments of the auditor (NoCLIENTS) was unknown and 178 observations if any of the other control variables were missing. These omissions left us with 3,139 observations. This sample is a sub-set of the sample analysed by Sundgren and Svanström (2015) on how auditors' going concern reporting evolves over time.

5. Empirical results

5.1 Disciplinary sanctions and loss of clients

Panel A in Table 3 presents descriptive evidence of the variables in Model (1). The mean, standard deviation, minimum and maximum values are displayed separately for unsanctioned auditors, auditor-years before a sanction and auditor-years after a sanction. It can be seen that the average value of NoCLIENTS is higher, and that the average size of the client portfolios measured with LnCumASSETS is larger for sanctioned auditors than for unsanctioned auditors. Furthermore, female auditors and auditors at Big 4 firms are less likely to receive a sanction than other auditors. A final noteworthy observation from Panel A in Table 3 is that sanctioned auditors are more experienced and/or older than unsanctioned auditors.

Regression results are presented in Table 4. In panel A, OLS regression results with LnCumASSETS as the dependent variable are presented. The dependent variable is

¹² We also attempted to exclude all observations that filed for bankruptcy less than 180 days after the balance sheet date. This left us with 3,000 observations and the results are qualitatively similar to those reported in Table 7.

NoCLIENTS in Panel B, and here we use a negative binominal regression. The reason for this is that the variance of NoCLIENTS exceeds the mean (see Panel A in Table 3), indicating that the data is over-dispersed.¹³ Column 1 includes the results for the full sample, column 2 the results for auditors at Big 4 firms, and column 3 the results for auditors at non-Big 4 firms. As the data includes multiple observations for the same auditor, Huber/White robust standard errors clustered on the auditor are reported (Rogers 1993). Apart from SANCTION and AfterSANCTION, the correlations between the explanatory variables are generally low and do not exceed 0.5 (see Appendix 1). The variance influence factors are also low, suggesting that multicollinearity is not a problem (see Table 4, Panel A).

A first observation that can be made from Panel A in Table 4 is that SANCTION has a significant positive coefficient at least at the 0.05 level for the full sample as well as for the sub-samples, thus showing that sanctioned auditors have more clients before the sanction than unsanctioned auditors. One reason for this could be that sanctioned auditors at non-Big 4 firms are busier and have less time to spend on each audit assignment than unsanctioned auditors at non-Big 4 firms (Sundgren & Svanström 2014).

H1a predicts that auditors lose clients after a sanction, thus implying that the coefficient of AfterSANCTION is expected to be negative. Although the coefficients have the expected sign, they are not significantly different from zero.¹⁴ H1b predicts that Big 4 auditors lose more clients than non Big 4 auditors rms. In order to study this hypothesis, we test the null hypothesis to determine whether there is a difference between the coefficient estimates of AfterSANCTION for Big 4 firms and non-Big 4. The Wald test is reported at the

¹³ The Pearson goodness of fit and the deviance goodness of fit were significant at the <0.01 level for the full sample and the sub-samples with Big 4 and non-Big 4 auditors, suggesting that a Poisson regression is inappropriate.

¹⁴ We also run the regressions with the logarithm of the total sales of all clients instead of total assets. These results are qualitatively similar.

bottom of Panel A in Table 4, where it can be seen that the null hypothesis cannot be rejected (p-value = 0.596).¹⁵

Panel B in Table 3 reports negative binomial regression results with NoCLIENTS as the dependent variable. As in Panel A, the coefficients of SANCTION are positive and significant, thus showing that sanctioned auditors have more clients before the sanction than unsanctioned auditors. However, the results reported in Panel B do not provide significant support for the predictions that auditors lose clients after a sanction.¹⁶

With respect to the control variables in Table 4, the following conclusions can be made. First, it can be seen that BIG4 has a negative and insignificant coefficient in the regression with LnCumASSETS as the dependent variable, and a negative coefficient significant at the 0.01 level in the regression with NoCLIENTS as the dependent variable. This shows that auditors at Big 4 firms have fewer clients. Second, FEMALE has a negative coefficient in the regressions, thus showing that female auditors have fewer and possibly also smaller clients. Third, measuring the average risk of clients with the average solvency of clients (AvSOLV), the results show that auditors with more clients also have more risky clients. This result is contrary to the notion that client risk is negatively associated with clientele size. A possible explanation for this result is that certain auditors are less selective when new assignments are accepted, which means that they end up with more assignments. A final observation is that auditors at larger offices of Big 4 firms audit fewer clients than auditors at smaller Big 4 offices.

Supplementary analyses of the loss of clients

¹⁵ We also estimated the models with interactions between Big 4 and SANCTION as well as Big 4 and AfterSANCTION as an alternative to the analyses of the subsamples of Big 4 and non-Big 4 auditors in Table 4. The results are qualitatively similar.

¹⁶ We winsorize AvSOLV and AvASSETS at one percent in both tails in the main analyses. The results are qualitatively similar when the variables are trimmed.

Large clients might be more concerned if their auditor receives a sanction than small clients and thus be more likely to switch auditor. In order to test this proposition we re-ran Model 1 on the quartile of auditors with AvASSETS over 8.85 Million SEK (1SEK = 9.21 EUR 03/12/2015), which means that 3,717 observations remain for further analyses. However, the results are qualitatively similar to those reported in Table 4 and do not provide any support for H2.

Since a warning is a more serious sanction than a reprimand, we also explore whether warned auditors lose clients. We excluded auditors with a reprimand from the sample, but the results do not provide support for the prediction that auditors with a warning lose clients.

5.2 *Disciplinary sanctions and auditors' salaries*

H2a predicts that a disciplinary sanction has a negative impact on an auditor's salary income. Descriptive evidence on the dependent and independent variables is presented in Panel B of Table 3. The salary numbers in the table are inflation adjusted with the Consumer Price Index to reflect the price level in 2011.

The panel also presents the salary in thousand SEK. It can be seen that the median salary is 528 thousand SEK for unsanctioned auditors, 516 thousand SEK for sanctioned auditors before the sanction and 512 thousand SEK for sanctioned auditors after the sanction. Using a Mann-Whitney test, the median salary is significantly higher for unsanctioned auditors than for sanctioned auditors before and after the sanction (p -value < 0.05), but there are no differences in the median salaries before and after the sanction (test not reported in the table). Apart from the correlation between SANCTION and AfterSANCTION, the correlations between the variables are generally low and are always below 0.6 (see Appendix

1). The variance influence factors also show that multicollinearity is not a problem (see Table 5).

OLS regression results with LnW as the dependent variable are presented in Table 5. As the data includes multiple observations for the same auditor, Huber/White robust standard errors clustered by auditor are reported. The analyses are based on an unbalanced panel with 12,059 auditor-year observations for unsanctioned auditors, 281 observations for sanctioned auditors before the sanction and 361 observations after the sanction (see Table 2). The average number of yearly observations for each auditor is 2.4 before the sanction and 3.2 after the sanction. Thus, we test whether the real salary is lower in this relatively short period after the sanction than before. Note that a negative coefficient on AfterSANCTION does not necessarily mean that the nominal salary of the auditor has decreased because the year indicator variables in the regression control for average changes in real salaries. However, it does suggest that the inflation adjusted salary is lower when controlling for annual average real-salary changes (via year indicator variables) and for the effects of the other control variables in the regression.

Column 1 in Table 5 reports the results for the full sample. Here, it can be seen that the coefficient of AfterSANCTION is insignificant. However, the negative coefficient for AfterSANCTION reported in column 2, which is based on auditors at Big 4 firms, shows that the salaries of sanctioned auditors are higher before the sanction than after (p-value < 0.05). The coefficient estimates indicate that compared to other auditors at Big 4 firms, salaries after the sanction are 12.9% lower than before the sanction. This is arguably an economically significant amount.¹⁷ Thus, the findings provide support for H2a for the sub-sample of auditors at Big 4 firms. In the main analyses, we do not exclude auditors with low incomes.

