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Auditor Independence, Dismissal Threats, and the Market Reaction to Auditor Switches

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1. *Introduction*

This paper analyzes the effect of auditor changes on security prices in two alternative regimes. In the first, the auditor follows a mechanical decision rule; in the second, the auditor takes into account the possibility that an adverse audit opinion may lead to dismissal. I show that in either regime, investors' reaction to switches depends on the context of the switch and the characteristics of the switching firm. With mechanical auditors, a retention may indicate either that the firm is doing so well that it expects a clean opinion from the current auditor, or that the firm is doing so poorly that it expects a qualified opinion from any auditor. I consider two special cases which describe these situations.

First, if no new information arrives after an initial audit opinion and switching is costly, I show that an auditor change is good news to investors: only the lowest-value firms, which expect a qualification

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from any auditor, retain the current auditor. Second, suppose there is new information, the cost of switching is zero, qualifications are costly, and a firm is more certain of the type of audit opinion it will receive from an old auditor than from a new auditor. Then, firms that expect high value and therefore are more certain of a clean opinion from the old auditor will retain, so a switch indicates low firm value in this case.

In a general model that allows for the arrival of new private information and costly switching, the analysis implies that the stock price response to the announcement of an auditor change depends on the preswitch audit opinion. Specifically, the stock price reaction to a switch will tend to be more negative after a clean than after a qualified opinion, because high-value retentions are more common after a clean opinion, while low-value retentions are more common after a qualified opinion.

In the regime with strategic auditors, I analyze investor reaction to switches and to information in the audit opinion when the auditor balances costs and benefits from issuing a clean or qualified opinion. If dismissed, an auditor may lose rents arising from either low-balling (the practice of charging an initial fee below costs) or his status as a low-cost producer of consulting services. I show that despite dismissal threats financial reports remain credible, so that investors continue to respond positively to a clean opinion and negatively to a qualified opinion. More important, auditor switches can still be good news despite dismissal threats and low-balling.

Since auditor switches can be bad news to investors even with a mechanical auditor, and can be good news even when management can influence the auditor, management intimidation of the auditor does not itself determine investors' reaction to an auditor switch. Instead, it is the information conveyed by the audit opinion prior to the switch that plays an important role. In contrast, previous studies have argued that the market reaction to auditor switches is negative because the switch signifies that the firm was attempting to influence the auditor (e.g., Fried and Schiff [1981], Chow and Rice [1982], and Schwartz and Menon [1985]). Furthermore, I also show that an auditor switch can be bad news and yet benefit shareholders by reducing the likelihood of incurring a costly qualification. Thus, a negative market reaction to switches does not in itself justify restrictive regulation of auditor changes.[1]

Section 2 introduces a general model in which the auditor follows a mechanical decision rule. The firm's decision to switch or retain the

[1] See "SEC to propose forcing firms to disclose auditor shopping for optimum opinions" in the June 23, 1987 edition of the *Wall Street Journal* and "SEC moves to tighten rules for data on firms' health and takeover situations" (*WSJ* [March 10, 1989]) for examples of proposals to tighten regulation of the auditing profession.

auditor is analyzed. Section 3 explores the equilibrium decision of the firm in the general case and then examines investor reactions in two special cases. Section 4 considers a strategic auditor model. Section 5 concludes the paper.

2. *Economic Setting*

There are two periods in the model, $t = 1, 2$, and all individuals are assumed to be risk-neutral. The gross firm value X_t, $t = 1, 2$, is random with density $f_t(X_t)$, and support $[\underline{X}, \overline{X}_t]$, $\underline{X}_t > 0$. The change in X_t between the two periods is $\delta \equiv X_2 - X_1$. δ is independent of X_1, has density $h(\delta)$, and has zero mean and support $[\underline{\delta}, \bar{\delta}]$. The terminal net value of the firm, V, equals the gross value in period 2 less any switching cost, C, and qualification cost, K, incurred:

$$V = X_2 - I(S)C - I(Q_1)K - I(Q_2)K, \tag{1}$$

where:

C = the cost of a switch
K = the cost to the firm if it is qualified
$I(S)$ = 1 if a switch occurred and 0 otherwise
$I(Q_t)$ = 1 if the firm was qualified in period t and 0 otherwise.

The cost of switching auditors C arises from the need to search and solicit presentations from potential auditors, from the new auditor's setup costs, and from procedures that require the time of client employees. The qualification cost K consists of renegotiation costs associated with a qualified opinion, such as technical defaults on existing loans or a decline in credit rating. A qualified opinion may also invite regulator involvement, such as a temporary suspension of trading. The costs C and K are common knowledge. I assume for the present that audit fees are the same across auditors, and hence can be ignored in the switch/retain decision. This assumption is relaxed in section 4 to allow for possible low-balling.

At the start of each period, the firm privately observes X_t. It is required to hire an auditor for each period.[2] The firm selects the initial auditor at random for period 1, and either retains (R) the old auditor (o) or switches (S) to a new auditor (n) for period 2. For each

[2] This assumption is consistent with mandatory audits of financial reports of public firms. Alternatively, Melumad and Thoman [1990] describe an equilibrium in which investors interpret failure to hire an auditor as indicating low firm value. This rationale would apply here if the manager were assumed to be concerned with the stock market valuation of the firm.

period, based on a noisy estimate of the firm's value, the auditor issues either a clean (U) or a qualified (Q) opinion. All uncertainty is resolved and the firm is liquidated at the end of the second period. Neither investors nor the auditor observe X_t until the end of period 2, and they have common priors about the densities $f_t(X_t)$ and $h(\delta)$.

The auditor forms his report based on observing firm value at the start of the period, A_t, $t = 1, 2$, with error ϵ_t. At the start of period 1, his observation is $A_1 = X_1 + \epsilon_1$. Define y as the net value of the firm at the beginning of the second period just prior to the switch/retain decision, $y = X_2 - I(Q_1)K$. Let A_2^n and A_2^o represent the second-period observations on the firm's net value for the new and old auditor respectively. At the start of period 2, these observations are:

$$A_2^n = y - C + \epsilon_2^n$$
$$A_2^o = y + \epsilon_2^o. \tag{2}$$

The audit errors ϵ_1, ϵ_2^o, and ϵ_2^n are random with zero mean and independent of X and δ.[3] The auditor's observation A_t is not revealed to investors; however, I assume that the firm learns the errors in the auditors' observations.[4] In practice, public corporations are required to file Form 8-K with the SEC concerning any major disagreements with their auditors regarding accounting principles. Thus, it is likely that the auditor will discuss disagreements with the client.

The probability densities of the errors for an old or a new auditor are $g^o(\epsilon_t)$ and $g^n(\epsilon_t)$ with support $[\underline{\epsilon}, \bar{\epsilon}]$. $g^i(\epsilon_t)$, $i = o, n$, is known to all parties. It is assumed that the error of the old auditor's observation persists over the two periods ($\epsilon_2^o = \epsilon_1^o$), but the error in the new auditor's observation is independent of the old auditor's error. These assumptions reflect an audit technology in which the incumbent auditor places more confidence in his own previous assessment than would a new auditor. Hence, the firm is more certain about a future assessment of the firm by an incumbent auditor than by a new auditor.

