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Auditor Independence and Earnings Quality: Evidence for Market Discipline vs. Sarbanes-Oxley Proscriptions

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Auditor Independence and Earnings Quality: Evidence for Market Discipline vs. Sarbanes-Oxley Proscriptions*

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October 6, 2008

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1. We relax *a priori* data-restrictions that ignore the potential for auditors’ dependence on consulting fees to *enhance* earnings quality.
2. We measure unexpected accounting fees in a more defensible manner, and develop a matching estimator to examine whether fee disclosures improve asset-pricing *efficiency*; and
3. We empirically evaluate the potential for *governance externalities* to rationalize proscriptive regulations.

Our results offer some support for auditor independence improving earnings quality. Importantly, however, they also suggest that mandated fee disclosures exhausted regulatory opportunities to improve this dimension of corporate governance, and thus speak more directly than does the literature against Sarbanes-Oxley’s proscription on jointly producing audit and non-audit services.

JEL: G14, G38, K22, M42

Keywords: Auditor independence, earnings quality, corporate governance, externalities, disclosure mandates, Sarbanes-Oxley Act of 2002

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1. Introduction

Recent accounting scandals (e.g., Enron, WorldCom) suggested to many that letting accountants “consult” for audit clients compromises earnings quality (e.g., see Romano, 2004; Weil, 2004).¹ Citing such arguments, US legislators almost unanimously supported the Sarbanes-Oxley Act of 2002 (SOX, hereafter), part of which restricts auditors from producing non-audit services (NAS).²

This restriction has received considerably less support, however, from corporate governance scholarship in accounting, law, and economics. Indeed, prior research on disclosure mandates found little evidence that markets value information about auditor independence (e.g., see Glezen and Millar, 1985; Frankel et al., 2002; Ashbaugh et al., 2003), and fueled objections to not only disclosure mandates, but also proscriptive regulations like SOX (e.g., see DeFond et al., 2002).³

Our goal for the present paper is to carefully evaluate whether the SOX restriction on NAS is indeed misguided, as the academic literature tends to suggest, or if this critical scholarship is instead faulty. Our motivation comes not only from the stark disagreement between lawmakers and academics, but from observing that prior research designs may have biased evidence against the hypotheses that (i) disclosure mandates strengthen market discipline and (ii) proscriptive governance regulation improves financial market performance. Addressing the potential for such biases, we

¹ Ezzamel et al. (1996) documented a similar perception for UK companies.

² See “Title II – Auditor Independence” of the Sarbanes-Oxley Act of 2002 (HR 3763), summarized in our Appendix A. The bill passed the House by a roll call vote of 423-3 and the Senate by a vote of 99-0 on July 25, 2002 (Source: Thomas – A Service of the Library of Congress, accessed April 12, 2005 at <http://thomas.loc.gov/home/thomas.html>).

³ Popular calls to loosen SOX and its regulatory constraint on producing NAS are also becoming louder. The US Chamber of Commerce (2006, p. 16), for example, argued that prohibiting “Big Four firms” from “audit assignments” unduly restricts competition.

offer more confident conclusions about whether and how auditor independence should be regulated.

Critical evaluations of empirical corporate governance research often point to “omitted variables” as biasing relationships of interest. A legitimate concern here is that strong correlations in the data do not evidence a causal relationship, but instead reflect weak controls for alternative explanations. The literature largely agrees, however, that auditor independence and earnings quality share a substantively small correlation. The potential for biased inference from these studies may thus have less to do with omitted variables than with measuring hypothesized causal variables with error. We show, for example, that when gauging market reactions to a client-firm’s choice of “auditor independence”, failing to account for market expectations creates an “errors-in-variables” problem that can attenuate estimates of truly large coefficients. We also argue that “non-results” in the literature have inadequately controlled for such expectations, and may thus be an artifact of attenuation bias rather than evidence that auditor independence negligibly affects earnings quality.

Moreover, even if received evidence that auditor independence negligibly affects earnings quality is robust, it does not imply that related disclosure mandates and proscriptive regulations are misguided. The literature has drawn such conclusions from studying how markets react when client firms disclose the level and nature of fees paid to auditors, a proxy for management’s potential to manipulate earnings. But this reaction reflects the private costs and benefits of a client firm’s governance choices, not the externalities that those choices might create. And whether externalities exist strongly influences the capacity for laws in general, and corporate

governance regulation in particular, to improve upon market outcomes (Coase 1960, Hermalin and Weisbach 2006, Acharya and Volpin 2007). Measuring the external effects of private disclosure- and governance decisions may thus be necessary to evaluate the efficiency-consequences of related regulations, but these measurements appear to be absent from the literature.

Addressing these issues, we find more firmly grounded evidence that auditors' dependence on non-audit fees compromises earnings quality, and little evidence that an audit client's governance choices create external effects. As our concluding figure illustrates (see Section 4), these results can be rationalized by a hypothesis where *auditor independence improves the informational content of earnings reports but, because a client firm's choice of auditor independence does not measurably affect other firms, we should not expect a strengthening of financial market performance from proscriptive regulations (e.g., the SOX-restriction on NAS) that are better aimed at governance externalities.*

We develop this evidence by evaluating several dimensions on which efficient markets should respond to disclosures about auditors' reliance on clients for non-audit fees – i.e., reduced form relationships that proximately depend on whether auditor independence influences the potential for earnings management (and thus earnings quality). This approach lets us maintain an important benefit from prior market-based designs – namely, avoiding the sensitivity that direct measures of earnings quality (e.g., abnormal accruals) have exhibited to model specification⁴ –

⁴ See, e.g., Frankel et al., 2002 and Ashbaugh et al., 2003. Note also that, under the common hypothesis that financial disclosures are less informative when auditors lack independence, then measures that draw on such disclosures are also uninformative when independence is lacking. But abnormal accruals (a proxy for earnings quality) are estimated from financial disclosures.

while lending itself to methodological refinements that (i) better gauge whether relationships (or non-relationships) in the data are statistical artifacts and (ii) yield evidence on externalities that have been modeled in the theoretical governance literature but ignored by empirical studies of whether regulations like the SOX-proscription on NAS can improve upon market discipline.

Our detailed investigation starts in Section 2. There, we identify several channels through which auditor independence may have influenced earnings quality without detection by prior research designs.

1. In addition to compromising information that financial disclosures make available, jointly producing audit and non-audit services can leverage scope economies and strengthen reputational incentives to *improve* earnings quality.⁵ But while such benefits can offset associated agency costs, and thus give rise to a non-monotonic relationship between audit quality and auditor “independence”, contributions to the literature have *a priori* restricted this relationship to being linear.
2. If markets are efficient and auditor independence affects earnings quality, then equity prices should respond to disclosures about *unexpected* independence. Prior studies, however, examined how markets responded to proxies that confound expected and unexpected

⁵ Banks may exhibit qualitatively similar economies when jointly producing lending and underwriting services (see, e.g., Kroszner and Rajan, 1994 and Drucker and Puri, 2005). Arruñada (1999) investigates the possibility for such economies in accounting engagements.

independence.⁶ Even if auditor independence truly influences earnings quality, this treatment can create an errors-in-variable problem that attenuates coefficient estimates of interest.

3. Previous research looked for “own-firm” effects of auditor independence, but ignored the potential for one firm’s choice of auditor independence (or disclosures about that choice) to affect other firms’ choices (or disclosures). Absent a measure of such externalities, however, conclusions about the efficiency-consequences of mandated disclosures versus proscriptive governance regulations lack a firm grounding.

Our empirical results, developed in Section 3, largely support the hypothesis that auditor independence improves earnings quality, though the economic consequences of this effect may be small. In addition, and more importantly for normative conclusions about governance regulations, they offer little evidence of external effects from a client’s choice of auditor independence, and thus speak more directly than does the literature against Sarbanes-Oxley’s proscription on jointly producing audit and non-audit services.

