

Opportunities to improve the measurement of audit quality: a call for collaboration between the profession and academics

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SUMMARY Audit research relies on a wide range of publicly available measures to examine which factors influence the quality of financial statement audits. While research to date has to rely largely on remote proxies due to a lack of access to proprietary data, there is considerable doubt about the validity of these proxies and the inferences drawn based on these proxies. In order to provide insight into the reliability of these measures, Rajgopal, Srinivasan & Zheng (2015) investigate whether commonly used proxies for audit quality (i.e. auditor size, abnormal audit fees, accrual quality, and the propensity to meet and beat analyst targets) are associated with deficiencies reported in SEC investigations and class-action lawsuits. Such alleged deficiencies reflect how external stakeholders assess audit performance. Their study indicates that the use of such proxies is highly problematic and that the performance of these measures, with the exception of auditor size, is poor.

PRACTICAL RELEVANCE This paper discusses the study by Rajgopal et al. (2015) and provides implications for research and practice. Specifically, we argue that failure to reliably measure audit quality harms the capability of academic researchers to assist the auditing profession in safeguarding and enhancing audit quality. Access to proprietary engagement data is thus essential for researchers to examine the key drivers of audit quality and to propose practically relevant recommendations.

1 Introduction

The ability to correctly assess and measure audit quality is of importance to audit firms, users of financial statements, regulators, standard-setters and society at large. This is reflected in various recent initiatives on audit quality indicators by regulators and oversight bodies (IAASB, 2014; CAQ, 2014; PCAOB, 2015), and

changes to the auditor report (ISA 701). Academic research has contributed to the discussion about audit quality, largely relying on publicly available data to measure and infer audit quality. However, these publicly available measures of audit quality may not capture actual audit quality. In fact, commonly used audit quality proxies in audit research are not associated with alleged audit deficiencies in investigations by the Securities and Exchange Commission (SEC) and class-action lawsuits against auditors which reflect how external stakeholders assess audit performance. Extant proxies of audit quality may thus not adequately reflect audit quality. This is the key message of Professor Suraj Srinivasan's talk at the Foundation for Auditing Research conference which took place on May 9 and 10, 2016 at Nyenrode Business University. Suraj Srinivasan is a professor of Accounting and Management at Harvard Business School. His presentation was based on his working paper titled "Measuring Audit Quality", which is joint work with Shivaram Rajgopal (Professor of Accounting and Auditing at Columbia Business School) and Xin Zheng (doctoral student at Emory University).

The purpose of this paper is twofold. We first shed some light on the current body of academic knowledge on the measurement of audit quality by discussing the study of Rajgopal, Srinivasan & Zheng (2015) (hereafter RSZ). Building on this, we elaborate on how a collaboration between practice and academia can improve the measurement of audit quality and thus allow researchers to assist practice in enhancing and safeguarding audit quality. Specifically, we point to the necessity for researchers to gain access to engagement-specific, granular audit data in order to make practically relevant recommendations for the audit profession and work towards a joint goal of high audit quality.

The remainder of this paper is organized as follows. The next section describes how audit quality is defined and how extant research has measured audit quality using publicly available data. Section 3 provides a summary of the study by RSZ. Section 4 discusses the contributions and limitations of RSZ. The paper concludes with a discussion on how measurement of audit quality can be improved through a collaboration between practice and research.

2 Defining and measuring audit quality

It is difficult to define what encompasses audit quality as perceptions of audit quality vary across stakeholder groups (see e.g. Knechel, Krishnan, Pevzner, Shefchik & Velury, 2013). Investors and society at large may consider audits to be of high quality if the financial statements are free from material misstatements and expect auditors to provide a warning signal in case of a client's impending bankruptcy, in the form of a going concern opinion (Carson et al., 2013). Regulators and oversight bodies might instead consider audits as high quality if they have been conducted and documented in line with auditing standards and if auditors obtained sufficient competent audit evidence to support their audit opinion (GAO, 2003). Finally, audit professionals may deem audits to be of high quality if risks have been sufficiently considered and incorporated into an effective audit plan, and if the audit has been performed according to the audit plan and auditing standards (see e.g. Christensen, Glover, Omer & Shelley, 2015 and PwC, 2015).

