The Positive Theory of Disclosure Regulation: In Search of Institutional Foundations

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Abstract

Institutions shape the nature and form of accounting rules; yet, a positive theory that links the standard-setting institution to observed standards has so far remained elusive. Here, we examine three stylized institutional forms: office-driven politicians, private-sector self-regulation and a mission-driven standard-setter. The form of the institution has dramatic consequences on the implemented disclosure regulation, and may lead to no-disclosure, full-disclosure, or conservative-like disclosures of only bad news. In the presence of excessive political interference, the institution does not maximize investors' surplus and the implemented regulation may become unrelated to the ex-ante cost and benefits of information. What we suggest is this: accounting regulation must be done by a strong and politically-independent body.

Keywords: theory; capital market; disclosures; accounting standards; standard-setting.

JEL: C78; D02; D04; D71; D72; D79; G28; L51; M41; M48.

"The accounting academic world also seems to attract those of a more cautious predisposition. Certainly, we are witnessing the effects of some quite strong intellectual biases and prejudices that are consistent with this. Keep away from politics, even the political science of standard-setting, seems to be one."

Anthony G. Hopwood (1944-2010), Presidential Address to the AAA,

. in The Accounting Review Vol. 82 (2007), p. 1372

Accounting standards are the offsprings of social institutions. Institutions involved directly or indirectly in standard-setting are manifold and range from generally-accepted industry conventions or private standard-setting organizations to political bodies such as Congress or governmental regulatory agencies. The form of these institutions, its underlying objectives and modus operandi, are the primary factors that explain the fundamental nature of accounting as we know it; however, researchers in the area have partially, if not entirely, ignored the living institution when explaining accounting choice.

The vast majority of prior research on disclosure regulations has been either descriptive or primarily concerned in normative welfare comparisons. The normative paradigm is important, and its insights about policy prescriptions should not be ignored or underestimated. The problem lies not with normative economics *per se* but its unnatural application to explain observed policy, despite abundant evidence that neither the due process, nor public comments, nor observed policies seem to be even remotely described by the maximization of a societal objective function. Unfortunately, following the fall out of favor of normative economics in many financial accounting circles, researchers seem to have all but given up on understanding the determination of accounting rules as if, while just about everyone *knows* this is false, new regulations were exogenous and simply fall down from the sky.

The lack of research in the area is highly problematic. Our current understanding of observed accounting rules is, for the most part, purely descriptive and lacks proper institutional foundations. The consequence of this has been a shockingly naive view of the actions of regulators, which has led to a broadening gap between researchers and regulators. In many empirical research designs, for example, new regulations are casually treated as natural experiments, behind a veil of blissful ignorance of the factors that spawned them. In theoretical work, regulated disclosures are either just assumed away, or probed as some exogenous feature of the environment that can be simply turned on and off by the modeler. Dye (2002) recently notes that: "there is, presently, no received theory on mandatory disclosures in accounting, in no small part because there has been very little published analytical research on accounting standards over the last two decades. In view of the overwhelming importance of mandatory disclosures in accounting practice, this is unfortunate and something accounting researchers should strive to rectify."

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From a practical standpoint, the absence of theoretical research on institutions has made it very difficult to think about the consequences of alternative institutional designs. Should accounting be political, leaving the process of legislating over accounting matters to democratically elected officials? Should accounting be controlled by a self-regulated body, where private interests may debate and choose which accounting rules they think are suitable? Or, should standard-setting be done from within a segregated organization with a clearly stated mission and whose decisions are insulated from political interference? Indeed, these three stylized views of the institution are all in part descriptive of the institution as it exists today; standard-setters have often explained that the institution ultimately strikes a delicate balancing act between politics, corporate pressures and an underlying mission (Beresford (1997, 2001), Tweedie (2009)).

Questions of institution design have been a long-standing theme in the practice of standard-setting, perhaps even more controversial than the accounting standards themselves. In one of the few papers to address these questions, Basu and Waymire (2008) narrate how the institution has evolved over time, moving from laissez-faire to a self-regulated convention and, over the past century, toward a centralized institution subject to strong political tidal forces. On many occasions, standard-setting institutions have been criticized (e.g., the 1976 Metcalf report) or reformed (e.g., the 1934 SEC Act, the replacement of the Accounting Principles Board by the FASB). Over the recent years, these questions have emerged again at the top of the agenda, as the widespread adoption of international standards has reiterated fundamental questions regarding the consequences of the institutional decision-making mechanisms followed by standard-setters. Except for a few notable exceptions (Watts and Zimmerman (1979), Ball (2001), Dye and Sunder (2001), Sunder (2009)), the debates have not yet permeated deep into the research community.

This paper provides an exploratory study of the consequence of institutional designs on a subset of disclosure regulations. The problem of understanding institutions is one that is very difficult and, quite frankly, will not be resolved within one disclosure model or a single study or methodology. Yet, we strongly believe that simply ignoring the problem is far worse. As the economist Martin Shubik recently notes, referring to accounting foundations, the primary interest is in primitive societal "rules of the game" (Shubik (2011)) in order to provide some links from the institution to the craft, and open up the paradigm in a manner that would allow further literature to expand on the natural limitations of the analysis. When it is successfully completed, the broader research agenda should provide researchers with the required information to make a clear case for a particular institutional structure (Sunder (1988), Kothari, Ramanna and Skinner (2010), Lambert (2010)).

We shall, to begin with, introduce the reader to the research paradigm and methods commonly-used in the institutional economics literature. The two quintessential propositions of this literature are that "institutions do matter" and that they "are susceptible to analysis by the tools of economic theory" (Matthews (1986), Williamson (2000)). The first proposition is certainly self-evident; the second proposition, however, is less immediate and means the following. In the real world, the institution will appear dauntingly complex and nearly incomprehensible. By "tools of economic theory," it is meant that the complexity can be decomposed into smaller simplified parts, amenable to economic analysis, and that some important insights may be gained on the entire institution from applying the analysis to one of these parts. In this respect, the research agenda does not offer a holistic or comprehensive view of what occurs in the institution but, rather, intends to distill some elementary economic forces.

As our study is intended as one incarnation of these propositions, we examine three institutional designs, all universally accepted as models of regulatory processes (and which have been used for issues ranging from trade to pensions or industry regulation, e.g., Persson and Tabellini (2002)). Let us also strongly emphasize the following: our objective is to develop theory and, thus, the rigorous path is to describe these institutions separately, in their purest and most refined embodiments; however, for more practical and observational purposes, one should keep in mind that the institutions as we observe them will almost certainly be a mesh of the three pure environments. And, in fact, because the application of the paradigm to disclosure theory is so much in its infancy, it is likely to be far too early to take the predictions to empirical analysis, at least before a more cohesive body of knowledge forms to either confirm or disprove the insights.

The first institutional design that we examine was, historically, ported from philosophy to economic thought by the Marquis de Condorcet in his 1785 text “Essay on the Application of Analysis to the Probability of Majority Decisions.” Condorcet observed that collective choices in a democratic society are the emanation of the will of the people and should reflect a policy outcome that is preferred by the majority over any other feasible policy (the “Condorcet winner”). From a game-theoretic perspective (which we adopt here), Black (1948) famously noted that the Condorcet winner can be equivalently restated as a non-cooperative equilibrium in a game in which two agents (the “politicians”) compete to win office by making policy proposals but, apart from winning, do not have any vested interest in the final policy. The terminology of politician or elections are used here in their economic rather than colloquial sense: whom we label the politician may be interpreted as a Congress representative, but it may also reflect an office-driven bureaucrat who undergoes a nomination process.

Although such a process may seem a-priori undesirable for accounting choice, it is not unusual or necessarily controversial in public policy; in the US, for example, Congress, the President as well as many administrators (i.e., a judge or police chief) are elected to make specific policy decisions. We will hereafter refer to this institution as “electoral competition.” At its very core, electoral competition means that the decision-making process has been externalized to an office-driven political body.

