Real and Exaggerated Internal Control Deficiencies[*]

Carolyn B. Levine

Tepper School of Business

Carnegie Mellon University

June 9, 2009

1 Introduction

Section 404 of the Sarbanes Oxley Act of 2002 requires firms to report on their internal control over financial reporting, and auditors to attest to management's assessment. PCAOB Auditing Standard 5 states "the auditor also should determine the level of detail and degree of assurance that would satisfy prudent officials in the conduct of their own affairs that they have reasonable assurance that transactions are recorded as necessary to permit the preparation of financial statements in conformity with generally accepted accounting principles." Since the 404 attestation (diagnosis) is used to justify the amount and cost of additional work (repair) for assurance on the financial statement audit, the setting shares traits with "credence goods." The firm itself cannot determine, either *ex ante* or *ex post*, whether it has internal control deficiencies and needs incremental auditing and cannot assess whether the services for which it engages the auditor were performed. Although a correct assessment and audit can help avoid economic losses associated with restatements, auditors have incentives to take advantage of the information asymmetry and exaggerate the severity of internal control deficiencies. In this paper, I investigate the inefficiencies in internal control attestations and the accompanying financial statement audits when auditors have an informational advantage over their clients.

Concerns about expert fraud abound for more common examples of credence goods, including automobile repair, home or computer maintenance, real estate services, and medical treatment. In a recent "sting" operation, CBC News provided computer experts with a common, inexpensive, hardware failure. Seven of ten provided incorrect diagnosis with a considerably higher price for repair/replacement.[1] NPR reported on a study by Atul Gawande in which he investigates a low income town with health care costs that are nearly double the national average; he suggests that doctors were "systematically milking the system running up fees with a philosophy that put wealth before health (NPR: Costly Care in a Texas Town)." Implicitly placing audits in this same class of services, SEC Chairman Donaldson stated "I have heard stories, as I am sure many of you have, of substantial and unanticipated expenses, including internal overhead, audit fees and software expenses …, management and auditors talking past one another, and duplicative testing procedures with little or no reliance on prior work."[2]

Pitchik and Schotter (1987) shows in a simple model of consumer fraud that there is a unique mixed-strategy equilibrium where experts randomize between honesty and fraud and customers always accept the minor treatment but randomize between accepting and rejecting the major treatment. Several papers demonstrate natural market solutions that endogenously limit fraud. Emons (2001) shows that a monopolist expert's commitment to *observable* capacity can lead to efficient repairs when services are unobservable. He also shows that when services are observable, a commitment on prices is sufficient to get efficiency in repairs. The expert appropriates the entire surplus, but does not exceed it. Wolinsky (1993) shows that specialization, where some experts repair only low cost problems, reduces experts' incentives to misrepresent. For some parameters and sufficiently many experts, fraud can be eliminated. With unverifiable outcomes, Pesendorfer and Wolinsky (2003) propose a regulatory solution, namely a "price floor" to improve welfare.

Although few claim explicitly that auditors deliberately find internal control deficiencies where none exist, many have suggested that auditors are taking an excessively risk averse approach and that additional work *is* profitable. Frank H. Brod, vice president and controller of The Dow Chemical Company and Financial Executives International Board member commented that auditors may be taking a "revenue enhancing" approach to testing.[3] As well, the costs of internal control audits

---

[1]Getting Gouged by Geeks; www.cbc.ca/marketplace/2007/10/03/geeks/

[2]Opening Remarks Before the Roundtable on the Implementation of Internal Control Reporting Provisions

[3]United States Securities and Exchange Commission Roundtable Discussion on Implementation of Internal Control

prompted the PCAOB to reevaluate its guidance and led to 175 comment letters, some containing suggestions for audit standard improvements. While auditing shares *some* of the characteristics of common credence goods, it also differs in several important ways. If a patient seeks a medical opinion, he may be able to (i) seek a second opinion and (ii) decide whether or not to get treatment. In contrast, the opportunity for second audit opinions are extremely limited (i.e., switching auditors is costly) and non-diagnosis and/or non-treatment is not an option as audits are mandatory.[4] This paper parsimoniously models the essentials of the audit environment providing the backdrop to evaluate (the diagnosis and repair) inefficiencies, pricing and solutions.

In my basic model, a firm (client) has either efficient or deficient internal controls. Diagnosis (i.e., assessment) of internal controls is automatically awarded to the current auditor. It is not possible to seek a second opinion or to separate the evaluation of internal controls from the financial statement audit. If the internal controls are efficient, the existing audit plan is sufficient to allow the auditor to opine on the financial statements. If internal controls are deficient, the auditor can "audit around" the problem, gathering additional data to achieve an appropriate level of assurance on the financial statement audit. The firm does not know whether its internal controls are efficient or not. The firm does not know whether its controls are efficient, and must rely on the auditor's assessment or switch auditors. If the firm switches, it incurs switching costs (i.e., it must still have a complete audit (financial statement and internal controls) plus any intangible costs from switching). The first result is that the auditor will always exaggerate the internal control problem.

To the model, I add the "value of incumbency" (Magee and Tseng 1990). The current auditor expects to earn future fees from the client. This makes the client more valuable and if future fees are high enough, the auditor may prefer honest assessment to overassessment. If the future benefits are extremely high, they can drive the costs of incremental auditing down to zero, making the current audit a "loss leader." Unlike the more common concerns about independence impairment, in this setting future fees can discipline the auditor away from overassessment.

I then consider how remediation affects internal auditing assessments and pricing. To capture remediation in this model, I allow firms to make an investment which ensures that controls are efficient (and thus less likely to have errors). This modeling choice gets support from Ashbaugh-Skaife,

---

Reporting Provisions. Wednesday, April 13, 2005

[4]In this spirit, (Dulleck and Kerschbamer 2006) refer to this as the *commitment* assumption whereby the "profound economies of scope [are such that] expert and customer are in effect tied together once the diagnosis is made"

Collins, Kinney, and LaFond (2008) which demonstrates an increase in accrual quality for those firms that remediate internal control deficiencies (i.e., adverse 404 opinions followed by unqualified opinions). By prohibiting the incumbent auditor from remediating (i.e., designing and implementing internal controls), firms are afforded an outside option which they may prefer to incremental auditing. The outside option puts a cap on the expenses the firm must incur. However, it does not eliminate overassessment. When auditors overassess, there will either be excessive incremental auditing or overinvestment in remediation.

Finally, I evaluate several proposals to improve 404 audits and reduce their costs. Among the proposals I consider are (a) monitoring auditors by the PCAOB (b) bright line standards for deficiencies and (c) capacity constraints on auditors. Perfect monitoring could deter overassessment, but imperfect monitoring can actually lead to greater overassessment. If a set of auditors follow bright line standards when they exist, they can (partially) discipline an unscrupulous auditor. Still, some overassessment will exist. Finally, capacity constraints do not improve honesty, can lead to greater overassessment, and certainly lead to increased prices.

Although internal control deficiencies are necessary for a material weakness, the inverse is not true. Moreover, internal control deficiencies that do not rise to the level of material weaknesses are not necessarily reported externally or detected (by investors). Consequently, the empirical research on internal controls has focused primarily on firms that disclose material weaknesses (either in under Section 302 or 404). Doyle and McVay (2007) find that (materially) weak internal controls are associated with relatively low-quality accruals, where quality is defined as the mapping of accruals into cash flows. The relation between weak internal controls and lower accruals quality is stronger for firms with company-level material weaknesses, rather than more auditable, account-specific problems, and material weaknesses disclosed under Section 302 (versus those under Section 404) seem to be more strongly associated with lower accruals quality. Ashbaugh-Skaife, Collins, Kinney, and LaFond (2009) show that firms with internal control problems have significantly higher cost of equity, and those that remediate previously disclosed internal control deficiencies reduce their cost of capital. Hammersley and Shakespeare (2008) find evidence that the market reaction varies with the severity of the internal control weakness. They show that returns are less negative if management concludes that internal controls are effective despite the presence of an internal control weakness, internal control weaknesses are more auditable and when disclosures about these weaknesses are detailed.

