Effort-Adverse Auditor and Increasing Audit Quality Output in a Competitive Audit Market

Sangphill Kim
University of Massachusetts Lowell
Taewoo Kim*
California State University San Bernardino
Alahassane Diallo
Eastern Michigan University

ABSTRACT
This paper develops a theoretical framework that shows how audit quality is determined by an effort-adverse utility maximizing auditor under a competitive auditing market. In such context, the auditor exerts increasing amount of effort under different circumstances which in turn, determines the level of audit quality. The model shows that audit quality is a positive function of auditor's independence. It also demonstrates that the auditor's higher perception of litigation risk reduces effort aversion and improves audit quality. Furthermore, the model suggests that audit quality improves with a stiffer penalty for audit failure, which would be consistent with recommending tougher audit regulation in general to improve audit quality. We suggest that the optimal level of audit effort is determined by the factors that influence auditor independence or auditor's perception of litigation risk. Thus, compensation schemes or different channels of audit fees payment can trigger the change in audit quality by making auditor exert different levels of audit effort. Finally, this paper's theoretical framework would provide beneficial guidelines for empirical tests conducted in empirical studies on audit quality.

Keywords: Audit Quality, Effort-Aversion, Auditor Independence, Audit Regulation, Utility Maximizing, Competitive Market.
JEL: M21

* Contact author. Email: taewoo.kim@csusb.edu

I. INTRODUCTION

DeAngelo (1981) defines audit quality as "the market-assessed joint probability that a given auditor will both detect a breach in the client's accounting system, and report the breach" . Audit quality often represents the credibility of financial reporting quality, which in turn ensures that the client firm's underlying economics is faithfully reflected from audited financial statements. Given the potential for low audit quality to mislead the users of audited financial statements, regulators and investors have continued to raise question on audit quality following the collapse of Enron and Arthur Andersen. Concerns were raised about the quality of the audit conducted by all accounting firms, Big 4 accounting firms included.

Given the obvious negative consequences of audit failure on capital markets and investors' wealth, audit quality has become one major topic of audit research. One of the main difficulties with audit quality is that it is not observable. A variety of proxies have been used to measure audit quality in prior empirical studies (See DeFond and Zhang 2014). Among these audit quality proxies, "output-based" proxies such as accounting restatements and going concern audit opinions have been commonly used as audit quality. "Input-based" proxies such as auditor size and audit fees are other types of representative proxies, where the level of auditor's effort especially, is estimated from audit fees in many prior studies (e.g., Hribar et al., 2010; Lobo and Zhao 2013).

In this paper, we present a theoretical model to show how an effort-averse auditor determines audit quality in the competitive audit market. We develop a theoretical model of the auditor's total wealth given audit fees determined in the audit market. Using the theoretical model and graphical representation, this paper shows the following: 1. The effort-averse auditor exerts different degree of audit effort in maximizing his/her utility, which results in different levels of audit quality. 2. Audit quality improvement under different scenarios. 3. Audit quality improvement when audit independence holds. 4. Audit quality deterioration when client retention rate is higher. 5. Audit quality improvement with less effort aversion triggered by the auditor's perception of litigation risk. 6. Audit quality increase with different audit regulation imposing higher penalty for audit failure.

The rest of the paper is organized as follows. Firstly, we provide a brief review of the audit literature. Secondly we develop a theoretical model for the hypothesis. Thirdly, we develop graphs to support our hypothesis. Lastly, the conclusion and discussions follow.

II. LITERATURE REVIEW

Auditors are more likely to detect errors and consequently improve audit quality, as they make more efforts in their audit (Shibano 1990; Matsumura and Tucker 1992; Dye 1993; Lobo and Zhao 2013). An auditor can find a client's misreporting with higher level of effort, which is consistent with the position that an auditor's effort affects the probability that he/she detects material misstatements in his/her client's financial statements and issues a correct opinion on the client's audited financial statements.

DeFond and Zhang (2014) provide a comprehensive review of multiple perspectives of audit quality. In addition to the demand side of audit quality, they present factors such as auditor's incentives for independence and competence as affecting the supply of audit quality. Litigation risk, reputation risk, and regulatory intervention are factors also linked to the supply of audit quality, and investigated as its drivers.

Empirical studies have generally inferred diverse proxies for audit quality, and there is little evidence on their comparability. Moreover, several empirical studies from a variety of determinants of audit quality often lead to inconclusive evidence on audit quality. For example,

audit fees have been used to infer the auditor's effort level in prior empirical studies. Audit fees can provide a direct link between the auditor's inputs and audit outcomes, because the amount of audit work explicitly induces audit quality (Carcello et al. 2002; Knechel et al. 2013). However, empirical evidence is inconsistent. Hribar et al. (2010) find a positive relationship between audit fees and the likelihood of restatements, whereas Lobo and Zhao (2013) document negative relationship between audit fees and financial restatements in their empirical study.