The second, now widely-used, model of institutional design was proposed only much later, by Baron and Ferejohn (1989), in response to common observations that some regulators may have strong ties to specific interest groups and, in those case, will act strategically to represent a private self-interest. Because policy proposers are just the mirror for private interests, the model is commonly-referred to as a model of “self-regulation,” which is also the terminology that we use. This approach raises a new conceptual challenge, since different members of the constituency will have preferences for different policies. Baron and Ferejohn resolve this conflict of interest by framing the problem as a multi-stage bargaining process, in which various members of the constituency (or their representative) sequentially make policy proposals.

One application of the model has been to negotiations deep within congressional committees. More broadly, the model is applicable to representative organizations whose members and trustees are chosen from those being regulated, must be approved, or any combination thereof. Indeed, accounting in the US prior the SEC Act of 1934 was in large part self-regulated; post the SEC Act and over the second half of the century, self-regulation has taken a major step back but has not entirely disappeared. Many examples of self-regulation do remain and include, even today, entire subsets of industry regulation (e.g., Jamal, Maier and Sunder (2005)).

Lastly, the third institutional design appeared more recently, as part of an ambitious research program to bridge the gap between positive and normative economics, and bring into the analysis a utilitarian description of the regulator (e.g., Sleet and Yeltekin (2008)). Accordingly, we will refer to this institution as the "mission-driven" institution, although alternative terms of utilitarian or objective-driven may just as well be used. In this model, the regulator retains the power to formulate and implement policy, but subject to clearly stated political constraints. Mission-driven institutions are more uncommon, but some well-known examples include the Central Bank (with a mission to preserve economic stability) or the Supreme Court (with a mission to preserve the integrity of the Constitution).[1] We shall not speculate as to whether, in its current form, the standard-setting institution is mission-driven or even benevolent; this is a discussion that should not be settled by opinion but rather through proper empirical designs. However, a stronger mission-driven institution liberated from political interference could certainly be one of the future directions for the institution.

These three institutions significantly differ in terms of their decision-making processes. They have, however, one common purpose: to aggregate the desires of a diverse set of self-interested agents. If the premise that institutions do matter is valid, then, we should expect the process of aggregation to affect disclosure regulations. Consequently, we should also expect the institution to implement policies that are not necessarily the same as those predicted by economic efficiency. Finally, we should hope to formally identify the supply and demand of regulations and how political frictions affect observed policy. This will be our roadmap in this study, namely to develop *a theory of political constraints* in the context of accounting regulation.

These basic ideas, we will formally illustrate within a more precise game-theoretic formulation and confront the three institutions to a stylized policy choice problem. But to state this problem, we need to make a scope restriction, one that is essential to make the reasoning precise and rigorous. We shall focus here on financial reporting motives, i.e. the self-interested actions of agents who are privately informed about a future event and benefit from the selective release of that information to influence market prices. This focus, which is not meant to be comprehensive, is not unique to our study and has become a defining point of the financial reporting literature (Beyer, Cohen, Lys and Walther (2010)). From a theoretical standpoint, the influence of reporting motives is also the most interesting and intellectually stimulating, simply because it elegantly musters the redistributive role of information. From a practical standpoint, reporting motives seem to explain the bulk of the political heat generated during some of most controversial accounting debates.

There are many other groups which, one should note, play some role and that, since those are not our theoretical focus here, further literature should expand on to obtain a more complete model of the institution. The first of those groups, the investment community ("investors"), is represented by stakeholders

[1] It is worth noting that the emergence of such institutions, now taken as granted, had been itself a matter of severe contention. The independent Supreme Court was itself the results of evolutions of thought about checks and balances and the will for Constitutional protection by individual states. An independent Central Bank emerged following the failure of the monetary policy over the seventies as well as fundamental research insights in the area (Kydland and Prescott (1977)).

who are either well-diversified or have no private information. The extent to which investors (who are by nature widely dispersed) play a large role in the institution's bargaining process is, however, subject to some caution. For better or worse, there is yet feeble evidence that investor groups play a major role in the policy bargaining process.[2]

The second of those groups may be thought of as those agents who provide monitoring, information dissemination and certification services ("monitors"), such as bank lenders, analysts or auditors. The challenge with these groups is that they appear primarily involved in the regulation of their own activities, such as, for example, bank disclosures (which fit here as special cases of reporting motives for banks), bank capital and risk requirements, or auditor fines and auditing standards (all of which are entirely outside of our research question). Indeed, the preference of the monitors over financial disclosure is likely to be ambiguous, as public disclosure could increase or decrease the economic value of their services (Lundholm (1991)). As part of our study, though, we will entertain the reasonable hypothesis that the mission-driven institution could incorporate the preference of these groups, or other groups that may be part of the rest of society (such as workers, consumers, etc.). Importantly, we do not mean that these groups should not be modeled in greater details in future work but, rather, that developing a clean theory requires to *first* fully understand the effects of financial reporting motives.

Developing and carefully explaining the results would simply take too much space at this point. Yet, together, the results suggest a common basic intuition and a more ominous prognosis which we shall briefly spell out here. Disclosure regulations are heavily redistributive and, as such, expose the worst type of "tyranny of the majority," where the specific interest group pivotal in the institution's decision-making process exerts its power of regulatory capture and dictates which regulation benefit its own private interest at the detriment of others. In fact, except (obviously) for the mission-driven institution, the institution almost entirely annihilates ex-ante efficiency as a determinant of new regulations. Even in a pure-exchange economy, a unique regulation emerges from the institution despite no assumed ex-ante value for information. In a production economy, the regulations that emerge are simply delinked from the costs and benefits of disclosure. Even with a mission-driven institution, excessive sensitivity to political pressures may entirely lock down the process and block any attempt to increase disclosure.

What we thus suggest is the following. The concept of a single homogenous constituency, for whom accounting reports are produced, is nothing but a convenient illusion. Even focusing on reporting motives, political interference leads to a very poor form of aggregation which disconnects, almost entirely, the institution from the normative cost and benefits of disclosure. Yet, for better and (almost certainly) for worse, the recent history of accounting regulation has been one of increasing and unrepenting political interference. The mission-driven institution may seem an attractive solution, on paper, but many practical problems remain to be addressed before it springs to life. How do we choose its members? How would their members elicit information that they do not have from the constituency? How could one commit domestic politicians regulators not to overrule the institution? These questions are neither easy nor trivial but, overall, call for more thought on the institution and its future embodiments.

[2] In fact, Robert Herz, a former Chairman of the FASB, has commented to us about the difficulties in bringing representative investor groups to committee discussions.

Literature Review

It would be inappropriate to begin a study on the positive analysis of regulation without proper testament to the many contributions of the normative research in the area. This literature was introduced to modelling by Demski's (Demski (1973, 1974)) famous tagline question: Are economically efficient standards even possible? (the answer is now known to be yes, sometimes). Since then, the normative literature has successfully explored various environments and proposed various maps linking the environment to the nature and provision of public information. Over the eighties, major contributions such as those of Kanodia (1980), Ohlson and Buckman (1981), Sunder and Plott (1982), to cite only a few examples, have described how the value and consequences of information will, in general, be a function of the productive environment and the available market mechanisms. This research area is still active today and continues to provide fundamental insights about the "conditional" economic suitability of various financial disclosure rules (e.g., Liang (2004), Ewert and Wagenhofer (2005), Kanodia (2006), Demski, Lin and Sappington (2008), Plantin, Sapra and Shin (2008), Beyer and Guttman (2010)).

