A discussion of "Auditor-client co-production of the audit and the effect on production efficiency"

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SUMMARY This article provides a reflection on the paper and presentation during the FAR Conference of 9 and 10 May 2016 of "Auditor-client co-production of the audit and the effect on production efficiency" by Gaeremynck, Willekens, and Knechel (GWK). The authors examine the effect of auditor-client co-production on the efficiency of an audit, a topic relevant to the whole audit-client financial reporting and assurance supply chain. Using a sample of working papers from a Belgium Big 4 firm, the authors explore the controllable (i.e., managerial) and non-controllable (i.e., environmental) factors that contribute to variations in audit efficiency within the auditor-client coproduction of financial reporting quality. The results suggest that partner tenure positively contributes to the efficiency of the audit engagement, but the audit work prepared by the client, interim-work by the auditor, and the final audit work performed during off-peak season negatively affect audit efficiency. While this may be surprising from an efficiency standpoint, it may be that such measures add to the audit effectiveness to an extent that outweighs any efficiency loss. Audit quality or audit production, after all, is a matter of efficiency and effectiveness. GWK offer a number of important insights for practitioners interested in the delicate balance of managing efficiency and effectiveness. In the paragraphs that follow, we aim to both summarize the GWK research and highlight the importance of the findings to practice.

PRACTICAL RELEVANCE GWK lay the foundation for future advancements in audit efficiency research in a number of ways. Academics and practitioners can work together to refine the audit efficiency model to include additional variables (e.g., number of subjective accounts, number of critical accounting policies, senior/manager tenure) that significantly affect audit efficiency. When inefficient audits are identified both within a firm office (e.g., Boston office) and across offices around the globe, the model can inform managing partners at both the local and global level about potential root causes of engagement inefficiencies. Moreover, academics can work with practitioners to develop audit efficiency models on an account level basis to identify when too much time is being spent on low risk areas. Future research opportunities include extending the model to identify audits that are perhaps, too efficient. For example, overly efficient audits may represent a red flag that a particular audit team may be cutting corners and not adhering to firm methodology.

1 Introduction and background

What do we know about the production process of the audit? Production is the process of converting a set of inputs into a set of outputs that have economic value (Shepherd, 1970). Production efficiency is generally defined in terms of minimizing the inputs to a production process for a given level of output (Fried et al., 2002). Up until now, only a few studies have examined audit production efficiency, in part, because of a lack of accessible data from firms (Causholli, De Martinis, Hay & Knechel, 2010). Despite this limitation, a scarce number of studies on audit production have provided valuable insights regarding the efficiency of the audit process.

Dopuch et al. (2003) use Stochastic Frontier Analysis (SFA)¹ and Data Envelopment Analysis (DEA) to estimate audit efficiency. Both of these techniques are benchmark techniques which compare individual audits to an "efficient frontier". The most efficient audit is deemed a 100% efficient audit, all other audits are considered to be inefficient, meaning that they could potentially reach the same output using fewer audit hours. Dopuch et al. (2003) use client characteristics as inputs and audit hours as outputs in their DEA approach. In doing so, they assume the output of the audit process (i.e., assurance) to be constant when in practice, reasonable assurance may vary across audits. Dopuch et al. (2003) find that audit efficiency has room for improvement, and inefficiencies are costly. However, many of the client characteristics in the model are not controllable and therefore, cannot be managed by audit firms to improve efficiency. As such, Dopuch et al. (2003) increased the level of interest in the examination of auditor-client co-production.

Knechel et al. (2009) extend this line of research by letting go of the "fixed level of assurance" assumption to accommodate the variation in reasonable assurance across audits. Like Dopuch et al. (2003), they utilize DEA to measure audit production efficiency. However, the inputs and outputs used by Knechel et al. (2009) are different. Audit costs per staff level are used as the inputs of the production function. The number of hours spent on assurance increasing activities (such as audit planning, internal control evaluation and substantive testing) are used as an output measure since these activities would presumably lead to a higher level of assurance. Knechel et al. (2009) find that audits are more efficient for (1) larger clients, (2) clients with a December year-end and (3) clients who are more automated. Audits are less efficient when auditors (1) rely on internal controls, (2) provide non-audit services and (3) when clients have subsidiaries. However, after the publication of Knechel et al. (2009) it was still unclear to what extent firms could control variations in audit efficiency.

2 Summary of Gaeremynck, Willekens and Knechel (2016)

In practice, it is generally assumed that more intensive client co-operation leads to more efficient audits. GWK seek to assess how the joint decisions (e.g., reliance on internal audit or the timing of the audit work) made by the auditor and client influence the efficiency of audit engagements. They begin by suggesting that different audit approaches yield different levels of assurance even though the final output for each audit is unitary (i.e., audit opinion). That is, the audit approach is based on the professional judgement of the auditor and is reflected in the risk assessment, the level of materiality, and the extensiveness of the planned audit procedures.

Unlike previous studies, GWK measure the variation in assurance by using the engagement's final materiality level. They explain that because lower materiality requires more extensive audit work, one can assume that different levels of materiality lead to relatively different levels of assurance (assuming all else equal). Therefore, GWK use materiality as their output measure (i.e., dependent variable) for measuring the efficiency of the audit process.

