

# Economic Consequences of Alternative Adoption Rules for New Accounting Standards\*

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We develop a theoretical framework that explains firms' reactions to new accounting standards, especially, those released by the FASB under its extended adoption policy. Our theory highlights the differences between recognized and disclosed accounting information, and provides a link between firms' adoption strategy and stock price behavior around the adoption announcement. We also consider the relation between delaying information release and renegotiating related contracts. Finally, we analyze the impact of alternative adoption policies allowed by a regulator.

We argue that managers utilize the extended adoption period and strategically choose adoption timing and reporting method to convey to the market their private information about the new standard's financial impact. Our model predicts that firms with "favorable" information recognize the impact of the new standard earlier than the mandatory adoption date, firms with "neutral" information disclose the impact in the footnotes to the financial statements, and firms with "unfavorable" information delay reporting until the mandatory adoption date and renegotiate the underlying contract. As a result, a positive market reaction to an early-adoption (recognition) decision is anticipated. In our companion study, Amir and Ziv (1997), we obtain results that are consistent with these predictions, using data on SFAS 106 adoption.

## *Condensé*

Le plus souvent, lorsqu'une instance de réglementation ou de normalisation en comptabilité, comme le Financial Accounting Standards Board (FASB), adopte une nouvelle norme de comptabilité financière, l'environnement comptable change. La mise en application de la norme exige la collecte et la présentation d'information nouvelle et peut modifier les mesures utilisées pour évaluer la performance financière dans les contrats d'emprunt, le calcul des primes ou les valorisations, par exemple. Au cours des dix dernières années, le FASB a instauré et mis en application une politique d'extension de la période d'adoption des nouvelles normes comptables au-delà d'un exercice.

Les auteurs s'intéressent à deux questions connexes. Premièrement, ils analysent les conséquences que peut avoir le fait de permettre la constatation de l'information requise durant une période prolongée prédéterminée, et de permettre la présentation par voie de notes de l'information relative à l'incidence de la norme, sans que cette dernière soit officiellement adoptée avant la date d'échéance prescrite. Deuxièmement, à partir des résultats de cette analyse, les auteurs évaluent les répercussions des différentes politiques d'adoption telles que la suppression de la possibilité d'adoption hâtive ou la décision de limiter les possibilités à la stricte constatation.

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Les auteurs exposent une théorie explicative du choix du moment et de la méthode de publication de l'information (constatation ou présentation par voie de notes) que ferait un gestionnaire cherchant à maximiser la valeur, préoccupé par l'incidence immédiate de la nouvelle norme sur la valeur de l'entreprise. Dans le modèle proposé par les auteurs, les gestionnaires détiennent de l'information privilégiée, bien qu'imparfaite, sur l'incidence à long terme de la norme sur la valeur de l'entreprise. Leur stratégie quant au choix du moment de l'adoption d'une nouvelle norme révèle au marché la teneur de cette information privilégiée. Les gestionnaires qui adoptent rapidement une norme en optant pour la stratégie de constatation soumettent l'entreprise à une vérification plus exhaustive. La probabilité que l'entreprise obtienne l'aval des vérificateurs s'en trouve donc modifiée. En outre, le marché accorde davantage de poids aux résultats d'une vérification exhaustive. En revanche, les gestionnaires peuvent opter pour la présentation de l'information par voie de notes, ce qui exige une vérification moins complète (c'est-à-dire standard). L'adoption de la norme à la date prescrite sans présentation d'information préalable donne aux gestionnaires un maximum de temps pour renégocier des contrats et procéder à divers ajustements. La publication hâtive d'information, au contraire, peut avoir des conséquences sur les chances de succès de la renégociation.

Selon le modèle élaboré par les auteurs, les entreprises ayant de l'information « favorable » devraient constater l'incidence de la nouvelle norme avant la date d'échéance prescrite ; les entreprises ayant de l'information « neutre » devraient présenter l'incidence de la norme par voie de notes ; et les entreprises ayant de l'information « défavorable » devraient repousser la publication d'information jusqu'à la date d'échéance prescrite et renégocier les contrats sous-jacents. De plus, le modèle des auteurs anticipe une réaction positive du marché à la décision d'adoption (constatation) hâtive de la norme.

Les auteurs analysent ensuite les conséquences des différentes politiques d'adoption envisageables. Par exemple, plutôt que de prolonger la période d'adoption durant laquelle les entreprises peuvent choisir entre l'adoption hâtive, la présentation de l'information par voie de notes ou le report (c'est-à-dire l'adoption tardive), le FASB pourrait exiger l'adoption d'une nouvelle norme comptable à une date prédéterminée, ce qui éliminerait l'alternative d'adoption hâtive ou de présentation de l'information par voie de notes (comme dans le cas de la *SFAS 125*). Par ailleurs, le FASB pourrait prohiber la publication par les entreprises d'information relative à l'incidence de la nouvelle norme. Une entreprise pourrait soit adopter la norme (et en constater l'incidence) ou reporter la publication d'information. Les auteurs montrent que, lorsque l'éventail des possibilités de publication grandit, davantage d'entreprises choisissent de révéler au marché l'information privilégiée dont elles disposent par l'intermédiaire de leur stratégie d'information, plutôt que de renégocier les contrats sous-jacents avec les bénéficiaires. Les renégociations sont donc moins nombreuses.

Plusieurs auteurs ont effectué des recherches empiriques sur la question de l'adoption hâtive des nouvelles normes de comptabilité. Tous ont constaté une relation constante entre le moment de l'adoption et l'incidence de cette adoption sur les bénéfices. Dans leur étude qui est le pendant de la présente, Amir et Ziv (1997) analysent le moment et la méthode de publication de l'information en ce qui a trait à la *SFAS 106 (Employers' Accounting for Post-Retirement Benefits other than Pensions)*. Ils constatent que le passif moyen des entreprises qui choisissent l'adoption hâtive est inférieur à celui des entreprises qui optent pour la présentation hâtive d'information par voie de notes qui, à son tour, est inférieur au passif des entreprises qui optent pour l'adoption à la date d'échéance prescrite. De plus, les entreprises qui ont opté pour l'adoption hâtive de la *SFAS 106* ont moins que les autres été appelées à renégocier les indemnités de retraite, et les obligations à l'égard du régime des entreprises qui ont renégocié leurs contrats

étaient, en moyenne, supérieures. Enfin, les auteurs remarquent que les déclarations d'adoption hâtive produisent, en général, une réaction positive du marché.

When an accounting regulator (or a standard-setting organization, such as the Financial Accounting Standards Board [FASB]), enacts a new financial accounting standard, typically the accounting environment changes. Implementing a new accounting standard requires collecting and presenting new information and may alter the measures of financial performance used, for example, in debt agreements, bonus calculations, or valuations. During the last decade, the FASB has established a policy of extending the adoption period of new accounting standards beyond one fiscal year. It has implemented this policy through regulations such as the *Statement of Financial Accounting Standards* 87 (SFAS 87) — allowing a three-year adoption period (1985–87), and SFAS 106, — allowing a four-year adoption period (1990–93).<sup>1</sup>

Our study addresses two related issues. First, we analyze the implications of the current adoption policy employed by the FASB — allowing recognition of the required information during a prespecified extended period and allowing disclosure of the standard's impact, without formal adoption, prior to the mandatory adoption date. Second, using our results, we evaluate the implications of alternative adoption policies the FASB employs or may consider (or has considered in the past), such as eliminating the possibility of early adoption or limiting firms to recognition only.

We present a theory that explains the timing and the method of information release (recognition or disclosure) made by a value-maximizing manager who is concerned with the immediate impact of the new standard on the firm's value. In our model, managers possess private, although imperfect, information on the standard's long-term effect on the firm's value. Managers convey their private information to the market by their timing strategy of adopting a new accounting standard. By early adoption of a new standard through recognition, a manager subjects the firm to a more exhaustive audit. Consequently, the probability that a firm will receive the auditor's approval is altered. Furthermore, similar to Titman and Trueman (1986), the market places higher weight on the findings of an exhaustive audit. Alternatively, the manager may disclose the information in the footnotes to the financial statements, which requires a less-comprehensive (i.e., standard) audit.<sup>2</sup> Adoption at the mandatory date with no previous disclosure provides the maximum available time for contract renegotiation and other adjustments. Early reporting, by contrast, may have an impact on the probability of succeeding in renegotiation.<sup>3</sup>

Our model predicts that firms with "favorable" information recognize the impact of the new standard earlier than the mandatory adoption date, firms with "neutral" information disclose the impact in the footnotes to the financial statements, and firms with "unfavorable" information delay reporting until the mandatory adoption date and renegotiate the underlying contract. In addition,

our model predicts a positive market reaction to an early-adoption (recognition) decision.