But the normative paradigm solves only one facet of the problem, by providing the necessary guidance for economically desirable disclosure. It does not, by design, speak to how (and whether) the regulatory institution will successfully implement these prescriptions, inasmuch as the choices of the institution will also be a function of the resistance of those it regulates, some of whom will suffer loss from the policy. With this premise began the theory of regulatory capture, as pioneered by George Stigler's "theory of economic regulation" (Stigler (1971)) and developed by various economists such as Anne Krueger, Richard Posner or Samuel Peltzman. The theory of regulatory capture conjectures that the regulatory institution may not necessarily be able, or willing to, implement the socially-desirable policies because, by its very own nature, it is a function of the supply and demand for regulations.

While it is fairly unexplored in accounting modelling, regulatory capture is not new to the broader accounting literature. The classic early texts of Horngren (1973), Zeff (1978) and Watts and Zimmerman (1978, 1979) outlined many of the problems posed by regulatory capture. This was followed by a first generation of empirical studies documenting widespread cases of firms' rent-seeking efforts to influence standard-setting (Zmijewski and Hagerman (1981), Deakin (1989)). A second generation of studies is now blooming and takes a more topical approach to firms' interference during some of the more recent accounting debates (Lo (2003), Ramanna (2008), Hochberg et Al. (2009), Ramanna and Sletten (2010), Allen and Ramanna (2010)).

These findings have been consistent with many examples of political involvement, some of which are described by actual standard-setters (Beresford (2001), Tweedie (2009)). Sunder (1988) and Zeff (2002, 2005) provide detailed evidence of political pressures in the due process in the US. The inner struggles over stock option expensing (FAS 123, and later FAS 123r) has been largely discussed in the literature and we refer to Farber, Johnson and Petroni (2007) for an extensive survey. Yet, this more prominent debate is only representative of a long history of political interference on standard-setting. A recent case involved the FASB's project on derivatives (FAS 133). It resulted in bills being introduced both in the House and Senate. The bills, if they had been signed into law, would have imposed particular accounting rules and nullified other proposals from the FASB. Over the year 2000, there were several tumultuous congressional hearings on the FASB's proposals on business combinations (FAS 141), which ultimately led the FASB to compromise by not requiring amortization of goodwill (an option it originally favored). Nevertheless, thirteen percent of U.S. senators sent a letter to the FASB urging it to postpone requiring implementation of the proposed standard. In the wake of the 2008 financial crisis, the US Congress' House Financial Services Subcommittee asked the FASB chairman Robert Herz to ease standards on fair-value measurements and other than temporary impairment. Paul Kanjorski, chairman of a financial accounting subcommittee, said: "If the regulators and standards setters do not act now to improve the standards, then the Congress will have no other option than to act itself."

Despite its clear relevance, it is fair to say that, in the modelling area, positive institutional economics has taken the back seat and, as a result, has provided limited formal guidance as to the economic consequences of political intervention. Two notable early exceptions are Amershi, Demski and Wolfson (1982) and Fields and King (1996), who provide some simplified game-theoretic models to capture elements of the process of institutional decision-making. However, these studies are not intended to be predictive about actual implemented regulations. Related in spirit to this study, the model proposed in Bertomeu and Magee (2010a) offers an analysis of how systemic shocks can affect the demand for regulation. Questions of institutional design and their consequences have been even more atypical, although this may be rapidly changing. Indeed, several more recent studies offer a ray of hope by focusing on the cost and benefits of alternative institutional mechanisms (Dye and Sunder (2001), Sunder (2009) and Ray (2010)).

1. The Pure-Exchange Economy

1.1. Reporting Environment

The economic environment that we have in mind follows directly from the financial reporting literature, but we will take some time to briefly reacquaint readers who may not be entirely familiar with it. Let there be a set of firms which will generate, at some unspecified date in the future, a random cash flow $\tilde{\pi}$. Each firm has a risk-neutral owner-manager (hereafter, the "owner") who should, if she were to hold on to the firm until the cash flow date, receive and consume $\tilde{\pi}$. However, the cash flow date is too far in the future and beyond her own investment horizon. Hence, she puts the firm for sale in a competitive financial market, for a new generation of investors to purchase, and intends to maximize how much she can collect for this sale.[3]

Prior to the sale, a random economic event is realized which we denote $\tilde{x}$ in some (possibly very large) set of possible events Ω. For now, the definition of the event is kept abstract, so that it may represent just about anything the researcher may imagine it should be. This event becomes observable early on to the owner, i.e. prior to the sale. Further, as we are concerned primarily in *reporting* incentives and the capital market valuation for the event, it is convenient to work directly with the expected cash flow implied by this event, namely defining $\tilde{v} \equiv \mathbb{E}(\tilde{\pi}|\tilde{x})$. In other words, while events may certainly

[3] One assumption is worth pointing out here. It is unimportant for these models if (a) the owner does not necessarily own the entire firm, (b) the owner pre-planned a sale but may retain part of the firm until the cash flow date. However, the analysis is complicated if the owner may trade strategically because some of her information would be revealed via her order flow. These concerns are often assumed away in order to focus the entire discussion on one source of information communication ("disclosure"). We refer to Bertomeu, Beyer and Dye (2011) for a recent example in which information may be revealed by disclosure and informed trading.

represent a complex reality, we are only concerned here about what this reality implies for future cash flows. We shall illustrate the economic forces with a mathematically approachable model, and make the assumption that $\tilde{v}$ is uniformly distributed on $[0, 1]$.

As the reader should note, this setting is one of pure-exchange where information has no ex-ante social value. The positive paradigm does not presuppose any social uses of information to explain disclosure (demands for disclosure will suffice) and, for this very reason, pure-exchange is very commonly used in the financial disclosure literature (e.g., Grossman and Hart (1980), Dye (1988), Shin (2003), Bertomeu et al. (2011)). Questions as to why or whether the regulator should exist are essentially normative questions that fall outside of our paradigm. This being said, we will introduce a production economy formally in the next Section in order to be able to compare the efficiency implied by the institution to the efficient disclosure regulation.[4]

Let there be a mandatory disclosure requirement (thereafter, the "disclosure regime"), such as an accounting standard or a SEC mandatory disclosure rule, that prescribes disclosure of some the owner's private information prior to the sale. The subject matter shall now be made more precise. The reader shall not find here, within a single model, a universal theory of accounting disclosures; accounting problems are very rich and multi-faceted and such an undertaking is well beyond our current means. Let us focus on one aspect of accounting disclosure, namely the accountant's predisposition to require advance disclosures for events deemed to be relatively unfavorable or adverse. This can be more narrowly defined as "impairment accounting," such as the reduction in the value of long-term assets or inventories, but more generally reflects prudent or conservative-like disclosures, ubiquitous in accounting practice, and which have been the object of a long empirical tradition (Moonitz (1951), Basu (1997), Watts (2003) or Basu and Waymire (2008)).[5]

Our study is thus concerned by disclosure regimes where, for two otherwise identical events, the policy shall not prescribe non-disclosure of an event if it mandates disclosure of a more favorable event (for example, "impair an asset if its value has fallen below a certain threshold" satisfies this criterion, but "reevalue the asset if its value increases but use historical cost otherwise" does not). In mathematical terms, let the disclosure regime be represented by a disclosure threshold $A \in [0, 1]$ such that v is disclosed if $v < A$ (e.g., "impair the asset" or "write-off the receivable") and v is not disclosed if $v \geq A$ ("use historical cost"). Of course, the model can accommodate as special cases particular situations such as (a) no disclosure is made, or $A = 0$ (e.g., "expense all $R\&D$"); (b) full disclosure is made, or $A = 1$ (e.g., "always fair-value the asset"); (c) partial disclosure of all unfavorable events, or $A = .5$ (which is implicit in the cutoff point in Basu (1997)). This assumption is not only conceptually intuitive, it has also been used in the literature by Goex and Wagenhofer (2008) and Bertomeu et al. (2011). Yet, regardless of

[4] It is also somewhat excessive to interpret the pure-exchange model as one in which, necessarily, information will have no social function. The pure exchange simply says that, at the moment the disclosure is selected, productive decisions have already occurred. As noted by Grossman and Hart (1980), it is entirely possible, *with no change to the analysis*, that some decisions have been taken ex-ante (for example an effort decision) and that those decisions depended on the anticipated disclosure. In other words, the pure-exchange model does not forsake the possible welfare effects of disclosure, it simply is agnostic about them.