In general, the audit process is a complex service which is highly dependent on the unique characteristics of both the client and the auditor. Inefficiencies in the audit process may stem from auditors' choices in the production process and client specific characteristics. GWK develop a model to disentangle the controllable factors from the non-controllable client specific factors. This distinction is important to elucidate potential strategies for improving the efficiency of audits.

The study was conducted on 158 diverse audit engagements for the year ends 2006 or 2007. GWK's data includes publically available client data and data from a Belgium Big 4 audit firm (i.e., audit team information, client information, hours performed per staff level, deadline information, engagement specific information and deliverables).

To disentangle managerial from non-controllable efficiency, GWK's model includes a three-stage DEA analysis to determine the level of managerial and non-controllable efficiency:

Stage 1: DEA-analysis with fundamental inputs (labor) and outputs (materiality) to determine preliminary efficiency.

Stage 2: Apply DEA to inefficiencies (slack) of stage 1 and environmental factors to isolate environmental or non-controllable inefficiencies.

Stage 3: Apply DEA to fundamental inputs and outputs after adjusting for environmental factors isolated in step 2 to assess managerial or controllable inefficiencies.

The estimated managerial and non-controllable inefficiencies were thereafter incorporated in a regression analysis to determine which aspects of the auditor-client co-production are associated with more or less managerial controllable inefficiency. Variables in the regression include controllable characteristics of an audit such as composition of the audit team, partner tenure, manager tenure, substantive testing before year end, interim audit, audit report lag, internal audit benefit and auditor's use of work prepared by the client.² GWK found that partner tenure positively contributes to audit efficiency, but that preparation of the audit work done by the client, interim work and final audit work done during off-peak season negatively affects efficiency. The evidence for a negative relationship between interim-work and preparations made by the client are surprising because they contradict the assumption that these factors contribute to audit efficiency. Furthermore, contrary to expectations, the results suggest that no efficiencies are realized by relying on the client's internal audit department, providing non-audit services to the client, and having a higher qualified audit team. The authors do not hypothesize about the reasons for the unexpected findings. However, with respect to the internal audit department, it is possible that client delays in deliverables disrupt the scheduling of the field work and thus, affect the efficiency of the engagement.

3 Recommendations, implications, and considerations for science and practice

3.1 Audience

In the current version of the paper, it is unclear which audience (e.g. academics, practitioners, regulators) is being targeted and who are the primary beneficiaries of the research. Statements in both the introduction and conclusion suggest that academics are the target audience since the research challenges the assumptions underlying traditional techniques for analyzing production efficiency used by academics. That is, GWK's research does not assume assurance is fixed and proposes materiality levels as a new proxy for the output measure in audit efficiency models studied and tested by academics. Moreover, the authors appeal to academics by introducing a new approach to measuring audit efficiency using their three-stage process.

Besides academics, it stands to reason that practitioners have the most to gain from scientific advances in audit efficiency (and effectiveness) research. That is, improving our understanding of how firms can measure, monitor, and thus, manage audit efficiency within and across firms are of great importance to practitioners. In the next section, we further elaborate on the significant contribution of audit efficiency research to practitioners.

3.2 Importance

The importance of the research is currently described in terms of demonstrating how to separate out the controllable (i.e., managerial) factors from the uncontrollable (i.e., environmental) factors so that firms can focus on what is in their control. Based on the framing and the tone of the writing, readers may infer that the uncontrollable factors are not informative and thus, can be set aside to focus on what is controllable. However, isolating the relationship between the uncontrollable factors and audit efficiency is of significant value to firms. That is, knowing how to measure the uncontrollable factors and their relationship with the number and mix of audit hours within and across offices has the potential to significantly improve the firm's operations. Currently, firms have systematic models (or at the very least, benchmarks) for how many hours and what mix of rank hours are necessary based on client factors such as size, risks, complexity, controls, etc. Firms can benefit from audit efficiency research by measuring the actual hours and mix for each audit and comparing the efficiency scores of each to determine the extent to which audits appear to be improperly staffed when controlling for managerial factors. As such, GWK's research disentangling the controllable and uncontrollable factors has the potential of benefiting practice to a much greater extent than presently described.

3.3 Contribution/implications

The contribution/implications of this research extends beyond the newly introduced statistical approach suggested by the authors. The research offers a means for examining the relationship between audit efficiency and audit quality. To illustrate, imagine a firm that calculates the audit efficiency scores for all audits inspected by regulators each year. Over time, the firm can identify a relationship between audit efficiency and audit quality. The firm can then calculate the audit efficiency scores for all audits and preemptively identify the audits that have a greater likelihood of containing audit deficiencies. Further investigation may reveal these audits may be indicative of cultural differences across offices or perhaps training issues in one or more locations. As such, the identified audits may warrant remediation such as greater supervision or an alternative mix of staffing.

4 Conclusion

In short, GWK add to our understanding of the drivers and impediments of audit efficiency. Moreover, their model provides a means for isolating uncontrollable client factors, which may lead to strategies for monitoring and managing engagement compliance with firm methodology. Such advancements may lead to measured improvements in the standardization of audit quality within global network firms. In conclusion, GWK exemplify the advantages of a close cooperation between researchers and practitioners and how such cooperation can lead to new insights that will move relevant audit research forward.

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Notes

 Stochastic Frontier Analysis is a method of economic modeling. Further explanation of this method is beyond the scope of this paper.
Non-controllable characteristics of an audit were purposely not included in the regression but include measures such as size, industry, and financial risk.

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