¹⁷ With the logarithm as the dependent variable, the change can be calculated as $1 - 1/e^{b_1}$ and in our case b_1 is the coefficient of AfterSANCTION (see Cameron & Trevedi 2010 p. 88).

However, the results are qualitatively similar when we exclude the quartile with the lowest income. Twenty-five percent of observations in the sample are on incomes below 427,000 SEK (46,043 EUR).

H2b predicts a stronger negative effect on salary for Big 4 auditors than for non-Big 4 auditors. In our empirical tests, we compare AfterSANCTION for Big 4 observations with AfterSANCTION for at non-Big 4 auditors. . It can be seen from Table 5 that the null hypothesis can be rejected (p-value < 0.05).¹⁸ Thus, the empirical findings support H2b.¹⁹

With regard to the control variables in Table 5, the following conclusions can be drawn. First, it can be seen that auditors with larger portfolios (measured with LnCumASSETS) and auditors at larger offices (LnOFF) have higher salaries (p-values < 0.01). Furthermore, it can be seen that salary levels are higher in Big 4 audit firms and that female auditors receive lower salaries (p-values < 0.01). A final observation that can be made is that auditors with less risky clients (measures with AvSOLV) have a higher salary. A possible reason is that this association may be driven by differences in competence: highly competent auditors may attract less risky clients and competent auditors are also likely to get higher salaries.

Supplementary analyses of auditors' salary

¹⁸ We also attempted to estimate a model with interactions between Big 4 and SANCTION as well as Big 4 and AfterSANCTION. The conclusions that can be drawn from this model are very similar to those from the separate analyses of the firms audited by Big 4 and non-Big 4 firms: the coefficient of AfterSANCTION is insignificant, suggesting that a sanction does not have any significant impact on the salary in non-Big 4 firms. The sum of the coefficients of AfterSANCTION and Big4*AfterSANCTION is negative and significant at the 0.10 level (p-value 0.052), suggesting that auditors at Big 4 firms have a lower salary after the sanction. Finally, the coefficient of Big4*AfterSANCTION is negative and significant at the 0.05 level (p-value 0.018), which supports H2b.

¹⁹ We winsorize AvSOLV and AvASSETS at one percent in both tails in the main analyses. The results are qualitatively similar when the variables are trimmed. For example, the coefficient (p-value) of AfterSANCTION in the analysis of the sub-sample with auditors at Big 4 firms is -0.144 (0.048).

First, we study whether auditors with large or small clients at Big 4 firms drive the negative association between a sanction and decrease in salary. We do this by studying auditors with AvASSETS in quartiles 1-3 and quartile 4 separately. These results show that the negative association between sanctions and salary for auditors at Big 4 firms reported in Table 5 is driven by auditors with clients in quartiles one to three, rather than by auditors with clients in the fourth quartile. Second we evaluate whether warned auditors experience a decrease in salary by excluding auditors with a reprimand from the sample. The coefficients of AfterSANCTION are insignificant in these regressions.

The main analyses focus on the question of whether the salary level is different in the years before and after the sanction. However, an alternative way of analysing the data is to study the salary changes for which we use $\text{Ln}W_t - \text{Ln}W_{t-1}$. The mean (median) change in salary for sanctioned auditors is -0.2% (0.2%) before the sanction and -3.8% (-1.2%) after the sanction. These percentages are for unwinsorised data. Using a Mann-Whitney test, the p-value for the difference in the medians is 0.13. We estimate regressions with $\text{Ln}W_t - \text{Ln}W_{t-1}$, as the dependent variable. Due to fairly extreme values, the dependent variable is winsorised 5% in each tail. AfterSANCTION is the test variable in the regression and the same control variables as in Table 5 are included. The coefficient (p-value) of AfterSANCTION is -0.017 (0.22) when the regression is estimated on the full sample. The coefficient (p-value) is -0.028 (0.439) for auditors at Big 4 firms, and -0.021 (0.138) for auditors at non-Big 4 firms. Thus, the results indicate that the change in salary is lower after the sanction, although the differences are not significant.²⁰ A possible reason for the difference between these results and those with LnW as the dependent variable is that negative changes in salary in the year

²⁰ The results are also insignificant when the dependent variable is trimmed 5% in each tail, that is, the centile with the smallest and largest values of $\text{Ln}W_t - \text{Ln}W_{t-1}$ were omitted.

immediately after the sanction may be offset by positive changes in later auditor-years after the sanction.

We study an unbalanced panel in the main analyses. This is consistent with the common view that extracting a balanced panel from an unbalanced panel leads to a loss in efficiency (e.g., Mátyás & Lovrics, 1991). However, the use of an unbalanced panel inevitably increases the variability in the data. Thus, the risk of a correlated omitted variable that could affect the coefficient of our test variable *AfterSANCTION* is lower if a balanced panel is used. We have six years of data for 88 sanctioned and 1,425 unsanctioned auditors, i.e. a total 9,078 observations. When we re-estimate the regressions in Table 5 on this sub-sample the results are qualitatively similar to those in Table 5. Most notably, *AfterSANCTION* has a negative coefficient with a p-value equal to 0.037 in the regression on the sub-sample with Big 4 auditors. It should be noted that possible omitted variables that influence the level of the salary, but are fairly constant between years, are unlikely to be correlated with the test variable when the balanced panel is analysed.

In short, the results show that the inflation adjusted salary level is lower for sanctioned auditors at Big 4 firms after the sanction than before. Note also that the inclusion of year dummy variables is likely to control for average real changes in auditors' salaries. However, we cannot rule out that this effect is driven by other exogenous factors, such as burnout or other circumstances leading auditors voluntarily reducing their workloads and salaries.

5.3 *Disciplinary sanctions and auditors' reporting*

We use the incidences of unclean audit opinions and going concern opinions in our tests of H3. Descriptive statistics for test and control variables are presented in Panels C and D in Table 3.

Panel C reports the descriptive statistics for variables used in the unclean opinion tests. It can be seen that unsanctioned auditors issued an unclean audit opinion to 13.1% of the companies. The corresponding proportion is 16.9% for firm years audited by auditors before the sanction and 16.1% for firm years after the sanction.

Panel D includes the variables in the going concern tests. Regardless of what is stated by management in the annual report, auditors are required to issue a going concern opinion if there is material uncertainty about the entity continuing its operation. The time span to consider is at least one year from the fiscal year end (ISA 570, A.10), and the type of audit report that is relevant ranges from an emphasis of matter paragraph to an adverse opinion depending on the information provided in the annual report (ISA 570, §18-21). The table shows that sanctioned auditors issued fewer going concern opinions for failing companies than unsanctioned auditors. The proportions of going concern opinions prior to bankruptcy are 15.1%, 8.2% and 5.9% respectively for unsanctioned and sanctioned auditors before the sanction and sanctioned auditors after the sanction. Thus, the descriptive statistics do not suggest any improvement in the reporting after the sanction.

Table 6 includes logistic regression results on whether the probability of an unclean audit opinion is higher after the sanction. The first column presents the results for the full sample, the second column presents the results for companies audited by Big 4 auditors and the third column presents the results for companies audited by non-Big 4 auditors. The data includes multiple observations for the same company and auditor. We therefore employ two-way clustering and cluster the standard errors on both the company and auditor using the approach suggested by Cameron, Gelbach and Miller (2006).²¹ The correlations between the

²¹ We use the ado file for two-way clustering in Stata written by Guan and Petersen. The file is available at: http://www.kellogg.northwestern.edu/faculty/petersen/htm/papers/se/se_programming.htm (retrieved January 2015).

variables are generally low (see Appendix 1). The highest correlated variables are by construction SANCTION and AfterSANCTION, and LOSS and PROBZ (correlation 0.51).

