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1. *Introduction*

This paper examines the performance of standard-setting arrangements between the Securities and Exchange Commission (*SEC*) and the Financial Accounting Standards Board (*FASB*). Congress, in the Securities Acts of 1933 and 1934, delegated authority over accounting standards to the *SEC* which, in turn, delegated the choice of accounting standards to a series of privately funded organizations, the current one being the *FASB*.[1] Since an integral part of the delegation arrangement

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[1] The *SEC* delegated its statutory authority over standard setting to the American Institute of Accountants' Committee on Accounting Procedure (*CAP*) from 1938 through 1959, to the American Institute of Certified Public Accountants' (*AICPA*'s) Accounting Principles Board (*APB*) from 1959 through 1973, and to the *FASB* from 1973 to the present. For a discussion of the relationships among the various bodies, see Horngren [1972; 1985].

is the *SEC*'s retention of veto power over the *FASB*'s choice of accounting standards, we call the arrangement veto-based delegation.[2]

We show that three factors influence the performance of the delegation arrangement: the level of disagreement between the *SEC* and the *FASB*, the *SEC*'s precommitment ability, and the default accounting standards from which the *SEC* can choose if it vetoes the *FASB* proposal. We find that, if there is sufficiently small preference divergence between the *FASB* and the *SEC* and if the *SEC* can credibly commit to an optimally chosen response when it vetoes the *FASB* recommendation, then veto-based delegation is an optimal arrangement. On the other hand, if there is sufficient preference divergence between the two organizations, if the *SEC* cannot commit to its response to the *FASB* proposal, or if the currently prevailing standard is the default, then veto-based delegation is dominated by other arrangements. Finally, we identify an alternative delegation arrangement that partially foregoes veto power and outperforms any veto-based arrangement.[3]

Our focus on the standard-setting process is motivated by the importance of accounting standards. These standards facilitate interpretation of and comparison among corporate financial disclosures and thereby reduce transaction costs and frictions in capital markets. The quality of these standards depends in part on how effectively the standard-setting process utilizes the expertise of the *FASB*. An indicator of the importance of this process is the long-standing debate among the *FASB* (and its predecessors), the *SEC*, the Business Roundtable, and Congress regarding how to structure the standard-setting process (see Burton and Sack [1990]).

In particular, Congress has criticized the use of veto-based delegation and has argued that the *SEC*'s veto-based delegation scheme gives away too much power to the *FASB*.[4] We seek to contribute to this discussion by conducting a model-based analysis of the performance of veto-based delegation in standard setting. Our analysis suggests that, contrary to the allegation that the *SEC* gave away too much power by delegating standard setting to the *FASB*, the *SEC* may not have gone far enough in

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[2] *FASB* [1977] states: "[T]he Commission has reserved, and over the past 40 years frequently has exercised, its power to anticipate or set aside the profession's standards for those the commission has found preferable." Miller and Redding [1986] state: "The SEC is able to influence the outcome of the process . . . through the SEC's formal and informal communication of its desires to the FASB. The ultimate threat of a 'veto' . . . is always there to help assure that the Board remains conscious of its own need to satisfy the SEC."

[3] As we discuss below, this alternative delegation arrangement may not be constitutionally acceptable.

[4] For example, the *Metcalf Staff Report* (U.S. Congress [1976]) states: "In effect, the SEC has delegated the establishment of accounting standards which are binding on all publicly-owned corporations to the special interest groups which control the FASB and has reserved a mere oversight role for itself."

delegating; fully retaining veto power could reduce the effectiveness of the standard-setting process.

The setting of this paper assumes five features of the *SEC–FASB* relationship. First, setting accounting standards requires costly expertise that the *SEC*, due to budgetary and salary restrictions, cannot afford. Thus the *SEC* delegates the hiring of expertise and the required fund-raising to the *FASB*. Second, the *FASB*'s expertise at determining the consequences of accounting standards gives it an informational advantage over the *SEC*. Third, there are varying levels of disagreement between the *SEC* and the *FASB* over the choice of any given accounting standard. Fourth, the *SEC*'s ability to utilize the *FASB*'s expertise is constrained because the *SEC* cannot use monetary transfers to influence the *FASB*. Finally, as discussed above, the *SEC* must retain veto power over the *FASB*'s choices.

In light of the institutional features exhibited in the *SEC–FASB* relationship, assessment of veto-based standard setting requires development of a highly institution-specific model. We build on existing models in which a decision maker (herein the *SEC*) seeks to elicit decision-relevant information from an informed agent (herein the *FASB*) but cannot use monetary transfers to influence the disclosure (see Crawford and Sobel [1982], Holmstrom [1984], and Melumad and Shibano [1991]). We extend those models by adding veto power for the decision maker and by operationalizing this veto power in two different ways depending on the specification of the default standard. Consistent with previous research (see Romer and Rosenthal [1978], Gilligan and Krehbiel [1987], and Matthews [1989]), we first study a veto arrangement in which the default accounting standard is the status quo. This arrangement seems to be descriptive of the *SEC–FASB* interaction over certain accounting issues.[5] Because the *SEC* is not legally required to specify the status quo as the default standard, we study a second type of veto arrangement, the strategic default arrangement, in which the default standards are endogenously chosen.[6]

As benchmarks for the maximum and minimum attainable standard-setting performance, we utilize a full-commitment benchmark (in

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[5] For instance, when the *SEC* vetoed the *FASB* proposal that only the successful efforts method of oil and gas exploration cost recognition be used, the default standard was the status quo, i.e., allowing firms to choose either the successful efforts or the full-cost method.

[6] For instance, when *SEC* Chairman Breeden said that the *SEC* will institute mark-to-market accounting for financial instruments if the *FASB*'s proposal does not specify that method, the *SEC* was specifying a default standard different from the status quo (Yang [1990]). When the *SEC* issued moratoria on adoptions of in-substance defeasance in 1982 and software capitalization in 1983, it set the default at prohibition of adoptions and asked the *FASB* to propose an acceptable alternative. Under the strategic default arrangement, the *SEC* can choose, but is not limited to choosing, the status quo standard as one of the defaults.

which the *SEC* can precommit fully to its response to the *FASB*'s proposal) and a no-commitment benchmark (in which the *SEC* cannot credibly commit to its response to the *FASB*'s proposal).[7] In this paper, we characterize the optimal strategic default arrangement and assess the performance of the strategic default and the status quo default arrangements relative to the two benchmarks.

Not surprisingly, the *SEC* can increase the performance of the standard-setting process both by establishing its ability to commit to default standards and by choosing those default standards strategically. While these two measures are necessary for improved standard setting, our analysis indicates that they would not be sufficient for standard setting to achieve the maximal benchmark performance if preference divergence is too large. Our main results are contained in the Summary Theorem: If the preferences of the *SEC* and the *FASB* diverge sufficiently, then no veto-based arrangement can achieve the maximal performance attained by the full-commitment benchmark. On the other hand, if preferences are sufficiently similar, then the strategic default arrangement, but not the status quo default arrangement, achieves maximal performance.

Our work continues the research initiated in Newman [1981*a*; 1981*b*; 1981*c*] on the relation between the *SEC* and *FASB*. Newman's cooperative game-theoretic perspective assumes that the *SEC*'s delegation of authority resulted in "influence" gains for the *FASB* and corresponding losses for the *SEC*. When the *SEC*'s and *FASB*'s preferences diverge, our results, derived using noncooperative game theory, are consistent with his view that a veto-based delegation arrangement decreases standard-setting performance from the *SEC*'s perspective. However, when preferences are similar, we find that a properly structured veto-based delegation arrangement is an optimal institutional arrangement.

Section 2 discusses the salient features of the institutional relationship between the *SEC* and *FASB*. In section 3 we describe our model of the two veto-based arrangements (differing in the specification of the default standard) and our full-commitment and no-commitment benchmarks. In section 4 we assess the performance of the two veto-based arrangements relative to each other, to the benchmark arrangements, and to an alternative delegation arrangement that partially foregoes veto power. In section 5 we summarize our results.

2. *The Institutional Setting*

While the stated objective of standard setting is to "provide information that is useful in making business and economic decisions," standard setters recognize that accounting standards should also pass the

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[7] The solution to the full-commitment setting and the equilibrium in the no-commitment setting are characterized in Melumad and Shibano [1991].

cost–benefit test (see *FASB* [1989]). Assessing the cost–benefit tradeoffs of any particular standard (for example, the effect of marking-to-market financial instruments) typically requires expertise, defined here as the ability to analyze the information generated in the public exposure process and to determine the effects of various accounting standards on preparers, users, and other interest groups.[8]

While the *SEC* could in principle hire the necessary expertise, salary caps imposed by the Civil Service Code may make reputable experts reluctant to work for the *SEC* (see Miller and Redding [1986]). For instance, the *SEC* chief accountant's salary was recently capped at about $90,000, while an *FASB* board member earns $290,000.[9]

As a private-sector body, the *FASB* faces less restrictive budgetary and salary constraints than the *SEC*.[10] Thus the *FASB*, through the expertise it can hire, is more capable than the *SEC* in assessing the consequences of alternative accounting standards and identifying conceptually optimal accounting standards.[11] By delegating standard setting to the *FASB*, the *SEC* obtains access to that expertise.[12]

Even though much of the data collected by the *FASB* is in the public record, the *FASB*'s expertise in processing that data makes its information superior to that of the *SEC*. This asymmetric information would not be problematic for the *SEC* if the *SEC* and the *FASB* had identical preferences over standards. The *FASB* would simply propose the standard most preferred by the *SEC*.

However, we note several differences between the two bodies that may create divergent preferences. First, the *SEC* is a government agency, while the *FASB* is a not-for-profit, private-sector body. The *SEC*

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[8] Demski and Sappington [1987] define expertise as the ability to select among information structures and privately observe the resulting signal. Our model is similar to theirs in that the result of the expert's analysis is assumed to be his private information; unlike them, we allow the expert's information to be communicated.

[9] But even at that high salary, attracting qualified *FASB* members has been difficult (see Cowan [1990]).

[10] Horngren [1972], a former member of the *APB*, argues that "[s]ince [the *SEC*] has minimal resources . . . , it delegates the duty to the [private sector]." Burton [1973], the *SEC*'s former chief accountant, points out that "[t]he *SEC* is not in a position to establish accounting principles, even though we have the statutory authority to do so. The [accounting profession] can devote more hours and financial resources to this area than can the Commission."

[11] We refer to an accounting standard as conceptually optimal if it meets the cost–benefit test specified in the Conceptual Framework (see *FASB* [1989]). We abstract from the complexity of specifying the conceptually optimal standard for any given accounting issue. Instead we treat it as a generic primitive and focus instead on assessing how well the standard setting process enables the *SEC* to utilize the *FASB*'s expertise.

[12] In a survey (Ronen and Schiff [1978]) of 1,329 corporations, *CPA*s, accounting academics, financial analysts, corporate lawyers, and financial reporters, respondents indicate that "expertise" is their most important criterion for choosing who should set accounting standards and that they consider the *FASB*'s expertise to be significantly superior to that of the *SEC*.

commissioners are political appointees nominated by the president and confirmed by Congress, while the *FASB* members are selected by the trustees of the Financial Accounting Foundation (*FAF*), a private-sector, not-for-profit corporation. Second, most of the *SEC*'s commissioners have legal backgrounds, while the *FASB*'s board members usually have extensive public and/or corporate accounting experience. Finally, accounting standards are the sole focus of the *FASB* but only a small subset of the *SEC*'s responsibilities.[13]

These three differences between the two bodies suggest they may be subject to different political pressures from their constituencies. In fact, some argue that one reason to delegate standard setting to the *FASB* is that the *FASB* is less likely to be affected by political pressures than the *SEC* (Breeden [1991]).[14] *FAF* policies are designed to protect the independence of *FASB* appointees from political pressures, while no such policies insulate *SEC* commissioners.[15] Thus, even if the *SEC* and *FASB* had equal access to the expertise necessary to determine conceptually optimal standards, the preferred standards of each body are likely to differ because of their different sensitivities to political pressures.

