**Auditor Reputation Losses, Legal Liability Damages, and Standards**

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**Abstract:** This paper studies the effect of imposing legal liability damages when an auditor also faces reputation losses. The auditor is uninformed about his ability but is concerned about avoiding a decline in the outside market's perception about his ability due to the loss in future clients. Reputation losses alone provide incentives for the auditor to supply costly audit quality. However, with legal liability damages, there is an option of noncompliance, where audit quality is lower than the minimum threshold set in the standards. Imposing legal liability damages may cause the auditor to choose noncompliance with lower audit quality than what would be optimal with only reputation losses. With compliance, if standards are lax, audit quality is higher than the minimum threshold because of reputation concerns. In equilibrium this is costly to the auditor because the market is not fooled and discounts high audit quality. With noncompliance, the auditor has lower costs, but incurs expected legal liability damages. If the legal liability damages are not too high, then noncompliance allows the auditor to commit to a lower audit quality. Further, when considering preferences for the strictness of standards, the investors always have a preference for stricter standards than the auditor, but reputation effects can dampen the difference in preferences.

*Keywords*: *reputation losses, legal liability damages, incentives, audit quality*

*JEL: M41, M42, D82, M48*

## 1. Introduction

Legal liability damages from investor lawsuits in the case of auditor negligence can be important in motivating auditors to provide sufficiently high audit quality. In the U.S., liability laws are such that audit firms of sufficiently large size and wealth provide insurance to investors in the case of audit failure, assuming the auditor is found negligent. Thus, the avoidance of litigation costs provides auditors an incentive to provide high quality audits and to comply with auditing standards. However, in some jurisdictions outside the U.S., legal liability is virtually nonexistent. It has been suggested that in the absence of legal liability damages, auditors are primarily motivated to provide high quality audits by reputational concerns (DeAngelo, 1981; Weber et al., 2008; Skinner and Srinivasan, 2012).[1, 2] Specifically, client firms prefer auditors with reputations for high quality and may switch to a new auditor if an auditor's reputation declines (Barton, 2005; Hennes, et al., 2014). This paper considers the effect of imposing legal liability damages from investor lawsuits on audit quality when the auditor faces reputation losses for providing high quality audits in the case of audit failure.

Much of the focus of the impact of legal liability damages on auditors has been on the benefit of improved audit quality. For example, part of the motivation for the Sarbanes-Oxley Act of 2002 may have been to increase audit quality by increasing auditors' expected liability due to additional attestations and higher penalties (Ghosh and Pawlewicz, 2009; Rashkover and Winter, 2005). However, shortly after the collapse of Arthur Anderson there was concern that the remaining Big 4 accounting firms might also succumb to the high litigation costs (Norris, 2004). This may have led to regulators proposing, or in some cases even mandating, limited liability for auditors.[3, 4] The concern is to impose a limited level of legal

[1] For example, in the case involving Ernst and Whinney's audit of Continental Illinois Bank, Judge Easterbrook commented: "The complaint does not allege that E & W had anything to gain from any fraud by Continental Bank. An accountant's greatest asset is its reputation for honesty, followed closely by its reputation for careful work. Fees for two years' audits could not approach the losses E & W would suffer from a perception that it would muffle a client's fraud. And although the interests of E & W's partners and associates who worked on the Continental audits may have diverged from the firm's, … covering up fraud and imposing large damages on the partnership will bring a halt to the most promising career. E & W's partners shared none of the gain from any fraud and were exposed to a large fraction of the loss. It would have been irrational for any of them to have joined cause with Continental." (DiLeo v. Ernst & Young).

[2] An alternative source of incentives for auditors may be with regulatory oversight (Ye and Simunic, 2015).

[3] In 2007, Conrad Hewitt, the SEC's Chief Accountant at that time, in a speech outlining the SEC's initiatives, proposed limiting U.S. auditors' liability (http://www.sec.gov/news/speech/2007/spch020907cwh.htm).

liability damages that provide sufficient incentives without imposing too much damage on the audit profession.[5] However proponents of both sides of the debate of whether to increase or limit legal liability damages to auditors do not take into consideration how reputation losses affect incentives to provide high audit quality.[6] Further, an often-overlooked consequence of imposing legal liability damages when there were none previously is that the auditor has an additional choice of whether to comply with auditing standards that provide a minimum threshold to avoid legal liability damages. This paper considers how this choice of compliance to avoid legal liability damages affects audit quality when the auditor is also motivated to avoid reputation losses due to audit failure.

I use a model consisting of three risk neutral parties: a firm (i.e. board of directors) who hires an auditor to provide assurance about an earnings report, and investors who can invest in the firm's project. Investors decide whether to invest in the firm in exchange for a share of the cash flows after observing an audited earnings report. The setting is equivalent to one in which the firm (or the manager of the firm) privately observes the cash flows early and reports the cash flows as unaudited earnings. The firm has an incentive to always report high earnings so as to induce investors to invest in the firm, but investors will anticipate the firm's incentive to misreport when choosing whether to invest in the firm. Hiring an auditor to provide assurance about the earnings report improves investment efficiency.

The auditor provides assurance about the firm's earnings based on his ability to detect the firm's misstatements as well as his private choice of audit quality. The auditor can be of either high or low ability, where a high ability auditor more likely detects misstatements than one of low ability, holding

[4] In 2008, the European Commission officially recommended that Member States should establish some form of limited liability for auditors (European Commission, 2008). Specifically, Charlie McCreevy, the European Commissioner for Internal Market and Services, stated in a news release: "After in-depth research and extensive consultation, we have concluded that unlimited liability combined with insufficient insurance cover is no longer tenable. It is a potentially huge problem for our capital markets and for auditors working on an international scale. The current conditions are not only preventing the entry of new players in the international audit market, but are also threatening existing firms. In a context of high concentration and limited choice of audit firms, this situation could lead to damaging consequences for European capital markets." From: http://europa.eu/rapid/press-release_IP-08-897_en.htm?locale=fr.

[5] Norris (2004) asks, "if auditors are doing a good job, they deserve to be protected from lawsuits that could put them out of business. But without the threat of such suits, will they do a good job?"

[6] Although not addressed in this paper, it is not clear that reputation losses alone would be sufficient to provide an auditor the incentives that are provided with legal liability damages alone. In settings where auditors face legal liability and reputational concerns, Lennox (1999) finds empirical evidence that legal liability provides larger sized audit firms with stronger incentives than reputation. Willenborg (1999) and Khurana and Raman (2004) also find evidence that the liability incentives are stronger than reputational incentives. However, Karpoff et al. (2008) find that for firms that are caught "cooking the books", reputational losses are significantly higher than legal penalties.

audit quality constant. Further, for a given level of ability, higher audit quality increases the likelihood of detecting misstatements. I assume that the auditor and all other parties have the same priors about the auditor's ability to detect misstatements. That is, the auditor's type is unknown by all parties, implying that the auditor cannot use the choice of audit quality to signal his type.

The auditor suffers a reputation loss in the case of audit failure, which occurs when the auditor fails to detect the client firm's misstatement and which is determined after cash flows are realized. More specifically, audit failure occurs if the auditor attests to high earnings but the subsequent cash flows are low. By providing a higher quality audit, the auditor can avoid audit failure and thus avoid a decline in his reputation for detecting misstatements despite being unable to signal his type.[7] The auditor's reputation declines due to the audit client market's updated beliefs about the auditor's type, i.e., a decline in the belief that the auditor is of a high type. This leads to a loss in future fees for audit and non-audit services, as clients prefer auditors that have a reputation for high quality and will switch when it believes their current auditor is not of high quality (Barton, 2005; Hennes, et al., 2014). Auditors with higher prior expectations about their type, i.e. a greater reputation for high ability, have more to lose than auditors with reputations for lower quality.

With audit failure, in addition to the auditor's reputation loss, the investors lose their investment. In the presence of legal liability damages, investors can sue auditors and possibly recover at least part of their investment. Whether auditors are found negligent in the case of investor lawsuits depends on their compliance with auditing standards. Auditing standards provide a threshold or a minimum amount of audit quality, such that the auditor is not negligent if the audit quality is subsequently determined to be above the threshold in the case of an investor lawsuit. The higher the threshold, the stricter are the standards. In the presence of legal liability damages, the auditor's choice of whether to comply with standards or to violate the standards is important. If it is discovered after an audit failure that the auditor did not supply sufficient audit quality to comply with the auditing standards, then the auditor is found

[7] This is similar to the setting in which a manager whose ability is unknown provides productive effort to influence external labor market perceptions and therefore his future wages. In this case, the manager is motivated by implicit incentives driven by labor market expectations or reputation, rather than explicit contract-based incentives. See Holmström (1999).

negligent and must repay damages to investors. While the possibility of reputation loss affects the auditor's choice of audit quality, it has no effect on the auditor's preference to comply with auditing standards.

Therefore, when regulators impose legal liability damages, the auditor anticipates not only the expected legal liability damages but also reputation losses in the case of audit failure when choosing audit quality. It is important to distinguish reputation losses from legal liability damages. The primary difference is that reputation losses can occur in the absence of legal liability damages. For example, in regimes outside of the U.S., legal liability may be virtually nonexistent. In Germany, legal liability for auditors is extremely limited and in Japan there is virtually no legal liability for auditors. Weber et al. (2008) documents significant reputation losses for KPMG in Germany after the ComROAD fraud was discovered, including a significant increase in the client defection rate.[8] Similarly, Skinner and Srinivasan (2012) find that one-quarter of the clients of PriceWaterHouseCooper's affiliate, ChuoAoyama, left after an audit failure at Kanebo in Japan.

With only reputation losses and no legal liability damages, the auditor is sufficiently concerned about the outside client market's perception to provide costly audit quality. However, the market is not fooled, because in equilibrium it correctly anticipates audit quality. That is, the market anticipates a certain audit quality and the auditor is motivated to provide that level of audit quality, due to his desire to avoid lower reputation and loss of future fees. This is comparable to a managerial career concerns setting, where a manager has concerns about the labor market's perception of his ability, which affects his future wages. In this case, the manager has implicit incentives to provide costly, productive effort to improve his reputation, but the market is not fooled and discounts his performance accordingly (Holmström, 1999). The similarity is that both the manager's and the auditor's actions can be interpreted as posturing to the market, but a subtle difference is that the manager is trying to increase future wages while the auditor is trying to avoid a decrease in future fees. Thus, with reputation losses alone, the equilibrium audit quality

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[8] Weber et al. (2008) notes that as of December 31, 2005, there were no lawsuits filed against KPMG nor were there any regulatory investigations of KPMG for the failure at ComROAD.

is increasing in the ability of the high type auditor and decreasing in the ability of the low type auditor. Even though audit quality is a substitute for ability, the dominating force is the expected loss in reputation, and a high ability auditor has more to lose than a low ability auditor.

Given that the auditor faces reputational losses, the introduction of legal liability damages can cause audit quality may decrease. When the standards are not strict, i.e., when the threshold in the standards for negligence is low, if the auditor chooses compliance then reputation losses drive the auditor to choose a strictly higher audit quality than what is prescribed in the standards. Because the auditor chooses compliance, legal liability damages play no part in the determination of audit quality, implying that audit quality is the same as if there were no legal liability damages. If the auditor chooses noncompliance, then the auditor's auditing costs decrease due to lower audit quality, but the auditor incurs legal liability damages in addition to reputation losses in the case of audit failure. Thus, if legal liability damages are not too high, then the auditor optimally chooses noncompliance with lower audit quality than when facing reputation losses alone.