We then analyze the implications of alternative adoption policies. For example, instead of allowing an extended adoption period during which firms could choose between early adoption, disclosure, or delay (implying late adoption), the FASB could mandate adoption of a new accounting standard at a pre-determined date, thus precluding the possibility of early adoption/disclosure.<sup>4</sup> Alternatively, the FASB could prohibit firms from disclosure of the new standard's impact. A firm could either adopt the standard (and recognize its impact) or delay reporting. We show that as the set of reporting options becomes larger, more firms convey their private information to the market through a reporting strategy, rather than renegotiating the underlying contracts with beneficiaries. Consequently, fewer renegotiations occur.

Early literature on voluntary disclosure, for instance, Grossman (1981) and Milgrom (1981), established a full-disclosure equilibrium even though disclosure is discretionary. Their result is based on the following adverse-selection ("market for lemons") argument: If investors know the manager possesses, but does not disclose, private information, investors will revise downward their estimation of the firm's value. Managers seeking to distinguish themselves from the worst possible type will disclose the information; hence, information from all firms is available to the market. More recent literature, for example, Dye (1985, 1986) and Verrecchia (1983, 1990), deal with the possibility of less-than-full disclosure. Verrecchia (1983) has shown that if disclosure is costly, then less-than-full disclosure may appear in equilibrium where traders have rational expectations. Dye (1985) has analyzed reasons for management's failure to disclose private information.<sup>5</sup>

Both Dye and Verrecchia obtained the prediction that revelation of private information constitutes "good" news. We extend and refine the issues addressed by Dye and Verrecchia by looking at the methods of information release (recognition versus disclosure) and by distinguishing between the two methods in terms of information revealed and market reaction. We have modified Dye's and Verrecchia's assumption that once a manager reveals information, then all the manager knows is truthfully disclosed. Hence, the information disclosed is sufficient for the market, and the reporting method is not relevant. In contrast, the manager in our model can reveal information only in a pre-specified form.<sup>6</sup> Hence, the method of reporting does supplement the information contained in the financial statements and does have incremental information content. Also, we assume in our model that the manager's private information does not limit the set of reports he may attempt to issue.<sup>7</sup>

Our model differs from existing literature in several other aspects. First, we do not require specification of exogenous disclosure costs.<sup>8</sup> Second, we assume that early release of information is voluntary, whereas eventual recognition is mandatory; and that this requirement impacts managerial incentives. This last property is related to Trueman (1990), who assumed that the timing of

disclosure is a decision variable for some firms, but not for others. He showed that, in equilibrium, early announcement is good news (Trueman's model does not deal with the reporting method). In contrast, in our model, *all* firms are allowed to adopt the new standard early.

Several empirical studies have addressed the issue of early adoption of new accounting standards. They all documented a consistent relation between the timing of adoption and the impact of adoption on income.<sup>9</sup> In our companion study, Amir and Ziv (1997), we investigate the timing and method of information release of SFAS 106. We find that the average liability of early-adopting firms is smaller than that of early-disclosing firms, which in turn is smaller than that of firms adopting at the mandatory adoption date. In addition, early adopters of SFAS 106 are less involved in postretirement benefits renegotiations, and firms that renegotiate their contracts have, on average, larger postretirement liabilities. Finally, we find that early adoption announcements generate, on average, a positive market reaction.

The organization of the paper is as follows: In the next section we formulate a theoretical model of strategic disclosure choice, then we analyze the model's equilibria, next we analyze the implications of different adoption policies, and finally we present our conclusions.

## The model

### *Setting*

Consider a three-period setting where firms have an uncertain obligation that will be paid out at the end of the third period.<sup>10</sup> The *liability* can have either a *low* ( $L$ ) or a *high* ( $H$ ) value, and their difference,  $H-L$ , is denoted  $\Delta$ . The *prior probability* that a given firm has a low liability, denoted  $p$ , is drawn from a commonly known *distribution*,  $G(p)$ , with a *density function*,  $g(p)$ .

The firm's risk-neutral manager possesses imperfect information regarding the expected probability of a low liability. We denote  $p_m \equiv \text{Prob}(\text{Low} | \text{manager's information})$ .<sup>11</sup> The manager may attempt to alter the liability by renegotiating with the liability beneficiaries. We assume that managers maximize their firm's expected market value at the end of the second period.<sup>12</sup>

At the beginning of the first period, a new set of accounting rules for the liability is established. The new accounting treatment for the liability differs substantially from the present procedure under which the liability is not reported. Under the new rules all firms must recognize the liability in their financial statements (i.e., present the obligation on the balance sheet and calculate related expenses based on the accrual method) by the end of the *second* period. However, managers have several reporting options at the end of the first period: to recognize the liability in the financial statements, to disclose the size of the liability in the footnotes to the financial statements (without recognizing any effect on financial statements), and to delay reporting until the second period.

As financial statements are audited, managers are able to report a low liability only if the auditors approve it.<sup>13</sup> In assessing the extent of the liability, the auditors collect information about the liability and revise their priors,  $G(p)$ , based on their findings. Auditors are presumed to be “effective”, in that they perform the necessary audit procedures and truthfully report their findings.<sup>14</sup> The firm can report a low liability only if the *auditors’ revised estimate of the probability that the firm has a low liability*, denoted  $p_a$ , is at least as high as a given *cutoff*, denoted  $\bar{P}$  (representing *exogenously* imposed fixed audit standards); that is,  $p_a \geq \bar{P}$ . Because the auditors obtain imperfect information, it is possible that a “good” firm, which has a low liability, will not pass the auditors’ test, and that a “bad” firm, which has a high liability, will pass it. We denote by  $q(p_m)$  the *probability that a manager, with private information  $p_m$ , passes the auditor’s test*.<sup>15</sup> Internal consistency requires that  $p_m \equiv \text{Prob}(\text{Low}|\text{manager’s information}) = q(p_m)\text{Prob}(\text{Low}|p_m, p_a \geq \bar{P}) + (1 - q(p_m))\text{Prob}(\text{Low}|p_m, p_a < \bar{P})$ .<sup>16</sup> Thus, the better a manager’s private information, the higher the manager’s assessed probability of being able to report a low liability, that is,  $q'(p_m) \geq 0$ .

Rational investors incorporate information from all possible sources in determining market values. In particular, investors use the manager’s strategy (timing and method of reporting) and the reported liability, that is *Gross Market Value*  $\equiv \text{GMV}(\text{manager strategy, reported liability})$ . Because investors are assumed to be risk neutral, the market value of the firm is its conditional expected future cash flow. Without loss of generality, we normalize the firm’s other assets to equal the higher value of the liability; hence, the expected value of the firm’s cash flows (before expenses), given an information set  $x$ , which equals its gross market value, is  $\text{GMV}(x) = \text{Prob}(\text{Low}|x) \cdot \Delta$ .