SEC–FASB disagreements over accounting standards may be expressed in private and therefore may be unobservable. However, some disagreements have been public: the *SEC* either vetoed the *FASB*'s proposal, suspended prevailing *FASB* regulations, or issued a superseding regulation.[16] Recently, the *SEC* has become more willing to criticize publicly the *FASB*'s positions; see, for instance, Linden [1990] and Schuetze [1992] for the *SEC*'s criticism of the *FASB*'s pension statement and its proposal on accounting for impaired loans. Whether the disagreement

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[13] The *SEC*'s responsibilities include regulation of securities markets, investment companies, financial advisors, and public utility holding companies, as well as enforcement of securities laws. A subset of the *SEC*'s activities involves the regulation of financial disclosures (both the nature of the information and the method of disclosure), a further subset of which is the setting of accounting standards.

[14] Respondents in the Ronen and Schiff [1978] survey thought that a significant difference between the two bodies is that the *FASB* is more objective than the *SEC*.

[15] The *FAF*'s *Bylaws* [1984] state that "The Trustees shall not, by or in connection with exercise of their power of approval over annual budgets or their periodic review of such operating and project plans, direct the *FASB* . . . to undertake or to omit to undertake any particular project or activity or otherwise affect the exercise by the *FASB* . . . of their authority, functions and powers in respect of standards of financial accounting and reporting" (*FAF* [1984, chapter A, article 1–A, section 1]).

[16] For example, *FASB–SEC* disagreements occurred over standards regarding: (1) oil and gas (the *SEC* rejected *SFAS No. 19* in 1977), (2) software costs (the *SEC* suspended *SFAS No. 2* in 1983, (3) defeasances (the *SEC* suspended *FASB* regulations in 1982), (4) leases (the *SEC* superseded *Opinion No. 31* in 1973), (5) investment tax credits (the *SEC* superseded *Opinion No. 2* in 1962), (6) changing price levels (the *SEC* superseded the *FASB Exposure Draft* in 1976), (7) goodwill and intangibles in bank acquisitions (*SEC Bulletin 42* superseded the *FASB*'s policy).

is public or private, it seems that at least on some accounting issues there is preference divergence at a level that varies over time and across issues.

Given the *FASB*'s superior access to relevant standard-setting information and the differing preferences of the two bodies, the *SEC* will try to induce the *FASB* to propose the standard most preferred by the *SEC*. The performance of the standard-setting process (from the *SEC*'s point of view) is measured by how close the chosen standard is to the *SEC*'s most preferred standard.

Two distinctive institutional features of the *SEC–FASB* relationship affect the ability of the *SEC* to influence the *FASB*'s proposal. First, the *SEC* cannot use monetary transfers and indirect subsidies to influence the *FASB* because it lacks the authority to do so. Second, for constitutional reasons, the *SEC* must maintain "veto power" over the *FASB*'s proposed standards.[17] Thus, the *SEC* cannot fully commit to its response to *FASB* proposals; this limitation, as will be shown, affects standard-setting performance in an important way.

3. *The Model*

3.1 THE BASIC MODEL

We model the *FASB* and the *SEC* as having preferences defined over the set of feasible accounting standards pertaining to a particular accounting issue.[18] For tractability, we represent a feasible standard as a single dimensional variable $\hat{x} \in \hat{X}$ where $\hat{X}$ is the real line.[19]

The *FASB*'s expertise-based informational advantage over the *SEC* is modeled as private information regarding the conceptually optimal accounting standard $\hat{t}$ (see n. 11). Prior beliefs about $\hat{t}$ are assumed to be uniform on $[\hat{t}_1, \hat{t}_2]$. Furthermore, we assume the *FASB* and the *SEC* each have a most preferred standard that is a weighted average of the

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[17] See Committe [1990] for a constitutional reason the *SEC* cannot fully delegate authority over the setting of accounting standards.

[18] While the *FASB* and the *SEC* are collections of individuals, we simplify the analysis by assuming that each institution is represented by a single individual. Explicitly modeling those individuals would result in a complex equilibrium analysis due to strategic interactions and collective action issues. Our model abstracts from this complexity and is silent on interactions within the institutions in order to emphasize interactions between the institutions.

[19] While we adopt this assumption for tractability, there are some accounting issues for which alternatives can be thought of as naturally ordered along a prominent single dimension. For instance, in the case of valuation of marketable securities, we can think of the spectrum of alternatives as going from "cost only" at one extreme to "lower-of-cost-or-market" on individual securities at the other extreme, with intermediate levels of market adjustment based on alternative portfolio aggregations (for example, short-term versus long-term portfolios). The more aggregated the portfolios, the less the adjustment to market.

conceptually optimal accounting standard, $\hat{t}$, and a (possible) influence effect of outside political pressure groups, p.[20]

In the real world, the feasible accounting standards for a given issue differ along multidimensional attributes over which preferences are defined (for example, informativeness, objectivity, implementation costs, timing of recognition). Since there are usually trade-offs among desirable attributes of a standard, an institution's preferences are generally not monotone along any single dimension.[21] To maintain in a single dimensional setting the inherent nonmonotonicity of multidimensional preferences, we adopt preference representations for both parties that are nonmonotone in the chosen standard.[22] For tractability, we assume that the preferences of the two parties have the following nonmonotone functional form:

$$\hat{U}^F(\hat{x},\hat{t}) = -(\hat{x} - \beta_F\hat{t} - (1-\beta_F)p)^2$$
$$\hat{U}^S(\hat{x},\hat{t}) = -(\hat{x} - \beta_S\hat{t} - (1-\beta_S)p)^2, \quad (1)$$

where β_F and β_S ($0 \leq \beta_S \leq \beta_F \leq 1$) represent the weights the *FASB* and the *SEC*, respectively, put on the conceptually optimal accounting standard. Intuitively, each body prefers that the chosen standard $\hat{x}$ be as close as possible to its weighted average of $\hat{t}$ and p. Note that, consistent with our discussion in section 2, there are no monetary transfers between the two bodies. We assume the *SEC* is more affected by political pressure, that is, $\beta_F > \beta_S$, because, as discussed in section 2, we find this assumption descriptive.[23]

To facilitate exposition, we establish the following transformation.

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[20] For simplicity, we think of all the political pressure groups affected by the *SEC*'s choice of standard as a single group (cf. n. 18). For a given issue, p can be thought of as the most preferred standard of that group. The differential effect of the pressure group on the *SEC* and the *FASB* is captured by different weights on p. A simple extension of this assumption would be to consider different pressure groups affecting the *SEC* and the *FASB*. Note that no restrictions are assumed on p.

[21] For example, we can think of x as representing a desirable but costly attribute of a particular standard, such as informativeness. For each institution, a higher x would be desirable if it were costless; however, higher values may increase processing and other costs differentially for different institutions. The one-dimensional representation of preferences over informativeness level would therefore be nonmonotone.

[22] Nonmonotonicity implies there is no standard that is preferred to any other standard irrespective of the information implicit in the *FASB* expertise. Specifically, had the *SEC*'s utility been monotone in the chosen standard, the *SEC*'s choice of standard would be independent of the *FASB*'s expertise. Similarly, had the *FASB*'s utility been monotone, the *FASB* would always make the same proposal. In either case, the *FASB*'s expertise would not be valuable because there would be no way to exploit it.

[23] Our model allows for the *FASB* to be completely unaffected by political pressure, i.e., $\beta_F = 1$. The analysis can be extended to entertain the case of $\beta_F < \beta_S$, that is, the *FASB* is more subject to political pressure than the *SEC*. Our analysis would be essentially unaffected, but the number of alternative cases would increase.

LEMMA 1. Without loss of generality, we can transform the variables and parameters of (1) such that the institutions' preferences are represented by:

$$U^F(x,t) = -(x - t)^2$$
$$U^S(x,t) = -(x - \alpha - \beta t)^2, \quad (2)$$

where $x \in X = R^1$, t is uniformly distributed on $[0, 1]$, α and β are functions of the original parameters, and $0 < \beta < 1$.[24] Note that t is the *FASB*'s most preferred standard and $\beta(\equiv \frac{\beta_S}{\beta_F})$ measures the relative sensitivities to political pressures.

Proof. See Appendix A for proofs.

Since X is assumed to be the real line, there exists an interior standard $x \in X$ that maximizes each institution's utility expressed in (2). This unique maximizer $x^i(t)$, $i \in \{F,S\}$, is referred to as the most preferred standard for institution i given the *FASB*'s most preferred standard t. The most preferred standard for the *SEC* is:

$$x^S(t) \equiv \underset{x}{\text{argmax}}\ U^S(x,t) = \alpha + \beta t. \quad (3)$$

The interaction between the *SEC* and the *FASB* starts with the latter proposing an accounting standard. The *FASB*'s proposal m is an element in the proposal set $M \subset X$ and its proposal rule $m(t)$ maps its most preferred standard into proposals.[25] The *SEC* then accepts the *FASB*'s proposal or chooses any other standard. The *SEC*'s standard-setting rule $x(m)$ maps proposals into standards.

The divergence of preferences represented in (2) captures a trade-off in the interaction between the *FASB*'s proposal rule $m(t)$ and the *SEC*'s choice of standard $x(m)$. The *SEC* will infer information about the *FASB*'s most preferred standard t from the *FASB*'s proposal m. The *FASB* is not likely to reveal its preferred standard fully in its proposal (i.e., $m(t) = t$), because the *SEC* would choose the standard $x = \alpha + \beta t$ that diverges from the *FASB*'s preferred standard t. On the other hand, the *FASB* is not likely to convey no information in its proposal, because then the *SEC* would choose the standard $x = \alpha + \frac{\beta}{2}$ (based on the expectation of the *FASB*'s most preferred standard, $E[t] = \frac{1}{2}$). That choice also diverges from the *FASB*'s preference (unless by coincidence $t = \frac{1}{2}$). Therefore, the *FASB* attempts to strategically influence the *SEC*'s

[24] Explicit expressions for x, t, α, and β can be found in the proof in Appendix A.

[25] The *FASB*'s most preferred standards are on the unit interval [0,1]. Without loss of generality in terms of performance, we assume that the *FASB*'s proposal rule is a uniform randomization over a subinterval (or a singleton) in the unit interval.

accounting standard choice by only partially revealing its preferred standard through its proposal.

Using the partial information conveyed by the *FASB*'s proposal, the *SEC* will choose a standard. Intuitively, the performance of the standard-setting process is measured by how close the chosen standard is expected to be from the *SEC*'s most preferred standard. Formally, the *SEC*'s expected payoff, given the *FASB* proposal rule $m(t)$, the *SEC* standard-setting rule $x(m)$, and the uniform prior distribution of t, is:

$$-\int_0^1 (x(m(t)) - \alpha - \beta t)^2 dt. \tag{4}$$

This performance measure will be affected by institutional constraints imposed on the standard-setting process. One important institutional constraint, discussed in section 2, is a limitation on the *SEC*'s ability to precommit to its response to *FASB* proposals.[26] We define the *SEC*'s commitment ability as its power to bind itself to respond to each proposal with a specific standard regardless of whether it is a sequentially rational response. Full commitment to an optimally chosen response rule allows the *SEC* to elicit more information from the *FASB* because the latter has assurances the *SEC* will not use the information too aggressively against the *FASB*. To the extent that the veto-based delegation arrangement precludes full commitment, the *FASB* knows the *SEC* will opportunistically use any information in the proposal and therefore the *FASB* is less inclined to share its expertise.

The exact form and the nature of the commitment implicit in observed veto-based arrangements is likely to be a function of issue-specific factors that change over time (for example, the nature of the political pressure on the *SEC*, the remaining duration of the commissioners' positions, and their own preferences and political aspirations).[27] Therefore, we study two polar cases of no and full commitment as well as the constrained commitment cases of strategic default and status quo default veto arrangements.

3.2 VETO-BASED DELEGATION ARRANGEMENTS

In a veto-based arrangement, the *SEC* commits to a standard-setting rule involving either accepting an *FASB* proposal or vetoing the proposal and choosing instead any standard from the prespecified default

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[26] We think of commitment as established via reputation in the unmodeled multi-period version of this game. Modeling reputation building in the *SEC–FASB* game is beyond the scope of this study. While commitment can also be established by enforceable contracts, this option is not descriptive of the *SEC–FASB* relationship.