Because audit quality depends on the level of strictness in the standards, investors and the auditor may take actions to influence standard setters to change the threshold for audit quality. With both legal liability damages and reputation losses, the investors' and the auditor's preferences depend on whether the auditor complies or does not comply. If the auditor complies and standards are lax, reputation losses cause the auditor to choose higher audit quality than the threshold, implying that the level of the threshold has no effect on the auditor's cost and the auditor is indifferent about the level of strictness. Therefore, with compliance, the auditor prefers any level of lax standards, while investors prefer the strictest standard because there are no legal liability damages. If the auditor does not comply, then the auditor prefers an intermediate level of the standards to balance the auditing costs and the legal liability damages, while investors prefer any level of standards that are sufficiently strict. These results build on the prior results in Ye and Simunic (2013), in which there are no reputation losses and investors and auditors have the same preference for strictness when standards are precise, and when the auditing fee depends on the auditor's wealth and compliance choice.

The paper is related to the previous work on auditor's incentives. In some of that work, the focus is only on legal liability damages in providing incentives to the auditor: see for example, Dye (1993), Schwartz (1997), Schwartz (1998), and Radhakrishnan (1999). More recently, Laux and Newman (2010) and Deng et al. (2008) study the effects of increased auditor liability on client retention and investment decisions, respectively. Other work focuses only on the role of reputation in providing incentives to the auditor (Datar and Alles, 1999; Corona and Radhuwa, 2010). This paper considers the role of both legal liability damages and reputation losses in providing incentives to auditors. Other work that also considers the effect of both legal liability damages and reputation losses on an auditor's incentives includes Bigus (2011) and Bigus (2015). In Bigus (2011), auditors can signal their type and with stronger reputation effects, both high and low types may supply higher than the socially optimal audit quality, suggesting that a legal liability cap would beneficial. In contrast, in the current setting without signaling, reputation losses never induce excessive audit quality and the introduction of limited legal liability damages may cause audit quality to decrease below the negligence threshold. Bigus (2015) studies the effect of reputation and liability losses on incentives, depending on the precision of negligence. With precise standards, there may not be a signaling equilibrium. In this paper, reputation effects alone cause the auditor to posture to the market, but imposing legal liability damages may allow the auditor to choose to violate standards.

The paper proceeds as follows. Section 2 describes the model. Section 3 analyzes the model and presents results: Section 3.1 serves as a benchmark, Section 3.2 identifies the equilibrium with only reputation losses, Section 3.3 describes the equilibrium with reputation and legal liability losses, and Section 4 concludes.

## 2. Model

A firm has an investment project for which it needs outside investment and for which it offers a share of the cash flows to investors. The timeline is as in Figure 1. The firm hires an auditor to verify its earnings and pays the auditor a non-contingent fee. Verification of the firm's earnings depends on the auditor's innate ability to detect misstatement and the audit quality that the auditor provides. The auditor's ability is unknown to all parties, and initially his reputation is based on prior expectations about his ability. Next, the auditor privately chooses audit quality, and the firm's earnings are publically released. The firm's verified earnings provide an early signal to investors, who choose whether to invest in the firm. Finally, investment cash flows are realized. If the audited earnings suggested good news and cash flows are bad, the auditor may suffer two losses. First, the audit market updates its beliefs about the auditor's reputation, which, due to the decline in the auditor's reputation, results in a decrease in future business for the auditor. Second, the auditor incurs legal liability damages if he is found to be negligent after being sued by investors.

----- Insert Figure 1 here. -----

The investment project requires an investment amount, $I$, from investors. The project's cash flows are uncertain and can be either good or bad and are denoted $x_i$, $i \in \{b, g\}$, with $x_g = X > 0$ and $x_b = 0$. Further, denote $\lambda$ as the likelihood of good cash flows. In return for the investment, the firm sells $\beta$ shares of the project's cash flows to investors, with $0 < \beta < 1$. If investors invest, assume that $\beta X - I > 0$. In addition, assume that the expected return from the project is non-negative, $\lambda\beta X - I \geq 0$. This implies that with no other information and a competitive market, investors prefer to invest rather than not to invest.

The firm's audited earnings i.e., verified by the auditor to be free of misstatements, are denoted $y_j$, $j \in \{L, H\}$. The setting here is equivalent to one in which the firm reports its own earnings privately and the auditor verifies that the firm's report is free of misstatements before publically releasing the earnings report. In this case, the firm always reports high earnings so as to induce investors to invest in the firm.

The auditor's verification of the firm's earnings depends on the auditor's choice of audit quality and the auditor's innate ability to detect misstatements. If the cash flows are good, the auditor can perfectly verify high earnings, but if cash flows are bad, the likelihood that the auditor's verification of earnings is correct is equal to the audit quality, $a$, and the auditor's ability, $\alpha$, or $a + \alpha$. The auditor's ability can be high or low, $\alpha \in \{\alpha_L, \alpha_H\}$, with $\alpha_H > \alpha_L \geq 0$. No one, including the auditor, knows the auditor's actual ability. The likelihood of a high ability auditor is $p$, and the expected auditor ability is $\alpha_0$

$= p\alpha_H + (1 - p)\alpha_L$. Also, assume that $0 < a + \alpha_0 < 1$. The auditor's cost of auditing is $c(a) = 0.5a^2$. The relationship between the cash flows and the firm's reported earnings are illustrated in Figure 2.

----- Insert Figure 2 here. -----

The investors' choice of whether to invest in the firm's project depends on the realized earnings. If earnings are high, $y_H$, the expected return from the project without an expected liability payment from the auditor is non-negative, $\lambda(\beta X - I) - (1 - \lambda)I(1 - a - \alpha_0) \geq 0$, implying that investors will invest. If earnings are low, $y_L$, the expected return from the project with no liability payments from the auditor is negative, $- (1 - \lambda)I(1 - a - \alpha_0) < 0$, implying that investors will not invest. Also, assume that $(1 - \lambda)I < (1 - \alpha_0)$, which ensures that the optimal audit quality that maximizes social welfare is feasible.

If reported earnings are high and cash flows are subsequently bad, the auditor suffers a reputation loss, which is based on the audit market's updated beliefs about the auditor's ability. The reputation loss results in a loss of future business. If the auditor verifies high earnings, $y_H$, and cash flows are bad, $x_b$, then the audit market's beliefs about the auditor's ability decreases, and the auditor's reputation decreases. Technically, if reported earnings are high and cash flows are bad, then $E(\alpha|y_H, x_b, a) =$

$\sum_{j=L,H} pr(\alpha_j, y_H, x_b|a)\alpha_j / pr(y_H, x_b|a) < \alpha_0$.

In addition to the reputation loss, the auditor may also face legal liability damages, denoted $L$. If reported earnings are high and cash flows are subsequently bad, then investors sue the auditor at which time the actual audit quality is determined. If the auditor is found to be negligent, then the auditor must repay damages, $L$, to investors. I assume that the damages that auditors pay back to investors is less than the investors' loss i.e., $L < I$. In this case, the auditor is only responsible for their share of the investors' loss, which is consistent with empirical evidence such as in Palmrose (2006). Further, with the form of $L$ basically unspecified, the analysis can focus on the comparison of the auditor's loss due to legal liability damages to the reputation loss.

The likelihood that the auditor is found negligent depends on the actual audit quality as well as threshold audit quality as prescribed in the auditing standards, denoted $s$. This is the minimum auditor quality such that the auditor is found to be compliant. The likelihood that the auditor is found negligent is $P(a, s)$. Specifically, standards are sufficiently precise so that the auditor is found negligent if only if the audit quality is determined to be below what the auditing standards prescribe, i.e., if $a < s$, then $P(a, s) = 1$. Otherwise, if it is revealed that the auditor complied with the standards, the auditor is not found negligent, or if $a \geq s$, then $P(a, s) = 0$.

The firm must pay a non-contingent fee to the auditor, which is based on the auditor's *ex ante* expected type, or $F_0 = \alpha_0$, assuming that the fee is at least as large as the expected cost of auditing, $c(a)$. Further, in the case of misreported high earnings, the market updates its priors about the auditor's type and sets the auditor's future fees equal to the auditor's expected type, $F_{Hb} = E(\alpha|y_H, x_b, a) < F_0$. If low earnings are correctly reported, the auditor's future fees remain the same, $F_0$. This is consistent with the auditor facing possible reputation losses based on current beliefs about his ability, i.e., $F_0 - F_{Hb}$.[9] The auditor discounts the future fees by $\delta$, with $0 < \delta < 1$.

With both reputation losses and legal liability damages, the auditor's expected payoff includes the current fee, the cost of auditing, expected liability payment, as well as the expected decline in future fees and is as follows:

$$U^A = F_0 - 0.5a^2 + (1 - \lambda)\{(a + \alpha_0)\delta F_0 + (1 - a - \alpha_0)[\delta F_{Hb} + P(a, s)L]\}. \tag{1a}$$

The investor's expected payoff is as follows:

$$U^I = \lambda(\beta X - I) - (1 - \lambda)(1 - a - \alpha_0)[I - P(a, s)L]. \tag{1b}$$

The firm's expected payoff is as follows:

$$U^F = \lambda(1 - \beta)X - F_0. \tag{1c}$$

## 3. Analysis

### *3.1 Benchmark - Audit Effort Observable*

Before turning to the main analysis, I consider a benchmark in which a regulator chooses audit quality to maximize social welfare, which is the sum of the firm's, the investor's and the auditor's

[9] If the audit market were to also update its beliefs about the auditor's type after observing low earnings and bad cash flows, the results of the paper still hold. See the additional analysis in the Appendix for further details.

expected payoffs. I assume that even though the regulator can observe the auditor's audit quality, the firm cannot observe the auditor's audit quality. The reason is to assess the effect of the loss of the auditor's reputation on audit quality in the absence of private information about audit quality. If the market were to also observe the auditor's audit quality, then the decline in the expected type would be appropriately discounted *ex ante* and have no bearing on the optimal audit quality.

Denote the regulator's optimal choice of audit quality as $a_{SW}$, and denote the conjecture of audit quality as $\hat{a}_{SW}$ and the conjecture of the lower future fees as $\hat{F}_{Hb} = E(\alpha | y_H, x_b, \hat{a}_{SW})$. The sum of the expected payoffs to the firm, the investor, and the auditor is as follows:

$$\text{SW} = \lambda(X - I) - (1 - \lambda)(1 - a_{SW} - \alpha_0)I + (1 - \lambda)(a_{SW} + \alpha_0)\delta F_0 - (1 - \lambda)(1 - a_{SW} - \alpha_0)\delta \hat{F}_{Hb} - 0.5a_{SW}^2. \quad (2)$$

The legal liability damages and the auditor's fee are just wealth transfers between the auditor and the investors, and the auditor and the firm, respectively, and do not affect social welfare. The first order condition with respect to the auditor's effort, when social welfare is maximized, where $a^*_{SW}$ denotes the equilibrium audit quality, is:

$$- a^*_{SW} + (1 - \lambda)I + (1 - \lambda)\delta(F_0 - \hat{F}_{Hb}) = 0 \quad (3)$$

The market's conjecture is correct in equilibrium, i.e., $\hat{F}_{Hb} = F_{Hb} = E(\alpha | y_H, x_b, a_{SW})$. Substituting and solving for $a^*_{SW}$ yields the following the equilibrium audit quality, assuming that $\delta$ is not too large:[10]

$$a^*_{SW} = 0.5[(1- \alpha_0) + (1 - \lambda)I - \sqrt{[(1-\alpha_0)-(1-\lambda)I]^2 - 4(1-\lambda)\delta f(\alpha)}], \quad (4)$$

where $f(\alpha) = p(1 - p)(\alpha_H - \alpha_L)^2$.