[5] In fact, we are not aware of any accounting rule such that, for two events that are exactly identical except future cash flows, the accounting rule would mandate disclosure of only the higher cash flow one. One remaining possibility is that this form may be recovered as an endogenous outcome of the institution; however, the theory presented here is limited in scope and will not answer this question.

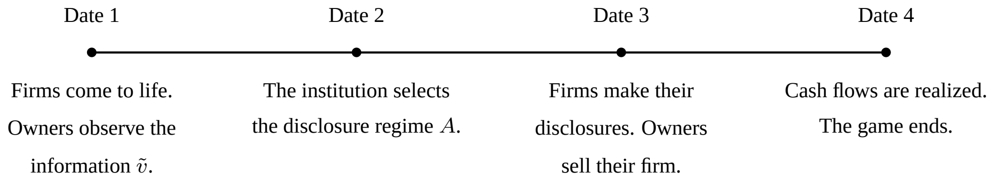

Figure 1: Model Timeline

how we may defend it, this is a limitation of our study and the question as to why accounting information have had this form is simply not one that we are able to answer yet.[6]

The financial market prices the disclosure competitively, for a price $P(v) = v$ after a disclosure and $P(v) = \mathbb{E}(\tilde{v}|\tilde{v} \geq A) = .5(A+1)$ after non-disclosure. It is important at this point to remove distracting considerations about alternative sources of information, so let us assume that there is no possibility to make *credible* voluntary disclosures (via costly voluntary disclosure or signaling); for example, auditing, potential litigations and SEC enforcement actions are much stronger for items that are required by law and part of the financial statements. This assumption is also common in the mandatory disclosure area (e.g., Sapra (2002), Dye (2002), Dye and Sridhar (2008), Goex and Wagenhofer (2008)) and, yet again, it is not our purpose to develop a theory of all forms of information communication (and their interactions). Of course, if voluntary disclosures were always possible and costless, there would no purpose for mandatory disclosure (Grossman and Hart (1980)).

Having introduced the building blocks of the model, we now present the timeline. At date one, firms and their owners come to life, and are endowed with advance knowledge $\tilde{v}$ of the future cash flow. There is no systematic risk and realizations of $\tilde{v}$ for each different firms are uncorrelated.[7] At date 2, owners collectively participate to the regulatory process in an institution (which will be described later) and implement a disclosure regime A. It is possible that the institution could have already existed at date 1, but what is important here is that either the state of ignorance lasts only for the flicker of an instant, or that owners may not commit not to regulate through the institution after they have become informed. At date 3, each firm discloses or does not disclose and firms are traded; the owner leaves the market and withers away. At date 4, finally, the new investors receive their cash flow, which they consume, and the game ends.

[6]We emphasize that *all* disclosure regimes that we consider here have conservative form, and the object that we examine is the quantity of disclosure. It would be completely improper to say (in our model) that one regime is “more” or “less” conservative than the other. In a recent paper, Dye (2002) also restricts the set of information systems under consideration. However, he only considers information system in which the firm can send only two messages (“bad” and “good”) and does not allow disclosure of the realization of the bad news. By contrast, in our model, the bad news is publicly revealed. Just like in Dye (2002), an extension to arbitrary information systems is not without presenting significant difficulties. Note that we have left aside some aspects that are not our primary focus here, such as for example disclosure manipulation or the managerial inherent honesty (Evans and Sridhar (1996), Evans, Lynn Hannan, Krishnan and Moser (2001)), or dynamic reputational concerns in disclosure management (Stocken (2000)).

[7]The effect of systematic risk is the main object of Bertomeu and Magee (2010a) who show that disclosure tends to decrease during moderate times or the early stages of a recession. These predictions would carry over to this study.

1.2. Standard-Setting by Electoral Competition

We will now introduce in greater details Black's model of electoral competition (Black (1948)).[8] Let there be two politicians, which we mundanely label as candidate 1 and candidate 2. As in Black's approach, the politician shall be broadly defined as a rational economic agent who is primarily interested in winning office and makes policy proposals accordingly. This may be the President or a member of Congress, but it may also be some prospective standard-setter primarily interested in being nominated.[9]

The two candidates compete to win office and to do so, simultaneously make a policy proposal A_i, where A_i denotes the proposal of candidate $i = 1, 2$. Which candidate/policy is selected depends on the collective support for the proposal. Owners support ("vote for") the proposal that most increases their market value. In addition, owners who are indifferent vote for either candidate with probability $.5$ (or, equivalently, do not vote). The candidate receiving more support is elected and, in the case of a tie, candidates have equal chances of being elected.[10]

How much electoral motives, relative to other institutional designs discussed later, fit the observed institution is a matter of empirical measurement and, importantly, we do not make any claims here that this model should be used alone to understand the institution (certainly, some members of Congress or standard-setters have their own agenda, care about the public good, etc.). As in Black's original study (and institutional economics as a field), our objective is limited here to capturing some fundamental economic forces that are or may be at play in the institution. Indeed, the institutions that we have today are not entirely isolated from electoral motives. For example, a large number of bills proposed in Congress provide instructions to standard-setters and the Securities and Exchange Commission can veto or alter certain proposals or pass its own disclosure requirements; standard-setters go through Congressional hearings on average once every two years (Beresford (2001)) and elected officials have occasionally left standard-setters on the sideline to directly legislate over accounting matters (Tweedie (2009)). Further, "campaigning" may not a faithful description of the nomination process for members of standard-setting organizations, but it is apparent that trustees seek candidates for the job whose philosophy appears compatible with that of the constituency.

We shall now discuss, informally at first, the likely outcome of this electoral competition game. Observe that some owners - those with lower cash flows - would be better-off with less disclosure. Therefore, one candidate, say candidate 1, may choose to primarily cater to these owners and propose some standard with some amount of non-disclosure (for example, "disclose nothing" or "disclose only below-average events"). But such a proposal puts the candidate in a very delicate political position. If such a proposal were to be anticipated, then the other candidate, say candidate 2, would be able to win

[8] It is unimportant for the results if there are strictly more than two politicians competing. Primarily for reasons of space, we do not present here a fourth institution in which the standard-setters receive monetary contributions or donations (e.g., Bernheim and Whinston (1986)). Accounting institutions are not allowed to receive significant direct monetary donations and, in practice, political contributions intended for financial accounting purposes are extremely small (see www.opensecrets.org for a list of the filings).

[9] One may argue that such standard-setter would be the "wrong" candidate for being part of the institution, as one that has no underlying philosophy. Although we do not disagree, this is beyond our point. We do not intend here to make normative claims as to whether one candidate is right or wrong, or even whether such situations are common or rare; what we study here is their consequences.

[10] This basic model is also the game-theoretic underpinning of Bertomeu and Magee (2010a)'s recent study. In that study, both candidates would propose the policy preferred by the most numerous group, which may vary as a function of the economic cycle.

the election just by convincing this non-disclosure group to support him. And, indeed, doing just that is possible.

Suppose that candidate 2 campaigns for the same standard as candidate 1 (i.e., requiring disclosure of the same transactions). Suppose that, in addition, candidate 2 reviews other transactions that could be disclosed and decides to require disclosure for the economic events that identify only a minority of lowest-value non-disclosers in candidate 1's proposal. In essence, what candidate 2 is proposing is to weed out the worst firms that pool under candidate 1's proposal. Those firms that (still) do not disclose under candidate 2 would look upon this proposal favorably because removing these worst firms would increase the non-disclosure market price. Those firms that are forced to disclose certainly prefer candidate's 1 proposal but they can be kept as a minority simply by making candidate's 2 proposal very similar to candidate 1's proposal.