[27] The *SEC*'s commitment power is difficult if not impossible to observe. The *SEC*'s formal or informal indications of what its future course of action would be provide some indirect evidence of commitment ability. These indications might take the form of general threats to veto a particular *FASB* proposal or specific threats to adopt a certain standard unless the *FASB* formulates a similar standard (as in the case of mark-to-market accounting; see Yang [1990]).

set X^d.[28] The *FASB* then proposes a standard and the *SEC* chooses either the *FASB*'s proposal or a standard from the default set. The constitutional requirement that the *SEC* retain veto power over the setting of accounting standards is captured by requiring a nonempty default set.[29]

Research on veto-based arrangements has focused on default sets consisting only of the status quo (see, for example, Romer and Rosenthal [1978], Gilligan and Krehbiel [1987], and Matthews [1989]). This restriction was appropriate because political and legal constraints in the settings studied limited the regulator's ability to specify other defaults. In the *SEC–FASB* institutional setting, however, there seems to be no constitutional constraint on the *SEC*'s choice of a default set (as long as it is nonempty). Indeed, for several prominent accounting issues, the *SEC* indicated that it would adopt an accounting standard *different from* the prevailing standard if the *FASB* did not produce an acceptable pronouncement. Examples include in-substance defeasances, software capitalization, and the recent mark-to-market accounting for financial institutions. We therefore analyze veto-based arrangements with two specifications of the default set. In the first, the status quo default arrangement, the default standard set contains only the status quo $x^{SQ} \in X$, that is, $X^d = \{x^{SQ}\}$. In the second arrangement, the strategic default arrangement, the *SEC* commits to either accepting the *FASB*'s proposal or vetoing it in favor of a standard from an optimally chosen default set denoted X^{SD}. For simplicity, we restrict the *SEC* to pure strategies,[30] and we observe the following.

OBSERVATION 1. Without loss of generality we can restrict attention to nonrandomized proposal strategies for the *FASB*.

We now formally present the optimization programs of these alternative veto-based arrangements.

Status Quo Default Arrangement (SQ)

The *SEC*'s optimization problem takes the following form:

$$P^{SQ}: \max_{x(\cdot)} -\int_0^1 (x(m(t)) - \alpha - \beta t)^2 \, dt$$

subject to:

$$(i)\ \forall m, x(m) = \underset{x \in m \cup x^{SQ}}{\operatorname{argmax}} \int_{T(m)} -(x - \alpha - \beta t)^2 dt, \text{ where } T(m) \equiv \{t \mid m(t) = m\}.$$

$$(ii)\ \forall t, m(t) \subset \underset{m'}{\operatorname{argmax}} -(x(m') - t)^2.$$

Constraint (i) is the sequential rationality requirement on the part of the *SEC* (i.e., given the proposal m and the information that the proposal

[28] The default set could be either a discrete or a continuous set of feasible standards.

[29] Interestingly, this requirement will prove to be nonbinding since Proposition 3 below shows that an empty default set is never an optimal choice.

[30] We can show that this is without loss of generality under (1) the mild behavioral assumption that if the *SEC* is indifferent between an *FASB* proposal and a standard in the default set, the *SEC* will accept the proposal, and (2) one of a number of alternative specifications on off-equilibrium beliefs.

reveals about the *FASB*'s most preferred standard, the *SEC* either accepts the proposal or chooses the status quo standard).[31] The second constraint is the proposal constraint (i.e., the *FASB* makes a proposal that is optimal given its most preferred standard and the standard-setting rule in (i)).

Strategic Default Arrangement (SD)

In the strategic default arrangement, the *SEC* solves:

$$P^{SD}: \max_{\{X^d, x(\cdot)\}} -\int_0^1 (x(m(t)) - \alpha - \beta t)^2 dt$$

subject to:

$$(i)\ \forall m, x(m) = \underset{x \in \{m\} \cup X^d}{\operatorname{argmax}} \int_{T(m)} -(x - \alpha - \beta t)^2 dt, \text{ where } T(m) \equiv \{t \mid m \in m(t)\}.$$

$$(ii)\ \forall t, m(t) \subset \underset{m'}{\operatorname{argmax}} -(x(m') - t)^2.$$

As in the status quo arrangement, constraint (i) is the *SEC*'s sequential rationality requirement and constraint (ii) is the *FASB*'s proposal constraint. The difference between P^{SQ} and P^{SD} is that under P^{SQ} the *SEC* is confined to the status quo when it declines the proposed standard. In the strategic default arrangement, the *SEC* strategically chooses the default standard set X^d to motivate the *FASB* to reveal more of its expertise-generated information.

3.3 PERFORMANCE BENCHMARKS

As a benchmark for the maximal performance attainable in this setting, we use the Revelation Principle which asserts that the performance of an optimal direct revelation mechanism involving full commitment constitutes an upper bound on the performance attainable from any other equilibrium.

Full-Commitment (FC) and No-Commitment (NC) Benchmarks

Specifically, the revelation mechanism is a game in which the *SEC* first commits to a standard-setting rule $x(m)$. The *FASB* makes a proposal $m(t)$ to the *SEC* which then adopts the accounting standard prescribed by the standard-setting rule $x(m(t))$. By the revelation principle, we can restrict attention to incentive-compatible proposal rules, i.e., where $m(t) = t$. In Melumad and Shibano [1991], we show that the full-commitment optimization problem amounts to:

$$P^{FC}: \max_{x(t)} -\int_0^1 (x(t) - \alpha - \beta t)^2\, dt$$

subject to:

$$-(x(t) - t)^2 \geq -(x(t') - t)^2,\ \forall t, t'$$

[31] Of course, the integrand should include the conditional probability of t given $T(m)$. But this measure is a constant since the original distribution is uniform.

where the constraint set represents the incentive-compatibility requirement.[32]

For a lower bound, we utilize the performance achieved in a no-commitment equilibrium. The no-commitment benchmark involves no constraints on the *SEC*'s response to the *FASB*'s proposal (the default set X^d equals the set of all possible standards X). Unlike the full-commitment benchmark, the strategic default arrangement, or the status quo default arrangement, the *SEC* cannot credibly promise to limit its response to the *FASB*'s proposal in any way.

The equilibrium in the no-commitment benchmark consists of a proposal rule $m(t)$, $t \in T$, for the *FASB* and a standard-setting rule $x(m)$ for the *SEC* such that:[33]

$$P^{NC}\text{: } (i)\, \forall m, x(m) = \underset{x \in X}{\operatorname{argmax}} \int_{T(m)} -(x - \alpha - \beta t)^2 dt, \text{ where } T(m) \equiv \{t \mid m(t) = m\}.$$

$$(ii)\, \forall t, m(t) \subset \underset{m}{\operatorname{argmax}} -(x(m) - t)^2.$$

Note that the two veto-based arrangements and the two benchmark arrangements differ in the *SEC*'s commitment ability. The veto-based arrangements we study involve "constrained commitment" in the sense that the *SEC*, in response to the *FASB*'s proposal, limits itself to a set, $X^d \cup \{m\}$ (i.e., the default set plus the *FASB*'s proposal). However, the *SEC* does not commit to a specific choice from the default standard set in response to a specific proposal. This means, in particular, that after hearing the proposal, the *SEC* can choose any sequentially rational standard from $X^d \cup \{m\}$.

The constrained commitment feature makes our veto-based delegation a two-stage interaction. The second stage of the interaction involves an equilibrium analysis of the *FASB*'s proposal strategy and the *SEC*'s standard-setting strategy given a prespecified default set. The constraints in P^{SQ} and P^{SD} specify the necessary equilibrium conditions.[34] The first stage involves a mechanism design problem in which

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[32] Since the *FASB* cannot avoid being affected by the *SEC*'s choice of standard, we do not impose an individual rationality (*IR*) constraint. Adding this constraint does not change our qualitative results. See discussion in Melumad and Shibano [1991].

[33] In the no-commitment setting, the restriction to pure strategies for the *SEC* is always without loss of generality. We focus attention on partition equilibria. The most preferred standards of the *FASB* are in the interval [0,1]. A *partition equilibrium of size N* (N finite) is defined as a partition $[v_0, v_1, \ldots, v_N]$ of the interval [0,1] ($0 = v_0 < v_1 < \ldots < v_N = 1$) where each subinterval generates the same proposal. We say that "a communication-dependent equilibrium exists" if there exists a partition equilibrium with two or more proposals. If a communication-dependent equilibrium yields utility for the *SEC* strictly higher than the communication-independent equilibrium, communication is said to be *valuable*. In Melumad and Shibano [1991], we characterize the communication-dependent equilibria that emerge in this setting.

[34] Formally, the set $T(m)$ over which integration takes place in constraint (i) is determined by constraint (ii).

the *SEC* chooses and commits to a set of default standards to be selected from in case of a veto in the second stage.

We now turn to assessing the performance of veto-based arrangements.

4. The Performance of Veto-Based Delegation

4.1 RELATIVE PERFORMANCE OF ALTERNATIVE VETO-BASED ARRANGEMENTS

It is immediately apparent that the strategic default arrangement weakly dominates both the status quo default and the no-commitment arrangements, since it allows more flexibility. In particular, the *SEC* can always set the default in the strategic default arrangement to be the status quo standard or the set [0,1] (as in the no-commitment arrangement). Formally:

OBSERVATION 2. The performance of the strategic default arrangement weakly dominates the performance of both the status quo arrangement and the no-commitment arrangement.

Once we characterize the optimal strategic default arrangement we will establish that the dominance is in general strict.

We now compare the performance of the status quo and the no-commitment arrangements. Intuitively one might expect the former to dominate the latter because the *SEC* has superior commitment ability in the status quo arrangement. As the following proposition establishes, this intuition need not hold.

PROPOSITION 1. The performance of the no-commitment arrangement may either dominate or be dominated by the performance of the status quo arrangement.

The intuition behind this result is that when the status quo is sufficiently unattractive to the *SEC*, the superior response flexibility of the no-commitment arrangement would dominate the commitment advantage of the status quo arrangement. The policy implication of this result is that when the *SEC* can choose only between an unconstrained response to *FASB* proposals and the currently prevailing standard, the *SEC* might be better off foregoing its commitment option altogether.

To assess the performance of the strategic default arrangement, we utilize previous results regarding the full-commitment benchmark. When the *SEC*'s standard-setting rule $x(t)$ changes as the *FASB*'s most preferred standard changes (i.e., there exist some t_1 and t_2, such that $t_1 \neq t_2$ and $x(t_1) \neq x(t_2)$), we say that $x(t)$ is expertise-dependent; otherwise, it is expertise-independent. We further say that expertise is valuable when no expertise-independent rule attains the same performance as any expertise-dependent rule.

The following characterization of the optimal full-commitment mechanism is an adaptation of proposition 3 from Melumad and Shibano [1991].

PROPOSITION MS. When the *FASB*'s expertise is valuable,[35] the optimal full-commitment mechanism has the following form:

$$x(t) = \begin{cases} x_1 \text{ for } t \in [0, x_1) \\ t \ \text{ for } t \in (x_1, x_2) \\ x_2 \text{ for } t \in (x_2, 1] \end{cases}$$

where $x_1 = \max\{0, \frac{2\alpha}{2-\beta}\}$ and $x_2 = \min\{\frac{2\alpha+\beta}{2-\beta}, 1\}$.

The intuition of this result is that when both parties' most preferred standards are relatively close, the *FASB* makes proposals that fully reveal its most preferred standard. The *SEC* thereby has full access to the *FASB*'s expertise in setting the standard. However, when their most preferred standards are relatively far apart, the *FASB* makes only partially revealing proposals and the *SEC*'s choice of standard only partially exploits the *FASB*'s superior information.

Figure 1 illustrates the optimal full-commitment mechanism for the specified parameters. The illustrated mapping $x(t)$ from the *FASB*'s most preferred standard to the *SEC*'s choice of standard is essentially the composite $x(m(t))$ of the *FASB*'s proposal rule $m(t)$ and the *SEC*'s standard-setting rule $x(m)$.