Prior academic literature has provided various definitions of audit quality. The most frequently cited definition of audit quality is the one by DeAngelo (1981). She defines audit quality as "the market-assessed joint probability that a given auditor will *both* (a) discover a breach in the client's accounting system, and (b) report the breach" (p. 186). Hence, audit quality can be seen as a function of an auditor's perceived competence and independence (Watts & Zimmerman 1981). DeAngelo's (1981) audit quality definition essentially characterizes audit quality as dichotomous, i.e. failure or non-failure to detect and report violations. The definition does not reflect the fact that audit quality can be defined as a continuum ranging from low to high (Francis, 2004, 2011). Taking this into account, DeFond and Zhang (2014, p. 276) define higher audit quality as "greater assurance that the financial statements faithfully reflect the firm's underlying economics, conditioned on its financial reporting system and innate characteristics". This definition of audit quality is related to clients' financial reporting quality and reflects a regulatory view of audit quality that higher audit quality is necessarily better (Donovan et al., 2014). Donovan et al. (2014), in their discussion of DeFond and Zhang (2014), however, suggest a more client/auditor-

centric view with audit quality being determined by client preferences and audit firm's efficient provision of services for which they hold a competitive advantage. Thus, Donovan et al. (2014) propose that auditors' competitive advantages and institutional features of the audit process should be integrated in the definition of audit quality. Overall, a multitude of definitions of audit quality exist, and none may be complete, partly because different stakeholders hold different opinions about what encompasses audit quality.

While audit quality is difficult to define and no universally accepted definition exists, it is even more challenging to measure audit quality reliably. Audits are labor intensive and require a lot of judgment, while the outcome of the audit (i.e. the level of assurance over financial statements) is not directly observable. Hence, a financial statement audit can be classified as a credence good¹ (Causholli & Knechel, 2012). In fact, audit failures might not be revealed until years after an audit has taken place, or not at all.

The measurement of audit quality is further complicated by the fact that audit researchers and external stakeholders typically need to rely on publicly available information. Therefore, audit research uses various alternative, but sometimes distant and indirect proxies for audit quality. The most commonly used proxies for audit quality are a Big N indicator (assuming higher audit quality if an audit is conducted by one of the larger audit firms), discretionary accruals (i.e. the part of accruals which are assumed to be used by management for earnings management purposes), the propensity to issue a going concern opinion, (abnormal) audit fees, meeting or beating analyst forecasts, restatements, accounting conservatism, auditor litigation, and perception-based measures, such as PCAOB inspections, cost of capital, and the earnings response coefficient as a means of analyzing market reactions to unexpected earnings (see DeFond & Zhang, 2014, for a comprehensive list). It goes without saying that, taken at face value, these publicly available measures of audit quality are at best indirect and seem disconnected from audit practice. Since researchers without access to better data must measure audit quality in such an indirect way, large measurement error may result and some measures may reflect client effects rather than auditor effects (e.g. discretionary accruals likely reflect within-GAAP earnings management which is to a large extent at the discretion of management). Clearly, these measures suffer from limitations. Testing the reliability of these measures is at the heart of RSZ's analysis and these issues are further detailed below.

Researchers examine the association between these audit input or outcome proxies of audit quality and underlying audit characteristics or contextual factors to examine a wide variety of research questions. The audit-

ing literature for example examines how audit quality is affected by factors such as: auditor independence (e.g. DeFond, Raghunandan & Subramanyam, 2002), industry expertise (e.g. Reichelt & Wang 2010), auditor tenure (e.g. Myers, Myers & Omer, 2003), mandatory or voluntary firm and partner rotation (e.g. Lennox, Wu & Zhang 2014), fee pressure (e.g. Choi, Kim & Zang, 2010), office size (e.g. Choi, Kim, Kim & Zang 2010), voluntary audits (e.g. Lennox & Pittman, 2011), and joint audits (e.g. Zerni, Haapamäki, Järvinen & Niemi, 2012). However, prior research finds only limited or mixed evidence for many of these research questions which curbs the potential for practically relevant recommendations for audit practice and standard-setting.