The interpretation of empirical evidence on audit fees needs caution without secluding risk premium from audit fees (DeFond and Zhang 2014; Lobo and Zhao 2013). DeFond and Zhang (2014) note that there is an opportunity of further research in that many of them fail to seclude "deadweight loss" from audit fees in their audit fee studies. Furthermore, the level of audit fees is determined in a competitive auditing market, thus implying a "given fee". In that audit fees are projected level of audit efforts rather than actual level of efforts, audit fees in prior studies could not establish a direct link between the realized input level of audit effort and audit quality. Even though audit fees are determined 'before' audit work in the competitive audit market, the majority of empirical studies have used audit fees as the proxy for audit effort when the latter can only be determined 'after' the audit work.

The availability of data on characteristics of auditors and the scarcity of audit outcome observations such as restatements and going concern opinions often limit audit research on the relation between actual auditor's effort and audit quality opinions (Francis 2011; DeFond and Zhang 2014). Prior theoretical studies infer a utility function or a risk model by assuming that the auditor is effort-averse (e.g., Baiman et al. 1987; Balachandran and Ramakrishnan 1987; Caplan and Kirschenheiter 2000). However, they do not show how audit quality is affected when an effort-averse auditor exerts different amount of effort while maximizing his/her utility.

Since Ng (1978) introduced a framework regarding the analysis of the role of financial reporting and the purpose of external auditing under the existence of GAAP, a number of studies developed a principal-agent model to address the role of utility maximizing auditors (Antle 1982; Moore and Scott 1986; Baiman et al. 1987). Antle (1982) develops the owner-manager model to consider the role of the auditor as an economic agent and to address the issue of the auditor's incentive as an expected utility maximizer. In the model, each individual behaves as if he/she maximizes the expected value of a von Neumann-Morgenstern utility function. Antle (1982) introduces an auditor into the analysis by examining the game-theoretic foundations of an expanded agency model, and argues that auditors' incentives such as reputation effects are inherently multiperiod phenomena. Moore and Scott (1986) introduce the model regarding auditors' legal exposure and examine to what extent limitations on such exposure influence audit intensity chosen by auditors and collusion with management.

While an effort-averse agent often appears in prior literature (e.g., Evans 1980; Christensen 1982; Bogetoft 1993; Almer et al. 2005), a few studies assume an effort-averse auditor in their models (e.g., Baiman et al. 1987; Balachandran and Ramakrishnan 1987). Using a concave utility function, Balachandran and Ramakrishnan (1987) provide the analysis on the effect of audit firm size on audit fees. Baiman et al. (1987) also analyzes an auditor's role as a utility-maximizing auditor in a principal-agent model and argue that the principal may reduce the inefficiency driven by information asymmetry by hiring a utility-maximizing auditor. Both studies assume auditors are effort-averse in their utility function and the potential penalty is assumed to drive the auditor to exert adequate effort.

The empirical inconclusiveness and the theoretical incompleteness motivate us to privilege the theoretical approach to audit quality and the impact of actual audit effort on the quality. That is, how faithfully client firm's underlying economics is reflected from audited financial statements.

III. MODEL AND HYPOTHESIS

DeAngelo (1981) defines audit quality as "the market-assessed joint probability that a given auditor will both detect a breach in the client's accounting system, and report the breach". Furthermore, audited financial statements from high quality auditors are expected not only to be free of material misstatements, but also to reflect its underlying economics faithfully (DeFond and Zhang 2014). If the client's financial statements are misstated, and the auditor does not detect the material misstatements during the audit, the auditor is responsible for the misstatement under the above definition of audit quality. Because an auditor's effort in performing the audit is more directly related to audit quality, audit quality can be expressed as an input-based proxy of the function of audit effort by the auditor to detect material misstatements in the client's financial statements as follows:

$$\text{Audit quality (AQ)} = f(x) \tag{1}$$

$$P(e) = 1 / (1+ x) \tag{2}$$

where x is the level of audit effort by an effort-averse auditor, $P(e)$ is the probability of audit failure, which can also represent litigation risk. Because audit failure refers to the situation that an auditor is liable for issuing an audit opinion which does not reflect the client's financial statements with material misstatements due to auditor's negligence, we assume that the probability of audit failure can be expressed as an inverse function of audit effort. As in common in the literature (e.g., Choi et al., 2009), audit quality is expressed as the function of auditor's effort, and the probability of audit failure is inversely proportional to audit effort. Thus, audit quality is higher and the probability of audit failure is lower as increases audit effort. The function has the property of diminishing marginal rate of decreasing probability of audit failure to audit effort as follows:

$$\frac{\Delta P(e)}{\Delta \mathrm{x}} < 0$$

Figure 1 presents the inverse relationship between the probability of audit failure (*P(e)*) and audit effort (x).

Prior literature (e.g., Balachandran and Ramakrishnan 1987; Baiman et al. 1987) assumes that the auditor is risk- and effort-averse, and presents a concave utility function $R(f) - C(e)$. $R(f)$ is the auditor's utility for audit fee (wealth) and $C(e)$ is the auditor's disutility from audit effort, which is equal to the cost of auditing.

