

Audit Firm Governance: Do Transparency Reports Reveal Audit Quality?

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This version: January 2011

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The assistance of Andreas Ehlinger and Benedikt Krantz in this research project is greatly appreciated.

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ABSTRACT: As a result of legal and regulatory requirements, audit firms in certain jurisdictions have recently started issuing transparency reports containing information on audit firm governance. The aim of this paper is to examine if audit firms are currently using transparency reports as a means to signal audit quality to the market. For this purpose, we examine whether the level of disclosure on audit firm governance is associated with actual audit quality. Based on a sample of transparency reports of 103 audit firms in a number of EU countries, we find that there is variation in the extent and type of disclosures across audit firms, but we do not find an association with actual audit quality. Overall, our findings suggest that transparency reports are not merely a fulfillment of minimum legal disclosure requirements on audit firm governance, but that the current disclosure level does not seem to reveal audit quality based on widely used measurable outputs of audit quality.

Keywords: *Corporate governance, audit firm, transparency report.*

Data availability: *All data are available from sources indicated in the paper.*

I. INTRODUCTION

In the aftermath of the high-profile corporate failures in the beginning of the twenty-first century and the recent financial crisis, audit quality has become a top priority for standard-setters, regulators and practitioners, and continues to be an important research topic for academics. One way to promote audit quality would be increased transparency with regard to the governance and professional practices of audit firms, which are known to be rather opaque professional services organizations. As the governance of audit firms is perceived to have a significant influence on audit quality, increased transparency on audit firm governance may enable market participants to differentiate among audit firms, which in turn is expected to provide incentives for audit firms to increase audit quality (IOSCO, 2009). In line with this reasoning, regulators in different jurisdictions have recently required (or are considering requiring) certain audit firms to issue transparency reports containing information on audit firm governance. For example, Directive 2006/43/EC of the European Parliament and Council of 17 May 2006, commonly referred to as the Eighth EU Directive, requires statutory auditors of Public Interest Entities (PIEs)¹ to publish, as of June 2008, annual transparency reports disclosing certain information relating to, for example, legal structure and ownership, governance structure, internal quality control system, quality assurance, education and independence practices, and partner remuneration. In 2008 the U.S. Advisory Committee on the Auditing Profession recommended the PCAOB to expand transparency of audit firms' governance (Bedard et al., 2010).

The underlying motivation of regulators to require audit firms to issue public transparency reports is that increased transparency is expected to reveal audit quality. In this paper, we test

¹ Article 2 (13) of the Eighth EU Directive defines Public Interest Entities as "entities governed by the law of a Member State whose transferable securities are admitted to trading on a regulated market of any Member State within the meaning of point 14 of Article 4(1) of Directive 2004/39/EC".

whether this conjecture holds for transparency reports that are currently issued by audit firms. This is a priori unclear. On the one hand, audit firms may have incentives to use this new legal requirement as an opportunity to be more transparent in order to differentiate themselves from other audit firms by signaling their quality. Insight into quality is somewhat limited and mainly comes down to the reputation of the audit firm as perceived by audit committees, investors, and other stakeholders. Following the economic theory of DeAngelo (1981), large audit firms are likely to deliver higher audit quality than smaller audit firms because of the differential size of the reputation capital that is at stake. Empirical research, especially in a U.S. context, has provided broad support for this theoretical prediction (e.g., Becker et al., 1998). Prior research, however, has also shown that there is variation in audit quality among the Big 4 audit firms, which appears to be a function of the quality of the institutional environment in terms of the level of investor protection and law enforcement (Maijor and Vanstraelen, 2006; Francis and Wang, 2008). Transparency reporting could therefore serve as a more refined publicly available measure for audit quality differentiation than the traditional Big 4/Non-Big 4 dummy variable, and could allow to differentiate among the global audit firm networks. This way, transparency reports could provide a market incentive for audit firms to compete more directly on audit quality, since these reports would give insight into how audit firms manage and compare in terms of audit quality. Audit firm-specific characteristics such as the structure of governance systems, internal quality control systems, and reward systems are believed to have a significant impact on the quality of audit services as provided by a particular audit firm (POB, 2006). Thus, increasing the extent of disclosure on audit firm governance could be used by audit firms as a differentiation strategy and a tool to signal audit quality. On the other hand, given that transparency reports did not voluntarily emerge in the audit market, one could argue that the incentives to do so were, and continue to

be, perceived to be limited. One reason could be that audit firms, while internally assessing and managing audit quality, are not convinced that information about governance and professional practices is meaningful or convenient for public disclosure. Some market participants also expressed concern about the value of disclosures contained in transparency reports as these may be nothing more than marketing promotion for audit firms (IOSCO, 2009). In addition, the reliability of disclosures contained in transparency reports of audit firms is currently not monitored, which may result in misleading or inaccurate disclosures. Hence, whether more disclosure on audit firm governance contained in transparency reports is associated with audit quality is essentially an empirical question, which we address in this paper. We assess the disclosure level using a self-constructed transparency report disclosure score. This score is based on current regulatory requirements, guidance by national oversight bodies, expert opinions, and international standards. A higher transparency report disclosure score means that the audit firm provides more information in its transparency report that may help stakeholders to assess how the audit firm manages and compares in terms of audit quality.

Our analysis is based on transparency reports of 103 audit firms in a number of EU countries (Austria, Germany, the Netherlands and the U.K.). The choice of countries included in the sample was pragmatic as we need to master the language in which the transparency reports are issued, which are Dutch, German and English.²

Our results show that there is variation in the extent and type of disclosures across audit firms. Further, we find that the level of disclosure on audit firm governance contained in audit firm transparency reports is not associated with actual audit quality, based on widely

² We exclude countries that have multiple official languages, such as Switzerland (German, French, Italian and Retho-Romanic) and Belgium (Dutch, French, and German) because transparency reports of the same firm may not reflect the same message in different languages.

used measurable outputs of audit quality. Overall, our findings suggest that transparency reports are not merely a fulfillment of minimum legal disclosure requirements, but that the current disclosure level does not seem to reveal audit quality. To the best of our knowledge, this paper is the first to examine audit firm governance disclosures contained in transparency reports, and whether the disclosure level enables audit quality differentiation among audit firms. Our findings have important policy implications, and the transparency disclosure score that is developed in this study may prove useful for future research in this area.

The remainder of this paper is organized as follows. Section II, describes the background of this study and develops the underlying theory and research questions. Section III outlines the research design including the transparency report disclosure score, empirical models and the sample that is used to test the models. Section IV presents the results of our empirical tests and Section V concludes the study.

II. BACKGROUND AND DEVELOPMENT OF RESEARCH QUESTIONS

High-quality financial reporting is essential for the well-functioning of our economy and for an efficient and effective capital market. A credible and effective audit function plays a key role in determining confidence in that market. The financial scandals that marked the beginning of the new millennium and the recent financial crisis have seriously affected public confidence in audited financial statements. This has caused regulators to examine more closely the reliability of public company financial statements, including improvement of audit quality and the organization and management of professional human resources that serve the audit market (IOSCO, 2009). Trust in the auditing profession is a prerequisite for an audit to have value, and the functioning of the audit market depends on the confidence that investors and other stakeholders have in the audit function. Transparency of audit firms is expected to

play an important role in promoting confidence in the audit function. This expectation is consistent with the theoretical prediction and empirical evidence that transparent financial reporting is important for an efficient allocation of resources within the capital market (e.g., Francis et al., 2009). Hence, audit regulators as well as audit professionals (e.g., Wyman, 2004) have argued that greater audit firm transparency (in terms of for example audit policies, processes and methodologies, management and governance, and revenues) should bolster confidence in audit quality. In order to increase transparency of audit firms, regulators in a number of jurisdictions now require, or are considering requiring, audit firms to issue a transparency report. In this regard, the EU can be considered as a front-runner. In particular, the EU Eighth Directive contains Article 40 on transparency reports, which requires disclosures on audit firm governance from audit firms with PIE clients.³ Given that EU member states have a certain level of discretion in implementing Article 40, this has resulted in variation in national laws on transparency reporting in terms of for example the extent of required disclosures and the types of organizations that have a PIE status. For example, the U.K. recently released a new governance code for audit firms which will complement related provisions in the Eighth Directive (ICAEW, 2010). The CPA Act in Japan, in force since 2008, has requirements similar to those contained in Article 40 of the EU Directive. Other countries require some transparency disclosure, but to a lesser extent. For example, the Canadian public audit oversight body requires certain audit firms to disclose *non-public* quality control reports, and publishes a public profile of these firms on its website (IOSCO, 2009). In October 2008 the Advisory Committee on the Auditing Profession in the U.S. recommended the PCAOB to require certain audit firms to produce a public annual report including information required by Article 40 of the Eighth Directive, as well as indicators of

³ See Section III, Transparency Report Disclosure Score, for details on the disclosure items that need to be reported.

audit quality and effectiveness as determined by the PCAOB (IOSCO, 2009). As of yet, the PCAOB has not taken a decision in this regard, and the current rules are the ones released in June 2008 by the PCAOB on periodic reporting by registered public accounting firms.

Thus, there appear to be some differences in the speed of development of transparency disclosure requirements across jurisdictions. Bedard et al. (2010) argue that the pace of change in the U.S. on this issue is slow because it is highly controversial and subject to much debate. Based on the PCAOB's Standing Advisory Group meeting (October 2008), Bedard et al. (2010) conclude that the three main difficulties in adopting audit quality reporting are that: (1) there appears to be no common definition of audit quality; (2) there is no consensus on what adequate indicators of audit quality would be; and (3) public disclosures of audit quality indicators may have possible unintended consequences. Despite the controversy, Deloitte LLP was the first global network in the U.S. to publish a report in 2010 entitled "Advancing quality through transparency" containing information on for example governance, ethical principles, independence, quality controls and legal structure.