H3a predicts that sanctioned auditors are more likely to issue an unclean audit report after the sanction than before it, and H3b predicts that Big 4 auditors change the reporting more than auditors at non-Big 4 firms. However, it can be seen from the table that the coefficients of AfterSANCTION are insignificant for the full sample and for the Big 4 and non-Big 4 sub-samples. Thus, the unclean opinion tests do not support the hypotheses.²²

In Table 7, logistic regressions with a going concern opinion prior to bankruptcy as the dependent variable are reported. We only report results for the full sample because the sanctioned auditors in the sample audited very few failing companies (see Table 2). Since we have multiple observations for the auditors, the standard errors are clustered on auditor in the regression. The correlations between the variables in the logistic regression are generally low. As above, the highest correlated variables are SANCTION and AfterSANCTION (correlation 0.67) and LOSS and PROBZ (correlation 0.53). It can be seen from the table that AfterSANCTION has an insignificant coefficient. Thus, similar to the findings for unclean audit opinions, the going concern tests do not support the hypothesis that auditors are more conservative in their reporting after the sanction than before it.^{23, 24} Overall, the insignificant

²² As an alternative way to test H3b, we estimated a model with interactions between Big4 and SANCTION as well as Big 4 and AfterSANCTION. We then studied the average marginal effects from the logistic regression models and the results do not support H3b. Thus, results with models including interactions are qualitatively similar to the ones in Table 6.

²³ The sample includes 455 companies with a going concern opinion, of which 358 companies received a going concern opinion for the first time in the year prior to bankruptcy. We also excluded the 97 companies with a going concern opinion two years prior to bankruptcy and the results are qualitatively similar.

²⁴ We classified audit reports with going concern opinions into three groups: emphasis of matter opinions, qualified/adverse opinions and reports that were difficult to classify. The final category comprises 43 observations in which the audit reports included remarks suggestive of a going concern opinion, but the statements were much more imprecise than the examples the standard provides. This category is not classified as going concern opinions in the main analyses. However, the results are qualitatively similar when the observations are classified as going concern opinions.

impact of sanctions on auditors' reporting indicates that sanctions do not effectively alter the auditors' behaviour.

With regard to the control variables in Tables 6 and 7, the following conclusions can be drawn. First, it can be seen that auditors at larger offices are more likely to modify the audit opinion. This result is consistent with results showing that auditors at larger offices provide higher quality audits (Francis & Yu 2009). Furthermore, it seems that more experienced auditors and auditors with more assignments are less likely to modify the report. These results are consistent with Sundgren and Svanström (2014), who find that older auditors and auditors with many assignments are less likely to issue a going concern opinion before bankruptcy.

Supplementary tests on auditor reporting

We perform a number of additional tests to further understand the effects of sanctions on auditors' reporting. First, reports at SBPA include some information about the reason for the disciplinary sanction. One would expect auditors to have strong incentives to change the reporting if the reason for the sanction is related to the reporting of the auditor. The reason for the disciplinary sanction is related to the reporting for 31.3 % (30 / 96) of the auditors in the going concern sample. The corresponding proportion for the sanctioned auditors in the unclean opinion sample is 27.9 % (41 / 147). When we only include auditors with reporting related sanctions in the sample, we continue to fail finding support for the prediction.

A failure to modify the audit report of a large client is likely to be detected and considered as a more serious error in possible future investigations by SBPA. Thus, sanctioned auditors have more reason to be conservative in their reporting, particularly for larger clients. Twenty-five percent of the companies have revenues exceeding 7.3 Million

SEK and we have run the regressions in Table 6 on this sub-sample. However, the results provide no support for the prediction that auditors of large firms are more likely to issue an unclean audit opinion after the sanction. The going concern results are also qualitatively similar when we run the logistic regression in Table 7 on the quartile of bankrupt companies with the largest assets.

Third, we attempt to exclude auditors with a reprimand from the sample in order to study whether warned auditors changed their behaviour. We find no support for H3a when the regressions with an unclean opinion (comparable with those reported in Table 7) are estimated on the full sample or the sample of firms audited by auditors at non-Big 4 firms. However, warned auditors at Big 4 firms report more unclean audit opinions after the sanction than before (p -value = 0.100). Furthermore, a comparison of the coefficient estimates for warned Big 4 and non-Big 4 auditors shows that Big 4 auditors increased their reporting of unclean opinions after the warning more than non-Big 4 auditors (p -value = 0.030), which supports H3b. We also study whether warned auditors improve their going concern reporting before bankruptcy, but found no support for this.

Fourth, in order to further study the robustness of the unclean opinion results, we constructed a balanced panel with companies audited by the same auditor for six years. This leaves us with 627 firm-years audited by auditors before the sanction, 927 firm-years after the sanction and 18,930 firm-years audited by unsanctioned auditors. Ninety-six sanctioned auditors remain in the data. We estimate the regressions in Table 6 on this reduced sample and the results are qualitatively similar to those reported in the table.

As a final test, we drop firm-years audited by unsanctioned auditors and study the proportions of unclean audit opinions before and after the disciplinary sanction. The proportion of unclean audit opinions before (after) the sanctions is 13.1% (11.3%) for the full

sample. The corresponding proportions for auditors at Big 4 firms are 7.4% (8.6%) and 13.9% (12.0%) for auditors at non-Big 4 firms. It can thus be deduced that auditors have not changed their reporting after the sanction. In short, the only result in the supplementary tests supporting H3 is that warned auditors at Big 4 firms seem to report more unclean opinions after the warning than before.

6. Conclusions

Independent oversight of auditors can contribute to audit quality in two different ways. First, the risk of sanctions may have a pre-emptive effect if it is associated with a loss of clients or a reduction in salary. Second, sanctioned auditors may learn from it and consequently change their reporting behaviour in order to avoid any further attention from oversight bodies.

In this study, we investigate pre- and post-sanction periods to gain insights into the consequences of disciplinary sanctions in terms of impact on clientele, salaries and reporting behaviour using a sample of individual auditors of primarily private companies receiving disciplinary sanctions in 2006-2009. First, we study whether sanctioned auditors have fewer clients and audit smaller assets after the sanction than before, but find no support for this prediction. Second, in our tests on salary effects we find that compared to unsanctioned auditors, Big 4 auditors have a lower salary after the sanction than before. Furthermore, we find support for the prediction that the difference in salary before and after the sanction is higher for Big 4 auditors than for non-Big 4 auditors. Third, based on the expectation that sanctioned auditors have an incentive to report more conservatively, we test whether auditors are more likely to issue unclean audit reports and going concern opinions prior to bankruptcy after the sanction. However, we find little support for this prediction.

Overall, the findings suggest that the effectiveness of auditor oversight for private companies in Sweden can be questioned and that the effects of disciplinary sanctions are relatively small. This is particularly the case for auditors at non-Big 4 firms. These results complement those of Knechel et al. (2015), who found that the credit market in Sweden recognises and prices the differences in auditors' reporting styles. In the private company setting the identity of the engagement partner seems to matter, whereas oversight (sanctions) has little impact on the behaviour of clients, audit firms and individual auditors. Moreover, the finding of no change in auditor reporting after the sanction is consistent with that of Knechel et al. (2015), which is that auditor reporting behaviour seems to be consistent over time, also in the case of critical events that could affect auditors' incentives.

There are a number of possible explanations for our findings. First, private client companies might in general not be very concerned about audit quality and many of them may be unaware that they have engaged a sanctioned auditor. Second, private client companies may value the range and quality of the consulting services (which is still allowed for private companies), rather than the audit. Thus, as long as clients have confidence in the quality of the consulting, there may be little incentive to replace the sanctioned auditor. Third, as replacing the sanctioned auditor is a major decision, the cost of changing the auditor may be greater than the expected benefits for the client and the audit firm. The auditor may also provide reasonable explanations for receiving the sanction. Fourth, audit firm management is unlikely to reallocate clients from sanctioned auditors to other auditors if they feel that they have directly or indirectly supported actions that have contributed to the sanction. Fifth, it is possible that a sanction is related to isolated behaviour in one or a few audits, and that the sanctioned auditor de facto has the competence and independence to conduct quality audits. Nonetheless, we cannot rule out the possibility of the results being influenced by correlated

omitted variables. For example, it is possible that the sanctioned auditors were overly busy, experienced burnout or became ill, which means that the reduction in the salary of sanctioned auditors at Big 4 firms was driven by other factors than the disciplinary sanction per se. Finally, although we have studied a relatively large number of possible effects of sanctions, it is possible that some of the effects have not yet been identified. For example, it is possible that sanctioned auditors receive a portfolio that is less risky or less complex and thus less difficult to audit. We have not been able to study this issue with our data and leave it for further research. Finally, we encourage studying other institutional settings. A cross-country comparison of the impact of disciplinary sanctions would provide further insights and contribute to a greater understanding of the effects of different ways of monitoring auditors.