Intuitively, the *SEC* is choosing the incentive-compatible standard-setting rule that minimizes the shaded area between the standard-setting rule $x(t)$ and the *SEC*'s most preferred standard line $x^S(t) = \alpha + \beta t$. Since t is uniformly distributed on $[0,1]$, the area between the standard-setting rule and the *SEC*'s most preferred standard line roughly represents the performance loss due to the *SEC*'s need to delegate standard setting. In the upper and lower regions $t \in [0, x_1]$ and $t \in [x_2, 1]$, the *SEC* finds it too costly (i.e., the distance between $\alpha + \beta t$ and t is too large) to accept the *FASB*'s fully revealing proposal $m(t) = t$, so the *SEC* sets standards x_1 and x_2, respectively, that are independent of the *FASB*'s expertise. In contrast, in the intermediate region $t \in [x_1, x_2]$, losses associated with accepting $m(t) = t$ are relatively small (i.e., $\alpha + \beta t$ and t are relatively close to each other), thus the *SEC* is responsive to the *FASB*'s expertise in choosing $x(m(t)) = t$.

In the following proposition we identify conditions on preference divergence under which the *SEC* can achieve the performance of the full-commitment benchmark in the strategic default arrangement. We identify three salient dimensions to preference divergence. First, the ex ante preferred standard of an institution refers to its best standard choice before it has any information regarding the *FASB*'s most preferred standard. We say there is a small (large) ex ante disagreement between the two institutions when the ex ante preferred standard of

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[35] When $\beta \in (0,1]$, the *FASB*'s expertise is valuable if and only if $\alpha \in (-\frac{\beta}{2}, 1-\frac{\beta}{2})$.

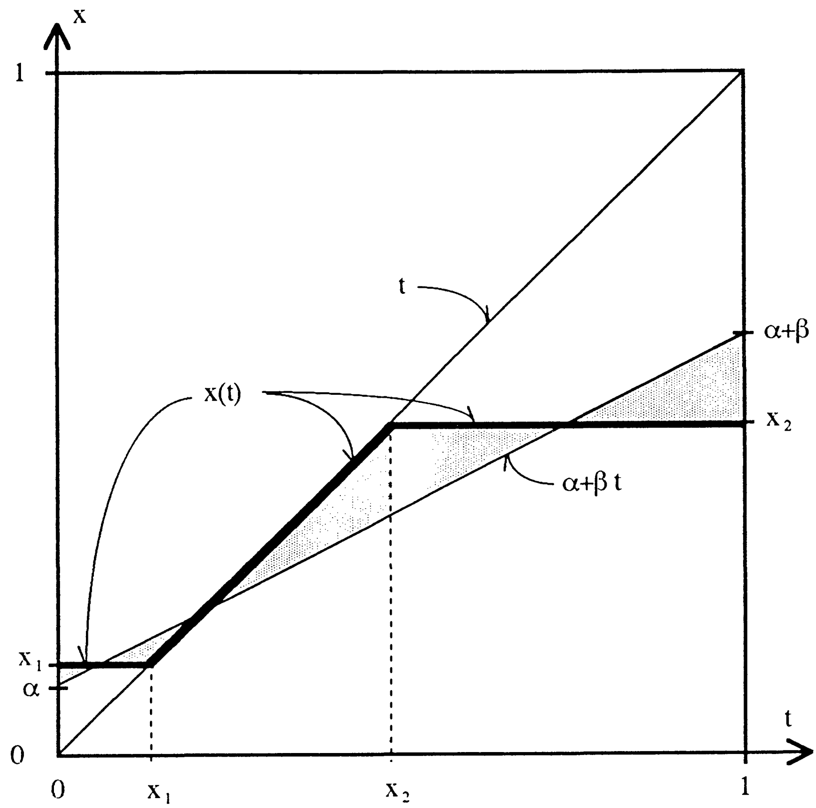

FIG. 1.—Example of an optimal full-commitment mechanism (bold line) (α = .1071, β = .5, x_1 = .1429, and x_2 = .4762).

the *SEC*, $E[x^S(t)] \equiv \alpha + \frac{\beta}{2}$, is close to (significantly different from) that of the *FASB*, $E[x^F(t)] \equiv \frac{1}{2}$.

To measure divergence ex post, we say the institutions' sensitivities to political pressures are similar (dissimilar) when the relative sensitivity ratio $\beta \equiv \frac{\beta_S}{\beta_F}$ is close to one (close to zero). Note that when political sensitivities are identical, i.e., $\beta_S = \beta_F$, then $\alpha = 0$ and $\beta = 1$.

The third measure of divergence pertains to the ordinal ranking of the institutions' most preferred standards. We say that there is preference reversal when in some cases the most preferred standard of the *SEC* is higher than that of the *FASB*, while in other cases the rankings reverse. Formally, there is a preference reversal if $\alpha \in (0,1-\beta)$. Intuitively, a preference reversal makes it much harder for the *SEC* and *FASB* to reach a compromise.

We say that the two institutions have similar preferences if their preferences exhibit small ex ante disagreement, or their sensitivities to political pressures are similar, or their preferences exhibit no reversal. We say that the institutions have divergent preferences if none of the above three conditions is met.

The full-commitment mechanism is said to be implementable (nonimplementable) via a strategic default arrangement if there exists (does not exist) an equilibrium in the strategic default arrangement with standard-setting rule $x(m)$ and proposal rule $m(t)$ such that the resulting composition mapping $x(m(t))$ from the *FASB*'s most preferred standard to the *SEC*'s choice of standard is equivalent to the full-commitment mechanism $x(t)$. In such a case, the strategic default arrangement attains the performance of the full-commitment benchmark.

PROPOSITION 2. If the *SEC*'s and *FASB*'s preferences are sufficiently similar, the full-commitment mechanism can be implemented via a strategic default arrangement. On the other hand, when the *SEC* and *FASB* have divergent preferences, the full-commitment mechanism cannot be implemented via a strategic default veto arrangement.

We use figure 2 to illustrate the relationship among the three measures of preference divergence, the implementability of full-commitment performance, and the standards x_1 and x_2 characterized in Proposition MS and illustrated in figure 1. Figure 2 shows a trapezoid representing the set of preference parameters (α, β) for which expertise is valuable in the full-commitment setting (see Proposition MS).

The implementable regions, where the full-commitment solution can be implemented by a strategic default arrangement, are regions (a)–(c).[36] For preferences in regions (a) and (b), preference reversal does not occur and there is low ex post preference divergence. The full-commitment mechanism is implemented via a strategic default arrangement involving default sets $X^d = \{x_1\}$ and $X^d = \{x_2\}$, respectively. For the preferences in region (c), there is low ex ante and ex post preference divergence. The full-commitment mechanism is implemented via a strategic default arrangement involving default set $X^d = \{x_1, x_2\}$.

In contrast, the nonimplementable regions represent preference parameters for which the full-commitment solution is not implementable. These preferences exhibit large ex ante disagreement over accounting standards, relatively dissimilar sensitivities to political pressures, and preference reversal. We illustrate an example of a nonimplementable case in figure 3. The optimal full-commitment standard-setting rule $x(t)$ is denoted by the bold line. The shaded area marks the region (called the defection region) in which the *SEC* would in equilibrium defect from any *FASB* proposal of the form $m(t) = t$ in favor of x_2 because, for

[36] Regions (a)–(c) correspond to the cases (a)–(c) of the proof of Proposition 2.

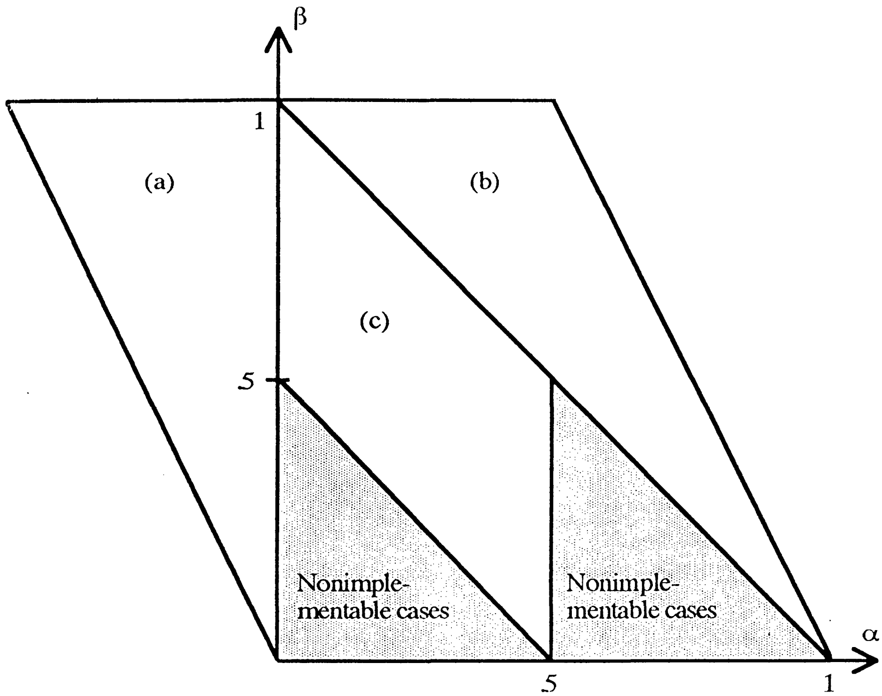

FIG. 2.—The implementable (nonshaded) regions and the nonimplementation (shaded) regions.

all t in that region, $U^S(x_2,t) > U^S(t,t)$. Thus, the full-commitment mechanism $x(t)$ cannot be implemented via a strategic default arrangement.

Proposition 2 establishes that the strategic default arrangement is weakly inferior to the full-commitment benchmark. To demonstrate that it is strictly inferior if preferences are divergent, we need to characterize the optimal strategic default arrangement in the nonimplementable cases and contrast its performance with that of the full-commitment benchmark.

PROPOSITION 3. An optimal strategic default arrangement must have either one or two default standards. In the nonimplementable cases, the performance of an optimal strategic default arrangement is strictly inferior to the full-commitment mechanism.

The characterization of the optimal strategic default arrangement is presented in Appendix A as part of the proof to the proposition. Here, using figure 3 as an illustration, we intuitively describe the trade-offs faced by the *SEC* in choosing the optimal strategic default arrangement for the nonimplementable cases.

In figure 3, recall that adopting x_1 and x_2 as the default standards would yield a defection region in which, if the *FASB* makes the fully revealing proposal $m(t)=t$, the *SEC* would prefer to defect to default stan-

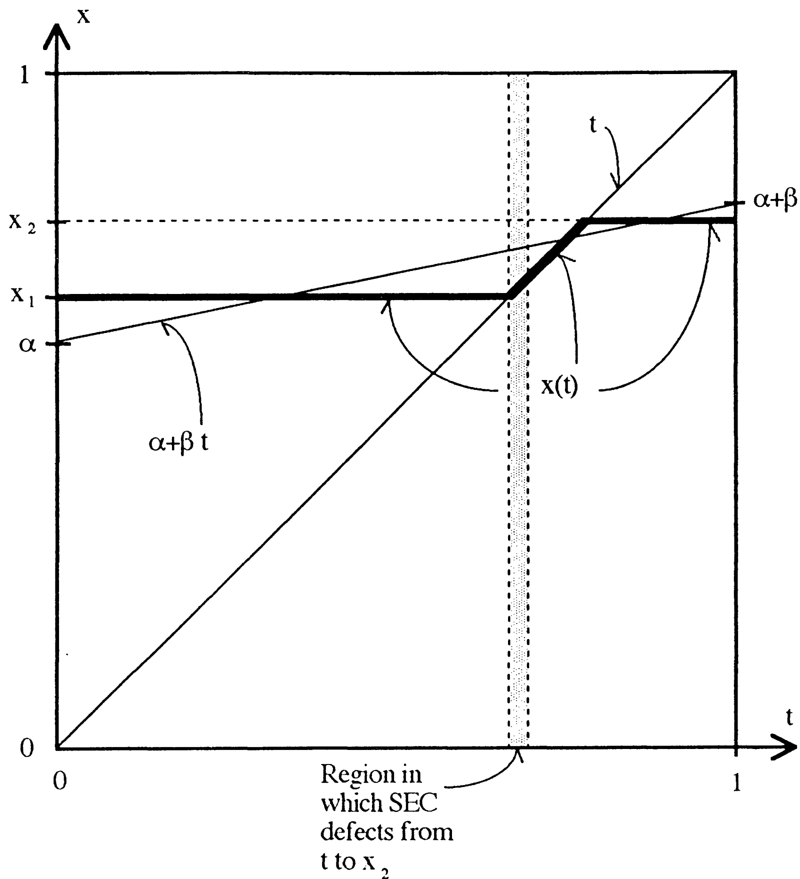

FIG. 3.—Example of a nonimplementable full-commitment mechanism (bold line) (α = .6, β = .2, x_1 = .6667, and x_2 = .7778).

dard x_2. If the *SEC* could commit to accepting the fully revealing proposal in the defection region, it would be able to replicate the full-commitment benchmark performance. But in the defection region, by definition, the sequential rationality condition for the *SEC* (condition (*i*) in Program P^{SD}) is not satisfied, so the *SEC* cannot credibly promise to accept it.

