

**Public Oversight and Audit Quality: Evidence
from Public Oversight of Audit Firms in the
Netherlands**

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Abstract

Using public and proprietary data of the Dutch public oversight body, we study the trade-off suggested by DeFond (2009) of expertise for independence associated with the shift from a peer review system to independent public oversight of audit firms. Specifically, we investigate the association between the audit firms' inspection and peer review outcomes, and the audit clients' accruals quality. Our results show 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. However, we find no significant association between the audit firms' peer review outcomes and the audit clients' abnormal accruals. This suggests that in comparison to peer reviews, independent inspections are more effective in detecting audit quality. Overall, our study contributes to the emerging literature on the effectiveness of oversight of audit firms, and is one of the first that relates to a non-US setting.

Keywords: audit oversight, peer reviews, audit quality, accruals quality

I. INTRODUCTION

The revelation of audit failures at the beginning of the 21st century has put an end to the era of self-regulation of the auditing profession both in the European Union (E.U.) and the United States (U.S.). Due to doubts about possible conflicts of interest related to the self-regulation of the profession, recent international regulatory reforms have removed the responsibility for audit quality assurance from the auditing profession (by means of peer reviews) and delegated this responsibility to independent public oversight bodies.

Prior research has mainly focused on the effectiveness and credibility of peer reviews, resulting in mixed evidence. For example, there is anecdotal and empirical evidence that some audit firms are able to control peer review outcomes by choosing ‘friendly’ reviewers (Anantharaman 2007), which corroborate criticisms that peer reviews lack objectivity. Other empirical studies suggest that peer review outcomes are associated with actual and perceived audit quality (Casterella et al. 2006; Hilary and Lennox 2005). Given the rather recent switch from self-regulation of the auditing profession to independent public oversight, research on the effectiveness and credibility of independent audit quality inspections is still in its infancy. Preliminary evidence from Lennox and Pittman (2007) indicates that audit firms’ market shares are insensitive to the content of the PCAOB reports, suggesting that the content of these reports is not perceived to be related to audit quality. One explanation for this finding is that the PCAOB inspection program performs a remedial role in terms of inducing audit firms to improve their quality. Carcello, Hollingsworth and Mastroliia (2008) provide further

evidence for this explanation by showing that the PCAOB inspection process has resulted in a reduction in client's earnings management. Contrary, the results in Lennox (2009) suggest that PCAOB inspections have become less thorough over time and that they have not led to an increase in audit quality. According to DeFond (2009) another potential factor that helps to explain the lack of informational value of the PCAOB inspection reports is the trade-off of expertise for independence associated with the shift from a peer review system to independent public oversight. Overall, it appears that research on the effectiveness and credibility of audit quality inspection programs is limited and focuses exclusively on the U.S. setting.

The purpose of this paper is to contribute to this recent field of research by studying the effectiveness of independent public oversight on auditing in detecting audit quality in a E.U. setting, the Netherlands. We focus on the Dutch setting for two main reasons. First, the Netherlands is one of the first European countries that removed the responsibility for audit quality assurance from the auditing profession (by means of peer reviews) and delegated this responsibility to an independent public oversight body, the Netherlands Authority for the Financial Markets (AFM) (similar to the PCAOB in the U.S.). Second, we were able to obtain access to a unique dataset of initial outcomes of inspections conducted by the AFM in the scope of audit license applications and have access to the outcomes of the prior peer review system. Data on these inspection and peer review outcomes are not made public. Therefore, the Dutch proprietary dataset, in combination with publicly available financial statement data, provides us with a unique setting to examine whether the Dutch independent public oversight system in comparison to the prior peer review system is able to identify actual audit quality.

Prior literature supports the premise that higher quality auditors reduce accruals-based earnings management (Becker et al. 1998; Francis et al. 1999). Therefore, we expect that, if AFM inspectors have the expertise and independence to successfully identify and report weaknesses in lower-quality audit firms, the initial inspection outcomes will be associated with the level of accruals quality of the audit firm's client portfolio. We measure accruals quality by the level of abnormal accruals. Further, we provide descriptive evidence on the types of weaknesses that inspection reviews typically reveal in audit firms.

Our results show that companies audited by an audit firm with a negative outcome from the public oversight body's inspection (i.e. with material findings) have higher abnormal accruals than companies audited by an audit firm with a positive inspection outcome (i.e. without material findings). However, we find no significant association between the audit firms' peer review outcomes and the audit clients' abnormal accruals. Overall, this suggests that, compared to the prior peer review system, the Dutch independent public oversight system is more effective in detecting audit quality. Hence, these findings indicate that the alleged trade-off of expertise for independence, that accompanies the shift from self-regulation to independent public oversight, has not been an impediment to the ability to distinguish between high and low audit quality.

Descriptive results show that audit firms with material findings typically have multiple weaknesses that appear to be highly interdependent. The most common types of weaknesses are related to engagement quality control reviews, gathering of sufficient and

appropriate audit evidence, monitoring procedures and internal inspections, independence and general policies and procedures.

Overall, these findings contribute to the emerging literature on the inspection process of public oversight bodies, and we are one of the first to examine this in a E.U. setting. Our findings are relevant for both scholars and regulators, in light of current worldwide discussions on the effectiveness and mutual recognition of audit oversight systems. Further, insights from this study may benefit public oversight bodies across the world in further shaping oversight systems.

The remainder of this paper is organized as follows. In the next section, we describe major changes to the institutions responsible for monitoring audit firms in the U.S. and Europe. Further, we give an overview of the insights from prior research studying the effectiveness of self-regulation and independent oversight as mechanisms for audit quality inspections. In Section 3, we develop our research question and hypothesis. Our sample and research design are described in Section 4. The results of our study are presented in Section 5 and the sensitivity analyses in Section 6. Finally, we conclude in Section 7.

II. BACKGROUND

A) REGULATION OF THE AUDITING PROFESSION

At the beginning of the 21st century, public confidence in the audit process was seriously undermined by a number of high-profile corporate scandals in Europe and the

U.S. One of the legislative responses to the audit failures that contributed to the scandals was to put an end to the era of self-regulation of the auditing profession in the E.U. and the U.S.

Regulation of the auditing profession in the U.S.

In the U.S., the move away from self-regulation was supported by concerns that the self-regulated peer review program that was in place prior to 2004 lacked credibility and failed to assure audit quality (Fogarty 1996). In response to these criticisms and to the audit failures associated with the corporate scandals, U.S. Congress passed the Sarbanes-Oxley Act in 2002, which requires for the first time that an independent oversight body handles audit firm inspections. From 2004 onwards, all accounting firms that issue an audit report for an SEC-reporting company or substantially participates in the audit must be registered with the Public Company Accounting Oversight Board (PCAOB), which will perform periodic inspections to assure audit quality.

Regulation of the auditing profession in the E.U.

Since 1984, the statutory auditing profession in the E.U. was regulated by the 8th E.U. Council Directive on Company Law, which primarily pertained to the approval of statutory auditors in E.U. Member States. The Directive did not, however, specify any public oversight or external quality assurance to ensure high audit quality. These matters were left to the discretion of the appropriate authorities in the Member States. The regulatory developments in the U.S., as well as some European accounting scandals (e.g. Parmalat in Italy) forced the E.U. to re-evaluate the regulation of the auditing profession and underlined the urgency of independent public oversight. On June 9, 2006 the 8th E.U.

Directive was replaced by a new version ('Statutory Audit of Annual Accounts and Consolidated Accounts'), and one of the new Directive's requirements for E.U. Member States is the creation of an effective system of public oversight for statutory auditors and audit firms on the basis of home country control. Since the new Directive further requires the system of public oversight to be governed by non-practitioners, this entails the end of self-regulation of the auditing profession in several European countries (FEE 2006).

According to the new 8th E.U. Directive, the European public oversight authorities have ultimate responsibility for approval and registration of audit firms, quality control of audit firms and auditors, continuous education of auditors and investigative and disciplinary actions against audit firms. More specifically, the new Directive regulates that all audit firms and auditors involved in statutory audits are required to obtain approval (i.e., registration or license) from the public oversight authority and are subject to a system of quality assurance under responsibility of the public oversight authority. Furthermore, the new 8th E.U. Directive and the 'Recommendation on external quality assurance for statutory auditors and audit firms auditing public interest entities' issued by the European Commission (EC) in 2008 (EC 2008) require a frequency of audit quality inspections of six years in general, but this is shortened to three years for statutory auditors and audit firms that carry out audits of public interest entities (PIE; i.e. listed companies, banks and insurance companies). Moreover, for audit firms with PIE-clients, the EC Recommendation stipulates that these inspections should be undertaken by non-practicing staff employed by the review organization. Whereas, for auditors auditing non-PIEs, the new regulation allows peer review organizations to perform tasks related to the execution of the inspections, as long as the independent public oversight authority

assumes ultimate responsibility for the external quality assurance system (monitored peer reviews). Member States were given two years, that is up to June 2008, to implement the provisions of the new Directive.