References

- Abbott, L.J., Gunny, K.A., & Zhang, T.C. (2013). When the PCAOB talks, Who Listens? Evidence from Stakeholder Reaction to GAAP-deficient PCAOB Inspection Reports of Small Auditors. *Auditing: A Journal of Practice and Theory*, 32(2), 1-31.
- Abdel-khalik, R. 1990. The jointness of audit fees and the demand for MAS: A Self-selection analysis. *Contemporary Accounting Research*, 6(2), 295-322.
- Bankley, A.I., Kerr, D. S., & Wiggins, C.E. (2012). A Content Analysis of CPA Firms' Correspondence Following PCAOB inspections 2004-2010. *Research in Accounting Regulation*, 24(2), 74-89.
- Beattie, V., & Fearnley, V. (1998). Audit market competition: auditor change and the impact of tendering. *The British Accounting Review*, 30 (3), 261-289.
- Bursell, J. (2010). Revisorernas löner höjs trots varning. *Svenska dagbladet*, October 27, 2010.
- Carson, E., Simnett, R., & Vanstraelen, A. (2013). *Auditing the Auditors: An International Analysis of the Effectiveness of National Inspection*. Working paper, University of New South Wales.
- Cameron, C., & Trivedi P. (2010). *Microeconomics Using Stata*. Revised Edition. Stata Press.
- Cameron, C., Gelbach, J. & Miller, D. (2006) *Robust inference with multi-way clustering*. National bureau of economic research. Technical working paper 327. <http://www.nber.org/papers/T0327>
- Carcello, J.V.C., Hollingsworth, C., & Mastrolia, S. (2011). The effect of PCAOB inspections on Big 4 audit quality. *Research in accounting regulation*, 23(2), 85-96.
- Casterella, J.R., Jensen, K.L., & Knechel, W.R. (2009). Is self-regulated peer review effective at signaling audit quality? *The Accounting Review*, 84(3), 713-735.
- Chen, S., Sun, S.Y.J., & Wu, D. (2010). Client Importance, Institutional Improvements, and Audit Quality in China: An Office and Individual Auditor Level Analysis. *The Accounting Review* 85(1), 127-158.
- Choi, J-H, Kim, C., Kim, J-B & Zang, Y. (2010). Audit office size, audit quality and audit pricing. *Auditing: a Journal of Practice and Theory* 29(1), 73-97.
- Daugherty, B., Dickins, D., & Tervo, W.A. (2011) Negative PCAOB inspections of Triennially inspected Auditors and Involuntary and Voluntary Client Losses. *International Journal of Auditing* 15(3), 231-246.
- Daugherty, B., & Tervo, W. A. (2010). PCAOB Inspections of smaller CPA Firms: The Perspective of inspected firms. *Accounting Horizons* 24(2), 189-219.
- DeFond, M. L., & Lennox, C. S. (2011). The Effect of SOX on Small Auditor Exits and Audit Quality. *Journal of Accounting and Economics* 52(1), 21-40.

- De Fuentes Barbera, C., Illueca Muñoz, M., & Pucheta Martinez, M.C. (2010). *Disciplinary sanctions and audit quality: Empirical evidence from an external oversight system*. Working paper, Universitat de Valencia.
- DeVaro, J., & Valdman, M. (2012). The Signaling Role of Promotions: Further Theory and Empirical Evidence. *Journal of Labour Economics* 30(1), 91-147.
- EY. (2013). Transparency Report Sweden, 2013.
- Ehlen, C.R., and Welker, R.B. (1996). Practitioners' Suggestions for Improving Practice-monitoring. *The CPA Journal* 66(7), 20-25.
- Elsa, J.E., & Stewart, J.R. (1995). Perceptions of peer and quality review. *The CPA Journal* 65(6), 58-60.
- European Union (2014/56/EU). Directive 2014/56/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2006/43/EC on statutory audits of annual accounts and consolidated accounts.
- Francis, J. R., & Yu, M. D. (2009). Big 4 office size and audit quality. *Accounting Review* 84(5), 1521–1552.
- Gramling, A., Krishnan, J., & Zhang, Y. (2011). Are PCAOB-identified Audit Deficiencies Associated with a change in Reporting Decisions of Triennially Inspected Audit Firms? *Auditing: A Journal of Practice and Theory* 30(3), 59-79.
- Gunny, K., & Zhang, T. C. (2013). PCAOB Inspection Reports and Audit Quality, *Journal of Accounting and Public Policy* 32(2), 136-160.
- Hilary, G., & Lennox, C. (2005). The credibility of self-regulation? Evidence from the accounting profession's peer review program? *Journal of Accounting and Economics* 40(1-3), 211-229.
- Hilbe, J. (1999). Zero-truncated Poisson and negative binomial regression. *Stata Technical Bulletin* (January), 37-40.
- International Auditing and Assurance Standards Board (IAASB). (2013). Auditor Reporting Invitation to Comment-Compilation of Responses– Question 12 – Disclosing the Name of the Engagement Partner: IAASB Main Agenda (April 15). Supplement to Agenda Item 2 - Compilation of Responses to ITC – Question 12. New York: IAASB. Retrieved from: <http://www.ifac.org/auditing-assurance/meetings#past-meetings>.
- Ittonen, K., Vähämaa, E., & Vähämaa, S. (2013). Female Auditors and Accruals Quality. *Accounting Horizons* 27(2), 205-228.
- Karjalainen, J., Niskanen, M., & Niskanen, J. (2013). *Are Female Auditors More Likely to Be Independent? Evidence from Modified Audit Opinions*. Working Paper, University of Eastern Finland.
- Knechel, W. R., Vanstraelen, A., & Zerni, M. (2015). Does the Identity of the Audit Partner Matter? An Analysis of Audit Partner Reporting Decisions, forthcoming in *Contemporary Accounting Research*. doi:10.1111/1911-3846.12113

- Knechel, W. R., Niemi, L., & Zerni, M. (2013). Empirical Evidence on the Implicit Determinants of Compensation in Big 4 Audit Partnerships. *Journal of Accounting Research* 51(2), 349-387.
- Knechel, W. R., & Payne, J. L. (2001). Additional Evidence on Audit Report Lag. *Auditing: A Journal of Practice & Theory* 20(1), 137–146.
- Knechel, W. R., Rouse, P., & Schelleman, C. (2009). A Modified Audit Production Framework: Evaluating the Relative Efficiency of Audit Engagements. *The Accounting Review* 84 (5), 1607-1638.
- Krishnan, J., & Schauer, P.C. (2000). The Differentiation of Quality Among Auditors: Evidence from the Not-for-Profit Sector. *Auditing: A Journal of Practice & Theory* 19(2), 9-25.
- Lennox, C. 2000. Do companies successfully engage in opinion shopping? Evidence from the UK. *Journal of Accounting and Economics* 29(3), 321–37.
- Lennox, C., & Pittman, J. (2010). Auditing the auditors: Evidence On the Recent Reforms to the External Monitoring of Audit Firms. *Journal of Accounting and Economics* 49(1-2), 84-103
- Li, C. (2009). Does client importance affect auditor independence at the office level? Empirical evidence from going-concern opinions. *Contemporary Accounting Research* 26(1), 201-230.
- Liu, X., & Simunic, D. (2005). Profit Sharing in an Audit Oligopoly, *The Accounting Review* 80(2), 677-702.
- Maijoor, S., & Vanstraelen, A. (2012). Research Opportunities in Auditing in the EU, Revisited, *Auditing: A Journal of Practice & Theory* 31(1), 115-126.
- Mátyás, L. & Lovrics, L. (1991). Missing observations and panel data. A Monte-Carlo analysis. *Economic Letters* 37, 39 – 44.
- Offermanns, M., & Vanstraelen, A. (2014). Oversight and inspection of auditing, in Hay, D., Knechel, W.R., & Willekens, M. (Eds). *The Routledge Companion to Auditing*, Routledge: New York.
- Ortín-Ángel, P., & Salas-Fumás, V. (2002). Compensation and Span of Control in Hierarchical Organizations. *Journal of Labour Economics* 20(4), 848-876.
- PCAOB, (2013). Release No. 2013-009, *Improving the Transparency of Audits: Proposed Amendments to PCAOB Auditing Standards to Provide Disclosure in the Auditor's Report of Certain Participants in the Audit*.
- Reynolds, J. K., & Francis, J. R. (2000). Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of Accounting and Economics* 30(3), 375-400.
- Rogers, W. (1993). Regression Standard Errors in Clustered Samples. *Stata technical bulletin*, 13(May), 19–23.