The optimal audit quality takes into account the expected loss from inefficient investment as well as the decline in the auditor's reputation. To see how the decline in the auditor's reputation affects the optimal audit quality, assume that $\delta = 0$. This case is equivalent to a setting where auditor type is

[10] Feasibility requires that $\delta \leq [(1 - \alpha_0) - (1 - \lambda)I]^2/4(1 - \lambda)f(\alpha)$. In addition, there are two positive real roots that solve (3) after replacing $F_{Hb}$ with $\hat{F}_{Hb}$. However, the larger root, $0.5\{(1- \alpha_0) + (1 - \lambda)I + \sqrt{[(1-\alpha_0)-(1-\lambda)I]^2 - 4(1-\lambda)\delta f(\alpha)}\}$, is not feasible because it is greater than $(1 - \alpha_0)$. In addition, feasibility of the smaller root requires that $(1 - \lambda)I \leq (1 - \alpha_0)$.

observable, implying that the discounted reputation loss has no effect on the optimal choice of audit quality.[11] With $\delta = 0$, the optimal audit quality is equal to the expected loss from inefficient investment, or $a^*_{SW} = (1 - \lambda)I$. Comparing the optimal audit quality in (4) with $(1 - \lambda)I$ , the effect of the auditor's possible future reputation loss is to increase the optimal audit quality, that is $0.5[(1- \alpha_0) + (1 - \lambda)I - \sqrt{[(1-\alpha_0)-(1-\lambda)I]^2 - 4(1-\lambda)\delta f(\alpha)}\,] > (1 - \lambda)I$.

In addition, the auditor's choice of compliance does not affect social welfare because the legal liability damages, $L$, do not affect social welfare. The consequence is that the strictness of the auditing standards in terms of a minimum required level of auditing quality also has no effect on social welfare.

*3.2 Unobservable Audit Quality with Only Reputation Losses*

In this section, the auditor's choice of audit quality is unobservable, which means the auditor chooses audit quality privately to maximize his expected payoff. In addition, there are no legal liability damages, implying that the auditor's incentives are only driven by his concern for avoiding reputation losses due to audit failure.

With no legal liability damages, denote the audit quality as $a_R$. The auditor chooses audit quality given the market's conjectures, denoted $\hat{a}_R$ , and $\hat{F}_{Hb} = E(\alpha | y_H, x_b, \hat{a}_R)$. Substituting $L = 0$ in (1a), the first order condition of the auditor's expected payoff in (1a) is:

$$- a_R + (1 - \lambda)\delta(F_0 - \hat{F}_{Hb}) = 0. \tag{4}$$

In equilibrium, the market's conjecture is correct. Let $a_R^*$ denote the equilibrium audit quality with only reputation losses. Then, $\hat{F}_{Hb} = F_{Hb} = E(\alpha | y_H, x_b, a_R^*)$. The solution, or the equilibrium audit quality, $a_R^*$, is found by substituting $F_{Hb}$ into the first order condition in (4). The following lemma states the equilibrium audit quality with only reputation losses due to audit failure.

[11] Technically, this would mean substituting $F_{Hb}$ for $\hat{F}_{Hb}$ in (3), which is independent of $a_{SW}$.

*Lemma 1: With only reputation losses, the auditor's choice of audit quality is* $a_R^* = 0.5[(1 - \alpha_0) - \sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}\,]$, *where* $f(\alpha) = p(1 - p)(\alpha_H - \alpha_L)^2$.

Proof: All proofs are in the Appendix.

With only reputation losses, there are two feasible solutions to the auditor's choice of audit quality, but the optimal equilibrium involves the lower audit quality. The auditor chooses a lower audit quality because in equilibrium his expected payoff is decreasing in the audit quality.[12] In this rational expectations equilibrium, the market's conjectures about the auditor's choice of audit quality are correct, implying that from an *ex ante* perspective, the auditor's choice of audit quality does not affect the market's conjectures about ability. That is, the market expects a certain level of audit quality, which in equilibrium the auditor provides, implying that the market discounts the auditor's reputation in the case of audit failure. This is similar to a career concerns setting in which a manager's desire to influence the external labor market's assessment of his ability and therefore his future wages gives him an incentive *ex ante* to provide costly productive effort. However, the market expects a certain amount of effort and discounts the manager's performance accordingly (Holmström, 1999).

Comparing the optimal audit quality when audit effort is observable to a regulator to the case when the auditor privately chooses audit quality, the auditor privately chooses audit quality that is strictly less than the audit quality that maximizes social welfare, i.e., $a_R^* < a_{SW}^*$. In the benchmark case, the regulator is concerned about both the investors' inefficient investment and the auditor's reputation loss due to audit failure, implying that the audit quality that maximizes social welfare is high enough to minimize both losses. However, if the auditor privately chooses audit quality, the auditor is only concerned about his reputation losses due to audit failure, and the consequence is lower audit quality than what maximizes social welfare.

With audit quality determined solely by the auditor's desire to avoid reputation losses, the auditor's innate, unknown ability has an important effect on audit quality. By assumption, audit quality is

[12] The auditor's expected payoff in equilibrium is $U^A(a_R^*) = F_0 - 0.5(a_R^*)^2 + (1 - \lambda)\delta\alpha_0$.

a substitute for the auditor's innate ability to detect misstatements. Because the auditor type is unknown, in equilibrium audit quality is affected by the prior beliefs about ability, $\alpha_0$, which is increasing in both the ability of the high type auditor, $\alpha_H$, and the ability of the low type auditor, $\alpha_L$. However, audit quality is also affected by the actual loss in reputation, which is represented by $f(\alpha) = p(1 - p)(\alpha_H - \alpha_L)^2$, and which is increasing in the ability of the high type auditor, $\alpha_H$, and decreasing in the ability of the low type auditor. Thus, when combining these forces, the effects of the ability of the high type auditor and the ability of the low type auditor on audit quality differ. The following proposition states the effect of ability on audit quality.

*Proposition 1: With only reputation losses, the audit quality is increasing in the ability of the high auditor type, $\alpha_H$, and decreasing in the ability of the low auditor type, $\alpha_L$.*

Both audit quality and the auditor's innate ability affect the likelihood of detecting misstatements. With ability unknown, audit quality is a substitute for the auditor's innate ability. Thus, the greater the ability, the less impact the audit quality has on the likelihood that the auditor detects misstatements. With no other factors, this would mean by the auditor's incentive to avoid reputation losses, the greater the reputation loss, the higher is the audit quality. This is similar to when the auditor faces only legal liability charges; with higher legal liability damages or higher wealth, audit quality is higher (Dye, 1993). With unknown auditor ability and with the loss in reputation being based on priors about ability or the average type, an actual high ability auditor will suffer a loss while an actual low type will not. Therefore, the greater the ability of the high auditor type, the greater is the loss in reputation, and the higher is audit quality.

Further, when there are no legal liability damages due to audit failure, i.e., no negligence, the auditor is not concerned with compliance or noncompliance with the auditing standards. If the investors cannot collect legal liability damages from the auditor, then there are no lawsuits and courts cannot determine the actual audit quality supplied. In other words, without legal liability damages, the auditor cannot suffer a loss from violating auditing standards because the violation of auditing standards would not be public knowledge. Thus, the standards play no role in the determination of audit quality with only reputation losses. Therefore, whether the audit quality will be sufficiently high to meet the minimum threshold in the standards depends on the significance of the reputation losses. From Proposition 1, if the ability of the high type auditor is sufficiently high or if the ability of he low type auditor is sufficiently low, then the auditor will be in compliance with the standards.

*3.3 Unobservable Audit Quality with Legal Liability Damages and Reputation Losses*

In this section, the auditor's choice of audit quality is also unobservable, but in addition to reputation losses, there are legal liability damages. The auditor is liable for damages in the case of audit failure and if it is subsequently determined that the audit quality was not in compliance with what is prescribed in the standards. Thus, the auditor's incentives are driven not only for his concern for avoiding reputation losses due to audit failure, but also his concern for avoiding legal liability damages if the audit violates standards. The results in this section demonstrate the effect of imposing legal liability damages in addition to the auditor's concern about reputation losses.

With both reputation losses and legal liability damages, the auditor chooses audit quality given the conjectures of the market, denoted $\hat{a}$ , and $\hat{F}_{Hb} = E(\alpha|y_H, x_b, \hat{a})$. The first order condition of the auditor's expected payoff in (1a) is:

$$- a + (1 - \lambda)P(a, s)L + (1 - \lambda)\delta(F_0 - \hat{F}_{Hb}) = 0. \tag{4}$$

In equilibrium, the market's conjectures are correct. Let $a^*$ denote the equilibrium audit quality with both legal liability damages and reputation losses. Then, $\hat{F}_{Hb} = F_{Hb} = E(\alpha|y_H, x_b, a^*)$. The solution, or the equilibrium audit quality, $a^*$, is found by substituting $F_{Hb}$ into the first order condition in (4). Further, the auditor's choice of quality depends on whether he complies or does not comply with standards; let $a_C^*$ denote the optimal audit quality with compliance and let $a_{NC}^*$ denote the optimal audit quality with noncompliance. The following lemma states the equilibrium audit quality depending on compliance or noncompliance and the minimum threshold in the standards, $s$, where $a_{C1} = 0.5\{(1- \alpha_0) -$

$\sqrt{[(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}$ }, $a_{C2} = 0.5\{(1-\alpha_0) + \sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}\}$, $a_{NC1} = 0.5\{(1-\alpha_0) + (1-\lambda)L - \sqrt{[(1-\alpha_0)-(1-\lambda)L]^2 - 4(1-\lambda)\delta f(\alpha)}\}$, and where $f(\alpha) = p(1-p)(\alpha_H - \alpha_L)^2$.

*Lemma 2: With both legal liability and reputation losses, the equilibrium audit quality depending on the auditor's choice of compliance with auditing standards is as follows:*

*i. With compliance, the equilibrium audit quality is higher than the compliance threshold if standards are lax, is equal to the threshold if standards are intermediate, and there is no equilibrium if standards are strict. Specifically,* $a_C^* = a_{C1}$ *if* $s \leq a_{C1}$, $a_C^* = s$ *if* $a_{C1} < s \leq a_{C2}$, *and if* $s > a_{C2}$, $a_C^*$ *does not exist.*

*ii. With noncompliance, the equilibrium audit quality is close to the compliance threshold if standards are lax, and lower than the threshold if standards are strict. Specifically,* $a_{NC}^* = s - \varepsilon$ *if* $s \leq a_{NC1}$, *where* $\varepsilon$ *is a very small, positive amount and* $a_{NC}^* = a_{NC1}$ *if* $s > a_{NC1}$.