Under the following exogenous qualification decision rule:

$$\text{if } A_t \leq \hat{A} \text{ issue qualified report}$$
$$\text{if } A_t > \hat{A} \text{ issue clean report,} \tag{3}$$

[3] To rule out assessments outside the support of X_t, I define $A_1 = \underline{X_1}$ if $X_1 + \epsilon_1 < \underline{X_1}$, and $A_1 = \overline{X_1}$ if $X_1 + \epsilon_1 > \overline{X_1}$. Similarly, $A_2 = \underline{X_2} - I(Q_1)\overline{K} - I(S)C$ if $X_2 + \epsilon_2 < \underline{X_2}$, and $A_2 = \overline{X_2} - I(Q_1)K - I(S)C$ if $X_2 + \epsilon_2 > \overline{X_2}$.

[4] When $\overline{\epsilon_t}$ is revealed to the firm, it can infer A_t since it observes X_t. Otherwise, the firm would infer the assessment of the auditor only imperfectly; the qualitative nature of the results would be similar.

the auditor is a pure technology, independent of management influence. At date 2, the minimum and maximum possible values of y given that a firm received a clean or a qualified opinion at date 1 for given ϵ_1 are denoted $\bar{y}_U(\epsilon_1)$, $\bar{y}_Q(\epsilon_1)$, $\underline{y}_U(\epsilon_1)$, and $\underline{y}_Q(\epsilon_1)$.[5]

I assume the critical value $\hat{A}$ is common knowledge. $\hat{A}$ may be interpreted as the face value of the firm's debt, so a firm with $A_t \leq \hat{A}$ is issued a going-concern qualification. Alternatively, $\hat{A}$ may be viewed as the minimum value of a firm with a clean opinion; if so, qualification implies substantial uncertainty about whether the firm is worth at least $\hat{A}$. The second interpretation corresponds to a qualification issued because of material uncertainties.

The firm makes its switching decision to maximize its expected terminal net value V, as given in (4) and (5) below for the cases of switch and retain:

$$E^m(V \mid R, \theta_1, y, \epsilon_1) = y - \Pr(Q_2{}^o \mid \theta_1, y, \epsilon_1)K \tag{4}$$

$$E^m(V \mid S, \theta_1, y, \epsilon_1) = y - \Pr(Q_2{}^n \mid \theta_1, y, \epsilon_1)K - C. \tag{5}$$

Subtracting (4) from (5) and noting that qualification and clean opinion are mutually exclusive events, the expected gain from switching (Π) is:

$$\Pi(\theta_1, y, \epsilon_1) = \left[\Pr(U_2{}^n \mid \theta_1, y, \epsilon_1) - \Pr(U_2{}^o \mid \theta_1, y, \epsilon_1)\right]K - C. \tag{6}$$

The gain from switching, which arises if there is an increased likelihood of a clean opinion from a new auditor, is measured by the difference in probabilities of a clean opinion between the new and old auditor multiplied by the cost of qualification K. A firm will switch auditors if the benefit outweighs the cost C, i.e., if $\Pi > 0$.

Lemma 1 summarizes properties that will be used later relating the probability of a clean opinion and the net gain of switching to firm type. All proofs for the lemmas and propositions are in Appendix A.

LEMMA 1.

1. The probability of a clean opinion from the current auditor at date 1 and from a new auditor at date 2 is increasing in the gross value of the firm X_t and in y.
2. At date 2, the probability of a clean opinion from the old auditor is discontinuous at $\hat{A} - \epsilon_1$, equal to 1 if $y > \hat{A} - \epsilon_1$, and 0

[5] These values are: $\bar{y}_U(\epsilon_1) = \overline{X_1} + \bar{\delta}$ (independent of ϵ_1), $\underline{y}_U(\epsilon_1) = \hat{A} - \epsilon_1 + \underline{\delta}$, $\bar{y}_Q(\epsilon_1) = \hat{A} - \epsilon_1 + \bar{\delta} - K$, and $\underline{y}_Q(\epsilon_1) = \underline{X_1} + \underline{\delta} - K$ (independent of ϵ_1). They are obtained by noting that the maximum value of X_1 for a previously clean firm is $\overline{X_1}$, and for a previously qualified firm is $\hat{A} - \epsilon_1$. The minimum value of X_1 for a previously clean firm is $\hat{A} - \epsilon_1$ and for a previously qualified firm is $\underline{X_1}$.

otherwise. Therefore, Π drops discontinuously at $y = \hat{A} - \epsilon_1$ and is negative for $y > \hat{A} - \epsilon_1$.

3. Π is monotonically weakly increasing in y on $[\underline{y}_\theta, \hat{A} - \epsilon_1)$ and $(\hat{A} - \epsilon_1, \bar{y}_\theta]$.
4. The density $f(X_t \mid U_t)$ first-order stochastically dominates the density $f(X_t \mid Q_t)$, $t = 1, 2$. In addition, $f(y \mid U_1)$ first-order stochastically dominates $f(y \mid Q_1)$.
5. Investors expect higher gross and net values after a clean opinion than after a qualified opinion at date 1. Investors also expect higher gross and net values after a clean opinion than after a qualified opinion at date 2, conditional on the date 1 opinion and the switch or retain event.

3. *Equilibrium in the General Model*

A firm belongs to one of three regions depending on its net value y, as shown in figures 1 and 2.[6] The curves are defined conditional on Q_1 or U_1.

For a given audit error ϵ_1, Region III contains firms certain of clean opinions from their incumbent auditors because $A_2^o = y + \epsilon_1 > \hat{A}$; no firm in Region III switches auditors.

Regions I and II lie to the left of $y = \hat{A} - \epsilon_1$. Firms in these regions will receive qualified opinions from their incumbent auditor because $A_2^o = y + \epsilon_1 \leq \hat{A}$. These regions differ in that the probability of a clean opinion from a new auditor exceeds C/K for a firm in Region II

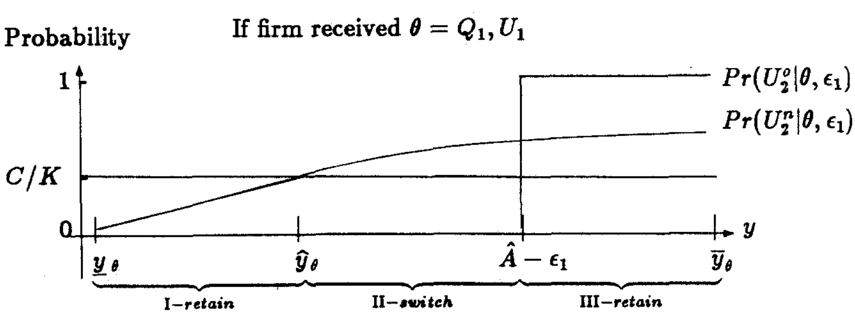

FIG. 1.—Probability of a clean opinion from an old (o) and new (n) auditor given audit error ϵ_1, cutoff for a clean opinion $\hat{A}$, and audit opinion $\theta = Q_1, U_1$ at date 1. y is net firm value just prior to the switch/retain decision. $\hat{y}_\theta$ is the switch-indifference value as defined in (7) in the text. $\underline{y}_\theta$, $\hat{y}_\theta$, and $\bar{y}_\theta$ are functions of ϵ_1.