The Netherlands was one of the first European countries to set up an independent public oversight system for all audit firms performing statutory audits (i.e. PIE and non-PIE audits)¹. Since October 2006 public oversight of the auditing profession in the Netherlands is regulated by the Audit Firms Supervision Act (AFSA). The AFSA delegates the oversight of audit firms performing statutory audits to the Netherlands Authority for the Financial Markets (AFM), an independent authority which reports to the Dutch Ministry of Finance. Under the AFSA, all audit firms need to apply for a license granted by the AFM to perform statutory audits in the Netherlands. The AFM will grant a license to an audit firm that has demonstrated that the firm itself and the auditors employed by or affiliated with the firm comply with the standards laid down in the AFSA. The AFSA contains quality control requirements for audit firms that are primarily based on the ‘International Standard on Quality Control 1’ (ISQC1). Audit firms that intend to perform statutory audits for PIEs have to comply with additional standards. The applicable quality control requirements are summarized in Exhibit 1. All the inspections conducted in the license approval process are carried out by non-practicing staff employed by the AFM. Audit firms that have obtained a license will be subject to

¹ Statutory audits are defined in the AFSA as “an audit of the financial accounts of an enterprise or institution serving a social purpose, that has been made mandatory by or pursuant to the statutory provisions stated in the appendix to this Act”. This includes the audits of both public and private companies that meet two out of the following three criteria: a) turnover over € 7.3 million, b) total assets over € 3.65 million, and c) number of employees over 50 (applicable to the time period studied in this paper). Furthermore, this includes the audits of several financial enterprises, municipalities, provinces, and certain governmental agencies.

continuous inspections by the AFM. These inspections focus on the formal set-up of the audit firm's internal quality control systems as well as on the adequate functioning of these systems.² As part of these inspections, the AFM will review the quality of the audit files and the documentation of the audit activities, principal findings, conclusions and the auditor's opinion.

- Insert Exhibit 1 here -

B) PRIOR LITERATURE

In prior literature on the credibility of audit quality inspection programs, a distinction can be made between research on peer reviews and research on independent public oversight.

The credibility of self-regulated peer review programs

Interest in this field was triggered by anecdotal evidence suggesting that peer reviews lack credibility and fail to improve audit quality. Relying on institutional theory, Fogarty (1996) argues that the U.S. peer review program may be nothing more than a 'ceremonial logic' established to maintain the profession's image instead of to improve actual audit quality. Overall, empirical studies investigating the credibility of the peer review program provide mixed evidence.

Hillary and Lennox (2005) show that audit firms gained clients after receiving clean opinions from their reviewers and lost clients after receiving modified or adverse

² The AFSA has designated the audit firms, rather than the individual auditors, as the primary subject of public oversight. Audit firms shall establish and maintain a system of quality control to provide it with reasonable assurance that: (a) the firm and its personnel comply with professional standards and applicable legal and regulatory requirements; and (b) reports issued by the firm or engagement partners are appropriate in the circumstances (ISQC 1, par. 11).

opinions. This suggests that audit clients *perceive* that peer review opinions provide credible information about quality differences between audit firms.

Casterella et al. (2006) examine the association between peer review opinions and *actual* audit quality. Using proprietary data from an insurance company that provides liability insurance to audit firms, they find that peer reviews provide effective signals regarding audit-firm quality. More specifically, their results show that unfavorable opinions in peer review reports are associated with other indicators of potentially weak quality control within the audit firm, such as overworking of audit staff and the acceptance of risky clients.

Using PCAOB inspection opinions as an independent benchmark of audit quality, Anantharaman (2007) finds that an audit firm's peer review opinion is likely to be more favorable if the reviewed firm is larger, it reviews other firms or it is reviewed by a non-competitor. This evidence suggests that not all peer reviews are objective and that some firms were able to control peer review outcomes by choosing 'friendly' reviewers.

The credibility of independent public oversight

Hermanson et al. (2007) provide the first descriptive evidence on 316 PCAOB inspection reports issued to smaller CPA firms. Sixty percent of the inspected firms had audit deficiencies. Further, they find that firms with audit deficiencies are smaller, have a larger number of issuer clients and are growing more rapidly than firms without deficiencies.

Similar to the work of Hillary and Lennox (2005) on the credibility of peer reviews, Lennox and Pittman (2007) test whether the inspection reports issued by the

PCAOB provide credible information to clients about audit firm quality. Contrary to the previous finding that peer reviews were perceived to be credible (Hilary and Lennox 2005), their results show that audit firms' market shares appear to be insensitive to the content of the PCAOB reports. One explanation for this finding is that the PCAOB inspection program performs a remedial role in terms of inducing audit firms to improve their quality. An alternative explanation is that PCAOB reports fail to disclose information that clients would value (quality control weaknesses and overall ratings of audit firms). Overall, the authors conclude that the PCAOB inspection process has been constructive for improving audit quality, although the way in which the inspectors' findings are reported could be made more informative.

Carcello et al. (2008) provide additional evidence for the first explanation in Lennox and Pittman (2007) by showing that the PCAOB inspection process has led to an improvement in audit quality, measured by a reduction in client's abnormal accruals. Furthermore, they find that this improvement in audit quality exceeds any improvement under the prior peer review system. Contrary to the results in Carcello et al. (2008), the results in Lennox (2009) suggest that PCAOB inspections have become less thorough over time and that they have not led to an increase in audit quality.

According to DeFond (2009), a third potential factor that might help to explain the lack of informational value of the PCAOB inspection reports reported by Lennox and Pittman (2009) is the trade-off of expertise for independence associated with the shift from a peer review system to independent public oversight. This trade-off arises because

non-practicing staff employed by public oversight bodies mitigate concerns about inspectors' independence, but might have less expertise than practicing peer reviewers.

III. RESEARCH QUESTIONS AND DEVELOPMENT OF HYPOTHESIS

From Section 2, it appears that in spite of the increased attention to public oversight on audit firms both in Europe and in the U.S., empirical research on the effectiveness and credibility of audit quality inspection programs is limited and focuses solely on the U.S. setting. The purpose of this paper is to contribute to this recent literature by performing a study in a E.U. setting, the Netherlands, and investigate whether the Dutch public oversight body's initial inspection outcomes are associated with *actual* audit quality, measured by the level of accruals-based earnings management.

As explained in Section 2, since October 2006, all audit firms performing statutory audits in the Netherlands need to have a license from the Dutch independent oversight body, the AFM. From January 2007 until August 2008, the AFM assessed the license applications. These assessments consist of desktop reviews for all applicants and on-site inspections, involving an in-depth assessment of internal quality control procedures and audit files. The purpose of these inspections is to verify the audit firm's compliance with all legal requirements and professional standards, and to identify any material weaknesses in the audit firm's quality control system or audit files. The initial inspections have two possible outcomes: 'no material findings' and 'material findings'. In case of no material findings, the audit firm is considered of sufficient quality and is granted a license to perform statutory audits. In case of material findings, the audit firm is

considered to be of low(er) quality. If the weaknesses are considered to be correctable within the short term, the audit firm is given time to make the necessary improvements. If the improvements subsequently prove to be satisfactory, the audit firm is granted a license. If the weaknesses are not considered to be correctable within the short term, the license application is rejected³.

Prior to the installment of independent public oversight, audit firms were subject to a peer review system. The peer reviews were performed by the inspection units of the professional organizations for registered auditors in the Netherlands. While mainly focused on the performance of individual auditors, the peer reviews also included a review of audit firm procedures. If the peer review lead to no material findings, the peer review outcome was ‘sufficient’. If the peer review lead to material findings that were correctable in the short term, the outcome was ‘sufficient but susceptible for improvement’. If the material findings were more severe, the outcome was ‘insufficient’. In order to compare the peer review outcomes with the outcomes from the public oversight body’s inspections, we consider the outcomes ‘sufficient but susceptible for improvement’ and ‘insufficient’ jointly as ‘material findings’.