Section 2 lays out the basic model, with and without consideration of future audit fees. Section 3 incorporates remediation by a third party. Proposals for improving 404 audits are evaluated in Section 4 and Section 5 concludes.

2   Testing, Disclosure and Audit of Material Weaknesses

I begin with a firm and its incumbent auditor.[5] The firm must issue an audited assessment on the adequacy of internal controls and a set of audited financial statements. The auditor's assessment of internal controls is the "diagnosis" stage and increases to the initial auditing plan, based on the diagnosis, are the "repair" stage. There are two approaches to dealing with the diagnosis of a problem (here, the evaluation of internal controls) in the credence good literature. The model can restrict diagnosis costs to be zero and evaluate pricing for repairs only (representing free, no commitment estimates) or can allow charges for both diagnosis and repair to be determined endogenously. The nature of the audit environment differs from the more traditional credence good setting where a customer can decide whether or not to seek an expert opinion. AS 5 states "the audit of internal control over financial reporting should be integrated with the [mandatory] audit of the financial statements." Therefore, I assume that the incumbent auditor is guaranteed the initial 404 assessment and focus on the pricing of the incremental services.

The firm's internal controls are efficient ($i = e$) or deficient ($i = d$) with probability $\alpha \in (0,1)$ and $(1-\alpha)$ respectively. A **deficiency** in internal control over financial reporting exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect misstatements on a timely basis. If internal controls are deficient, the firm will issue misleading financial statements with some positive probability, q_d. If internal controls are efficient, the firm will issue misleading financial statements with a smaller (remote) probability, $q_e > 0$. Because both types of firms can have errors or restatements, it is impossible to know with certainty, *ex post*, whether or not the assessment of internal controls was appropriate. It is not the size of the loss (conditional on it being material), but rather the probability of its occurrence that determines whether or not an internal control is deficient.

I focus on efficient and deficient (rather than materially weak) internal controls, presuming that auditors have verifiable (observable) evidence to justify adverse 404 opinions. Moreover, the

---

[5]The regulation requiring internal control audits was largely unexpected, so it seems reasonable that the original auditor choice was unrelated to anticipation about internal control auditing integrity.

number of firms receiving material weakness opinions is small.[6] Garrett Stauffer, senior partner at PricewaterhouseCoopers, said "[On] deficiencies, it is clearly very, very judgmental. There [are] no bright lines in this area, unless you have a slam dunk material weakness because the auditor found an error in financial statements that is 50 percent of net income, things start to become very difficult and judgmental."

Rejecting a current offer from an auditor does *not* eliminate the need for an audit. The firm must find a new auditor, but has more precise information than its incumbent auditor about its switching costs (e.g., the firm may have privately solicited bids from other auditors or had discussions with its audit committee).[7] Specifically, firm k's cost of switching auditors is $\lambda(k) = kL$, with L constant.[8] The auditor knows only that $k \sim U[0,1]$. The switching costs reflect the (net) costs of an alternative audit and any intangible costs associated with switching auditors.[9]

Let the auditor's costs of (incremental) auditing required for reasonable assurance that financial statements will be prepared in conformity with GAAP, given assessment i, be r_i. When internal controls are efficient, we assume there is no need for *incremental* auditing ($r_e = 0$). The actual level of incremental auditing is unverifiable, allowing the auditor to get paid for auditing as if the firm has a deficiency, but exerting no additional (firm specific) effort. In other words, the cost of "faking" an incremental audit is zero and the firm never learns which type of audit is performed. A common criticism of internal control audits, which seems in line with this assumption, is that "instead of using judgment to tailor audit programs to the nature of an audit client, some auditors are applying a checklist approach to *all* audit clients, regardless of their complexity."[10]

The auditor sets the prices for incremental auditing of firms with efficient internal controls at $p_e = 0$ and deficiencies at p_d prior to the audit.[11] Auditors operate in a heavily regulated market and

[6]"55 companies is a surprisingly low number given the hundreds of public companies restating their financial statements for errors during 2006, suggesting a breakdown in their controls" Jonas, Rosenberg, Gale, and Hedges (2007).

[7]Contrast this with the standard credence good assumption that the customer can choose whether or not to seek diagnosis and accept the conditions for repair. If he rejects repair, his loss is defined by his true type.

[8]By allowing the distribution of k to include zero, it increases the potential for honesty. Alternatively, p_e could be limited, but non-zero.

[9]While it might seem that switching costs should be affected by internal control type, since the new auditor does not know the true state of the internal controls until it actually assesses them, it cannot use those to determine future fees.

[10]PCAOB Chairman McDonough, SEC Roundtable Discussion on Implementation of Internal Control Reporting Provisions

[11]Hogan and Wilkins (2008) find that audit fees are significantly higher for firms with internal control weaknesses and

are unlikely to suggest to a client an explicitly "fraudulent" set of prices. Given efficient controls imply no additional work is required, the auditor will not post a positive price for firms assessed as efficient. After being assessed as deficient, the firm must either pay the stated p_d for additional auditing or fire the auditor (equivalently, the auditor resigns).[12] The auditor must conduct the audit at the previously agreed upon prices and at that point, take responsibility for the evaluation of the internal controls and audited financial statements.

While the firm is also unlikely to *know* whether its audit is adequate, it seems reasonable to believe that auditor (rather than the firm) will bear the costs for either (i) failing to determine the correct audit required or (ii) failing to provide the audit they were hired to do. This downside protection is the motivation behind our next simplifying assumption: the firm knows that internal control audit is adequate as long as it has incurred the additional costs specified by the auditor.[13]
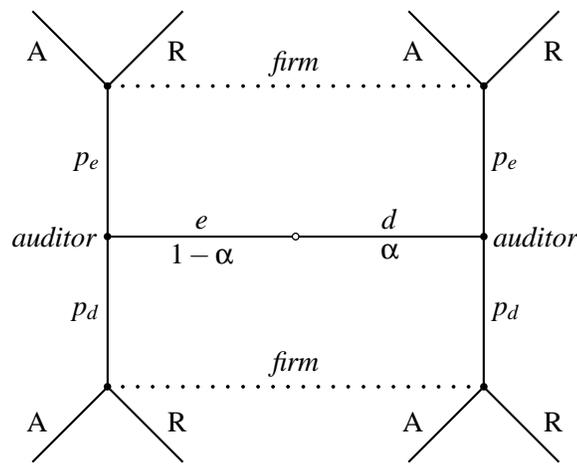

Figure 1: Evaluation, Pricing and Acceptance Decision (A=Accept, R=Reject)

---

these fees increase in the severity of the weaknesses. They interpret this as evidence that audit firms respond to higher levels of control risk by increasing audit fees.

[12]In Section 3, I add the option of internal control remediation.

[13]"One factor we will look at is whether the company took seriously its obligation to detect fraud. Obviously, no system of controls can prevent all misconduct;however, if a company can demonstrate that it has satisfied its obligation to implement good procedures, then in my eyes it has a significant better chance of receiving leniency (assuming the other criteria set out in the report are met) In short, if you are looking for leniency you had better be able to show that you cared about preventing corporate misconduct before you discover that it occurred. Speech by SEC Commissioner Cynthia A. Glassman: Sarbanes-Oxley and the Idea of "Good" Governance, September 27, 2002

2.1 Unobservable Audit Effort, Auditor Switching Costs

If the individual firm's k were known by the auditor, and $kL > r_d$, the auditor would engage in first price discrimination. Each client would receive a deficient assessment, and pay the auditor his switching costs kL. For those firms for which $kL < r_d$, the auditor would assess honestly and give up the clients which were inefficient to audit. A client with high switching costs would like to convince an auditor that it has lower costs. Therefore, we further assume that k cannot be communicated or verified.