This point is illustrated by the diverging findings on whether high (abnormal) audit fees, an input to the audit, enhance or reduce audit quality, and whether fees serve as a direct proxy of audit or financial reporting quality. High fees can be attributed to a) economic bonding between the client and the auditor which would reduce audit quality, b) a risk premium paid by the client, or low audit efficiency which would not impact audit quality, or c) high audit effort which would increase audit quality (DeFond & Zhang, 2014). Another complicating factor is the fact that audit fees are an input to the audit, but that (abnormal) audit fees are used as proxies for both audit input (i.e. risk premium, efficiency and effort explanations, see for example Doogar, Sivadasan & Solomon, 2015) and output (i.e. fees as a proxy for audit quality and financial reporting quality, see for example Hribar, Kravet & Wilson, 2014). Since researchers have to rely on publicly available data and are thus unable to clearly distinguish between these alternative explanations, it is not surprising that various different findings are reported in the audit fee literature.

The mixed findings in prior audit fee literature and audit research in general might thus be attributed to the use of imperfect measures of audit quality. These studies may at best fail to assess the real impact of audit characteristics or contextual factors on audit quality or at worst make erroneous inferences and provide inappropriate recommendations for audit practice and regulation. This clearly illustrates the need for better measures of audit quality for the sake of enhancing knowledge about audit quality and its determinants, and ultimately contributing to the improvement of audit quality in practice. Practical recommendations on how audit quality can be improved may be enabled through access to audit firm data, thus bridging the current disconnect between science and practice.

3 Validity of currently used audit quality measures

In order to verify how well the commonly used proxies for audit quality reflect actual audit failures, RSZ

examine in their current study whether the most frequently used audit quality proxies reflect alleged audit deficiencies in the SEC's Accounting and Auditing Enforcement Releases (AAERs) against auditors and class-action lawsuits in which auditors appear as defendants. The content of AAERs and lawsuits reflect how external stakeholders, the SEC and private law firms, assess audit performance on a granular level. The audit deficiencies mentioned by the SEC and private law firms may reflect impaired reporting quality, violations of auditing standards, and provide a strong indication of poor audit quality.

Specifically, RSZ assess whether these detailed deficiencies are associated with the following audit quality measures: Big N, discretionary accruals (the part of accruals which reflect management choices and earnings management), accrual quality (the extent to which accruals map into operating cash flows), (abnormal) audit fees, and the likelihood of meeting or beating analyst forecasts. Using hand-collected data on non-dismissed class-action lawsuits and AAERs, they examine the extent to which the deficiencies specified within these documents explain variation in audit quality proxies. For this purpose, they collect data from 1978 to 2011, including 34 AAERs (87 firm-years) and 135 lawsuits (382 firm-years)². A wide range of deficiencies are mentioned within these documents. RSZ extract the following issues: lack of independence from the client, a failure to exercise due care, an insufficient level of professional skepticism, an inadequate planning and supervision, an inadequate assessment of fraud risks, a failure to gather sufficient audit evidence, a failure to express an appropriate audit opinion, and a failure to evaluate the adequacy of disclosures. The authors classify these deficiencies into a number of broad categories and subcategories which are in line with generally accepted auditing standards (GAAS). Specifically, RSZ regress each of the aforementioned audit quality proxies on the number of allegations mentioned or on specific audit deficiencies mentioned in the AAERs and class-action lawsuits, controlling for commonly defined factors. The evidence they present provides limited support for the reliance on measures of audit quality used by prior research. The authors report that the total number of allegations is negatively associated with the presence of a Big N audit firm, which in turn seems to be driven by the fact that Big N audit firms are less likely to be accused of failure to exercise due care. Big N auditors are, however, not associated with any other specific audit deficiencies (i.e. those described in the previous paragraph). This suggests that Big N as a proxy for audit quality may reasonably reflect audit quality as perceived by external stakeholders in the US setting. The authors furthermore note that abnormal audit fees are on the one hand negatively associated with failure to adequately