In this paper, we want to investigate whether the AFM inspection process was effective in detecting *actual* audit quality. Audit quality is defined as the joint probability that a given auditor will both (a) discover a material misstatement in the client’s financial statements, and (b) report the breach (DeAngelo 1981). A high quality audit will detect

³ Most audit firms make use of the opportunity to appeal the decision to reject a licence. If the audit firm makes further improvements during this (legal) process, the AFM is bound to take these improvements into consideration and grant a licence if the audit firm has demonstrated that it complies with all relevant requirements.

material deviations in the financial statements and constrain management's discretion to manage accruals, i.e., a high audit quality ensures low absolute abnormal accruals (e.g., Francis et al. 1999). Therefore, we measure audit quality by the level of the audit clients' abnormal accruals.

To assure high quality inspections, inspectors must both have the *expertise* to capture actual audit quality and the necessary *independence* to report the outcome of their inspections objectively (FEE 2006). The long-standing debate between self-regulation and government regulation (Peltzman 1976; Stigler 1971) is characterized by an alleged trade-off of expertise for independence associated with the switch from peer reviews to independent public inspections. Indeed, since independent full-time inspectors have no personal or employment relationship with any of the audit firms they inspect, concerns on inspectors' independence are mitigated. It can, however, be very challenging for full-time inspectors of an oversight body to maintain their knowledge of professional developments and their understanding of day-to-day business and audit techniques. Therefore, the *expertise* of the inspectors performing the quality reviews is of utmost importance to obtain high quality reviews. To assure the technical competence of the AFM inspectors, all employed inspectors have on average 10-15 years of relevant experience in the auditing profession. Furthermore, before the license application inspections, the inspectors have received extensive training to ensure their knowledge of recent regulatory and professional developments.

Hence, we test the following hypothesis:

H1: Companies audited by audit firms that received a positive inspection outcome (i.e. ‘no material findings’) by the Dutch public oversight body have higher accruals quality than companies audited by audit firms that received a negative inspection outcome (i.e. ‘material findings’), *ceteris paribus*.

IV. RESEARCH DESIGN

A) SAMPLE

As the inspections with regard to the license applications of Dutch audit firms started in 2007, we consider the accruals quality of companies in the audit firm’s client portfolio in the years 2005-2006. Furthermore, we restrict the sample to private (non-listed) companies as the number of Dutch listed companies is limited and the audit market for these listed companies is highly concentrated. Hence, the initial sample consists of all Dutch private companies in the years 2005 and 2006 for which current year’s net income is available in the database ‘AMADEUS’⁴. Next, we require companies in the sample to meet at least two of the following criteria: (1) total assets greater than EUR 3.65 million, (2) sales greater than EUR 7.3 million, and (3) number of employees greater than 50. By adopting these size restrictions we exclude companies that are subject to exemptions from reporting requirements and statutory audit requirements. Consistent with previous research on accruals quality, we exclude financial institutions and insurance companies (SIC 60-67) because of their specific accounting requirements

⁴ AMADEUS is a pan-European database distributed by Bureau Van Dijk (<http://www.bvdep.com>) that contains financial information on over 11 million public and private companies in 41 European countries.

complicating comparisons with industrial and commercial companies. Further, we exclude companies for which data is not available for some variables and extreme observations⁵ to mitigate the effect of outliers and potential data errors. The final sample consists of 5,029 company-year observations of Dutch companies over the years 2005 and 2006.

For the comparative analysis of peer review outcomes, a second sample is constructed equivalent to the sample described above. Since the peer reviews considered in this study were conducted in the years 2005 and 2006, we investigate the accruals quality of companies in the audit firm's client portfolio in the years 2003-2004. The peer review sample consists of 4,638 company-year observations.

Auditor data were collected from the Dutch database 'REACH'⁶.

B) EMPIRICAL MODEL

Dependent variable

To measure accruals quality, we use a performance-adjusted cross-sectional modified Jones (1991) model as described by Dechow et al. (1995) and Kothari et al. (2005). The first step is to estimate the following OLS regression:

$$TA_t = \alpha_0 + \alpha_1 \left(\frac{1}{Assets_{t-1}} \right) + \alpha_2 (REV_t - \Delta AR_t) + \alpha_3 PPE_t + \varepsilon_t \quad (1)$$

where:

⁵ To remove outliers we deleted the observations which are in the top or bottom 0.5 percent of the distribution of scaled total accruals and the control variables in the regression model.

⁶ REACH is a database distributed by Bureau Van Dijk (<http://www.bvdep.com/>) that contains financial statement data of Dutch listed and non-listed companies.

- TA_t = total accruals in year t (defined as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization), scaled by lagged total assets;
- ΔREV_t = sales in year t less sales in year $t-1$, scaled by lagged total assets;
- ΔAR_t = accounts receivable in year t less accounts receivable in year $t-1$, scaled by lagged total assets; and
- PPE_t = net property, plant, and equipment in year t , scaled by lagged total assets.

We estimate equation (1) by year and by three-, two-, or one-digit SIC codes conditional on having at least 10 firms in each SIC group. A company's unadjusted abnormal accruals are set equal to the difference between total accruals and the fitted normal accruals estimated by the appropriate residuals from equation (1).

Subsequently, we adjust abnormal accruals for performance as described in Kothari et al. (2005). To this end, we rank companies within each industry-year group into ten groups based on their return-on-assets (ROA). Performance-adjusted abnormal total accruals (ATA) are the difference between the sample company's 'unadjusted abnormal accruals' and the median abnormal accruals for companies in the same industry-year-ROA decile. We analyze the absolute value of ATA⁷ since private companies are expected to exhibit both income-increasing and income-decreasing accruals.

Independent variables

Test variables

The primary independent test variable of this study is the Dutch public oversight body's initial inspection outcome (material findings or no material findings) concerning the company's audit firm (PO_FIND). The indicator variable PO_FIND is given a value

⁷ Performance-adjusted accruals are winsorized at the top 0.5 percent of the distribution to mitigate the effect of outliers

of one if material findings were identified at the company's audit firm by the Dutch public oversight body. In order to compare the effectiveness of the public oversight body's inspections with the prior peer review system, we define a second independent test variable: PR_FIND is given a value of one if material findings were identified at the company's audit firm by the peer review system. Initial inspection outcomes and peer review outcomes are collected from the proprietary files of the Dutch public oversight body, the AFM.

Control variables

To control for differences in earnings management incentives and company characteristics that are associated with accruals quality, we include the following control variables.

First, we include the natural logarithm of total assets as a proxy for company size. It is argued in the literature that accruals quality is positively associated with company size, because large firms tend to have more stable and predictable operations (Dechow and Dichev 2002).

Second, we include a leverage variable, measured as long-term debt scaled by total assets. Following the debt-equity theory, highly leveraged companies have incentives to manage earnings upwards to prevent violations of debt covenants (DeFond and Jiambalvo 1994; Watts and Zimmerman 1990; Young 1999). Alternatively, Becker et al. (1998) argue that high leverage may induce income-decreasing earnings management in financially distressed companies in view of contractual renegotiations.

Third, we control for performance, measured by (the absolute value of) operating cash flow scaled by total assets. Dechow et al. (1995) and Young (1999) highlight the importance of controlling for financial performance, since the matching principle results in a natural smoothing property of accounting accruals. This results in negative (positive) abnormal accruals to occur in a period with extreme positive (negative) cash flows. Including a cash flow-based performance measure, which is unrelated to earnings management, in the regression models corrects for this effect. The expected association between operating cash flow and signed abnormal accruals is negative. Taking the absolute values of both these variables results in a positive association.

Hribar and Nichols (2007) show that controlling for differences across companies in the natural volatility of their accruals mitigates the potential bias arising from the use of the absolute value of discretionary accruals. For this reason, we include two company characteristics as additional controls in our analysis: sales growth (measured as the percentage of year-to-year growth of sales) and a loss dummy (equal to one if the company experiences a loss in the current year).

Finally, we include industry dummies to control for the potential effect of the industry on our accruals measures and a year dummy, which takes the value of one for the observations in 2006.