Consider the strategy of *delay*, denoted *Del*. In this case, nothing is reported in the first period, and the manager retains the option of negotiating the liability terms in the second period. We assume that only a *fraction*,  $\beta$ , of the delaying firms would be capable of successfully renegotiating the liability. Possible reasons for the inability to successfully renegotiate the liability may relate to the timing of contract expiration, the existence of prescheduled labor negotiation, the structure of the liability, and an inability to secure the auditors’ approval for reporting  $L$  after the renegotiation.<sup>17</sup> Moreover, (successful) bargaining is costly; the *costs*,  $C$ , include concessions made to beneficiaries in return for a liability reduction. Those firms that successfully renegotiate their liability have a (commonly known) low liability; that is,  $\text{Prob}(\text{Low}|\text{successful renegotiation}) = 1$ . Firms that failed in their negotiations are subject to a standard audit during the second period. The auditors evaluate the prenegotiation liability and approve reporting of a low liability if their findings are above the cutoff, that is,  $p_a \geq \bar{P}$ . Consequently, given a delayed recognition, the expected market value of the firm at the end of the second period is given by the following equation:

$$MV_{Del} \equiv (1 - \beta)[q(p_m)GMV(Del, L) + (1 - q(p_m))GMV(Del, H)] + \beta(\Delta - C) \quad (1)$$

The second strategy is *recognition*, denoted *Rec*. By attempting to recognize a low liability, the manager subjects the firm to an extensive audit in the first period; such an audit involves *incremental costs*, denoted  $F$ . An extensive audit is required because the standard dictates the adoption of a new measurement rule.<sup>18</sup> The manager will be able to recognize a low liability in the first period only if the auditors approve it. If the auditors do not agree to a low-liability report, the firm must recognize a high liability. We assume that once an audit is performed, the manager cannot delay reporting. If the auditors' findings are such that the firm has a high liability, the auditors require the reporting of that liability; otherwise, the auditors would be unable to attest that the financial statements present fairly the financial position of the firm.<sup>19</sup>

Subjecting the firm to an extensive audit has several consequences. First, the probability of an audit failure (mistake) is reduced; hence, a "good" firm is more likely to pass the auditors' test under the extensive audit, whereas a "bad" firm is more likely to fail the extensive audit. We denote by  $\hat{p}_a$  the *auditors' estimate of the probability the firm has a low liability*, given an extensive audit; and by  $\hat{q}(p_m)$ , the *probability that a manager who possesses private information  $p_m$ , passes an extensive audit*. We assume fixed audit standards; thus no change occurs in the auditors' cutoff probability,  $\bar{P}$ . Second, the information contained in the liability report is of higher "quality"; hence, the auditors' report is more informative.<sup>20</sup> The expected market value at the end of the second period for a firm attempting to recognize the liability is given by equation (2):

$$MV_{Rec} \equiv [\hat{q}(p_m)GMV(Rec, L) + (1 - \hat{q}(p_m))GMV(Rec, H)] - F \quad (2)$$

Finally, if the *manager discloses the liability in the footnotes to the first period's financial statements*, denoted *Dis*, the firm does not bear the consequences of an extensive audit in the first period. This assumption reflects our casual observation that auditors apply less scrutiny to footnote disclosure than to full recognition. The manager can disclose either a *low (DisL) or a high (DisH) liability*. Although disclosing a low liability does not prompt an extensive audit, we assume that it does prevent the manager from renegotiating the liability in the second period. Intuitively, when claiming to have a low liability, the manager will be able to receive fewer (or no) concessions from beneficiaries.<sup>21</sup> Additionally, the firm will be subject to a standard audit in the second period, because recognition is mandatory at that time. The expected market value of the firm given a disclosure of a low liability is as follows:

$$MV_{DisL} \equiv [q(p_m)GMV(DisL, L) + (1 - q(p_m))GMV(DisL, H)] \quad (3)$$

If a high liability is disclosed, the manager can renegotiate the liability, as in the case of the delay strategy. However, if the manager is unable to renegotiate successfully (an event with a probability of  $1 - \beta$ ), the auditors require an

extensive audit, with incremental costs of  $F$ , in order to approve a *revision* of the report from a high to a low liability. Thus, the expected market value of the firm given a high liability disclosure is as follows:

$$MV_{DisH} \equiv (1 - \beta)[\hat{q}(p_m)GMV(DisH, L) + (1 - \hat{q}(p_m))GMV(DisH, H) - F] + \beta(\Delta - C). \quad (4)$$

All events are summarized in figure 1.

### Assumptions

Our assumptions are related to the informativeness of different audit procedures. Recall that a firm may be subject to two different levels of audit: standard, where the probability that a manager with private information  $p_m$  passes the audit is  $q(p_m)$ ; and extensive, where the corresponding probability is  $\hat{q}(p_m)$ . An extensive audit increases the accuracy of the audit report; hence, a “good” firm is more likely to pass an extensive audit than a “bad” firm (fewer type I errors in an extensive audit), whereas a “bad” firm is more likely to pass a standard audit (fewer type II errors in an extensive audit). We further assume the difference between the two probabilities is increasing in the manager’s private information. Formally:

#### Assumption 1:

The difference  $\hat{q}(p_m) - q(p_m)$  is negative for small values of  $p_m$ , positive for large values of  $p_m$ , and is increasing in  $p_m$ .

Assumption 1 implies that the better is the manager’s information, the higher are the gains from a more intensive audit.<sup>22</sup>

A second consequence of an extensive audit is increased quality of the information contained in the liability report. Define auditor informativeness as the difference between the probability of a low liability given an  $L$  report and the probability of a low liability given an  $H$  report. We assume that, regardless of the manager’s information, auditors are more informative when conducting an extensive audit. Formally:

#### Assumption 2:

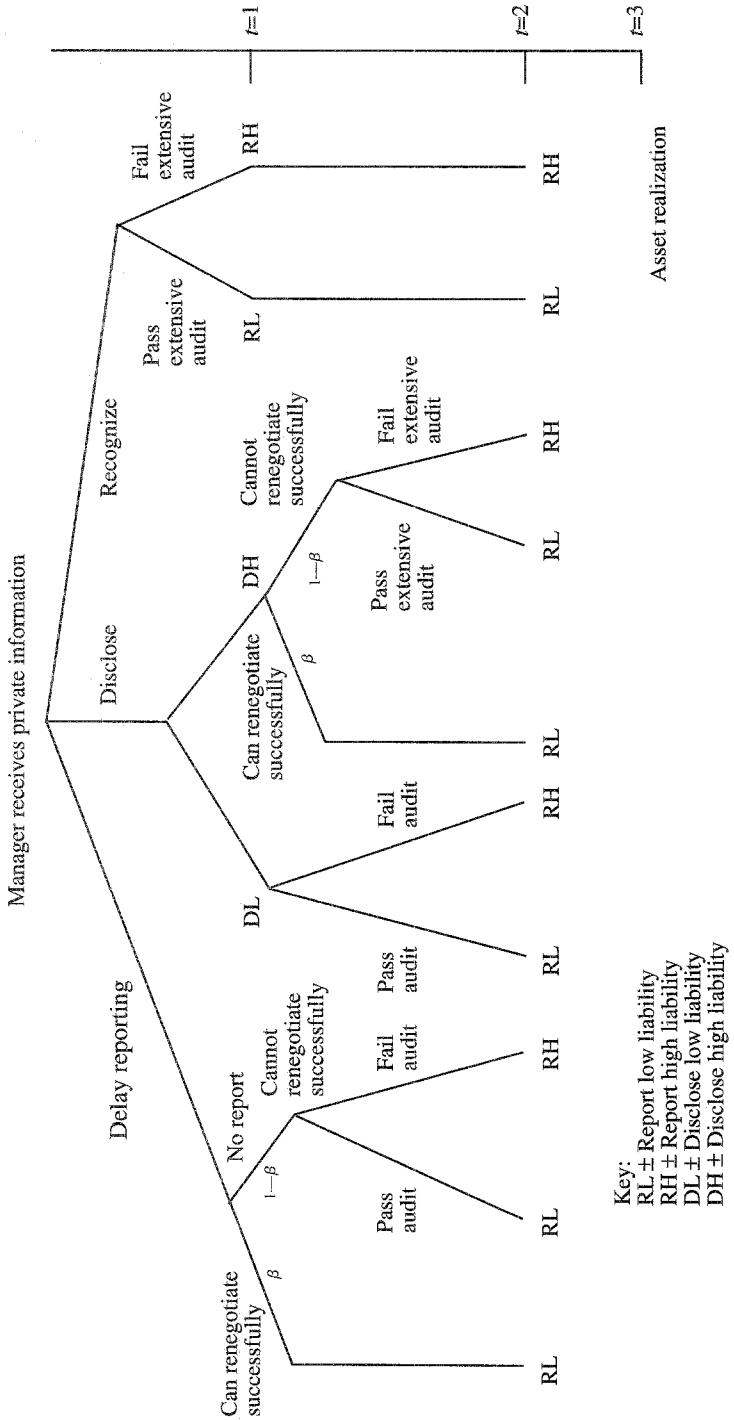
For any possible manager’s information, an extensive audit is more informative than a standard audit; that is, for all  $p_m, \tilde{p}_m$ :

$$[Prob(Low|p_m, \hat{p}_a \geq \bar{P}) - Prob(Low|p_m, \hat{p}_a < \bar{P})] \geq [Prob(Low|\tilde{p}_m, p_a \geq \bar{P}) - Prob(Low|\tilde{p}_m, p_a < \bar{P})]$$

Assumption 2 combines two elements. First, the auditor’s informativeness, holding the manager’s information constant, is higher when an extensive audit is conducted.<sup>23</sup> Second, when calculating the posterior probability of a low liability, the manager’s strategy is informative, because it is based on the manager’s



Figure 1 Time line



private information. We assume that even when the manager's information is incorporated through his strategy, auditors are more informative when conducting an extensive audit, than when conducting a standard audit. This premise holds regardless of the manager's information or strategy, that is, the auditors' information exhibits higher quality than that of the manager. Such a property is descriptive for cases where estimation of the liability is more aligned with the auditor's expertise than with the manager's.