The auditor must set price p_d, without knowing whether or not the client's switching costs are above or below the price.[14] Suppose the auditor sets price $p_d = \lambda(k)$ for an arbitrary k. If the firm is assessed as deficient, it will retain the auditor whenever $k' > k$ and switch otherwise. An auditor will never underaudit when the firm has deficiencies since we have assumed he bears (or at least shares) the costs of a failed audit; however, he may choose to take a loss on the audit, by charging a price below his cost. At price $\lambda(1)$, the auditor loses all of his clients; at $p_d = \lambda(0) = 0$, he keeps all clients, but incurs losses of r_d on incremental auditing for those firms that are truly deficient. Since the price of incremental auditing for firms assessed as efficient is zero (and thus weakly below the price of incremental auditing for firms assessed as deficient), the firm will always accept the low cost audit when it is offered (as it passes the risk to the auditor, and has a lower price). The auditor chooses the optimal price and strategy subject to retaining only those clients whose switching costs exceed price.

We use the notation $(\mathcal{A}_e \mathcal{A}_d)$ to represent the auditor's assessment conditional on type, where $\mathcal{A}_i \in \{I, C\}$ for incorrect and correct. The strategies CI and II, in which the auditor always assesses the firms as efficient and assesses efficient firms as deficient and deficient firms as efficient respectively can be eliminated. The former is eliminated because it is equivalent to the strategy in which the auditor assess firms honestly and charges zero for the incremental audit of deficient firms. For the latter, if it is desirable to exaggerate the internal control problems of efficient firms, it is also desirable to exaggerate the internal control problems of deficient firms. This leaves the strategies in which the auditor honestly assesses (CC), and in which the auditor overassesses (IC) (i.e., all firms are assessed as deficient).

The profits, for an arbitrary price $p_d = kL$ are $(1-k)(kL-(1-\alpha)r_d)$ and $(1-\alpha)(1-k)(kL-r_d)$

---

[14]Alternatively, if there is a continuum of clients, setting price at a level above the minimum will lead to some fraction of the clients switching.

for *IC* (overassessment) and *CC* (honest assessment) respectively. Choosing the optimal k for each, and substituting into the profit expressions, we have

$$\overbrace{\frac{(L-(1-\alpha)r_d)^2}{4L}}^{OVER} > \overbrace{\frac{(1-\alpha)(L-r_d)^2}{4L}}^{HONEST}$$

for all $L > r$, and the auditor overassesses always. Without $L > r$ the auditor would not want to keep any of the deficient clients. He chooses an interior value of k^*, as increasing k simultaneously increases per client fees and decreases the probability of retaining the client.

Proposition 1 *Auditors assess every firm as deficient and post prices $(p_e, p_d) = (0, p^*)$ where $p^* = (L + (1-\alpha)r_d)/2$. If $kL > p^*$, the firm accepts its assessment; otherwise the firm switches auditors.*

The audit assessment and fees paid are completely uninformative about the true internal control state. Although there is a point at which the firms reject the audits, high switching costs imply high profits for the auditor. Not surprisingly, many of the complaints to the SEC about 404 regulation related to the excessive costs. By keeping prices at switching costs, the firms accept their assessments despite the high price of the audit (relative to the auditor's cost).

There are two costs of mandatory 404 audits from the perspective of the firm. First the auditor earns profits due to the automatic industry provided by the new requirements. We call these "captive client costs." Second, all firms pay for significant deficiency audits, regardless of their true state, which we call "overassessment costs" Note the *ex ante* probability of each type, α does not affect the price of the audit, so the overassessment inefficiency is strictly increasing in the probability a firm's internal controls are efficient.

The result of Proposition 1 bears both similarities and differences to the analysis in Fong (2005). He finds that experts may cheat, but they will cheat selectively. The customers that suffer higher losses are more likely to be misdiagnosed. In my model, the auditor does not know the type of firm it is dealing with, and therefore cannot specifically target the high switching cost firms, *per se*. However, the firms with the high switching costs are the ones that retain the auditor. Zero profits for an efficient audit leads to the result that the auditor overassesses always.

Given the ongoing nature of the relationship between auditor and client, it seems unrealistic that there are no advantages to keeping an efficient client. Therefore, I extend the model to allow the

9

auditor to consider future audit fees when determining his optimal strategy. To keep the analysis simple, add to the model a simple summary measure of expected future rents. Specifically, let F represent the net benefits a firm expects to gain from an ongoing relationship with the client. I assume that the firm will have to pay F in future fees regardless of whether it retains or switches its auditor, and therefore, from the firm's perspective, F is not part of the decision rule.

Future audit fees have a significant effect on the degree of honesty, as retaining clients, even those that do not pay incremental audit fees, becomes valuable. Now the profits to the auditor of always assessing the firms as deficient, and charging $\lambda(k)$ for $k \in [0,1]$ are $(1-k)(kL+F) - (1-k)(1-\alpha)r_d$. In contrast, the auditor's value of honestly assessing the firm, and charging $\lambda(k)$ is $\alpha F + (1-\alpha)(1-k)(kL+F) - (1-\alpha)(1-k)r_d$. Now, there is a guarantee of future fees for firms assessed as efficient (all of whom retain the auditor). As before, the auditor incurs incremental audit costs only for those firms that accept and are genuinely deficient.

Differentiating the profit functions, we have (*IC* is overassessment; *CC* is honest assessment)

$$
\begin{aligned}
k^*_{IC} &= \frac{(L-F+(1-\alpha)r_d)}{2L} &&\in [0,1] \\
k^*_{CC} &= \frac{(L-F+r_d)}{2L} &&\in [0,1]
\end{aligned}
\tag{1}
$$

The optimal price of incremental auditing is decreasing in future audit fees, and the fee is higher when the auditor honestly assesses than when he overassesses. It may seem surprising that the auditor's fees are lower when he is honest. However, the efficient clients are subsidizing the inefficient clients, allowing the auditor to get a larger share of the market when he overassesses. Since we use k to represent the probability of retention in the profit function, the optimal k is restricted to be between 0 and 1.[15]

Replacing the optimal k into the profits expression, the auditor then determines his assessment strategy. Or

$$
\begin{aligned}
\Pi^k_{IC} &= \frac{(F+L-(1-\alpha)r_d)^2}{4L} \\
\Pi^k_{CC} &= \alpha F + \frac{(1-p\alpha)(F+L-r_d)^2}{4L}
\end{aligned}
$$

---

[15] As long as $L \geq r_d$, k^*_{CC} and k^*_{IC} are less than 1 for $F > 0$ and we can ignore this bound. The profit function will switch over to F when the lower bound is reached.

Figure 2, Panel A graphs the profits from each assessment strategy.

Proposition 2 *Let $L > r_d$. If $F < L - r_d \left((1-\alpha)\right)^{\frac{1}{2}}$ auditors overassess their clients. Otherwise, auditors honestly assess their clients. The fee structure for incremental auditing is*

$$p_d = \begin{cases} \frac{L-F+(1-\alpha)r_d}{2} & : \quad F \in \left(0, L - r_d\left((1-\alpha)\right)^{\frac{1}{2}}\right] \\ \max\left\{0, \frac{L-F+r_d}{2}\right\} & : \quad F > L - r_d\left((1-\alpha)\right)^{\frac{1}{2}} \end{cases}$$

The price of incremental auditing becomes small as future fees become large, because keeping each client becomes more and more important. When $F > L - (1-\alpha)r_d$, the auditor is losing money on the incremental audit ($p_d < r_d$); when $F > L + r_d$, the price of incremental auditing bottoms out at zero. At zero price for incremental services, the assessment is irrelevant in that the total price of an audit, regardless of the assessment, is the same. Therefore, when the auditor is indifferent between an honest assessment and overassessment, and I assume he will assess honestly.[16] Although in other settings future fees may impede independence (and honesty), when auditors are prone to exaggerate problems (as in the case of credence goods), future rents can keep them in line. As future fees get large, the benefits of keeping the client outweigh the additional fees it can get from a subset of the firms. The auditor prefers to keep all clients, and provide incremental audits at zero fees.