Hence our empirical models formally look as follows:

$$|ATA_t| = \beta_0 + \beta_1 PO_FIND_t + \beta_2 Size_t + \beta_3 Leverage_t + \beta_4 |Performance_t| + \beta_5 Growth_t + \beta_6 Loss_t + \beta_7 Year_t + \beta_{8-11} Industry_t + \varepsilon \quad (2)$$

$$|ATA_t| = \beta_0 + \beta_1 PR_FIND_t + \beta_2 Size_t + \beta_3 Leverage_t + \beta_4 Performance_t + \beta_5 Growth_t + \beta_6 Loss_t + \beta_7 Year_t + \beta_{8-11} Industry_t + \varepsilon \quad (3)$$

where:

Dependent variable

$|ATA_t|$ = absolute value of performance-adjusted abnormal total accruals measured by the modified Jones model (see equation (1) for details).

Independent variables

PO_FIND_t = indicator variable (1 if the Dutch oversight body's initial inspection outcome is 'material findings'; 0 else);

PR_FIND_t = indicator variable (1 if the Dutch peer review outcome is 'material findings'; 0 else);

$Size_t$ = natural logarithm of total assets;

$Leverage_t$ = ratio of total debt over total assets;

$|Performance_t|$ = absolute value of operating cash flow scaled by total assets;

$Performance_t$ = operating cash flow scaled by total assets;

$Growth_t$ = percentage of year-to-year growth of sales;

$Loss_t$ = dummy variable (loss in the current year = 1; else = 0);

$Year_t$ = year dummy (observations in 2006 = 1; else = 0); and

$Industry_t$ = vector of industry dummies (SIC 10-19: Mining and construction; SIC 20-39: Manufacturing; SIC 40-49: Transportation, Communication, Electric, Gas, and Sanitary Services, SIC 50-59: Wholesale trade). SIC 70-89 (Services) is the industry of reference.

V. RESULTS

A) DESCRIPTIVE STATISTICS AND UNIVARIATE RESULTS

Company characteristics

Panel A, B and C of Table 1 summarize the descriptive statistics for all companies included in the sample, companies audited by an audit firm with material findings and companies audited by an audit firm without material findings, respectively. The mean value of signed abnormal accruals (ATA) is 0.023. When univariately testing differences between Panel B and C (not tabulated), there appears to be no significant difference in

ATA for firms audited by an audit firm with or without material findings ($p = 0.531$). Since private companies might have incentives to both under- and overreport earnings, the absolute value of abnormal accruals ($|ATA|$) is a better measure to capture the combined effect of income-increasing and income-decreasing earnings management. As hypothesized, $|ATA|$ is significantly higher for companies audited by an audit firm with material findings than for companies audited by an audit firm without material findings ($p = 0.044$). Comparison of Panel B and C further reveals that companies audited by an audit firm without material findings tend to perform better and are more highly leveraged than companies audited by an audit firm with material findings. None of the other control variables are significantly different between the two samples.

- Insert Table 1 -

Table 2 includes Pearson correlation coefficients among the company characteristics. As can be seen the risk of bias in our multivariate analyses due to multicollinearity is minimal.

- Insert Table 2 -

Audit firm characteristics

The companies in our sample are audited by 97 audit firms that applied for a license to be compliant with the Dutch audit regulation (AFSA). The initial inspections of the AFM lead to material findings for 63 of these 97 audit firms (65 percent) since material weaknesses in the audit firms' internal quality control systems or audit files were detected. For 34 audit firms (35 percent) the inspections lead to no material findings.

Panel A, B and C of Table 3 summarize the descriptive statistics for all audit firms included in the sample, the audit firms with material findings from public oversight inspections, and the audit firms without material findings, respectively. When univariately testing (not tabulated) the differences in size measures (i.e., number of audit clients, total audit fees, number of auditors, and number of managers) and ratios (i.e., average number of audit clients per auditor, average audit fee per client, and percentage of managers with an audit qualification) between Panels B and C we find that there are no significant differences between audit firms with material findings and audit firms without material findings.

- Insert Table 3 here -

The AFM inspections consist of an in-depth assessment of the audit firm's internal quality control procedures and audit files in order to test whether these are fully compliant with the quality control requirements as set out in the AFSA, or whether there are any material weaknesses. Exhibit 1 contains a summary of these requirements. A distinction is made between quality control requirements at the audit firm level and at the audit engagement level. The audit firm is primarily responsible for the quality control requirements at the audit firm level. These requirements establish a 'framework' within the audit firm which supports the performance of high-quality audits. The individual auditor is primarily responsible for the quality control requirements at the audit engagement level. These requirements are focused on the actual performance of audits.

For all 63 audit firms with material findings we have analyzed the specific weaknesses identified by the AFM. We have been able to review the AFM files in order

to identify the weaknesses that were communicated with the audit firms. For each of the quality requirements as listed in Exhibit 1 the audit firms were coded 1 if the AFM had material findings with regard to that particular requirement, and 0 otherwise. The material weaknesses identified by the AFM involve both weaknesses in the description of the formal procedures as well as in the actual functioning of these procedures.⁸ Table 4 provides the total frequency of findings for each of the quality control requirements (Panel A) and the average number of findings per audit firm (Panel B).

- Insert Table 4 here -

Panel A of Table 4 shows that more than 50 percent of the audit firms with material findings had weaknesses with regard to their engagement quality control reviews (83 percent), their gathering of sufficient and appropriate audit evidence (76 percent), their monitoring procedures and internal inspections (63 percent), their independence (56 percent), and their general policies and procedures (52 percent). Weaknesses with regard to (human) resources (10 percent), fraud (16 percent) and consultation (17 percent) were the least frequent. Panel B of Table 4 shows the average number of weaknesses per audit firm. The average total number of weaknesses is 5.92 (out of a possible 15), with an average of 4.33 (out of 11) weaknesses in audit firm quality requirements and 1.59 (out of 4) weaknesses at the audit engagement level.

This analysis is to some extent comparable to the one performed by Hermanson and Houston (2008). They summarize the quality control defects disclosed in PCAOB reports for 20 smaller registered audit firms up to June 2008. They find 56 defects in

⁸ For instance, a weakness with regard to the independence requirements can involve a material omission in the audit firm's independence safeguards as described in its' quality manual, as well as an actual breach in its independence from a particular audit client.

these 20 firms (mean of 2.8, median of 3). They find frequencies of weaknesses in engagement quality control reviews (75 percent), the gathering of sufficient and appropriate audit evidence (10 percent), audit engagement acceptance and continuance procedures (5 percent), and independence (30 percent) that are lower than the frequencies we find in our sample of Dutch audit firms. Only the frequency of weaknesses concerning the professional skepticism (75 percent) is higher. A first explanation for these differences is that in the U.S. quality control defects are only disclosed if the audit firm has not addressed the defects to the satisfaction of the PCAOB within 12 months after the date of the inspection report. Therefore, audit firms have been given (at least) a year to address the weaknesses identified immediately after the PCAOB inspections, while we have studied unaddressed weaknesses. Secondly, Hermanson and Houston only report on 20 smaller audit firms, compared to the 63 audit firms in our sample, that include both large and small audit firms.

Table 5 includes Pearson correlation coefficients among the identified weaknesses. As can be seen from Table 4 and 5, the AFM seldomly identified isolated weaknesses. The minimum number of weaknesses identified is two and this occurred for only four audit firms. The various elements of an audit firm's internal quality control systems are highly interdependent. For instance, audit firms with material findings regarding their independence often also appear to apply too little skepticism in performing audits and gathering sufficient audit evidence, in conjunction with weak internal quality controls (e.g. inadequate engagement quality reviews, monitoring and internal inspections), and poor client account records (which should distinguish between revenues from audits and revenues from other services). Although it would be interesting

to study which elements of the audit firms' quality control systems are most effective in ensuring high audit quality (i.e., by finding a significant association between one or more quality control elements and accruals quality), this analysis would suffer from bias due to multicollinearity. Since accruals quality is measured at the company level, rather than the audit-firm level, the bias due to multicollinearity is even more severe, since the few larger audit firms with PIE-clients are dominating our sample. Multivariate regression analysis would suffer from this bias, making the regression coefficients of the individual weaknesses unreliable.

- Insert Table 5 –

B) REGRESSION RESULTS

Table 6 reports the regression results for equation (2) and (3) when we use the outcome of the public oversight inspections as the independent variable of interest (Panel A) and the outcome of the peer reviews as the independent variable of interest (Panel B). We tabulate coefficients from OLS-regression models and, in parentheses, p-values based on robust standard errors that are clustered by company⁹.