We emphasize that Assumption 2 does not deal with the issue of ranking different strategies, but asserts that the *difference* between posterior probabilities given the results of an extensive audit is larger than the *difference* between posterior probabilities given the results of a standard audit. In particular, Assumption 2 is consistent with the possibility that undergoing an extensive audit provides either "good" or "bad" news to investors.<sup>24</sup>

Our first two assumptions compared the two levels of audit and could be described as "relative" informativeness assumptions. The next assumption deals with the auditors' "absolute" informativeness. We assume that when the auditors' findings are negative, the firm is better off if it successfully renegotiates the liability; that is, for some firms there are real economic benefits in renegotiation.

#### *Assumption 3:*

Consider the conditional probability of a low liability when the firm has *failed* the audit. Then, regardless of the manager's private information, the firm could be better off if it succeeded in renegotiating the liability; that is,  $\forall p_m$ ,  $Prob(Low|p_m, p_a < \bar{P}) \leq (\Delta - C)/\Delta$ .

Assumption 3 eliminates the possibility that renegotiation is used without any economic justification, for instance as a "money burning" strategy. Another implication, that is consistent with Assumption 2, is that the auditors' findings are of high quality.

#### **Equilibrium analysis**

The following two conditions should be simultaneously satisfied in equilibrium: (i) the manager's adoption policy is utility maximizing; that is, given the prevailing equilibrium market valuation functions,  $GMV(\cdot, \cdot)$ , each manager chooses to recognize, disclose (low or high), or delay reporting according to the strategy that maximizes the firm's second-period value; and (ii) investors have rational expectations; that is, the adoption policy they expect managers to employ corresponds to the adoption policy managers actually employ. Given an adoption policy, investors use Bayes rule to update their beliefs.

The following set of claims establishes the characteristics of any equilibrium prevailing in this game. We first deal with the strategy of recognition.

### Claim 1

Suppose a manager with private information  $p_m = p^{**}$  chooses to recognize the liability; then, in equilibrium, all managers with private information  $p_m \geq p^{**}$  recognize the liability.

*Proof:* (See Appendix for all proofs.)

Claim 1 establishes that if some managers recognize the liability in the first period, then these are the managers with the most favorable private information. Thus, there exists some cutoff of the private information,  $p^{**}$ , such that all managers with  $p_m \geq p^{**}$  prefer recognition, and all managers with  $p_m < p^{**}$  select either disclosure or delay.<sup>25</sup>

An immediate corollary to Claim 1 is that investors react favorably to early recognition.

### Corollary 1

On average, the market reaction to a firm's early recognition of the liability is positive.

Corollary 1 is consistent with prior empirical findings, which established that "good" news is reported earlier.<sup>26</sup> However, our result also distinguishes between methods of early reporting. In particular, disclosure, which is another method of early reporting, does not generate the same market reaction as recognition. We establish that "good" news is reported earlier, and in the most credible way available. Earlier research such as Verrecchia (1983), assumed truthful reporting and thus could not distinguish between levels of reporting credibility.

Next we investigate the characteristics of firms who prefer to delay reporting.

### Claim 2

Suppose a manager with private information  $p^*$  delays reporting; then, all managers with private information  $p_m < p^*$  prefer to delay reporting.

Claim 2 suggests that bad news is reported late. An immediate corollary is as follows:

### Corollary 2

The market reaction to a firm's delay in reporting the liability is negative.

Claims 1 and 2 establish that managers of firms who disclose the liability have midlevel value for their private information, between firms that recognize (high value) and those that delay (low value). Recall that managers may disclose either a low liability (and forgo the ability to renegotiate) or a high liability (which implies an extensive audit if renegotiations fail). Because these two strategies differ from each other along more than one dimension, it remains unclear which managers prefer a given disclosed value. In particular, if the

probability of successful renegotiation is relatively high (i.e.,  $\beta \rightarrow 1$ ), disclosing high liability is tantamount to delay, and the managers with better information among those who disclose in the first period prefer disclosing a low liability to disclosing a high liability. If, on the other hand, the probability of successful renegotiation is relatively low (i.e.,  $\beta \rightarrow 0$ ), disclosing a high liability is tantamount to recognition, and the managers with better information among those who disclose in the first period prefer disclosing a high liability to disclosing a low liability. For intermediate levels of probability of successful renegotiation, the ranking is unclear. Also, the question as to whether the equilibrium involves at most one cutoff point between high and low disclosure, could not be answered in general. One needs to put more structure on the difference function  $\hat{q}(p_m) - q(p_m)$  in order to have monotonicity. If, for example, the relation  $\hat{q}(p_m) - q(p_m)$  is linear, we would have at most one cutoff point, where the behavior of each group of managers is based on the value of  $\beta$ . This argument is summarized in Claim 3, as follows.

### Claim 3

Consider the set of firms that disclose in the first period and assume the difference  $\hat{q}(p_m) - q(p_m)$  is linear in  $p_m$ . Then, if the probability of successful renegotiation,  $\beta$ , is sufficiently high, managers with higher values of private information will disclose low liability, and managers with lower values of private information will disclose high liability; that is, there exists a cutoff,  $p^\circ$ , such that a manager who possesses private information  $p_m \geq p^\circ$  discloses a low liability, and a manager who possesses private information  $p_m < p^\circ$  discloses a high liability. If, on the other hand,  $\beta$  is sufficiently small, then there exists a (possibly different)  $p^\circ$ , such that a manager who possesses private information  $p_m \geq p^\circ$  discloses a high liability, and a manager who possesses private information  $p_m < p^\circ$  discloses a low liability.

Note that under the second case stipulated in Claim 3, or in some cases with intermediate  $\beta$ , the report in the financial statements may not be monotonic in the manager's private information. Managers whose private information implies a higher probability of having a low liability are disclosing a higher liability than managers whose private information implies a lower probability of having a low liability. The reason for this possibility is that when successful renegotiation is unlikely, managers assign more value to the consequences of the extensive audit, which is preferred by managers with better private information.

Claims 1 through 3 are summarized in Proposition 1.

### Proposition 1

Consider the decision to recognize, disclose (high or low), or delay. Then, delaying firms are always those firms whose managers have a low level of private information, disclosing firms are those firms whose managers have a

midlevel of private information, and recognizing firms are always those firms whose managers have a high level of private information.

Figure 2 provides an illustration of market value functions that are consistent with a case where all strategies are used by managers in equilibrium.

There exists a complementary interpretation for our results.<sup>27</sup> Our setting allows two possible signals for the manager: (i) renegotiate or not, and (ii) use a standard or an extensive audit. Managers with favorable private information utilize both signals (no renegotiation and an extensive audit — recognition); whereas managers with unfavorable information do not use any signal (renegotiation and a standard audit — delay). Managers with intermediate levels of private information utilize one out of the two signals: renegotiation and an extensive audit — disclose high; no renegotiation and a standard audit — disclose low. As our assumptions do not incorporate comparison of the two signals, we observe the possibility of alternative rankings, as reported in Claim 3.