When the auditor's choice of audit quality is unobservable and the auditor faces both reputation and legal liability damages, the primary difference compared to the setting where the regulator chooses the optimal audit quality is due to compliance. When audit quality is observable to a regulator, compliance is not a consideration because legal liability damages are wealth transfers between the investors and the auditor, and thus have no effect on social welfare.

With compliance, there are no legal liability damages even in the case of audit failure, i.e., $P(a, s) = 0$, and the auditor is only concerned about reputation losses. Thus, if standards are lax, the auditor will choose the same audit quality as in the previous section with no legal liability, i.e., $a_C^* = a_R^*$, if $s < a_{C1}$ which, from Proposition 1, occurs when the ability of the high type auditor is sufficiently high. There are actually two possible equilibria, both of which are feasible if standards are lax; however, the auditor will choose the smaller of the two equilibria. In equilibrium, the market's conjectures about the auditor's choice of audit quality are correct, implying that from an *ex ante* perspective, the auditor's choice of audit quality does not affect the market's conjectures about ability.[13] However, the auditor delivers a certain

[13] The auditor's expected payoff in equilibrium with compliance is $U^A(a^*) = F_0 - 0.5(a^*)^2 - (1-\lambda)\delta\alpha_0$.

audit quality because that is what the market expects. With compliance, because there is no legal liability loss, choosing a higher audit quality in equilibrium has no benefit and is only costly to the auditor.

If standards are neither lax nor strict, there are also two equilibria with compliance, but the auditor chooses the lowest audit quality to comply with the standards, or $a_C^* = s$ if $a_{C1} \leq s < a_{C2}$. In this case, unless $a_{C1} = s$, this lower audit quality ($a_{C1}$) is not feasible, but the higher audit quality, $a_{C2}$ is feasible. In addition, $a_C^* = s$ is also an equilibrium. Similar to above, given both equilibria, the auditor chooses the equilibrium with the lowest audit quality, or $a_C^* = s$. If standards are strict, or if $s > a_{C2}$, then there is no equilibrium because the direct cost of auditing is always too high relative to the benefit of avoiding the discounted, expected reputation losses.

If the auditor chooses noncompliance, the auditor incurs legal liability damages in the case of audit failure, i.e., $P(a, s) = 1$. Further, as with compliance, the optimal audit quality depends on the strictness of the standards. Noncompliance implies that the choice of audit quality is strictly lower than what is in the standards, i.e., $a_{NC} < s$. Therefore, taking the strictness of the standards as given implies that the audit quality can vary with the strictness of the standards. If standards are sufficiently strict, i.e., if $s > a_{NC1}$, the auditor chooses an audit quality that is similar to the optimal audit quality with a regulator, $a_{SW}^*$, but depends on the legal liability damages, $L$, rather than the investment amount, $I$. In this case, with $L < I$, audit quality is lower than the socially optimal audit quality, or $a_{NC1} < a_{SW}^*$, and the difference in audit quality depends on the difference between $L$ and $I$.

With noncompliance and when standards are not strict, i.e., if $s \leq a_{NC1}$, the equilibrium audit quality $a_{NC1}$ is not feasible and the only equilibrium is the highest audit quality just below what is prescribed in the standards, i.e., $a_{NC}^* = s - \varepsilon$, where $\varepsilon > 0$ is a very small positive amount. In this case, compared to the audit quality with no legal liability damages (as in Lemma 1), the audit quality with legal liability damages may be higher or lower, depending on the strictness of the standards.

With the equilibrium audit quality in place, I next turn to the auditor's choice of compliance or noncompliance. If the auditor chooses noncompliance, then in the case of audit failure, the auditor is found negligent and must pay legal liability fees. With compliance, the auditor's choice of audit quality is higher than with noncompliance, which means higher direct audit costs, but the auditor does not incur legal liability damages. In choosing compliance over noncompliance, the auditor weighs the higher incremental direct auditing costs with compliance against the expected legal liability damages with noncompliance. From an *ex ante* perspective, the discounted reputation loss has the same effect on the auditor's expected payoff regardless of the choice of audit quality. This is because in equilibrium the market can ascertain the auditor's audit quality and discount its expectation of the auditor's type accordingly. The following proposition compares the auditor's expected payoff in equilibrium with compliance to his expected payoff with noncompliance.

*Proposition 2: With both legal liability damages and reputation losses, the auditor's choice of compliance versus noncompliance depends on the legal liability damages and the strictness of standards as follows:*

*i. If the standards are lax, $s \le a_{C1}$, then the auditor chooses compliance if and only if the legal liability damages are sufficiently high, or* $L \ge \dfrac{[a_{C1}^2 - (s-\varepsilon)^2]}{2(1-\lambda)[1-\alpha_0-(s-\varepsilon)]}$*; otherwise he chooses noncompliance.*

*ii. If standards are neither strict nor lax, or if* $a_{C1} < s \le \hat{s} = \sqrt{(a_{NC1})^2 + 2(1-\lambda)(1-a_{NC1}-\alpha_0)L}$*, then the auditor chooses compliance, and if the standards are strict,* $s > \hat{s}$*, then the auditor chooses noncompliance.*

The first thing to note is that the auditor's choice of compliance is non-monotonic in the compliance threshold, *s*. It is not the case that as the strictness of the standards increases, the auditor more likely prefers noncompliance. That is, the auditor can prefer noncompliance when standards are lax which means that the compliance threshold is low (Proposition 2, Case i), but then prefers compliance for a higher compliance threshold or when standards are not lax (Proposition 2, Case ii).

Starting with Case (ii) of Proposition 2, if standards are not lax, the intuition for the existence of a cutoff for the compliance threshold is straightforward. For standards that are neither strict nor lax, i.e., $a_{C1}$

$\leq s \leq a_{NC1}$, the auditor strictly prefers compliance. In this intermediate range of strictness, from Lemma 2 the audit quality with noncompliance is very close to the audit quality with compliance, i.e., $a_C^* = s$ and $a_{NC}^* = s - \varepsilon$. This implies that the direct cost of auditing with compliance is virtually the same as with noncompliance. Therefore, the benefit of avoiding legal liability damages with compliance is sufficient to make compliance preferable. When standards are stricter, $a_{NC1} < s \leq a_{NC2}$, there is a much bigger difference between the audit quality with compliance and the audit quality with noncompliance. In this case, the auditor trades off between the higher direct cost of auditing with compliance and the expected liability damages with noncompliance. This implies that there is a cutoff for the compliance threshold such that when the compliance threshold is greater than the cutoff, the expected liability damages are lower than the higher direct auditing costs with compliance.

When standards are lax, as in Case (i) of Proposition 2, then the auditor's choice of compliance versus noncompliance is not so clear. If standards are lax, from Lemma 2, with compliance the auditor chooses a higher audit quality than the minimum amount necessary to ensure compliance due to reputational losses, i.e., $a_C^* = a_{C1}$. *Ex ante*, the auditor would like to be able to commit to a lower audit quality and ignore the possibility of reputation losses. This is because with a rational expectations equilibrium, the market expects a specific audit quality and discounts it accordingly. With noncompliance, when standards are lax, from Lemma 2, the auditor's choice of audit quality is just below the threshold for compliance, i.e., $a_{NC}^* = s - \varepsilon$. In this case, comparing the expected payoff with compliance to noncompliance, the auditor prefers noncompliance as long as the legal liability damages are low. If the legal liability damages are high, noncompliance is too costly, and the auditor prefers compliance.

From Proposition 2, given the auditor's choice of compliance and noncompliance, I next consider the effect of adding legal liability damages when the auditor is concerned about avoiding reputation losses in the case of audit failure. With only reputation losses, the auditor is not concerned about complying with standards, but rather provides sufficient audit quality to avoid reputation losses. Introducing the possibility of negligence and legal liability damages gives the auditor a choice of whether to provide sufficient audit quality to comply with standards. The following corollary describes the effect of introducing legal liability damages on audit quality.

*Corollary 1: With reputation losses, the addition of legal liability damages can cause audit quality to stay the same, to decrease, or to increase. The specifics are as follows:*

*i. If standards are lax and the legal liability damages are high, or if* $s \leq a_{C1}$ *and* $L \geq \frac{[a_{C1}^2 - (s-\varepsilon)^2]}{2(1-\lambda)[1-\alpha_0-(s-\varepsilon)]}$*, then audit quality is the same.*

*ii. If standards are lax and the legal liability damages are low, or if* $s \leq a_{C1}$ *and* $L < \frac{[a_{C1}^2 - (s-\varepsilon)^2]}{2(1-\lambda)[1-\alpha_0-(s-\varepsilon)]}$*, then audit quality decreases.*

*iii. Otherwise, if* $s > a_{C1}$*, then audit quality increases.*

The most surprising result in Corollary 1 is that the introduction of legal liability damages can cause audit quality to decrease (Case ii). This is because with the addition of legal liability damages, the auditor does not comply with standards when the auditor would have been in compliance with standards without legal liability damages. If standards are lax, then the audit quality with compliance is the same as with no legal liability damages and is driven only by reputational losses, i.e., $a_R^* = a_C^* = a_{C1}$. That is, with legal liability damages and compliance, the auditor chooses audit quality that is strictly higher than the compliance threshold due to concern for his reputation loss.

The reason that the equilibrium audit quality optimally decreases with the addition of legal liability damages is because with reputation losses, the auditor provides costly audit quality and the market expects a certain amount of audit quality and discounts it appropriately. This means that the auditor would be better off if he could somehow commit to provide lower audit quality. Introducing legal liability damages and the choice of compliance gives the auditor an option to commit to a lower audit quality via noncompliance than the audit quality he provides to avoid reputation losses. Noncompliance and lower audit quality are optimal when the legal liability damages are not too high. In this case, when legal liability damages are low, it could be the case that reputation losses could be more significant than the losses from legal liability.

In Cases (i) and (iii) of Corollary 1, audit quality stays the same or increases, respectively. In Case (i), the standards are lax, which means that with only reputation losses, the auditor is in compliance with standards. With the introduction of legal liability damages, and if legal liability damages are sufficiently high, the auditor chooses compliance and due to reputation concerns chooses higher audit quality than the compliance threshold. From Lemma 2, this is the same audit quality as with only reputation losses, i.e., $a_R^* = a_{C1}$. In Case (ii), standards are not lax, which means that with only reputation losses the optimal audit quality is too low to be in compliance. With the addition of legal liability charges, the auditor chooses compliance when standards are neither strict nor lax, i.e., if $a_{C1} < s \leq \hat{s}$, and in this case audit quality is equal to the compliance threshold, which is strictly greater than the optimal audit quality with only reputation losses. When standards are strict, the auditor chooses noncompliance, and the optimal audit quality is still higher than the optimal audit quality with only reputation losses because the auditor's choice depends on both legal liability damages and reputation losses, i.e., $a_{NC}^* = a_{NC1}$.

Next I turn to the investors' preference for whether the auditor complies with standards or does not comply with standards, given both reputational losses and legal liability damages. Given that the auditor can detect investments with good cash flows perfectly, the investors' preference for compliance will depend on the effect of audit failure on investment efficiency. With legal liability damages, in the case of audit failure the investors recoup some of their investment if the audit quality is determined to be lower than the compliance threshold. The following proposition describes the investor's preference for compliance.