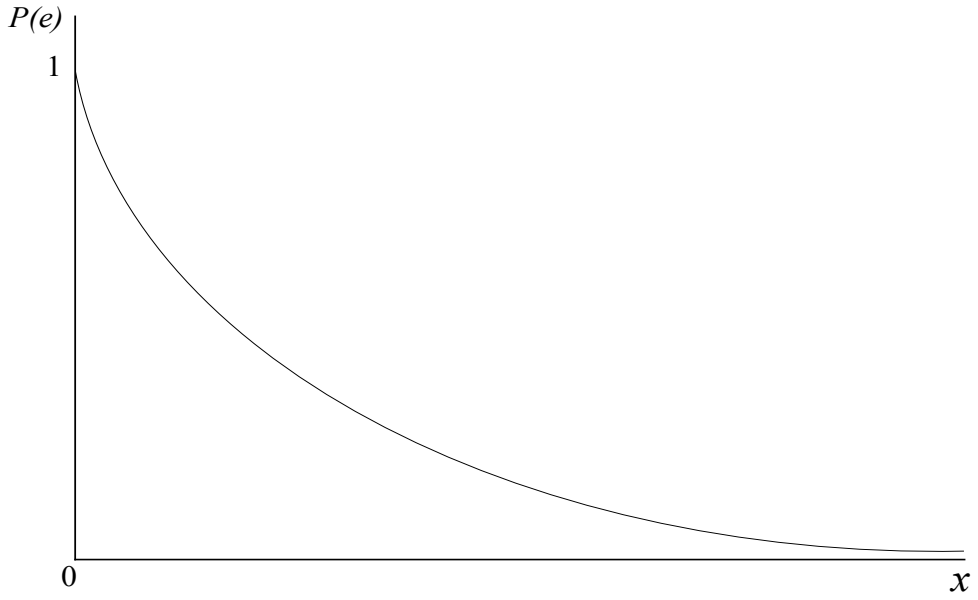
The auditor's total wealth ($\widetilde{W}$) is as follows:

$$\widetilde{W} = F - \big(\alpha x + \beta D P(e)\big) + \gamma PV(F) \tag{3}$$

where F is audit fees which are not contingent on the auditors' opinions; α is auditor's effort cost parameter ($\alpha > 0$); β is penalty parameter ($\beta > 0$) and D is penalty dollar amount imposed to the auditor in case of audit failure; γ ($0 \leq \gamma \leq 1$) is the expected client retention parameter; $PV(F)$

is the present value of future audit fees from retaining the client; and x and $P(e)$ are as same as the above definition[1]. Consistent with Simunic (1980), the auditor's total wealth reflects audit fees which consist of an effort component and an expected loss component. γ is an adjusted parameter because *PV(F)* represents future audit fees minus the sum of future audit cost and future penalty. Also, it is possible to consider the present value of future audit fees for retaining the client if we consider multi periods in our model.

FIGURE 1
Probability of Audit Failure (*P(e)*) and Audit Effort (*x*)



The characteristic of our model that distinguishes it from prior auditing models is that audit fees are assumed as given in the model since audit fees are determined in the competitive market. That is, given F^e, x^e (expected effort level, x) is determined in the price of F^e. However, the actual x will be determined by auditors' actual level of audit effort while auditing clients' financial statements. As such, x can be higher or lower than x^e. The AQ is $f(x)$ not $f(x^e)$, as assumed in most empirical audit fee studies.

The decision making faced by the effort averse auditor, who obeys the Von Neumann Morgenstern utility axioms with respect to x, can be formulated as follows:

Maximize $E\,[U(\widetilde{W})]$ with respect to x (4)

[1] The penalty parameter (β) represents auditor's perception of litigation risk in the model. According to SAS 106, "loss or injury from litigation, adverse publicity, or other events arising in connection with the audited financial statements" is described as "engagement risk". While we use the penalty from audit failure which implies litigation risk throughout this study, engagement risk also can be interchangeably used as engagement risk emerges from litigation risk as well as reputation risk and regulation risk (Knechel et al., 2007).

where $U(\widetilde{W})$ is Von Neumann-Morgenstern utility of wealth function $\widetilde{W}$, with $U'(\widetilde{W}) > 0$ and $U''(\widetilde{W}) < 0$; and E is expectation operator. Given that audit fees are determined in the competitive audit market, the auditor's optimal behavior would maximize his/her own expected utility function subject to α, β, and γ. Von Neumann Morgenstern utility axioms are 1) Nonsatiation which denotes that the marginal utility of the auditor's wealth is always positive (i.e., $U'(\widetilde{W}) > 0$); and 2) effort aversion which denotes that the marginal utility is decreasing (i.e., $U''(\widetilde{W}) < 0$).