Section 4 concludes by summarizing our various results within a unified theoretical framework, calling attention to questions that our results create for future

⁶ To be sure, the literature does not completely ignore this issue. DeFond et al. (2002) and Frankel et al. (2002), for example, evaluated how proxies for earnings quality relate to measures of “unexpected” non-audit fees. These measures ignore, however, the potential for organizational features (e.g., audit committee independence) to substitute for auditor independence in producing corporate governance services (Falaschetti and Orlando, 2003). Moreover, while information must be available before it can influence expectations, DeFond et al. (2002) and Frankel et al. (2002) estimate “expectations” from contemporaneous information. Even received measures of unexpected non-audit fees thus appear prone to the errors-in-variables problem that we attempt to address more carefully.

investigations, and highlighting how our research design can be extended to normative evaluations of other corporate governance regulations.

2. Literature Review and Opportunities for an Improved Research Design

Even before legislators responded to recent governance scandals, the issue of accountants producing NAS for audit clients received considerable regulatory attention. The Securities and Exchange Commission's (SEC) *Accounting Series Release (ASR) No. 250: Disclosure of Relationships with Independent Public Accountants*, for example, required subject companies to disclose fees paid to auditors for NAS (via proxy statements filed after September 30, 1978). Glezen and Millar (1985) found, however, that shareholder voting on auditor-retention negligibly responded to these disclosures. This evidence supported early arguments that producing NAS for audit clients does not materially compromise an accountant's integrity, as well as the SEC's rationale for withdrawing *ASR 250* in 1982 – i.e., shareholders lack interest in fee disclosures (Glezen and Millar, 1985, pp. 859-60).

2.1 Linear-restrictions can bias inference

But drawing such strong inference can be problematic. For example, a negligible linear relationship between shareholder voting and fee disclosures is observationally equivalent to auditor independence influencing earnings' quality in a non-monotonic manner. The following figure illustrates one such possible relationship.

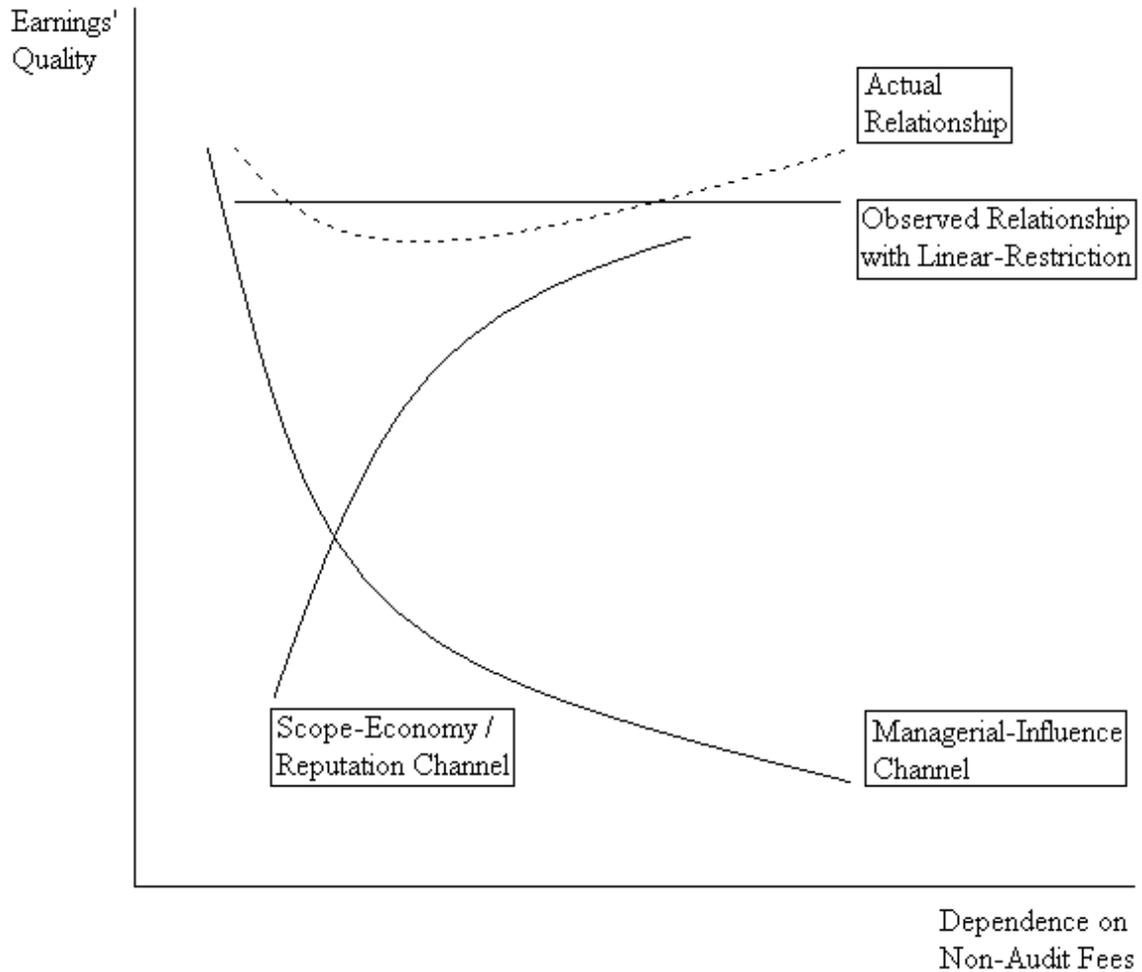


Figure 1
 Linear restrictions can hide evidence that fee dependencies influence earnings quality

An auditor's dependence on non-audit fees can, in principle, compromise or enhance the information that earnings reports make available. If, for example, informational inputs for producing audit services intersect those for producing NAS, then jointly producing audit and non-audit services can improve earnings quality by facilitating scope economies. Joint production can, in addition, increase the cost of certifying misstated financial statements – e.g., the reputational costs of any such

certification might include foregone opportunities from audit *and* non-audit services.⁷ On the other hand, by endowing managers with the capacity to threaten auditors with the loss of non-audit business, jointly producing audit and non-audit services increases the pressure that managers can place on auditors to endorse compromised financial statements.⁸

To the extent that non-monotonicities characterize the relationship between earnings quality and dependence on non-audit fees, research designs that *a priori* restrict that relationship to being linear can spuriously produce evidence *against* the hypothesis that NAS matters. For example, simple correlations between proxies for quality and fee dependence, as well as corresponding coefficient estimates from linear regressions, can appear negligible even if quality and fee dependence truly share a strong non-linear relationship. Rather than evidencing the lack of a relationship between earnings quality and fee dependencies, “non-results” like those of Glezen and Millar (1985, Tables 6 and 7) may be an artifact of this type of bias.

In addition to being subject to the above criticisms, evidence from shareholder voting is consistent with fee disclosures being important, but voting costs discouraging even rational owners from collectively acting against compromised auditors. More recent authors (e.g., Frankel et al., 2002; Ashbaugh et al., 2003) have thus looked at how market valuations respond to fee disclosures. In doing so,

⁷ Rents from non-audit services might be available from the above mentioned scope economies.