*Proposition 3: The investors prefer that the auditor chooses compliance if the legal liability damages are small, i.e., if* $L/I \leq \dfrac{(a_C^* - a_{NC}^*)}{(1 - a_{NC}^* - \alpha_0)}$*; otherwise, the investors prefer that the auditor chooses noncompliance.*

With the legal liability damages lower than the investment amount, in the case of audit failure and if the auditor does not comply, then the investors only recoup a portion of their investment i.e., $I - L$. In this case, the likelihood of audit failure and losing the investment is lower if the auditor complies than if he does not comply and the difference is the difference between the audit quality with compliance, i.e., $a_C^*$, and the audit quality with noncompliance, $a_{NC}^*$. However with noncompliance and audit failure, the auditor must pay back an amount $L < I$ to investors. Thus, if the legal liability damages are not much lower than the investment amount relative to the difference in audit quality, the investors prefer noncompliance. However, if the legal liability damages are very low relative to the investment amount, or if the difference in audit quality is high, then the investors prefer that the auditor complies with standards.

The investors' preference for compliance versus noncompliance differs from the auditor's preference, in that the investors' preference depends primarily on the difference between the legal liability damages and the investment amount. In addition, both the investors' and the auditor's preferences depend on the audit quality. For a given level of strictness of the standards, if the audit quality with noncompliance is close to the audit quality with compliance, the auditor will more likely prefer to comply with standards. In contrast, if the legal liability damages are lower than the investment amount, the investors will less likely prefer compliance if the audit quality with noncompliance is close to the audit quality with compliance.

Up to this point, the level of the strictness of the standards is exogenous in determining the auditor's choice of compliance with the standards as well as the impact of the auditor's choice on the investors' welfare. The choice of strictness in accounting standards is in general subject to a regulator, but can be influenced by lobbyists who represent investors' preferences as well as auditors' preferences. I next compare the auditor's and the investor's preference for strictness of the standards, given the auditor's choice of compliance or noncompliance.

*Proposition 4: With both reputation losses and legal liability damages, the auditor's and the investors' preferences for strictness of standards are as follows.*

*i. The auditor prefers any level of lax standards if legal liability damages are sufficiently high, or prefers $s \leq a_{C1}$, if $L > \underline{L} = [(1 - \alpha_0) - \sqrt{(1-\alpha_0)^2 - a_{C1}^2}\ ]/(1 - \lambda)$; otherwise the auditor prefers an intermediate level of strictness, $s = (1 - \lambda)L + \varepsilon$.*

*ii. The investors prefer strict standards if the level of investment is high, or prefers $s = \hat{s}$ if $I > I^* = L(1 - a_{NC1} - \alpha_0)/(a_{C2} - a_{NC1})$; otherwise the investors prefer less strict standards, $a_{NC1} < s < \hat{s}$.*

The auditor clearly prefers a compliance threshold that is lower than the investors' preferences. However, the reputation losses play a key role in bringing the divergent preferences closer together. With no reputation losses, if the auditor complies with standards, the auditor prefers the lowest possible threshold to reduce the direct auditing costs; the investors prefer the highest possible threshold because they cannot recoup their entire investment. However, with lax standards, reputation losses cause the auditor to choose higher audit quality than the threshold, implying that the level of the threshold has no bearing on the auditor's cost and the auditor is indifferent about the level of strictness. With noncompliance, the auditor prefers a specific compliance threshold that is neither strict nor lax because the equilibrium audit quality balances the direct auditing cost and the incurrence of the legal liability damages. The auditor's overall choice of the compliance threshold depends on the legal liability damages; if they are sufficiently high, the auditor will choose lax standards that induce compliance with audit quality that is higher than the threshold. If legal liability damages are low, the auditor chooses an intermediate level of the threshold that induces noncompliance and an intermediate level of audit quality.

The investors will never choose lax standards. In the case of compliance, the investors prefer the strictest threshold possible to minimize their lost investment. With compliance, the auditor will not be found negligent, meaning that in the case of audit failure, investors lose their entire investment. A stricter threshold induces the auditor to provide high audit quality, thus reducing the likelihood of audit failure. With noncompliance, the investors can recover some of their lost investment from the auditor. However, noncompliance means a lower audit quality than the threshold, implying that the investors prefer sufficiently strict standards to induce the auditor to choose higher audit quality. Comparing the investors' expected payoffs, the investors will choose very strict standards when the amount of the investment is sufficiently large.

I next introduce a numerical example to illustrate and to expand on the results. I first use the numerical example to compare audit quality with only reputation losses to audit quality with only legal liability damages. If there is no reputation loss but there are legal liability damages, i.e., if $\delta = 0$, from (1a) the auditor's expected payoff is:

$$U^A = F_0 - 0.5(a_L)^2 - (1 - \lambda)(1 - a_L - \alpha_0)P(a_L, s)L. \tag{5}$$

Clearly, the auditor's expected payoff depends on whether the auditor complies with standards or violates the standards, implying that the choice of audit quality depends on whether the auditor complies or does not comply with standards. Let $a_L^*$ denote the equilibrium audit quality with only legal liability damages. By maximizing (5), the auditor can choose compliance with $a_L^* = s$ or noncompliance with $a_L^* = (1 - \lambda)L$.

Figure 3 compares audit quality with only reputation losses to audit quality with only legal liability damages, both with and without compliance. The panel on the left (Panel A) is when the legal liability damages are low ($L = 0.021$) and the panel on the right (Panel B) is when the legal liability damages are higher ($L = 0.3$).

----- Insert Figure 3 here. -----

I consider first how the strictness of the standards affects whether audit quality with reputation losses can be at least as large as audit quality with legal liability damages. If the standards are not strict, ($s \leq 0.0966$ when $L = 0.021$ and $s \leq 0.3394$ when $L = 0.3$), then with only legal liability damages, the auditor will comply with standards. Then, audit quality with only reputation losses will be at least as large as audit quality with only legal liability damages if $s < 0.225$ and $\delta > s(0.45 - s)/0.06125$. Note that this threshold for $\delta$ is increasing in $s$. Under these combined conditions, the audit quality with only reputation losses is at least as large as with only legal liability damages, implying that reputation losses would be sufficiently high so that the auditor would also be in compliance with auditing standards.

If standards are sufficiently strict, ($s > 0.0966$ when $L = 0.021$ and $s > 0.3394$ when $L = 0.3$), then with only legal liability damages, the auditor will not comply with standards. In this case, the audit quality with only reputation losses is at least as great as with legal liability damages if $\delta \geq 0.0753$ when $L = 0.021$, or if $\delta \geq 0.7347$ when $L = 0.3$. In contrast to the case when standards are not strict, the threshold for $\delta$ does not depend on the strictness of the standards because the auditor does not base audit quality on the compliance threshold when he chooses noncompliance.

Comparing the two panels, the effect of higher legal liability damages can be observed. First, overall, it is less likely that audit quality with reputation losses will be at least as large as with only legal liability damages. With higher legal liability damages, the auditor has more to lose when he can be found negligent. Further, with higher legal liability damages, the auditor is more likely to comply with standards and provide a higher audit quality. Even with stricter standards, the audit quality with reputation losses may not be sufficiently high, implying that reputation loss in the case of audit failure may not be sufficient to motivate the auditor to choose high audit quality.

Next, Figure 4 shows the auditor's choice of compliance or noncompliance when the auditor may incur both legal liability damages and reputation losses. The panel on the left (Panel A) depicts the auditor's compliance choice when legal liability damages are low ($L = 0.021$) and the panel on the right (Panel B) depicts the compliance choice when legal liability damages are high ($L = 0.3$)

----- Insert Figure 4 here. -----

In both panels, if standards are sufficiently strict, i.e., $s > \hat{s}$, the auditor prefers noncompliance (Case (ii) of Proposition 2). Further, the cutoff for $s$ is increasing in the discounted reputation loss, which is also illustrated in both panels. In this range of the compliance threshold $s$, only audit quality with noncompliance depends on the discounted reputation losses; with compliance, the audit quality is just equal to the threshold, $s$. Therefore, as the discounted reputation loss increases, noncompliance is more costly to the auditor than compliance, implying that the higher the discount factor, the greater the cutoff is for the compliance threshold such that the auditor will choose noncompliance.

When $s \leq \hat{s}$, the auditor's choice of compliance and noncompliance depends on the legal liability damages (Cases (i) and (ii) of Proposition 2), as well as the compliance threshold $s$. In Panel B, when legal liability damages are higher, the auditor always prefers compliance when $s \leq \hat{s}$ (Case (ii) of Proposition 2). However, in Panel A, with low legal liability damages, the auditor may choose compliance or noncompliance when $s \leq \hat{s}$. If the standards are lax and the discounted reputation loss is high, then the auditor chooses noncompliance (Case (i) of Proposition 2). With lower legal liability damages, the auditor is better off with noncompliance because with compliance he chooses a higher audit quality than is necessary (i.e., $a_c^* > s$), which is more costly than the expected legal liability damages he incurs with noncompliance. Thus, the imposition of legal liability damages can cause the auditor to choose noncompliance when he would have been in compliance with only reputation losses. Further, in Panel A, if the standards are lax and the discounted reputation loss is high, then audit quality is lower with the addition of legal liability damages (Case (ii) of Corollary 1).

**4. Conclusion**

This paper highlights the importance of reputation losses in an auditor's choice of audit quality. The results demonstrate that audit quality may decline when legal liability damages are introduced and the auditor is already concerned about reputation losses. With reputation losses alone, the auditor would like to be able to commit to lower audit quality but cannot do so. Thus, if regulators impose legal liability damages that are not too high when the auditor already faces reputation losses and if standards are lax, the auditor will choose noncompliance and a lower audit quality than if there were no legal liability damages. In practice, legal liability damages may be low if regulars mandate limited liability or if there are post-trial settlements or appeals that lower damages (Palmrose, 1991).

The results have implications for regulators imposing either caps on liability damages or who are considering increasing the damages for which auditors are liable. If the legal liability damages are too low and standards are lax, then audit quality may decrease. In addition, in jurisdictions where there is no legal liability, reputation loss may be sufficient in motivating auditors but audit firms must have a sufficiently significant reputation for high quality. Specifically, the paper suggests that not only is the amount of the reputation loss important, but the strictness of the standards is also an important factor to consider when varying the legal liability damages. Audit firms that have a reputation for high audit quality have more to lose in terms of reputation if they choose to provide low audit quality, but these same firms may have more wealth, which also provides strong incentives to avoid legal liability damages. There are some limitations to the setting considered. The formation of reputation often occurs over several time periods, and the setting here only considered one period. In addition, reputation effects may be more pronounced when considering that auditors often have multiple clients.