But, no candidate should be willing to make a proposal that could be defeated by the other candidate. Therefore, to protect themselves, each candidate should propose full-disclosure. We prove this result formally in what follows.

Lemma 1.1 *If $A_1 < 1$, there exists a proposal A_2 such that candidate 2 wins the election.*

Proof: Assume that candidate 1 proposes $A_1 < 1$. Consider a proposal $A_2 = A_1 + \epsilon$, where $0 < \epsilon < 1 - A_1$. Then: (a) all owners with $v < A_1$ are indifferent, (b) all owners with $v \geq A_2$ prefer candidate 2. It follows that candidate 2 receives a support equal to, at least, $.5A_1 + 1 - A_1 - \epsilon = 1 - .5A_1 - \epsilon$. This term is always greater than $.5$ if ϵ is chosen sufficiently small.$\square$

Lemma 1.1 establishes that a no-disclosure or partial-disclosure proposal, if it is anticipated, is certain to be defeated. Consequently, no candidate shall, in equilibrium, propose less than full-disclosure, as stated in the next Proposition.[11]

Proposition 1.1 *There is a unique (pure-strategy) Nash equilibrium. Both candidates propose and implement full-disclosure ($A = 1$).*

Proof: If one candidate, say candidate 1, proposes $A_1 < 1$, then this candidate must expect to lose with probability one. However, this cannot be optimal, since then candidate 1 could deviate to propose $A_1 = A_2$ and have 50% chance of winning. To close the argument, we test whether full-disclosure is an equilibrium. Suppose both candidates propose $A_1 = A_2 = 1$. If candidate 2 deviates to $A_2 < 1$, then all owners with $v \in [A_2, .5(1 + A_2))$ prefer A_2 while all owners with $v \in (.5(1 + A_2), 1)$ prefer A_1. As a result, exactly half of all owners prefer A_2 over A_1, and a deviation of this form is not *strictly* desirable.$\square$

The result may appear, at first sight, surprising. No firm has the ability, on its own, to separate itself solely on its own, violating the principal requirement for Milgrom-Grossman-Hart famous unraveling result (Grossman and Hart (1980)). In addition, any disclosure regime must be collectively "approved" and, therefore, lower-value potentially have a say in what higher-value firms will disclose. Yet, because

[11] We do not discuss here the disciplining mechanisms available to the regulator in order to enforce particular levels of mandatory disclosure, such as litigation law (Evans and Sridhar (2002)), the tax code asymmetry (Williams, Hughes and Levine (2010)), or SEC enforcement (Bloomfield et Al. (2010)).

of the collective pressure of non-disclosers, who benefit from (small enough) increases in disclosure, each candidate will attempt to outcompete the other candidate until they both converge to propose full-disclosure.

Interestingly, Proposition 1.1 is seemingly in contradiction to one of the most widely-used theorem in collective choice. In his monograph, Black (1948) shows that, in a wide class of models, electoral competition will lead to both candidates proposing the policy preferred by the median (the now famous median voter theorem). Yet, full-disclosure is not the policy that maximizes the stock price of the median firm: with $A = .5$, the median firm would have been sold at $.75$ instead of its disclosure price of $.5$. Quite the opposite, electoral competition *minimizes* the surplus of the median owner among all possible disclosure regimes.

The median voter theorem is, of course, not incorrect; rather, it is some aspects specific to the disclosure problem modelled here that violate its assumptions. Technically, the requirements for the median voter to apply are true except for the (apparently innocuous) fact that individual preferences over A are only weakly - but not strictly - single-peaked. In economic terms, firms that must *already* disclose do not lose from further increases in disclosure requirements and, as a result, they do not switch their support to the median owner for a disclosure threshold that increases beyond the level preferred by the median. This in turn causes the median voter to lose the key political position that is, in most of the prior literature, obtained under electoral competition. In fact, the result presents an “extreme” voter paradox in which, as a result of the political process, the highest-value owner is able to implement her most preferred regime (full-disclosure).

Let us briefly mention how this result (and all those that will follow) should be interpreted as part of a broader context, not in a literal manner. In practice, a wide set of other groups may have their own preferences for disclosure. If these preferences were single-peaked, then, absent reporting motives, the median voter theorem would apply leading to the implementation of the policy preferred by the median of these groups. This is a result that is well-known already and we do not replicate it here. The new element that we show here is that financial reporting motive would push the policy outcome (in this larger model) away from the median voter and toward full-disclosure. In other words, the results must be interpreted as the direction toward which reporting motives incrementally influence the standard rather than as a stand-alone prediction.

1.3. Standard-Setting by Self-Regulation

We examine next a different institutional design in which those agents being regulated actively (and strategically) bargain over which disclosure regime should be implemented. To develop the idea of a bargaining process, we develop the widely-used Baron and Ferejohn (1989) model of self-regulation (hereafter, BF). BF introduce a multi-person bargaining model, in the lines of the Rubinstein-Stahl bargaining game, as an abstract representation of the deliberations and bargaining game that occurs deep within the regulatory body and/or when interest groups can strategically influence the agenda-setting process.

There are certainly aspects of accounting regulation that are indicative of self-regulation. In the US, accounting questions are often discussed in Congressional subcommittees: deliberations by self-interested committee members have been an important application of the BF model. The standard-setting institutions themselves are non-governmental institutions which are accountable to their constituency. New agenda items are brought to the attention of standard-setting boards through the submission of open agenda comment letters (often by private interest groups) and from the institution's advisory boards where preparers form by far the largest group. We do suspect, however, that the actual level of self-regulation has decreased in the US over the twentieth century; with the exception of a few state requirements, accounting was mostly self-regulated prior to the 1934 SEC Act (Basu and Waymire (2008)). After this, many politicians decided they needed to have direct authority over accounting, which led to the dissolution of the Accounting Principles Board (APB) and the recommendations of the Metcalf report. Among members of the International Accounting Standards Board (IASB), domestic regulators have grown in numbers over the years, forming the largest group (including the incoming 2011 chairman).

The regulatory choice takes place over a large number of regulatory rounds $t = 0, \ldots, T$. In each round, a proposer (or agenda-setter) is randomly chosen. The proposer strategically chooses a reporting regime $A \in [0, 1]$.[12] Then, this proposal is voted by all owners. The proposal can be passed or defeated. If more than half of all owners oppose the new regime, then the proposal is defeated, and the next regulation round begins with a new proposer being randomly selected. Otherwise, the proposal is passed and the regulatory game ends with the implementation of the proposed disclosure regime.

Aware of the strategic behavior within the game, owners are forward-looking when deciding whether to support or oppose a particular proposal. At the voting stage, owners vote "Yes" if the price conditional on the proposed regulation is greater than the expected price conditional on one or more regulation round, and owners vote "No" otherwise. To make these forward-looking concerns formally explicit, we define $V_t(x)$ as the expected price by a firm with $v = x$ at the beginning of round t (prior to the new proposer being selected). Finally, to close the model, we assume that if the proposal fails in the last round, no disclosure regulation is implemented, i.e. $r(v) =$ "ND" for all v and all firms are priced at $.5$. This seems fairly reasonable given that assuming anything different would leave open the question as to how any extra disclosures rules would have been approved if the regulatory process failed.[13]

It is worth noting that we have made some simplifications to the BF model. First, we assume that all agents are symmetric at the proposal stage and can be selected with equal chance; this is mainly for parsimony, since there does not seem to be any empirical evidence, or conceptual reason, as to why *private* information about cash flows should be (on average) correlated to political influence. Second, we do not impose discounting between bargaining rounds. The presence of a discount factor in BF is in part for technical reasons because, if T becomes large, a general BF bargaining game may not have a well-defined limit; as we will see here, we can obtain a sharp limit result even without discounting. We have in mind repeated bargaining rounds that occur over a relatively short time (some of them possibly during the same meeting), at least relative to the horizon of a firm. Having a model in which *each round* occurs over longer time periods (such as one to multiple years) would require us to model that private

[12] It is entirely equivalent to assume that all agents make proposals and a proposal (instead of the proposer) is randomly selected.