[6] If signaling incentives are incorporated, the change in auditors could be made purely to signal high firm value. In addition, auditor changes can occur without K, the direct cost of a qualified opinion. See Teoh [1988].

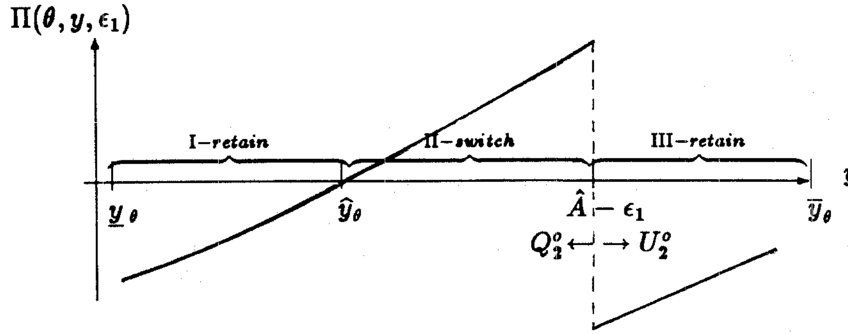

FIG. 2.—Net gain to switching for given audit assessment error ϵ_1 in the General Model. $\underline{y}_\theta$, $\hat{y}_\theta$, and $\bar{y}_\theta$ are functions of ϵ_1. $\Pi(\theta, y, \epsilon_1)$ is the net gain to switching auditors as defined in (6) in text. Variable definitions are as in figure 1.

but not one in Region I. From (6), Π is positive in Region II but not in Region I, and therefore, only firms in Region II will switch auditors.

Let the switch-point between Regions I and II be $\hat{y}_\theta(\epsilon_1)$ where the probability of a clean opinion from a new auditor is just equal to C/K. This point is found by setting $\Pi = 0$ in (6) and solving for y:

$$\hat{y}_\theta(\epsilon_1) = \hat{A} + C - G_{\epsilon^n}^{-1}\left(1 - \frac{C}{K}\right), \tag{7}$$

where $G_{\epsilon^n}^{-1}$ is the inverse of the cumulative probability distribution of the new auditor's date 2 error.

PROPOSITION 1. If the change in firm value is random, and switching and qualification costs are positive, then:

i. If y has support such that $\underline{y}_\theta(\epsilon_1) < \hat{y}_\theta(\epsilon_1) < \hat{A} - \epsilon_1 < \bar{y}_\theta(\epsilon_1)$, a firm will switch auditors if its net value y is in the range $(\hat{y}_\theta(\epsilon_1), \hat{A} - \epsilon_1)$, and retain otherwise.

ii. If $\hat{y}_\theta(\epsilon_1) < \underline{y}_\theta(\epsilon_1)$, a firm that will receive a qualified opinion from the incumbent auditor will always switch auditors, and retain otherwise.

iii. If $\hat{y}_\theta(\epsilon_1) > \hat{A} - \epsilon_1$, no firm will switch auditors.

For very low values of $\hat{y}$, even the lowest-value firm gains by switching auditors. On the other hand, if $\hat{y}_\theta(\epsilon_1) > \hat{A} - \epsilon_1$, no firm will switch auditors because the likelihood of a clean opinion from a new auditor is too low. This analysis indicates that the sign of investors' reaction to a given auditor switch depends on the costs of switching and qualification, as well as the distribution of firm values, changes in firm values, and audit assessment errors. Thus, empirical work should attempt to categorize the sample of switches based on observable characteristics of firms, e.g., whether the firm previously had obtained a clean or qualified audit opinion.

3.1 THE STATIC CASE ($\delta \equiv 0$)

This subsection focuses on how the initial audit assessment error affects the firm's decision to switch auditors. The firm is assumed to receive no new private information about firm value after date 1, so $\delta = 0$ and $X_2 = X_1 = X$; the time subscripts on X are dropped in this subsection for convenience. The incentive to switch auditors comes from the positive revaluation of the firm by investors because a new audit partially reveals an initial adverse audit assessment error, and a consequent partial revelation of the firm's favorable information about X.

If the firm receives U_1, $\delta = 0$ and $\epsilon_2{}^o = \epsilon_1$ implies that the firm will receive a second clean opinion from the old auditor. But since the presence of audit error means the firm is not fully confident of a clean opinion from a new auditor, a firm with an initial clean opinion will never switch auditors. This can be seen in figures 1 and 2 by noting that the distribution of $y = X_2$ for a firm with U_1 is degenerate with probability one at a point in Region III.

If, however, the firm receives Q_1 and the incumbent auditor is retained, the firm will surely receive a second qualification. By switching, the firm can achieve a positive probability of a clean opinion from a new auditor because audit errors are independent across old and new auditors. In this case, the distribution of X_2 is degenerate with probability one at a point in either Region I or II in figures 1 and 2.

Since, from Lemma 1, a high-value firm is more likely to receive a clean opinion than a low-value firm from a new auditor, the gain from switching is monotonically increasing in X. This implies a critical value $\hat{X}$ such that a firm of value $X = \hat{X}$ is just indifferent between switching or retaining auditors. If $C < K$, the critical value $\hat{X}$ is the sum of K and $\hat{y}$ as defined in (7). This switch-indifference value $\hat{X}$ is such that $\Pr(U_2{}^n \mid U_1, \hat{X}, \epsilon_1) = C/K$.

Thus, among firms with a qualified opinion at date 1, a high-value firm has a higher probability of receiving a clean opinion from a new auditor than a low-value firm, so only a higher-value firm switches. The preceding discussion is summarized as Proposition 2.

PROPOSITION 2. If the change in the underlying value of the firm is zero ($\delta \equiv 0$), a firm with a clean opinion at date 1 will never switch auditors. A firm with a qualified opinion at date 1 will switch auditors if (*i*) $K > C$, the cost of qualification exceeds the cost of switching, and (*ii*) $X > \hat{X}$. As a consequence, the announcement of a change in auditors after a qualified opinion leads to a weakly positive revision in the gross and net values of the firm, and to a strongly positive revision if and only if the probability of a switch is less than one.

Proposition 2 is consistent with the view that a firm with a qualified opinion is more likely to switch auditors than one with a clean opinion, with two important differences. First, it is a *higher*-value firm that will switch auditors. Second, Proposition 2 is derived for a mechanical, not a strategic, auditor. Previous empirical studies have suggested that auditors are not independent based on the evidence that there is a higher frequency of switches after a qualified opinion than after a clean opinion. Proposition 2 demonstrates that this evidence can be consistent with auditor independence.

Proposition 2 also indicates that an auditor switch can be good news to investors. So long as a switch is not certain, only a firm with beginning-period net value greater than the cutoff value $\hat{X}$ will switch auditors. The switch is good news because it indicates that the firm is confident that the initial qualification is the result of an auditor error and not low firm value.

A switch is good news here even if the new auditor has lower precision than the old auditor. This contrasts with the analysis of Titman and Trueman [1986], in which the first-time selection of a high-precision auditor is a signal of high firm value.[7] The analysis here highlights the importance of examining the characteristics of both incumbent and new auditors to predict the market reaction to switches.