In Panel A, we report a significant positive association between abnormal accruals (ATA) and the Dutch public oversight body's initial inspection outcome (PO_FIND) for the company's audit firm. However, we find no significant association between the audit firms' peer review outcomes (PR_FIND) and the audit clients' abnormal accruals. Overall, these results support our hypothesis, that companies audited by an audit firm

⁹ Because audit firm characteristics are similar for all companies audited by a specific audit firm, clustering at the company level might overstate statistical significance. Unreported sensitivity analyses show that clustering standard errors at the audit firm level produce similar p-values to the ones reported in Table 3.

without material findings have higher accruals quality than companies audited by an audit firm with material findings, but only when the inspection is performed by the independent public oversight body and not when performed by peer reviewers. This suggests that in comparison to peer reviews, independent inspections are more effective in detecting audit quality and that the trade-off suggested by DeFond (2009) of expertise for independence has not been an impediment to the ability to distinguish between high and low audit quality, but is more likely to be an improvement.

- Insert Table 6 –

VI. SENSITIVITY ANALYSES

A) PIE VERSUS NON-PIE AUDIT FIRMS

In Dutch audit regulation an important distinction is made between audit firms that audit PIEs and those that have only non-PIE clients in their portfolio. Although both types of audit firms need to comply with Dutch audit regulation in order to be allowed to perform statutory audits in the Netherlands and are subject to public oversight, audit firms that intend to perform statutory audits for PIE-clients have to comply with additional standards. Among the audit firms in the sample, the audit firms that applied for a so-called PIE-license audit approximately 90 percent of all companies in the sample. The public oversight body's inspection outcomes and the peer review outcomes for PIE-audit firms are likely to be overweighed in the results in Table 6. To check whether our findings also hold for smaller, non-PIE audit firms, we re-estimate equation (1), but now

split the sample into two subgroups: (1) companies audited by a PIE-audit firm, and (2) companies audited by a non-PIE audit firm for both the public oversight body's inspection outcomes and the peer review outcomes. The results in Panels A and B of Table 7 show that the coefficient on PO_FIND, measuring the public oversight body's inspection outcome, is significantly positive both for companies audited by an audit firm with PIE clients and for companies audited by an audit firm with only non-PIE clients, indicating that our findings are not only driven by audit firms with PIE-clients. Panels C and D show that the coefficient on PR_FIND, measuring the peer review outcome, is not significant, indicating that there is no significant relationship between the peer review outcome and the audit clients' abnormal accruals for companies audited by an audit firm with PIE clients nor for companies audited by an audit firm with only non-PIE clients.

- Insert Table 7 -

B) ALTERNATIVE ACCRUALS QUALITY PROXY

DeFond and Jiambalvo (1994) and Teoh et al. (1998) argue that non-working capital accruals are less susceptible to manipulation than working capital accruals. Therefore, we test the sensitivity of our results with a proxy for abnormal working capital accruals as dependent variable in our regression model as proposed by DeFond and Park (2001) and subsequently used in earnings management studies (e.g., Carey and Simnett, 2006; Francis and Wang, 2008). Like DeFond and Park (2001), we define working capital accruals as the change in non-cash working capital (WC). Abnormal working capital accruals (AWCA) are calculated as realized working capital minus 'expected' working capital, where expected working capital is assumed to be a fixed proportion of

sales (Dechow et al. 1998; DeFond and Park 2001). Formally, our proxy for abnormal working capital accruals is:

$$AWCA_t = WC_t - \left[WC_{t-1} / S_{t-1} \right] * S_t \quad (4)$$

where:

- $AWCA_t$ = abnormal working capital accruals in year t ;
- WC_t and WC_{t-1} = non-cash working capital in year t , where non-cash working capital is computed as (current assets – cash and short-term investments) – (current liabilities – short-term debt); and
- S_t and S_{t-1} = sales in year t and year $t-1$.

Subsequently, abnormal working capital accruals are scaled by lagged total assets. Similar to the main analysis, we analyze the effect of both the public oversight body’s inspection outcome (Panel A) and the peer review outcome (Panel B) on the absolute value of AWCA (Table 8). The results are similar to those reported in Table 6.

- Insert Table 8 -

C) SIGNED ABNORMAL ACCRUALS

As a third sensitivity analysis, we split the samples used in the analyses in Tables 6 and 8 into positive and negative abnormal accruals (ATA and AWCA) and re-estimate the equations (2) and (3). Untabulated results show that the coefficient of the variable PO_FIND, measuring the outcome of the public oversight body’s inspection, is positive and significant for income-increasing accruals, and negative and significant for income-decreasing abnormal accruals. However, the coefficient of the variable PR_FIND, measuring the peer review outcome, is positive and significant only for income-increasing accruals measured by the modified Jones model. The coefficient is not significant for the income-decreasing accruals and for the abnormal working capital accruals. Overall, our finding that the independent public oversight body is more

effective in detecting audit quality than the prior peer review system appears to hold for both income-increasing and income-decreasing abnormal accruals.

D) BIG 4 AUDIT FIRMS

In prior earnings management studies, a Big 4 dummy is often included, since the Big 4 audit firms are considered to be of consistently higher quality than non-Big 4 audit firms. However, we believe that in the Netherlands the Big 4 audit firms cannot be considered a homogenous group with regard to audit quality.¹⁰ Therefore we did not include a Big 4 dummy in our main regression analysis as shown in Table 6. As a sensitivity test, we did include a Big 4 dummy in our regression model, and find robust results for our variables of interest, PO_FIND and PR_FIND.

VII. CONCLUSION

One of the most important fall-outs of the financial accounting scandals at the beginning of the 21st century was the worldwide move-away from self-regulation of the auditing profession towards a system of independent public oversight. Currently discussions are ongoing about the effectiveness of independent public oversight systems across countries. Empirical evidence on the effectiveness of independent inspection programs is however still limited and relates solely to a U.S. setting. This paper provides to our knowledge the first evidence on the quality of independent inspection outcomes in a E.U. setting, the Netherlands. The Netherlands is one of the first European countries

¹⁰ In a recent press release (3 December 2009, available on the AFM website www.afm.nl) the AFM has issued a report on the investigation of the Big 4 audit firms following the credit crisis. In this report the AFM refers to non-compliance by “one or more” Big 4 audit firms.

that removed the responsibility for audit quality assurance from the auditing profession and delegated this responsibility to an independent public oversight body, the AFM. Using a unique database of the AFM's initial inspection outcomes for the purposes of audit firm license approval, we examine whether there is an association between a company's abnormal accruals and the initial inspection outcomes of the Dutch independent oversight body received by the company's audit firm. As a benchmark, we also examine whether there is a similar association between a company's abnormal accruals and the outcome of the peer reviews that were in place before the installment of public oversight. Since the number of listed companies is limited and the audit market for listed companies is highly concentrated, we focus our study on private companies.

Our results show that, in comparison to peer reviews, the Dutch independent inspection outcomes more credibly reflect audit quality. Specifically, we find that companies that are audited by an audit firm with a negative initial inspection outcome (i.e. with material findings) have lower accruals quality than companies audited by an audit firm with a positive inspection outcome (i.e. without material findings). However, we do not find a similar association between the companies' accruals quality and the audit firms' peer review outcomes. These findings are present for both income-increasing and income-decreasing abnormal accruals and robust across different auditor types (PIE versus non-PIE audit firms) and for alternative accruals quality measures.

Furthermore, we provide descriptive evidence on the individual weaknesses in the audit firms' internal quality control systems and audit files as identified by the AFM. We find that audit firms with material findings have on average six weaknesses. Because of

high interdependency between the various quality control requirements, leading to multicollinearity, we were unable to perform multivariate analyses to investigate the incremental effect of each of these quality control requirements on the level of accruals quality in the client portfolio.

Overall, these results are supportive of the effectiveness of the Dutch public oversight system in comparison with the prior peer review system. The trade-off of expertise for independence appears not to have been an impediment to the ability to distinguish between high and low audit quality. In fact, independent public oversight inspections appear to have been more effective in detecting audit quality than peer reviews.

Future research could look into the effectiveness of public oversight in *improving* audit quality over time. More specifically, it would be interesting to investigate whether accruals quality of companies audited by an audit firm with a negative inspection outcome improves more after the independent inspections than accruals quality of companies audited by an audit firm with a positive inspection outcome. Furthermore, it would be interesting to investigate the incremental effect of the individual elements of audit firms' internal control systems in more detail, and find a way to circumvent the multicollinearity problem.