⁸ Arruñada (1999) developed a book-length evaluation of how the joint production of audit and non-audit services can enhance the quality of earnings reports. Frankel et al. (2002) reviewed how joint production can degrade earnings quality. Bratton (2003, pp. 12-13) reviewed the conventional wisdom that “nonaudit consulting rents, employment opportunities at clients, and audit industry concentration” compromise the “professional relationship” between auditors and management.

however, they too ignored the potentially confounding issue of functional form, and thus left open Glezen and Millar's (1985) observational equivalencies.⁹

Exploiting a more recent SEC reporting requirement, for example, Ashbaugh et al. (2003) found that firm-level market valuations negligibly responded to disclosures about the proportion of fees paid to auditors for NAS (i.e., "fee ratios").¹⁰ On their face, these results largely confirm the hypothesis that having accountants produce NAS for audit clients *does not* degrade earnings quality.¹¹ But while the opposing forces highlighted above suggest that the relationship between fee dependence and earnings quality may be non-linear, and even non-monotonic, regression specifications for received "non-results" *a priori* restrict this relationship to being linear.¹²

⁹ Other types of research designs may have also encountered difficulty in making valid inference available. Francis and Ke (2003), for example, examined whether the market valuation of earnings surprises depends on auditor independence. In doing so, however, they not only omitted the reporting of potentially important sensitivity analyses, they drew inference from an *indicator* of whether surprises occurred after the SEC implemented its fee disclosure mandate (e.g., equation (5) formally characterizes each firm as maintaining the same filing date). This methodology thus treats earnings surprises as having occurred when audit-fee information was available, even for firms that file proxies in late quarters – i.e., firms for whom such information could *not* have been available. Such difficulties are not confined to studies that report evidence that fee disclosures matter. DeFond et al. (2002), for example, reported that the propensity for auditors to issue going concern opinions is unrelated to auditor independence. While their evaluation restricts consideration to *only* distressed firms, however, it ignores the potential for bias to emerge from non-random selection.

¹⁰ Ashbaugh et al. (2003) followed Frankel et al. (2002) in exploiting the SEC's "Final Rule S7-13-00, Revision of the Commission's Auditor Independence Requirements," which demands that companies disclose, via proxy statements filed after February 5, 2001, information regarding fees that the auditor billed to it during the previous year (Frankel et al., 2002, p. 4).

¹¹ To be sure, Frankel et al. (2002) found evidence from *accrual data* that jointly producing audit and non-audit services degrades earnings' quality, and an economically "small" market response to fee disclosures. Ashbaugh et al. (2003) argued that Frankel et al.'s (2002) accrual evidence is spurious, and questioned whether Frankel et al.'s (2002) event study results are even *statistically* significant. Kinney and Libby (2002) and Falaschetti and Orlando (2003) offered related critiques.

¹² Per our introduction, we do not address evidence that draws on non-market data, such as those on accruals or audit opinions (e.g., see Craswell et al., 2002; Ashbaugh et al., 2003). Evidence that rests on such measures tends to support the hypothesis that producing NAS does not materially diminish the quality of reported earnings (e.g., see Romano, 2004, Table 3).

2.2 Ignoring market efficiency implications can bias inference

In addition to offering evidence on how a proxy for earnings' quality (i.e., percentage of shareholder-votes to retain an auditor) linearly relates to a proxy for auditor independence (i.e., percentage of fees from NAS), Glezen and Millar (1985) conducted an event study on whether shareholders were less likely to vote for an auditor's retention after learning about the auditor's dependence on non-audit fees. They found that this likelihood negligibly responded to disclosures, and characterized this evidence as suggesting that fee dependence does not influence earnings quality.

But this evidence also supports the *joint* hypothesis that fee dependence affects earnings quality and shareholders rationally form expectations. Fee disclosures can be informative without *systematically* changing the direction in which shareholders vote. Indeed, evidence that the number of companies with higher approval ratings after the fee disclosure equals the number with lower ratings (see Glezen and Millar, 1985, Tables 3 – 5) supports the hypothesis that jointly producing audit and non-audit services influences earnings quality, but shareholders correctly anticipated (on average) this joint production.

More recent contributions encounter a related difficulty. These studies looked at how market valuations reacted to the disclosure of audit and non-audit fees by estimating parameters from the following equation:

$$AR = \alpha_1 \text{ Fee Dependence} + \sum_{i=2}^n \alpha_i \cdot \text{Controls}_i + \varepsilon_i \quad (1)$$

where *AR* measures “abnormal returns” and *Fee Dependence* equals the ratio of fees paid for NAS to fees paid for all services (i.e., audit and non-audit).¹³

If markets are efficient, however, then abnormal returns do not depend on *Fee Dependence* per se, but rather on the fee ratio’s unexpected portion. To the extent that the set of “control variables” is incomplete, the above specification can thus create an errors-in-variables problem that hides the influence of auditor independence.

In addition, if expected fee dependencies correlate with ε_i , then this incompleteness can also bias estimates in an *a priori* unknowable direction. Given our interest in evaluating whether received studies overlooked evidence that fee disclosures matter, however, we focus this theoretical discussion on the potential for errors-in-variables to have created an attenuation bias. By assuming that variables like *Fee Dependence* have no effect on the dependent variable except for their relationship with the “true” explanatory variable, Wooldridge (2002, p. 73) takes a similar approach to prove that attenuation bias emerges from measuring explanatory variables with error. We address a more general form of endogeneity bias in developing our empirical results below.

To see the errors-in-variables problem for the present application, notice that equation (1) can be rewritten as follows.

$$AR = \alpha_1 (Unexpected\ Dep. + Expected\ Dep.) + \sum_{i=2}^n \alpha_i \cdot Controls_i + \varepsilon_i \quad (2)$$

¹³ See Frankel et al. (2002) and Ashbaugh et al. (2003).

In this light, *Fee Dependence* in equation (1) appears to be a noisy proxy for the explanatory variable of interest if markets are efficient – i.e., *unexpected* fee dependence. Figure 2 illustrates how, by inflating the explanatory variable’s variance, this type of error biases least squares estimates of α_1 toward zero.¹⁴

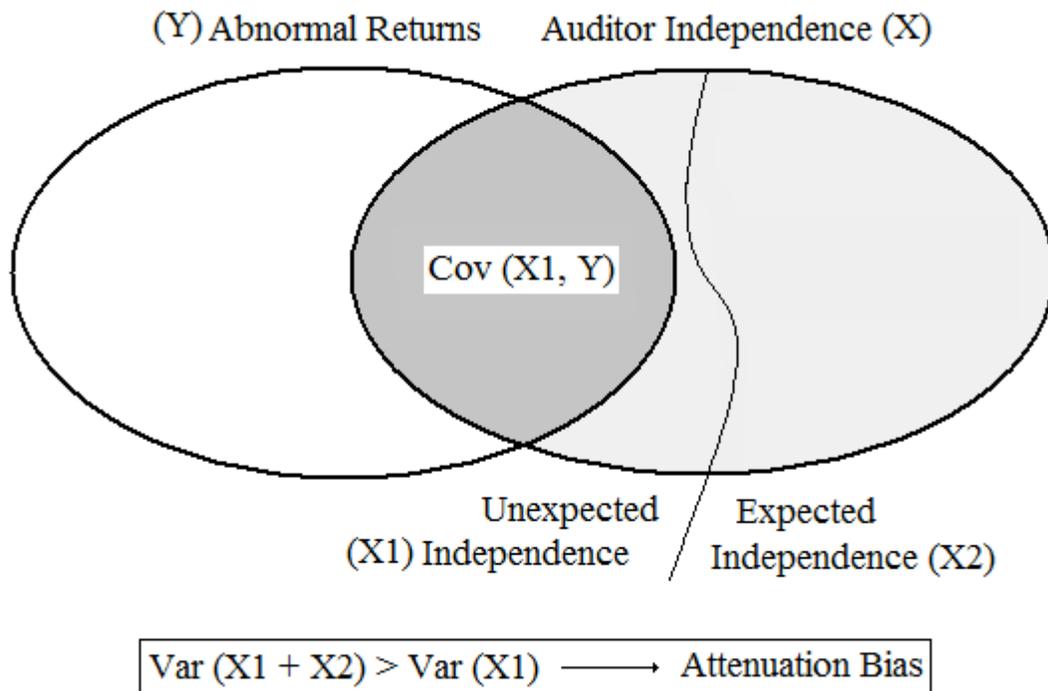


Figure 2
Attenuation bias from measuring “unexpected auditor independence” with error

Received results that fee disclosures don’t matter may be an artifact of this bias, rather than evidence that auditor independence does not materially affect earnings quality. Frankel et al. (2002) attempted to address this issue by constructing

¹⁴ We prove this result in Appendix B.

measures of unexpected fee dependencies.¹⁵ In doing so, however, they ignored the potential for organizational features (e.g., board and ownership structures) to substitute for auditor independence as factors in producing corporate governance services (Falaschetti and Orlando, 2003). In addition, while information sets must be available *before* they can influence expectations, Frankel et al. (2002) appear to have estimated “expectations” from contemporaneous information (i.e., the timing of their expectation *equals* that of the information from which it is estimated).