Consider next the comparative statics of the equilibrium in this case. From the definition of $\hat{X}$ as in (7), a rise in the cost of switching C raises $\hat{X}$. A higher C reduces the net benefit to switching, and so reduces the likelihood of a switch in equilibrium and raises the probability of a clean opinion after a switch. A switch never occurs when C becomes so large that the highest-valued firm with a previous qualification does not profit by switching. On the other hand, a firm will always switch auditors after a qualified opinion if C is zero.

An increase in K, the cost of qualification, has two offsetting effects. A higher K lowers the net value of a firm with Q_1 and so reduces the firm's chance of exceeding the cutoff for a clean opinion with a new auditor. This implies a lower probability of switch. However, an increase in K also makes it more costly to receive a second qualification from the old auditor, and therefore makes it more worthwhile to incur cost C to raise the probability of a clean opinion through a switch. These effects are summarized by a downward shift in both C/K and $\Pr(U_2^n \mid Q_1, X, \epsilon_1)$, and therefore the intersection of these two lines may lie either to the left or right of the original $\hat{X}$. The comparative statics results are obtained by differentiation of (7).

[7] To reconcile the difference, note that a switch here reveals information to investors about both the incumbent and the new auditor. Thus, a switch always leads to a higher posterior precision than a retention, and it is a higher-value firm previously misassessed as bad that has the greatest desire for precision.

3.2 COSTLESS AUDITOR SWITCHES ($C = 0$)

In this subsection $X_1 \neq X_2$ because the gross firm value is subject to a random shock, δ, which will be partially revealed to investors by the firm's switch/retain decision. In order to focus on the change in firm value in this subsection, I assume a zero cost of switching auditors, $C = 0$. The motive for switching arises from the firm's fear of the incumbent auditor's response to bad news (low δ); thus, in contrast to the Static Case, a switch may occur even after a clean opinion because bad news increases the chances of a qualified opinion from the old auditor. Conversely, a firm may retain the old auditor after a qualified opinion, because good news leads the manager to expect a clean opinion from the incumbent auditor. In these circumstances, a costless switch reveals bad news about the firm, despite absence of any collusion between the auditor and manager.[8]

Since switching is costless, a firm will switch auditors only if its incumbent auditor, if retained, would have issued a qualified opinion at date 2 and so long as there is a positive probability of a clean opinion from a new auditor. This proves the following lemma.

LEMMA 2. If switches are costless and if $\bar{\epsilon}_2{}^n$ is sufficiently large, then the net gain to switching, $\Pi(\theta_1, y, \epsilon_1)$ in (6), is positive for $y \leq \hat{A} - \epsilon_1$.

With $C = 0$, Region I now disappears in figures 1 and 2. As before, the probability of a clean opinion is greater from a new auditor than from an old auditor in Region II, and the opposite is true for Region III. Thus, the net gain to switching is positive for Region II and negative for Region III, and so a firm in Region II will always switch auditors whereas a firm in Region III will always retain. The following proposition obtains.

PROPOSITION 3. If the change in the underlying value of the firm (δ) is stochastic, the cost of switching auditors is zero, and the maximum of the new auditor's assessment error $\bar{\epsilon}_2{}^n$ is sufficiently large, the announcement of a change in auditors leads to a negative revision in the expected gross and net values of the firm.

The announcement of a switch reveals bad news because it indicates that the firm's information is sufficiently unfavorable that it expects a qualified opinion from the old auditor and wishes to try its luck with a new auditor. Thus, a negative stock price reaction is expected, even under the assumption of independence between the auditor and manager. Moreover, because the manager here wishes to maximize the true underlying value of the firm, shareholders benefit in that the expected firm value at the terminal date is higher with the switch than without. Hence, a negative stock price reaction need

[8] If the manager and auditor can collude, a switch might indicate falling out; it is not obvious whether this would lead to a positive or negative stock price reaction.

not imply that switches are bad for investors nor that the auditor has been intimidated by management.

Consider next the comparative statics for costless switches. By (6), the decision to switch auditors is made to minimize the probability of obtaining a qualified opinion, i.e., if $\bar{\epsilon}_2{}^n$ is sufficiently large, a firm switches if and only if $y \leq \hat{A} - \epsilon_1$. An increase in K therefore affects neither the likelihood of a switch after U_1 nor the probability of a clean opinion after a switch. Moreover, an increase in K will not affect the expected net value of a firm that retains its auditor after a clean opinion, since it will receive a second clean opinion. Since a switch after a clean opinion leads to a positive probability of qualification, a rise in K leads to a greater stock price decline at the announcement of a switch after a clean opinion.

For a previously qualified firm, an increase in K reduces the average net value of a switching firm at the beginning of the second period and therefore the probability of a clean opinion given a switch. This suggests that the stock price reaction to a switch after Q_1 may be more negative with an increase in K. However, an increase in K will raise the likelihood that the firm expects a second qualification from the incumbent, and therefore raises the probability of a switch, so the market reaction may not be more negative.

3.3 INFLUENCE OF THE PRESWITCH AUDIT OPINION

Assuming that new private information arrives and changing auditors is costly, this subsection examines the effect of the previous audit opinion on the stock price reaction to an auditor switch. Under some reasonable conditions to be explained below, it may be relatively uncommon after a clean opinion (as compared to the situation following a qualified opinion) for a firm to do so poorly that it not only expects a qualified opinion at date 2 from the old auditor, but does not even find it worth the switch cost to try for a clean opinion from a new auditor. If so, a switch after a clean opinion is bad news, or at least worse news than after a qualified opinion. In this case, a switch after a clean opinion indicates to investors that the firm is expecting a qualified rather than a clean opinion from the old auditor.

Conversely, it may be relatively uncommon for a firm with a qualified opinion to do so well that it is assured of a clean opinion at date 2 from the old auditor. If so, a switch after a qualified opinion is likely to be good news, or at least better news than after a clean opinion. In this case, a switch after a qualified opinion indicates to investors that the firm is good enough that it is willing to suffer the switch cost to seek an audit opinion from a new auditor. Lemma 3 describes some sufficient conditions under which the relatively "uncommon" cases described above never occur.

LEMMA 3. In the general model, a previously qualified firm never belongs to Region III if (1) $K > \bar{\delta}$, and has a positive probability of belonging to Region II if (2) $\Pr(\epsilon_2{}^n > C + K - \bar{\delta} + \underline{\epsilon}) > C/K$. A previously clean firm will never belong to Region I if (3) $\Pr(\epsilon_2{}^n > C - \underline{\delta} + \bar{\epsilon}) > C/K$.

Condition (1) implies that the cost of qualification exceeds any possible improvement in firm value so that a previously qualified firm will expect a qualified opinion at date 2 from its old auditor. Condition (2) ensures that there is some chance that a previously qualified firm will switch because there is a sufficiently high chance of a clean opinion from a new auditor. Condition (3) ensures that a previously clean firm will always switch if it is sure of a qualified opinion from its old auditor.[9] The preceding discussion is summarized in the following proposition.