[13] In fact, the results are entirely unchanged if we assume, instead, that full-disclosure is passed. Although we have not looked at all possible cases, the main result appears to be robust to other assumptions about what happens after round T fails.

information may change, and be revealed by the arrival of current cash flows in-between rounds; this is the object of Bertomeu and Magee (2010b) but not ours here.

The model is solved by backward induction, starting from the last regulation round. At this last stage, owners know that failing to pass a regulation will lead to no-disclosure, i.e. a market price of $.5$ for all firms. As a result, all above-average owners, i.e. with $v > .5$, may support *any* $A > 0$. It follows that, in this last round, any regulation $A \in (0, 1)$ can be passed, as stated next.

Lemma 1.2 *In round T, any regulation $A \in (0, 1)$ can be passed.*

Since any regulation can pass, the agenda-setter in the last round becomes, *de facto,* a dictator and can impose just any standard it pleases. Which regime A would, then, a proposer with value v optimally pass? The proposer can achieve the dislosure price v when passing $A > v$ or, alternatively, $.5(A + 1)$ when passing $A \leq v$ and not disclosing. It follows that the price-maximizing regime for an owner with value v is one in which the proposer pools only with higher-value firms, i.e. proposing and implementing $A = v$ to achieve $.5(v + 1)$.

Proposition 1.2 *In round T, the proposer $v \in (0, 1)$ proposes and passes $A = v$.*

We calculate next the continuation price $V_T(x)$ at the start of round T. This is, one should recall, the expected market price for a firm $v = x$ prior to the identity of the proposer being selected. There are two possible realizations of the proposer's identity: (a) if the round T proposer has value $v \leq x$, the regime $A = v \leq x$ is passed, leading to a (non-disclosure) market price of $.5(v+1)$; (b) if the round T proposer has value $v > x$, the regime $A = v > x$ is passed, leading to a (disclosure) market price of x.

$$\begin{aligned} V_T(x) &= \int_0^x \frac{v+1}{2} dv + \int_x^1 x dv \\ &= -\frac{3}{4}x^2 + \frac{3}{2}x \end{aligned} \tag{1.1}$$

This continuation price has several intuitive properties. First, the lowest value firm is almost sure to disclose and realizes a price equal to zero. That is, there is always full transparency and no mispricing "at the bottom." Second, the median firm achieves an expected price $V_T(.5) = 9/16$ which is strictly greater than its true disclosing value of $.5$. This is because the median firm expects that, with a lucky draw of the proposer, it will end up not disclosing with some $A \in (0, .5)$, leading to some lower-value firms being excluded from the non-disclosure region. Third, the highest value firm averages out the identity of the last-period proposer, counting on an expected regulation $A = 1/2$ for a surplus of $V_T(1) = 3/4$. That is, there is the highest level of mispricing "at the top." As compared to the median owner, higher value owners appear to be strictly worse-off under a self-regulated institution then they were under electoral competition.

Another more subtle property of the value function is worth emphasizing, as it will play a key role in explaining the outcome of the regulatory process. As the value of the firm increases, the probability of a relatively lower-value proposer also increases. This causes the continuation price V_T to be concave in the private value. That is, the self-regulated institution operates as a mechanism that redistributes value across firms, very similar to an increasing marginal tax rate (we will use this analogy further later on).

We develop the model further and examine the regulatory choice that emerges in earlier bargaining rounds. However, given that the formal proof is more technical and obscures the economic intuitions at play, we first provide some heuristical intuitions that rely (for the most part) on elementary graphical analysis.

The concave value function $V_T(x)$ is plotted in Figure 2 and represents how much each firm expects to receive after the $T-1$ round of regulation fails.

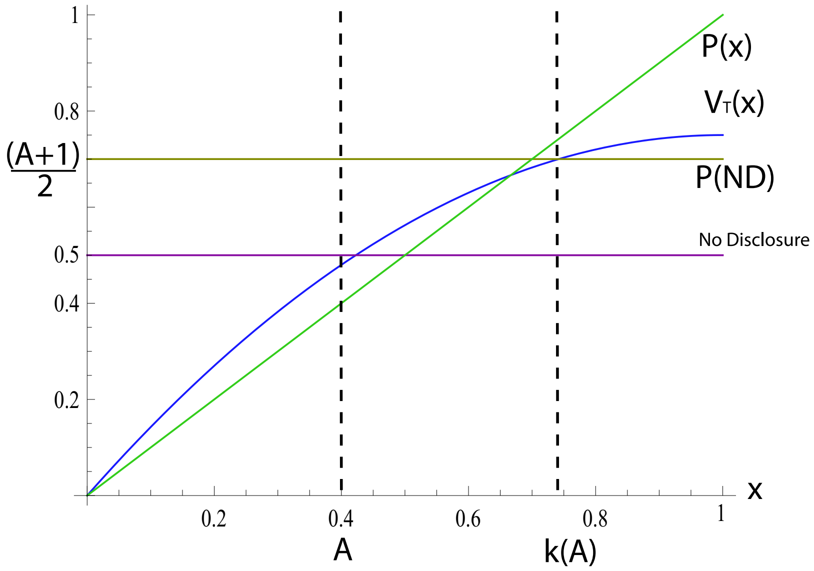

Figure 2: Continuation Value $V_T(x)$ vs Proposed Standard A

We examine next whether no-disclosure can be passed at round $T-1$. This regulation is plotted as a horizontal line intersecting the vertical axis at $.5$ (i.e., all firms are priced at $.5$). As argued earlier, the median firm (and all above-average firms) expects a market price strictly greater than $.5$ if round T is attained. We conclude that no-disclosure, as a potential policy, will be opposed by strictly more than half of all owners and may not pass. Confirming this observation from Figure 2, the fraction of firms such that $V_T(x)$ is greater than the no-disclosure price $.5$ is strictly greater than half.

Consider next a full-disclosure regime, as represented by the diagonal line $P(x)$. In Figure 2, we observe that firms with x rightwards of the intersection of $V_T(x)$ and $P(x)$ support full-disclosure over waiting for round T. There are, again, strictly less than half of all owners supporting full-disclosure.

These two preliminary discussions suggest one important element of the model. Specifically, as early as round $T-1$, the pivotal role of the median owner - which was lost under electoral competition or in round T - has been renewed. As a result, the median owner obtains, endogenously, the ability to veto any piece of legislation.

We are left to examine whether there are some partial disclosure regulations $A \in (0,1)$ that may pass at round $T-1$. To pass, a regulation must be supported by the "veto-wielding" median owner, i.e. it must be such that the median firm does *not* disclose, or $A \leq .5$. That is, contrary to round T, not a single regulation that prescribes disclosure of good outcomes $A > .5$ may now pass.

The cases with a regulation $A < .5$ are less straightforward. Although the median has a veto, she may (sometimes) be better-off with some regulations $A < .5$, for a current stock price of $.5(A+1)$, over the continuation price $V_T(.5)$. As one example, a regulation with A slightly below .5 would be supported by the median at the voting stage since it would imply a market price very close to $.75 > V_T(.5)$. At least some regulations that are less informative than $A = .5$ may potentially pass (or so it would seem).