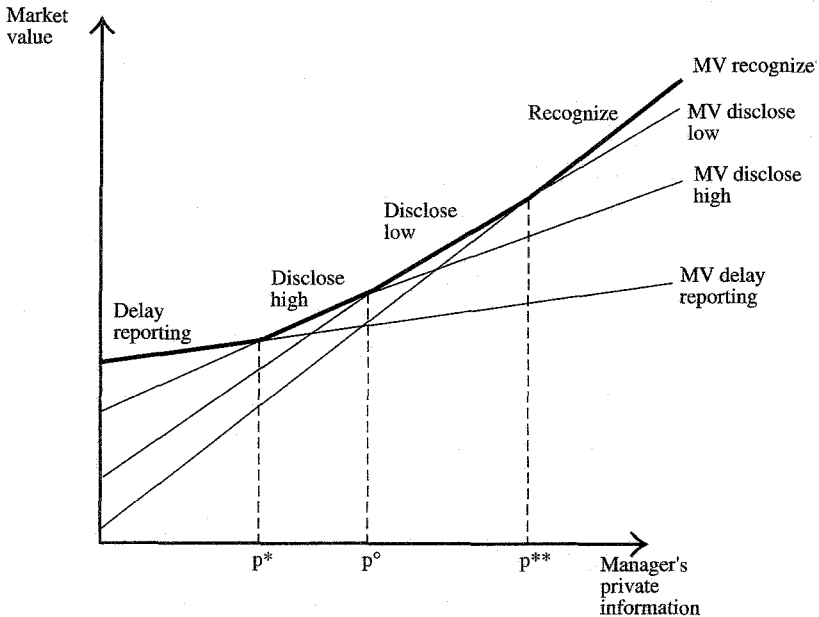
Early literature on voluntary disclosure has shown that costly disclosure is necessary in order to have less-than-full disclosure (Verrecchia 1983). In our model, we include explicit costs related to disclosure: extensive audit costs,  $F$ , and cost of renegotiation,  $C$ . However, as the following corollary shows, neither is necessary for our results.<sup>28</sup>

### Corollary 3

The equilibria we characterize in Proposition 1 could be supported without monetary renegotiation costs,  $C = 0$ , and without extensive audit costs,  $F = 0$ .

Hence, another contribution of our work is the endogenizing of disclosure costs. Verrecchia (1990) comments that “I emphasize that the extent of endogeneity is limited, because in all these models exogenous costs must exist to preclude full disclosure.” The different probabilities of obtaining different auditors reports serve as the exogenous costs referred to by Verrecchia.

Proposition 1 considers optimal managers’ strategies that may be sustained in equilibrium. Even in the simpler case where the difference function,  $\hat{q}(p_m) - q(p_m)$ , is linear, four equilibrium types and nineteen equilibria alternatives are consistent with Proposition 1:<sup>29</sup> (i) all managers choose the same strategy (four alternative equilibria), (ii) managers are using two different strategies (seven alternative equilibria), (iii) three different strategies are used (six alternative equilibria), and (iv) all four strategies are used in equilibrium (two alternative equilibria). The prevailing equilibrium is a function of the model parameters, as well as of the off-the-equilibrium-path beliefs of investors when some strategies are not utilized in equilibrium. It is possible to construct examples to demonstrate the existence of each of the equilibrium types. Note also that for a given set of parameters, there may be more than one possible prevailing equilibrium. For example, equilibrium where all firms delay could be supported for all sets of parameters, given the off-the-equilibrium-path beliefs that recognition and disclosure are associated with, say, the lowest possible

**Figure 2** Equilibrium where all strategies are used

private information,  $p_m$ . Obviously, documenting all 19 equilibria alternatives is impractical. Furthermore, to reduce the number of equilibria alternatives we would need to put more structure on the model. However, this is tedious and unnecessary. The following corollary establishes the robustness of our predictions in the presence of alternative equilibria.

#### Corollary 4

Our predictions are (weakly) consistent with *all* of the above equilibria; namely, none of our predictions (when applicable) is reversed when an alternative equilibrium emerges.

We now turn to evaluate the implications of the alternative adoption policies the FASB may consider.

#### Policy implications

So far our analysis has dealt with an environment in which firms determine the timing of adoption as well as the method of interim reporting. Our analysis was partially motivated by the adoption environment related to SFAS 106 and by Amir and Ziv's (1997) empirical documentation of actual strategies and market reaction. Next we use our model to discuss simpler environments and to consider the implications of alternative adoption policies. Recall that in our equilibrium analysis we identified three clusters of firms based on their managers'

private information: managers with “favorable” private information choose to recognize the liability early, managers with “neutral” private information choose to disclose the liability, and managers with “unfavorable” private information choose to delay reporting. We remove some of these strategies from the managers’ feasible action set and consider the implications of such policies on managers’ strategies, and in particular, on renegotiation activities.

We begin with a benchmark case in which managers do not possess superior information relative to investors; that is, their information is public. A manager will renegotiate the liability only if it increases the enterprise’s expected cash flows, or:

$$(1 - \beta) \text{Prob}(\text{Low} | p_m) \cdot \Delta + \beta(\Delta - C) \geq \text{Prob}(\text{Low} | p_m) \cdot \Delta$$

which implies renegotiation when:

$$\text{Prob}(\text{Low} | p_m) \leq (\Delta - C)/\Delta. \quad (5)$$

As  $\text{Prob}(\text{Low} | p_m)$  is increasing in  $p_m$ , managers with private information of low  $p_m$  renegotiate, whereas managers with private information of a high  $p_m$  do not.

#### Observation 1

When managers’ information is public, a cutoff  $p^*$  exists, such that all managers with private information  $p_m < p^*$  prefer to renegotiate. The value of  $p^*$  is a function of the renegotiation costs,  $C$ . In particular, when  $C = 0$ , all firms renegotiate, whereas when  $C = \Delta$ , none does so.

Next, we introduce asymmetric information between managers and the market and assume that managers must report their firm’s liability immediately, with no extended adoption period. Consider the case where all reports are subject to a uniform level of audit (either standard or extensive). Managers may also attempt to renegotiate the liability. We also assume, as in the model section, that managers’ utility increases with the market value of their firm, as inferred by investors from its financial reports. In this environment, financial reporting (which includes the manager’s strategy and the actual report) may change the manager’s behavior.

#### Observation 2

When managers possess private information and must report their liability in the financial statements, then, relative to the case of symmetric information (Observation 1), fewer managers prefer to renegotiate. Formally, a manager with private information  $p_m = p^*$  strictly prefers reporting the liability to renegotiation.

Intuitively, reporting is chosen by managers with favorable private information. When deciding to report the liability, the manager is pooled with the upper tail of the private information distribution. Hence, given the manager derives utility from the implied market value, there are additional benefits from reporting.

Observation 2 highlights the reduction in renegotiation activities resulting from the introduction of financial reporting. If renegotiation results in either a social loss or a social gain, financial reporting changes the resource allocation in the economy.

Note that Observation 1 is unchanged (qualitatively and quantitatively) when managers possess private information, but financial reporting is prohibited. In that case, managers cannot convey their private information to the market and maximize the expected cash flow of the firm. That is, managers maximize the firm's value at the end of the third period.

Consider now the setting introduced in the model section, which includes a richer strategy space available to managers. Assume that all three strategies are used in the prevailing equilibrium, as derived in the equilibrium analysis section. Recall that for  $p_m < p^*$ , managers prefer to delay (and renegotiate); for  $p^* \leq p_m < p^{**}$ , managers prefer to disclose, and for  $p^{**} \leq p_m$ , managers prefer to recognize the liability.<sup>30</sup> The adoption rules, as stipulated previously, allow firms an extended adoption period, with flexibility before the mandatory adoption date. Consider, instead, simpler adoption policies where some of the alternatives are removed.

First we assume that firms are not allowed to adopt a standard earlier than the mandatory adoption date (i.e., recognition in the first period is not allowed); however, early disclosure is allowed.<sup>31</sup> This leads to the following observation.

#### Observation 3

If firms are not allowed to recognize the liability in the first period, then delaying (and renegotiating) firms are those firms whose managers have a low level of private information and disclosing firms are those firms whose managers have a high level of private information. Furthermore, the cutoff point between delaying and disclosing,  $p^*$ , is increasing relative to the case where early recognition is allowed; namely, more firms prefer to delay and renegotiate.