Surprisingly, the larger the costs to the auditor of incremental auditing, the more honest the auditor. It might seem that the actual costs to the auditor are irrelevant since they are only incurred when the firm is truly deficient. However, when actual costs are genuinely high, incremental audit fees are also set to be high. The loss of efficient firms along with deficient firms makes overassessing less preferred.

2.2 Implications: Fee Caps, Mandatory Rotation, Small Firm Burden

A regulatory cap on audit fees for firms without adverse 404 opinions might seem like a natural solution; if regulators mandate a price cap, they can reduce the severity of the captive client problem. The fee cap does not affect the probability of overassessment but may affect the rents the auditor could extract from its clients. The obvious problem with fee caps is that the cost of auditing is likely to differ across clients (r^k), making this solution somewhat impractical. If the fee cap were too low

---

[16]The assumption that switching costs can be zero is more than a modeling convenience. If switching costs are restricted to be strictly positive, qualitatively things are similar, but the auditor might revert back to overassessment (or never engage in honest assessment) if the lower bound on switching is high enough.
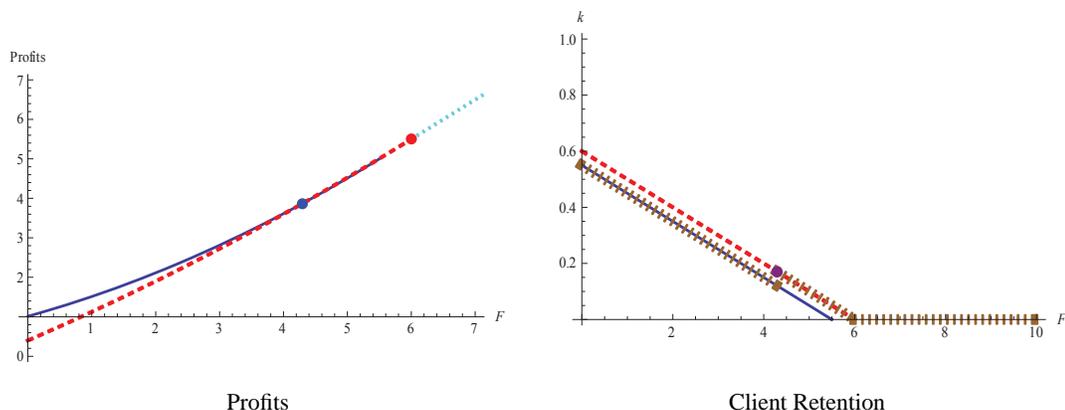
Profits	Client Retention

Figure 2: Auditor assessments, profits and client retention

(i.e., $r_d >> p_d$), an auditor finding a deficiency would resign, and the firm might not be able to find a willing auditor at the capped fee level (i.e., the outside option would go to ∞).

Mandatory auditor rotation is often suggested as a solution to problems of auditor independence. An unintended consequence of mandatory rotation would be to increase overassessments. Mandatory rotation decreases the value of future audit fees from a particular client. The lower the future audit fees, the greater the probability of overassessment. As well, the PCAOB has limited the type of compensation for non-services and limits on tax planning.[17] To the extent these effectively decrease F, it may lead to greater overassessment, holding aside any improvements to independence.

Are small firms likely to suffer more from the implementation of 404? Comments abound to suggest that there have been disproportionate effects on small (and medium sized) public companies.[18] In the SEC roundtable discussion, Mr. Davern commented that the framework was designed for large firms in a position as valued client of a large auditor. Smaller clients are "obviously significantly less valued as clients" because of their size or risk, and experience much higher relative average costs. In a comment letter, the Telecommunications Industry Association (TIA) states "audit fees increased an average of 84% for Standard and Poor's (S&P) small-cap companies and 92% for S&P mid-cap companies, while only increasing 55% for S&P 500 companies."

[17]PCAOB Release No. 2005-014

[18]"Section 404 of the Sarbanes-Oxley Act (the Act) is having a devastating impact on AeA's small and medium sized member companies ... Section 404 implementation is the quintessential example of the law of unintended consequences, with the biggest victim being small business." American Electronics Association White Paper

Suppose we consider a large firm that is 10 times bigger than a small firm. Recall that price is either $\frac{L-F+(1-\alpha)r_d}{2}$ or $\frac{L-F+r_d}{2}$, both of which are increasing in L and r_d and decreasing in F. If future fees, the cost of auditing and switching costs are all scaled identically, then all firms would share a (proportionately) equal expense for 404 compliance. However, suppose there are fixed costs associated with the internal control audit, or $r_d^L < 10r_d^S$ where S and L are subscripts for small and large. Holding all other parameters at their scaled values, the small firm will have audit costs that are relatively high compared to their size (i.e., more than 1/10 of the incremental costs of larger firms). The same is true of switching costs; if $L^L < 10L^S$ the audit costs will be higher for small firms. In contrast, if future audit profits are *lower*, audit costs will be higher for small firms. We revisit the tax on small firms when we impose capacity constraints on auditors.

3   Remediation

Firms can eliminate 404 deficiencies by investment in remediation. Practically, firms may remediate deficiencies through policies and procedures (e.g., improving documentation, processes, or upgrading information systems), personnel (appointment of new staff), training, and board procedures. Auditors are prohibited from executing remediation plans by AS 2, which states "[i]f the auditor were to design or implement controls, that situation would place the auditor in a management role and result in the auditor auditing his or her own work."

To our basic model, we add the option of remediation. I assume an investment of $\rho L \equiv R$ guarantees that controls are efficient, although controls might be efficient without the investment. For example, hiring additional personnel to provide documentation and testing might improve, and will not harm, the control environment.[19] Thus, a control that has been assessed as deficient can be remediated at a cost of R. Following remediation, the firm *knows* its type is efficient and by previous assumption, the auditor cannot charge for additional auditing. Now, there are two options for avoiding incremental audit fees: switching auditors and remediating. If the price of incremental auditing is above the cost of remediation, the firm will either remediate or switch, which ever is less costly.[20] I assume that remediation is observable, and the auditor does not incur additional costs for

---

[19]To analogize, no harm will come of an extra (unnecessary) oil change, and some cars will benefit.

[20]In a study of the costs of 404, Charles River Associates found that (the sampled) firms had an average of 348 deficiencies, 271 of which were remediated within the first year.

evaluating the effectiveness of the remediation.[21]

Thus far, the auditor has extracted rents based on switching costs. If $\rho > 1$, the remediation option is irrelevant. Therefore, I conduct the remaining analysis with the assumption $\rho \in [0,1]$. To simplify, ρ is independent of individual switching costs and common knowledge. For an assessed deficiency and price p_d for incremental auditing, firm k will determine which is most cost effective: switching auditors ($\lambda(k) \leq \min\{R, p_d\}$), remediation ($R \leq \min\{\lambda(k), p_d\}$) or paying for incremental auditing ($p_d \leq \min\{R, \lambda(k)\}$). We assume that if the firm is indifferent, it will pay for incremental auditing rather than remediation.[22]

As before, we consider the optimal price, given the auditors assessment strategy. If the auditor chooses a price $p_d > R$, then whenever $\lambda(k) < R$, the firm will switch and otherwise the firm will remediate. If the auditor chooses a price $p_d < R$, whenever $\lambda(k) < p_d$ the firm will switch and otherwise the firm will pay the incremental audit fees.