PROPOSITION 4. If Conditions (1)–(3) hold in the general model, then a firm will switch auditors after a clean opinion only after a decline in its underlying value, $\delta < 0$. A firm may switch after a qualified opinion after an increase in value, $\delta > 0$. Furthermore, investors react negatively to a switch after a clean opinion and weakly positively to a switch after a qualified opinion. Therefore, a switch after a clean opinion is worse news than a switch after a qualified opinion.

Since a switch by a previously clean firm indicates a decline in firm value (negative δ) and a higher expectation of incurring qualification costs, a switch after a clean opinion is bad news. On the other hand, a previously qualified firm with positive δ may still switch auditors, because the increase in firm value may not be large enough to overcome the cost K from the initial qualification, and therefore the incumbent auditor, if retained, still could qualify. When $K > \bar{\delta}$, a previously qualified firm can never be issued a clean opinion by its incumbent auditor, so such a firm will always switch auditors so long as the chance of getting a clean opinion is sufficiently high compared to the cost of the switch. Therefore, a switch after a qualified opinion conveys either positive information or no information.

Proposition 4 suggests a possible explanation for the ambiguous empirical results of past studies that aggregate the sample of switches across preswitch audit opinions. Distinguishing between previously qualified and previously clean switches could improve the power of the tests; see Teoh [1990]. Furthermore, the hypotheses of previous empirical studies were based on the view that firms switch auditors after a qualified opinion to coerce or "shop for" a more favorable audit opinion. In this paper, opinion-shopping is observationally equivalent to obtaining a second drawing by the switching firm of an auditor's assessment, and so is unrelated to coercion.

[9] The conclusion of Proposition 4 can be obtained under conditions milder than (1) and (3); results are available from the author.

4. *Auditor Switches with Dependent Auditors*

I now examine a model in which the auditor decides what report to issue taking into account the dependence of its future payoffs on the audit opinion. Since the audit opinion issued today may influence the firm's decision to switch/retain the auditor, the auditor's decision of whether to issue a clean or qualified opinion balances the expected costs of litigation against costs of losing a client.

My approach differs from that of several recent papers that deal with truthfulness of auditors. Sarath and Wolfson [1988] show how litigation costs affect the incentive for an auditor to work hard in verifying information about the firm when the auditor's continuous report is truthful. Melumad and Thoman [1990] examine both the auditor's effort in obtaining information and the decision of whether to report truthfully based on a binary signal. Magee and Tseng [1990] provide a multiperiod analysis of the incentive for auditors to report truthfully when the auditor's beliefs are binary.

In a setting where an auditor observes a continuous signal but issues a binary report (Q or U), it is not obvious how to define "truthfulness" of the mapping from the auditor's beliefs to its decision. More fundamentally, the analysis here is based on the view that there will usually be difficult accounting issues in which neither a clean nor a qualified opinion is the clear implication of accepted practice. Thus, the issue I examine is whether, on the margin, the auditor will make a stricter or broader interpretation of *GAAP* in the specific case at hand. (Shibano [1988] is another study that focuses on optimal strictness rather than the truthfulness of the auditor.) For simplicity, I restrict attention to the case of $\delta = 0$, which suffices to illustrate the main ideas.

4.1 THE EQUILIBRIUM AUDIT RULE

This section endogenizes an auditor cutoff rule similar to that assumed in the mechanical auditor regime. I assume that the firm will dismiss the auditor only if it is optimal to do so *ex post*. Previously, I assumed the audit error ϵ_1 was perfectly observable to the client after the first audit opinion was revealed. With a strategic auditor, the asymmetry of information between client and auditor about the auditor's future conservatism with respect to the client plays a crucial role. I therefore assume that ϵ_1 is not observable to the firm, so that the firm will take a qualified opinion as an adverse indicator of the current auditor's assessment of the firm.[10] This

[10] If ϵ_1 were perfectly observable to the manager, the resulting audit opinion would not convey information beyond what is revealed by ϵ_1. The manager's decision on whether to switch auditors or retain would then be independent of the previous audit opinion.

makes the gain to switching higher after a qualified opinion than after a clean opinion. Thus, to the extent that switches are costly to the auditor, issuing a qualified opinion becomes costly as well.[11]

Suppose that the equilibrium endogenous audit decision cutoffs at dates 1 and 2 are A_1^* and A_2^*, respectively, and are common knowledge. To confirm that A_1^* and A_2^* are equilibrium cutoffs, I first analyze the firm's decision to switch or retain the auditor assuming an audit decision rule with given cutoffs A_1^* and A_2^*. The firm will choose to switch or retain based on a Bayesian inference about the unobserved audit error given a clean or qualified opinion. Then, I derive the optimality of a cutoff rule with A_1^* and A_2^* given the client's equilibrium switch behavior.

Let the firm's profit function from switching be:

$$\pi(\theta_1, X) = \left[\Pr(U_2^n \mid \theta_1, X) - \Pr(U_2^o \mid \theta_1, X)\right] K - C, \qquad (8)$$

which is similar to that in (6) except that the net gain is no longer a function of ϵ_1, which is unobservable to the manager, nor of δ, which is zero. Since Q_1 makes the firm more pessimistic about its next report from the incumbent, the gain to switching is higher after Q_1 than after U_1. This follows from the statistical result in Lemma A2 stated and proved in Appendix A because conditioning on Q_1 rather than U_1 implies a lower ϵ_1 in the first order stochastic dominance sense, and the net value y is reduced by qualification ($K > 0$).

If, as will be shown later, $A_2^* > A_1^*$, then a firm never switches auditors after U_1 if $C > 0$ because it believes its current auditor's assessment is more favorable than that of a random new auditor in a first-order stochastic dominance sense. On the other hand, $\Pr(U_2^o \mid Q_1, X) = 0$, whereas the probability of a clean opinion from the new auditor is positive and increasing in X. It follows from (8) that after Q_1, a switch always occurs if C is sufficiently low, or never occurs if C is sufficiently high; or else a switch will occur if and only if $X > \hat{X}$. Therefore, the decision rule of the firm has the same form as that in subsection 3.1 and the stock price implications remain the same.

Consider next the optimality of the cutoff rule with A_1^* and A_2^*. The auditor faces costs from expected litigation when a clean opinion is incorrectly issued and from dismissal threats if the opinion is qualified. These costs are graphed in figure 3 as a function of the audit assessment A_t.

[11] Asymmetry of information about the auditor's costs of litigation or of losing a client, instead of about its audit assessment, would be an alternative way in which Q could be informative to the client about the auditor's likely behavior. This would lead to a scenario in which the manager does not know the auditor's cutoff, so that a qualified opinion communicates to the manager the bad news that the auditor is conservative.

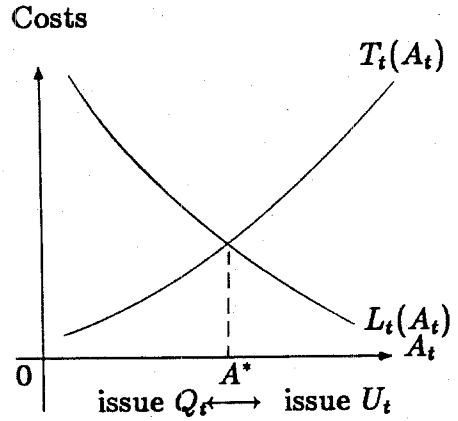

FIG. 3.—Costs associated with issuance of a clean (U_t) or a qualified (Q_1) audit opinion at date t as a function of the audit assessment A_t. $L_t(A_t)$ is litigation costs; $T_t(A_t)$ is dismissal costs; A^* is optimal cutoff for the assessment of the firm to be issued a clean opinion.