Ashbaugh et al. (2003) took an alternative approach by comparing cumulative abnormal returns between the first year in which information about fee dependencies was available (i.e., fiscal year 2000) and the last year in which such information was unavailable (i.e., fiscal year 1999). In doing so, they developed evidence that markets negligibly reacted to disclosures about fee dependencies. These results may instead reflect, however, market efficiencies that force average abnormal returns to zero over time (i.e., new information affects market prices, but not systematically in one direction or the other).

2.3 Focusing on firm-level effects ignores the potential for externalities

Finally, an important issue to which neither early nor more recent evidence speaks is the potential for firms to shy away from disclosure and governance practices that are privately costly but publicly beneficial – i.e., to under-produce positive externalities. As Figure 3 illustrates, firms that confront similar market forces (e.g., those that operate in related sectors) may choose similar governance structures. One firm’s disclosure may thus inform markets about forces that are common to other firms –

¹⁵ DeFond et al. (2002) employed a similar method to investigate the sensitivity of going concern opinions to NAS.

i.e., firms do not fully internalize the costs and benefits of *reporting* governance information. Absent mandates, then, firms can disclose less information than is socially optimal (e.g., see Admati and Pfleiderer, 2000).

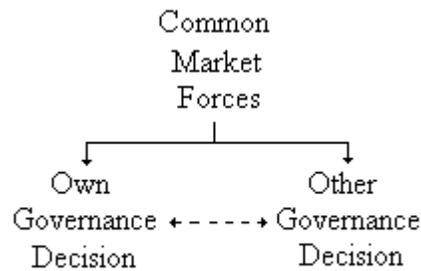


Figure 3
Mandated disclosures can mitigate inefficiencies from *information* spillovers

This type of correlation can also emerge from forces that disclosure mandates do not address, such as the influence of one firm’s governance choice on other firms’ choices. To see how “governance spillovers” can persist in the face of disclosure mandates, suppose that a firm chooses a weak governance mechanism (e.g., one that allows for “too much” earnings management), and notice that this choice not only diminishes information about the firm’s *own* performance, but also weakens other firms’ ability to evaluate their managers’ *relative* performance. To insulate managers from an increased risk of arbitrary performance evaluations, these “other” firms may optimally expand their allowances for earnings management (Nielson, 2006). The following figure illustrates this phenomenon.



Figure 4
 Proscriptive regulations may be necessary to check inefficiencies from *governance* spillovers

While this type of frequency-dependent strategy can be *privately* optimal, it creates *socially* sub-optimal governance levels – e.g., it can push economies toward progressively inferior governance structures, rather than rescue them from unattractive initial states (Nielson, 2006; Acharya and Volpin, 2007). Moreover, disclosure mandates would not address this problem. Indeed, even if markets enjoy complete information about a firm’s governance decisions, they will only price the internal costs and benefits of those decisions.¹⁶ If governance decisions create external effects, whether or not information about such decisions is readily available, proscribing certain governance practices may thus be necessary.

By ignoring the potential for governance decisions to be correlated across firms, and whether any such relationship reflects firms’ exposure to common forces or external governance effects, received research may have overreached in (i) dismissing the efficacy of disclosure mandates and (ii) extending that inference to proscriptive regulations. Indeed, each of the prominent contributions that we review above

¹⁶ Acharya and Volpin (2007) similarly observe that, “even if firms can commit to corporate governance standards, [they] may choose inefficiently low levels of governance because they do not internalize the benefit that corporate governance has on competitors.”

examined how disclosures affect only the disclosing-firm's performance.¹⁷ They would have thus failed to find evidence of policy efficacy if those regulations' main benefit comes from checking external consequences of disclosure- or organizational-choices.

3. Empirical Results

By (i) *a priori* restricting the relationship between fee dependence and earnings quality to be linear, (ii) employing noisy proxies for unexpected fee dependencies, and (iii) ignoring the potential for disclosure and governance choices to create external effects, received research designs may have overlooked evidence that auditor independence materially influences the quality of earnings reports. In addition, these designs cannot tell us what any such evidence means for the efficiency of disclosure mandates that might productively address informational externalities or proscriptive regulations that might address governance externalities.

We thus develop a more complete investigation of how data from fee disclosures can evidence a relationship between auditor independence and earnings quality. Our departure from the literature begins with an attempt to distinguish what have heretofore appeared as observationally equivalent hypotheses: (i) jointly producing

¹⁷ Examining a qualitatively similar regulatory issue (i.e., the Glass-Steagall Act's proscription on jointly producing commercial and investment banking services), Kroszner and Rajan (1997) acknowledged the potential for spillover effects to rationalize regulation as enhancing efficiency, but their research design allowed for an investigation of only internal effects. Li et al. (2008) found evidence that events leading up to SOX in general (not just the auditor independence provision) are associated with positive abnormal market returns, and these positive returns are concentrated in firms that were previously most susceptible to earnings management. Drawing normative inference from this study is also difficult, however, for the case at hand. To be sure, our study focuses on a particular aspect of SOX. In addition, however, only four of the eight events that Li et al. studied (events 3-6) appear directly related to the prospects of SOX becoming law. And abnormal market returns for this subset of events (-0.001) are considerably smaller than those for all events (events 2-8) that Li et al. associated with significantly positive net abnormal returns (see Li et al. Table 5).

audit and non-audit services does not materially influence earnings quality and (ii) jointly producing these services influences earnings quality, but markets are efficient. In making this distinction, we also examine whether auditor independence relates to earnings quality in a non-linear manner. Finally, we measure the extent to which one firm's choice of auditor independence contains information about other firms' independence choices.

Our results offer some support for auditor independence enhancing the informational content of financial statements (i.e., improving earnings quality), but little evidence of fee dependencies being correlated across firms (as would be the case if common market forces aligned choices of auditor independence, or private choices of independence created external governance effects). We thus conclude that, while disclosure mandates may have strengthened the ability of market participants to discipline choices of auditor independence, the SOX restriction on producing NAS is unlikely to offer any additional improvements.

3.1 Data

Our investigation begins where Frankel et al.'s (2002) and Ashbaugh et al.'s (2003) ended – i.e., with an event study of how valuation levels responded to “initial” disclosures of fees paid to auditors.¹⁸ Valuation levels will respond to disclosures about auditor independence if disclosures contain news about scope economies in audits, reputational incentives of auditors, or the potential for strategically managed earnings (i.e., factors that influence the “quality” of reported earnings), and reported

¹⁸ By reducing asymmetric information, disclosures can also decrease valuation variances and increase liquidity. To check the robustness of our abnormal return regressions, we consider these latter implications of news about earnings quality below.

earnings inform valuations. Here, we're interested in recreating the literature's results to gain confidence that any new findings emerge from methodological refinements (rather than from data-artifacts).