Intuitively, there are two measures that the *SEC* could use to resolve this impasse. First, the *SEC* could eliminate the defection region by replacing x_2 with a default standard d_2 sufficiently above x_2 such that the *FASB* can in equilibrium be fully revealing between d_2 and x_1. However, the higher d_2 is above x_2, the more performance moves below the full-commitment benchmark performance. Second, the *SEC* could retain x_2

and the *FASB* could adopt a less revealing proposal strategy in the defection region. If the *FASB* is sufficiently less revealing, then the *SEC* would not defect to default standard x_2. However, when the *FASB* is less revealing, the resulting performance again deviates below that of the benchmark.

It turns out that in the optimal strategic default arrangement derived in Proposition 3, the *SEC* chooses an optimal combination of these two measures. In the equilibrium the *SEC* chooses a default slightly higher than x_2 and the *FASB* makes partially revealing proposals in the defection region.

One complication is that we are facing a multiple-equilibria problem. We can support as an equilibrium any arbitrary number of proposals in the defection region.[37] While we cannot specify which of these equilibria may prevail, we can compare the standard-setting performance of these equilibria with that of the maximal and minimal benchmarks. Proposition 3 establishes that any such equilibrium performs strictly worse than the optimal full-commitment mechanism.

We now illustrate in figure 4 the optimal strategic default arrangement for the preference parameters used in the figure 3 example above, and we present the equilibrium involving a single proposal in the defection region. The strategic default levels are $d_1 = 0.6667$ (which is equal to x_1) and $d_2 = 0.7799$ (which is strictly higher than $x_2 = 0.7778$). In the defection region, the *FASB*, if its most preferred standard is between $t = x_1$ and $t = \frac{x_1 + B}{2}$, proposes $m(t) = x_1$ and, if its most preferred standard is between $t = \frac{x_1 + B}{2}$ and $t = B$, proposes $m(t) = B$. This proposal strategy reveals less of the information generated by the *FASB*'s expertise than the fully revealing proposal $m(t) = t$. Note that the *SEC* is responding to the implementability problem by both adjusting one of the defaults and accepting partially revealing proposals in the defection area.

The following summarizes the relative performance of veto-based arrangements as a function of the level of preference divergence established in Propositions 2 and 3 and Observation 2.

SUMMARY THEOREM. If the preferences of the *SEC* and the *FASB* are sufficiently divergent, then no veto-based arrangement can achieve the maximal performance achieved by the full-commitment benchmark. On the other hand, when the preferences are sufficiently similar, then the strategic default arrangement, but not the status quo default arrangement, replicates the full-commitment performance.

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[37] The important question of equilibrium refinement (selection) is beyond the scope of the analysis. Our qualitative welfare results hold regardless of which refinement is used.

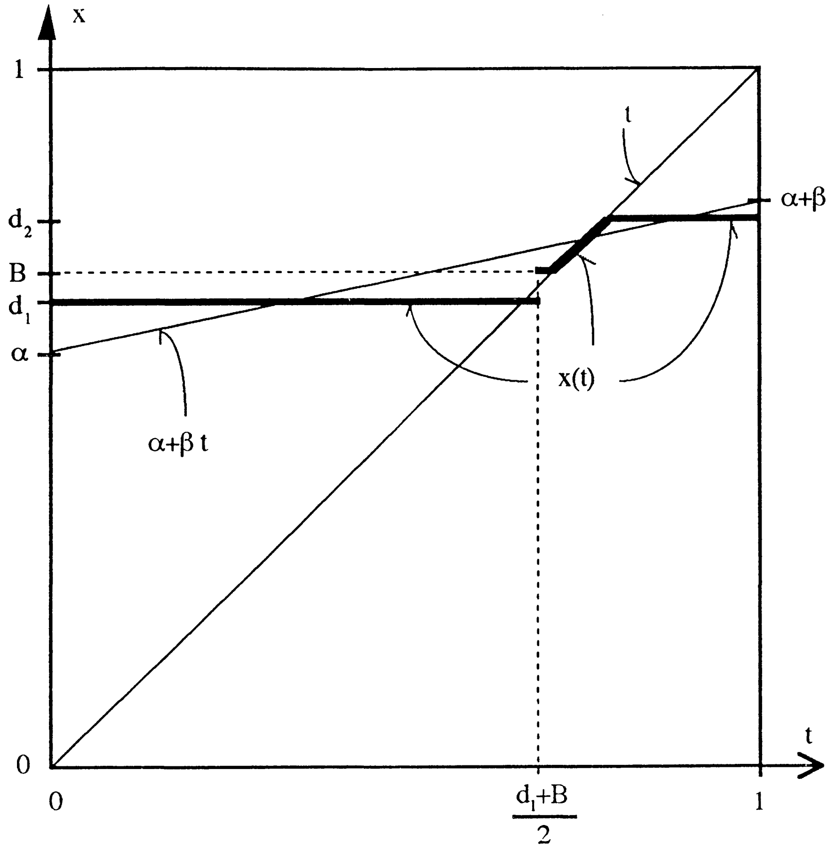

FIG. 4.—Example of an optimal strategic default arrangement (bold line) (α = .6, β = .2, d_1 = 0.6667, B = 0.7002, and d_2 = 0.7799).

4.2 THE CONSTRAINED DELEGATION MECHANISM

We conclude our analysis by examining an alternative form of delegation that is shown to be superior to veto-based delegation. We define a constrained delegation arrangement as one in which the *SEC* specifies a constrained standard set X^{CD} from which the *FASB* may choose. The *SEC* strategically chooses X^{CD} and foregoes the right to veto if the *FASB* chooses a standard from X^{CD}.[38] Formally:

[38] A more complete description of the game should include the specification of beliefs for *FASB* proposals outside the delegated set. However, as long as the *SEC* has commitment power, it can implement the constrained delegation mechanism by committing to an appropriate response (for example, the upper or lower bound of the set X^{CD}) to any out-of-equilibrium proposal.

Constrained Delegation

$$P^{CD}: \max_{X^{CD}} -\int_0^1 (x(t) - \alpha - \beta t)^2 \, dt$$

subject to:

$$\forall t, \ x(t) = \underset{x \in X^{CD}}{\operatorname{argmax}} -(x - t)^2.$$

Note that the *SEC* only partially foregoes the last mover position. While the *SEC* commits not to veto an *FASB* proposal from X^{CD}, it maintains the right to veto (out-of-equilibrium) proposals outside that set.

OBSERVATION 4. The *SEC* can achieve the maximal performance with constrained delegation. For the nonimplementable cases, constrained delegation strictly dominates any of the veto-based arrangements.

The optimal constrained delegation set X^{CD} is a connected interval. The bounds of the delegation set are x_1 and x_2 from the full-commitment mechanism (i.e., the *SEC* delegates the set $[\max\{0, \frac{2\alpha}{2-\beta}\}, \min\{\frac{2\alpha+\beta}{2-\beta}, 1\}]$). We note that the delegation region expands as β goes from zero to one. When the *SEC*'s and *FASB*'s most preferred standards are most similar, the *SEC* adopts the *FASB*'s most preferred standard. When the parties' most preferred standards are most different, the standard is independent of the *FASB*'s preferences.

Given the superiority of constrained delegation, why does the *SEC* not appear to use it? Some legal scholars would argue that since constrained delegation involves partial foregoing of the *SEC*'s veto power, this form of commitment is unconstitutional (see Committe [1990]). If this is the case, our analysis suggests that this constitutional constraint limits the *SEC*'s ability to use fully the *FASB*'s expertise. If this constraint is not illegal, then the *SEC* may want to consider redesigning the standard-setting process to approximate constrained delegation.

5. *Summary and Discussion*

We present a model that captures key features of the interaction between the *SEC* and *FASB* in the setting of accounting standards. We show that three factors influence the performance of the delegation arrangement: the preference divergence between the *SEC* and *FASB*, the *SEC*'s commitment ability, and the set of default accounting standards. We find that if the *FASB* and the *SEC* have sufficiently similar preferences and if the *SEC* can commit to an optimal default set, then veto-based delegation is an optimal arrangement. On the other hand, if preferences diverge sufficiently, if commitment ability is constrained, or if the status quo accounting standard is the default standard, then veto-based delegation is dominated by other arrangements.

Finally, we show that if the *SEC* is able to forego its veto power partially, then the maximal benchmark performance will always be achieved. This result suggests that the *SEC*, rather than giving up too much power by delegating standard setting to the *FASB*, may not have gone far enough in delegating. Fully retaining veto power reduces the effectiveness of the standard-setting process.

Useful extensions of this paper would be to check how robust our results are to relaxing some of our restrictive assumptions. These extensions include introducing additional individuals or institutions (both in the marketplace and within the *SEC* and *FASB*), modeling multiple time periods, and allowing for multidimensional attributes of accounting standards.

APPENDIX A
Proofs

For simplicity, the *FASB*'s most preferred standard is referred to as its type.

Proof for Lemma 1. We first rescale the utilities such that the rescaled type t is distributed uniformly on [0,1]. Let $\Delta\hat{t} = \hat{t}_2 - \hat{t}_1$. We multiply both utility functions by $\frac{1}{\sqrt{\Delta\hat{t}}}$. The ordinal ranking is unchanged. Since we do not make interpersonal comparisons, we can do this with no loss of generality. We therefore define:

$$\tilde{t} = \frac{\hat{t} - \hat{t}_1}{\Delta\hat{t}},\ \tilde{x} = \frac{\hat{x}}{\Delta\hat{t}},\ \tilde{p}_S = \frac{(1-\beta_S)p - \beta_S\hat{t}_1}{\Delta\hat{t}},\ \text{and}\ \tilde{p}_F = \frac{(1-\beta_F)p + \beta_F\hat{t}_1}{\Delta\hat{t}}.$$

$$\tilde{U}^S(\tilde{x},\tilde{t}) \equiv \frac{1}{\sqrt{\Delta\hat{t}}}\hat{U}^S(\hat{x},\hat{t}) = -(\tilde{x} - \beta_S\tilde{t} - \tilde{p}_S)^2$$

$$\tilde{U}^F(\tilde{x},\tilde{t}) \equiv \frac{1}{\sqrt{\Delta\hat{t}}}\hat{U}^F(\hat{x},\hat{t}) = -(\tilde{x} - \beta_F\tilde{t} - \tilde{p}_F)^2.$$

We now transform the above utility representation to the simplified form of the lemma. Let $t \equiv \beta_F\tilde{t} + \tilde{p}_F = \frac{(1-\beta_F)p + \beta_F\hat{t}}{\Delta\hat{t}}$, $x \equiv \tilde{x}$, $\alpha \equiv \tilde{p}_S - \frac{\beta_S}{\beta_F}\tilde{p}_F = (1 - \frac{\beta_S}{\beta_F})\frac{p}{\Delta\hat{t}}$, and $\beta \equiv \frac{\beta_S}{\beta_F}$. Note that there is a one-to-one mapping between ordered pairs $(p, \frac{\beta_S}{\beta_F})$ of original parameters and ordered pairs (α, β) of new parameters.

The *SEC*'s utility can then be rewritten as $U^S(x,t) = -(x - \alpha - \beta t)^2$ and the *FASB*'s utility is $U^F(x,t) = -(x - t)^2$.

Proof for Observation 1. If randomization over proposals by the *FASB* results in the same choice of standard for the different proposals, the claim is immediate. So we only need to establish the claim for the case when some of the proposals chosen by a given type result in different standards.

Since the *FASB*'s preferences are single peaked, the *FASB* can be indifferent between at most two proposals. Let $A(x_1)$ be the set of types that randomize between the proposal that results in x_1 and some other proposal. We shall show that $A(x_1)$ must have measure zero. Assume to the contrary that $A(x_1)$ has positive measure. Then, $A(x_1)$ must contain types t_1 and t_2 such that $t_1 < t_2$ and either $x_1 < t_1 < t_2$ or $t_1 < t_2 < x_1$. We focus, with no loss of generality, on $x_1 < t_1 < t_2$.