Alternatively, the legislator may prohibit early disclosure. A firm either recognizes the liability in the first period or delays reporting, which leads to the following.

#### Observation 4

If disclosure of the liability in the first period is prohibited, then, relative to the case where disclosure is allowed, more firms prefer to delay and renegotiate ( $p^*$  increases). The number of firms that prefer early recognition can either increase or decrease ( $p^{**}$  can move in both directions).

Consistent with Observations 1 and 2, as more options are available for a firm, fewer firms delay and renegotiate the liability, and more firms convey private information to the market, rather than change their economic position through renegotiation. Hence, the adoption policy employed by the FASB is not neutral and impacts on firms' behavior. To the extent the FASB is sensitive to eco-



conomic consequences of its standards, the potential impact of the adoption policy should be taken into consideration.

### **Concluding remarks**

In this study we develop a theoretical framework that explains firms' reactions to new accounting standards, especially, those released by the FASB under its extended adoption policy. Our theory highlights the differences between recognized and disclosed accounting information and provides a link between a firm's choice of whether to recognize or disclose information under new accounting standards, and stock price behavior around the adoption announcement. In addition, we have considered the relation between delay of information release and renegotiation of related contracts.

We have argued that managers use the extended adoption period to convey to the market their private information about the new standard's financial impact. Furthermore, managers and the market distinguish between recognition and disclosure and do not view them as equivalent methods of information release. Hence, the choice of the reporting method is informative. Accordingly, we have predicted that the adoption impact of the new accounting standard of early adopters is more positive (or less negative) than that of firms that disclose their impact without a formal adoption, which in turn is more positive (or less negative) than the standard's impact on firms that delay. Finally, we have predicted a positive market reaction to early adoption announcements. In Amir and Ziv (1997) we obtain results that are consistent with these predictions, using data on *SFAS* 106 adoption.

Having analyzed alternative adoption policies, we have found that as more reporting options are introduced, the number of firms that find it beneficial to renegotiate the underlying contract decreases. Managers can find alternative ways of communicating with the market. Having started with a benchmark case where managers' information is public, we have found that firms renegotiate the obligation if renegotiation costs are sufficiently low. We also found that introducing an extended adoption policy where firms are allowed to delay, disclose, or recognize reduces the number of renegotiations, and that posing restrictions on the adoption policy increases the number of renegotiations relative to a case with no restrictions.

Proponents of uniform accounting rules have argued that all firms should be forced to recognize a new accounting standard on a prespecified date and that the possibility of early adoption should be precluded. We show that such a policy yields more contract renegotiations relative to the current FASB policy, because managers will be unable to reveal their private information through financial reporting choices.

Finally, the FASB has recently issued *SFAS* 123, allowing firms to choose, indefinitely, between recognition and disclosure.<sup>32</sup> It would be interesting to develop and test a variation of our predictions in this setting. Also, in 1996 the FASB released *SFAS* 125, forcing firms to adopt the standard at a prespecified

date. It would be interesting to study firms activities between the release of SFAS 125 and its mandatory adoption date.

## Appendix:

### *Proof Claim 1*

We need to show that all managers with private information  $p_m \geq p^{**}$  prefer recognition to all other strategies.

- (i) Start with the strategy of delay, and consider arbitrary rational market valuations,  $GMV(\cdot, \cdot)$ . Because a manager with private information  $p_m = p^{**}$  prefers recognition, we know that

$$\begin{aligned} E(MV_{Rec}|p^{**}) &= [\hat{q}(p^{**})GMV(Rec, L) + (1 - \hat{q}(p^{**}))GMV(Rec, H)] - F \\ &\geq (1 - \beta)[q(p^{**})GMV(Del, L) + (1 - q(p^{**}))GMV(Del, H)] \\ &\quad + \beta(\Delta - C) \\ &= E(MV_{Del}|p^{**}) \end{aligned}$$

This equation can be rewritten as

$$\begin{aligned} q(p^{**})\{[GMV(Rec, L) - GMV(Rec, H)] - (1 - \beta)[GMV(Del, L) - GMV(Del, H)]\} \\ + [\hat{q}(p^{**}) - q(p^{**})][GMV(Rec, L) - GMV(Rec, H)] \\ + GMV(Rec, H) - (1 - \beta)GMV(Del, H) - F - \beta(\Delta - C) \geq 0 \end{aligned}$$

Consider a manager with private information  $p_m > p^{**}$ . We need to show that the last inequality is positive for this manager. The third line of this inequality is not related to the manager's private information. For the second line, note that  $[GMV(Rec, L) - GMV(Rec, H)]$  is always positive (because the auditors are informative) and that for  $p_m > p^{**}$ ,  $[\hat{q}(p_m) - q(p_m)] > [\hat{q}(p^{**}) - q(p^{**})]$  by Assumption 1. Hence,  $[\hat{q}(p_m) - q(p_m)][GMV(Rec, L) - GMV(Rec, H)] > [\hat{q}(p^{**}) - q(p^{**})][GMV(Rec, L) - GMV(Rec, H)]$ .

Last, we need to show the first line is also larger for  $p_m > p^{**}$ . Note  $q(p_m) > q(p^{**})$ , so we need to show the term in the curled brackets is positive. Expand on the gross market value terms as follows:<sup>33</sup>

$$\begin{aligned} GMV(Rec, L) &= Prob(Low|Rec, \hat{p}_a \geq \bar{P}) \cdot \Delta \\ &= \int_{p_m \in Rec} Prob(Low|p_m, \hat{p}_a \geq \bar{P})g(p_m|p_m \in Rec)dp_m \cdot \Delta \end{aligned}$$

$$\begin{aligned} GMV(Del, L) &= Prob(Low|Del, p_a \geq \bar{P}) \cdot \Delta \\ &= \int_{p_m \in Del} Prob(Low|p_m, p_a \geq \bar{P})g(p_m|p_m \in Del)dp_m \cdot \Delta \end{aligned}$$

with the terms for an  $H$  report similarly derived. The term in the curled brackets could be rewritten as

$$\begin{aligned}
& \left\{ \int_{p_m \in Rec} Prob(Low|p_m, \hat{p}_a \geq \bar{P}) g(p_m|p_m \in Rec) dp_m \right. \\
& \quad - \int_{p_m \in Rec} Prob(Low|p_m, \hat{p}_a < \bar{P}) g(p_m|p_m \in Rec) dp_m \} \cdot \Delta \\
& \quad - (1 - \beta) \left\{ \int_{p_m \in Del} Prob(Low|p_m, p_a \geq \bar{P}) g(p_m|p_m \in Del) dp_m \right. \\
& \quad \left. - \int_{p_m \in Del} Prob(Low|p_m, p_a < \bar{P}) g(p_m|p_m \in Del) dp_m \right\} \cdot \Delta \\
& \geq \text{Min}_{p_m \in Rec} [Prob(Low|p_m, \hat{p}_a \geq \bar{P}) - Prob(Low|p_m, \hat{p}_a < \bar{P})] \cdot \Delta \\
& \quad - \text{Max}_{p_m \in Del} [Prob(Low|p_m, p_a \geq \bar{P}) - Prob(Low|p_m, p_a < \bar{P})] \cdot \Delta \geq 0
\end{aligned}$$

by Assumption 2.

(ii) Next, consider the alternative strategy of disclosing low. Because a manager with private information  $p^{**}$  prefers recognition, we know the following:

$$\begin{aligned}
E(MV_{Rec}|p^{**}) &= [\hat{q}(p^{**})GMV(Rec, L) + (1 - \hat{q}(p^{**}))GMV(Rec, H)] - F \\
&\geq [q(p^{**})GMV(DisL, L) + (1 - q(p^{**}))GMV(DisL, H)] \\
&= E(MV_{DisL}|p^{**})
\end{aligned}$$

which could be rewritten as

$$\begin{aligned}
q(p^{**})\{[GMV(Rec, L) - GMV(Rec, H)] - [GMV(DisL, L) - GMV(DisL, H)]\} \\
+ [\hat{q}(p^{**}) - q(p^{**})][GMV(Rec, L) - GMV(Rec, H)] \\
+ GMV(Rec, H) - GMV(DisL, H) - F \geq 0
\end{aligned}$$

Using arguments identical to those established in part (i) it could be shown that all managers with private information  $p_m > p^{**}$  also prefer recognition to disclosure of a low liability.