Prior research on transparency reporting is very limited. A notable exception is the study by Pott et al. (2008), investigating how practitioners assess the effectiveness of several aspects of transparency reporting in improving auditor independence. The results indicate that there is no significant perceived difference in effectiveness based on whether the transparency report is mandatory or voluntary, or whether it is audited or not. Petersen and Zwirner (2009) examined a sample of transparency reports of German audit firms, finding that the extent of disclosures varies across firms and is positively correlated with the number of PIE clients. In the Netherlands, Pheijffer (2010) studied the transparency reports of the Big 4 audit firms. He concluded that the Dutch Big 4 audit firms meet the minimum legal disclosure requirements, but that these disclosures are not very informative. Similarly, the Dutch professional

organization of auditors concluded that transparency reports of Dutch audit firms contain extensive information about the design of systems of quality assurance but not much information about the functioning of these systems, which could significantly improve the informational value of transparency reports (NIVRA, 2010). Further, it was concluded that the readability of the reports could be improved and that the use of boilerplate language should be avoided. The chairman of the Dutch professional organization of auditors, Ruud Dekkers, stated that transparency reports should be more than just compliance documents, and that audit firms should use this opportunity to better communicate with its stakeholders and society at large (Nierop, 2010). Besides academics and the audit profession, some public oversight bodies have also published reports on the extent and type of disclosures in transparency reports. Examples are the two reports issued by the Professional Oversight Board (POB) of the U.K. Financial Reporting Council (FRC) (POB, 2008; 2010). In its most recent report, the POB concludes that there is improvement in the quality of transparency reports, and that “in general firms have resisted the temptation to turn their transparency reports into marketing documents” (POB, 2010, p.2). At the same time, there is “limited evidence of firms attempting to distinguish between themselves, and hence compete, on quality” (POB, 2010, p.2). The report further notes that many audit firms give a high-quality description of their internal quality control and other systems in place. However, no audit firm provides any objective measures demonstrating the effectiveness of those systems, which the POB therefore recommends audit firms to do in the future. Finally, the POB notes that it would like to see improvement in the quality of disclosures relating to international networks, independence issues and financial information.

Following economic theory, audit firms will assess the costs and benefits of the disclosure level in transparency reports. It can be expected that the outcome of this cost/benefit analysis

differs across audit firms due to specific audit firm characteristics. Disclosure costs are likely to be higher for smaller audit firms or firms with fewer PIE clients. In terms of benefits, enhanced transparency of audit firms may increase investor confidence in the financial reporting of its clients. This is to the benefit of both the client company (e.g., lower risk premium) and the auditor (e.g., positive influence on audit committee decisions on auditor appointment and shareholder ratification of auditor selection). In this paper we examine whether transparency reports are used as a differentiation strategy and a tool to signal audit quality, or whether they are merely a fulfillment of minimum legal requirements. The outcome is a priori unclear. Given that transparency reports did not voluntarily emerge in the audit market, it could be argued that the incentives to do so were, and continue to be, perceived to be limited. Alternatively, one could argue that in a setting where transparency reports become mandatory, this is likely to create new incentives for audit firms, whereby high quality audit firms may want to signal their high quality status to the market and therefore can be expected to report in a more transparent way.

The reporting requirements on audit firm governance stipulated in Article 40 of the EU Directive leave considerable reporting discretion for audit firms. For example, an audit firm may choose to provide a detailed description of its systems and procedures in place and the functioning of these systems and procedures, or alternatively may limit itself to a mere compliance check with legal requirements, such as statements confirming that certain policies or procedures exist and/or comply with laws and regulations. Disclosure in transparency reports, and particularly voluntary disclosures over and above minimum requirements, can therefore be seen as an investment of audit firms in their reputation, credibility, and ultimately the audit quality that they provide. This leads us to the central question of this paper: Does the disclosure level in transparency reports enable audit quality differentiation among audit firms?

The answer to this question can only be affirmative when two conditions are met. First, there needs to be variation in the extent and type of disclosures contained in transparency reports of audit firms. Second, the observed variation in the disclosure level has to be a signal of the underlying audit quality delivered by the firm. Therefore, we formulate the following two research questions:

RQ1: Is there variation in the extent and type of disclosures contained in audit firm transparency reports?

RQ2: Are the extent and type of disclosures contained in audit firm transparency reports associated with actual audit quality?

As mentioned, the underlying argument of regulators is that as measures of audit quality become transparent to the public, audit firms could compare performance on these measures against their competitors, which may create incentives to 'be the best', and encourage audit firms to adopt sound governance practices (Carcello, Bedard and Hermanson, 2009). This way, increased transparency of audit firms is expected to spur competition in the audit market, which may ultimately result in improvement of audit quality. Some argue that it may also alleviate concerns raised on audit market concentration (IOSCO, 2009). The effect of enhanced transparency on the availability of audit services and auditor choice may, however, be limited if stakeholders continue to select one of the large firms due to existing relationships or because of the reputation of these firms. Furthermore, it is likely that disclosure costs will be higher for smaller audit firms. In any event, the objective of transparency reporting is for more transparency to lead, in principle, to more informed decisions by stakeholders, including audit firms.

III. RESEARCH DESIGN

Transparency Report Disclosure Score

In order to measure the level of disclosure in transparency reports, we develop a detailed transparency report disclosure score⁴ *TRDS*. The objective of *TRDS* is to measure the extent and type of information that audit firms provide in their transparency report that may help stakeholders to assess how audit firms manage and compare in terms of audit quality. *TRDS* was obtained in several steps, following a process similar to other disclosure studies.

The first step was to identify the disclosure items to be included in the score. Following Article 40 (titled “Transparency Report”) of the Eighth EU Directive, we include ten broad items: (a) A description of the legal structure and ownership; (b) Where the audit firm belongs to a network, a description of the network and the legal and structural arrangement in the network; (c) A description of the governance structure of the audit firm; (d) A description of the internal quality control system of the audit firm and a statement by the administrative or management body on the effectiveness of its functioning; (e) An indication of when the last quality assurance review took place; (f) A list of public interest entities for which the audit firm has carried out statutory audits during the preceding financial year; (g) A statement concerning the audit firm’s independence practices, which also confirms that an internal review of independence compliance has been conducted; (h) A statement on the policy followed by the audit firm concerning the continuing education of statutory auditors; (i) Financial information showing the importance of the audit firm; and (j) Information concerning the basis for the partners’ remuneration. These items, as well as the more detailed elements that each item is composed of, are listed in Appendix A. The ten broad items

⁴ The disclosure instrument makes use of insights from Ehlinger (2010).

basically function as a minimum requirement for transparency reports. The Directive does not make detailed prescriptions about what information should be disclosed in each category, thereby giving audit firms considerable discretion in the type and extent of information that they can provide. The detailed elements that each item is composed of are based on guidance by national oversight bodies, expert opinions, and international standards (e.g., IFAC's International Standard on Quality Control 1 and Code of Ethics for Professional Accountants, see IFAC, 2009; 2010), as well as an initial review of transparency reports. Given these recommendations, a higher *TRDS* implies higher quality of disclosure.

Item (a) through (c) broadly relate to the structure, network, management and governance of audit firms. According to the IOSCO consultation report (2009), disclosures related to these arrangements may allow stakeholders to evaluate and compare how audit firms manage audit quality. For example, the design of a network may have an impact on audit quality by fostering consistency in audits conducted by members of a network. Consequently, disclosure of network arrangements like common quality control systems, shared audit methods, or common use of professional resources can be relevant for stakeholders in evaluating audit quality. Item (d) relates to internal quality control systems. The way in which audit firms implement and monitor these systems can directly affect audit quality. Hence, disclosures on internal quality control systems can be relevant for stakeholders in evaluating audit quality (IOSCO, 2009). Item (e) concerns independent quality assurance reviews. Like internal quality control systems, independent quality assurance reviews can directly influence audit quality. Moreover, disclosures on the outcome of quality assurance reviews resemble an output measure of audit quality that may inform stakeholders. Item (f) requires information on clients that are public interest entities. Arguably, such information can inform stakeholders about the nature and size of the client portfolio, thereby

providing them with a better context to judge other audit quality related disclosures. Item (g) and (h) are about policies and procedures relating to continuing education and independence, respectively. As both can directly affect audit quality, disclosure on these issues may be relevant for stakeholders in evaluating audit quality. Item (i) demands providing certain financial information. Such information may help stakeholders to better understand relevant strengths and potential conflicts of interest (IOSCO, 2009). Finally, item (j) concerns the basis for partners' remuneration. Compensation policies and procedures may create incentives for certain behavior that affects audit quality (IOSCO, 2009). Therefore, information about partners' remuneration is considered potentially useful for stakeholders in assessing audit quality.

The second step in developing *TDRS* was to examine the transparency reports for the presence or absence of all elements pertaining to the disclosure items. Besides coding the presence or absence of each element, we evaluated for each element whether it is applicable to a particular audit firm. For example, a statement about the nature of deficiencies discovered during the last quality assurance review is only considered to be applicable if the firm reports that any deficiencies were discovered. Next, we calculated for each disclosure item a disclosure score by dividing the number of elements disclosed on each item by the number of applicable elements. In this way we obtain ten sub-scores ranging from 0 (no disclosure) to 1 (full disclosure) for item (a) through (j). We label these *Score_A* through *Score_J*.