Let us, for now, delay the technical proof and explain why, in fact, no standard with $A < .5$ would pass (despite, potentially, a "Yes" by the median). As we have seen, no-disclosure does not pass, so let us consider gradually increasing the proposal from $A = 0$ toward $A = .5$. As A is increased, some prior non-disclosers become disclosers and switch to oppose the proposal, while some higher-value non-disclosers (who preferred waiting for round T) switch to support the proposal. Measuring how increasing A affects the support for the proposal thus requires us to compare the fraction of lower-value firms that start opposing to the higher-value firms that start supporting. The concavity of the value function, however, implies that a higher value owner perceives round T as an increasing marginal tax and, therefore, is more responsive to the extra value when passing the current proposal. It follows that the support for A increases as A is increased and is maximal at $A = .5$. But the standard $A = .5$ just barely passes; it follows that the $A = .5$ is the only disclosure regime that may pass.[14]

Having examined which regulations may pass, we pursue the argument to its conclusion by recovering which regulation would be proposed at round $T-1$ and by which proposers. Owners with $v \geq .5$ can achieve $.75$ by passing $A = .5$, which is always greater than $V_T(.)$; thus it is indeed desirable to pass this regime for owners with favorable information. Vice-versa, owners with $v < .5$ are better-off waiting (i.e., proposing any $A \neq .5$ that fails) since no regulation that is attractive to them can pass at $T-1$. We conclude that $A = .5$ passes with probability .5 at round $T-1$, and a proposal fails with probability .5.[15]

The value function $V_{T-1}(x)$ is then updated again by taking an average of $V_T(x)$ (a proposer with $v < .5$) and $1_{x<.5}x + 1_{x\geq .5}.75$ (a proposer with $v \geq .5$), as represented by the dotted line in Figure 3. One can recognize graphically that this updated value function has the same distinctive features that made $A = .5$ the only standard that can pass, leading to a replay of the intuitions developed above and giving a simple recursive structure to the bargaining game.

In the next Proposition, we establish these intuitions formally, and provide a formal solution of the model for any number of bargaining rounds $T > 1$. A complete proof is given in the Appendix.

Proposition 1.3 *In bargaining rounds* 1 *to* $T-1$*, a proposer with* $v \geq .5$ *proposes and passes* $A = .5$ *and a proposer* $v < .5$ *makes a proposal that fails, leading to one more round of regulation. If round* T *is reached, a (last) proposer with value* v *proposes and passes* $A = v$*.*

Proposition 1.3 extends the basic intuition developed for round $T-1$ and, exploiting the recursive nature of the game for rounds that precede, reveals an elegant regularity in the problem: except for the last round, the same proposal strategy is used in all rounds. In each round, the median may see its most

[14] We briefly note that the fact that $A = .5$ barely passes is an artefact of the simplified pure-exchange model. However, this property is not, strictly speaking, critical for the argument (similar results with other voting rules are available from the authors). Later on, we show that the results are entirely robust in the production economy, where some regimes do not barely pass.

[15] As an aside, the theory is consistent with temporarily delayed agreements, since there is a 50% probability that the proposal may fail.

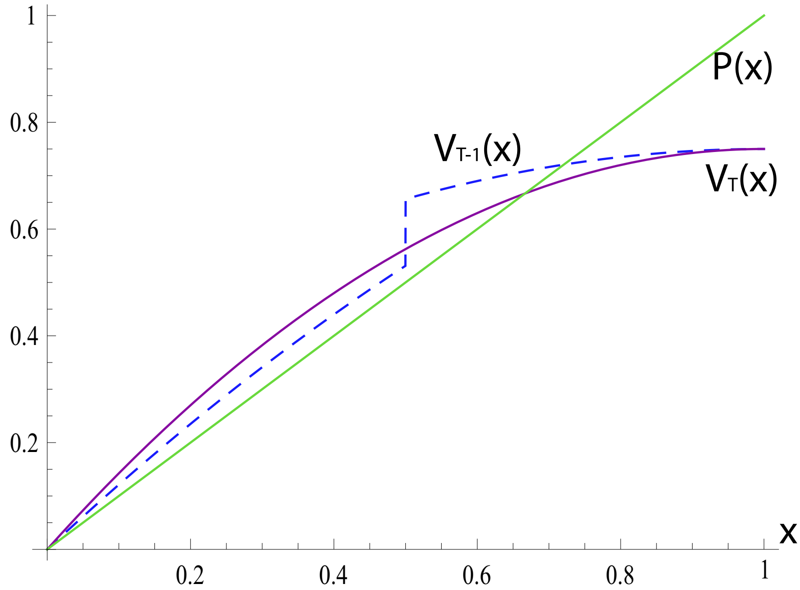

Figure 3: Continuation Value $V_{T-1}(x)$

preferred regime implemented. In fact, the only situation in which a non median-preferred regime could be implemented is if the regulatory process reaches its final round.

As in BF, we examine next the solution of the model when the number of bargaining rounds becomes large enough so that there is always a very large horizon of remaining rounds. We proceed as in Einhorn and Ziv (2008) by taking the limit of the finite game, i.e. when $T \to +\infty$.[16]

Corollary 1.1 *As T becomes large, the probability that $A = .5$ is implemented converges to one.*

Corollary 1.1 establishes an unexpected property of self-regulation. As the number of regulatory rounds becomes large, one and only one regulation is passed almost surely and does not depend on the realization of the proposer. This regulation features a disclosure rule that is not unusual in accounting circles: it prescribes disclosure of all below-average ("bad") events and non-disclosure of all above-average ("good") news. This is, to our knowledge, the first time such a widespread property of accounting standards has been derived from primitive assumptions about the institution. Further, there is (so to speak) a revenge of the median voter theorem contained in this characterization. Although the assumptions of Black's median voter theorem do not apply in the BF game (and BF typically do not predict the median-preferred choice), it is here made apparent that the self-regulated institution ultimately implements the disclosure regime preferred by the median.

1.4. Standard-Setting by a Mission-Driven Standard-Setter

We present next an alternative form of standard-setting institution where the standard-setter is driven by a clearly-stated mission. For now, given that we have not yet modeled productive uses of information,

[16]As a technical aside, as in Einhorn and Ziv (2008), we take the limit of a finite game to eliminate other equilibria that would only occur in an infinite-horizon repeated game and which would require further refinements (Rubinstein (1982)). Yet, one may note that the equilibrium strategies described here are also one equilibrium in the infinite horizon game.

we will assume that the standard-setter has a single-peaked utility function with a preferred standard A^s.

The standard-setter controls the agenda and proposes a new standard to maximize his objective. To capture political pressures imposed on the institution, we adopt the commonly-used Simpson-Kramer (SK) bound (Simpson (1969), Kramer (1977), Caplin and Nalebuff (1988)). In formal terms, there exists a minority $\alpha \in [0,1]$ that, if it is strictly better-off under no regulation, can block the standard-setter's effort and, in that case, no disclosure is passed. Simpson and Kramer interpret this bound as an inherent bias of most institutions in favor the status-quo. This is the case, for example, for a Congressional "filibuster" (with a minority of the Senate) or major legislative changes such as Constitutional amendments (which require a supermajority). The more sensitive accounting issues typically enter Congressional hearings where they can be delayed, or even stopped, by even a minority of more vocal opponents.[17] The SK bound α, in our setting, can also be thought of as the standard-setter's independence in the presence of heavy political resistance.

Developing an independent standard-setting institution isolated from political interference has been the object of long-standing, yet often unsuccessful, efforts by the accounting profession (Beresford (2001), Tweedie (2009)). Yet, some developments in standard-setting are pushing toward this model. Both the FASB and the IASB have put renewed efforts toward conceptual statements that better define an underlying objective function. Over time, there have been not one but many instances in which standard-setters have clashed with political bodies (e.g., inflation accounting, stock option expensing, acquisition accounting, fair-value accounting). Every defeat against political forces, and there have been many, have only strengthened the resolve to create more independent and mission-driven standard-setting bodies.

To solve the model, let A denote the regime proposed by the standard-setter. Those owners with $v < .5$ and $v < A$ are better-off not disclosing and would prefer the proposal to fail. It follows that a fraction $\min(A, .5)$ of all firms opposes A. In other words, the more disclosure is increased (moving away from the non-disclosure status-quo), the more the proposal is opposed by private interests. As a result, the standard-setter will optimally attempt to increase A as much as possible, up to A^s.