In the auditor's wealth function, model (4), the client retention parameter (γ) is closely related with auditor independence. Prior literature notes auditor independence refers to an auditor's attitude of being free from managerial pressure or interference. As defined as "the ability to act with integrity and objectivity" (AICPA 1979), auditor independence reflects how probable the auditor report honestly if he/she detects a breach (Watts and Zimmerman 1981). Based on the assumption of moral hazard on the part of the auditor, Antle (1984) introduces auditor independence by modeling the auditor as expected utility maximizers and characterizing observable auditors' reporting activities. Independent auditors are likely to report honestly if a breach is detected from the client' financial reporting. Because an additional effort by auditors is required for the detected breach, auditor independence plays a critical role in determining the exertion of an additional audit effort.

Besides client retention concern, diverse proxies are used as threats to auditor independence in empirical literature, such as client size, nonaudit service fees, client affiliation with audit firms, and client importance (e.g., Tapalagul and Lin, 2015). Nonetheless, the auditor must consider client retention in issuing an appropriate audit opinion regarding detected breach in the client's financial statements as wealth depends on it. While the ongoing relationship between the auditor and auditee may amplify client-specific knowledge, the auditor is prone to compromise auditor independence in order to retain the client with continuous audit contracts.

Auditor independence can be impaired at the point where the effect of economic bond dominates the effect of learnings effect from the ongoing relationship. If the auditor is independent from the client, the expected retention parameter (γ) is not necessarily zero, but the auditor is totally independent from the client, if γ is zero. Given that, if γ is one, then audit independence is zero, while audit independence is one if γ is zero. As the expected client retention parameter (γ) increases, the auditor is more dependent on the client (or less independent from the client), the level of the auditor's effort is lower (x^* decreases or audit quality is less pronounced).

$$\frac{\partial x^*}{\partial \gamma} < 0 \Rightarrow \frac{\partial AQ}{\partial x^*} > 0 \Rightarrow \frac{\partial AQ}{\partial \gamma} < 0 \quad (5)$$

The inferences from the above theoretical model are incorporated into graphical representation. Figure 2 presents how the optimal effort by the effort-averse auditor is determined. That is, the effort-averse auditor will make an effort to maximize his/her own expected utility function, and the optimal level of audit effort (x^*), and that of auditor's total wealth (W^*) will be determined at the point where the auditor's total wealth function and his/her utility indifference curve are tangent.