The third step in developing *TDRS* was to examine the dimensionality of the disclosure items. An underlying assumption and requirement for a composite score is that the items that the score is composed of are unidimensional. In order to identify latent dimensions in the items, we apply exploratory common factor analysis with Maximum Likelihood (ML)

extraction.⁵ Based on the eigenvalues-greater-than-1 rule, a scree test, and model fit measures, we retain one factor in the main analysis. The results of the exploratory factor analysis are shown in Table 1 below.

[Table 1 here]

The retained factor is labeled “transparency report disclosure level”, has an eigenvalue of 2.59, and explains about 26% of the variance of the ten items. Seven out of ten items load significantly on the construct with loadings larger than 0.5. Bartlett's test of sphericity and The Kaiser-Meyer-Olkin measure of sampling adequacy confirm that factor analysis is appropriate for our data.⁶ Given the results of the exploratory factor analysis, *TRDS* is calculated by taking the average score of the items that load significantly on the retained factor. Item (b), item (e), and item (i) do not load significantly, and are therefore excluded from the score. In our sensitivity analysis, we test several alternatives to *TRDS*.

The final step in developing *TRDS* is assessing the reliability of the score. For this purpose we calculate Cronbach’s alpha measure of internal consistency. The value of 0.78 indicates adequate reliability.⁷

Empirical Models

To answer our research questions, we define two empirical models: (1) A model that allows us to examine whether there is variation in the extent and type of disclosure contained in audit firm transparency reports; and (2) A model that helps us to assess whether the disclosure level contained in audit firm transparency reports is associated with actual audit quality. In the first

⁵ The resulting factors are therefore only based on the shared variance among the items. We consider common factor analysis theoretically more appropriate than principal component analysis, because the objective of our factor analysis is to identify latent dimensions. Moreover we lack knowledge about the amount of specific and error variance in the items. Examination of the distribution of the items indicates that the ML extraction method is appropriate.

⁶ Bartlett's test of sphericity is strongly significant. The Kaiser-Meyer-Olkin measure of sampling adequacy is 0.72, which can be interpreted as “middling”.

⁷ Nunnally (1978) suggests that a value of at least 0.70 indicates adequate reliability.

model we relate transparency disclosure to a number of audit firm characteristics. We proxy for audit firm transparency disclosure by means of the transparency report disclosure score (*TRDS*) discussed above. In the second model we relate audit quality to this same transparency report disclosure score, as well as a number of control variables. In our main analysis, we measure actual audit quality by abnormal accounting accruals as a proxy for the extent of client earnings management. The extent of client earnings management, and especially the abnormal accounting accruals proxy, is widely used to infer differences in audit quality (e.g., Becker et al., 1998; Carey and Simnett, 2006; Francis and Wang, 2008). The underlying premise for the use of this proxy is that, “all things being equal, earnings with relatively larger amounts of accruals are presumed to be inherently less reliable and more likely to be the result of opportunistic discretion by managers in applying accrual-based accounting” (Francis et al., 2009), and that higher quality auditing will be reflected in less earnings management and therefore lower abnormal accounting accruals (Becker et al. 1998). Both our models are discussed in more detail below.

Transparency Report Disclosure Model

Before examining to what extent *TRDS* is associated with a measurable output of audit quality on the engagement-level (i.e., our proxy for client earnings-management), we explore the determinants of *TRDS* at the audit firm-level. Our model is specified as follows:

$$TRDS = \alpha_0 + \alpha_1 REV + \alpha_2 BIG4 + \alpha_3 NETW + \alpha_4 UK + \alpha_5 NL + \alpha_6 AT + \alpha_7 FIRST + \varepsilon \quad (1)$$

We consider two variables that are related to audit firm size: the natural logarithm of total revenues of an audit firm as reported in its transparency report (*REV*), and a dummy variable with a value of one if an audit firm is a Big 4 auditor (*BIG4*), and zero otherwise.⁸ As argued

⁸ In a sensitivity test we additionally examine the number of PIE-clients as a measure of audit firm size.

before, smaller audit firms face relatively higher information production costs. Additionally, benefits of disclosure may be relatively low for smaller audit firms because their disclosures are of interest to fewer stakeholders. Compared to larger audit firms, smaller firms are also subject to more lenient regulations in general and less public scrutiny. Next to audit firm size, we examine whether audit firm network membership is associated with *TRDS*. To the extent that network member firms have common standards regarding internal quality control, and shared audit methods and professional resources that potentially lead to higher audit quality, they may want to signal this to stakeholders by providing more disclosure. We define *NETW* as a dummy variable that has a value of one if an audit firm reports that it belongs to a network, based on the definition of the IFAC Code of Ethics (IFAC 2010) and the Eighth EU Directive, and zero otherwise. To test for differences in *TRDS* as a result of differences in national disclosure requirements, we include three dummy variables for the U.K. (*UK*), the Netherlands (*NL*) and Austria (*AT*). Due to more extensive disclosure guidelines in Germany, we expect that the extent of reporting will be higher in this country compared to the U.K., the Netherlands, and Austria. Finally, we include a dummy variable *FIRST* in our model with a value of one if the examined transparency report is the first report that is issued by the audit firm, and zero otherwise. Expectedly, *TRDS* is lower in the first year due to the fact that audit firms lack experience and also because information production costs may be relatively high in the first year of reporting compared to later years.

Earnings Management Model

Consistent with prior studies (e.g., Becker et al., 1998; and Francis and Yu, 2009), we use the extent of client firm earnings management as a proxy for audit quality in the main analysis, and run the following earnings management model to test whether disclosures contained in audit firm transparency reports are associated with actual audit quality:

$$\begin{aligned}
|AWCA| = & \beta_0 + \beta_1 TRDS + \beta_2 BIG4 + \beta_3 LNSIZE + \beta_4 GROWTH + \beta_5 /OCF| + \beta_6 LEV \\
& + \beta_7 LOSS + \beta_8 STD_SALES + \beta_9 STD_CF + \beta_{10} - \beta_{12} COUNTRY \\
& + \beta_{13} - \beta_{19} INDUSTRY + \varepsilon
\end{aligned} \tag{2}$$

The dependent variable $|AWCA|$ is the level (absolute value) of client firms' abnormal working capital accruals, scaled by lagged total assets, and is our measure of the extent of client firms' earnings management.⁹ We focus on abnormal working capital accruals because those are more likely to be managed than non-working capital accruals (e.g., DeFond and Jiambalvo, 1994). Abnormal working capital accruals are computed as the difference between actual and expected non-cash working capital, where expected working capital is a fixed proportion of sales (DeFond and Park, 2001):

$$AWCA_t = WC_t - [(WC_{t-1}/Sales_{t-1}) * Sales_t] \tag{3}$$

where WC = non-cash working capital = (Current Accruals – Cash) – (Current Liabilities – Short Term Debt). The abnormal working capital accruals model based on DeFond and Park (2001) is commonly used in studies relating to European and other non-U.S. countries (e.g. Carey and Simnett, 2006; Francis and Wang, 2008). Subsequently, the abnormal working capital accruals are scaled by lagged total assets. In our tests, we use the absolute value of abnormal working capital accruals because firms may have incentives to manage earnings either upward or downward (e.g., Menon and Williams, 2004; Francis and Yu, 2009; Prawitt et al. 2009).¹⁰

⁹ As discussed in Section IV, in sensitivity analyses we reran all tests using two alternative measures of abnormal total accruals: a measure based on the performance-adjusted Jones model (Jones, 1991; Francis and Yu, 2009,) and a measure based on Francis and Wang (2008).

¹⁰ As a sensitivity check, we also estimated the model on the positive and negative abnormal working capital accruals subsamples separately and with signed abnormal accruals as the dependent variable (see below).

Our test variable in the earnings management model (Equation (2)) is *TRDS*, the transparency report disclosure score discussed in Section III. If disclosures contained in audit firm transparency reports are associated with actual audit quality we should see a significant and negative coefficient on the test variable. Our control variables include measures of audit firm size (*BIG4*), client size (*LNSIZE*), client sales growth (*GROWTH*), client cash flow performance (*/OCF/*), client leverage (*LEV*), client earnings performance (*LOSS*), client sales and cash flow volatility (*STD_SALES* and *STD_CF*), and client country (*COUNTRY*) and client industry (*INDUSTRY*) dummies. We include *BIG4* because prior studies have documented a negative association between audit firm size and discretionary accruals (e.g. Becker et al. 1998). *LNSIZE*, measured as the natural logarithm of total assets, is included because Menon and Williams (2004) report a negative relationship between absolute abnormal accruals and firm size. *GROWTH*, measured as the one-year growth in sales, is included to control for the positive relationship between sales growth and abnormal accruals (e.g., Menon and Williams, 2004; Francis and Yu, 2009). */OCF/* is included to control for the fact that tests of earnings management may be misspecified in samples with extreme financial performance (Dechow et al., 1995). Since abnormal accruals are negatively related to cash flow from operations (e.g., Menon and Williams, 2004; Francis and Wang, 2008; Francis and Yu, 2009), we expect a positive relationship between the *absolute* values of abnormal accruals and the *absolute* values of cash flow from operations. *LEV* is measured as total debt over total assets. On the one hand, firms with high leverage may have incentives to increase earnings upward to avoid debt covenant violations (e.g., DeFond and Jiambalvo, 1994; Becker et al., 1998). On the other hand, those firms may have incentives to reduce earnings for contractual renegotiations (e.g., DeAngelo et al., 1994; Becker et al., 1998). Consistent with the findings of Prawitt et al. (2009), we expect that absolute abnormal accruals are positively related to

LEV_LOSS is a dummy which takes a value of one if current and prior-year net income before extraordinary items is below zero, and zero otherwise. While some argue that loss firms have less incentives to manage earnings (e.g., Francis and Yu, 2009), others argue and find that especially those firms have increased incentives to manage earnings (e.g., Prawitt et al., 2009). Therefore, we do not predict a coefficient on *LOSS*. Following Francis and Yu (2009) we also include *STD_SALES* and *STD_CF* as controls. *STD_SALES* (*STD_CF*) is computed as the standard deviation of sales (cash flow from operations) for the most recent three years. We have no specific expectations regarding the relationship between *STD_SALES* and *AWCA*. Following Francis and Yu (2009) we expect a positive sign on *STD_CF* because some prior studies report a positive association between cash flow volatility and accruals (e.g., Doyle et al., 2007; Hribar and Nichols 2007). Finally, we include country and industry dummies to control for potential systematic differences in absolute abnormal accruals across countries and industries.