Let $m(x) \in \{m | x(m) = x\}$ be the proposal that results in standard x. To satisfy the indifference condition for each type that randomizes using x_1, it must be that:

(1) t_1 randomizes between $m(x_1)$ and $m(x_2)$ where $x_2 = 2t_1 - x_1$ and similarly

(2) t_2 randomizes between $m'(x_1)$ and $m(x_3)$ where $x_3 = 2t_2 - x_1$.

But observe that $x_2 < x_3$; therefore, t_2 would prefer to propose $m(x_2)$ instead of $m'(x_1)$. This contradicts the assumption that the measure of $A(x_1)$ is positive.

Thus, without loss of generality in terms of performance, we can confine attention to pure proposal strategies.

Proof of Proposition 1. We prove this proposition by example.

Example 1. The performance of the no-commitment arrangement strictly dominates that of the status quo default arrangement. Let $\alpha = \frac{3}{28}$ and $\beta = \frac{1}{2}$ and $x^{SQ} = -\frac{1}{10}$.

Consider first the equilibrium in the no-commitment arrangement. Based on Melumad and Shibano [1991], the two-proposal equilibrium in the no-commitment arrangement is characterized by:

$$x(m_1) = \frac{6}{42} \text{ where } m(t) = m_1 \text{ for } t \in [0, \frac{13}{42}]$$

$$x(m_2) = \frac{20}{42} \text{ where } m(t) = m_2 \text{ for } t \in [\frac{13}{42}, 1].$$

It can be verified that for any no-commitment equilibrium that involves more than two proposals, the *SEC* is strictly better off. It is therefore sufficient to show that the *SEC* has strictly higher utility in the two-proposal, no-commitment equilibrium than in the equilibrium of the status quo default arrangement.

In the status quo default arrangement, the equilibrium is the following:

$$x(m) = t \text{ where } m(t) = t \text{ for } t \in [0,1].$$

To verify that this is the equilibrium, note that the *FASB* of type t strictly prefers to propose $m(t) = t$ if it is accepted because t is the *FASB*'s most preferred standard. If the *FASB* proposes $m(t) = t$, then the *SEC* chooses between accepting the proposal or vetoing it in favor of the status quo, that is, $x \in \{t, -\frac{1}{10}\}$. For proposals $t < \frac{3}{14}$, the *SEC* prefers the *FASB* proposal to the status quo because $-\frac{1}{10} < t < \alpha+\beta t$. For proposals $t > \frac{3}{14}$, the *SEC* prefers the *FASB* proposal to the status quo because:

$$t - (\alpha+\beta t) < (\alpha+\beta t) - (-\frac{1}{10}).$$

The difference between the *SEC*'s utility in the two-proposal, no-commitment equilibrium and the equilibrium in the status quo default arrangement is:

$$-\int_0^{\frac{13}{42}} \left(\frac{3}{28} + \frac{t}{2} - \frac{6}{42}\right)^2 dt - \int_{\frac{13}{42}}^{1} \left(\frac{3}{28} + \frac{t}{2} - \frac{20}{42}\right)^2 dt + \int_0^1 \left(\frac{3}{28} + \frac{t}{2} - t\right)^2 dt = \frac{113}{3528} > 0.$$

That is, the two-proposal, no-commitment arrangement strictly outperforms the status quo default arrangement.

Example 2. The performance of the status quo default arrangement strictly dominates that of the no-commitment arrangement.

Consider $\alpha = -\frac{1}{4}$ and $\beta = \frac{3}{4}$ and $x^{SQ} = \frac{1}{5}$. We first show in the no-commitment arrangement that only a one-proposal equilibrium exists. Note that a one-proposal equilibrium always exists. Assume to the contrary that an equilibrium exists with N proposals where $N \geq 2$. According to lemma 1 in Melumad and Shibano [1991], the expression for the cutoff type t_1 between the lowest proposal and the next higher proposal is:

$$t_1 = \frac{(\frac{8}{3})\left(1 + (\frac{3}{8})\left(\frac{8}{3} - 2(\frac{1}{3})^N - (\frac{2}{3})3^N\right)\right)}{\left(3^N - (\frac{1}{3})^N\right)}, \text{ where } N \geq 2.$$

But this expression is negative for any $N \geq 2$. Therefore, the only possible equilibrium in the no-commitment arrangement involves only one proposal. The *SEC* will then choose the standard $x = \alpha + \beta E[t] = \frac{1}{8}$.

We now turn to the status quo default arrangement. Consider the following standard-setting rule.

$$x(m) = t, \text{ where } m(t) = t \text{ for } t \in [0, \frac{1}{5}]$$

$$x(m) = \frac{1}{5}, \text{ where } m(t) = t \text{ for } t \in [\frac{1}{5}, 1]. \qquad (A1)$$

We first show that while this rule may not be the resulting equilibrium, it establishes a lower bound on the equilibrium *SEC* performance in the status quo default arrangement. First observe that for the *FASB*'s $t \in [0, \frac{1}{5}]$, the *FASB* would always propose $m(t) = t$ since the *SEC* would never veto it in favor of $x^{SQ} = \frac{1}{5}$. For $t \in [\frac{1}{5}, 1]$, they might pool in different ways, but for the *SEC* to accept a pool proposal over $x^{SQ} = \frac{1}{5}$, the resulting welfare over the arbitrary pool must exceed the welfare under vetoing the proposal in favor of $x^{SQ} = \frac{1}{5}$. Thus, it is sufficient to show that the performance of (A1) dominates that of the no-commitment equilibrium.

The difference in terms of the *SEC*'s utility between (A1) and the one-proposal, no-commitment equilibrium is:

$$-\int_0^{\frac{1}{5}}\left(t+\frac{1}{4}-\frac{3}{4}t\right)^2 dt-\int_{\frac{1}{5}}^{1}\left(\frac{1}{5}+\frac{1}{4}-\frac{3}{4}t\right)^2 dt+\int_0^{1}\left(\frac{1}{8}+\frac{1}{4}-\frac{3}{4}t\right)^2 dt = \frac{77}{10000} > 0.$$

Therefore, the optimal status quo default arrangement must achieve strictly higher performance than the no-commitment arrangement.

Preliminaries to Proofs of Proposition 2 and 3. The following terminology is useful in the proofs.

Preliminary A. Let d_i, $d_j \in X^d$ be defaults specified in a strategic default arrangement. The following are equivalent:

(i) The *SEC* defects (does not defect) from d_i to d_j.

(ii) $x(m(t)) = d_j$ for $m(t) = d_i$, $(x(m(t)) = d_i$ for $m(t) = d_i)$.

(iii) $U^S(d_i,t) \equiv E[-(d_i - \alpha - \beta t)^2 | (m(t) = d_i] < (>) E[-(d_j - \alpha - \beta t)^2 | m(t) = d_i] \equiv U^S(d_j,t)$.

(iv) $|d_j - \alpha - \beta d_i| < (>) |\alpha + \beta d_i - d_i|$.

Note that the *SEC* defects from t to d_n, where $d_n < t$:

(i) when $d_n < t < \alpha + \beta t$ and

(ii) when $d_n < \alpha + \beta t < t$, if $t - \alpha + \beta t < \alpha + \beta t - d_n$.

Preliminary B. Let d_m and d_n be arbitrary proposals specified in a strategic default arrangement. The following are equivalent, for *FASB* type $t \in T(d_m)$:

(i) *FASB* type t defects (does not defect) from d_m to d_n.

(ii) $m(t) = d_n$ $(m(t) = d_m)$.

(iii) $U^F(d_m,t) \equiv -(d_m - t)^2 < (>) U^F(d_n,t) \equiv -(d_n - t)^2$.

Note that *FASB* type $t \in T(d_m)$ does not defect from d_m to d_n where $d_m < d_n$ if $t < d_m$.

Preliminary C. The performance of the optimal full-commitment mechanism is implementable in an arrangement if the strategies prescribed by the optimal full-commitment mechanism are sequentially rational for the *SEC*.

Proof of Proposition 2. For each of the parameter sets below, we specify a strategic default arrangement and check whether it implements (in the sense of preliminary C above) the performance of the optimal full-commitment mechanism.

Case (a). $\alpha \leq 0$ and $\alpha + \beta \leq 1$. From Proposition MS, the full-commitment mechanism involves x_1 and x_2 such that $x_1 \equiv \max\{\frac{2\alpha}{2-\beta}, 0\} = 0 < x_2 \equiv \frac{2\alpha+\beta}{2-\beta} < 1$. We then choose a strategic default arrangement with only one default $d_1 = x_2$. For the parameters of this case, $\forall t < x_2$, $t > \alpha + \beta t$; therefore, the *SEC* does not defect from t to x_2, $\forall\ t < x_2$. For $t > x_2$, it is clear that there is no proposal x that is preferred by the *FASB* to x_2 and that will not be rejected by the *SEC* in favor of x_2. Therefore, the specified strategic default arrangement implements the full-commitment performance.

Case (b). $\alpha \geq 0$ and $\alpha + \beta \geq 1$. From Proposition MS, the full-commitment mechanism involves x_1 and x_2 such that $x_1 \equiv \frac{2\alpha}{2-\beta} < x_2 \equiv \min\{\frac{2\alpha+\beta}{2-\beta}, 1\} = 1$. We choose a strategic default arrangement with only one default $d_1 = x_1$. Note that these conditions imply that $t < \alpha + \beta t$, $\forall t > x_1$; therefore, the *SEC* does not defect from t to x_1, $\forall t > x_1$. For $t < x_1$, it is clear that there is no proposal x that is preferred by the *FASB* to x_1 and that will not be rejected by the *SEC* in favor of x_1. Therefore, the specified strategic default arrangement implements the full-commitment performance.

Case (c). $0 \leq \alpha \leq \frac{1}{2}$ and $\frac{1}{2} \leq \alpha + \beta \leq 1$. From Proposition MS, the full-commitment mechanism involves x_1 and x_2 such that $0 < x_1 = \frac{2\alpha}{2-\beta} < x_2 = \frac{2\alpha+\beta}{2-\beta} < 1$. We choose a strategic default arrangement with defaults $d_1 = x_1$ and $d_2 = x_2$.

Note that for these parameters $x_2 - \alpha - \beta x_2 < \alpha + \beta x_2 - x_1$; therefore, the *SEC* does not defect from x_2 to x_1. A fortiori, the *SEC* does not defect from t to x_1, $\forall t \in [x_1, x_2]$.

Also note that for these parameters $x_2 - \alpha - \beta x_1 > \alpha + \beta x_1 - x_1$; therefore, the *SEC* does not defect from x_1 to x_2. A fortiori, the *SEC* does not defect from t to x_2, $\forall t \in [x_1, x_2]$. Therefore, the specified strategic default arrangement implements the full-commitment performance.

Proof of Proposition 3. The proof is based on two distinct results. The first, Proposition 3*A*, characterizes the optimal strategic default arrangement for the nonimplementable cases. The proof is very lengthy and we provide here only an abbreviated version (a detailed proof is available from the authors). The second result, Proposition 3*B*, compares the performance of the optimal strategic default arrangement (for the nonimplementable cases) with the performance of the full-commitment mechanism.

To simplify exposition, we introduce the following definitions:

An equilibrium involves full separation for all types in $[t_1, t_2]$ when the proposal rule is $m(t) = t$ for all types in $[t_1, t_2]$ and the standard-setting rule is $x(t) = m(t)$ for all types in $[t_1, t_2]$.

An equilibrium involves pooling for all types in $[0,t_1]$ ($[t_2,1]$) when the proposal rule is $m(t) = t_1$ ($m(t) = t_2$) for all types in $[0,t_1]$ ($[t_2,1]$) and the standard-setting rule is $x(t) = m(t)$ for all types in $[0,t_1]$ ($[t_2,1]$).