EXHIBIT 1
Description of quality control requirements

Audit firm level

| | |
|---|---|
| General policies and procedures | Audit firms are required to design a system of quality control to provide the firm with reasonable assurance that the firm and its personnel comply with professional standards and regulatory and legal requirements, and that reports issued by the firm or engagement partners are appropriate in the circumstances. The system of quality control is usually laid down in the audit firm's quality manual, which consists of policies, procedures, descriptions, and standards. |
| (Control) structure | A majority of the voting rights in the audit firm shall be held by and a majority of the members of the administrative or management body of the audit firm must be persons that satisfy the requirements in regard to the competence of auditors. Furthermore, the formal or actual control structure of the audit firm shall not represent an obstacle for effective oversight. |
| Good repute | All members of the audit firm's administrative and/or management body (policymakers and co-policymakers) should be of good repute. ¹¹ |
| Integrity | The audit firm should establish integrity policies and procedures designed to prevent the involvement of the audit firm, the auditors or other employees of the audit firm in criminal offences and infringements of the law, and relationships with clients that could be detrimental to confidence in the audit firm or in the financial markets. |
| Independence | If an audit firm or any other part of the network maintains relationships with an audit client or a third party affiliated to that audit client that could represent a threat to the independence of the audit firm vis-à-vis either the audit client or the third party, the audit firm must apply safeguards to ensure its independence by eliminating or reducing such a threat. If such safeguards are not feasible, the audit firm shall not accept the assignment, or shall terminate the assignment. |
| Client account records | An audit firm shall maintain a systematic, accessible and up-to-date set of client account records, which include per audit client the name and full business address of the audit client, whether the audit client is a public interest entity, the name of the responsible auditor, and the fees charged for the statutory audit and the fees charged for other services rendered in any financial year. |
| Acceptance and continuance of audit engagements | Before accepting or continuing an assignment for an audit, an audit firm must determine whether the firm and its auditors comply with all applicable requirements, whether it has the specialist employees, time and resources required to perform the audit in an appropriate manner, and the integrity of the audit client. |
| (Human) resources | An audit firm shall provide the auditor with such time, resources and personnel as he needs to carry out his task in an appropriate manner. |
| Consultation | An audit firm will ensure that, where necessary for the proper conduct of an audit, the responsible auditor consults subject-matter specialists. The audit firm will ensure that the responsible auditor documents the subject and conclusions of such a consultation. |
| Engagement quality control review | The firm should establish policies and procedures requiring, for all audits for PIEs and for all other audits that meet the criteria as set out by the firm, an engagement quality control review that provides an objective evaluation of the significant judgments made by the engagement team and the conclusions reached in formulating the audit report. The engagement quality control review should be performed by a certified auditor and be completed before the audit report is issued. |

¹¹ Since none of the 88 audit firms included in our sample had material findings regarding the good repute of their (co-)policymakers, the 'good repute' requirement is left out of the further analyses.

EXHIBIT 1 (Con't)
Description of quality control requirements

| | |
|-------------------------------------|--|
| Monitoring and internal inspections | An audit firm shall ensure compliance with its system of quality control and it will carry out an annual evaluation of its system of quality control, including a periodic inspection of a selection of completed engagements. Audit firms that perform audits for public interest entities must appoint a compliance officer. |
| Duty of care | The audit firm shall ensure that its auditors comply with the requirements in regard to their competence, independence, objectivity, integrity, and reporting of reasonable assumptions of fraud. |

Audit engagement level

| | |
|---------------------------------------|--|
| Professional skepticism | The auditor should plan and perform an audit with an attitude of professional skepticism recognizing that circumstances may exist that cause the financial statements to be materially misstated. |
| Sufficient appropriate audit evidence | The auditor should obtain sufficient appropriate audit evidence to be able to draw reasonable conclusions on which to base the audit opinion. |
| Audit trail | The audit files should provide an accurate and coherent reproduction of the various phases of the audit process: the engagement acceptance or continuance, the audit approach, the audit plan, the risk analysis, the performance of audit procedures, the findings, the conclusions, and the audit opinion. |
| Fraud | In planning and performing the audit to reduce audit risk to an acceptably low level, the auditor should consider the risks of material misstatements in the financial statements due to fraud. An auditor who, during the performance of an audit, is given access to data or information which justifies the reasonable assumption of fraud of substantial importance in regard to the financial accounts of the audit client, will report this assumption to an investigating official. |

NOTE: The quality control requirements in this exhibit are derived from the legal requirements in the Audit Firms Supervision Act (Articles 14-31), the Decree on the Supervision of Audit Firms (Articles 8-38), and the International Standards on Auditing (a.o. ISA 200, 230, 240, and 500).

TABLE 1
Descriptive statistics for company characteristics

Panel A: Full sample (n = 5,029)

| Variable ^a | <u>Mean</u> | <u>Median</u> | <u>Std. Dev.</u> | <u>Min</u> | <u>Max</u> |
|-----------------------|-------------|---------------|------------------|------------|---------------|
| ATA | 0.023 | -0.001 | 0.097 | -0.166 | 0.515 |
| ATA | 0.063 | 0.041 | 0.077 | 0.000 | 0.515 |
| Size | 174,961.600 | 40,025.000 | 494,013.400 | 1,743.000 | 5,881,538.000 |
| Leverage | 0.669 | 0.675 | 0.229 | 0.010 | 1.446 |
| Performance | 0.091 | 0.076 | 0.160 | -0.828 | 0.949 |
| Growth | 0.095 | 0.068 | 0.249 | -0.855 | 4.873 |
| Loss dummy | 0.161 | 0.000 | 0.368 | 0.000 | 1.000 |

Panel B: Material findings sample (n = 3,492)

| Variable ^a | <u>Mean</u> | <u>Median</u> | <u>Std. Dev.</u> | <u>Min</u> | <u>Max</u> |
|-----------------------|-------------|---------------|------------------|------------|---------------|
| ATA | 0.024 | -0.001 | 0.099 | -0.166 | 0.515 |
| ATA | 0.065 | 0.042 | 0.079 | 0.000 | 0.515 |
| Size | 182,431.300 | 42,661.500 | 511,326.200 | 1,743.000 | 5,881,538.000 |
| Leverage | 0.664 | 0.668 | 0.233 | 0.022 | 1.446 |
| Performance | 0.089 | 0.074 | 0.161 | -0.828 | 0.949 |
| Growth | 0.095 | 0.066 | 0.259 | -0.855 | 4.873 |
| Loss dummy | 0.162 | 0.000 | 0.368 | 0.000 | 1.000 |

Panel C: No Material findings sample (n = 1,537)

| Variable ^a | <u>Mean</u> | <u>Median</u> | <u>Std. Dev.</u> | <u>Min</u> | <u>Max</u> |
|-----------------------|-------------|---------------|------------------|------------|---------------|
| ATA | 0.022 | -0.001 | 0.091 | -0.156 | 0.515 |
| ATA | 0.060 | 0.039 | 0.072 | 0.000 | 0.515 |
| Size | 157,990.700 | 35,661.000 | 451,923.400 | 2,062.000 | 5,137,557.000 |
| Leverage | 0.680 | 0.688 | 0.219 | 0.010 | 1.446 |
| Performance | 0.097 | 0.082 | 0.157 | -0.735 | 0.911 |
| Growth | 0.094 | 0.071 | 0.226 | -0.681 | 2.652 |
| Loss dummy | 0.161 | 0.000 | 0.368 | 0.000 | 1.000 |

NOTE: This table presents the descriptive statistics of the company characteristics for the full sample (Panel A), the subsample of company-years in which the company is audited by an audit firm that received a negative inspection report (i.e. material findings) from the AFM (Panel B) and the subsample of company-years in which the company is audited by an audit firm that received a positive inspection report (i.e. no material findings) (Panel C).

^a Variable definitions: ATA is abnormal accruals from a variant of the modified Jones model (see equation 1 for details). Size is total assets in thousand EUR. Leverage is the ratio of total debt over total assets. Performance is the ratio of operating cash flow on lagged total assets. Growth is the percentage of year-to-year growth of sales. Loss dummy is an indicator variable equal to one if the firm reports a loss in the current year; else 0.