Rewriting R as ρL where $\rho \in [0,1]$, I evaluate the optimal price for each strategy. If the auditor sets a price above remediation costs, it will never get any incremental audit fees. The flip side is that the auditor will not incur any additional costs, as deficient firms that retain their auditor will remediate.

Consider the audit strategy of overassessing. When price is below remediation costs then remediation costs will not affect the firm's decision.[23] If price is above R, however, the firm's strategy switches from purchasing audit services to remediating. Thus, the auditor is limited in his ability to extract rents from clients. How should the auditor set prices at this point? Consider a level of F such that the optimal k determined by Equation 1 exceeds ρ (i.e., low F as k_{IC}^* is decreasing in F). There are three choices: the auditor can set price at, below or above remediation costs. For this value of F, price equal to R dominates any price below R and therefore profits would be $(1-\rho)(\rho L + F - (1-\alpha)r_d)$. Alternatively, the auditor could set price above R and keep all clients whose switching costs are above remediation costs. All firms remediate, making all clients efficient, and therefore, the expected value is $(1-\rho)F$. If instead, the auditor chooses honesty, the profits are $\alpha F + (1-\rho)(1-\alpha)(\rho L + F - r_d)$ for price equal to remediation costs and $(1-\rho+\rho\alpha)F$ for price

---

[21] Although this is likely to understate the actual costs, this simplifies the problem considerably.

[22] If this is not the case, we would have to use prices that are ε below R for arbitrarily small ε. Results would be qualitatively the same.

[23] To the extent that remediation costs are ongoing costs (personnel, review of transactions, software upgrades), rather than one time fixed costs, we focus on the single period problem and ignore discounting.

above remediation costs.

Case I: $L < \frac{(1-\alpha)r_d}{\rho}$. The pricing schedule for incremental auditing is

$$
P = \begin{cases} R+\varepsilon & F < \hat{F} \\ \max\left\{0, \frac{L-F+r_d}{2}\right\} & F > \hat{F} \end{cases}
$$

where

$$
\hat{F} = \begin{cases} r_d/\rho & L < (1-\rho)r_d/\rho \\ (1-2\rho)L+r_d+2\left(L(1-\rho)(r_d-\rho L)\right)^{\frac{1}{2}} & L > (1-\rho)r_d/\rho \end{cases}
$$

Conditional on setting prices above remediation costs (which the auditor does when future fees are low), it is always better to have an honest assessment: the per client fee is the same and the auditor retains a larger fraction of his clients. The impact of remediation opportunities on assessment is clear. For the region in which incremental fees would have been larger than remediation fees, the remediation option induces honesty rather than overassessment. There is no impact on the assessment decision for fees that would have been lower than the remediation option.

Case II: $L \in [\frac{(1-\alpha)r_d}{\rho}, \frac{r_d}{\rho}]$. The pricing schedule for incremental auditing is

$$
P = \begin{cases} R & F < F^R \\ R+\varepsilon & F^R < F < \hat{F} \\ \max\left\{0, \frac{L-F+r_d}{2}\right\} & F > \hat{F} \end{cases}
$$

For low future fees, the auditor overassesses and charges R. For higher fees, the auditor chooses honest assessment; prices are decreasing in F, starting above remediation costs, and dropping down when $k_{CC}^* < \rho$. For very large fees, the price is zero, since the auditor would prefer to do the incremental audit at a loss in order to retain his clients.

Case III: $L > \frac{r_d}{\rho}$. The price schedule for incremental auditing is

$$
P = \begin{cases} R & F < L(1-2\rho)+(1-\alpha)r \\ \max\left\{0, \frac{L-F+(1-\alpha)r_d}{2}\right\} & F \in \left((1-2\rho)L+(1-\alpha)r_d,\, L-r_d(1-\alpha)^{\frac{1}{2}}\right] \\ \max\left\{0, \frac{L-F+r_d}{2}\right\} & F > L-r_d(1-\alpha)^{\frac{1}{2}} \end{cases}
$$

Here, the inclusion of the outside remediation option is to reduce the fees when they would have

15

otherwise exceeded the remediation fee. For $k^*_{IC} > \rho$, prices are set to R, rather than above R. The auditor succumbs to this (endogenous) price cap rather than lose all incremental fees when remediation costs and future fees are low.

Proposition 3 *Audit fees are weakly lower and the degree of overassessment is weakly smaller with the option to remediate and $R < L$.*

[I] If $L < \frac{(1-\alpha)r_d}{\rho}$, the auditor always assesses honestly.

[II] If $L \in [\frac{(1-\alpha)r_d}{\rho}, \frac{r_d}{\rho}]$, the auditor overassesses when $F < F^R$, and assesses honestly otherwise.

[III] If $L > \frac{r_d}{\rho}$, the auditor overassesses whenever $F < L - r(1-\alpha)^{\frac{1}{2}}$ and assesses honestly otherwise.

In Case I, the auditor avoids incremental auditing when future fees are low by charging a price above remediation costs. Only when future fees are high is the auditor willing to do the extra auditing himself. In Case II, switching costs are moderate, and there is a region of overassessment. Because the auditor values current profits relatively more when future fees are low, he needs to keep prices low enough to get current incremental audits. Finally, in Case III, there is considerably more overassessment. Fees start at R and drop down (so that the auditor can keep more of the clients). Finally, when future fees are high enough, the auditor switches to honest assessment. In cases I and II, the firms remediate with some positive probability and SOX has successfully effected an improvement in internal controls. However, to satisfy the conditions of these cases requires the unlikely combination of highly successful yet inexpensive remediation options.

The three panels of Figure 3, demonstrate the three cases of Proposition 3. The heavy line represents profits from overassessment and optimal $k \in [0, 1]$, the dashed line represents profits from honest assessment, and an optimal k, the dotted line represents profits from overassessment and price R and the dot/dashed line represents profits from honest assessment and prices above R.

As long as there is an outside option for remediation, prohibiting the auditor from providing remediation services is unnecessary (holding aside the independence concerns). However, the outside option is likely to arise endogenously. Entry and competition are more likely if the incumbent is prohibited from participating in the market for remediation.
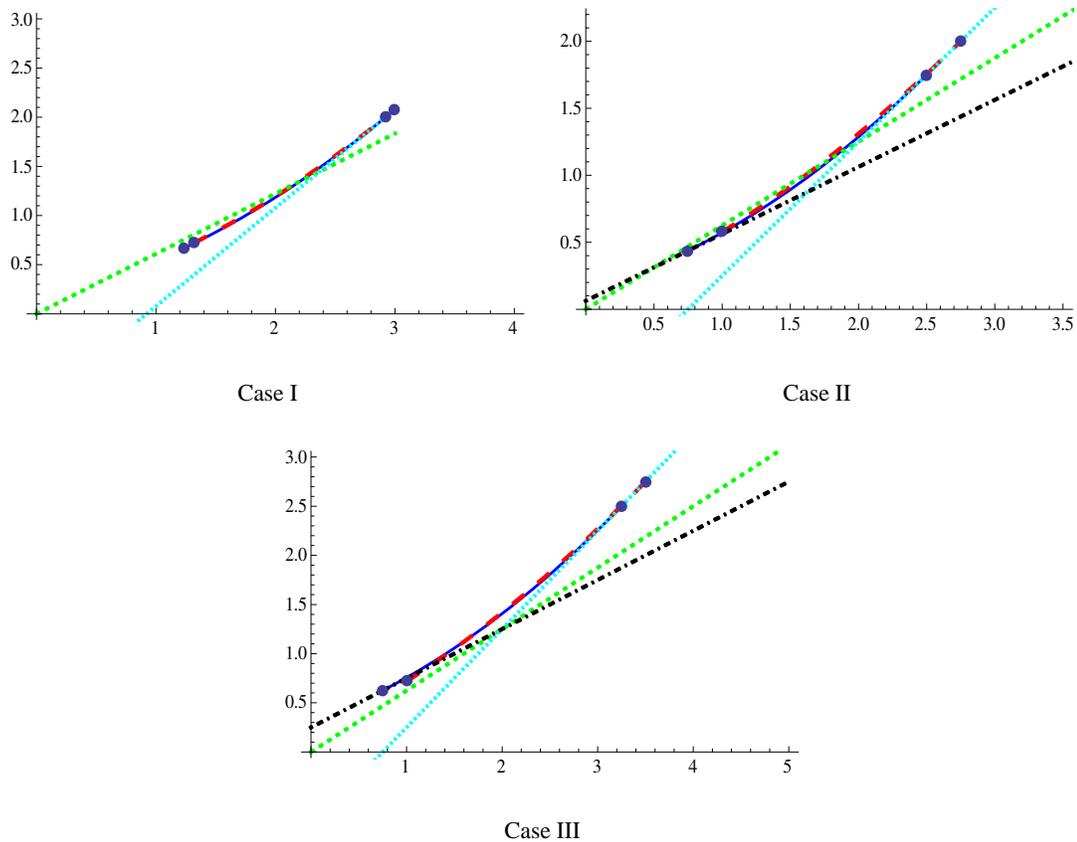
Case I