Sample and Data Collection

To conduct our empirical tests we need data on both audit firm transparency disclosures and client firm characteristics. We obtained our audit firm transparency data from public transparency reports issued by audit firms. We collected data on client firm characteristics from the Worldscope database, supplemented by data that are hand-collected from company financial reports. Our final sample is a cross-section of our audit firm sample and our client firm sample.

We have collected audit firm transparency reports issued in four EU countries: Austria, Germany, the Netherlands and the U.K. Language barriers prevented us from

increasing the number of countries in our sample.¹¹ We note that in the U.S. there is currently no requirement on transparency reporting. Our starting point for collecting the reports are the listings of PIE auditors obtained from the respective audit firm oversight bodies in our sample countries.¹² We then located transparency reports for the financial year 2008 for the audit firms on those listings via the websites of the audit firms, from the public oversight bodies, and – in rare occasions – via emails to audit firms.

We collected information on publicly listed client firms in the same four EU countries from the Worldscope database. Because auditor identity information was missing for a number of clients we hand-collected this information from these firms' financial reports. We have explicitly excluded clients in the utilities and financial industries due to the difficulty of estimating abnormal accruals for these industries (e.g., Francis and Yu, 2009).

Combining our two samples resulted in a final sample of 103 audit firms and 1,373 client firms for which all data required for our analyses are available. Table 2 below shows the country distribution (both audit and client firms) and industry distribution (client firms only) for our final sample.

[Table 2 here]

As the table shows, the majority of our audit firm sample is from Germany (69%), followed by the U.K. (20%), The Netherlands (7%), and Austria (4%). The majority of our client firms is from the U.K. (64%), followed by Germany (30%), The Netherlands (5%), and Austria (1%). Most of these client firms are from the manufacturing (42%) and services (34%)

¹¹ As indicated earlier in footnote 2, we also exclude countries that have multiple official languages.

¹² In Austria, this is the Austrian Audit Quality Control Oversight Board (Qualitätskontrollbehörde für Abschlussprüfer und Prüfungsgesellschaften) of the Federal Ministry of Economics and Labour (Bundesministerium für Wirtschaft, Familie und Jugend); in Germany the Chamber of Public Accountants (Wirtschaftsprüferkammer); in the Netherlands the Authority of Financial Markets (Autoriteit Financiële Markten), and in the U.K. the Public Oversight Board of the Financial Reporting Council.

industries, followed at some distance by trade (13%) and mining and construction (10%). Few clients in our sample are in the agriculture, forestry and fishing industry (1%) and in public services (0.1%).

IV. RESULTS

Descriptive Statistics

Transparency Report Disclosures

Table 3 displays the descriptive statistics for all variables in the transparency reporting model. Overall, audit firms meet the minimum legal disclosure requirements. However, the descriptive statistics of *TRDS* indicate that there is considerable variation in the level of disclosure in the transparency report by the audit firms in the sample. Values of *TRDS* range from 0.18 to 0.78, and the standard deviation of *TRDS* is 0.14.¹³ Untabulated results show that there is also substantial variation in the values of *Score_A* through to *Score_J*.

[Table 3 here]

Table 4 presents the pair-wise correlations among all variables in our transparency reporting model. The first column provides a univariate test for the association between *TRDS* and the explanatory variables in the model. Providing preliminary support for some of our expectations, *TRDS* is significantly negatively associated with *UK* ($p < 0.01$), *NL* ($p < 0.05$), and *FIRST* ($p < 0.01$).

[Table 4 here]

¹³ When we partition the sample into Big 4 ($n=18$) and non-Big 4 audit firms ($n=85$), we find that the mean (standard deviation) of *TRDS* is 0.51 (0.10) and 0.53 (0.15), respectively (not reported in the table). Hence, there is also considerable variation in *TRDS* within these groups of audit firms. A mean-comparison test shows that the mean value of *TRDS* is not significantly different between Big 4 and non-Big 4 audit firms. A variance-comparison test indicates that the variance of *TRDS* in the group of Big 4 audit firms is lower than the variance of *TRDS* in the group of non-Big 4 audit firms ($p < 0.05$).

Earnings Management Model Descriptives

Table 5 below reports summary statistics of the variables used in the earnings management model. Following Francis and Yu (2009), signed abnormal working capital accruals are winsorized at -0.999 and 0.999. The mean (median) value of absolute abnormal working capital accruals (*/AWCA/*) amounts to 8.94 (4.19) percent of lagged total assets. The fact that the average value of abnormal accruals is higher than the median is consistent with prior work (see, for example, Francis and Yu (2009)).¹⁴ The average (median) transparency report disclosure score (*TRDS*) is 0.5142 (0.5117). About 63.7 percent of the client firms in the sample is audited by a Big 4 auditor, and the mean (median) client size (*SIZE*) amounts to €1,184,481,000 (€101,870,500). On average, client firm sales grow (*GROWTH*) by 20.76 percent. The sales growth rate of the median client firm is about half of the average sales growth rate, and amounts to 10.5 percent. On average, client firms report an absolute value of cash flow from operations (*/OCF/*) that amounts to 14.82 percent of lagged total assets. The value for the median firm is lower at 9.94 percent. The average (median) leverage (*LEV*) is 20.52 (16.45) percent. This indicates that, on average, 20.52 percent of client firm total assets are financed with debt, while this is a little less for the median firm at 16.45 percent. Further, 20.17 percent of the client firms in the sample report a loss (*LOSS*) in the year under study (2008) and the preceding year (2007). The mean (median) volatility in sales (*STD_SALES*) is 0.1944 (0.1069), and the mean (median) volatility in cash flow from operations (*STD_OCF*) is 0.0806 (0.0450).

[Table 5 here]

¹⁴ Note that in comparison to the abnormal accrual values reported by Francis and Yu (2009), the average and median values reported in this study are smaller. A potential explanation is that we focus on abnormal *working capital* accruals instead of *total* accruals.

Table 6 reports the correlation matrix for the variables used in the earnings management model. This matrix shows that the transparency report disclosure score (*TRDS*) is significantly and negatively correlated with (the absolute value of) abnormal working capital accruals (*/AWCA/*), which would initially suggest that *TRDS* reveals actual audit quality. Consistent with expectations and prior research, */AWCA/* are significantly and negatively correlated with audit firm size (*BIG4*) and client firm size (*LNSIZE*), and are significantly and positively correlated with client firm growth (*GROWTH*), the absolute value of cash flow from operations scaled by lagged total assets (*/OCF/*), and volatility in sales (*STD_SALES*). Further, Table 6 shows that */AWCA/* are significantly and positively correlated with reporting a negative income from extraordinary items in the year under study and previous year (*LOSS*), and with more volatility in operating cash flows (*STD_OCF*).

[Table 6 here]

Transparency Report Disclosure Model

Table 7 below shows the results of our multivariate analysis of the transparency reporting model using OLS and White's corrected standard errors. The model is significant ($p < 0.01$) and has good explanatory power (adjusted R^2 of 68.55%). Additional tests for multicollinearity give no indication of any potential harmful effects on the results. While we find no significant association between *TRDS* and *BIG4*, the results show that *TRDS* is significantly positively associated with *REV* ($p < 0.01$). We interpret this as evidence that larger audit firms are more transparent than smaller audit firms, in line with our expectation. Also in line with our expectation, the results indicate that the disclosure level in Germany is significantly higher than in the U.K. ($p < 0.01$), the Netherlands ($p < 0.01$), and Austria ($p < 0.01$). The negative association between *TRDS* and *FIRST* ($p < 0.01$) confirms our

expectation that the extent of reporting is lower in the first year of reporting. In contrast to our expectation, *NETW* is not significantly associated with *TRDS*.

[Table 7 here]

Earnings Management Model

Table 8 reports the estimation results of the earnings management model using OLS and White's corrected standard errors. The model is significant (at $p < 0.01$) and has an adjusted R^2 of 27.13%. Tests suggest that multicollinearity does not affect our results. Unlike the univariate results reported in the correlation matrix (Table 6), Table 8 shows that the test variable *TRDS* is not significant once we control for other factors that may influence abnormal working capital accruals. Hence, we find no statistical support for an association between the transparency report disclosure score and the level of abnormal accruals of the clients in the audit firms' portfolios. In line with prior research, most control variables (*BIG4*, *SIZE*, *GROWTH*, $|OCF|$, *LOSS*, and *STD_SALES*) are significant with coefficients in the predicted direction. However, some control variables (*LEV*, *STD_OCF*) are not significant at conventional levels. We do not observe significant differences in abnormal working capital accruals across our sample countries.