For a given assessment A_t, the expected litigation cost $L_t(A_t)$ associated with issuing a clean opinion increases with the probability of a suit and the expected size of the penalty.[12] The expected litigation cost (L_t) is assumed to be zero for A_t sufficiently large[13] and decreasing in A_t because the probability of an investor suit and an adverse outcome for the auditor decreases with A_t.

I also assume that the auditor suffers qualification-related costs ($T_t(A_t)$) which are increasing in A_t. Since an auditor cannot collect fees from a firm with no assets, I also assume the endpoint condition that $T_t(0) = 0$. T_t is composed of direct and indirect dismissal costs, and loss in future rents either if there is low-balling or from sale of management advisory services (*MAS*).

Direct dismissal costs are the losses from idle capacity and costs of attracting new clients. Indirect costs result from disagreements with the client, since a client may dispute a qualified opinion or withhold fees, forcing the auditor to incur collection costs. These costs increase with A_t because a client that is doing well believes more strongly

[12] The penalty includes court-assessed fines and damages resulting from complaints by the investors to the State Board of Accountancy, the AICPA, and the SEC. All three agencies have the authority to impose sanctions on auditors such as revoking the auditor's license or barring him from accepting or soliciting new clients for a certain period. The SEC has the additional authority to terminate the auditor's contracts with SEC registrants.

[13] Litigation activity has been suggested to be related to the client's business risk; see Palmrose [1988] and Goldwasser [1989]. The higher A_t is, the lower the auditor's assessment of client business risk, and therefore the lower the expected litigation costs.

that it merited a clean opinion. A low-balling cost of dismissal results from a smaller profit margin in the markup of the fee above the cost of the audit for a new client (acquired at date 2 after the old client has switched) as compared to a repeat client.[14] An auditor who possesses a cost advantage in the sale of *MAS* as a by-product of the audit can extract rents from the client which would be removed by these dismissals. The expected loss of rents increases with A_t because the size of these rents and the probability of a switch given a qualified opinion increase with firm value.

For a given assessment A_t of the net value of the firm, the auditor's problem at date 1 and date 2 is to choose the opinion that minimizes the expected litigation and dismissal costs:

$$\min_{Q_t, U_t} T_t(A_t)I[Q_t] + L_t(A_t)I[U_t] \tag{9}$$

subject to the slope and endpoint properties of T_t and L_t described above. The solution to (9) is described in the proposition below.

PROPOSITION 5. The optimal decision rule at date t of an auditor facing a program described in (9) is to issue a qualified report if $A_t = X + \epsilon_t \leq A_t^*$, and a clean opinion otherwise, where A_t^* is defined by $L_t(A_t^*) = T_t(A_t^*)$.

Furthermore, $A_1^* < A_2^*$. Since the optimal audit rule has the same form as in (3), the stock price reaction to an auditor switch is also nonnegative when there is no new private information and auditors are dependent.

In the framework adopted here the auditor will be reluctant to qualify because of dismissal and other qualification-related costs. However, the auditor will not always be intimidated into giving a clean opinion because of potential litigation costs. To see this, note that an increase in expected dismissal costs $T_t(A_t)$, which may be interpreted as arising from more permissive regulation of low-balling or *MAS*, decreases the optimal cutoff A_t^*. In this case, investors will react even more negatively to a qualification because qualifications are now rarer and occur only for firms below a lower cutoff value. Conversely, a higher cost of switching auditors reduces $T_t(A_t)$ because a switch becomes less probable after qualification for a given A_t. The equilibrium audit cutoff rises so the auditor becomes more conservative. Higher litigation costs $L_t(A_t)$ similarly raise A_t^* and make the auditor more conservative. As a consequence, investors react more positively to a clean opinion.

In the previous sections, the auditor was assumed to follow a

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[14] DeAngelo [1981] explains low-balling as a way for auditors to compete away rents earned ex post after a client has retained the auditor. In her model, information is symmetric so that the low-balling schedule is set to preclude switches entirely. Here, the presence of asymmetric information permits switches to occur.

mechanical decision rule and therefore was independent of management influence. In contrast, the strategic auditor's decisions will be influenced by the manager's past actions and his perceptions of how the manager will react to his decisions. This interdependence between the auditor and manager occurs even when the auditor does not fear a dismissal. Nevertheless, the presence of indirect costs of issuing a qualified opinion will discourage the auditor from issuing only qualified opinions so a cutoff rule will still apply. If indirect costs are low, clean opinions will be infrequent, so a firm with only mildly bad news will still receive a qualification. With most firms receiving qualified opinions, investors will be unable to discriminate finely among a large majority of firm types. It is possible that a less conservative audit cutoff may enhance investor ability to discriminate among firm types.

5. *Conclusion*

I show that when an auditor follows a mechanical decision rule, an auditor switch can be good news for investors because the switch separates better firms which have been underassessed by the auditor from poorer firms. Furthermore, I show that a greater switch frequency after qualified opinions than after clean opinions is consistent with auditors who do not follow management's wishes but instead follow a mechanical decision rule. I also show that when switches are costless, investor reaction can be negative even when the auditor does not collude with management. This contradicts the arguments that a negative reaction indicates collusion of the firm with the new auditor.

Auditor switches depend in part on firm value. A firm with intermediate value switches auditors in the hope of obtaining a favorable opinion, while a low-value firm does not switch because there is virtually no hope of improving its position. A high-value firm abstains because it is confident of a clean opinion from the incumbent auditor. A related result is that investor reaction to auditor switches is conditioned on the preswitch audit opinion and other factors related to the costs and benefits of switching.

Finally, when the auditor is an economic agent who faces explicit (litigation and switching) costs of either qualifying or issuing a clean opinion to the firm, investors' response to switches can be positive. In addition, auditor dependence arising from the manager's threat of dismissal changes the information conveyed by the audit opinion.

APPENDIX A

I begin with Lemmas A1 and A2, which are required later for some of the proofs.

LEMMA A1. Let $H(t)$ be a weakly decreasing function of t for $t \in [\underline{z},$

$\bar{z}]$, where $H(z') < H(z'')$ for some z', $z'' \in (\underline{z}, \bar{z})$, and let $f(t)$ be a positive function in the same interval. Suppose that $\int_{\underline{z}}^{\bar{z}} H(t) f(t) dt = 0$. Then:

$$\int_{\underline{z}}^{z} H(t) f(t) dt > 0 \text{ for all } z \in (\underline{z}, \bar{z}).$$

Proof. By hypothesis, for any $z \in [\underline{z}, \bar{z}]$:

$$\int_{\underline{z}}^{z} H(t) f(t) dt = -\int_{z}^{\bar{z}} H(t) f(t) dt.$$

If, for some $z < \bar{z}$, $H(t) = 0$ on $(\underline{z}, \bar{z})$, then $H(t)$ must decrease somewhere on $[z, \bar{z})$. This implies that the right-hand side of the above equation is strictly positive, which is a contradiction. If, for some $z < \bar{z}$, $\int_{\underline{z}}^{z} H(t) f(t) dt < 0$, then the right-hand side is positive (because $H(t) < 0$ for all $t \geq z$), which contradicts the assumed negativity of the left-hand side. Thus, the only remaining possibility is that the integral on the left-hand side is strictly positive.