Case II

Case III

Figure 3: Remediation and Assessment

4   404 "Solutions"

4.1   PCAOB Inspections of Auditors

After their first year of 404, many companies complained that the costs of 404 were much higher than expected, and that they did not believe that the benefits outweighed the costs (Comments of John Thain, then-CEO of the NYSE at SEC's 2005 Roundtable). The PCAOB's Chairman McDonough commented "When we do an inspection and look at the workpapers of individual audit engagements, it is at least as likely that we can come to the conclusion that the work done was excessive than it was inadequate."

To model the *inspection* of the auditors, we begin with our basic model and suppose there is

an inspection technology. We have assumed that it is costless for a firm to "fake" incremental auditing. For consistency this implies that the auditor *will not* be detected for failing to do work, but rather for failing to correctly assess the firm and thus conducting excessive (or insufficient) work. If monitoring technology is error free then overassessments become trivially less attractive.[24] Since it seems somewhat unlikely that inspections will be perfect, we let the PCAOB generate a signal that is different from the auditor's signal. Therefore, there will be some cases in which the PCAOB will determine that the auditor has overassessed and others in which the PCAOB will determine that the auditor has underassessed. Let X be the expected cost when the auditor has overassessed, and Y be the cost when the auditor has correctly assessed. The auditors profits for overassessment and honest assessment are

$$\alpha(1-k)(kL+F-X)+(1-\alpha)((1-k)(kL+F-r_d-Y) \tag{2}$$

$$\alpha(1-k)(F-Y)+(1-\alpha)((1-k)(kL+F-r_d-Y) \tag{3}$$

where we assume $X > Y > 0$ (or the expected costs are greater when the auditor genuinely has done something wrong).[25]

Observation 1 *Conditional on an assessment strategy, the optimal k is weakly higher under monitoring.*

This suggests that prices for incremental audits can increase (at least for some parameters) when the auditor faces PCAOB monitoring. This is in addition to those costs auditor might pass along to its clients to offset the increased fees it would likely pay as a registrant if the PCAOB expands its scope of services. More importantly, the range of future audit fees for which there is overassessment can also grow. Specifically,

Proposition 4 *Monitoring can either increase ($L < \hat{L}$) or decrease ($L > \hat{L}$) the size of the overassess-*

---

[24]For this to be true, the inspection need not catch all incorrect assessments; it only must be correct when it determines the auditor has overassessed.

[25]The fines themselves could be the same, but the probability of making an error would be lower than the probability of correctly learning the firm's type and hence the ordering $X > Y$. The case of perfect monitoring would have $X > Y = 0$. This formulation also imposes the same expected costs for Type I and Type II errors. This assumption can be relaxed, but would add an additional parameter without any intuitive benefits.

ment region, where

$$\hat{L} \equiv \frac{2(1-\alpha)X(r_d+Y)+2(1-\alpha)^{\frac{1}{2}}r_dX-(1-\alpha)Y(2r_d+Y)+aX^2}{4(X-Y)}$$

To see the implications of Proposition 4, consider the example below in Table 1. We hold fixed all parameters with the exception of F and L.

Table 1: **Thresholds on F above which auditor chooses honest assessments**

L	$L = 0.3$	$L = 1.00$
NO MONITORING	0.23	0.93
MONITORING	0.29	0.85

Fixed parameters: $\alpha = 0.500; r_d = 0.100; Y = 0.150, X = 0.175$.

In this example, when L is low (first column), future audit fees $F \in (0.23, 0.29)$ result in overassessment with monitoring, but would lead to honest assessment without it. As L increases, the direction flips. Now, for $F \in (0.85, 0.93)$, the overassessment without monitoring is eliminated in favor of honest assessment with monitoring. Figure 4 holds fixed (at the same levels in the numerical example above) X, Y and α, allowing L and r to vary. The surfaces represent the thresholds with and without monitoring.

Chairman McDonough of the PCAOB commented "Is it likely that we will throw [auditors] in jail because we think they over did it? Probably not. Is it likely with our tough love approach to our responsibilities that we would have a very direct and perhaps severe discussion with the top management of the [audit] firm? You bet." Determining whether the parameters that lead to an increased region of overassessment, is reasonable is left to the reader.

4.2 Defining Probability Thresholds for Deficiencies

Kelly Pasterick, the Manager of Sox Compliance for Alcoa Inc. writes "[W]e do not believe that the ... term 'more than remote likelihood' [is] appropriately defined to be applied in practice... We recommend that the Board define and clearly articulate as to the quantitative and qualitative factors that should be considered in analyzing deficiencies." In this section, we discuss the conditions under

Figure 4: Auditor assessment thresholds
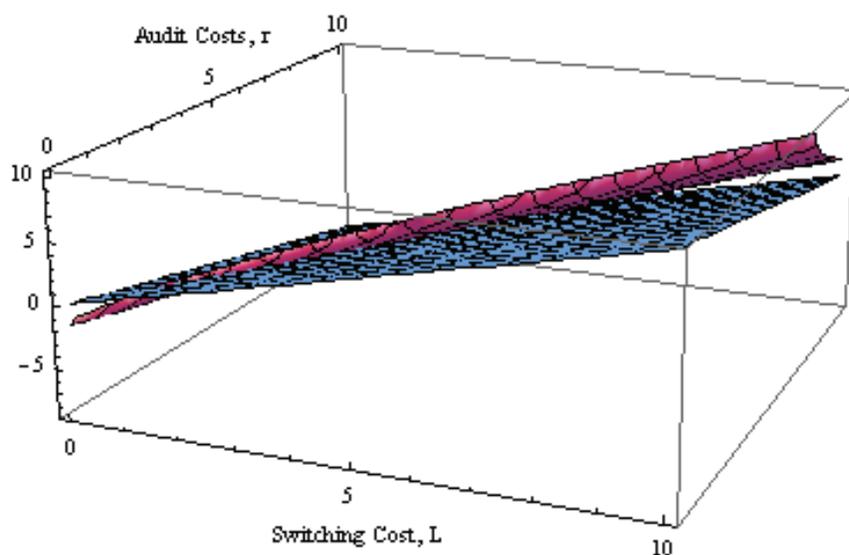
which a clear statement of the auditor's threshold would affect the degree of overassessment and the costs of audits.