## Appendix

**Proof of Lemma 1:** With only reputation losses and no legal liability damages (i.e., $L = 0$), and given the market's conjectures about the audit quality, $\hat{F}_{Hb} = E(\alpha | y_H, x_b, \hat{a}_R)$, the auditor's problem is to choose audit quality, $a_R$, so as to maximize his expected payoff, $U^A$, or:

$$Max\ F_0 - 0.5a_R^2 + (1 - \lambda)\delta(a_R + \alpha_0)F_0 + (1 - \lambda)\delta(1 - a_R - \alpha_0)\hat{F}_{Hb}$$

The first order condition of $U^A$ with respect to $a_R$, or $\partial U^A/\partial a_R = 0$, where $a_R^*$ is the equilibrium audit quality, is:

$$- a_R^* + (1 - \lambda)\delta(F_0 - \hat{F}_{Hb}) = 0. \tag{A1}$$

The market's conjecture is correct in equilibrium, that is $\hat{F}_{Hb} = F_{Hb} = E(\alpha | y_H, x_b, a_R^*) = \dfrac{p(1-a_R^*-\alpha_H)\alpha_H + (1-p)(1-a_R^*-\alpha_L)\alpha_L}{(1-a_R^*-\alpha_0)}$. Substituting $\hat{F}_{Hb} = F_{Hb}$ into (A1) yields the following

$$(a_R^*)^2 - (1 - \alpha_0)a_R^* + (1 - \lambda)\delta p(1 - p)(\alpha_H - \alpha_L)^2 = 0 \tag{A2}$$

Next, I solve for the equilibrium audit quality, $a_R^*$, which is the solution to (A2). With a positive coefficient on $(a_R^*)^2$ and with $- (1 - \alpha_0) < 0$ and $(1 - \lambda)\delta p(1 - p)(\alpha_H - \alpha_L)^2 > 0$, there are either two positive or zero real roots. Denote the real roots that solve (A2) as $a_{R1} = 0.5[(1-\alpha_0) - \sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}]$ and $a_{R2} = 0.5[(1-\alpha_0) - \sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}]$, where $f(\alpha) = p(1 - p)(\alpha_H - \alpha_L)^2$. The two real roots exist if $(1- \alpha_0)^2 - 4(1 - \lambda)\delta f(\alpha) \geq 0$, or if $\delta f(\alpha) \leq \dfrac{(1-\alpha_0)^2}{4(1-\lambda)}$, which is true because by assumption $\delta f(\alpha) \leq \dfrac{[(1-\alpha_0)-(1-\lambda)I]^2}{4(1-\lambda)}$.

Checking for feasibility, $a_{R2} \leq 1 - \alpha_0$, or $\sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)} \leq (1 - \alpha_0)$, which is true. Thus, both $a_{R1}$ and $a_{R2}$ are feasible. With both roots feasible, the auditor can choose either equilibrium. However, because the market's conjecture is correct, the auditor's expected payoff in equilibrium is $F_0$ –

$0.5a_R^{\,2}$ - $(1 - \lambda)\delta p(1 - p)(\alpha_H - \alpha_L)^2$], which is strictly decreasing in $a_R$. This implies that auditor's expected payoff is highest if $a_R^* = a_{R1}$. ■

**Proof of Proposition 1:** With only reputation losses, the audit quality in Lemma 1, $a_R^*$, is increasing in the ability of the high auditor type, $\alpha_H$, if $\partial a_R^*/\partial\alpha_H > 0$, or if $0.5[-\partial\alpha_0/\partial\alpha_H$ - $\dfrac{0.5[-2(1-\alpha_0)\partial\alpha_0/\partial\alpha_H - 4(1-\lambda)\delta\,\partial f/\partial\alpha_H]}{\sqrt{[(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}}$ > 0. Substituting $\partial\alpha_0/\partial\alpha_H = p$ and $\partial f/\partial\alpha_H = 2p(1 - p)(\alpha_H - \alpha_L)$, this inequality is $0.5p\{-1 + \dfrac{(1-\alpha_0)+4(1-\lambda)\delta(1-p)(\alpha_H-\alpha_L)}{\sqrt{[(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}}\} > 0$. This inequality will hold if $(1 - \alpha_0) + 4(1 - \lambda)\delta(1 - p)(\alpha_H - \alpha_L) > \sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta p(1-p)(\alpha_H-\alpha_L)^2}$, which is true. The audit quality in Lemma 1, $a_R^*$, is decreasing in the ability of the low auditor type, $\alpha_L$, if $\partial a_R^*/\partial\alpha_L < 0$, or if $0.5[\partial\alpha_0/\partial\alpha_L$ - $\dfrac{0.5[-2(1-\alpha_0)\partial\alpha_0/\partial\alpha_L - 4(1-\lambda)\delta\,\partial f/\partial\alpha_L]}{\sqrt{[(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}}$ < 0. Substituting $\partial\alpha_0/\partial\alpha_L = (1 - p)$ and $\partial f/\partial\alpha_L = -2p(1 - p)(\alpha_H - \alpha_L)$, this inequality is $0.5(1 - p)\{-1 + \dfrac{(1-\alpha_0)-4(1-\lambda)\delta p(\alpha_H-\alpha_L)}{\sqrt{[(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}}\} < 0$. This inequality will hold if $-\sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta p(1-p)(\alpha_H-\alpha_L)^2} + (1 - \alpha_0) - 4(1 - \lambda)\delta p(\alpha_H - \alpha_L) < 0$. If $\delta > \dfrac{(1-\alpha_0)}{4(1-\lambda)p(\alpha_H-\alpha_L)}$, then the inequality holds. If $\delta \le \dfrac{(1-\alpha_0)}{4(1-\lambda)p(\alpha_H-\alpha_L)}$, then the inequality holds if $2(1 - \alpha_0) - 4(1 - \lambda)\delta p(\alpha_H - \alpha_L) - (1 - p)(\alpha_H - \alpha_L) > 0$ or if $\delta < \dfrac{(1-\alpha_0)+(1-\alpha_H)}{4(1-\lambda)p(\alpha_H-\alpha_L)}$, which is true. ■

**Proof of Lemma 2:**

1. With compliance and both reputation losses and legal liability damages and given the market's conjectures about the audit quality, $\hat{F}_{Hb} = E(\alpha | y_H, x_b, \hat{a}_C)$, the auditor's problem is to choose audit quality, $a_C$, so as to maximize his expected payoff, $U^A$ such that $a_C \ge s$, or:

$$Max\ F_0 - 0.5a_C^{\,2} + (1 - \lambda)\delta(a_C + \alpha_0)F_0 + (1 - \lambda)\delta(1 - a_C - \alpha_0)\,\hat{F}_{Hb}$$

s.t. $a_C \geq s$

The constraint can be rewritten as $-a_C \leq -s$. The Lagrangian is $L(a_C, \mu) = F_0 - 0.5a_C^2 + (1-\lambda)\delta(a_C + \alpha_0)F_0 + (1-\lambda)\delta(1 - a_C - \alpha_0)\hat{F}_{Hb} - \mu(s - a_C)$, where $\mu$ is the Lagrangian multiplier. The Kuhn Tucker conditions are: $\partial L(a_C^*, \mu^*)/\partial a_C^* = 0$, $\mu^*(s - a_C^*) = 0$, $\mu^* \geq 0$, and $a_C^* \geq s$. The first order condition of the Lagrangian with respect to $a_C$, or $\partial L(a_C^*, \mu^*)/\partial a_C = 0$, is:

$$-a_C^* + (1-\lambda)\delta(F_0 - \hat{F}_{Hb}) + \mu^* = 0. \tag{A3}$$

Assume first that $\mu^* = 0$, in which case (A3) is identical to the first order condition (A2) in the proof of Lemma 1 and the real roots that solve (A2) also solve (A3) with $\mu^* = 0$, or $a_{C1} = 0.5[(1-\alpha_0) - \sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}]$ and $a_{C2} = 0.5[(1-\alpha_0) + \sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}]$, where $f(\alpha) = p(1-p)(\alpha_H - \alpha_L)^2$. Also, the same as in the proof of Lemma 1, $a_{C1} < a_{C2} \leq 1 - \alpha_0$. With $\mu = 0$, the condition, $\mu(s - a_C) = 0$, is met. Given the two solutions, $a_C^* \geq s$ if either $s \leq a_{C1} < a_{C2}$ or if $a_{C1} < s \leq a_{C2}$.

Next assume that $\mu > 0$ and because the Kuhn Tucker conditions mean that $\mu(s - a_C) = 0$, then $a_C^* = s$. Also for the first order condition, $\partial L(a_C^*, \mu^*)/\partial a_C^* = 0$, to hold, $\mu - s + (1-\lambda)\delta p(1-p)(\alpha_H - \alpha_L)^2/(1 - s - \alpha_0) = 0$. For $\mu > 0$, $-s^2 + (1-\alpha_0) - (1-\lambda)\delta(1-p)(\alpha_H - \alpha_L)^2 > 0$. This function has two positive roots if $(1-\alpha_0)^2 - 4(1-\lambda)\delta(1-p)(\alpha_H - \alpha_L)^2 \geq 0$, which as shown above is true. Solving for the roots, $\mu > 0$ if $a_{C1} < s < a_{C2}$.

Next I determine the optimal audit quality. Because $s$ is exogenous, a comparison of the possible solutions depends on whether $a_{C1}$ and $a_{C2}$ are feasible or are at least as large as $s$. If $s \leq a_{C1} < a_{C2}$, there are two feasible solutions, $a_C \in \{a_{C2}, a_{C1}\}$, and if $a_{C1} < s \leq a_{C2}$, there are two feasible solutions, $a_C \in \{a_{C2}, s\}$, and finally if $s > a_{C2}$, there are no feasible solutions because $\mu^* < 0$. In equilibrium, because the market's conjecture is correct, the auditor's expected payoff is $F_0 - 0.5a_C^2 + (1-\lambda)\delta\alpha_0$, which is strictly decreasing in $a_C$. This implies that auditor's expected payoff is highest if $a_C^* = a_{C1}$ if $s \leq a_{C1}$ and $a_C^* = s$ if $a_{C1} < s \leq a_{C2}$.

2. With noncompliance and given the market's conjectures about the audit quality, the auditor's problem is to maximize his expected payoff, $U^A$, such that $a_{NC} < s$. The strict equality constraint can be transformed to a weak equality constraint, $a_{NC} \leq s - \varepsilon$, where $\varepsilon > 0$ and is an infinitesimal amount, or:

$$Max\ F_0 - 0.5a_{NC}^2 - (1 - \lambda)(1 - a_{NC} - \alpha_0)L + (1 - \lambda)\delta(a_{NC} + \alpha_0) F_0 + (1 - \lambda)\delta(1 - a_{NC} - \alpha_0) \hat{F}_{Hb}$$

$$\text{s.t. } 0 < a_{NC} \leq s - \varepsilon$$

The Lagrangian is $L(a_{NC}, \mu) = F_0 - 0.5a_{NC}^2 - (1 - \lambda)(1 - a_{NC} - \alpha_0)L + (1 - \lambda)\delta(a_{NC} + \alpha_0) F_0 + (1 - \lambda)\delta(1 - a_{NC} - \alpha_0) \hat{F}_{Hb} - \mu(a_{NC} - s + \varepsilon)$, where $\mu$ is the Lagrangian multiplier. The Kuhn Tucker conditions are: $\partial L(a_{NC}^*, \mu^*)/\partial a_{NC}^* = 0$, $\mu^*(a_{NC}^* - s + \varepsilon) = 0$, and $\partial L(a_{NC}^*, \mu^*)/\partial \mu^* \leq 0$. The first order condition of the Lagrangian with respect to $a_{NC}$, $\partial L(a_{NC}^*, \mu^*)/\partial a_{NC}^* = 0$, is:

$$- a_{NC}^* + (1 - \lambda)[L + \delta(F_0 - \hat{F}_{Hb})] - \mu^* = 0. \tag{A3}$$

Assume first that $\mu = 0$. The market's conjecture is correct in equilibrium, that is $\hat{F}_{Hb} = F_{Hb} = E(\alpha|y_H, x_b, a_{NC}^*) = \frac{p(1-a_{NC}^*-\alpha_H)\alpha_H + (1-p)(1-a_{NC}^*-\alpha_L)\alpha_L}{(1-a_{NC}^*-\alpha_0)}$. Substituting $F_{Hb}$ and $\mu^* = 0$ into (A3) yields:

$$(a_{NC}^*)^2 - a_{NC}^*[(1 - \alpha_0) + (1 - \lambda)L] + (1 - \lambda)[(1 - \alpha_0)L + \delta p(1 - p)(\alpha_H - \alpha_L)^2] = 0. \tag{A4}$$

The equilibrium audit quality, $a_{NC}^*$, solves the equality in (A4).