FIGURE 2
Optimal Effort Level for an Effort Averse Auditor

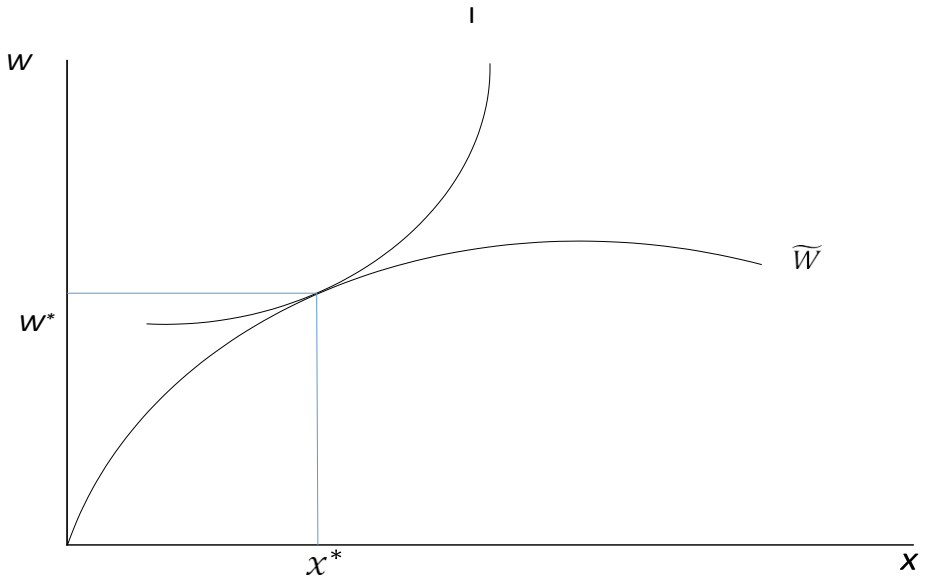


FIGURE 3
Change in the Optimal Effort Level when Auditor Independence Changes

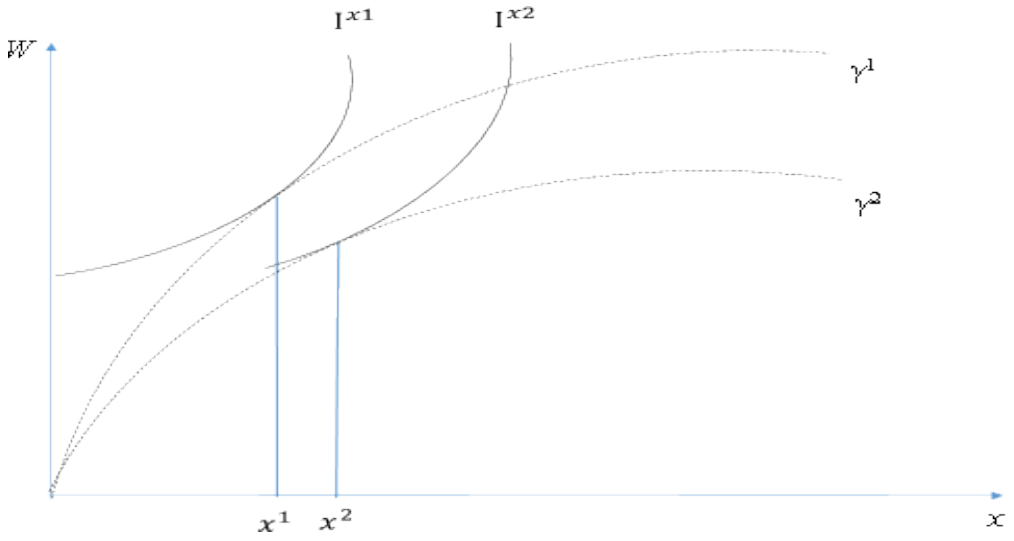


Figure 3 shows how the optimal level of audit effort varies as auditor independence (γ) changes. If γ changes from γ^1 to γ^2, which implies that the degree of auditor independence is greater than before, the auditor makes more efforts even when auditor's wealth decreases. That is, the audit quality is improved because the auditor would make more efforts when the auditor does not perform subsequently the client's audit, which means that the auditor has no concern with the client retention. When the degree of auditor independence changes, the degree of efforts that the auditor makes would change. That is, the auditor would make more efforts to avoid audit failure as the auditor independence is escalated (from γ^1 to γ^2). Audit quality is a function of audit effort, so that audit quality is enhanced with increased audit efforts if the degree is auditor independence is escalated.

An auditor's optimal level of effort at different levels of effort-averseness is presented in Figure 4. Given that audit effort is affected by auditor independence, the auditor's effort level shifts from x^1 to x^2 or x^3 as the auditor becomes less effort averse (i.e., I^{A1} to I^{A2} or I^{A3}) due to the change in the degree of auditor independence.

FIGURE 4
Optimal Effort Level for an Auditor Displaying Different Degrees of Effort Aversion