- Shumway, T. (2001). Forecasting bankruptcy more accurately: a simple hazard model. *Journal of Business* 74(1), 101–124.
- Smeets, V., & Warzynski, F. (2008). Too many theories, too few facts? What the data tell us about the link between span of control, compensation and career dynamics. *Labour Economics* 15(4), 687-703.
- Sundgren, S., & Svanström, T. (2013). Audit office size and audit pricing: evidence from small- and medium-sized enterprises. *Accounting and Business Research* 43(1), 31-55.
- Sundgren, S. & Svanström, T. (2014). Auditor-in-Charge Characteristics and Going Concern Reporting. *Contemporary Accounting Research* 31(2), 531-550.
- Sundgren, S. & Svanström, T. (2015). *Implementing a New Auditing Standard: The Case of ISA 570–Based Going Concern Reporting in Sweden*. Unpublished manuscript, Umeå School of Business and Economics.
- Sweeney, J. T., & Summers, S.L. (2002). The Effect of the Busy Season Workload on Public Accountants' Job Burnout. *Behavioral Research in Accounting* 14(1), 223–245.
- Van Opijnen, M., Van de Poel, K., & Vanstraelen, A. (2011). *Public Oversight and Audit Quality: Evidence from Public Oversight of Audit Firms in the Netherlands*. Working paper, Maastricht University.
- Woodlock, P., & Claypool, G. (2001). Your Audit Subcommittee: How to Cope with the End of the 'Rubber Stamp' Era. *Journal of Corporate Accounting & Finance* 12(4), 27-39.
- Zmijewski, M. (1984). Methodological issues related to the estimation of financial distress prediction. *Journal of Accounting Research* 22 (Supplement), 59–82.

Table 1. Variable definitions

LnCumASSETS	Natural logarithm of the cumulative assets of all the companies audited by the auditor. The amounts are inflated with CPI to reflect the price level in 2011 (measured at an annual basis).
NoCLIENTS	The number of clients audited by the auditor (measured on an annual basis).
SANCTION	An indicator variable taking the value one if the auditor has received a sanction in any of the years studied.
AfterSANCTION	An indicator variable taking the value one in the years after receiving the sanction.
LOSS	An indicator variable taking the value one if the company reported a negative profit
EXP	Experience of the auditor measured as the time in years since the CPA certification.
LnOFF	Natural logarithm of the number of CPA auditors at the office (measured in 2009).
AvSOLV	Average solvency of all the auditor's clients (measured on an annual basis).
AvASSETS	Average total assets of all the auditor's clients (measured on an annual basis).
FEMALE	An indicator variable taking the value one for female auditors.
APPR_2	An indicator variable taking the value one if the auditor has the most recent type of lower certification, implying that he/she has passed a written test. Auditors with an older type of lower certification, implying that he/she has not passed a written test, are in the reference category.
AUTH	An indicator variable taking the value one if the auditor has the higher type of certification. Auditors with an older type of lower certification, implying that he/she has not passed a written test, are in the reference category.
BIG4	An indicator variable taking the value one if the auditor is at PwC, EY, KPMG or Deloitte.
LnW	Natural logarithm of salary. The amounts are inflated with CPI to reflect the price level in 2011.
SALARY (KKR)	The auditor's salary in thousand Swedish crowns (SEK). The amounts are inflated with CPI to reflect the price level in 2011.
STOCKHOLM	An indicator variable for the Stockholm region (the capital and largest city in Sweden).
UNCLEAN	An indicator variable taking the value one if the audit report departs from a standard report and zero otherwise.
PROBZ	The probability of bankruptcy based on Shumway's (2001) estimates of Zmijewski's model.
LnASSETS	The natural logarithm of total assets of the client.
BUSY	An indicator variable taking the value one if the balance sheet date is December 31.
LnAGE	Natural logarithm of age of the company in years.
GC	An indicator taking the value one if the auditor issued a going concern opinion.
DELAY	The time between the bankruptcy filing and the balance sheet date in days.

Table 2. Sample composition

Sample used in the analyses of disciplinary sanctions and loss of clients			
	All	Big 4	Non Big 4
Number of auditors	2,933	1,230	1,703
Of which sanctioned auditors	147	34	113
Total number of auditor-years	14,868	5,781	9,087
Auditor-years audited by unsanctioned auditors	14,045	5,589	8,456
Auditor-years before the sanction	342	75	267
Auditor-years after the sanction	481	117	364
Sample used in the analyses of disciplinary sanctions and salary			
	All	Big 4	Non Big 4
Number of auditors	2,598	1,095	1,503
Of which sanctioned auditors	118	28	90
Total number of auditor-years	12,701	5,122	7,579
Auditor-years audited by unsanctioned auditors	12,059	4,970	7,089
Auditor-years before the sanction	281	61	220
Auditor-years after the sanction	361	91	270
Sample used in the analyses of disciplinary sanctions and unclean opinions			
	All	Big 4	Non Big 4
Number of auditors	2,949	1,222	1,727
Of which sanctioned auditors	150	34	116
Total number of firm-years	59,116	18,535	40,581
Firm-years audited by unsanctioned auditors	54,542	17,596	36,949
Firm-years audited by sanctioned auditors before the sanction	2,046	394	1,652
Firm-years audited by sanctioned auditors after the sanction	2,528	545	1,983
Sample used in the analyses of disciplinary sanctions and going concern opinions			
	All	Big 4	Non Big 4
Number of auditors	1,518	539	979
Of which sanctioned auditors	96	19	77
Total number of observations	3,139	973	2,166
Observations audited by unsanctioned auditors	2,886	930	1,956
Observations audited by sanctioned auditors before the sanction	134	22	112
Observations audited by sanctioned auditors after the sanction	119	21	98

Table 3. Descriptive statistics

Panel A: Descriptive evidence on variables in tests of Hypothesis 1a and 1b

	LnCumASSETS	NoCLIENTS	EXP	LnOFF	AvSOLV	AvASSETS	FEMALE	APPR_2	AUTH	BIG4
Unsanctioned auditors (N = 14,045)										
Mean	12.962	95.259	16.711	1.530	-0.220	0.015	0.239	0.094	0.585	0.398
Median	12.953	80.000	17.000	1.386	0.359	0.004	0.000	0.000	1.000	0.000
Min	4.854	1.000	0.000	0.000	-13.047	0.001	0.000	0.000	0.000	0.000
Max	19.779	1450.000	50.000	4.431	0.673	0.343	1.000	1.000	1.000	1.000
Variance	2.017	5102.048	78.701	1.638	3.680	0.002	0.182	0.085	0.243	0.240
Sanctioned auditors, before sanction (N=342)										
Mean	13.256	139.374	18.699	1.090	-0.491	0.011	0.164	0.018	0.596	0.219
Median	13.129	122.500	19.000	0.693	0.260	0.004	0.000	0.000	1.000	0.000
Min	10.255	10.000	1.000	0.000	-13.047	0.001	0.000	0.000	0.000	0.000
Max	17.529	488.000	47.000	4.431	0.632	0.343	1.000	1.000	1.000	1.000
Variance	1.258	7198.094	55.284	1.761	4.858	0.001	0.137	0.017	0.241	0.172
Sanctioned auditors, after sanction (N=481)										
Mean	13.381	150.119	21.283	1.115	-0.570	0.013	0.125	0.012	0.559	0.243
Median	13.328	129.000	21.000	0.693	0.253	0.004	0.000	0.000	1.000	0.000
Min	7.763	5.000	5.000	0.000	-13.047	0.001	0.000	0.000	0.000	0.000
Max	17.982	448.000	51.000	4.431	0.673	0.315	1.000	1.000	1.000	1.000
Variance	1.591	9444.946	52.716	1.865	4.924	0.001	0.109	0.012	0.247	0.184
P-value	0.000	0.000	0.000	0.000	0.000	0.120	0.000		0.000	0.000