Lemma A2. For two mutually exclusive events Ω_1 and Ω_2 such that $\Pr(\Omega_1 \mid z)$ is weakly decreasing with z and $\Pr(\Omega_2 \mid z)$ is weakly increasing with z, the probability density of z conditional on Ω_2 first-order stochastically dominates the probability density of z conditional on Ω_1, i.e., letting F be the cumulative distribution of z, for each z, $F(z \mid \Omega_1) \geq F(z \mid \Omega_2)$, with strict inequality for some z. Furthermore, if Ω_1 and Ω_2 are a partition of the sample space Ω, i.e., $\Omega_1 \cup \Omega_2 = \Omega$, then $E(z \mid \Omega_2) > E(z) > E(z \mid \Omega_1)$, where $E(z)$ is the unconditional expectation of z.

Proof.

$$\begin{aligned} F(z \mid \Omega_1) &- F(z \mid \Omega_2) \\ &= \int_{\underline{z}}^{z} f(t \mid \Omega_1) dt - \int_{\underline{z}}^{z} f(t \mid \Omega_2) dt \\ &= \int_{\underline{z}}^{z} \frac{\Pr(\Omega_1 \mid t) f(t) dt}{\Pr(\Omega_1)} - \int_{\underline{z}}^{z} \frac{\Pr(\Omega_2 \mid t) f(t) dt}{\Pr(\Omega_2)} \end{aligned}$$

by Bayes' Theorem.

The first-order stochastic dominance follows from Lemma A1 on setting:

$$H(t) = \frac{\Pr(\Omega_1 \mid t)}{\Pr(\Omega_1)} - \frac{\Pr(\Omega_2 \mid t)}{\Pr(\Omega_2)}.$$

By a standard property of first-order stochastic dominance between the distributions, it follows that $E(z \mid \Omega_2) - E(z \mid \Omega_1) > 0$. If Ω_1 and Ω_2 are not only mutually exclusive but are exhaustive events, then

$E(z)$, the unconditional expectation of the value of the firm by investors, is a probability-weighted average of $E(z \mid \Omega_1)$ and $E(z \mid \Omega_2)$. It follows that $E(z \mid \Omega_2) > E(z) > E(z \mid \Omega_1)$.

Proof of Lemma 1.

1. $\Pr(Q_1 \mid X_1) = \Pr(X_1 + \epsilon_1 < \hat{A} \mid X_1) = \int_{\epsilon_1} g(\epsilon_1 < \hat{A} - X_1) d\epsilon_1 = G(\hat{A} - X_1)$. Since G is increasing in its argument, it follows immediately that $\Pr(U_1 \mid X_1) = 1 - \Pr(Q_1 \mid X_1)$ is increasing in X_1. For date 2, the numerator of the partial derivative of G with respect to y is $\Pr(y + \epsilon_2{}^n > \hat{A} \mid X_1 + \epsilon_1 > \hat{A},\ y,\ \epsilon_1) = 1 - G_{\epsilon_2{}^n}(\hat{A} - y)$, which is increasing in y, and therefore increasing in X_2.
2. By noting that $\epsilon_2{}^o = \epsilon_1$, $A_2{}^o = y + \epsilon_1$. From equation (3), the old auditor will issue a clean opinion only if $y > \hat{A} - \epsilon_1$. From part 1 above and equation (6), the net gain to switching is negative for y in this range and drops discontinuously at $y = \hat{A} - \epsilon_1$.
3. Differentiating equation (6) everywhere except at $y = \hat{A} - \epsilon_1$ gives:

$$\frac{\partial \Pi(\theta_1, y, \epsilon_1)}{\partial y} = -\frac{\partial \Pr\left(Q_2{}^n \mid \theta_1, y, \epsilon_1\right)}{\partial y} \cdot K = g_{\epsilon_2{}^n}\left(\hat{A} - y\right) \cdot K \geq 0.$$

   Equality occurs when y is sufficiently large, so that $y + \epsilon_2{}^n > \hat{A}$, i.e., when a new auditor always issues a clean opinion.
4. The proof is immediate from Lemma A2 by setting $\Omega_1 = Q_t$, $\Omega_2 = U_t$, and $z = X_t$.
5. The proof for the case of gross values is a direct application of Lemma A2 and part 3 above. For the net of cost results, recall that K is deducted from the value of the firm if the firm received one qualified opinion, and $2K$ is deducted if the firm received two qualified opinions. Thus, letting $\Omega = S$ or R, and $\theta_1 = Q_1$ or U_1, the net value results are immediate from Lemma A2.

Proof of Proposition 2. From the discussion in the text, if $C < K$, the firm switches only if $X > \hat{X}$. Thus, the probability of a switch $\Pr(S \mid X)$ increases weakly with X and the probability of a retention $\Pr(R \mid X)$ decreases weakly with X. From Lemma A2, this implies that the probability density of firm value for a retention first-order stochastically dominates that of a switch, $F(X \mid S,\ Q_1) \leq F(X \mid R,\ Q_1)$ for all $X \in [\underline{X},\ \overline{X}]$ (strict for some X), and therefore $E(X \mid S,\ Q_1) > E(X \mid R,\ Q_1)$.

The expected terminal net values V of the firm are:

$$E(V \mid S, Q_1) = E(X \mid S, Q_1) - K - C - \Pr\left(Q_2{}^n \mid S, Q_1\right)K$$
$$E(V \mid R, Q_1) = E(X \mid R, Q_1) - 2K.$$

Therefore, the difference in the net of costs value of the firm is:

$$E(V \mid S, Q_1) - E(V \mid R, Q_1) = \left[E(X \mid S, Q_1) - E(X \mid R, Q_1)\right] + K\left[\Pr(U_2{}^n \mid S, Q_1)\right] - C.$$

The first term in brackets is positive, as proved above. From (6), a firm will switch auditors after a qualified opinion if and only if $K[\Pr(U_2{}^n \mid Q_1, X, \epsilon_1)] > C$. Taking expectations over all X and ϵ_1 gives $K[\Pr(U_2{}^n \mid Q_1)] > C$, and hence the net of costs value of a switch exceeds that of a retention.

The positive announcement effect is immediate from above, and by noting that investors' expectation of firm value at the announcement of Q_1 is a probability-weighted average of the values of the firm given either switch or retain, $E(V \mid Q_1) = \Pr(X > \hat{X})E(V \mid S, Q_1) + [1 - \Pr(X > \hat{X})]E(V \mid R, Q_1)$. Therefore, so long as $0 < \Pr(S \mid Q_1) < 1$, $E(V \mid S, Q_1) > E(V \mid Q_1) > E(V \mid R, Q_1)$. If $\hat{X} < \underline{X}$, so that the firm always switches ($\Pr(S \mid Q_1) = 1$), then $F(X \mid S, Q_1) = F(X \mid Q_1)$, and therefore, $E(X \mid S, Q_1) = E(X \mid Q_1)$ and $E(V \mid S, Q_1) = E(V \mid Q_1)$.