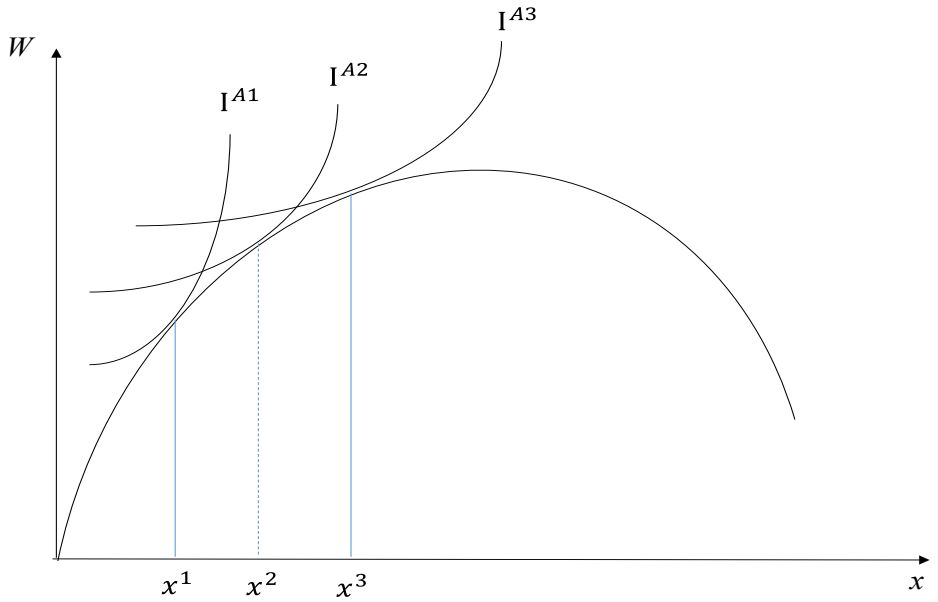


FIGURE 5
Optimal Audit Effort for an Effort Loving Auditor

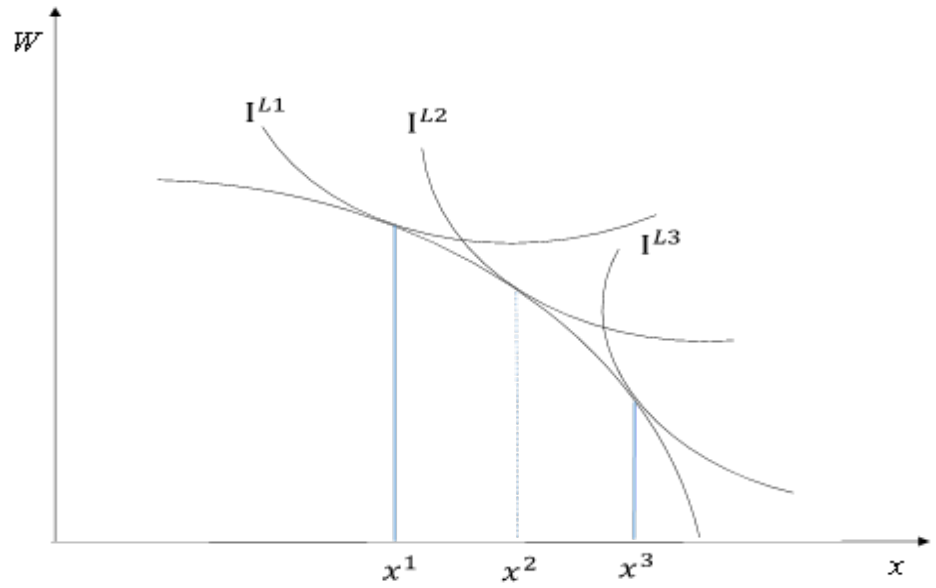


FIGURE 6
Optimal Audit Effort for an Auditor Displaying Effort Neutral, Effort Aversion, and Effort Loving

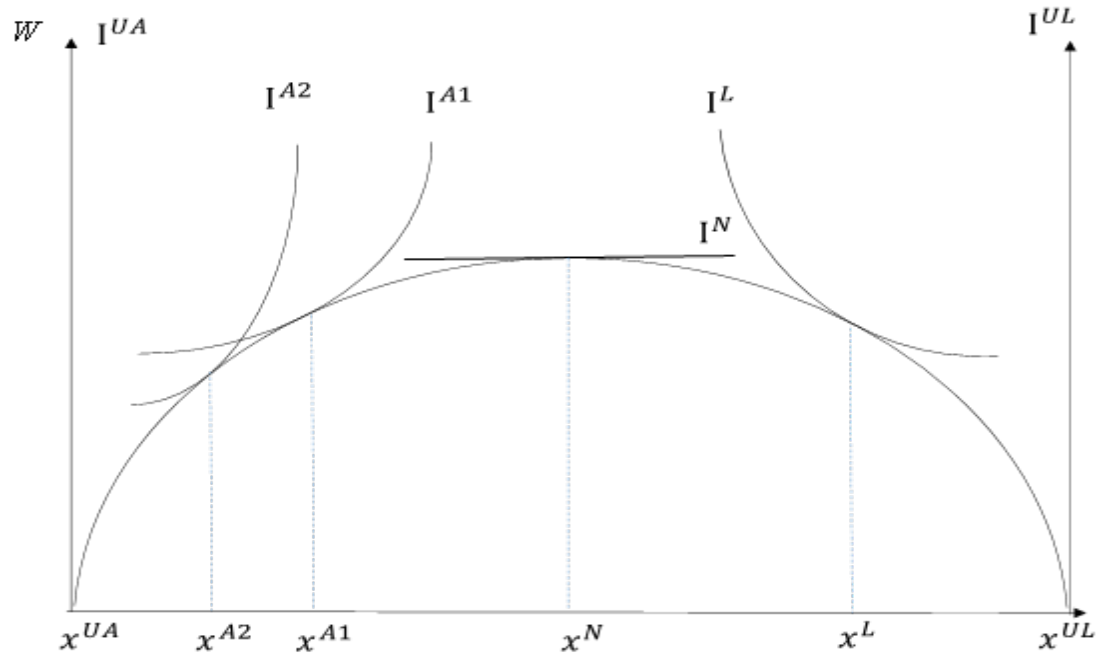


Figure 5 shows the effort loving auditor's wealth and the optimal level of audit efforts by the effort loving auditor. As the auditor becomes more effort loving (i.e., I^{L1} to I^{L3}), the auditor's desired level of efforts increases from x^1 to x^3, while the effort level decreases from x^3 to x^1 as the auditor's attitude of effort loving changes from I^{L3} to I^{L1}.

In Figure 6, we show how the optimal level of audit efforts is determined for auditors with different attitudes on audit effort (i.e., effort neutral, effort loving, and effort aversive auditors). When the auditor is effort-neutral (I^N), the optimal level of audit effort x^N. The optimal level of audit efforts increases when the auditor's effort attitude is effort loving (x^L). Effort averse auditors make less efforts to maximize their utility and the optimal level of efforts is determined at x^{A1} or x^{A2} , much less than x^N or x^L.

In summary, we focus on the analysis of the optimal relationship between the effort-averse auditor and audit quality.

IV. CONCLUSION AND DISCUSSION

This paper develops a theoretical framework to show how audit quality is determined by an effort-averse auditor. In maximizing his/her utility, the auditor exerts different amount of effort under different circumstances, which in turn, determines audit quality.