Next, I solve for the solution to (A4). Denote the linear coefficient in (A4), $- [(1 - \alpha_0) + (1 - \lambda)L]$, as $b$ and the constant, $(1 - \lambda)[(1 - \alpha_0)L + \delta p(1 - p)(\alpha_H - \alpha_L)^2]$, as $c$. With a positive coefficient on $(a_{NC}^*)^2$ and with $b < 0$ and $c > 0$, there are either two positive or zero real roots. Denote the real roots that solve (A4) as $a_{NC1} = 0.5[-b-\sqrt{b^2-4c}]$ and $a_{NC2} = 0.5[-b+\sqrt{b^2-4c}]$. The two real roots exist if $b^2 - 4c \geq 0$, or if $\delta \leq \frac{[(1-\alpha_0)-(1-\lambda)L]^2}{4(1-\lambda)p(1-p)(\alpha_H-\alpha_L)^2}$, which is true with $\delta \leq \frac{[(1-\alpha_0)-(1-\lambda)I]^2}{4(1-\lambda)p(1-p)(\alpha_H-\alpha_L)^2}$.

Checking for feasibility, $a_{NC2} \leq 1 - \alpha_0$, or $\sqrt{b^2-4c} \leq 2(1 - \alpha_0) + b$, which can only hold if the right-hand side is nonnegative, or if $L \leq (1 - \alpha_0)/(1 - \lambda)$. Because $L \leq I$ and by assumption $I \leq (1 - \alpha_0)/(1 -$

$\lambda$), then $L \leq (1 - \alpha_0)/(1 - \lambda)$. The root $a_{NC2}$ is only feasible if $\sqrt{b^2 - 4c} \leq 2(1 - \alpha_0) + b$, or if $(1 - \alpha_0)^2 - (1 - \alpha_0)[(1 - \alpha_0) + (1 - \lambda)L] + (1 - \lambda)[(1 - \alpha_0)L + \delta p(1 - p)(\alpha_H - \alpha_L)^2] > 0$, which is true. If $a_{NC2}$ is feasible, then $a_{NC1}$ is also feasible because $0 < a_{NC1} < a_{NC2}$. Finally, with $\mu^* = 0$, the other Kuhn Tucker conditions are met if $a_{NC}^* = a_{NC1}$ and $a_{NC1} < s$ or if $a_{NC}^* = a_{NC2}$ and $a_{NC2} < s$.

Next assume that $\mu > 0$, and because $\mu(s - a_{NC}) = 0$, this means that $a_{NC}^* = s - \varepsilon$. Also for the first order condition, $\partial L(a_{NC}^*, \mu^*)/\partial a_{NC}^* = 0$, to hold $\mu^* = - (s - \varepsilon) + (1 - \lambda)[L + \delta p(1 - p)(\alpha_H - \alpha_L)^2/(1 - s + \varepsilon - \alpha_0)]$. Then $\mu^* > 0$ if:

$$(s - \varepsilon)^2 - (s - \varepsilon)[(1 - \alpha_0) + (1 - \lambda)L] + (1 - \lambda)[(1 - \alpha_0)L + \delta p(1 - p)(\alpha_H - \alpha_L)^2] > 0. \tag{A5}$$

The left-hand side of the inequality in (A5) is the same as the left-hand side of the equality in (A4), implying that the solution to (A5) is $(s - \varepsilon) < a_{NC1}$ and $(s - \varepsilon) > a_{NC2}$.

Summarizing, if $s \leq a_{NC1}$ then $a_{NC}^* = s - \varepsilon$, if $a_{NC1} < s \leq a_{NC2}$, then $a_{NC}^* = a_{NC1}$ and if $s > a_{NC2}$, there are two possible solutions, $a_{NC}^* \in \{a_{NC1}, a_{NC2}, s - \varepsilon\}$. In the latter case, the auditor must choose among three possible solutions. In equilibrium the auditor's expected payoff is $U^A(a_{NC}^*) = F_0 - 0.5(a_{NC}^*)^2 - (1 - \lambda)(1 - a_{NC}^* - \alpha_0)L + (1 - \lambda)\delta\alpha_0$ and is decreasing in $a_{NC}^*$ if $a_{NC}^* > (1 - \lambda)L$. Because $a_{NC1} > (1 - \lambda)L$, the auditor will choose the lowest possible audit quality or $a_{NC}^* = a_{NC1}$, when $s > a_{NC2}$. ■

**Proof of Proposition 2:** Before proceeding, it is useful to order the various thresholds for $s$, which are defined in Lemma 2. First, it is clear that $a_{C1} < a_{NC1}$. Second, $a_{C2} > a_{NC2}$ if $\sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)} > (1 - \lambda)L + \sqrt{[(1-\alpha_0)-(1-\lambda)L]^2 - 4(1-\lambda)\delta f(\alpha)}$, where $f(\alpha) = p(1 - p)(\alpha_H - \alpha_L)^2$. Rearranging, this inequality is $[(1 - \lambda)L]^2 > 0$, which is true. Thus, $0 < a_{C1} < a_{NC1} < a_{NC2} < a_{C2} < 1$.

1. Assume $s < a_{C1}$. With compliance, $a_C^* = a_{C1}$ and with noncompliance $a_{NC}^* = s - \varepsilon$. Comparing the auditor's expected payoff in equilibrium with compliance and without compliance, the auditor prefers

compliance if $F_0 - 0.5a_{C1}^2 + (1 - \lambda)\delta\alpha_0 \geq F_0 - 0.5(s - \varepsilon)^2 - (1 - \lambda)[1 - (s - \varepsilon) - \alpha_0]L + (1 - \lambda)\delta\alpha_0$, or if $L \geq \frac{[a_{C1}^2 - (s-\varepsilon)^2]}{2(1-\lambda)[1-\alpha_0-(s-\varepsilon)]}$ and if $L < \frac{[a_{C1}^2 - (s-\varepsilon)^2]}{2(1-\lambda)[1-\alpha_0-(s-\varepsilon)]}$, then the auditor prefers noncompliance.

2. Assume $a_{C1} \leq s \leq a_{NC1}$. With compliance, $a_C^* = s$ and with noncompliance $a_{NC}^* = s - \varepsilon$. Comparing the auditor's expected payoff in equilibrium with compliance and without compliance, the auditor always prefers compliance if $F_0 - 0.5s^2 + (1 - \lambda)\delta\alpha_0 \geq F_0 - 0.5(s - \varepsilon)^2 - (1 - \lambda)[1 - (s - \varepsilon) - \alpha_0]L + (1 - \lambda)\delta\alpha_0$, which is true because $\varepsilon$ is a very small, positive amount.

3. Assume $a_{NC1} < s \leq a_{C2}$. With compliance, $a_C^* = s$ and with noncompliance $a_{NC}^* = a_{NC1}$. The auditor will prefer compliance if the auditor's expected payoff in equilibrium with compliance is more than with noncompliance, or $F_0 - 0.5s^2 + (1 - \lambda)\delta\alpha_0 \geq F_0 - 0.5(a_{NC}^*)^2 - (1 - \lambda)(1 - a_{NC}^* - \alpha_0)L + (1 - \lambda)\delta\alpha_0$, or if $s \leq \hat{s} = \sqrt{(a_{NC1})^2 + 2(1-\lambda)(1-a_{NC1}-\alpha_0)L}$. Clearly, $\hat{s} > a_{NC1}$, but $\hat{s} < a_{C2}$ if only if $h(a_{NC1}) = a_{NC1}^2 + 2(1 - \lambda)L(1 - \alpha_0 - a_{NC1}) - a_{C2} < 0$. The upper bound of $a_{NC1}$ is $(1 - \alpha_0)$ and the lower bound of $a_{NC1}$ is 0. If $a_{NC1} = (1 - \alpha_0)$, then $h(a_{NC1}) = (1 - \alpha_0)^2 - a_{C2}$ which is negative and if $a_{NC1} = 0$, then $h(a_{NC1}) < 0$. Thus, given that $h(a_{NC1})$ is quadratic, $h(a_{NC1}) < 0$ for all assumed values of $a_{NC1}$. This means that the auditor strictly prefers noncompliance when $\hat{s} < s < a_{C2}$.

4. If $s > a_{C2}$, there is no equilibrium with compliance, implying that the auditor will not comply. ■

**Proof of Corollary 1:** From the proof of Lemma 1, audit quality with only reputation losses is $a_R^* = a_{R1} = 0.5[(1-\alpha_0) - \sqrt{(1-\alpha_0)^2 - 4(1-\lambda)\delta f(\alpha)}]$. Note that $a_{R1} = a_{C1}$ from the proof of Lemma 2.

1. Assume that $s \leq a_{C1}$. From the proofs of Proposition 2 and Lemma 2, if $L \geq \frac{[a_{C1}^2 - (s-\varepsilon)^2]}{2(1-\lambda)[1-\alpha_0-(s-\varepsilon)]}$, with reputation losses and legal liability damages the auditor chooses compliance with $a_C^* = a_{C1} = a_{R1}$. If $L < \frac{[a_{C1}^2 - (s-\varepsilon)^2]}{2(1-\lambda)[1-\alpha_0-(s-\varepsilon)]}$, from the proof of Proposition 2, the auditor chooses noncompliance with $a_{NC}^* = s - \varepsilon < a_{R1}$.