Proof of Proposition 3. The proof for the first part of the proposition follows by applying Lemmas A2 and 2 with $z = y$, $\Omega_1 = S$, and $\Omega_2 = R$. Since a firm switches only if $y + \epsilon_1 < \hat{A}$, by Lemma 2, the probability of a switch $\Pr(S \mid y)$ (retention $\Pr(R \mid y)$) weakly decreases (increases) with y. Therefore, from Lemma A2, the probability density $f(y \mid R)$ first-order stochastically dominates $f(y \mid S)$ and so $E(y \mid R) > E(y \mid S)$. Since y is increasing in X_2, the expected gross value of the firm at date 2 is always higher for a retention than a switch.

Since a retaining firm does not suffer qualification costs at date 2 (it is certain of a clean opinion from its incumbent auditor), whereas a switching firm may be qualified by the new auditor and pays switching costs, the difference in the expected terminal net values between a switching and a retaining firm is:

$$E(V \mid \theta_1, S) - E(V \mid \theta_1, R) = \left[E(y \mid \theta_1, S) - E(y \mid \theta_1, R)\right] - \Pr\left(Q_2{}^n \mid \theta_1, S\right)K - C.$$

$E(y \mid \theta_1, S) < E(y \mid \theta_1, R)$ from above, and $\Pr(Q_2{}^n \mid \theta_1, S) \geq 0$, K, $C > 0$, so it follows that $E(V \mid \theta_1, S) < E(V \mid \theta_1, R)$, i.e., the expected terminal net value of the firm is lower for a switching than a retaining firm and the announcement of a switch is bad news whereas a retention is good news.

Proof of Lemma 3. Available from author.

Proof of Proposition 4.

Qualified Opinion at Date 1

Condition 1 in Lemma 3 rules out the existence of Region III for a previously qualified firm (regardless of ϵ_1). Condition 2 ensures that

Region II exists for a previously qualified firm for some range of ϵ_1. This leads to two cases.

First, if Region I does not exist, only Region II remains. This happens if the cost of switching C is zero. In Region II, the incumbent auditor always issues a qualified opinion since $K > \bar{\delta}$. If $\bar{\epsilon}_2$ is sufficiently large (e.g., $\bar{\epsilon}_2 > \hat{A} - y_Q$), even the worst type of qualified firm ($y_Q = \underline{X} + \underline{\delta} - K$) has a chance of a clean opinion from a new auditor. Since switching is costless, a previously qualified firm therefore will always switch auditors. Consequently, all previously qualified firms will always switch auditors, so the stock price reaction is zero; i.e., $E(X_2 \mid S, Q_1) = E(X_2 \mid Q_1)$ and $E(V \mid S, Q_1) = E(V \mid Q_1)$.

Second, if Region I does exist, then there exist values of ϵ_1 such that there is an interior cutoff value $\hat{y}_Q(\epsilon_1)$ in the support $(\underline{y}_Q(\epsilon_1), \bar{y}_Q(\epsilon_1))$, and where a firm with ϵ_1 and value $y \leq \hat{y}_Q(\epsilon_1)$ will retain auditors and a firm with ϵ_1 and value $y > \hat{y}_Q(\epsilon_1)$ will switch auditors.

Therefore, the probability of a switch $\Pr(S \mid Q_1, y)$ is increasing in y and the probability of a retention $\Pr(R \mid Q_1, y)$ is decreasing in y. Applying Lemma A2 with $\Omega_1 = R$, $\Omega_2 = S$, and $z = y$, the distribution of y given a switch first-order stochastically dominates the distribution of y given a retention, $F(y \mid R, Q_1) > F(y \mid S, Q_1)$. It follows that $E(y \mid S, Q_1) > E(y \mid R, Q_1)$, and $E(X_2 \mid S, Q_1) > E(X_2 \mid R, Q_1)$.

Since Region III does not exist, the expected net terminal value of a firm at the announcement of Q_1 is:

$$E(V \mid Q_1) = E(X_2 \mid Q_1) - K - \Pr(S \mid Q_1) \cdot \left[C + \Pr(Q_2^n \mid S, Q_1)K\right] - \Pr(R \mid Q_1)K.$$

The expected net of cost value of the firm at the announcement of a switch is:

$$E(V \mid S, Q_1) = E(X_2 \mid S, Q_1) - \Pr(Q_2^n \mid S, Q_1)K - C.$$

Subtracting the former from the latter equation and simplifying gives the stock price reaction to the announcement of a switch:

$$E(V \mid S, Q_1) - E(V \mid Q_1) = \left[E(X_2 \mid S, Q_1) - E(X_1 \mid Q_1)\right] - \Pr(R \mid Q_1)\left[C - \Pr(U_2^n \mid S, Q_1)K\right].$$

The first term in brackets is positive from the above. For each firm that switches, the expected gain from switching derived from the probability of avoiding K exceeds C. So for a given X_2 that switches, $C - \Pr(U_2^n \mid S, Q_1, X_2)K < 0$. Integrating over all X_2 that lead to a switch, $C - \Pr(U_2^n \mid S, Q_1)K < 0$. It follows that $E(V \mid Q_1, S) > E(V \mid Q_1)$. Thus, in either case the announcement of a switch after a qualified opinion is on average weakly good news.

Clean Opinion at Date 1

Condition 3 of Lemma 3 rules out Region I for a previously clean firm. Both Regions II and III will remain (regardless of ϵ_1). Region II will exist since for the worst possible previously clean firm, $\underline{\delta}$ will cause it to get a qualified opinion from the old auditor, and this will lead to a switch by Condition 3. Region III will exist since a previously clean firm that experiences a nonnegative δ will be sure of a clean opinion from the old auditor.

For a given ϵ_1, only a firm with $y < \hat{A} - \epsilon_1$ will switch auditors, which is the reverse of the Q_1 case above. The probability of a switch $\Pr(S \mid U_1, y)$ therefore decreases with y and vice versa for the probability of a retention. Defining $\Omega_1 = S$, $\Omega_2 = R$, and $y = z$ and applying Lemma A2 and using reasoning similar to in the Q_1 case above, we obtain the opposite result that the expected gross and net values of a switch are smaller than the expected gross and net values of a retention. A switch after a clean opinion is therefore bad news. Thus, a switch after a clean opinion is worse news than a switch after a qualified opinion.

Proof of Proposition 5. The decision to issue a qualified opinion for any assessment below A_t^* and to issue a clean opinion for any assessment above A_t^* is optimal because expected litigation costs exceed expected qualification-related costs $(L_t(A_t) > T_t(A_t))$ only if $A_t < A_t^*$. Since $L_t(0) > T_t(0) = 0$, and $T_t(A_t) > L_t(A_t) = 0$ for A_t sufficiently large, the $T_t(A_t)$ and $L_t(A_t)$ curves will intersect, implying an interior optimum. Since the costs and benefits in (9) at date 2 are the same for a new or old auditor, either will follow the same decision rule A_2^* at date 2. Finally, the date 2 cutoff exceeds the date 1 cutoff because the expected qualification-related costs are uniformly greater at date 1 than at date 2 since dismissal and loss of rents are absent at date 2.

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