[Table 8 here]

Sensitivity Analyses

Transparency Report Disclosure Model

To test the robustness of the results of the multivariate analysis of the transparency reporting model reported in Table 7, we performed several sensitivity tests. First, substituting *TRDS* by

alternative transparency report disclosure scores, *ATRDS1* and *ATRDS2*,¹⁵ leads to identical conclusions for all explanatory variables. Second, the findings for *REV* are robust to excluding revenues from non-audit services from the measure (i.e., calculating *REV* as the natural logarithm of revenues of audit services only). Third, when we estimate the transparency reporting model for a subsample of Big 4 audit firms (n=18) and Non-Big 4 audit firms (n=85), the coefficient for *REV* is positive and significant in both subsamples. Further, the coefficients for *UK*, *NL*, *AT* and *FIRST* are negative and significant in both subsamples. Fourth, when we substitute the variable *REV* in the transparency reporting model by a variable measuring the number of PIE clients, we find a significant positive association between this alternative measure of audit firm size and *TRDS*. Fourth, when we substitute the variable *BIG4* in the model by a dummy variable that takes the value one if the audit firm is a member of one of the six global audit firm networks,¹⁶ the association this variable and *TRDS* is not significant either. Fifth, when we replace *BIG4* and *NETW* by a one three-level ordered variable that takes the value 0 if the audit firm does not belong to a network, 1 if the audit firm belongs to a non-global network, and 2 if the audit firm belongs to a global network, we find no association between *TRDS* and this variable. Six, when we exclude *REV* from the transparency reporting model, the coefficients for *BIG4* and *NETW* remain insignificant. Thus our results reported in Table 7 appear to be robust to alternative specifications.

¹⁵ Based on the factor analysis reported in Table 1 in Section III, *ATRDS1* is the calculated factor score for each audit firm in the sample. *ATRDS2* is the average score of all ten disclosure items. The Pearson correlation is 0.99 between *TRDS* and *ATRDS1*, and 0.90 between *TRDS* and *TRDS2*.

¹⁶ We define global audit firm networks in the same way as Carson (2009): Deloitte & Touche, Ernst & Young, KPMG, PricewaterhouseCoopers, BDO, and Grant Thornton. These are the "... 'founding members' under the Constitution of the Forum of Firms, which operates as the Transnational Auditors Committee of IFAC. (...) This group of firms also represent the founding members of the Global Public Policy Symposium and the CEOs of these firms presented joint statements on recommendations for change in auditing and financial reporting standards (DiPiazza et al., 2006)" (Carson, 2009).

Earnings Management Model

We also performed sensitivity analyses to test the robustness of reported results for our earnings management model. First, we ran the earnings management model (Equation (2)) using two alternative measures of abnormal accruals, i.e. a measure of abnormal total accruals based on the performance-adjusted Jones model¹⁷ (Francis and Yu, 2009) and a measure of abnormal total accruals based on Francis and Wang (2008). The results (not reported) are qualitatively similar to our main results reported in Table 9.

Second, we estimated our earnings management model for various subsamples: a subsample of clients from audit firms that belong to global audit firm networks; a subsample of clients audited by firms that do not belong to global audit firm networks; a subsample of clients audited by Big 4 audit firms; a subsample of clients audited by Non-Big 4 auditors; and a subsample of client-firm observations audited by audit firms for which their 2008 transparency report is not their first transparency report. For all subsamples our results are similar to our main results: our transparency disclosure score *TRDS* is not significant.

Third, we tested our earnings management model on country subsamples separately. We were unable to estimate the model for client firms in Austria because this subsample is too small with only 16 observations. Again, the estimated coefficient on the transparency disclosure score *TRDS* is not significant.

¹⁷ Using this method, the abnormal part of total accruals is estimated as the residual of the following performance-adjusted Jones model, estimated using ordinary least squares (OLS), for each two-digit industry(SIC)-year combination in the full Worldscope sample (Jones 1991, Francis and Yu 2009):

$$TAC = \gamma_0 + \gamma_1 \Delta REV + \gamma_2 GPPE + \gamma_3 NI + \varepsilon \quad (4)$$

where *TAC* = total accruals, measured as non-cash working capital accruals minus depreciation; *ΔREV* = change in sales revenues; *GPPE* = gross property, plant and equipment; and *NI* = net income before extraordinary items. Non-cash working capital accruals are computed as $(\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD)$, where ΔCA = change in current assets from year t-1 to year t; $\Delta Cash$ = change in cash from year t-1 to year t; ΔCL = change in current liabilities from year t-1 to year t; and ΔSTD = change in short-term debt from year t-1 to year t. All variables are scaled by lagged total assets. This model extends the traditional Jones model (Jones 1991) with a performance measure to control for the potential misspecification of tests using accruals from the traditional Jones model in samples with extreme financial performance (Dechow et al. 1995, Kothari et al. 2005).

Fourth, we estimated our earnings management model with *ATRDS1* and *ATRDS2*. Consistent with our main results, the estimated coefficients on these alternative transparency report disclosure scores are not significant.

Fifth, we examined whether specific transparency disclosure items are associated with audit quality. To this end, we replaced our test variable, first, by the scores for specific disclosure items *Score_A* through *Score_J* discussed in Section III individually; next, by *TRDS* together with *Score_B*, *Score_E*, and *Score_I* (i.e. those items that do not load on the factor derived from the factor analysis discussed in Section III) simultaneously; and finally by an internal quality control score (*IQCS*).¹⁸ Panels A, B, and C in Table 9 below show the estimated coefficients on these alternative tests. None of the estimated coefficients are significant, which is in line with our main results.

[Table 9 here]

As a final sensitivity analysis we use audit fees as a measure of audit quality, and include our test variable *TRDS* in an audit fee model.¹⁹ The audit fee literature, initiated by Simunic (1980) and meta-analyzed by Hay, Knechel and Wong (2006), argues that “a higher audit fee implies higher audit quality, *ceteris paribus*, either through more audit effort (more hours) or

¹⁸ Our use of *IQCS* as an alternative transparency disclosure measure highlights the importance that various oversight and standard setting bodies (e.g. IFAC 2009) attach to the internal quality control system. We based our *IQCS* measure on audit firms’ transparency report disclosures on the effectiveness of their internal quality control system as discussed in item (d) in Appendix A. Specifically, *IQCS* is a three-level ordered variable with a value of zero if an audit firm makes no statement on the effectiveness of its internal quality control system; a value of one if an audit firm makes a weak statement on the effectiveness of its internal quality control system; and a value of two if an audit firm makes a strong statement on the effectiveness of its internal quality control system. A statement is considered to be strong if explicit reference to effectiveness is made without any reservations.

For our sample of 103 audit firms, *IQCS* has a value of zero for 7 firms (6.8 percent), a value of one for 76 firms (73.79 percent), and a value of two for 20 firms (19.42 percent). In our sample of 1,373 client firms *IQCS* has a value of zero for 24 observations (1.75 percent), a value of one for 764 observations (55.64 percent), and a value of two for 585 observations (42.61 percent).

¹⁹ We do not use audit fees as our main measure for audit quality as it reduces our sample size because we were able to collect audit fees for only 1,105 out of all 1,373 audit clients in our sample. Further, we acknowledge the concern that the size of audit fees is considered to be a simplistic measure and arguably cannot be viewed as a true measure of higher audit quality (IOSCO, 2009).

through greater expertise of the auditor (higher billing rates)” (Francis, 2004). Empirical evidence provides support that audit firms charging higher audit fees like the Big 4 and industry specialists also deliver higher quality audits on average (see Hay et al. 2006 for an overview). In line with our second research question we therefore examine whether transparency disclosure is associated with audit fees. If audit firms use transparency disclosures to signal audit quality, the audit firm transparency report disclosure score is expected to be positively associated with audit fees. We follow prior research by modeling audit fees as a function of auditee size, auditee complexity, auditee asset composition, auditee risk and financial distress, auditee industry, and auditor type. To control for the use of observations from three different countries we also include two country dummies in our fee model.²⁰ We add our transparency report disclosure score *TRDS* to the model to examine whether the disclosures contained in audit firm transparency reports are associated with actual audit quality.²¹ We run our fee model on 1,105 observations²² and find that the model provides a good fit and that the results for our control variables are similar to those of prior research.²³ Furthermore, we find that our transparency report disclosure score *TRDS* is not

²⁰ As discussed earlier, we have collected the 2008 transparency reports of audit firms in 4 EU countries: Austria, Germany, the Netherlands, and the U.K. Since audit fees were not available for Austrian audit clients, our fee analysis is confined to observations from Germany, the Netherlands, and the U.K.

²¹ More specifically, our audit fee model is as follows: $LNFEES = \beta_0 + \beta_1 TRDS + \beta_2 LNSIZE + \beta_3 SEGMENTS + \beta_4 FOREIGN + \beta_5 INV + \beta_6 REC + \beta_7 CURRENT + \beta_8 LEV + \beta_9 ROA + \beta_{10} LOSS + \beta_{11} YEAREND + \beta_{12} BIG4 + \beta_{13} NL + \beta_{14} UK + \beta_{15} - \beta_{20} INDUSTRY + \epsilon$, where *LNFEES* is natural logarithm of audit fees; *TRDS* is our transparency report disclosure score; *LNSIZE* is the natural logarithm of client total assets; *SEGMENTS* is the natural log of the sum of the number of client geographic and product segments; *FOREIGN* is the ratio of client foreign to total sales; *INV* is the ratio of client inventory to total assets; *REC* is the ratio of client receivables to total assets; *CURRENT* is the ratio of client current assets to client current liabilities; *LEV* is the ratio of client long-term liabilities and debt to client total assets; *ROA* is the ratio of client net income to total assets; *LOSS* has a value of 1 if the client has reported an operating loss in each of the last two years and 0 otherwise; *YEAREND* has a value of 1 if the client has a December year-end and 0 otherwise; *BIG4* has a value of 1 if the client has a Big 4 auditor and 0 otherwise; *NL* has a value of 1 if the client is located in the Netherlands and 0 otherwise; *UK* has a value of 1 if the client is located in the U.K. and 0 otherwise; and *INDUSTRY* represent six dummy variables for the seven industries present in the sample.