We measured auditors' dependence on NAS fees for each client firm in the Audit Analytics database that filed a definitive proxy statement between February 5, 2001 (the first day that firms were required to disclose such fees) and February 4, 2002, leaving us with 3,313 sampled firms.¹⁹ In doing so, we followed Frankel et al. (2002) and Ashbaugh et al. (2003), defining the variable *Fee Dependence* as the ratio of non-audit fees to total fees. This ratio's average equals 0.47 for our sampled firms (i.e., 47% of total fees are, on average, attributable to NAS), and its standard deviation equals 0.26.²⁰

Treating the filing date as our "event date" (i.e., day 0), we then used stock price data from the Center for Research in Securities Prices (CRSP) to compute each sampled firm's abnormal return on the event date. Here, our variable *Abnormal Return (AR)* equals the difference between the firm's raw return and the CRSP equally weighted market return on the disclosure date.²¹ Evaluated at their mean, our *Abnormal Return* exhibits the same magnitude as does Ashbaugh et al.'s (2003).²²

Finally, we employed a specification similar to that of Frankel et al. (2002) to establish a baseline relationship between abnormal returns and fee dependencies. In

¹⁹ Data from Audit Analytics are available with subscription at www.auditanalytics.com.

²⁰ Appendix C summarizes our data.

²¹ Our results are invariant to a number of alternative measures of excess returns. For example, we obtained similar results from comparing raw returns around the announcement to the return of a beta-matched portfolio over the same interval. In addition, while our reported results are based on the disclosure date ($t = 0$), we found similar results when employing both two and three day windows around the announcement (e.g., -1 to 0, 0 to +1, and -1 to +1).

²² The mean of our *Abnormal Returns* is 0.08% (standard deviation 4.9%). Ashbaugh et al. (2003) reported a mean of 0.04%.

particular, we estimated parameters from equation (1) (see our Section 2) and report the results in the first two columns of the following Table 1.

Table 1
Dependent Variable = *Abnormal Returns*
Estimation Method = OLS

Variable	(1)	(2)	(3)	(4)
<i>Constant</i>	0.005 (0.002)***	0.012 (0.005)**	0.006 (0.009)	0.013 (0.006)**
<i>Fee Dependence</i>	-0.008 (0.003)**	-0.006 (0.004)*		-0.028 (0.026)
<i>Fee Dependence</i> ²				0.068 (0.069)
<i>Fee Dependence</i> ³				-0.053 (0.051)
<i>Unexpected Fee Dep.</i>			-0.011 (0.005)**	
<i>Expected Fee Dep.</i>			0.010 (0.019)	
<i>Log(Market Value)</i>		-0.001 (0.000)	0.000 (0.001)	-0.001 (0.000)
<i>Adj. R</i> ²	0.002	0.002	0.003	0.002
<i>Obs.</i>	3,313	3,313	927	3,313

***, **, and * indicate confidence at the 99%, 95%, and 90% levels, respectively. Standard errors are reported in parentheses.

Coefficient estimates from these specifications evidence a statistically significant and negative relationship between abnormal returns and (gross) fee dependencies. In addition, the magnitude of our estimate on *Fee Dependence* mimics that of Frankel et al.'s (2002). Here, a standard deviation decrease in *Fee Dependence* is associated with an increase in market capitalization of about \$6 million, while moving from the highest observed level of *Fee Dependence* to zero (i.e., a coarse estimate of the

maximum change that SOX induced) is associated with an increase in market capitalization of about \$24 million.²³

3.2 Do unexpected fee dependencies affect market valuations?

Our literature review suggests that if markets are efficient, then the coefficient estimates reported in columns (1) – (2) of Table 1 can be biased toward zero. We address this issue by partitioning *Fee Dependence* into its expected and unexpected components, and measuring how markets respond to the unexpected component. To check the potential for even this finer specification to have left a considerable errors-in-variables problem (or a more general form of endogeneity bias), we also employ methods that abstract from the measurement of abnormal returns and fee ratios to consider whether (i) market valuations became more efficient and (ii) associated assets became more liquid. Our results consistently support the hypotheses that relaxing auditor independence significantly degrades earnings quality, and disclosure mandates strengthened markets' ability to discipline this choice.

3.2.1 Abnormal returns decrease with *unexpected* fee dependencies

DeFond et al. (2002) and Frankel et al. (2002) attempted to estimate the unexpected portion of fee disclosures from proxy statement information about the financial performance and operating characteristics of sampled audit clients. On at least two dimensions, however, this methodology coarsely partitions *Fee Dependence*

²³ Others have characterized such changes as “economically small” when evaluated against market capitalization, which averages almost \$3 billion in our sample (e.g., see Ashbaugh et al., 2003). In light of our interest in the private incentive to disclose such information, however, market capitalization may not be an informative benchmark. For example, our estimated abnormal returns appear non-trivial when evaluated against quarterly earnings projections.

into its expected and unexpected components, and thus leaves open the potential for considerable endogeneity bias.

First, this methodology ignores the capacity for organizational attributes (e.g., board structure) to substitute for auditor independence in producing governance services (Falaschetti and Orlando, 2003). Second, it estimates “expectations” from information that was unavailable to market participants – i.e., data on fee dependencies, financial performance, and operating characteristics come from the *contemporaneous* proxy statement. Expectations about fee dependencies, however, must draw on information that is available before relevant proxy statements are disclosed. Indeed, if markets are efficient, then information disclosed *with* that about fee dependencies *cannot* systematically relate to prior expectations about fee dependencies.

We address the potential for such treatments to have biased available inference by restricting attention to fee dependencies that are more likely to have been unexpected. In particular, we develop a new variable, *Unexpected Fee Dependence*, from the following model’s residuals.²⁴

$$\textit{Fee Dependence Proxy Statement 2001} = f(\textit{Firm Characteristics Proxy Statement 2000}) + u \quad (3)$$

Note that our set of “firm characteristics” pre-dates our data on fee dependencies, and thus satisfies a necessary condition for information to act as a basis for expectations.

²⁴ To address potential difficulties in drawing inference from generated regressors (e.g., see Adrian Pagan, 1984), we also instrumented for *Fee Dependence* with either quartile-dummies of *Fee Dependence* (e.g., see Abraham Wald, 1940) or *Unexpected Fee Dependence*. Inference that is available from associated (unreported) 2SLS regressions differs negligibly from what our reported results make available. We thank Jonah Gelbach for bringing this issue to our attention.

In addition, this set includes data on organizational features that might act as substitute factors in producing governance services, including those that Falaschetti and Orlando (2003) found to be plausibly exogenous.

Data requirements to estimate equation (3) reduce our sample size to 927 audit clients.²⁵ Results from this estimation let us partition *Fee Dependence* into its expected and unexpected components, and thus re-estimate equation (1) with a less noisy proxy for unexpected dependencies. Coefficient estimates from this “re-estimation” appear in column (3) of Table 1.

If markets are efficient and fee dependence matters, then abnormal returns should vary only with *Unexpected Fee Dependence* (and not its expected counterpart). This relationship makes itself evident in our specification (3) – i.e., the coefficient estimate on *Unexpected Fee Dependence* is statistically significant, while that on *Expected Fee Dependence* is not. Here, a standard deviation decrease in *Unexpected Fee Dependence* (i.e., a decrease of 0.19) is associated with an increase in market value of almost \$17 million (about 20 basis points of the over \$8 billion average market capitalization in our restricted sample), while a decrease from the maximum *Unexpected Fee Dependence* (0.52) to zero is associated with an increase in market value of about \$46 million (almost 60 basis points).