TABLE 2
Pearson Correlation Coefficients between the company characteristics
(n=5,029)

| Variable^a | ATA | Size | Leverage | Performance | Growth |
|-----------------------------|----------|-----------|-----------|-------------|-----------|
| ATA | 1.0000 | | | | |
| Size | -0.0231 | 1.0000 | | | |
| Leverage | 0.0507** | -0.0281* | 1.0000 | | |
| Performance | 0.0240 | 0.0037 | -0.1652** | 1.0000 | |
| Growth | 0.0608** | 0.0987** | 0.0213 | -0.0199 | 1.0000 |
| Loss dummy | 0.0519** | -0.0741** | 0.3335** | -0.2388** | -0.1304** |

NOTE: This table presents the Pearson correlation coefficients and their significance among the company characteristics. *,** indicates significantly correlated at the $\alpha = 0.05$; 0.01 level, respectively (two-tailed).

^a Variable definitions: ATA is abnormal accruals from a variant of the modified Jones model (see equation 1 for details). Size is the natural logarithm of total assets in thousand EUR. Leverage is the ratio of total debt over total assets. Performance is the ratio of operating cash flow on lagged total assets. Growth is the percentage of year-to-year growth of sales. Loss dummy is an indicator variable equal to one if the firm reports a loss in the current year; else 0.

TABLE 3
Descriptive statistics for audit firm characteristics

Panel A: Full sample (n = 97)

| Variable ^a | Mean | Median | Std. Dev. | Min | Max |
|--|------------|------------|------------|-----------|-------------|
| Audit clients | 178.887 | 34.000 | 572.281 | 2.000 | 3,857 |
| Audit fees | 8,276,555 | 541,358 | 34,300,000 | 25,000 | 194,000,000 |
| Auditors | 15.928 | 6.000 | 32.224 | 1.000 | 170.000 |
| Managers | 6.979 | 5.000 | 6.024 | 1.000 | 46.000 |
| Average number of clients per auditor | 7.983 | 6.250 | 7.372 | 0.204 | 59.000 |
| Average audit fee per client | 20,816.460 | 17,500.000 | 15,337.950 | 1,923.077 | 123,851.200 |
| Percentage of audit qualified managers | 0.737 | 0.722 | 0.220 | 0.143 | 1.000 |

Panel B: Material findings sample (n = 63)

| Variable ^a | Mean | Median | Std. Dev. | Min | Max ^b |
|--|------------|------------|------------|-----------|------------------|
| Audit clients | 185.444 | 38.000 | 623.975 | 2.000 | n/a |
| Audit fees | 8,712,773 | 541,358 | 35,100,000 | 25,000 | n/a |
| Auditors | 16.794 | 6.000 | 34.525 | 1.000 | n/a |
| Managers | 6.778 | 5.000 | 6.695 | 1.000 | n/a |
| Average number of clients per auditor | 8.092 | 6.333 | 8.200 | 0.204 | n/a |
| Average audit fee per client | 20,188.380 | 17,500.000 | 16,183.830 | 1,923.077 | n/a |
| Percentage of audit qualified managers | 0.739 | 0.733 | 0.222 | 0.300 | n/a |

Panel C: No material findings sample (n = 34)

| Variable ^a | Mean | Median | Std. Dev. | Min | Max ^b |
|--|------------|------------|------------|-----------|------------------|
| Audit clients | 166.735 | 33.500 | 470.122 | 8.000 | n/a |
| Audit fees | 7,468,269 | 613,132 | 33,300,000 | 156.000 | n/a |
| Auditors | 14.324 | 6.000 | 27.876 | 2.000 | n/a |
| Managers | 7.353 | 6.500 | 4.598 | 1.000 | n/a |
| Average number of clients per auditor | 7.780 | 5.889 | 5.630 | 0.643 | n/a |
| Average audit fee per client | 21,980.260 | 18,001.000 | 13,789.060 | 7,954.853 | n/a |
| Percentage of audit qualified managers | 0.733 | 0.694 | .221 | 0.143 | n/a |

NOTE: This table presents the descriptive statistics of the audit firm characteristics for all auditors in the sample (Panel A), the subsample of auditors that received a negative inspection report (i.e. material findings) from the AFM (Panel B) and the subsample of auditors that received a positive inspection report (i.e. no material findings) (Panel C).

^a Variable definitions: Audit clients is the number of companies audited by audit firm *i*. Audit fees is the total fees invoiced

for performing statutory audits by audit firm *i*. Auditors is the number of auditors appointed in charge of a statutory audit by audit firm *i*. Managers is the number of individuals that (co-)determine the day-to-day policies of the audit firm. Average number of clients per auditor is the average number of companies audited by an individual auditor from audit firm *i*. Average audit fee per client is the average total fees invoiced for performing statutory audits by audit firm *i*. Percentage of audit qualified managers is the percentage of managers with an audit qualification.

^b n/a: Due to confidentiality agreements with the AFM, we are not able to print the maximum values for the audit firms included in the material findings and no material findings samples.

TABLE 4
Analysis of weaknesses

Panel A: Frequency of weaknesses

| | | Audit firms with material findings (n = 63) | Audit firms with control defects ^a (n = 20) |
|-------------------------------|---|--|---|
| <i>Audit firm level</i> | | | |
| GPP | General policies and procedures | 0.52 | n/a |
| CS | (Control) structure | 0.19 | n/a |
| INT | Integrity | 0.24 | n/a |
| IND | Independence | 0.56 | 0.30 |
| CAR | Client account records | 0.40 | n/a |
| ACC | Acceptance / continuance of audit engagements | 0.44 | 0.05 |
| HR | (Human) resources | 0.10 | n/a |
| CON | Consultation | 0.17 | n/a |
| EQR | Engagement quality control review | 0.83 | 0.75 |
| MIS | Monitoring and internal inspections | 0.63 | n/a |
| DC | Duty of care | 0.25 | n/a |
| <i>Audit engagement level</i> | | | |
| PS | Professional skepticism | 0.17 | 0.75 |
| SAE | Sufficient appropriate audit evidence | 0.76 | 0.10 |
| AT | Audit trail | 0.49 | n/a |
| FRA | Fraud | 0.16 | n/a |

Panel B: Number of weaknesses

| | Audit firms with material findings (n = 63) | Audit firms with control defects ^a (n = 20) |
|--|--|---|
| Average total number of weaknesses | 5.92 | 2.8 |
| Average number of weaknesses at firm level | 4.33 | n/a |
| Average number of weaknesses at engagement level | 1.59 | n/a |

NOTE: This table presents for each quality control weakness (see Exhibit 1) the proportion of audit firms with a negative inspection outcome for which the AFM detected such a weakness during the license inspection process (Panel A) and the average number of quality control weaknesses reported per audit firm with a negative inspection outcome (Panel B).

^a Control defects as summarized by Hermanson and Houston (2008).

See Exhibit 1 for a description of the quality requirements

TABLE 5

Pearson Correlation Coefficients between Weaknesses

(n = 97)

| Weakness^a | GPP | CS | INT | IND | CAR | ACC | HR | CON | EQR | MIS | DC | PS | SAE | AT | FRA |
|-----------------------------|------------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|-----------|-----------|------------|-----------|------------|
| GPP | 1.0000 | | | | | | | | | | | | | | |
| CS | 0.3250** | 1.0000 | | | | | | | | | | | | | |
| INT | 0.4753** | 0.0991 | 1.0000 | | | | | | | | | | | | |
| IND | 0.2308* | 0.1741 | 0.0349 | 1.0000 | | | | | | | | | | | |
| CAR | 0.2734** | 0.2797** | 0.2043* | 0.3916** | 1.0000 | | | | | | | | | | |
| ACC | 0.2629** | 0.2443* | 0.2939** | 0.1846 | 0.2488* | 1.0000 | | | | | | | | | |
| HR | 0.1769 | 0.1635 | 0.0085 | 0.0744 | 0.0444 | 0.1198 | 1.0000 | | | | | | | | |
| CON | 0.2236* | 0.0631 | 0.1168 | 0.2052** | 0.0866 | 0.1309 | -0.0918 | 1.0000 | | | | | | | |
| EQR | 0.4062** | 0.2867** | 0.1120 | 0.4837** | 0.3118** | 0.4101** | 0.2389* | 0.3327** | 1.0000 | | | | | | |
| MIS | 0.2825** | 0.2577* | 0.2209* | 0.4608** | 0.3204** | 0.4831** | 0.2196* | 0.3609** | 0.6533** | 1.0000 | | | | | |
| DC | 0.2672** | 0.1705 | 0.0404 | 0.3602** | 0.2462* | 0.3299** | 0.3471** | 0.1039 | 0.3020** | 0.4177** | 1.0000 | | | | |
| PS | 0.0863 | 0.0631 | 0.1168 | 0.3406** | 0.2353* | 0.1309 | 0.1781 | 0.0772 | 0.1371* | 0.2948** | 0.3667** | 1.0000 | | | |
| SAE | 0.2468* | 0.1918 | 0.1470 | 0.5874** | 0.4068** | 0.3251** | 0.2594* | 0.2963** | 0.5899** | 0.5113** | 0.4491** | 0.3613** | 1.0000 | | |
| AT | 0.3011** | 0.0782 | 0.0126 | 0.3597** | 0.1016 | 0.2465* | 0.2829** | 0.1732 | 0.5046** | 0.3690** | 0.3507** | 0.2430* | 0.4271** | 1.0000 | |
| FRA | -0.0288 | 0.1815 | -0.0512 | 0.0983 | 0.1878 | 0.1581 | 0.1944 | -0.1213 | 0.3154** | 0.2670** | 0.2147* | -0.0143 | 0.2747** | 0.1312 | 1.0000 |