plan the audit, the failure to state whether the financial statements are presented according to Generally Accepted Accounting Standards (GAAP), and inadequate considerations of fraud risks. On the other hand, abnormal audit fees are positively associated with the total number of violations and the number of other allegations of deficiencies. This makes it hard to interpret the findings. Moreover, as explained above, the use of (abnormal) audit fees as an indicator of audit quality is generally speaking rather complicated, as higher fees can reflect more effort, but could also reflect a risk premium (in case of increased client risks) or even poor planning or economic bonding and thus impaired auditor independence. Regardless of the difficulty associated with the interpretation of the effect of audit pricing on audit quality, it is also a difficult measure to act upon (i.e. it is hard to argue that increasing/decreasing fees could improve audit quality). The other measures of audit quality, i.e. discretionary accruals, accrual quality and the likelihood of meeting or beating earnings targets, are not (consistently) associated with allegations of deficiencies. In summary, only one of the proxies provides a consistent (negative) association with the number of alleged deficiencies reported by the SEC and lawyers, which is audit firm size (Big N). RSZ therefore suggest that Big N can be used as a reasonable proxy for audit quality. At the same time, the authors urge future research to refine or develop new audit quality proxies, for example through access to better data.

We concur with RSZ's conclusion that refinement of audit quality proxies is needed, and point to at least four reasons why the Big N measure which is consistently negatively associated with allegations in AAERs and lawsuits in RSZ, is not uncontested: a) auditor choice is endogenous and based on client characteristics (see e.g. Lennox, Francis & Wang, 2012 for a discussion on selection bias); b) the measure is not engagement specific, hence it is impossible to examine variations in audit quality across clients within the same auditor type³; c) it is an input, not an outcome variable, making it impossible to verify how differences in for example audit process factors, such as adopted audit methodologies, affect audit quality; and d) there is mixed support for audit quality differentiation of large audit firms in settings outside the US, such as in continental Europe (Vander Bauwhede & Willekens, 2004). Thus, it is not sufficient to rely on the Big N measure as a proxy for audit quality if research is to inform practice and standard-setting in the future.

4 Contributions and limitations of RSZ

RSZ make at least three important contributions to the auditing literature. First, by providing evidence which highlights the issues with commonly adopted proxies for audit quality, they show that these meas-

ures hardly reflect any of the deficiencies pointed out by the SEC or lawyers. The only proxy which RSZ recommend and which does not seem to suffer from construct validity problems is auditor size (a Big N dummy). This paints a gloomy picture of audit research of the past 35 years, since it appears that audit research has not made significant advancements beyond the proposition in DeAngelo (1981) that auditor size and audit quality are positively associated. This is further problematic as it raises serious concerns with respect to the validity of prior research using the common audit quality proxies under investigation in RSZ. This is evidenced by the fact that various inconsistent findings on the same research questions have been produced over the years, sometimes without reaching consensus⁴.

Secondly, the findings of RSZ add to the literature by providing detailed descriptions and examples of audit deficiencies. By classifying the deficiencies in line with GAAS standards RSZ provide a foundation for future research on this topic.

Finally, RSZ provide insights into how external stakeholders evaluate audit deficiencies and the differences in focus between regulatory agencies (i.e. the SEC) and lawyers. For example, they show that lawyers typically focus on a greater number of violations, and violations of sub-standards. Furthermore, lawyers mostly sue the largest audit firms. This is in line with deep-pockets hypothesis.⁵ In contrast, most of the investigations by the SEC target the smaller audit firms. The SEC typically also mentions a smaller number of deficiencies. Potential explanations for the SEC's behavior are that auditors might be too big to fail or the revolving door phenomenon⁶ (Kedia, Khan & Rajgopal, 2015).

While the study by RSZ clearly points to the limitations of commonly used audit quality measures, we also note a number of limitations of the paper itself. First of all, and as acknowledged by RSZ, AAERs by the SEC and class-action lawsuits reflect audit deficiencies as perceived by external stakeholders. Whereas these are relatively objective and detailed measures of audit deficiencies, the measure might suffer from selection bias. While lawyers are more likely to pursue large audit firms with deep pockets in class-action lawsuits, the SEC is less likely to go after large audit firms. This selection bias might impact the results of the study, and little can be done to effectively control for the bias since selection of audit firms by the SEC and lawyers is based on factors unobservable to academics.