The negative and significant coefficient estimate on *Unexpected Fee Dependence* suggests that the results reported in columns (1) and (2) are not artifacts of what, in

²⁵ Results of that estimation appear in Appendix D. In unreported regressions, we considered the potential for results reported in column (3) to be an artifact of this sample restriction. We did not find evidence of such a bias.

principle, can be important sources of endogeneity bias.²⁶ Even more, results from estimating our more flexible specification (reported in column (4)) suggest that this evidence is not an artifact of what appear in the literature as *a priori* (but loosely grounded) linear restrictions on relationships in these data – i.e., insignificant coefficient estimates on higher ordered variables suggest that theoretically plausible non-linearities are empirically unimportant for this application. These results begin to offer more confident support for the hypothesis that mandating fee disclosures significantly enhanced markets’ ability to discipline this dimension of corporate governance.

To facilitate a preliminary check of whether this inference is due to an inflationary bias (rather than the potential for attenuation bias that motivated our distinction of expected and unexpected fees), we split our sample into early- and late-filers, then reassigned late-filers to the highest frequency filing date in the first half of our sample (and vice-versa for early-filers). One source of potential bias for our estimates is unobservables that happened to affect returns around proxy dates that are influential for our coefficient estimates. To the extent that unobservables spuriously drive our results, our coefficient estimate on *Unexpected Fee Dependence* should be insensitive to whether sampled firms actually disclosed information about auditor independence on an “event” date. In other words, if unobservables rather than a proxy for news about auditor independence rationalize our abnormal returns, then those returns should persist when the unobservables are present and the news is not.

²⁶ Our proof in Appendix B shows that a large variance in the expected fee ratio (relative to that of the unexpected fee ratio) attenuates the coefficient estimate on *Fee Dependence*. The variance of our unexpected fee ratio, however, is about five times that of our expected fee ratio. This relative magnitude appears reasonable if the cost of producing audit services contains a considerable fixed component.

We do not find evidence for this bias. The coefficient estimate on *Unexpected Fee Dependence* becomes statistically insignificant (and its magnitude drops by 50 to 90 percent) when it is calculated for a date that, while popular with other filers, does not reveal information about the independence of a client firm's own auditor.²⁷

3.2.2 Auditor independence may also affect the *efficiency* of market valuations

To further evaluate the confidence that this inference deserves, we examine a deeper implication of the joint hypothesis that markets are efficient and fee dependency is informative. In particular, we evaluate the implication that, if news about fee dependence informs markets about earnings quality, then errors in forecasting a firm's financial performance should decrease. This method appears attractive for our present purposes because inference that it makes available does not rely on estimating *Abnormal Returns* or the unexpected portion of *Fee Dependence*.

To see this attractiveness, suppose that $v \in R_+$ represents an asset's true valuation, and let the relationship $v \in V \subset R_+$ represent information about that valuation. Under this representation, market efficiency implies that $E[v | v \in V] - v = 0$ – i.e., forecast errors equal zero on average.

In the present context, $E[v | v \in V]$ represents the market's valuation of a firm for a given set of information. Now suppose that disclosures about audit and non-audit

²⁷ To be sure, neither this robustness check, nor those reported below, can dismiss *all* possibilities for information contained in proxy statements but omitted from our specifications to spuriously drive our measured relationship between abnormal returns and auditor independence. We note, however, that any such information would have to monotonically vary across client firms with our improved measure of unexpected fee dependence, as well as give rise to effects that are consistent with our market efficiency and liquidity results (described below for both the firm and market levels of our investigation). In this light, the relationships measured here appear considerably less susceptible to omitted variables bias than do those reported in the literature. And perhaps more importantly, our research design facilitates a careful evaluation of whether two issues that appear untouched by the empirical literature (i.e., attenuation bias and governance externalities) have led to overly strong conclusions about the efficiency consequences of relevant disclosure and proscriptive regulations.

fees contain additional information about earnings quality so that $v \in V'$ where $V' \subset V$. Forecast errors may continue to equal zero (on average) in this richer informational environment, while the variability of errors decreases. This implication follows immediately from our definition of information and that for calculating variances – i.e., $E\left[\left(E[v|v \in V', V' \subset V] - v\right)^2\right] < E\left[\left(E[v|v \in V] - v\right)^2\right]$.

Looking at how valuation levels *and* variation responded to revelations about fee dependence can thus facilitate a more thorough evaluation of how auditor independence relates to earnings quality. To the extent that we mis-specified our “expectation regression” (i.e., equation (3)), the magnitude of our coefficient estimate on *Unexpected Fee Ratio* may also reflect an attenuation bias. If information enters markets in the manner that we’ve modeled here, however, then examining changes in the variance of firm-valuations offers an important robustness check.

We thus extend our event study by evaluating how the *variance* in market valuations responds to fee disclosures. Our measure of variance equals the standard deviation of each client’s stock price over the one- and two-month intervals immediately preceding and immediately following the proxy filing date, normalized by the corresponding average stock price.

Per our above discussion, this measure of forecast errors should decrease if jointly producing audit and non-audit services compromises earnings quality.²⁸ Evidence to this effect appears in the following Table 2. In particular, consistent with the

²⁸ Note that the manner in which we modeled information assumes that information in fee disclosures is independent of the disclosure’s content (i.e., the disclosure per se reduces uncertainty). If, instead, information about earnings quality varies with the level of fee dependence, then our volatility measures should exhibit a positive relationship with our variable *Fee Dependence*. We did not find evidence for this implication in several unreported regressions.

disclosure of audit fees being informative, the variance of market valuations significantly decreases between the two months before and after the proxy date.²⁹

Table 2
Fee Disclosure and Variance in Market Valuations
(Obs. = 3,298)

Days Relative to Announcement:	-62 to -2	2 to 62	z stat	-32 to -2	2 to 32	z stat
<i>Median Stock Price Volatility</i>	0.106	0.095	-3.12***	0.069	0.069	0.29

***, **, and * indicate confidence at the 99%, 95%, and 90% levels, respectively.

Evidence for this decrease appears sensitive, however, to our event window's length. We do not observe a decrease, for example, between the one-month windows. This sensitivity, coupled with our robust and significant parametric estimates (see Table 1), encouraged us to also evaluate Bushee and Luez's (2003) conjecture that efficiency-enhancing informational disclosures can increase liquidity in the reporting firm's financial assets.³⁰ In unreported results, we find evidence of such an effect. Specifically, evaluated at one-month windows before and after a firm's fee disclosure, bid-ask spreads significantly decrease and trading volumes significantly increase.³¹

²⁹ Results from measuring efficiency with average (as opposed to median) volatility are qualitatively similar.

³⁰ Liquidity can increase, for example, if disclosures mitigate the potential for markets to "unravel" in the face of information asymmetries (e.g., see Akerlof 1970).

³¹ Results for a two-month window surrounding the proxy date are similar, though the increase in share turnover over this interval is small and statistically insignificant.

3.3 Do fee disclosures create information spillovers?

Evidence reported in our Tables 1 and 2, as well as that from examining bid-ask spreads and trading volumes, largely supports the hypothesis that markets discipline decisions about auditor independence, and mandated fee disclosures enhanced this discipline. While more firmly grounded than corresponding results in the literature, however, this evidence only evaluates the own-firm effects of private governance choices.

Drawing inference from estimates of such effects, the literature concludes that relevant disclosure mandates and proscriptive regulations did little to enhance, or even diminished, financial market performance (e.g., see Glezen and Millar, 1985; DeFond et al., 2002). But this inference ignores the potential for regulations to expand financial opportunities by mitigating the external consequences of disclosure or organizational decisions. Absent evidence about such externalities, we cannot confidently dismiss the potential for proscriptive features of SOX to expand financial market opportunities.