4.2.1 Bright-line vs. Judgment-Based Audits

The premise behind the call for a regulated threshold seems to be that auditors would follow explicit rules if they exist. That is, with the appropriate guidance, (at least some) auditors will be less conservative (i.e., less likely to overassess). Suppose there are two types of auditor: bright-line and judgment-based. To operationalize, I assume that a bright line auditor suffers extreme losses if assessments do not follow the dictates of the rule. How does the presence of bright line auditors affect the strategy of the other auditors?

If there is no "cost" to the judgment based auditor of being identified as such, the presence of bright-line auditors will not affect the assessment strategy. If regulators monitor more closely those firms which reveal themselves to be judgment-based, it may increase a firm's expected penalties from overassessment. However, based on the analysis from the previous section, imperfect monitoring and penalties do not necessarily improve the degree of honesty. If the scrutiny carries over to

financial statement auditing (regulators are also more likely to demand revisions of financial state-ments), then it might become very costly for a judgment-based auditor to reveal his type. Suppose the judgment-based auditor prefers to conceal his type, and posts prices as if he were assessing honestly.

Although the judgment auditor's price is consistent with honest assessment, his actions need not be. Therefore, he determines which is more profitable, overassessment or honesty, substituting k^*_{CC} into the profit functions, given below

$$IC \quad \frac{(L+F-r_d)(L+F-(1-2\alpha)r_d)}{4L}$$

$$CC \quad \alpha F + \frac{(1-\alpha)(L+F-r_d)^2}{4L}$$

Whenever $F < L - r$ the auditor prefers overassessment; otherwise the auditor prefers honest assess-ment. Thus, when restricted to the (honest assessment) pricing rule, there is more honest assessment. Intuitively, the auditor switches to honesty sooner because pricing under honest assessment is higher and at the higher prices and overassessment too many clients will switch.

The optimal prices under honest assessment exceed the optimal prices under overassessment and the degree of overassessment is reduced. However, the prices for incremental auditing have increased, since deficient firms have to pay for themselves, rather than being subsidized by the effi-cient firms. Ex ante, the firms are better off; ex post, deficient firms experience audit fee increases. A significant caveat is that it is unlikely that prices would be sufficient to separate firms in practice. Therefore, the costs to the auditor of separating diminish, eliminating the increased honesty.

Lock and Key: Probabilities and Thresholds

If, instead, the rationale for a threshold is that firms know their probabilities, but do not know the threshold auditors use, then clearly mandating a threshold would eliminate the "credence" nature of the audit. More reasonably, firms may possess a noisy signal of their type $\hat{q}$ and the threshold Q is disclosed, the firm can update its beliefs about overassessment. Now, the firms are acting, *de facto*, as monitor. Unlike the regulator who has power to fine the auditor, the firm's punishment is limited to firing the auditor (resulting in the loss of future profits), making the penalties less effective. Even if the firms could have an intermediate stage where they threaten to fire the auditor if the signal and

21

Figure 5: Thresholds with Bright Line Auditors
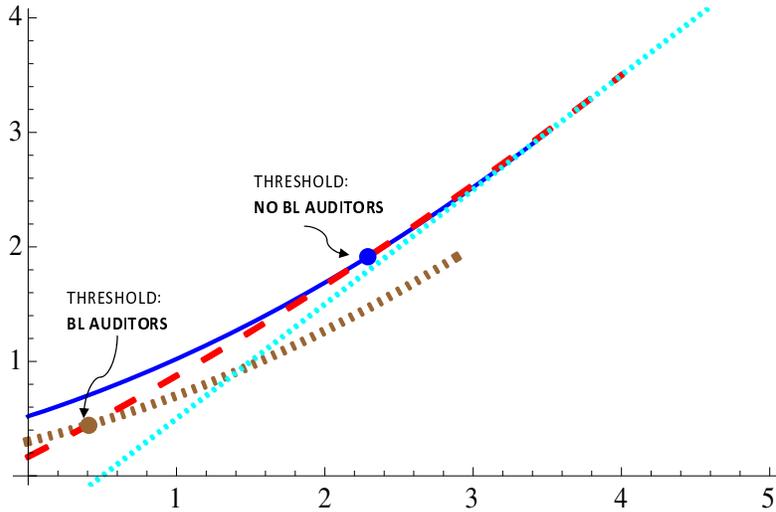
assessment disagree, without a connection between the observed probability and a firm's switching costs the efforts at renegotiation would be fruitless. To see this, suppose the optimal strategy is overassessment, and a firm threatens to fire its auditor following a deficiency assessment. The threat is only credible if the auditor would have lost the client anyway, and by giving in to the threat whenever the firm is truly efficient, the auditor is switching to a strategy of honesty, which was suboptimal by construction.

4.3   Capacity Constraints

To increase competition among auditors and reduce the costs of audits, some have suggested limiting the size of large audit firms. To simplify the analysis, suppose there is a continuum of clients with mass 1, and a capacity constraint represents a limit on the auditor's market share. Specifically, the auditor can serve no more than $(1 - \bar{k})$ of the market, with $\bar{k} \in (0, 1)$.

If the auditor would have optimally set $k^* > \bar{k}$, there is no impact of an explicit capacity constraint as auditors have endogenously choose to be smaller than the upper limit. Therefore, we focus on a regulated capacity such that $k^* < \bar{k}$, or optimally the auditor would keep more clients than the

22

regulation permits. Now, the auditor must select a price for incremental audits and the audit strategy given the regulated cap on clients. If the auditor is overassessing, it can use k_{IC}^* and turn away clients after it reaches its upper bound. Alternatively, the auditor can change the optimal pricing rule. As in the simple analysis of a monopolist with capacity constraints, it is always better for the auditor to increase prices so that the constrained level of capacity is achieved endogenously. In other words, the auditor does not "turn clients away" when he has reached capacity. Instead, the auditor prices services high enough that clients choose to leave, and the resulting fraction of clients at the new level of prices satisfies the capacity limit.[26]

Things are a bit more complicated with honest assessment. If the capacity constraints are low, the auditor will have to randomly drop some clients. To see this, recall that all clients assessed as efficient will stay; if with efficient clients only the auditor would exceed his capacity constraint, he would certainly exceed the constraint if he also keeps some deficient clients. Thus, the auditor's problem becomes

$$\max_{\delta,k}(1-\delta)(aF+(1-a)(1-k)(kL+F-r))$$
$$s.t.(1-\delta)(\alpha+(1-\alpha)(1-k)) \leq (1-\bar{k})$$

where $p_d = kL$. Assuming the constraint is met with equality, and substituting into the maximization problem, the optimal pricing is $\frac{L-(\alpha L(L-(1-\alpha)r))^{\frac{1}{2}}}{(1-\alpha)}$, and the auditor sends away $\delta = \frac{L(1-c)}{(aL(L-(1-a)r)^{\frac{1}{2}}} < 1$.

Proposition 5 *Prices are higher for incremental auditing when auditors are capacity constrained. The degree of honest assessment may decrease or increase when auditors are capacity constrained.*

Figure 6 illustrates the second part of Proposition 5, where the x-axis is the size of the future audit fees and the y-axis is the profitability of each strategy. Holding fixed the maximum switching costs L, costs of assurance r_d, and fraction of efficient firms in the market α, in Panel A, $\bar{k}$ is relatively high and honesty is eliminated, whereas in Panel B, $\bar{k}$ is extremely low and honesty is enhanced.