²² As noted earlier, we were unable to collect fee data for all 1,373 clients in our client firm sample.

²³ More specifically, our results show that our audit fee model has an adjusted R^2 of 0.735 and is significant at $p < 0.000$. *SIZE*, *SEGMENTS*, *REC*, *ROA*, *YEAREND*, and *BIG4*, are significant in the expected direction. We

significantly associated with audit fees.²⁴ This suggests that, in line with our main results, transparency report disclosure is not associated with actual audit quality.

Overall, our sensitivity analyses confirm our main results, and taken together our results suggest that currently the level of disclosure on audit firm governance is not associated with audit quality.

V. CONCLUSION

In this paper, we examine audit firm governance disclosures contained in transparency reports of 103 audit firms in four EU countries (Austria, Germany, the Netherlands and the U.K.). Europe has been a front-runner by requiring audit firms servicing PIEs to issue a transparency report since 2008. Since the governance of audit firms is considered to have a significant influence on audit quality, some regulators expect that increased transparency on audit firm governance may provide insight in firms' audit quality, and as a result may provide incentives for audit firms to compete more directly on audit quality.

We investigate whether the level of transparency report disclosures enable audit quality differentiation among audit firms. A positive answer to this question implies that two conditions must be met. First, there has to be variation in the extent and type of disclosures contained in audit firm transparency reports. Second, the variation in the disclosure level has to be a signal of the underlying audit quality delivered by the audit firm.

Although transparency reports did not voluntarily emerge in the market, it can be argued that in a setting where transparency reports become mandatory, this may create new incentives for audit firms with regard to disclosure. In particular, it could be expected that

expressed no expected direction for *NL*, *UK*, and the industry dummies, but our results show that *NL*, *UK* and two industry dummies are also significant.

²⁴ Our (two-sided) p-value for TRDS is 0.476.

high-quality audit firms would like to signal their type by means of a higher level of disclosure on their governance practices. To measure the level of transparency report disclosures, we develop a transparency report disclosure score based on the items required by Article 40 of the Eighth EU Directive and recommendations by national oversight bodies, expert opinions, international standards, and our own review of transparency reports.

Our results show that there is variation in the transparency report disclosure scores across audit firms. In particular, we find that, as expected, larger audit firms (in terms of audit firm revenues) have a higher transparency report disclosure score. We also observe significant country differences, with German audit firms having the highest transparency report disclosure scores. Further, we note that initial transparency reports have a significantly lower transparency report disclosure score, implying that the disclosure level increases over time.

Next, we examine whether the transparency report disclosure score is associated with actual audit quality measured by the level of abnormal accruals of listed clients in audit firms' portfolios. The results do not provide evidence of such an association, neither in the pooled sample, nor in various subsamples. These results remain robust across countries, a number of alternative abnormal accruals measures, alternative transparency report disclosure measures, and the use of audit fees as an alternative audit quality measure. The absence of statistical support for an association between the level of disclosure on audit firm governance and audit quality could have at least two possible explanations. First, it could mean that audit firm governance does not matter for actual audit quality, which seems unlikely. Second, it could be that both high and low audit quality firms provide extensive disclosures which do not reflect the actual quality of the services that are provided.

In summary, we conclude that the current transparency report disclosure levels do not appear to reveal the underlying audit firm quality. This would be in line with recent recommendations of oversight bodies and the auditing profession to encourage audit firms to further improve the informational value of disclosures, rather than giving in-compliance statements which risk becoming uninformative boilerplate statements. Further, the results confirm the concerns expressed by the PCAOB on the value of disclosures in transparency reports like those required by Article 40 of the EU Eighth Directive. We acknowledge that our study is limited to transparency reports from four EU countries. However, the four countries that are included show variation in their cultural background and legal and institutional quality (e.g., Leuz et al. 2003), which supports the representativeness of our sample.

Overall, we argue that requiring audit firms to disclose a number of audit firm governance practices needs careful (re-)consideration. If the aim is to provide a publicly available instrument of audit quality differentiation, more work needs to be done on developing such an instrument. To this end, future research is warranted on audit quality indicators by looking at the content of disclosures provided in transparency reports. While disclosing more on certain audit firm governance practices arguably could serve as a tool to signal audit quality, as it gives information on, for example, the design and functioning of systems, the content of the information disclosed may also matter. Although there were no audit firms in our sample disclosing poor performance of systems in place, a detailed content analysis of certain disclosures could prove to be informative, such as for example the proportion of revenues for non-audit work to revenues from audit clients.

APPENDIX A

Elements of Audit Firm Transparency Score

(a) Description of the legal structure and ownership (maximally 16 points)

- Name of the reporting entity
 - Full legal form (or common abbreviation of legal form)
 - Country or place of incorporation or registration
 - Identification number in public register according to Article 15 of the Eighth EU Directive
- Number of employees
- Description of shareholder groups according to their status
- Description of the distribution of shares
 - Shareholdings in percent [not applicable when a single natural person holds all shares]
- Whether the reporting entity operates more than one domestic office, and if so, the number of domestic offices (or anything else giving an indication to that matter)
 - Location (city) of all offices mentioned [not applicable when the reporting entity operates one domestic office]
- Whether the reporting entity has any domestic affiliates
 - Names of all domestic affiliates including their full legal form (or a common abbreviation for it) or a description of their relation to the reporting entity [not applicable when the reporting entity has no domestic affiliates]
- Whether the reporting entity has any branches abroad, and if so, their number (or anything else giving an indication to that matter)
 - Location (country or city) of all branches abroad [not applicable when the reporting entity has no branches abroad]
 - Size in terms of revenues (total or broken down to all branches) and/or number of employees of all branches abroad [not applicable when the reporting entity has no branches abroad]
- Description of the range of services being offered

(b) Where the audit firm belongs to a network, a description of the network and the legal and structural arrangements in the network (maximally 13 points)

- Whether the reporting entity belongs to a network, and if so, the name of the network
- Whether there is a central organization, and if so, its name [not applicable when the reporting entity does not belong to a network]
 - Full legal form (or common abbreviation for it) [not applicable if there is no central organization]
- Description of extent of profit sharing arrangements among network members [not applicable when the reporting entity does not belong to a network]
- Other key features of the reporting entity's network agreement, such as rights regarding use of common brand name, common strategic management, functional organization according to common services lines, and common standards regarding internal quality control [not applicable when the reporting entity does not belong to a network]

- Size of the network in terms of, at least, (number of) countries where network members operate offices, total number of member firms or offices, and total number of employees [not applicable when the reporting entity does not belong to a network]
- Total revenues of the network [not applicable when the reporting entity does not belong to a network]
 - Breakdown of total revenues to service lines [not applicable if there are no common service lines]
- Whether there are any central governing bodies, and if so, their names [not applicable when the reporting entity does not belong to a network]
 - Description of the functions of each central governing body [not applicable if there are no central governing bodies]
 - Description of the relationships between the bodies [not applicable if there is only one central governing body]
 - Description of the process for appointment of new members of each central governing body [not applicable if there are no central governing bodies]
 - Frequency of meetings of each central governing body [not applicable if there are no central governing bodies]

(c) A description of the governance structure of the audit firm (maximally 19 points)

- Names of principal management bodies
 - Description of the functions of the principal management bodies
 - Description of the relationships between the principal management bodies [not applicable if there is only one principal management body]
 - Description of the process for appointment of new members of the principal management bodies
- Names of members of the principal management bodies
 - Relevant professional qualifications
 - Functions on principal management bodies or statement that members have similar rights and responsibilities
 - Tenure in years served on the respective body
- Whether there is other executive staff, and if so, their number or their names
 - Relevant professional qualifications of all personnel mentioned under this item [not applicable if there is no other executive staff]
 - Description of rights to represent the firm towards external parties for all groups of personnel mentioned under this item [not applicable if there is no other executive staff]
- Whether there are any oversight bodies, and if so, their names
 - Description of functions of oversight bodies [not applicable if there are no oversight bodies]
 - Description of relationships between all oversight bodies [not applicable if there is only one oversight body]
 - Frequency of meetings of each oversight body [not applicable if there are no oversight bodies]
 - Description of the process for appointment of new members of each oversight body [not applicable if there are no oversight bodies]

- Names of members of each oversight body [not applicable if there are no oversight bodies]
 - Functions on oversight bodies, or statement that members have similar rights and responsibilities [not applicable if there are no oversight bodies]
 - Tenure in years served on the respective body [not applicable if there are no oversight bodies]

(d) A description of the internal quality control system of the audit firm and a statement by the administrative or management body on the effectiveness of its functioning (maximally 55 points)

General

- Objectives of the internal quality control system according to ISQC1 (or a similar statement)
 - Additional objectives formulated for the internal quality control system
- Description of the scope of the internal quality control system
- Statement on the effectiveness of the internal quality control system
 - Explicit reference to “effective functioning” without any reservations

Leadership responsibilities for quality within the firm

- Statement that firm’s chief executive officer (or equivalent), or the principal management body as a whole assume ultimate responsibility for the entity’s internal quality control system
- Information on how a quality-oriented internal culture is sought to be achieved by established policies and procedures

Relevant ethical requirements

- Outline of measures taken in order to encourage adherence to other ethical requirements (i.e. due care, confidentiality, and professional behavior)
- Outline of measures specifically taken in order to ensure data privacy