Second, and as mentioned by RSZ, the lawsuits and SEC investigations in their sample are always settled outside of court. This makes it unclear to what extent an audit was actually insufficient in the sense that allegations would hold up in a court of law and to what extent a settlement relates to reputation protection by the auditor. We do point out that this is probably less

of an issue for SEC investigations as the SEC has access to issuer data and thus better insight into any violations. However, the sample is comprised of a larger number of lawsuits than AAERs, which potentially affects the validity of results.

Third, auditors are only sued if there is very strong evidence of financial statement fraud. This implies that the approach used by the authors to identify audit failures might only capture the most extreme and rare cases. As pointed out by Francis (2004), less than 1 percent of all audits represent outright audit failures.

Fourth, we note that the majority of AAERs and class-action lawsuits relate to the period from 1997 to 2004, which is in line with other research which shows that the tendency to sue auditors has decreased in the period after the passage of the Sarbanes-Oxley Act (see e.g. Fuerman, 2012). This may impact the ability of future research to assess audit quality through the use of deficiencies reported in lawsuits or AAERs. More generally, audit research in settings outside the US cannot rely on such deficiencies to assess audit quality, since inspection reports and data on lawsuits are typically not publicly available outside of the US.

Fifth, while we concur with the notion that currently used audit quality proxies are imperfect, we raise the question whether one would actually expect an association between these proxies and the deficiencies reported in AAERs and class-action lawsuits. For example, the amount of discretionary accruals (a measure of accrual quality) picks up within-GAAP earnings management, whereas the AAERs and class-action lawsuits are related to severe audit deficiencies. Thus, the lack of significant associations between extant audit quality measures and deficiencies noted in AAERs and class-action lawsuits may not completely invalidate these audit quality constructs. Nevertheless, we agree with the authors that developing new audit quality proxies or refining the existing ones through access to more granular data is paramount if research is to inform and assist practice in its ambition to improve audit quality.

As a suggestion for future research we believe that it could be useful to cluster the various reported deficiencies and focus on those deficiencies which actually impair audit quality. This is important because the reported deficiencies are interdependent. For example, the selection of an engagement team that lacks required industry specific expertise might fail to exercise sufficient professional skepticism, which could lead to an insufficient evaluation of audit evidence, which subsequently can cause the auditor to issue an inappropriate audit opinion.

Finally, we want to point out that it could be insightful for future research to examine, based on the alleged deficiencies, if there are specific settings in which particular traditional audit quality measures do provide

reliable indications of audit quality (see Lennox, Wu & Zhang, 2016, for evidence that discretionary accruals and earnings characteristics reflect higher audit quality in the Chinese setting). More over, it is important to recognize that each measure has both advantages and disadvantages (for example with regard to reliability and timeliness), making it important for researchers to assess which proxy is best used to answer a particular research question.

5 Conclusion

Academic research, using publicly available data, may have provided a starting point for understanding audit quality and its various determinants and levels. However, as pointed out by RSZ, audit research largely relies on publicly available, but quite imperfect measures of audit quality. In order to enable researchers to assist the auditing profession and financial statement users in understanding the drivers of audit quality and the root causes of audit failures, it is of key importance to provide researchers with access to more insightful internal audit firm data and potential audit quality indicators (see also Francis, 2011 and Knechel et al., 2013). Some recent literature provides first insights into audit quality using engagement-specific proprietary audit firm data, for example internal assessments of engagement quality (Bell, Causholli & Knechel, 2015). Bell et al. (2015) provide additional insights into the audit process and quality and shed light on issues for which previous literature had found mixed results⁷. These papers provide a promising start and show that a collaborative approach between the profession, regulators or oversight bodies and academics, as initiated in the Netherlands by the Foundation for Auditing Research, is the only way forward for academics to truly contribute to safeguarding and enhancing audit quality and for practitioners to gain relevant insights into factors affecting audit quality.