Evidence from our “expected fee dependence” regression begins to address this open issue (see Appendix D). Recall from our theoretical motivation that operationally related firms will choose similar levels of auditor independence if that choice is influenced by common sector forces or the governance choices of benchmark competitors. Coefficient estimates on the sector-dummies in our “expected fee dependence” regression offer some evidence for such a correlation. In particular, evaluated at the coarse 1-digit SIC-level, firms within three of nine sectors appear to choose distinctly different levels of auditor independence. This difference

is marginally greater than what is expected from a random process where, evaluated at a 90 percent level of confidence, one sector can be expected to significantly differ (even though firms' choices are truly unrelated).

To check this inference, we evaluate an additional implication of models where information- or governance externalities are important – i.e., reports about fee dependence from one firm should inform markets about unobserved fee dependence in other firms. In particular, we separately conducted our event studies for firms that filed proxies up to and after April 5, 2001 (i.e., the date after which approximately half of our sampled firms filed proxy statements). If information from one firm's disclosure “spills over” to others (because firms face correlated market forces, or governance choices create external effects), then disclosures from firms that filed late in the proxy year should have been less informative than those from “early filers.” In this case, valuations for “late filers” should exhibit a smaller response to disclosures than do valuations for “early filers.”³²

Estimates reported in Table 3 argue against such effects being important. Indeed, to the extent that significant relationships appear in our data, they evidence a stronger response to fee disclosures from late filers (though coefficient estimates for early and late filers are statistically indistinguishable).

³² Foster (1980) anticipated this type of method.

Table 3
 Dependent Variable = *Abnormal Returns*
 Estimation Method = OLS

Variable	“early” filers	“late” filers
<i>Constant</i>	0.020 (0.011)*	-0.006 (0.014)
<i>Unexpected Fee Dep.</i>	-0.007 (0.007)	-0.015 (0.007)**
<i>Expected Fee Dep.</i>	-0.028 (0.026)	0.002 (0.028)
<i>Log(Market Value)</i>	-0.000 (0.001)	0.000 (0.002)
<i>Adj. R²</i>	0.005	0.002
<i>Obs.</i>	460	467

***, **, and * indicate confidence at the 99%, 95%, and 90% levels, respectively. Standard errors are reported in parentheses.

We also separately estimated this abnormal return regression for early and late filers within each of the eight single-digit industry groupings for which a sufficient number of observations exists in our data. Recall that, for the models reviewed in our Section 2, informational and governance spillovers occur between operationally related firms. The non-results reported in our Table 3 may thus be an artifact of confounding filing dates and operational characteristics. Nevertheless, even within distinct operational groupings, we find little evidence that informational or governance externalities are important. In particular, a statistically significant market response to early disclosures exists for only one industry group (SIC 2). And even

here, coefficient estimates on *Unexpected Fee Dependence* for early and late filers are statistically indistinguishable.³³

Similarly disconfirming evidence emerges from extending our analyses of valuation-variances (see Table 2) and financial asset liquidity (see discussion in section 3.2) to the “spillovers” case. Here, the response of valuation-variances to fee disclosures differs insignificantly between early and late filers, as does the response of bid-ask spreads and trading volumes. These results offer the first evidence of which we are aware about the potential for fee disclosures to create informational spillovers, and largely argue against the empirical relevance of a theoretically plausible governance spillover that might have rationalized the SOX proscription on NAS.

4. Conclusion

Prominent studies have argued that regulating auditor independence through disclosure mandates and organizational proscriptions exhibits little potential to expand financial market opportunities (e.g., see Glezen and Millar, 1985; DeFond et al., 2002; Ashbaugh et al., 2003). In developing this conclusion, however, they left open the possibilities that (i) governance attributes share a non-monotonic relationship with earnings quality, (ii) forces associated with market efficiency mask evidence of regulatory efficacy, and (iii) disclosure and organizational externalities retard market efficiency.

³³ Note that controlling for “early fee ratios” in the first-stage regression for late filers (i.e., the regression from which we estimate expected and unexpected fee ratios) could further reduce the potential for errors-in-variables to attenuate coefficient estimates for late filers, and thus strengthen the evidence presented here that early filers do not experience a larger market response. We thank Sudipta Basu for highlighting this possibility.

Addressing these issues, we develop more firmly grounded evidence about the efficacy of disclosure mandates and organizational proscriptions as they apply to the issue of auditor independence. Figure 5 illustrates how our various results can be rationalized as emerging from a process where independence improves the informational content of earnings reports, and news about this governance attribute lets markets update their valuations of client firms and decrease their forecast errors. This rationalization does not rest on either fee disclosures or governance choices creating external effects (at least through channels where information- or governance spillovers are salient), and thus suggests more strongly than does the literature that SOX proscriptions on NAS went too far.

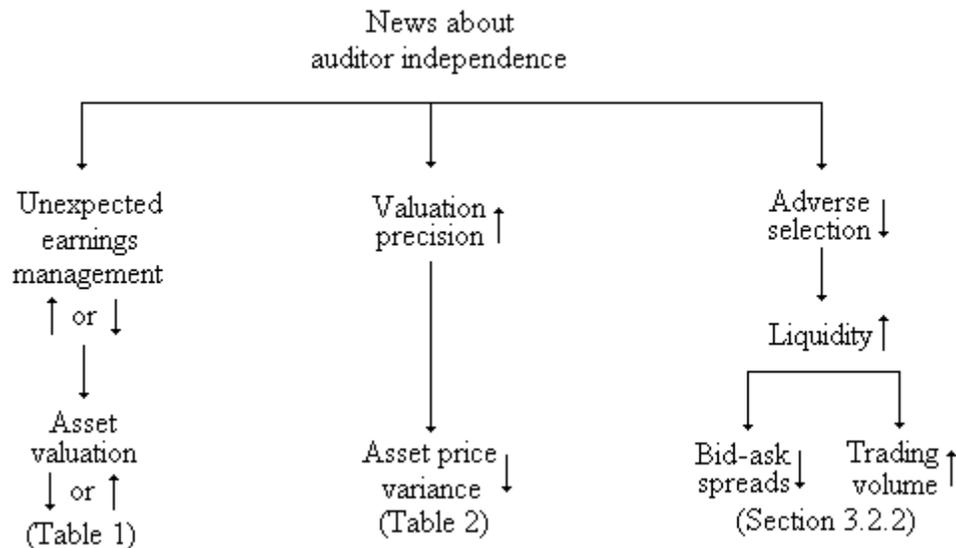


Figure 5
Summary and rationalization of results

Our results speak more directly than has prior research against the capacity for SOX's restriction on NAS to expand financial opportunities. To be sure, while we

extend the literature by evaluating a particular channel through which proscriptive regulations can enhance market efficiency, we cannot speak to every such channel. A poorly governed firm might, for example, increase credit channel risks. In cases like these, a firm's choice of auditor independence creates externalities but contains little information about others' choices of auditor independence. Our evidence that informational spillovers are unimportant does not speak to such channels.

That said, we are unaware of prior evidence that addresses channels through which disclosure or governance decisions can create external effects. This lack of support, coupled with our evidence against a theoretically plausible channel through which proscriptive regulation might expand financial opportunities, thus poses a more fundamental question: Why did SOX, part of which restricts the production of NAS, receive almost unopposed political support?³⁴ Given the importance of financial services to economic performance (e.g., see Jayaratne and Strahan, 1996; Levine, 1997; Rajan and Zingales, 1998), future work may want to consider why self-interested rule-makers, whether they reside in an agency like the Securities and Exchange Commission (SEC) or a national legislature like the US Congress, might develop governance rules that maintain little known capacity to expand financial opportunities. This type of understanding could better inform collective decision-making *ex ante*, and might thus improve upon "remedies" that rely on *ex post* reactions to particularly unproductive policies.