Acceptance and continuance of client relationships and specific engagements

- Outline of policies and procedures helping to ensure availability of necessary competence, capabilities and resources
 - Reference to responsible personnel
- Outline of policies and procedures helping to ensure integrity of clients
 - Reference to responsible personnel
- Outline of policies and procedures concerning the continuance of client relationships and eventual withdrawal
 - Reference to responsible personnel

Human resources

- Outline of policies and procedures concerning recruitment
 - Reference to responsible personnel
- Outline of policies and procedures concerning employee performance evaluations
 - Reference to responsible personnel
- Outline of policies and procedures concerning employee promotions

- Reference to responsible personnel
- Outline of policies and procedures concerning the assignment of engagement/lead partners
 - Reference to responsible personnel
- Outline of policies and procedures concerning the assignment of other members of engagement teams
 - Reference to responsible personnel

Engagement performance

- Whether IT software is used to support audit work, and if so, a description of its integration into the audit process
- Outline of policies and procedures concerning supervision
 - Reference to responsible personnel
- Outline of policies and procedures concerning difficult or contentious matters
 - Reference to responsible personnel
- Outline of criteria against which all audits and reviews of historical financial information and other assurance and related services engagements except for those concerned with public listed entities are evaluated in order to select engagements for quality control reviews
- Number of engagement quality control reviews performed in the reporting period
- Outline of policies and procedures concerning the extent of engagement quality control reviews
- Outline of criteria for eligibility of engagement quality control reviewers
- Outline of policies and procedures concerning differences of opinion
 - Reference to responsible personnel
- Outline of policies and procedures helping to ensure timely completion of engagement documentation
 - Reference to responsible personnel
- Outline of policies and procedures helping to ensure safe custody, integrity, accessibility and/or retrievability of engagement documentation
 - Reference to responsible personnel
- Outline of policies and procedures concerning the retention of engagement documentation

Monitoring compliance with the firm's quality control policies and procedures

- Outline of policies and procedures concerning inspection cycles
 - Reference to responsible personnel
- Outline of policies and procedures concerning the selection of specific engagements for inspections
 - Reference to responsible personnel
- Outline of policies and procedures concerning the evaluation, communication and remediation of identified deficiencies
 - Reference to responsible personnel
- Outline of policies and procedures concerning necessary improvements of the internal quality control system due to new developments in professional standards and applicable legal and regulatory requirements

- Reference to responsible personnel
- Outline of policies and procedures concerning complaints and allegations
 - Reference to responsible personnel

Documentation of the internal quality control system

- Information on how the internal quality control system is documented
 - Reference to responsible personnel
 - How documentation is made accessible to responsible personnel
- Outline of content of quality control manual

(e) An indication of when the last quality assurance review referred to in Article 29 of the Eighth EU Directive took place (maximally 7 points)

- Description of the role of external quality assurance reviews
- Applicable review interval
- Date of last review
- Name of the reviewer
- Outcome of the last review
 - Broad statement about the nature of any deficiencies discovered [not applicable if no deficiencies are discovered]
 - Date when any deficiencies are remediated or supposed to be remediated [not applicable if no deficiencies are discovered]

(f) A list of public-interest entities for which the audit firm has carried out statutory audits during the preceding financial year (maximally 4 points)

- List of public-interest entities for which the audit firm has carried out statutory audits during the preceding financial year
 - Whether the respective audit relates to an audit of separate accounts, group accounts, or both
 - Reason why the respective clients are considered public-interest entities
 - Country or place of incorporation or registration of the respective client(s)

(g) A statement concerning the audit firm's independence practices which also confirms that an internal review of independence compliance has been conducted (maximally 21 points)

- Outline of policies and procedures concerning the communication of (new) requirements to employees
 - Reference to responsible personnel
- Outline of policies and procedures concerning the monitoring of threats or breaches
 - Reference to responsible personnel
- Outline of policies and procedures concerning the reporting of threats or breaches
 - Reference to responsible personnel
- Outline of policies and procedures concerning the evaluation of identified threats or breaches
 - Reference to responsible personnel
 - Description of possible actions subsequent to the evaluation of identified breaches
- Outline of policies and procedures concerning written confirmation of compliance

- Reference to responsible personnel
- Description of tools and processes available to employees in case of doubt (i.e. to help them prevent/identify threats)
 - Reference to responsible personnel
- Outline of measures specifically taken in order to avoid self-interest threats
- Outline of measures specifically taken in order to avoid self-review threats
- Outline of measures specifically taken in order to avoid familiarity threats
- Statement that an internal review of independence practices has been conducted
 - Statement is given by one of the main management bodies
- Outcome of internal review of independence practices [not applicable if such review was not conducted]
 - Broad statement about the nature of any deficiencies discovered [not applicable if no deficiencies are discovered]
 - Outline of consequences of any deficiencies discovered [not applicable if no deficiencies are discovered]

(h) A statement on the policy followed by the audit firm concerning the continuing education of statutory auditors referred to in Article 13 of Directive 2006/43/EC (maximally 13 points)

- Whether there are minimum requirements or goals regarding continuing education, and if so, a description of these minimum requirements
- Form(s) of continuing education used (except ‘on-the-job’ training)
 - Type(s) of education providers used
 - Example(s) of the content of important training modules for employees involved in audit work
- Whether continuing education is considered in promotion decisions and/or employee remuneration policies
- Outline of policies and procedures concerning the monitoring of employee competence development
 - Reference to responsible personnel
 - Whether competence development is documented
- Whether, and if so, how relevant literature is provided to employees
- Whether, and if so, how employees striving to obtain professional certification(s) are supported
- Outline of measures taken in order to facilitate ‘on-the-job’ training
 - Reference to responsible personnel
- Whether, and if so, how employees willing to participate in technical committees, projects or teaching engagements are supported

(i) Financial information showing the importance of the audit firm, such as the total turnover divided into fees from the statutory audit of annual and consolidated accounts, and fees charged for other assurance services, tax advisory services and other non-audit services (maximally 9 points)

- Total revenues
- Revenues from statutory audit work

- Breakdown of revenues from statutory audit work to revenues from public-interest entities and non- public-interest entities
- Revenues from non-audit work [not applicable if no non-audit services are being offered]
 - Breakdown of revenues from non-audit work to revenues from public-interest entities and non- public-interest entities [not applicable if no non-audit services are being offered]
 - Breakdown of revenues from non-audit work to revenues from for other assurance services, tax advisory services and/or other non-audit services [not applicable if no non-audit services are being offered]
 - Breakdown of revenues from non-audit work to revenues from audit clients and revenues from non-audit clients [not applicable if no non-audit services are being offered]
- Comparative information for previous year(s)
- Whether, and if so, where an annual (financial) report is publicly available

(j) Information concerning the basis for the partners' remuneration (maximally 9 points)

- Elements of partner remuneration
 - Indication of the relative importance of each element of remuneration mentioned [not applicable if only one element of partner remuneration is identified]
 - Indication of the relative importance of variable remuneration [not applicable if partner remuneration contains only fixed parts]
 - Comparable information about other executive staff [not applicable if there is no other executive staff]
 - Comparable information about members of oversight bodies [not applicable if there are no oversight bodies]
- List of criteria for partner remuneration [not applicable if partner remuneration contains only fixed parts]
 - Comparable information about other executive staff [not applicable if there is no other executive staff]
 - Comparable information about members oversight bodies [not applicable if there are no oversight bodies]
- Statement that audit partners are not remunerated by reference to (prospective) revenue generated through successful acquisitions of additional engagements

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TABLE 1
Maximum Likelihood (ML) factor analysis of disclosure items
(N=103)

Items	Factor 1: Transparency Report Disclosure Level
Item (a) – Structure	0.50
Item (b) – Network	-
Item (e) – Management and governance	0.60
Item (d) – Internal quality control system	0.55
Item (e) – Quality assurance review	-
Item (f) – Public interest entities	0.63
Item (g) – Continuing education	0.55
Item (h) – Independence	0.65
Item (i) – Financial information	-
Item (j) – Partner remuneration	0.61
 Eigenvalue	 2.59
Variance Explained (%)	25.87

Displayed are absolute loadings above 0.4.

TABLE 2
Sample information on 103 audit firms and 1,373 client firms

Panel A: Audit Firm Country Distribution

Country		
Austria	4	(4%)
Germany	71	(69%)
The Netherlands	7	(7%)
U.K.	21	(20%)
Total	103	(100%)

Panel B: Client Firm Country Distribution

Country		
Austria	16	(1%)
Germany	406	(30%)
The Netherlands	75	(5%)
U.K.	876	(64%)
Total	1,373	(100%)

Panel C: Client Firm Industry Distribution

Industry (based on SIC codes)		
Agriculture, forestry and fishing (SIC 0)	9	(1%)
Mining and construction (SIC 1)	136	(10%)
Manufacturing (SIC 2 and 3)	581	(42%)
Trade (SIC 5)	182	(13%)
Services (SIC 7 and 8)	463	(34%)
Public Administration (SIC 9)	2	(0%)
Total	1,373	(100%)

TABLE 3
Descriptive statistics of all variables in transparency reporting model
(N=103)

Variables	Mean	Median	Std. Dev.	Min.	Max.
<i>TRDS</i>	0.5271	0.5786	0.1395	0.1762	0.7763
<i>REV</i>	9.4589	9.3611	2.3211	5.2523	14.6319
<i>BIG4</i>	0.1748	0.0000	0.3816	0.0000	1.0000
<i>NETW</i>	0.6990	1.0000	0.4609	0.0000	1.0000
<i>UK</i>	0.2039	0.0000	0.4049	0.0000	1.0000
<i>NL</i>	0.0680	0.0000	0.2529	0.0000	1.0000
<i>AT</i>	0.0388	0.0000	0.1941	0.0000	1.0000
<i>FIRST</i>	0.1359	0.0000	0.3444	0.0000	1.0000

Variable definitions:

TRDS = transparency report disclosure score as defined in Section III;

REV = natural logarithm of total revenues (in €000) of the audit firm;

BIG4 = dummy variable with a value 1 if the audit firm is a Big 4 auditor, and 0 otherwise;

NETW = dummy variable with a value 1 if the audit firm belongs to a network, and 0 otherwise;

UK = dummy variable with a value 1 if the audit firm is registered in the UK, and 0 otherwise;

NL = dummy variable with a value 1 if the audit firm is registered in the Netherlands, and 0 otherwise;

AT = dummy variable with a value 1 if the audit firm is registered in Austria, and 0 otherwise;

FIRST = dummy variable with a value of 1 if the transparency report is the first report that is issued by the audit firm, and 0 if otherwise.