(iii) Finally, consider the strategy of disclosing a high liability. Because a manager with private information  $p^{**}$  prefers recognition, we know the following:

$$\begin{aligned}
E(MV_{Rec}|p^{**}) &= [\hat{q}(p^{**})GMV(Rec, L) + (1 - \hat{q}(p^{**}))GMV(Rec, H)] - F \\
&\geq (1 - \beta)[\hat{q}(p^{**})GMV(DisH, L) + (1 - \hat{q}(p^{**}))GMV(DisH, H) - F] \\
&\quad + \beta(\Delta - C) \\
&= E(MV_{DisH}|p^{**})
\end{aligned}$$

which could be rewritten as

$$\hat{q}(p^{**})\{[GMV(Rec,L) - GMV(Rec,H)] - (1-\beta)[GMV(DisH,L) - GMV(DisH,H)]\} \\ + GMV(Rec,H) - (1-\beta)GMV(DisH,H) - \beta(\Delta + F - C) \geq 0$$

Assume to the contrary that some managers with private information  $p_m > p^{**}$  prefer to disclose a high liability. Because the inequality is monotone in  $p_m$ , this implies that all managers with private information  $p_m > p^{**}$  prefer to disclose a high liability, which could be the case only if the term in the curled brackets is negative. However, if a manager with private information  $p^{**}$  prefers recognition, it must be that the following term is positive:

$$GMV(Rec,H) - (1-\beta)GMV(DisH,H) - \beta(\Delta + F - C) \geq 0$$

or:

$$GMV(Rec,H) - GMV(DisH,H) + \beta GMV(DisH,H) \geq \beta(\Delta + F - C).$$

From the assumption that managers with private information  $p_m > p^{**}$  prefer to disclose a high liability, we know  $GMV(Rec,H) - GMV(DisH,H)$  is negative, so it must be that  $GMV(DisH,H) \geq \Delta + F - C$ . However,

$$GMV(DisH,H) = Prob(Low|manager disclosed high, \hat{p}_a < \bar{P}) \\ \leq Prob(Low|manager disclosed high, p_a < \bar{P}) \leq (\Delta - C)/\Delta$$

by Assumption 3, and we obtain a contradiction.

### *Proof Claim 2*

- (i) By Claim 1, if a manager with private information  $p^*$  chooses to delay, there can be no manager with private information  $p_m < p^*$  who chooses to recognize.
- (ii) Delay versus disclosing high: because a manager with private information  $p^*$  prefers to delay, we know the following:

$$(1-\beta)[q(p^*)GMV(Del,L) - (1-q(p^*))GMV(Del,H)] + \beta(\Delta - C) \\ \geq (1-\beta)[\hat{q}(p^*)GMV(DisH,L) - (1-\hat{q}(p^*))GMV(DisH,H) - F] + \beta(\Delta - C)$$

This equation can be rewritten as

$$\{q(p^*)[GMV(Del,L) - GMV(Del,H)] - \hat{q}(p^*)[GMV(DisH,L) - GMV(DisH,H)]\} \\ + [GMV(Del,H) - GMV(DisH,H) - F] \geq 0.$$

By Assumption 2:

$$\begin{aligned}
 & GMV(Del, L) - GMV(Del, H) \\
 &= Prob(Low \mid \text{manager prefers delay}, p_a \geq \bar{P}) \cdot \Delta \\
 &\quad - Prob(Low \mid \text{manager prefers delay}, p_a < \bar{P}) \cdot \Delta \\
 &\leq Prob(Low \mid \text{manager prefers disclose high}, \hat{p}_a \geq \bar{P}) \cdot \Delta \\
 &\quad - Prob(Low \mid \text{manager prefers disclose high}, \hat{p}_a < \bar{P}) \cdot \Delta \\
 &= GMV(DisH, L) - GMV(DisH, H)
 \end{aligned}$$

Consider a manager with private information  $p_m < p^*$  who prefers high disclosure. Then, it must be that

$$\begin{aligned}
 & q(p_m)[GMV(Del, L) - GMV(Del, H)] \\
 &\quad - \hat{q}(p_m)[GMV(DisH, L) - GMV(DisH, H)] \\
 &\leq q(p^*)[GMV(Del, L) - GMV(Del, H)] \\
 &\quad - \hat{q}(p^*)[GMV(DisH, L) - GMV(DisH, H)]
 \end{aligned}$$

or:

$$\begin{aligned}
 & \{GMV(Del, L) - GMV(Del, H)\}[\hat{q}(p^*) - \hat{q}(p_m)] \\
 &\leq \{GMV(Del, L) - GMV(Del, H)\}[q(p^*) - q(p_m)]
 \end{aligned}$$

This inequality can hold only if

$$[\hat{q}(p^*) - \hat{q}(p_m)] \leq [q(p^*) - q(p_m)] \text{ or } \hat{q}(p^*) - q(p^*) \leq \hat{q}(p_m) - q(p_m)$$

which contradicts Assumption 1.

(iii) Delay versus disclosing low: because a manager with private information  $p^*$  prefers to delay,

$$\begin{aligned}
 & (1 - \beta)[q(p^*)GMV(Del, L) - (1 - q(p^*))GMV(Del, H)] + \beta(\Delta - C) \\
 &\geq [q(p^*)GMV(DisL, L) - (1 - q(p^*))GMV(DisL, H)]
 \end{aligned}$$

which could be rewritten as the following:

$$\begin{aligned}
 & q(p^*)\{[GMV(DisL, L) - GMV(DisL, H)] \\
 &\quad - (1 - \beta)[GMV(Del, L) - GMV(Del, H)]\} + GMV(DisL, H) \\
 &\quad - (1 - \beta)GMV(Del, H) - \beta(\Delta + F - C) \leq 0
 \end{aligned}$$

Assume to the contrary that some managers with private information  $p_m < p^*$  prefer disclosing low. Because the inequality is monotone in  $p_m$ , this implies

that managers with private information  $p_m < p^*$  also prefer disclosing low, which can happen only if the term in the curled brackets is negative, and the following term is positive:

$$GMV(DisL,H) + (1 - \beta)GMV(DeL,H) - \beta(\Delta + F - C) \geq 0$$

The proof is completed using arguments identical to part (iii) of Claim 1.

### *Proof Claim 3*

By Claims 1 and 2, it is clear that all managers who possess private information  $p^* \leq p_m < p^{**}$  prefer to disclose and that there are no other managers who disclose. Assume that both disclosing strategies are used and that a manager with private information  $p^\circ$  is indifferent between the two strategies.

$$\begin{aligned} q(p^\circ)GMV(DisL,L) + (1 - q(p^\circ))GMV(DisL,H) \\ = (1 - \beta)[\hat{q}(p^\circ)GMV(DisH,L) + (1 - \hat{q}(p^\circ))GMV(DisH,H) - F] + \beta(\Delta - C) \end{aligned}$$

Rewriting:

$$\begin{aligned} q(p^\circ)[GMV(DisL,L) - GMV(DisL,H)] \\ - (1 - \beta)\hat{q}(p^\circ)[GMV(DisH,L) - GMV(DisH,H)] \\ = (1 - \beta)[GMV(DisH,H) - F] + \beta(\Delta - C) - GMV(DisL,H) \end{aligned}$$

When  $\beta$  is high, the second term on the *LHS* is small and the *LHS* is increasing in  $p$ , implying that managers with private information  $p_m \geq p^\circ$  prefer to disclose a low liability. When  $\beta$  is low, one can use Assumption 1 to see that the *LHS* is decreasing in  $p$  (the proof is similar to Claim 2 (ii)) and managers with private information  $p_m \geq p^\circ$  prefer to disclose a high liability. When the difference function  $\hat{q}(p) - q(p)$  is linear, the above inequality is monotone in  $p$ .