---

[26]Notice that without a continuum of clients, if switching cost realizations differ from expectations, an auditor with excess capacity might prefer to reduce its prices to gain more clients, if pricing is individualized.
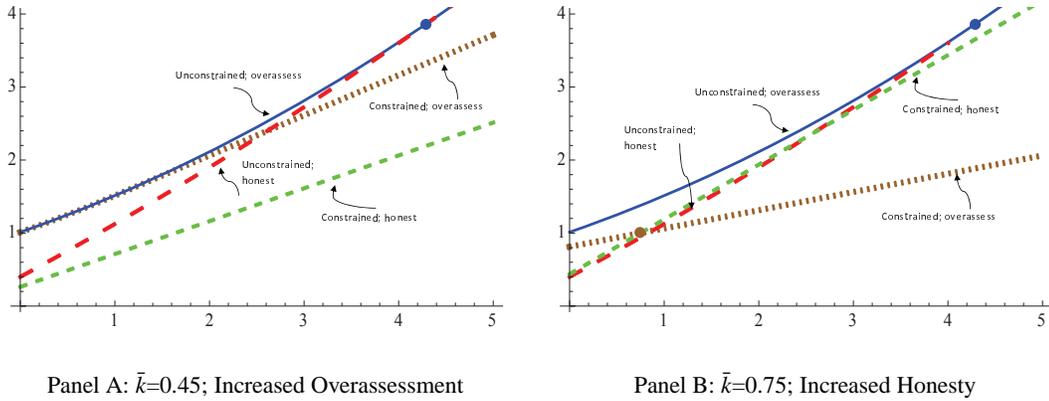
Panel A: $\bar{k}$=0.45; Increased Overassessment   Panel B: $\bar{k}$=0.75; Increased Honesty

Figure 6: Capacity Constraints: $L = 5, r_d = 1, \alpha = 1/2$

5   Conclusion

I demonstrate the problems of overassessment of internal control problems in integrated audits, where auditors evaluate internal control deficiencies that affect assurance levels for financial statement audits. As in many settings where the problem and remedy are unobservable to the customer, auditors can (and will) take advantage of their clients. Unlike many standard credence goods in which market mechanisms can effectively discipline the expert to honesty, the mandatory nature of an audit exacerbates the problems of information asymmetry between auditor and client. Clients with low switching costs will fire their auditors, as long as switching costs are privately known. If future fees from clients are significant, auditors are more disciplined – they set lower prices for incremental auditing and may assess honestly. Separating remediation from auditing is beneficial, and with the possibility of remediation, there are caps on the costs to the client firms.

Because of the high costs following Sarbanes Oxley, many proposals for improvements to PCAOB auditing standards have emerged. I do a policy evaluation, determining the costs and benefits of three options: PCAOB inspections, better disclosure of auditing thresholds and standards and capacity constraints on auditors. In many cases, the solutions do not increase the degree of honesty, and may increase the incremental auditing costs.

I examine incentives and solutions for the (perceived exorbitant) costs of SOX 404 compliance. Although the audit relationship is a repeated one, the analysis is a single period game. To capture

some of the multiperiodicity, I consider future fees (as if they can be collapsed to a single present value sum). At the same time, the paper considers switching costs, but is a partial equilibrium analysis. Why would some firms find their switching costs to be lower? Why would a new auditor be willing to take on a new client at lower rates? How does the competition for clients affect future fees and switching costs? An avenue for future research is to consider integrating the overall audit market, the differential pricing of future audit fees across auditors (and perhaps lowballing), auditor competition, thus endogenizing switching costs.

A Appendix

Proof of Proposition 2: The profits from overassessment and price $p_d = kL$ are

$$\Pi_{IC} = \begin{cases} \frac{(F+L-(1-\alpha)r)^2}{4L} & : F \leq L + (1-\alpha)r_d \\ F - (1-\alpha)r_d & : F > L + (1-\alpha)r_d \end{cases}$$

and the profits from honest assessment and price $p_d = kL$ are

$$\Pi_{CC} = \begin{cases} aF + \frac{(1-\alpha)(F+L-r)^2}{4L} & : F \leq L + r_d \\ F - (1-\alpha)r_d & : F > L + r_d \end{cases}$$

Substituting optimal values of k, and setting the profits under each strategy equal, we have thresholds on F, such that

$$\frac{(F+L-(1-\alpha)r)^2}{4L} = aF + \frac{(1-\alpha)(F+L-r)^2}{4L} \rightarrow F = L \pm r\sqrt{(1-a)}$$

Thus, $\Pi_{IC} > \Pi_{CC}$ when $F < L - r_d\sqrt{(1-a)}$; when $F > L + r\sqrt{(1-a)}$, it is also the case that $F > L + r(1-a)$ and the relevant comparison is between the second element of the profit function, and Π_{CC}^*. They are equal at $k^* = 0$.

Proof of Proposition 3

If $p > R$, the firm will either remediate or switch. The auditor will get $(1-\rho)F$ in the case of remediation and overassessment, and $aF + (1-a)(1-\rho)F$ in the case of honest assessment. Therefore, *if* the auditor chooses a price above remediation costs, he will always assess honestly.

$$2\sqrt{(1-\alpha)L(1-(1-\alpha)\rho)(r_d-\rho L)} - L(2(1-\alpha)\rho - 1) + (1-\alpha)r_d < L - r_d\sqrt{(1-\alpha)}$$

25

or, the threshold above which the auditor prefers overassessment and a price below R is always above the threshold at which the auditor prefers honest assessment and a price below R. If honest assessment and a price above R is chosen, it will always be followed by honest assessment and a price below R.

If $p \leq R$, the firm will either accept incremental auditing or switch. The auditor's profit function for overassessment is Π_{IC}, with the constraint that $k \leq \rho$ and for honest assessment Π_{CC}. Only if the price in the absence of remediation would exceed R will the firm set $k = \rho$.

$$L > r_d/\rho \Rightarrow aF + (1-a)(1-\rho)F < (1-\rho)(\rho L + F - (1-\alpha)r_d)$$

References

ASHBAUGH-SKAIFE, H., D. COLLINS, W. KINNEY, AND R. LAFOND (2008): "The Effect of SOX Internal Control Deficiencies and Their Remediation on Accrual Quality," *The Accounting Review*, 83.

——— (2009): "The Effect of SOX Internal Control Deficiencies on Firm Risk and Cost of Equity," *Journal of Accounting Research*, 47.

DOYLE, JEFFREY, G. W., AND S. MCVAY (2007): "Accruals Quality and Internal Control over Financial Reporting," *The Accounting Review*, 82.

DULLECK, U., AND R. KERSCHBAMER (2006): "On Doctors, Mechanics, and Computer Specialists: The Economics of Credence Goods," *Journal of Economic Literature*, pp. 5–42.

EMONS, W. (2001): "Credence Goods Monopolists," *Journal of Industrial Organization*, 19, 375–89.

FONG, Y.-F. (2005): "When Do Experts Cheat and Whom Do They Target?," *RAND Journal of Economics*, 36.

HAMMERSLEY, JACKIE, M. L., AND C. SHAKESPEARE (2008): "Market Reactions to the Disclosure of Internal Control Weaknesses and to the Characteristics of those Weaknesses under Section 302 of the Sarbanes Oxley Act of 2002," *Review of Accounting Studies*, 13.

HOGAN, C., AND M. WILKINS (2008): "Evidence on the Audit Risk Model: Do Auditors Increase Audit Fees in the Presence of Internal Control Deficiencies?," *Contemporary Accounting Research*, 25, 219–242.

JONAS, G., A. ROSENBERG, M. GALE, AND L. HEDGES (2007): "Special Comment: The Third Year of Section 404 Reporting on Internal Control," *Available at: http://ssrn.com/abstract=985546*, May, 1–20.

MAGEE, R., AND M.-C. TSENG (1990): "Audit Pricing and Independence," *The Accounting Review*, 65.

PESENDORFER, W., AND A. WOLINSKY (2003): "Second Opinions and Price Competition: Inefficiency in the Market for Expert Advice," *Review of Economic Studies*, 70.

PITCHIK, C., AND A. SCHOTTER (1987): "Honesty in a Model of Strategic Information Transmission," *American Economic Review*, 77.

WOLINSKY, A. (1993): "Competition in a Market for Informed Experts' Services," *RAND Journal of Economics*, 24.