Panel B: Descriptive evidence on variables in tests of Hypothesis 2a and 2b

	SALARY (KKR)	LnW EXP	LnOFF	LnCumASSETS	AvSOLV	AvASSETS	FEMALE	APPR_2	AUTH	STOCKH	BIG4	
Unsanctioned auditors (N = 12,059)												
Mean	580.137	13.164	15.700	1.580	13.033	-0.242	0.015	0.242	0.101	0.604	0.240	0.412
Median	528.286	13.177	16.000	1.386	13.021	0.353	0.005	0.000	0.000	1.000	0.000	0.000
Min	0.054	3.982	1.000	0.000	4.854	-13.276	0.001	0.000	0.000	0.000	0.000	0.000
Max	6960.089	15.756	46.000	4.431	19.779	0.669	0.350	1.000	1.000	1.000	1.000	1.000
Variance	86234.940	0.331	63.883	1.602	1.914	3.828	0.002	0.183	0.091	0.239	0.183	0.242
Sanctioned auditors, before sanction (N=281)												
Mean	599.484	13.065	17.705	1.176	13.356	-0.441	0.012	0.185	0.028	0.644	0.302	0.217
Median	515.744	13.153	18.000	0.693	13.173	0.230	0.004	0.000	0.000	1.000	0.000	0.000
Min	0.204	5.317	2.000	0.000	10.837	-13.276	0.001	0.000	0.000	0.000	0.000	0.000
Max	4176.398	15.245	33.000	4.431	17.529	0.632	0.350	1.000	1.000	1.000	1.000	1.000
Variance	169052.700	0.965	37.966	1.843	1.174	4.363	0.001	0.151	0.028	0.230	0.212	0.171
Sanctioned auditors, after sanction (N=361)												
Mean	563.407	13.133	19.983	1.268	13.589	-0.571	0.015	0.127	0.028	0.618	0.302	0.252
Median	511.600	13.145	20.000	0.693	13.416	0.211	0.004	0.000	0.000	1.000	0.000	0.000
Min	1.035	6.942	5.000	0.000	9.712	-13.276	0.001	0.000	0.000	0.000	0.000	0.000
Max	2954.292	14.899	36.000	4.431	17.982	0.669	0.315	1.000	1.000	1.000	1.000	1.000
Variance	71476.540	0.341	36.272	1.966	1.547	4.850	0.002	0.111	0.027	0.237	0.211	0.189
P-value	0.308	0.014	0.000	0.000	0.000	0.002	0.449	0.000	0.000	0.000	0.002	0.000

Panel C: Descriptive evidence on variables in the unclean opinion tests of Hypothesis 3a and 3b

	UNCLEAN	LOSS	PROBZ	LnASSETS	LnAGE	EXP	LnOFF	NoCLIENTS	BUSY	FEMALE	APPR_2	AUTH	BIG4
Unsanctioned auditors (N = 54,539)													
Mean	0.131	0.241	0.118	14.583	2.497	17.687	1.337	136.497	0.489	0.177	0.067	0.589	0.323
Median	0.000	0.000	0.049	14.513	2.639	18.000	1.099	121.000	0.000	0.000	0.000	1.000	0.000
Min	0.000	0.000	0.000	6.908	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
Max	1.000	1.000	1.000	24.025	4.727	50.000	4.431	1450.000	1.000	1.000	1.000	1.000	1.000
Variance	0.114	0.183	0.038	2.679	0.709	67.945	1.466	7297.977	0.250	0.145	0.063	0.242	0.219
Sanctioned auditors, before sanction (N=2,046)													
Mean	0.169	0.239	0.120	14.422	2.268	18.505	1.041	186.951	0.479	0.116	0.026	0.574	0.193
Median	0.000	0.000	0.055	14.300	2.485	19.000	0.693	175.000	0.000	0.000	0.000	1.000	0.000
Min	0.000	0.000	0.000	8.294	0.000	1.000	0.000	10.000	0.000	0.000	0.000	0.000	0.000
Max	1.000	1.000	1.000	22.848	4.511	47.000	4.431	488.000	1.000	1.000	1.000	1.000	1.000
Variance	0.140	0.182	0.036	2.373	0.837	45.651	1.585	9569.035	0.250	0.103	0.025	0.245	0.156
Sanctioned auditors, after sanction (N=2,528)													
Mean	0.161	0.258	0.130	14.430	2.507	20.795	0.938	204.517	0.443	0.101	0.019	0.530	0.216
Median	0.000	0.000	0.053	14.359	2.639	21.000	0.693	192.000	0.000	0.000	0.000	1.000	0.000
Min	0.000	0.000	0.000	6.908	0.000	5.000	0.000	5.000	0.000	0.000	0.000	0.000	0.000
Max	1.000	1.000	1.000	20.733	4.522	51.000	4.431	448.000	1.000	1.000	1.000	1.000	1.000
Variance	0.135	0.191	0.044	2.605	0.584	51.301	1.501	11388.630	0.247	0.091	0.019	0.249	0.169
P-value	0.000	0.135	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000

Panel D: Descriptive evidence on variables in the going concern opinion tests of Hypothesis 3a and 3b

	GC	LOSS	PROBZ	LnASSETS	LnAGE	EXP	LnOFF	NoCLIENTS	BUSY	FEMALE	DELAY	APPR_2	AUTH	BIG4
Unsanctioned auditors (N = 2,886)														
Mean	0.151	0.728	0.442	14.129	1.817	16.750	1.355	137.612	0.515	0.174	287.469	0.072	0.569	0.322
Median	0.000	1.000	0.309	14.046	1.792	17.000	1.099	123.000	1.000	0.000	292.000	0.000	1.000	0.000
Min	0.000	0.000	0.001	6.908	0.000	-4.000	0.000	1.000	0.000	0.000	94.000	0.000	0.000	0.000
Max	1.000	1.000	1.000	23.032	4.248	47.000	6.405	982.000	1.000	1.000	365.000	1.000	1.000	1.000
Variance	0.129	0.198	0.119	2.194	1.143	67.749	1.608	7322.639	0.250	0.144	2914.016	0.067	0.245	0.218
Sanctioned auditors, before sanction (N=134)														
Mean	0.082	0.724	0.437	14.066	1.742	17.321	1.235	209.582	0.478	0.082	289.582	0.045	0.657	0.164
Median	0.000	1.000	0.268	13.999	1.792	17.000	0.693	201.000	0.000	0.000	299.000	0.000	1.000	0.000
Min	0.000	0.000	0.012	10.240	0.000	3.000	0.000	31.000	0.000	0.000	129.000	0.000	0.000	0.000
Max	1.000	1.000	1.000	18.956	3.970	39.000	6.405	488.000	1.000	1.000	365.000	1.000	1.000	1.000
Variance	0.076	0.201	0.129	2.274	1.077	52.174	2.141	9923.538	0.251	0.076	2362.982	0.043	0.227	0.138
Sanctioned auditors, after sanction (N=119)														
Mean	0.059	0.723	0.410	14.309	1.785	19.647	0.844	202.824	0.496	0.067	290.656	0.008	0.546	0.176
Median	0.000	1.000	0.308	14.177	1.946	19.000	0.693	186.000	0.000	0.000	300.000	0.000	1.000	0.000
Min	0.000	0.000	0.005	11.362	0.000	5.000	0.000	35.000	0.000	0.000	120.000	0.000	0.000	0.000
Max	1.000	1.000	1.000	18.495	3.850	42.000	5.357	428.000	1.000	1.000	364.000	1.000	1.000	1.000
Variance	0.056	0.202	0.103	2.232	1.045	62.146	1.432	9718.638	0.252	0.063	2817.990	0.008	0.250	0.147
P-value	0.002	0.987	0.611	0.372	0.699	0.001	0.000	0.000	0.653	0.000	0.749		0.000	0.000

Notes: P-values are for Anova for continuous variables and Pearson Chi-square tests for categorical variables. Anova is used to test the null hypothesis that the average values for unsanctioned, before sanction and after sanction are similar. Pearson Chi-square is used to test the null hypothesis that the frequency distribution of the categorical variables is equal to the expected distribution if the variables are independent. The three different types of authorisations (APPR_1, APPR_2 and AUTH) are tested with one Chi-square test.