An equilibrium involves partitioning $\{v_0,v_1, \ldots , v_{n+1}\}$ where $v_0 < v_1 < \ldots < v_{n+1}$ over some interval $[v_0,v_{n+1}]$ of types if:

$$(i)\quad v_i \in \underset{m}{\operatorname{argmax}} -(x(m) - t)^2 \text{ for } t \in \left[\frac{v_{i-1}+v_i}{2}, \frac{v_i+v_{i+1}}{2}\right],$$

$$(ii)\quad v_i \in \underset{x\in\{v_i\}\cup X^d}{\operatorname{argmax}} \int_{T(v_i)} -(x - \alpha - \beta t)^2 dt, \text{ where } T(v_i) \equiv \{t\,|\,m(t) = v_i\},$$

where $i = 1, 2, \ldots, n$.

The first requirement says that any *FASB* type in $\left[\frac{v_{i-1}+v_i}{2}, \frac{v_i+v_{i+1}}{2}\right]$ prefers v_i over any other proposal. The second condition requires that the *SEC* prefers the *FASB*'s proposal over any default.

The set of parameters, $\alpha \geq \frac{1}{2}$ and $\alpha + \beta \leq 1$, are called the lower defection cases, and the set of parameters, $\alpha \geq 0$ and $\alpha + \beta \leq \frac{1}{2}$, are called the upper defection cases. The label lower (upper) defection case is chosen because, for the specified parameters, if the *SEC* were to adopt a strategic default arrangement based on the full-commitment mechanism (i.e., $n = 2$ with $d_1 = x_1$ and $d_2 = x_2$), the set of types for which the *SEC* would defect to either x_1 or x_2 to $x(t) = t$ is below (above) the type for which the *SEC* and the *FASB* preferences coincide.

Statement of Proposition 3A. In the lower defection cases (the upper defection cases are symmetric), an equilibrium in a strategic default arrangement is characterized by either one or two default standards and has the following structure:

Case 1. The default set is binary, $X^d = \{d_1,d_2\}$ where $d_1 = x_1$ and $d_2 \geq x_2$ (recall that $x_1 = \frac{2\alpha}{2-\beta}$ and $x_2 = \frac{2\alpha+\beta}{2-\beta}$ are the standards in the pooling regions of the full-commitment mechanism).

- In regions $[0,x_1]$ and $[d_2,1]$, the equilibrium involves pooling with $x(t) = m(t) = x_1$ and $x(t) = m(t) = d_2$, respectively.
- In the region $[x_1, B(d_2)]$, where $B(d_2) = \frac{2\alpha - d_2}{1-2\beta}$, the equilibrium involves partitioning with $v_0 = x_1$ and $v_{n+1} = B(d_2)$.
- In the region $[B(d_2),d_2]$, the equilibrium involves full separation.

Case 2a. The default set is a singleton, $X^d = \{d_1\}$ where $d_1 = x_1$, and $\alpha < \frac{(1-2\beta)(2-\beta)}{2(1+\beta)}$.

- In the region $[0,x_1]$, the equilibrium involves pooling with $x(t) = m(t) = x_1$.

- In the region $[x_1,1]$, the equilibrium involves full separation.

Case 2b. The default set is a singleton, $X^r = \{d_1\}$ where $d_1 \leq x_1$ and $\alpha > \frac{(1-2\beta)(2-\beta)}{2(1+\beta)}$.

- In the region $[0,d_1]$, the equilibrium involves pooling with $x(t) = m(t) = d_1$.
- In the region $[d_1,C(d_1)]$, where $C(d_1) = \min\{\frac{2\alpha - d_1}{1-2\beta},1\}$, the equilibrium involves full separation.
- In the region $[C(d_1),1]$, the equilibrium involves partitioning with $v_0 = C(d_1)$.

Sketch of Proof of Proposition 3A: Case 1. We sketch the proof through a series of lemmata. Proofs of these lemmata are available from the authors. We first note than in an optimal strategic default arrangement, there must be a finite number of defaults.

LEMMA 2. The default set is a finite set, $\{d_1, \ldots ,d_n\}$, where $d_1 < \ldots < d_n$.

Proof. Assume that the default set X^d is not finite. That is, there exists a default $d_i \in X^d$ that is an accumulation point, since $X^d \subset X$ and X by assumption is a closed set. Thus, $\forall \varepsilon > 0$, there exists another default $d_j \in X^d$, WLOG $d_j > d_i$, in the ε-neighborhood around d_i, where $d_j - d_i = \delta(\varepsilon) < \varepsilon$. Let $T(d_i) = \{t \mid d_i = x(m(t))\}$ denote the set of types that make a proposal that results in d_i. Then for each $t \in T(d_i)$ and for every $\varepsilon > 0$, $|t - d_i| < |t - d_i + \delta(\varepsilon)|$. But since d_i is an accumulation point, then this condition must hold for any arbitrarily small ε (and therefore δ(ε)); thus, $T(d_i)$ must consist only of d_i. WLOG assume that $d_i < \alpha + \beta d_i$. For sufficiently small ε, it is clear that $d_i < d_j < \alpha + \beta d_i$. Then in response to $m(d_i)$, the *SEC* prefers $x = d_j$ to $x = d_i$, contradicting the assumption that d_i is a default.

Next, we show that the lowest and highest defaults are associated with pooling behavior by the *FASB*. Lemma 3 below shows that an optimal strategic default arrangement $x^*(t)$ starts and ends with a pooling region. Furthermore, the highest and lowest pooling regions are above and below $t = \frac{\alpha}{1-\beta}$. Note that $t = \frac{\alpha}{1-\beta}$ is the *FASB* type that is in perfect agreement with the *SEC*. Graphically, $t = \frac{\alpha}{1-\beta}$ is the intersection between the *SEC*'s and the *FASB*'s most preferred standard line.

LEMMA 3. Assume $n \geq 2$. Then, an optimal strategic default arrangement $x^*(t)$ must involve some d_1 and d_n such that:

$$\begin{aligned} x^*(t) &= d_1 \text{ for } t \in [0, d_1], \text{ where } d_1 < \frac{\alpha}{1-\beta} \\ &= d_n \text{ for } t \in [d_n, 1], \text{ where } d_n > \frac{\alpha}{1-\beta}. \end{aligned}$$

Sketch of Proof. The lengthy proof is available from the authors. The following is a sketch of the proof. We prove the case for d_n; the proof for d_1 is similar. We suppose to the contrary that Lemma 3 does not hold. There are three counter-cases to consider:

Case (i): $x^*(t) = d_n$ for $t \in [d_n,1]$, where $d_n < \frac{\alpha}{1-\beta}$.

Case (ii): $x^*(t) = t$ for $t \in [d_n,1]$, where $d_n < \frac{\alpha}{1-\beta}$.

Case (iii): $x^*(t) = t$ for $t \in [d_n,1]$, where $d_n > \frac{\alpha}{1-\beta}$.

We show that, compared with each counter-case, the optimal strategic default arrangement $x^*(t)$ specified in Lemma 3 is preferred by the *SEC* and is implementable. Thus, neither of the counter-cases characterizes the optimal strategic default arrangement.

We now turn our attention to the case in which the defection region occurs for low types (called the lower defection case); the proof for the upper defection case is symmetric. We start with some definitions. $B_u[d_1,d_n]$ ($B_l[d_1,d_n]$) is defined as the upper (lower) bound of the defection region generated by defections from t to d_n (d_1). Formally:

$$B_u[d_1,d_n] = \inf_{t \in [d_1,d_n]} \{t \mid d_n - \alpha - \beta t \geq \alpha + \beta t - t\} \text{ and}$$
$$B_l[d_1,d_n] = \sup_{t \in [d_1,d_n]} \{t \mid t - \alpha - \beta t \leq \alpha + \beta t - d_1\}.$$

Three cases can arise.

Case (a): $B_u[d_1,d_n] > d_1$ and $B_l[d_1,d_n] = d_n$ (lower defection case).
Case (b): $B_u[d_1,d_n] = d_1$ and $B_l[d_1,d_n] = d_n$.
Case (c): $B_u[d_1,d_n] = d_1$ and $B_l[d_1,d_n] < d_n$ (upper defection case).

In case (b), it is immediately verified that the optimal mechanism is such that $n = 2$. The remainder of the proof is concerned with case (a); the proof of case (c) is similar. Lemma 4 shows that in the lower defection case there is perfect separation for high types between the lowest and highest defaults.

LEMMA 4. The optimal strategic default arrangement sets $x^*(t) = t$ for $t \in [B_u[d_1,d_n], d_n]$.

Sketch of Proof. The lengthy proof is available from the authors. Let k be such that $d_{k-1} < B_u[d_1,d_n] \leq d_k$. The proof consists of three claims which we state without proof. Intuitively, claims 1 and 2 below show that there are no defaults between d_k and d_n and claim 3 establishes that $d_k = B_u[d_1,d_n]$.

Claim 1: In a full-commitment setting, the *SEC* prefers $x^*(t) = t$ for $t \in [d_k,d_n]$.
Claim 2: $x^*(t) = t$ for $t \in [d_k,d_n]$ is implementable.
Claim 3: The optimal default $d_k = B_u[d_1,d_n]$.

By the definition of $B_u[d_1,d_n]$, we cannot have perfect separation for types $t \in [d_1,B_u[d_1,d_n]]$. Therefore, it must be the case that each *SEC* standard is a response to an interval of *FASB* types. These "pools" could result from types pooling at defaults or from self-generated pools in which types choose a proposal that is not a default and that the *SEC* finds sequentially rational to accept.

LEMMA 5. Without loss of generality, we can restrict attention to strategic default arrangements involving a partition (but no defaults) in the region $t \in (d_1, B_u[d_1,d_n]]$.

Sketch of Proof. The argument supporting Lemma 5 is that both a self-generated pool and a default (that is chosen in equilibrium) are characterized by the same proposal constraint for the *FASB*. They differ, however, in that the latter requires a sequential rationality constraint for the *SEC* while the former does not. Therefore, any equilibrium in the case where there is a default d_j in the region $t \in (d_1,B_u[d_1,d_n]]$ is also an equilibrium in the case where d_j is omitted (in that case the equilibrium would involve a self-generated pool $v_i = d_j$). The converse, however, is not true; an equilibrium involving no default in the region $t \in (d_1, B_u[d_1,d_n]]$ may not be an equilibrium if we define any of the self-generated pools as a default.

Lemma 5 implies that without loss of generality we can restrict attention to strategic default arrangements involving two defaults only. We conclude the proof of Proposition 3*A*: Case 1 by establishing that the upper pooling region x_2 of the full-commitment solution is a bound for the highest default d_n (Lemma 6) and that the value of the lowest default d_1 is exactly the lower pooling region x_1 of the full-commitment (Lemma 7).

LEMMA 6. $d_n \geq x_2 = \dfrac{2\alpha + \beta}{2 - \beta}$.

Proof. Suppose that $d_n < x_2$. Recall that we can restrict attention to the strategic default arrangement that uses default set $\{d_1, \ldots, B_u, d_n\}$. Consider an alternative strategic default arrangement with default set $\{d_1, \ldots, B_u, d_n + \varepsilon\}$. It is easy to verify that the *FASB*'s proposals and the *SEC*'s standard-setting rule are unaffected on $[d_1,d_n]$. Furthermore, the *FASB* will not defect from t on $[d_n,d_n + \varepsilon]$ if the *SEC* does not defect. For a small enough choice of $\varepsilon > 0$, the *SEC* does not defect from t on $[d_n,d_n + \varepsilon]$ because the definition of B_u and the fact that $d_n > d_{n-1} \equiv B_u$ imply that $d_n-(\alpha+\beta d_n)<(\alpha+\beta d_n) - B_u$, thus $d_n + \varepsilon - (a + \beta(d_n + \varepsilon)) < (\alpha + \beta(d_n + \varepsilon)) - B_u$.

The first-order condition for the optimal d_n is $(1 - d_n^*)(2 - \beta)(x_2 - d_n^*) = 0$. Since we assume that $d_n^* < x_2$, the derivative is positive. Thus, the *SEC* is better off with the proposed alternative strategic default arrangement where $d_n^* \geq x_2$.

LEMMA 7. $d_1 = x_1$.

Proof. We demonstrate this lemma through the claims 7.1–7.4.

Claim 7.1. There exists at most one default below x_1.