In addition, our results offer a more nuanced characterization of disclosure mandates than does the literature. Our evidence that fee dependencies, even those

³⁴ Romano (2004, p. 8) begins to do address this question by investigating why "Congress would enact legislation that in all likelihood would not fulfill its objectives".

that can more plausibly be characterized as “unexpected”, share a significant and negative relationship with abnormal returns supports the efficacy of disclosure mandates. At the same time, however, this evidence suggests that the *necessity* for such mandates is not well understood. For example, the cost of producing information about fee dependencies appears to be small, while our best estimates suggest that associated benefits may be considerable (at least for the proximate decision-makers). Evidence that markets disciplined the choice of auditor independence, but not the choice of whether to disclose such information, appears puzzling in this light.

Finally, while applied to the question of regulating the disclosure and choice of auditor independence, our research design can easily be extended to other governance regulations. Required disclosures about executive compensation, for example, were recently expanded in the US,³⁵ and a reduction in the level of compensation that is deductible for tax purposes is being considered in several countries.³⁶ Whether such measures can strengthen market discipline, or better align the private and social consequences of governance choices, can be evaluated in event studies that control for market expectations, evaluate the efficiency of asset prices, and look for evidence of governance externalities like those developed here.

³⁵ The Financial Accounting Standards Board (FASB) recently required the expensing of option-compensation, and the Securities and Exchange Commission (SEC) expanded the set of compensation-information that must be disclosed in proxy filings.

³⁶ See, e.g., *The Economist* (June 14, 2008).

Appendix A

Section 201: Services Outside The Scope Of Practice Of Auditors; Prohibited Activities³⁷

It shall be “unlawful” for a registered public accounting firm to provide any non-audit service to an issuer contemporaneously with the audit, including: (1) bookkeeping or other services related to the accounting records or financial statements of the audit client; (2) financial information systems design and implementation; (3) appraisal or valuation services, fairness opinions, or contribution-in-kind reports; (4) actuarial services; (5) internal audit outsourcing services; (6) management functions or human resources; (7) broker or dealer, investment adviser, or investment banking services; (8) legal services and expert services unrelated to the audit; (9) any other service that the Board determines, by regulation, is impermissible. The Board may, on a case-by-case basis, exempt from these prohibitions any person, issuer, public accounting firm, or transaction, subject to review by the Commission.

It will not be unlawful to provide other non-audit services if they are pre-approved by the audit committee in the following manner. The bill allows an accounting firm to “engage in any non-audit service, including tax services,” that is not listed above, only if the activity is pre-approved by the audit committee of the issuer. The audit committee will disclose to investors in periodic reports its decision to pre-approve non-audit services. Statutory insurance company regulatory audits are treated as an audit service, and thus do not require pre-approval.

The pre-approval requirement is waived with respect to the provision of non-audit services for an issuer if the aggregate amount of all such non-audit services provided to

³⁷ Source: The American Institute of Certified Public Accountants (AICPA). “Summary of Sarbanes-Oxley Act of 2002.” Accessed at http://www.aicpa.org/info/sarbanes_oxley_summary.htm on April 26, 2005.

the issuer constitutes less than 5% of the total amount of revenues paid by the issuer to its auditor (calculated on the basis of revenues paid by the issuer during the fiscal year when the non-audit services are performed), such services were not recognized by the issuer at the time of the engagement to be non-audit services, and such services are promptly brought to the attention of the audit committee and approved prior to completion of the audit.

The authority to pre-approve services can be delegated to one or more members of the audit committee, but any decision by the delegate must be presented to the full audit committee.

Appendix B

Proof of Attenuation Bias

Hypothesis: If markets are efficient, then the OLS estimate of α_1 in equation (1) is biased toward zero.

Proof: To ease exposition, let $y \equiv AR$ and $x \equiv Fee\ Dependence$ in equation (1) so that the OLS estimate of α_1 equals $\text{cov}(x, y)/\text{var}(x)$. In addition, let $\hat{\alpha}_1$ denote the OLS estimate of α_1 , and $\tilde{\alpha}_1$ denote the unbiased estimate. Finally, let x_E and x_U denote the expected and unexpected components of *Fee Dependence*, respectively (i.e., let $x = x_E + x_U$). Then (assuming that $\text{cov}(x_E, \varepsilon) = 0$),

$$\begin{aligned}\hat{\alpha}_1 &= \text{cov}(x_E + x_U, y)/\text{var}(x_E + x_U) \\ &= (\text{cov}(x_E, y) + \text{cov}(x_U, y))/(\text{var}(x_E) + 2\text{cov}(x_E, x_U) + \text{var}(x_U)).\end{aligned}$$

Without loss of generality, let $\text{cov}(x_U, y) < 0$, and notice that market efficiency implies that $\text{cov}(x_E, y) = \text{cov}(x_E, x_U) = 0$. The following relationship thus emerges.

$$0 > \hat{\alpha}_1 = (\text{cov}(x_U, y))/(\text{var}(x_E) + \text{var}(x_U)) > (\text{cov}(x_U, y))/\text{var}(x_U) = \tilde{\alpha}_1.$$

In words, unexpected fee dependence diminishes earnings quality (i.e., $\text{cov}(x_U, y) < 0$), but $\hat{\alpha}_1$ maintains an upward bias toward zero (letting $\text{cov}(x_U, y) > 0$ creates a downward bias toward zero).

Appendix C

Statistical Description of the Data

	mean	median	std. dev.	min	max
Full Sample (3,313 observations)					
Fee Dependence	0.466	0.481	0.256	0.000	1.000
Abnormal Returns	0.08%	-0.15%	4.87%	-35.28%	59.74%
Log(Market Value)	12.57	12.44	2.006	6.733	19.935
Restricted Sample (927 observations)					
Fee Dependence	0.573	0.606	0.215	0.000	0.985
Unexpected Fee Dep.	0.001	0.022	0.195	-0.552	0.523
Expected Fee Dep.	0.573	0.570	0.092	0.333	0.858
Abnormal Returns	0.03%	-0.04%	3.07%	-18.43%	13.81%
Log(Market Value)	14.343	14.269	1.686	9.907	19.935

Appendix D

Dependent Variable = *Fee Dependence*
Estimation Method = OLS

Variable	Coefficient Estimate
Constant	0.467 (0.153) ^{***}
Fraction of Shares Held by CEO	-0.024 (0.059)
Fraction of Shares held by Institutions	-0.007 (0.025)
Log of Board-Size	0.015 (0.026)
Fraction of Audit Committee Independent	-0.058 (0.033) [*]
Fraction of Nominating Committee Independent	0.064 (0.029) ^{**}
Indicator of Chair Separation from CEO	0.022 (0.014)
Log of Sales	-0.020 (0.010) ^{**}
Sales Growth	0.015 (0.030)
Return on Assets	-0.011 (0.153)
Indicator of Net Loss During Year	0.024 (0.028)
Cash Flow-to-Assets	0.097 (0.112)
Leverage	0.043 (0.034)
(Inventories + Receivables)-to-Assets	-0.010 (0.037)
Indicator of New Stock or Debt Issue During Year	0.040 (0.026)
Log of Market Value	0.062 (0.009) ^{***}
Market Value-to-Book Value	-0.004 (0.002) [*]
Annualized Stock Return	-0.011 (0.016)
<i>Adj. R</i> ²	0.162
<i>Obs.</i>	927

***, **, and * indicate confidence at the 99%, 95%, and 90% levels, respectively. Standard errors are reported in parentheses. This specification also includes unreported industry indicators.

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