Table 4. Disciplinary sanctions and loss of clients**Panel A: OLS regressions with LnCumASSETS as the dependent variable**

	Full sample	Big 4	Non-Big 4
SANCTION	0.291 (0.079)***	0.401 (0.187)**	0.315 (0.080)***
AfterSANCTION	-0.057 (0.071)	-0.142 (0.147)	-0.054 (0.075)
EXP	0.025 (0.003)***	0.041 (0.004)***	0.015 (0.003)***
LnOFF	0.040 (0.017)**	-0.093 (0.030)***	0.098 (0.021)***
AvSOLV	-0.023 (0.008)***	-0.017 (0.015)	-0.030 (0.009)***
AvASSETS	14.664 (0.571)***	13.727 (0.533)***	31.989 (5.356)***
FEMALE	-0.758 (0.044)***	-0.871 (0.080)***	-0.656 (0.050)***
APPR_2	-0.065 (0.079)	0.188 (0.134)	-0.226 (0.094)**
AUTH	0.696 (0.041)***	0.951 (0.075)***	0.515 (0.050)***
BIG4	-0.017 (.0419)		
Year variables	YES	YES	YES
CONSTANT	11.955 (0.061)***	11.893 (0.111)***	12.004 (0.069)***
N	14,868	5,781	9,087
Model F-value	152.860***	119.700***	77.700***
R-squared	0.442	0.518	0.371
Highest VIF	2.410	2.560	2.370
Average VIF	1.570	1.590	1.550
P- value for Wald test of equality of AfterSANCTION in the sub-samples with Big 4 and Non-Big 4 firms			0.596

Note: **, *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. The panel reports OLS regression results in which the dependent variable is the log of the sum of the assets of clients audited. The table reports coefficient estimates and standard errors. The standard errors, reported in parentheses, are clustered by auditor. See Table 1 for variable definitions.

Panel B: Negative binominal regressions with NoCLIENTS as the dependent variable

	Full sample	Big 4	Non-Big 4
SANCTION	0.308 (0.051)***	0.319 (0.090)***	0.318 (0.060)***
AfterSANCTION	-0.035 (0.044)	-0.076 (0.087)	-0.037 (0.050)
EXP	0.009 (0.002)***	0.018 (0.003)***	0.002 (0.002)
LnOFF	-0.027 (0.012)**	-0.067 (0.020)***	-0.003 (0.015)
AvSOLV	-0.028 (0.005)***	-0.034 (0.009)***	-0.025 (0.006)***
AvASSETS	-1.981 (0.311)***	-1.900 (0.331)***	-2.500 (1.770)
FEMALE	-0.494 (0.030)***	-0.583 (0.050)***	-0.445 (0.037)***
APPR_2	-0.179 (0.054)***	-0.080 (0.086)	-0.275 (0.069)***
AUTH	0.119 (0.029)***	0.119 (0.052)**	0.121 (0.034)***
BIG4	-0.316 (0.028)***		
Year variables	Yes	Yes	Yes
CONSTANT	4.538 (0.040)***	4.203 (0.070)***	4.586 (0.049)***
N	14,868	5,781	9,087
Model Chi-square	1078.090***	352.770***	543.420***
P- value for Wald test of equality of AfterSANCTION in the sub-samples with Big 4 and Non-Big 4 firms			0.852

Note: **, *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. The panel reports negative binominal regression results in which the dependent variable is the number of clients audited. The table reports coefficient estimates and standard errors. The standard errors, reported in parentheses, are clustered by auditor. See Table 1 for variable definitions.

Table 5. Disciplinary sanctions and salary

	Full sample	Big 4	Non-Big 4
SANCTION	-0.087 (0.081)	0.127 (0.074)*	-0.131 (0.102)
AfterSANCTION	0.053 (0.059)	-0.138 (0.064)**	0.088 (0.072)
EXP	0.002 (0.001)	0.005 (0.001)***	0.000 (0.002)
LnOFF	0.103 (0.008)***	0.036 (0.008)***	0.134 (0.012)***
LnCumASSETS	0.106 (0.010)***	0.072 (0.008)***	0.131 (0.018)***
AvSOLV	0.010 (0.004)**	0.009 (0.007)	0.009 (0.005)*
AvASSETS	-0.695 (0.257)***	-0.201 (0.243)	-0.530 (0.740)
FEMALE	-0.083 (0.023)***	-0.130 (0.019)***	-0.052 (0.035)
STOCKH	0.020 (0.023)	0.085 (0.026)***	0.015 (0.030)
APPR_2	0.012 (0.029)	0.064 (0.032)**	-0.004 (0.040)
AUTH	0.030 (0.025)	0.140 (0.024)***	-0.022 (0.035)
BIG4	0.158 (0.014)***		
Year variables	Yes	Yes	Yes
CONSTANT	11.584 (0.128)***	12.163 (0.097)***	11.291 (0.234)***
N	12,701	5,122	7,579
Model F-value	52.200***	42.490***	20.860***
R-squared	0.191	0.28	0.117
Highest VIF	2.290	2.500	2.240
Average VIF	1.590	1.690	1.540
P- value for Wald test of equality of AfterSANCTION in the sub-samples with Big 4 and Non-Big 4 firms			0.019

Note: **, *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. The panel reports OLS regression results in which the dependent variable is the log of the real salary of the auditor. The table reports coefficient estimates and standard errors. The standard errors, reported in parentheses, are clustered by auditor. See Table 1 for variable definitions.

Table 6. Disciplinary sanctions and unclean audit opinions

	Full sample	Big 4	Non-Big 4
SANCTION	0.370 (0.095)***	0.324 (0.209)	0.366 (0.094)***
AfterSANCTION	-0.153 (0.098)	-0.076 (0.257)	-0.160 (0.107)
LOSS	0.059 (0.042)	0.127 (0.078)	0.033 (0.049)
PROBZ	3.617 (0.098)***	3.485 (0.171)***	3.677 (0.119)***
LnASSETS	-0.328 (0.017)***	-0.346 (0.029)***	-0.319 (0.021)***
LnAGE	-0.047 (0.022)**	-0.126 (0.042)***	-0.021 (0.026)
EXP	-0.024 (0.003)***	-0.016 (0.005)***	-0.027 (0.004)***
LnOFF	0.055 (0.022)**	0.061 (0.041)	0.052 (0.026)**
NoCLIENTS	-0.0003 (0.0003)	-0.001 (0.001)*	-0.0001 (0.0003)
BUSY	-0.326 (0.044)***	-0.299 (0.085)***	-0.333 (0.051)***
FEMALE	-0.027 (0.063)	-0.137 (0.116)	0.005 (0.075)
APPR_2	-0.117 (0.096)	-0.195 (0.169)	-0.105 (0.116)
AUTH	-0.075 (0.052)	-0.181 (0.106)*	-0.047 (0.060)
BIG4	-0.276 (0.059)***		
Year variables	Yes	Yes	Yes
Industry variables	Yes	Yes	Yes
CONSTANT	2.868 (0.287)***	2.906 (0.498)***	2.731 (0.347)***
N	59,114	18,533	40,581
Model Chi-square	3183.000***	956.370***	2261.760***
Pseudo R-square	0.196	0.199	0.193
P- value for Wald test of equality of AfterSANCTION in the sub-samples with Big 4 and Non-Big 4 firms			0.779

Note: **, *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. The table reports logistic regression results in which the dependent variable takes the value 1 if the audit report departs from a standard one and 0 otherwise. The table reports coefficient estimates and standard errors. The standard errors, reported in parentheses, are clustered by auditor and company. See Table 1 for variable definitions.