TABLE 4
Correlations among Variables in Transparency Reporting Model
(N=103)

Variables	<i>TRDS</i>	<i>REV</i>	<i>BIG4</i>	<i>NETW</i>	<i>UK</i>	<i>NL</i>	<i>AT</i>
<i>REV</i>	-0.1580						
	0.1108						
<i>BIG4</i>	-0.0712	0.6333					
	0.4747	0.0000					
<i>NETW</i>	0.0587	0.3517	0.3020				
	0.5558	0.0003	0.0019				
<i>UK</i>	-0.6611	0.3685	0.0209	-0.0357			
	0.0000	0.0001	0.8337	0.7203			
<i>NL</i>	-0.2167	0.3096	0.2821	0.1772	-0.1367		
	0.0279	0.0015	0.0039	0.0734	0.1687		
<i>AT</i>	-0.1347	0.1569	0.4368	0.1319	-0.1017	-0.0543	
	0.1748	0.1135	0.0000	0.1842	0.3066	0.5861	
<i>FIRST</i>	-0.6915	0.0824	-0.1825	-0.1721	0.7837	-0.1071	-0.0797
	0.0000	0.4082	0.0650	0.0822	0.0000	0.2816	0.4234

Reported coefficients are for Pearson product-moment correlations. Two-sided p-values are reported on each second line. All variables are as defined in Table 3.

TABLE 5
Descriptive Statistics Earnings Management Model
(N=1,373)

Variables	Mean	Median	Std. Dev.	Min.	Max.
<i>/AWCA/</i>	0.0894	0.0419	0.1485	0.0000	0.9990
<i>TRDS</i>	0.5142	0.5117	0.1098	0.1762	0.7763
<i>BIG4</i>	0.6373	1.0000	0.4810	0.0000	1.0000
<i>LNSIZE</i>	11.7290	11.5315	2.2531	4.5152	19.1154
<i>SIZE</i>	2,184,481	101,871	12,300,000	91.3959	200,000,000
<i>GROWTH</i>	0.2076	0.1050	0.4961	-1.0000	2.0000
<i>/OCF/</i>	0.1482	0.0994	0.1913	0.0000	2.6198
<i>LEV</i>	0.2052	0.1645	0.2266	0.0000	2.8864
<i>LOSS</i>	0.2017	0.0000	0.4015	0.0000	1.0000
<i>STD_SALES</i>	0.1944	0.1069	0.3492	0.0004	6.9225
<i>STD_OCF</i>	0.0806	0.0450	0.1753	0.0000	4.7177

Variable definitions:

- /AWCA/* = absolute value of client abnormal working capital accruals computed following DeFond and Park (2001);
- TRDS* = transparency report disclosure score as defined in Section III;
- BIG4* = dummy variable with a value of 1 if the client has a Big 4 auditor and 0 otherwise;
- LNSIZE* = natural logarithm of client total assets in €000;
- SIZE* = client total assets in €000;
- GROWTH* = one-year growth in client sales, where the maximum value is winsorized at a value of 2 (Francis and Yu, 2009);
- /OCF/* = absolute value of client operating cash flows to lagged client total assets;
- LEV* = client total debt to client total assets;
- LOSS* = dummy variable with a value of 1 if the client has reported an operating loss in each of the last two years, and 0 otherwise;
- STD_SALES* = standard deviation of client sales for the most recent three years
- STD_OCF* = standard deviation of client cash flow from operations for the most recent three years

TABLE 6
Correlations among Variables in the Earnings Management Model
(N=1,373)

Variables	<i>/AWCA/</i>	<i>TRDS</i>	<i>BIG4</i>	<i>LNSIZE</i>	<i>GROWTH</i>	<i>/OCF/</i>	<i>LEV</i>	<i>LOSS</i>	<i>STD_SALES</i>
<i>TRDS</i>	-0.1347 <0.01								
<i>BIG4</i>	-0.1496 <0.01	0.4076 <0.01							
<i>LNSIZE</i>	-0.2465 <0.01	0.3140 <0.01	0.4822 <0.01						
<i>GROWTH</i>	0.4019 <0.01	-0.1117 <0.01	-0.0227 0.4003	-0.0449 0.0964					
<i>/OCF/</i>	0.2797 <0.01	-0.1377 <0.01	-0.1293 <0.01	-0.2554 <0.01	0.2052 <0.01				
<i>LEV</i>	0.0334 0.2158	0.0579 0.0321	0.0771 0.0043	0.1311 <0.01	-0.0336 0.2137	0.0189 0.4841			
<i>LOSS</i>	0.2124 <0.01	-0.1602 <0.01	-0.1598 <0.01	-0.4029 <0.01	0.0860 <0.01	0.2133 <0.01	0.0555 0.0398		
<i>STD_SALES</i>	0.2022 <0.01	-0.0647 0.0165	-0.0958 <0.01	-0.1902 <0.01	-0.0078 0.7734	0.1052 <0.01	-0.0025 0.9248	0.1340 <0.01	
<i>STD_OCF</i>	0.2396 <0.01	-0.1086 <0.01	-0.1543 <0.01	-0.3427 <0.01	0.0195 0.4693	0.5349 <0.01	0.0273 0.3120	0.2595 <0.01	0.2051 <0.01

Reported coefficients are for Pearson product-moment correlations. Two-sided p-values are reported on each second line.
All variables are as defined in Table 5.

TABLE 7
OLS Regression Results Transparency Reporting Model
(N=103)

Independent Variables	Predicted Sign	Coefficient estimate	t-value	
<i>Intercept</i>	?	0.4345	8.66	***
<i>REV</i>	+	0.0191	3.50	***
<i>BIG4</i>	+	-0.0325	-1.09	
<i>NETW</i>	+	0.0016	0.08	
<i>UK</i>	-	-0.2090	-6.92	***
<i>NL</i>	-	-0.2330	-8.50	***
<i>AT</i>	-	-0.1846	-7.64	***
<i>FIRST</i>	-	-0.1310	-4.09	***
Adj. R ²		0.6855		

The dependent variable *TRDS* is our measure of transparency report disclosure. All variables are as defined in Table 3.

*, **, *** indicate statistical significance at the 10%, 5% and 1% level respectively, based on one-tailed tests.

TABLE 8
OLS Regression Results Earnings Management Model
(N=1,373)

Independent Variables	Predicted Sign	Coefficient Estimate	t-value	
<i>Intercept</i>	?	0.0704	1.29	
<i>TRDS</i>	?	0.0144	0.22	
<i>BIG4</i>	-	-0.0139	-1.31	*
<i>LNSIZE</i>	-	-0.0083	-3.72	***
<i>GROWTH</i>	+	0.1096	6.44	***
<i> OCF </i>	+	0.0712	1.52	*
<i>LEV</i>	+	0.0400	1.26	
<i>LOSS</i>	+/-	0.0210	1.69	*
<i>STD_SALES</i>	+	0.0625	2.19	**
<i>STD_OCF</i>	?	0.0737	0.90	
<i>COUNTRY dummies</i>		Included		
<i>INDUSTRY dummies</i>		Included		
Adj.R²		0.2712		

The dependent variable */AWCA/* is the absolute value of abnormal non-cash working capital accruals, computed as in DeFond and Park (2001).

COUNTRY and *INDUSTRY* dummies are as defined in Section III. All other variables are as defined in Table 5.

*,**,*** indicate statistical significance at the 10%, 5% and 1% level respectively and is based on a one-tailed test if the sign of the coefficient is in the predicted direction, and is based a two-tailed test otherwise. Results for the country and industry dummies are not reported for parsimony.

TABLE 9
Additional Earnings Management Model Tests
(N = 1,373)

Panel A: Each Specific Disclosure Item Individually

Independent Variable	Coefficient	
	Estimate	t-value
<i>Score_A</i>	-0.0252	-0.65
<i>Score_B</i>	0.0225	1.16
<i>Score_C</i>	-0.0105	-0.43
<i>Score_D</i>	-0.0073	-0.24
<i>Score_E</i>	0.0009	0.04
<i>Score_F</i>	0.0470	1.31
<i>Score_G</i>	0.0335	0.85
<i>Score_H</i>	-0.0105	-0.42
<i>Score_I</i>	0.0262	0.74
<i>Score_J</i>	0.0116	0.51

Panel B: *TRDS*, *Score_B*, *Score_E* and *Score_I* Simultaneously

Independent Variable	Coefficient	
	Estimate	t-value
<i>TRDS</i>	0.0079	0.12
<i>Score_B</i>	0.0190	0.90
<i>Score_E</i>	-0.0030	-0.13
<i>Score_I</i>	0.0229	0.60

Panel C: *IQCS*

Independent Variable	Coefficient	
	Estimate	t-value
<i>IQCS</i>	0.0021	0.23

Variables are as defined in Sections III and IV of the paper.