Proof. Assume there is more than one default below x_1. That is, assume that in equilibrium there exist d_1 and d_2 such that $d_1 < d_2 < x_1$. Then for $t \in [0, \frac{d_1 + d_2}{2}]$, the *SEC* must choose d_1. That is, $d_2 - (\alpha + \beta \frac{d_1 + d_2}{4})>$

$(\alpha + \beta \frac{d_1 + d_2}{4}) - d_1$. Rearranging yields the equivalent expression $\frac{d_1 + d_2}{2} > \frac{2\alpha}{2 - \beta} \equiv x_1$, contradicting the assumption that $d_1 < d_2 < x_1$.

Claim 7.2. If $d_1 \le x_1$, then there does not exist $v < d_1$ such that the *SEC* prefers d_1 to v for any arbitrary $[0,b]$ where $b \in [v, \frac{v + d_1}{2}]$.

Proof. We need to show that:

$$-\int_0^b (v - \alpha - \beta t)^2 dt + \int_0^b (d_1 - \alpha - \beta t)^2 dt < 0, \text{ or } b(\beta b + 2\alpha - v - d_1)(v - d_1) < 0.$$

Since by definition, $v < d_1$, we need to show that $\beta b + 2\alpha > v + d_1$. Since $v < d_1 < x_1$, it is sufficient to show that $\beta b + 2\alpha > 2x_1$; this holds because $b < x_1$.

Claim 7.3. $d_1 \le x_1$.

Proof. Suppose $d_1 > x_1$; then for $v_i = 2x_1 - d_1$ (note that $v_i < x_1$) all types in $[0, \frac{v_i + d_1}{2}]$ would prefer the standard v_i to d_1 while the *SEC* would not defect to any of the defaults (in particular, to d_1). (Note that the particular $v_i = 2x_1 - d_1$ discussed is the one that is most preferred ex ante by low types. The same argument would go through for any $v_i < x_1$.) By claim 7.2, if the *SEC* set $d_1 = x_1$, then there is no pool $v_i < x_1$ such that the *SEC* would accept. It is easy to check that the equilibrium resulting from setting $d_1 > x_1$ would make the *SEC* worse off relative to choosing $d_1 = x_1$.

Claim 7.4. $d_1 \ge x_1 = \frac{2\alpha}{2 - \beta}$.

Proof. We first note that increasing d_1 ($d_1 < x_1$) by an $\varepsilon > 0$ will not lead the *SEC* to veto any of the previously accepted proposals in favor of the new (increased) $d_1 + \varepsilon$. It is enough to consider the lowest possible v_1. The lowest bounds on v_1 and on the average type choosing v_1 are both equal to d_1. That is, we need to show that $\alpha + \beta d_1 > d_1$ when $d_1 < x_1$. This inequality is immediately verified.

The effect of increasing d_1 on the *SEC*'s utility over the interval $t \in [0, v_1]$ is given by:

$$\frac{\partial}{\partial d_1}\left(- \int_0^{\frac{d_1 + v_1}{2}} (d_1 - \alpha - \beta t)^2 dt - \int_{\frac{d_1 + v_1}{2}}^{v_1} (v_1 - \alpha - \beta t)^2 dt \right) =$$

$$\frac{8\alpha d_1 - (6 - 3\beta)\, d_1^2 - (4 - 2\beta)\, d_1 v_1 + (2 - \beta)\, v_1^2}{4}.$$

To sign this derivative, note first that it is increasing in v_1. When we replace v_1 in the derivative by its lower bound d_1, the derivative is $d_1(2 - a)(x_1 - d_1)$, that is positive for all $d_1 < x_1$. Since the derivative is positive at the minimizing value of v_1, it is positive for all v_1 and all d_1 where $d_1 < v_1$.

It is easy to verify that the *FASB*'s proposals and the *SEC*'s standard-setting rule are unaffected on $[v_1,1]$. Furthermore, on the interval $[0, \frac{d_1 + \varepsilon + v_1}{2}]$, the *FASB* will pool on $d_1 + \varepsilon$ and the *SEC* will accept this proposal.

Proposition 3A: Case 2. There are two possible subcases to consider:

$$\begin{aligned} \text{Subcase 1: } x_1(t) &= d_1 \text{ for } t \in [0,d_1) \\ &= t \text{ for } t \in [d_1, 1], \text{ and} \\ \text{Subcase 2: } x_2(t) &= t \text{ for } t \in [0,d_1) \\ &= d_1 \text{ for } t \in [d_1, 1]. \end{aligned}$$

The optimal level of d_1 in the first subcase is determined by the following optimization problem:

$$\max_{d_1} - \int_0^{d_1} (d_1 - \alpha - \beta t)^2 dt - \int_{d_1}^{1} (t - \alpha - \beta t)^2 dt$$

subject to $d_1 \in [0,1]$.

The first- and second-order conditions with respect to d_1, i.e., $(1 - d^*_1)((2 - \beta)d^*_1 - 2\alpha) = 0$ and $-2((2 - \beta)d^*_1 - \alpha) < 0$ respectively, imply that, for our parameters, $d_1^* = \frac{2\alpha}{2 - \beta} \equiv x_1$.

Similarly, for the second subcase, we can show that $d_1^* = \frac{2\alpha + \beta}{2 - \beta} \equiv x_2$.

It can easily be verified that for the above parameters, $x_1(t)$ dominates $x_2(t)$; i.e.:

$$- \int_0^{x_1} (x_1 - \alpha - \beta t)^2 dt - \int_{x_1}^{1} (t - \alpha - \beta t)^2 dt > - \int_0^{x_2} (t - \alpha - \beta t)^2 dt - \int_{x_2}^{1} (x_2 - \alpha - \beta t)^2 dt.$$

We now investigate whether $x_1(t)$ is implementable as a veto arrangement. Consider first $\alpha < \frac{(1 - 2\beta)(2 - \beta)}{2(1 + \beta)}$. In that case, suppose the *SEC* adopts $d_1 = x_1$ and that the *SEC*'s standard-setting rule is:

$$\begin{aligned} x(m(t)) &= x_1 \text{ for } t \in [0,x_1) \\ &= t \text{ for } t \in [x_1,1]. \end{aligned}$$

Then, the *FASB*'s optimal reporting rule is:

$$\begin{aligned} m(t) &= x_1 \text{ for } t \in [0,x_1) \\ &= t \text{ for } t \in [x_1,1]. \end{aligned}$$

Given the above reporting rule the *SEC*'s optimal standard-setting rule is indeed:

$$\begin{aligned} x(m(t)) &= x_1 \text{ for } t \in [0,x_1) \\ &= t \quad \text{for } t \in [x_1,1], \end{aligned}$$

because for the above parameters the *SEC* prefers t to x_1.

Consider now the case when $\alpha > \frac{(1-2\beta)\,(2-\beta)}{2\,(1+\beta)}$. In this case, in the region $[C(d_1),1]$, where $C(d_1) = \min\{\frac{2\alpha - r_1}{1-2\beta},1\}$, there cannot be full separation since the *SEC* will defect from $m(t) = t$ to d_1. The equilibrium must involve partitioning by arguments similar to those in Lemma 5 above.

We now evaluate the performance of the strategic default arrangement relative to the benchmark case of full commitment. We have already established that for the parameters of Proposition 2, a strategic default arrangement entails no loss of performance. We are left with an open question in the nonimplementable case: Is there a strategic default arrangement that differs from the full-commitment standard-setting rule and yet replicates the latter's performance?

STATEMENT OF PROPOSITION 3B. For all nonimplementable cases, any strategic default arrangement achieves strictly lower performance than that of the benchmark full commitment arrangement.

Proof. Consider cases 1 and 2 of Proposition 3*A*.

Case 1. Strict dominance of the full-commitment mechanism is shown in two subcases:

Case 1.1. Assume $d_2 = x_2$. Define $p(d_2)$ as the lowest possible level of the first self-generated pool above x_1 when the second default is d_2. Let y be the right endpoint of the types that propose $p(d_2)$. For the *SEC* not to defect from p to x_2, the lowest level of $p(d_2)$ given y must be such that $p(2-\beta) - 2\beta y = \beta x_1 - 2d_2 + 4\alpha$. Since by construction $y > p$ and $d_2 = x_2$, $p(x_2) > \frac{4\alpha - 2\beta - 2\alpha\beta}{(2-3\beta)\,(2-\beta)}$ We can show that $p(x_2) > \frac{4\alpha - 2\beta - 2\alpha\beta}{(2-3\beta)\,(2-\beta)} > x_1$ because $\alpha > \frac{1}{2}$.

Consider the following mechanism $x(t)$ that does better than the optimal strategic default arrangement $x^*(t)$.

$$\begin{aligned} x(t) &= x_1 &&\text{for } t \in [0,\tfrac{x_1 + p(x_2)}{2}) \\ &= p(x_2) &&\text{for } t \in [\tfrac{x_1 + p(x_2)}{2},p(x_2)) \\ &= t &&\text{for } t \in [p(x_2),d_2) \\ &= d_2 &&\text{for } t \in [d_2,1]. \end{aligned}$$

The performance of this mechanism is strictly better than $x^*(t)$ (but is not implementable as a strategic default arrangement). We now show that the performance of $x(t)$ is strictly inferior to that of the full-commitment mechanism described in Proposition MS. It is sufficient to show that:

$$-\int_{x_1}^{\frac{x_1+p(x_2)}{2}} (x_1-\alpha-\beta t)^2 dt - \int_{\frac{x_1+p(x_2)}{2}}^{p(x_2)} (p(x_2)-\alpha-\beta t)^2 dt + \int_{x_1}^{p(x_2)} (t-\alpha-\beta t)^2 dt < 0.$$

The *LHS* is evaluated to be $LHS = \dfrac{(2\alpha - 2p + \beta p)^3}{12(2-\beta)^2}$. This expression is negative because $p > x_1 = \dfrac{2\alpha}{2-\beta}$.

Case 1.2. If $d_2 > x_2$, then consider the following mechanism $x(t)$ that does better than the optimal strategic default arrangement $x^*(t)$.

$$\begin{aligned} x(t) &= x_1 \text{ for } t \in [0, x_1) \\ &= t \text{ for } t \in [x_1, d_2) \\ &= d_2 \text{ for } t \in [d_2, 1]. \end{aligned}$$

The performance of this mechanism is strictly better than $x^*(t)$ (but is not implementable as a strategic default arrangement). We now show that the performance of $x(t)$ is strictly inferior to that of the full-commitment mechanism described in Proposition MS. It is sufficient to show that:

$$-\int_{x_2}^{d_2} (t-\alpha-\beta t)^2 dt - \int_{d_2}^{1} (d_2-\alpha-\beta t)^2 dt + \int_{x_2}^{1} (x_2-\alpha-\beta t)^2 dt < 0.$$

The *LHS* is evaluated to be:

$$LHS = \frac{(-3+2\beta+\alpha+d_2(2-\beta))\,(\beta+2\alpha-d_2(2-\beta))^2}{3(2-\beta)^2}.$$

Therefore, it is sufficient to show that the first term in the numerator is negative. Because the coefficient on d_2 is positive, it is sufficient to show that:

$$-3 + 2\beta + \alpha + (2-\beta)x_2 < 0.$$

This inequality holds since in the nonimplementable cases, $\alpha + \beta < 1$.

Case 2. The proof for the strict performance loss of the strategic default arrangement described in case 2 is similar to that of case 1 above. In case 2*a* of Proposition 3*A*, the optimal strategic default arrangement is strictly dominated by the full-commitment mechanism over the region $t \in (x_2, 1]$ (and possibly over the region $t \in [0, d_1]$). In case 2*b* of

Proposition 3*A*, some *FASB* types start pooling at $C(d_1)$. The proof remains essentially the same; i.e., the optimal strategic default arrangement is strictly dominated by the full-commitment mechanism over the region $t \in (x_2,1]$ (and possibly over the region $t \in [0,d_1]$).

Proof of Observation 4. Recall from Proposition MS that the optimal full-commitment mechanism is:

$$x(t) = \begin{cases} x_1 & \text{for } t \in [0,x_1) \\ t & \text{for } t \in [x_1,x_2] \\ x_2 & \text{for } t \in (t_2,1]. \end{cases}$$

It is therefore clear that by setting $X^{CD} = \{x_1,x_2\}$, we can implement the full-commitment mechanism in the *CD* setting. The strict dominance of *CD* over the veto-based mechanism for the nonimplementable cases is an immediate corollary to Proposition 3.

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