We suggest that the optimal level of audit efforts *(x**) is determined by the factors that influence auditor independence (γ) or auditor's perception of litigation risk (β). For example, compensation skims or different channel of audit fees payment can trigger the change in audit quality by making auditor exert different levels of audit effort. While some studies document that the relationship between litigation risk and audit quality may vary as the sensitivity of litigation costs to audit effort changes under different regimes of auditors' liability (e.g., Narayanan, 1994) or as litigation risk affects the number of parties to whom auditors are liable (e.g., Chan and Wong, 2002), the model suggests that a stiffer penalty for audit failure improves audit quality in general to suggest a tougher audit regulation. This can not only support a theoretical ground on recent debates on the impact of audit regulations (e.g., SOX) on audit quality, but also provide a solid framework for empirical studies on audit quality.

In this paper, we show how audit quality is determined by an effort-averse auditor in an expected utility maximizing theoretical model. Assuming that the auditor is effort-averse, we posit that different factors such as auditor independence and penalty for audit failure induce different level of audit effort consistent with maximizing the auditor's utility, which in turn, determines audit quality. This study shows audit quality suffers when client relationship which proxies for auditor independence is sticky while the quality is enhanced vice versa. The model also demonstrates audit quality improves with less effort aversion that may be weakened by the auditor's perception of penalty for audit failure, i.e., litigation risk.

Our model provides a theoretical background for many empirical or experimental research. Despite its importance for the research on the relationship between audit quality and audit independence, few theoretical grounds have been provided to support this relationship. Prior audit quality research has shown mixed empirical evidence. Our study is the first theoretical study that examines whether the effort averse auditors make efforts in a different manner to maximize their utility under a competitive audit market. Furthermore, this study sheds light on the empirical study of the impairment of audit independence from the extended auditor tenure (i.e., client retention) or non-audit service fees. This study also contributes to studies on audit fees to proxy for audit quality. While audit fees are projected level of audit efforts rather than actual level of efforts, audit fees are often used to measure audit quality in prior studies. A large number of empirical studies have

used audit fees may distort the implication of their findings since the actual level of audit effort can be known 'after' audit work, which could be different from the level of audit effort at the stage of audit fee determination. Thus, this study provides the direct link between the realized input level of audit effort and audit quality.

This study contributes to the literature in the area of audit quality in several ways. The model in this study shows how an effort-averse auditor plays a role in an improvement in audit quality under a competitive auditing market. Our study is the first model to show this. That is, this study posits that the effort-averse auditor make an effort to maximize his/her utility, and furthermore presents that audit quality is differentiated as the degree of audit effort varies. This study maintains the assumption of the effort-averse auditor and extends the examination of the effect of the behavior of effort averse auditors on audit quality.

Second, this study provides a theoretical framework for many empirical or experimental research. This study sheds light on the theoretical framework for the effects of auditor independence on audit quality, so we provide further insights into possible extension of future research regarding the effect of practical proxies for auditor independence on audit quality. Consistent with our prediction, Kim et al. (2016) argue whether audit quality improves when there is a simple change in audit fee payment channel by using experiments and survey analysis.

While there is no framework for the study of the relationship between audit independence and audit quality, this study posits that auditor independence induces an enhancement in audit quality via changes in the level of audit efforts. Furthermore, empirical studies between auditor tenure and audit quality are incomplete. We posit the reason for this incompleteness is the empirical studies' failure to distinguish auditor independence from audit quality. For example, propensity of issuing going-concern opinion has been used as a proxy for audit quality, and the negative relationship between the audit quality and audit partner tenure has been studied (e.g., Carey and Simnett 2006). However, the frequency of going-concern opinion issuance may not represent whether or not the client firm's underlying economics is faithfully reflected from audited financial statements. Furthermore, their finding on the negative relationship between the propensity of issuing going-concern opinion and audit partner tenure can stem from the impact of auditor independence on audit work rather than the relationship between audit partner tenure and audit quality. We show the impact of auditor independence on audit quality using our model. This paper also extends Lu and Sapra (2009)'s study, because auditor's conservatism seems to be an attempt to reduce the probability of audit failure ($P(e)$), i.e., litigation risk, in our model and consequently to increase audit quality.

Finally, our model help regulators to determine the penalty for audit failure, suggesting a stiffer penalty. In response to the accounting scandal, SOX was enacted to improve auditing of U.S. public companies not only by emphasizing firms' internal controls, but also by establishing the Public Company Accounting Oversight Board (PCAOB) which is designed to oversee and regulate auditing, and to protect investors from corporate frauds. While a number of studies present that earnings management has been decreased after SOX (Cohen, Dey, and Lys 2008; Chhaochharia and Grinstein 2007; Lobo and Zhou 2006), the impact of SOX on audit quality is an open ended question to both researchers and regulators. Coates and Srinivasan (2014) document that prior research on the benefit of SOX provides less evidence on the causality and that research design to isolate the effects of SOX may be challenging since most of the research includes all large firms affected by SOX, with no control group of firms. The new model in this study suggests a stiffer penalty for audit failure improves audit quality in general to recommend a tougher audit regulation. As this is the first study that shows how audit quality changes via the different degree

of audit effort by an effort-averse auditor as changes the client retention rate, this study contributes to the theoretical literature on how audit quality is affected by audit regulations.