### **Endnotes**

- 1 The FASB (1985, 1990) provides for an extended adoption period "to give more time to employers and their advisors to assimilate the requirements and to obtain the information required" and "because of concerns that some employers would have to arrange to renegotiate or to obtain waivers of provisions of some legal contracts."
- 2 According to the FASB (1993), "Disclosure is not a substitute for recognition in financial statements." The FASB's explanation is that "even with improved disclosures, only the most sophisticated users ... could reasonably estimate the ... impact of recognizing all compensation costs."
- 3 SFAS 87 states that "Some respondents opposed disclosure of assumed future compensation levels because providing that information to employees could affect labor negotiation."
- 4 Recently, in SFAS 125 (1996), the FASB stated that the standard is effective for transactions occurring after December 31, 1996, and shall be applied prospectively. Earlier or retroactive application is *not* permitted.

- 5 These include the following: investors' uncertainty about the nature and existence of the manager's information, mutual benefits for managers (the agents) and shareholders (the principals) from nondisclosure, and hidden-action considerations. Dye (1986) added the possibility of externalities between (nonproprietary) information disclosed and (proprietary) information not disclosed, such that investors are able to infer the undisclosed information from the disclosed information.
- 6 This prespecified form reflects the limitation imposed by accounting standards with respect to accounting information.
- 7 Because the manager in our model possesses imperfect information, truthful reporting is not well defined; see Melumad et al (1994).
- 8 Verrecchia (1990) emphasizes the desire to endogenize these costs.
- 9 See Daley and Vigeland (1983) on the effects of debt covenants on firms in the case of *SFAS* 2; Ayres (1986) on adoption motives related to *SFAS* 52. Imhoff and Thomas (1988) on the economic consequences of changes in accounting for leases as per *SFAS* 13; Langer and Lev (1993) and Ali and Kumar (1994) on the characteristics of firms that elected early adoption of *SFAS* 87; and Amir and Livnat (1996) on the timing of adoption of *SFAS* 106.
- 10 The third period in our model represents all future periods, which are condensed for modeling purpose into one period. Also, our model, with minor terminology changes, is applicable to assets.
- 11 Our model refers to liabilities for which the exact future cash flows are not fully determined at present, such as pensions, postretirement benefits, environmental liabilities, or other contingent liabilities.
- 12 If the manager is maximizing *only* the firm's expected value at the end of the third period, financial reporting has no consequences, and the results reported in Observation 1 prevail. The assumption that managers are concerned with short-term valuation of their firm (in our case, the firm's value at the end of the second period) is quite common in finance literature, and could be motivated in a number of ways. First, a manager might have an equity position in the firm, a portion of which he needs to liquidate in the near future. Second, the firm might need to issue equity in the interim. Third, some of the manager's compensation could be tied to short-term market valuation of the firm. Alternatively, a manager might intend to leave the firm before the realization of the uncertain obligation; in that case, the manager's future employment and the compensation he commands would be a function of the market valuation of the firm he had managed before. A more general case exists where managers maximize a weighted average of their firm's value at the end of the first, the second, and the third periods. Our qualitative results hold in this case.
- 13 A more general case, beyond the scope of this paper, involves the possibility of a sustained disagreement between the manager and the auditors, such that the firm reports a low liability and the auditors provide a qualified opinion. See Melumad and Ziv (1997).
- 14 As shown in Melumad and Thoman (1990) for a more general model of strategic auditing, under certain assumptions strategic auditors are "effective" in equilibrium. For simplicity, we assume this form of audit effectiveness.
- 15 The auditors in our model do not use the manager's strategy as an input. This assumption is justified by the need to support auditors' opinions with "hard" evidence (e.g., working papers, statistical tests). Auditee's equilibrium strategy does not constitute this kind of evidence.
- 16 Formally,  $q(p_m) = \int f(p)g(p|p_m)dp$ , where  $g(p|p_m)$  is the posterior distribution of the probability of having a low liability calculated by the manager, and  $f(p)$  is the

probability that a firm with (an unobserved) probability of a low liability  $p$  passes the auditor's test, i.e.,  $f(p) = \text{prob}(p_a \geq \bar{P}|p)$ .

- 17 All of the above reasons for failure in renegotiations are independent of firm type. However, it seems reasonable that the firm's prenegotiation liability is another factor of the probability of successful renegotiations, i.e.,  $\beta = \beta(p)$ . We suppress this possibility in our analysis. Note that if the relation between  $\beta$  and  $p$  is not very strong and does not dominate the trade-offs we identify below, our qualitative results hold.
- 18 An alternative motivation for an extensive audit is that it is conducted over two periods. If only the final report is used by investors, there is no change in our results. Note, however, that although the final report summarizes all of the auditors' findings, it is not a sufficient statistic for an interim report. The history of reports is also informative. In particular, recognition of a low liability in both periods is different from recognition of a high liability in the first period and a low liability in the second. The reason is that the auditors' report is an aggregate measure of the audit information and does not reveal how far a firm was from a given cutoff. Although we can incorporate both first- and second-period reports and derive specific market values, this approach significantly complicates the derivation, without qualitatively changing the results.
- 19 This requirement is supported by SEC's (Securities and Exchange Commission) *Staff Accounting Bulletin* 74 (1987), which requires the disclosure of information regarding accounting standards not yet adopted and for which information is available.
- 20 Also, *SFAS* 5 distinguishes between recognized events and disclosed events according to their accuracy.
- 21 Verrecchia (1983) provided a similar argument with respect to the negotiations between Chrysler and United Auto Workers.
- 22 The functions  $q(p_m) = 0.25 + 0.5 p_m$  and  $\hat{q}(p_m) = p_m$  are consistent with Assumption 1.
- 23 For example, assume the prior probabilities are such that high and low liabilities are equally likely,  $\bar{P} = 0.5$ , and that the auditors use a sample with an accuracy of 0.75 in each draw. If the auditors use a one-draw sample representing a standard audit, then  $\text{Prob}(\text{Low}|p_a \geq 0.5) = 0.75$ ,  $\text{Prob}(\text{Low}|p_a < 0.5) = 0.25$ , and the difference is 0.5. If the auditors use a three-draw sample, representing an extensive audit, then  $\text{Prob}(\text{Low}|\hat{p}_a \geq 0.5) = 54/64$ ,  $\text{Prob}(\text{Low}|\hat{p}_a < 0.5) = 10/64$ , and the difference, 0.6875, exceeds that of the standard audit.
- 24 Continue the example from endnote 23, and define  $V \equiv (\text{Prob}(\text{Low}|p_m, \hat{p}_a \geq \bar{P}), \text{Prob}(\text{Low}|p_m, \hat{p}_a < \bar{P}), \text{Prob}(\text{Low}|p_m, p_a \geq \bar{P}), \text{Prob}(\text{Low}|p_m, p_a < \bar{P}))$ . Assume when managers' private information is incorporated, the probability of a low liability given that the manager elected an extensive (a standard) audit is 0.7 (0.3). Then,  $V = (0.9265, 0.3017, 0.5625, 0.125)$ , and the extensive audit provides "good" news. Alternatively, assume when managers' private information is incorporated, the probability of a low liability given the manager elected an extensive (a standard) audit is 0.3 (0.7). Then,  $V = (0.6983, 0.0735, 0.875, 0.4375)$ , and the extensive audit provides "bad" news. Both "good" and "bad" news examples are consistent with Assumption 2.
- 25 The cutoff  $p^{**}$  may equal 1, in which case no manager recognizes the liability, or it may equal 0, in which case all managers recognize the liability.
- 26 For example, Chambers and Penman (1984) showed that the market reaction to an earlier than expected earnings announcement is positive.
- 27 We thank our discussant, Gerald Feltham, for suggesting this insightful interpretation.



- 28 These costs are included because we believe they are descriptive.
- 29 For the general form of the difference  $\hat{q}(p_m) - q(p_m)$  the number of alternatives is even higher.
- 30 Obviously, we need to assume there is no change in the prevailing equilibrium when alternative policies are introduced.
- 31 This policy reflects the one employed by the FASB for the adoption of SFAS 125.
- 32 Although the adoption requirements of SFAS 123 are different from those of previous standards, we believe that this deviation is due to political pressure and does not represent a change in the FASB's adoption policy.
- 33 The expression  $g(p_m|p_m \in A)$  is the conditional probability density of  $p_m$ , given that it is included in the subset A.

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