*, ** Significantly correlated at the $\alpha = 0.05$; 0.01 level, respectively (two-tailed)

^a Weaknesses definitions: See Tabel 4 for full names and Exhibit 1 for the description of the quality requirements

TABLE 6
Multivariate regression analysis
(dep.var. = |ATA|)

| Variables ^a | Panel A Public oversight | Panel B Peer review |
|-------------------------|-----------------------------|------------------------|
| PO_FIND | 0.006 (0.005)*** | |
| PR_FIND | | 0.001 (0.593) |
| Size | -0.001 (0.046)** | -0.003 (0.006)*** |
| Leverage | 0.013 (0.012)** | 0.030 (0.000)*** |
| Performance | 0.294 (0.000)*** | 0.285 (0.000)*** |
| Growth | 0.018 (0.009)** | 0.010 (0.041)** |
| Loss dummy | 0.018 (0.000)*** | 0.009 (0.001)*** |
| Constant | 0.018 (0.071)* | 0.024 (0.053)* |
| Fixed effects | Industry/year | Industry/year |
| Observations | 5029 | 4638 |
| Adjusted R ² | 0.252 | 0.206 |
| F-value | 41.81*** | 33.83*** |

NOTE: This table presents the multivariate regression results for equation (2) for the samples with the public oversight body's inspection outcomes (Panel A) and the peer review outcomes (Panel B). The table reports coefficients estimates and p-values based on standard errors corrected for heteroskedasticity and for clustering of observations by company (in parentheses). *, **, *** indicates significantly different from zero at the $\alpha = 0.10$; 0.05; 0.01 level, for two-tailed tests.

^a Variable definitions: |ATA| is the absolute value of abnormal accruals from a variant of the modified Jones model (see equation 1 for details). PO_FIND is an indicator variable equal to one if the Dutch public oversight body's initial inspection outcome is 'material findings'; zero else. PR_FIND is an indicator variable equal to one if the Dutch peer review outcome is 'material findings'; zero else. Size is the natural logarithm of total assets in thousand EUR. Leverage is the ratio of total debt over total assets. |Performance| is the absolute value of the ratio of operating cash flow on lagged total assets. Growth is the percentage of year-to-year growth of sales. Loss dummy is an indicator variable equal to one if the firm reports a loss in the current year; else zero.

TABLE 7
Sensitivity analysis: PIE versus non-PIE audit firms
(dep. var. = |ATA|)

| Variables ^a | Panel A Public oversight – PIE audit firm | Panel B Public oversight – non-PIE audit firm | Panel C Peer review – PIE audit firm | Panel D Peer review – non-PIE audit firm |
|-------------------------|---|--|--|---|
| PO_FIND | 0.005 (0.035)*** | 0.008 (0.029)** | | |
| PR_FIND | | | 0.000 (0.898) | 0.010 (0.238) |
| Size | -0.002 (0.01)** | -0.001 (0.813) | -0.003 (0.007)*** | -0.009 (0.075)* |
| Leverage | 0.010 (0.073)* | 0.044 (0.000)*** | 0.030 (0.000)*** | 0.037 (0.051)* |
| Performance | 0.298 (0.000)*** | 0.221 (0.000)*** | 0.286 (0.000)*** | 0.222 (0.000)*** |
| Growth | 0.018 (0.010)** | 0.008 (0.576) | 0.010 (0.046)** | 0.017 (0.268) |
| Loss dummy | 0.018 (0.000)*** | 0.014 (0.026)** | 0.009 (0.001)*** | 0.006 (0.504) |
| Constant | 0.026 (0.013)** | 0.019 (0.628) | 0.025 (0.050)** | 0.088 (0.107) |
| Fixed effects | Industry/ Year | Industry/ Year | Industry/ Year | Industry/ Year |
| Observations | 4500 | 529 | 4391 | 247 |
| Adjusted R ² | 0.254 | 0.205 | 0.207 | 0.178 |
| F-value | 39.48*** | 5.79*** | 32.20*** | 3.73*** |

NOTE: The table presents the multivariate regression results for equation (2) split by audit firm type. Panel A and B present the results of the regression for all companies audited by an auditor with PIE clients and without PIE clients, respectively, including the public oversight body's inspection outcome. Panel C and D present the results of the regression for all companies audited by an auditor with PIE clients and without PIE clients, respectively, including the peer review outcome. The table reports coefficient estimates and p-values based on standard errors corrected for heteroskedasticity and for clustering of observations by firm (in parentheses). *, **, *** indicates significantly different from zero at the $\alpha = 0.10$; 0.05; 0.01 level, for two-tailed tests.

^a Variable definitions: |ATA| is the absolute value of abnormal accruals from a variant of the modified Jones model (see equation 1 for details). PO_FIND is an indicator variable equal to one if the Dutch public oversight body's initial inspection outcome is 'material findings'; zero else. PR_FIND is an indicator variable equal to one if the Dutch peer review outcome is 'material findings'; zero else. Size is the natural logarithm of total assets in thousand EUR. Leverage is the ratio of total debt over total assets. |Performance| is the absolute value of the ratio of operating cash flow on lagged total assets. Growth is the percentage of year-to-year growth of sales. Loss dummy is an indicator variable equal to one if the firm reports a loss in the current year; else zero.

TABLE 8
Sensitivity analysis: Abnormal working capital accruals
(dep. var. = |AWCA|)

| Variables ^a | Panel A Public oversight | Panel B Peer review |
|-------------------------|-----------------------------|------------------------|
| PO_FIND | 0.009 (0.004)*** | |
| PR_FIND | | 0.001 (0.681) |
| Size | -0.005 (0.000)*** | -0.007 (0.000)*** |
| Leverage | -0.004 (0.628) | 0.002 (0.796) |
| Performance | 0.391 (0.000)*** | 0.383 (0.000)*** |
| Growth | 0.082 (0.000)*** | 0.113 (0.000)*** |
| Loss dummy | 0.030 (0.000)*** | 0.018 (0.000)*** |
| Constant | 0.079 (0.000)*** | 0.098 (0.000)*** |
| Fixed effects | Industry/year | Industry/year |
| Observations | 5029 | 4638 |
| Adjusted R ² | 0.223 | 0.301 |
| F-value | 40.99*** | 44.38*** |

NOTE: This table presents the multivariate regression results for equation (2) for the samples with the public oversight body's inspection outcomes (Panel A) and the peer review outcomes (Panel B) with as dependent variable abnormal working capital accruals. The table reports coefficients estimates and p-values based on standard errors corrected for heteroskedasticity and for clustering of observations by firm (in parentheses). *, **, *** indicates significantly different from zero at the $\alpha = 0.10$; 0.05; 0.01 level, for two-tailed tests.

^a Variable definitions: |AWCA| is the absolute value of abnormal working capital accruals, scaled by lagged total assets. PO_FIND is an indicator variable equal to one if the Dutch public oversight body's initial inspection outcome is 'material findings'; zero else. PR_FIND is an indicator variable equal to one if the Dutch peer review outcome is 'material findings'; zero else. Size is the natural logarithm of total assets in thousand EUR. Leverage is the ratio of total debt over total assets. |Performance| is the absolute value of the ratio of operating cash flow on lagged total assets. Growth is the percentage of year-to-year growth of sales. Loss dummy is an indicator variable equal to one if the firm reports a loss in the current year; else zero.

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