Since the quality of an audit depends on inputs to the audit, the audit process, and outputs that arise from the audit process (IAASB, 2014), the availability of audit firm data on these input, process, and output factors, as well as client characteristics and contextual factors is the key to enhance our understanding about audit quality, its determinants and consequences.

Possible examples of audit output data which could be of use in academic research, are internal quality review reports, waived misstatements, the size of required adjustments to be made by the client, and inspection reports to audit firms by oversight bodies (such as the Dutch AFM and the US PCAOB). This would provide researchers with more direct and accurate indicators of audit quality than the currently used proxies and enable researchers to answer important research questions that inform audit firms, regulators, and society at large.

Audit research could further enhance our understanding by not only providing insight into the outcomes of an audit, but also by providing insight into the audit process, such as chosen audit techniques and methodologies and the development of new tools, such as those related to Big Data analysis. Access to audit input data, such as audit team composition, auditor characteristics and behavioral aspects of the audit will be vital for gaining an understanding of the drivers and root causes of audit quality. These insights will allow academics to assess which resources, techniques, methodologies, and tools lead to the highest impact on audit effectiveness and efficiency across different clients and will help to understand the determinants of audit quality.

It is paramount to base audit research on internal audit firm and engagement-specific data to provide findings, unconfounded by measurement issues, on the factors that improve or harm audit quality. Researchers' access to proprietary audit firm data promises to not only clarify mixed previous findings but will also help to shed light on previously unexplored research questions that

are of importance to audit firms, regulators, and users of financial statements. These insights can enhance our knowledge about audit quality, help audit firms in planning and conducting audits and decrease the expectation gap between auditors and external stakeholders. Ultimately, this will allow researchers to make valuable and practically-relevant recommendations to audit practice about how audit quality can potentially be improved. There is a lot to gain from collaboration between audit firms and accounting scholars. ■

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Notes

1 ■ The economics literature defines a credence good as a good whose qualities are not observable before or after the purchase of the good and whose need is difficult to know *ex ante*. This makes it difficult for the buyer of the credence good to assess its utility (Emons, 1997). Causholli and Knechel (2012) examine the audit as a credence good since the quality is not known by the client (or other stakeholders), *ex ante* or *ex post*.

2 ■ All lawsuits and SEC AAERs in RSZ's sample are settled outside of court.

3 ■ It is also important to acknowledge that the Big4 are not a homogenous group and that there are differences in audit quality between large audit firms. For example, inspection reports (e.g. by the Dutch AFM or the PCAOB) indicate quality differences between the Big4. Furthermore, audit quality likely varies within a Big4 firm, for example, across audit offices (Francis & Yu, 2009).

4 ■ The findings in RSZ clearly show that results

of previous studies using these noisy audit quality proxies may not be relied upon, which is further corroborated by the fact that studies using the same proxies find different results. Nevertheless, it is important to acknowledge that there are settings for which the commonly used proxies for audit quality form relatively consistent and logical results over time.

5 ■ Larger auditors with more wealth are at higher risk from litigation since the rewards for plaintiffs will be higher when targeting auditors with deep pockets. Dye (1993) suggests that large auditors thus have an incentive to issue more accurate reports so as to avoid the risk from litigation.

6 ■ The revolving doors phenomenon implies that the SEC is less likely to pursue large audit firms since the SEC's (enforcement) staff is lenient towards potential future employers such as the large audit firms. This suggests regulatory capture of the SEC (Kedia, Khan & Rajgopal,

2015). The second potential phenomenon that can explain why the SEC is less likely to pursue large auditors is that the audit firms have become too big to fail and that the audit market would suffer from the exit of a Big4 audit firm (Kedia, Khan & Rajgopal, 2015).

7 ■ Bell, Causholli and Knechel (2015) investigate how auditor tenure and the provision of non-audit services impact audit quality, measured as quality indicated through internal quality reviews. They show that tenure has no impact on audit quality for SEC registrants, but decreases audit quality for private clients. They further show that non-audit service fees are positively associated with audit quality for SEC registrants and negatively associated with audit quality for private clients. This sheds light on previous mixed findings on whether audit quality improves or declines with tenure, and the provision of non-audit services.

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