Table 7. Disciplinary sanctions and going concern opinions prior to bankruptcy

	Full sample
SANCTION	-0.425 (0.460)
AfterSANCTION	-0.503 (0.618)
LOSS	0.266 (0.183)
PROBZ	2.499 (0.201)***
LnASSETS	0.294 (0.045)***
LnAGE	0.033 (0.052)
EXP	-0.027 (0.009)***
LnOFF	0.060 (0.051)
NoCLIENTS	-0.002 (0.001)**
BUSY	-0.129 (0.114)
FEMALE	-0.168 (0.172)
DELAY	-0.0004 (0.001)
APPR_2	0.359 (0.252)
AUTH	0.118 (0.145)
BIG4	0.250 (0.142)*
Year variables	Yes
Industry variables	Yes
CONSTANT	-7.262 (0.787)***
N	3,139
Model Chi-square	297.230
Pseudo R-square	0.136

Note: **, *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. The table reports logistic regression results in which the dependent variable takes the value 1 if the auditor has issued a going concern opinion and 0 otherwise. The table reports coefficient estimates and standard errors. The standard errors, reported in parentheses, are clustered by auditor. See Table 1 for variable definitions.

Appendix 1. Correlation matrices

Panel A: Correlations between variables in tests of Hypothesis 1a and 1b (N=14,868)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
LnCumASSETS (1)	1.000											
NoCLIENTS (2)	0.506	1.000										
SANCTION (3)	0.060	0.157	1.000									
AfterSANCTION (4)	0.052	0.129	0.755	1.000								
EXP (5)	0.254	0.168	0.091	0.091	1.000							
LnOFF (6)	0.211	-0.139	-0.076	-0.056	-0.109	1.000						
AvSOLV (7)	-0.038	-0.101	-0.038	-0.031	-0.021	0.018	1.000					
AvASSETS (8)	0.523	-0.101	-0.016	-0.008	0.076	0.305	0.032	1.000				
FEMALE (9)	-0.307	-0.255	-0.053	-0.047	-0.202	-0.012	0.062	-0.068	1.000			
APPR_2 (10)	-0.206	-0.125	-0.064	-0.050	-0.399	0.061	0.008	-0.073	0.042	1.000		
AUTH (11)	0.366	0.055	-0.005	-0.010	0.024	0.267	0.000	0.218	-0.055	-0.373	1.000	
BIG4 (12)	0.152	-0.232	-0.077	-0.055	-0.082	0.457	0.041	0.261	-0.014	0.023	0.181	1.000

Panel B: Correlations between variables in tests of Hypothesis 2a and 2b (N=12,701)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
LnW (1)	1.000												
SANCTION (2)	-0.023	1.000											
AfterSANCTION (3)	-0.008	0.741	1.000										
EXP (4)	0.077	0.091	0.089	1.000									
LnOFF (5)	0.322	-0.061	-0.040	-0.076	1.000								
LnCumASSETS (6)	0.311	0.072	0.066	0.319	0.188	1.000							
AvSOLV (7)	0.027	-0.030	-0.027	-0.040	0.013	-0.036	1.000						
AvASSETS (8)	0.194	-0.007	0.001	0.086	0.303	0.522	0.028	1.000					
FEMALE (9)	-0.141	-0.046	-0.044	-0.185	-0.006	-0.318	0.065	-0.068	1.000				
STOCKH (10)	0.050	0.032	0.023	0.006	0.226	0.021	0.014	0.117	0.058	1.000			
APPR_2 (11)	-0.055	-0.054	-0.040	-0.401	0.037	-0.206	0.007	-0.077	0.039	-0.046	1.000		
AUTH (12)	0.188	0.011	0.004	0.052	0.256	0.358	0.000	0.210	-0.064	0.101	-0.407	1.000	
BIG4 (13)	0.257	-0.078	-0.053	-0.047	0.433	0.140	0.039	0.257	-0.017	-0.105	0.011	0.172	1.000

Panel C: Correlations between variables in the unclean opinion tests of Hypothesis 3a and 3b (N=59,115)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
UNCLEAN (1)	1.000														
SANCTION (2)	0.027	1.000													
AfterSANCTION (3)	0.017	0.730	1.000												
LOSS (4)	0.215	0.005	0.008	1.000											
PROBZ (5)	0.422	0.010	0.012	0.505	1.000										
LnASSETS (6)	-0.241	-0.026	-0.018	-0.206	-0.230	1.000									
LnAGE (7)	-0.072	-0.031	0.004	-0.037	-0.105	0.167	1.000								
EXP (8)	-0.060	0.068	0.076	-0.014	-0.020	0.034	0.127	1.000							
LnOFF (9)	-0.010	-0.078	-0.065	0.025	0.023	0.153	-0.011	-0.074	1.000						
NoCLIENTS (10)	0.007	0.182	0.152	0.000	0.010	-0.042	-0.027	0.153	-0.093	1.000					
BUSY (11)	-0.055	-0.016	-0.018	0.018	0.011	0.113	0.081	0.004	0.077	-0.029	1.000				
FEMALE (12)	0.016	-0.049	-0.040	0.009	-0.003	-0.064	-0.015	-0.176	-0.042	-0.254	-0.007	1.000			
APPR_2 (13)	0.026	-0.049	-0.039	-0.002	0.016	-0.023	-0.028	-0.326	0.093	-0.104	-0.006	0.040	1.000		
AUTH (14)	-0.029	-0.021	-0.024	0.009	0.000	0.133	-0.010	-0.021	0.234	0.075	0.059	-0.070	-0.311	1.000	
BIG4 (15)	-0.052	-0.068	-0.045	-0.006	-0.009	0.168	0.035	-0.049	0.422	-0.234	0.061	-0.016	0.045	0.142	1.000

Panel D: Correlations between variables in the going concern opinion tests of Hypothesis 3a and 3b (N=3,139)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
GC (1)	1.000															
SANCTION (2)	-0.062	1.000														
AfterSANCTION (3)	-0.049	0.670	1.000													
LOSS (4)	0.152	-0.003	-0.002	1.000												
PROBZ (5)	0.254	-0.014	-0.017	0.528	1.000											
LnASSETS (6)	0.027	0.010	0.024	-0.092	-0.351	1.000										
LnAGE (7)	0.006	-0.014	-0.005	0.020	-0.073	0.159	1.000									
EXP (8)	-0.092	0.055	0.067	-0.023	-0.044	0.051	0.089	1.000								
LnOFF (9)	0.078	-0.065	-0.076	0.009	0.015	0.114	0.033	-0.040	1.000							
NoCLIENTS (10)	-0.075	0.211	0.134	-0.007	-0.016	0.014	-0.038	0.204	-0.084	1.000						
BUSY (11)	-0.004	-0.016	-0.007	0.013	-0.011	0.127	0.059	0.001	0.076	-0.002	1.000					
FEMALE (12)	0.009	-0.072	-0.053	0.042	0.053	-0.071	-0.014	-0.152	-0.058	-0.245	-0.019	1.000				
DELAY (13)	-0.022	0.013	0.011	-0.056	-0.047	0.049	-0.007	-0.004	0.034	0.012	0.080	-0.020	1.000			
APPR_2 (14)	0.060	-0.048	-0.047	-0.003	-0.012	-0.034	-0.066	-0.324	0.044	-0.113	0.001	0.024	0.019	1.000		
AUTH (15)	0.036	0.020	-0.010	0.003	0.006	0.137	0.031	-0.035	0.227	0.084	0.041	-0.090	0.018	-0.314	1.000	
BIG4 (16)	0.088	-0.090	-0.057	0.048	0.006	0.118	0.056	-0.042	0.362	-0.219	0.075	-0.019	0.005	0.038	0.103	1.000