REFERENCES

Almer, E. D., J. L. Higgs, and K. L. Hooks. 2005. A theoretical framework of the relationship between public accounting firms and their auditors. *Behavioral Research in Accounting*

American Institute of Certified Public Accountants (AICPA). 1979. Scope of Services by CPA Firms, Public Oversight Board. AICPA, 1979.

American Institute of Certified Public Accountants (AICPA). 2007. Audit Evidence. Statement on Auditing Standards No. 106.

Antle, R. 1982. The auditor as an economic agent. *Journal of Accounting Research* 20: 503-527.

Antle, R. 1984. Auditor independence. *Journal of Accounting Research* 22: 1-20.

Baiman, S., J. H. Evans III, and J. Noel. 1987. Optimal contracts with a utility maximizing auditor. *Journal of Accounting Research* 25 (2): 217-244.

Balachandran, B. V., and R. T. S. Ramakrishnan. 1987. A theory of audit partnerships: Audit firm size and fees. *Journal of Accounting Research* 25 (1): 111-126.

Bogetoft, P. 1993. Parallelism in information production Moral hazard and relative performance evaluations. *Management Science* 39 (4): 448-457.

Carcello, J., D. Hermanson, T. Neal, and R. Riley, Jr. 2002. Board characteristics and audit fees. *Contemporary Accounting Research* 19 (3): 365-384.

Carey, P., and R. Simnett. 2006. Audit partner and audit quality. *The Accounting Review* 81 (3): 653-676.

Chan, D. K., and K. P. Wong. 2002. Scope of auditors' liability, audit quality, and capital investment. *Review of Accounting Studies* 7(1): 97-122.

Choi, J., J. Kim, X. Liu, and D. A. Simunic. 2009. Cross-listing audit fee premiums: Theory and evidence. *The Accounting Review* 84 (5): 1429-1463.

Christensen, J. 1982. The determination of performance standards and participation. *Journal of Accounting Research* 20 (2): 589-603.

Coates, J., and S. Srinivasan. 2014. SOX after ten years: A multidisciplinary review. *Accounting Horizons* 28 (3): 627-671.

Chhaochharia, V., and Y. Grinstein. 2007. Corporate governance and firm value: The impact of the 2002 governance rules. *Journal of Finance* 62: 1789–1825.

Cohen, D., A. Dey, and T. Lys. 2008. Real and accrual-based earnings management in the pre- and post- Sarbanes-Oxley periods. *The Accounting Review* 83: 757-787.

DeAngelo, L. E. 1981. Auditor size and audit quality. *Journal of Accounting and Economics* 3: 183-199.

DeFond, M. L., and J. Zhang. 2014. A review of archival auditing research. *Journal of Accounting and Economics* 58: 275–326.

Dye, R. A. 1993. Auditing standards, legal liability, and auditor wealth. *Journal of Political Economy* 101 (5): 887-914.

Evans, J. H. 1980. Optimal contracts with costly conditional auditing. *Journal of Accounting Research* 18: 108-128.

Francis, J. R. 2011. A framework for understanding and researching audit quality. *Auditing: A Journal of Practice and Theory* 30 (2): 125-152.

Kim, S., S. Kim, T. Kim, and S. Pae. 2016. Audit quality and indirect payment of audit fees. Working paper.

Knechel, W. R., and A. Vanstraelen. 2007. The relationship between auditor tenure and audit quality implied by going concern opinions. *Auditing: A Journal of Practice and Theory* 26(1): 113-131.

Lobo, G., and J. Zhou. 2006. Did conservatism in financial reporting increase after the Sarbanes-Oxley Act? Initial evidence. *Accounting Horizons* 20 (1): 57–73.

Lobo, G., and Y. Zhao. 2013. Relation between audit effort and financial report misstatements: Evidence from quarterly and annual restatements. *The Accounting Review* 88 (4): 1385-1412.

Lu, T., and H. Sapra. 2009. Auditor conservatism and investment efficiency. *The Accounting Review* 84 (6): 1933-1958.

Matsumura, W. M. and R. R. Tucker. 1992. Fraud detection: A theoretical foundation. *The Accounting Review* 67 (4): 753-782.

Moore, G., and W. R. Scott. 1986. Auditors' legal liability, collusion with management, and investors' loss. *Contemporary Accounting Research* 5 (2): 754-774.

Narayanan, V. G. 1994. An analysis of auditor liability rules. *Journal of Accounting Research*: 39-59.

Ng, D. S. 1978. An information economics analysis of financial reporting and external auditing. *The Accounting Review* 53: 910-920.

Shibano, T. 1990. Assessing audit risk from errors and irregularities. *Journal of Accounting Research* 28: 110-140.

Simunic, D. A. 1980. The pricing of audit services: Theory and evidence. *Journal of Accounting Research* 18 (1): 161-190.