2. Assume that $s > a_{C1}$. With compliance, clearly the audit quality is strictly greater with both reputation losses and legal liability damages than with only reputation losses because $a_{C1} = a_{R1}$. From the proof of Proposition 2, with noncompliance, if $a_{C1} \leq s \leq a_{NC1}$, then $a_{NC}^* = s - \varepsilon$ and because $\varepsilon$ is a small, positive amount, $s - \varepsilon > a_{C1}$. If $a_{NC1} < s \leq a_{C2}$, from the proof of Proposition 2, with noncompliance $a_{NC}^* = a_{NC1}$ and clearly $a_{NC1} > a_{C1}$. ■

**Proof of Proposition 3:** Comparing the investors' expected payoff, $U^I$ in (1b) if the auditor complies to the expected payoff with noncompliance, the investors prefer compliance if $\lambda(\beta X - I) - (1 - \lambda)(1 - a_C^* - \alpha_0)I \geq \lambda(\beta X - I) - (1 - \lambda)(1 - a_{CN}^* - \alpha_0)(I - L)$, or if $L/I \leq \dfrac{(a_C^* - a_{NC}^*)}{(1 - a_{NC}^* - \alpha_0)}$. ■

**Proof of Proposition 4:**

1. The auditor's expected payoff differs depending on whether he chooses compliance or noncompliance. With compliance, because the market's conjecture is correct, the auditor's expected payoff in equilibrium is $U^A = F_0 - 0.5a_C^{*2} + (1 - \lambda)\delta\alpha_0$, which is clearly decreasing in $a_C^*$, implying that the auditor prefers the minimum threshold. However, due to reputation losses, if $s \leq a_{C1}$, where $a_{C1}$ is defined in the proof of Lemma 2, then $a_C^* = a_{C1}$, and the auditor's expected payoff does not depend on $s$, implying that the auditor is indifferent among any $s \leq a_{C1}$. If $s > a_{C1}$, then $a_C^* = s$, and given that the auditor's expected payoff is decreasing in $a_C^*$, if $a_C^* = s$, then the auditor prefers the least strict standards, i.e., $s = a_{C1} + \varepsilon$, with $\varepsilon$ a small, positive amount. Overall, with compliance the auditor prefers any compliance threshold such that $s \leq a_{C1}$. With noncompliance, because the market's conjecture is correct, the auditor's expected payoff in equilibrium is $U^A = F_0 - 0.5a_{NC}^{*2} - (1 - \lambda)(1 - a_{NC}^* - \alpha_0)L + (1 - \lambda)\delta\alpha_0$, which is strictly decreasing in $a_{NC}^*$ if $a_{NC}^* > (1 - \lambda)L$, and strictly increasing if $a_{NC}^* < (1 - \lambda)L$. Thus, the auditor's expected payoff is at a maximum if $a_{NC}^* = (1 - \lambda)L$, implying that the auditor will choose $s = (1 - \lambda)L + \varepsilon$ to ensure maximum rents with noncompliance.

Comparing the auditor's expected payoff in equilibrium with compliance to noncompliance, the auditor prefers any $s \leq a_{C1}$ which ensures compliance to $s = (1 - \lambda)L + \varepsilon$ which ensures noncompliance if

$F_0 - 0.5a_{C1}{}^2 + (1 - \lambda)\delta\alpha_0 > F_0 - 0.5[(1 - \lambda)L]^2 - (1 - \lambda)[1 - (1 - \lambda)L - \alpha_0]L + (1 - \lambda)\delta\alpha_0$, or if $h(L) = -0.5(1 - \lambda)^2L^2 + (1 - \lambda)(1 - \alpha_0)L - 5a_{C1}{}^2 > 0$. Note that $h(L)$ has two positive roots but the larger root is infeasible because it is larger than $(1 - \alpha_0)/(1 - \lambda)$. Thus, the auditor will choose any threshold $s \leq a_{C1}$, which ensures compliance if $L < \underline{L} = [(1 - \alpha_0) - \sqrt{(1 - \alpha_0)^2 - a_{C1}^2}\ ]/(1 - \lambda)$; otherwise the auditor will choose the threshold $s = (1 - \lambda)L + \varepsilon$, which ensures noncompliance.

2. The investor's expected payoff in depends on whether the auditor chooses compliance or noncompliance. From (1b), if the auditor complies, the investors' expected payoff is $\lambda(\beta X - I) - (1 - \lambda)(1 - a_C{}^* - \alpha_0)I$, which is clearly increasing in $a_C{}^*$. Therefore, the investors prefer a compliance threshold that induces the auditor to choose the highest audit quality with compliance, or $s = a_{C2}$. With noncompliance, the investors' expected payoff in (1b) is $\lambda(\beta X - I) - (1 - \lambda)(1 - a_{NC}{}^* - \alpha_0)(I - L)$, which is strictly increasing in $a_{NC}{}^*$, implying that investors prefer any compliance threshold $s > a_{NC1}$ because it induces higher audit quality, $a_{NC}{}^* = a_{NC1}$. Comparing the investors' expected payoff, the investors will choose $s = a_{C2}$ which ensures that the auditor complies with standards if $\lambda(\beta X - I) - (1 - \lambda)(1 - a_{C2} - \alpha_0)I > \lambda(\beta X - I) - (1 - \lambda)(1 - a_{NC1} - \alpha_0)(I - L)$, or if $I > I^* = L(1 - a_{NC1} - \alpha_0)/(a_{C2} - a_{NC1})$. ■

**Additional Analysis**

Assume that the audit market updates its beliefs about auditor type when earnings are low and cash flows are subsequently bad, and denote the future fees as $F_{Lb} = E(\alpha | y_L, x_b, a)$. With only reputation losses and no legal liability damages (i.e., $L = 0$), and given the market's conjectures about the audit quality, $\hat{F}_{Lb} = E(\alpha | y_L, x_b, \hat{a}_R)$, the auditor's problem is to choose audit quality, $a_R$, so as to maximize his expected payoff, $U^A$, or:

$$Max\ F_0 - 0.5a_R{}^2 + (1 - \lambda)\delta(a_R + \alpha_0)\,\hat{F}_{Lb} + (1 - \lambda)\delta(1 - a_R - \alpha_0)\,\hat{F}_{Hb}$$

The first order condition of $U^A$ with respect to $a_R$, or $\partial U^A/\partial a_R = 0$, where $a_R{}^*$ is the equilibrium audit quality, is:

$$- a_R^{*} + (1 - \lambda)\delta(\hat{F}_{Lb} - \hat{F}_{Hb}) = 0. \tag{A6}$$

The market's conjecture is correct in equilibrium, that is $\hat{F}_{Lb} = F_{Lb} = E(\alpha|y_L, x_b, a_R^{*}) =$

$\dfrac{p(a_R^{*} + \alpha_H)\alpha_H + (1-p)(a_R^{*} + \alpha_L)\alpha_L}{(a_R^{*} + \alpha_0)}$ and $\hat{F}_{Hb} = F_{Hb} = E(\alpha|y_H, x_b, a_R^{*}) =$

$\dfrac{p(1 - a_R^{*} - \alpha_H)\alpha_H + (1-p)(1 - a_R^{*} - \alpha_L)\alpha_L}{(1 - a_R^{*} - \alpha_0)}$. Substituting $\hat{F}_{Lb} = F_{Lb}$ and $\hat{F}_{Hb} = F_{Hb}$ into (A6) yields the following:

$$(a_R^{*})^3 + (a_R^{*})^2 (2\alpha_0 - 1) - a_R^{*}(1 - \alpha_0) + (1 - \lambda)\delta p(1 - p)(\alpha_H - \alpha_L)^2 = 0 \tag{A7}$$

First, it is important to note that the constant in (A7) is the same as in (A1), but the polynomial is now cubic instead of quadratic. By Descartes' rule of signs and its corollary, the cubic in (A7) has either two positive real roots and 1 negative real root, or two nonreal roots and 1 negative root. This is somewhat similar to the quadratic in (A2), which has either two positive real roots or two nonreal roots; however, the parameters are assumed to be of a certain level that ensures that there are two positive real roots. Thus, if there are two positive real roots and 1 negative real root, because audit quality cannot be negative, then the auditor will choose one of the two the positive roots as the equilibrium audit quality. Similar to the proof in Lemma 1, the auditor will choose the lower positive root because in equilibrium his expected payoff in (A1) is decreasing. Thus, the rest of the results will continue to hold.

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**Figure 1**

**Timeline of Events**

| Date 0 | Date 1 | Date 2 | Date 3 | Date 4 |
|---|---|---|---|---|
| A firm has an investment project, for which it needs outside capital and hires an auditor to verify earnings. | The auditor chooses audit quality. | Earnings are produced and publically observed. | Investors choose whether to invest. | Investment cash flows are realized. Auditor may incur reputation loss and may be sued and incur legal liability damages. |

**Figure 2**

**The probability of *x* and *y*, given *a***

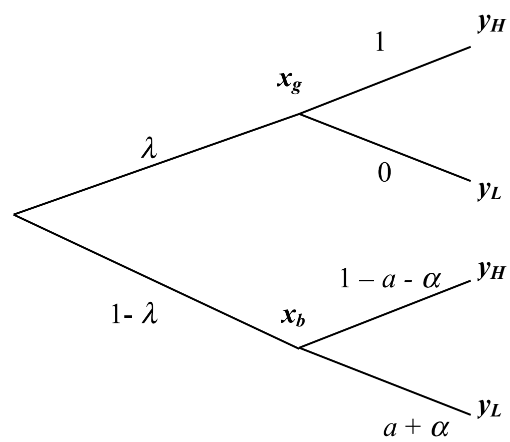

**Figure 3**
**Numerical Example**
**Comparison of Audit Quality with Reputation Losses Versus Legal Liability Damages**
(with $p = 0.5$, $\alpha_H = 0.9$, $\alpha_L = 0.2$, and $\lambda = 0.5$)

Panel A, $L = 0.021$ | Panel B, $L = 0.3$

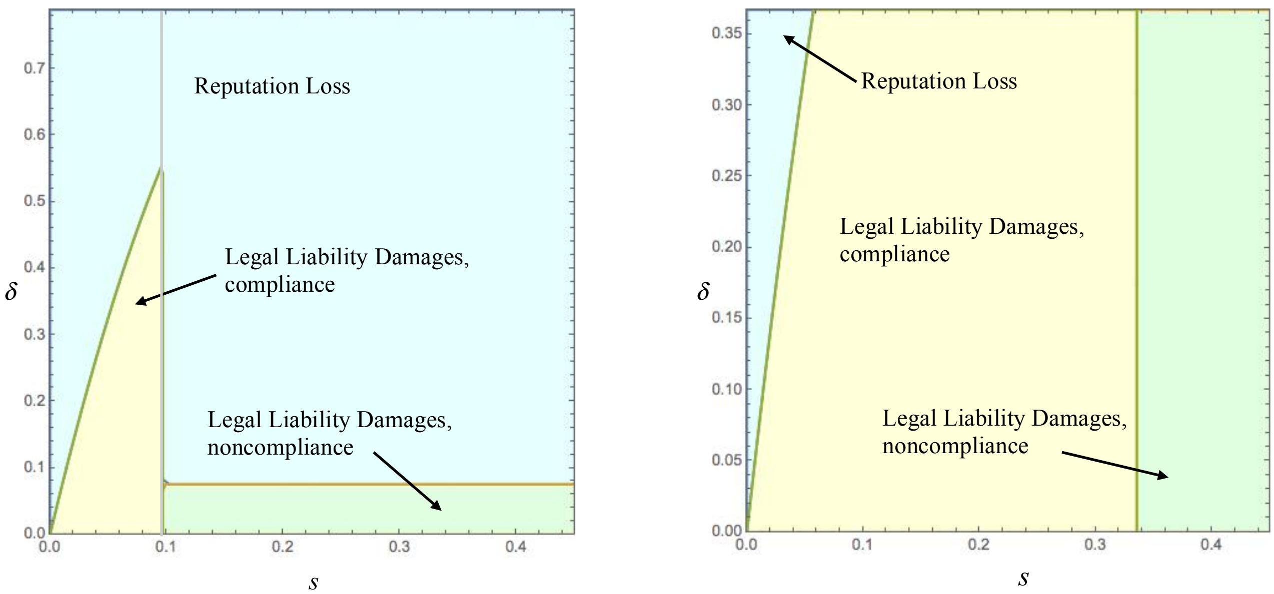

**Figure 4**
**Numerical Example**
**Auditor's Preference for Compliance versus Noncompliance**
(with $p = 0.5$, $\alpha_H = 0.9$, $\alpha_L = 0.2$, and $\lambda = 0.5$)