Proposition 1.4 *If $\alpha > .5$, then $A = A^s$ is implemented. Otherwise, $A = \min(A^s, \alpha) \leq .5$ is implemented (and no good news are ever disclosed).*

We show that the standard-setter can achieve its mission only when independence is high enough, but not when a large enough minority of firms can block new regulations. In such cases, the standard-setter is, yet again, bound to recover the support of the median owner and passes standards with $A < .5$ that do not involve disclosure of good news. In this respect, the mission-driven is not a panacea, unless it is given a proper mandate to overcome political pressures. In fact, the more politically-sensitive mission-driven institution will be almost completely paralyzed and will pass less disclosure than any of the two other institutions.[18]

[17]These institutional biases for the status-quo are, inherently, tied to the fact that delaying the passage of a new legislation is much easier than accelerating it. For example, the standard-setter's due process requires the institution to review and respond to the arguments presented in comment letters. The standard-setter is also advised not to pass new legislation while it is still being discussed in Congress. Note that it is implicit in SK's analysis that the proposer cannot rally the support of those that "support" the new legislation (for example, the filibuster will block new legislation even if more than half of all senators support it).

[18]The comparison between the self-regulated institution and the mission-driven one may seem "unfair" because the decision

2. The Production Economy

2.1. Model and Preliminaries

The production economy is now described with two main objectives in mind. The first objective is to nest the predictions into a richer economic environment, in which the institution may affect investment and there may be frictions to disclosure. The second objective is to allow for a direct comparison between the regulation produced by the institution and the "normative" regulation that would have been ex-ante preferred by a representative investor.

We embed into the argument some costs and benefits of disclosure. As before, current owners are short-lived and sell their assets before the cash flow date. New owners need to make a post-disclosure decision, labelled $I \geq 0$, and which leads to a final net cash flow $F = \tilde{v}I - I^2/2 + \mu$. The constant μ is assumed to focus our discussion away from ex-ante shutdowns (it represents some cash flows from the firm's other operations) and is assumed, for this purpose, to be large enough ($\mu > .5 + c$).[19]

One may interpret I as an investment or scale decision or, more abstractly, any decision that should (under complete information) be increased conditional on greater values of $\tilde{v}$. For obvious reasons, we assume that the prior owners may not tell the truth after selling the asset.[20] Finally, to speak of environments with potentially too much disclosure, we introduce a cost of disclosure $c > 0$ which reduces the final cash flow F by c if a disclosure were made. To focus our discussion, let us assume that the

The optimal investment strategy is given by the optimal choice of I conditional on all available information, and thus maximizes $\mathbb{E}(\tilde{v}I - I^2/2|r(\tilde{v}))$. It follows that $I^* = \mathbb{E}(\tilde{v}|r(\tilde{v}))$, as stated next.

Lemma 2.1 *Let $I^D(v)$ denote the optimal investment for a firm disclosing v and I^{ND} denote the optimal investment for a firm not disclosing. Then, $I^D(v) = v$ and $I^{ND} = (1 + A)/2$.*

Substituting this investment policy to obtain the no-disclosure price and the disclosure price,

$$P(ND) = (A+1)^2/8 \tag{2.1}$$

$$P(v) = v^2/2 - c \tag{2.2}$$

Let σ be the social surplus in the production economy or, equivalently, the expected surplus to an

is by majority in the former but a minority can (possibly) block a proposal in the latter. However, we believe that, as an applied assumption, this is entirely reasonable. In a self-regulated institution, the constituency itself controls the proposal stage so there would be no clear reason why a minority could block a proposal made and approved by the remaining majority. By contrast, a mission-driven standard-setter drafts new standards in relative isolation from the constituency, and, thus, it will face a far more intense political interference.

[19] Incorporating optimal shutdowns is not difficult, and provides interesting predictions on its own. For example, if $\mu > .5 - c$ is large, the economy will feature a "death spiral" under self-regulation in which the only equilibrium is one in which all firms must disclose (this is because low-value firms forced to disclose would shut down, moving the median voter increasingly toward full-disclosure). As a result, no firm would ultimately operate. However, this extension does lengthen the exposition and would take us too far away from our current message.

[20] Intuitively, a selling mechanism such that the owner, after selling, reveals the true signal is not very compelling. The prior owner would have no strict incentive to do so and, in practice, would be expeditiously sued if he were to turn around immediately, and reveal that the new investors overpaid.

uninformed or diversified investor. Then:

$$\begin{aligned} \sigma &= (1-A)P(ND) + \int_0^A P(v)dv \\ &= \frac{A^3}{24} - \frac{A^2}{8} + \frac{3-24c}{24}A + \frac{1}{8} \end{aligned} \tag{2.3}$$

Maximizing this social surplus provides the normative optimum in this production economy, as stated below.

Proposition 2.1 *Social surplus is maximized at:* $A^* = \max(0, 1-2\sqrt{2c}) < 1$.

The socially efficient level of disclosure is decreasing in the cost of disclosure (as expected). Further, because there would be no point in forcing the highest-value firm to incur disclosure costs if all other firms already disclosed on their own, the socially-optimal level is always strictly less than full-disclosure.

2.2. Standard-Setting by Electoral Competition

The model of electoral competition is now revisited in the economy with production. For pedagogical purposes, let us first throw in an educated guess about the prediction of the model, based on what we have learnt in the pure-exchange economy. Since the production economy features both benefits and costs of disclosure, one should (supposedly) expect full-disclosure to occur only when the cost is small (as the production benefits overcome the cost) and, as the cost increases, the model should feature lesser levels of disclosure.

The problem with this ingenuous extension of the results is that it is incorrect. To see this, let us simply reapply the main argument used under pure-exchange. If one candidate proposes $A_1 < 1$, and the other candidate proposes $A_2 = A_1 + \epsilon$, all firms with $v \geq A_1 + \epsilon$ will still receive a higher price under A_2 and thus candidate 2 will *still* win over candidate 1 by choosing A_2 slightly above the proposal made by candidate 1. In other words, because non-disclosers do not bear the disclosure cost, full-disclosure remains the only candidate Nash equilibrium of the game, *regardless of the magnitude of the cost*.

Perhaps, then, electoral competition is such an intense economic force that it overcomes the extra motives brought by the cost and benefits of disclosure. But, intuitively, this idea is by itself absurd: if disclosure costs were arbitrarily large, all firms would support no-disclosure over full-dislosure. What then (if anything) is an equilibrium in the electoral competition game and does it depend on disclosure costs?

The resolution of this apparent paradox lies in the following observation. If both candidates were to propose $A_1 = A_2 = 1$ and candidate 2 were to deviate to slightly reduce A_2 to $1-\epsilon$ (keeping ϵ small enough), then all firms with $v \in [1-\epsilon, 1)$ would prefer A_2 because this would save new non-disclosers some disclosure costs for a very small loss of production efficiency.[21] Consequently, full-disclosure is no longer an equilibrium even if disclosure costs are very small.

Proposition 2.2 *If* $c > 0$, *there exists no pure-strategy equilibrium in the electoral competition game.*

[21]Technically, we need to set ϵ such that $1/2 - c < (2-\epsilon)^2/8$.

The inexistence of an equilibrium is another violation of the median voter theorem. In social choice theory, this property is generally interpreted as a situation of heavy regulatory instability and a failure of convergence to long-term stable policies (e.g., Plott (1967), Caplin and Nalebuff (1988)).[22] From a purely theoretical perspective, the inexistence of a Nash equilibrium is also a major limitation, because it also indicates a failure of the theory to provide any predictive guidance. One solution to this problem would be to solve the model in mixed strategies. However, this route is extremely unpopular in social choice because it would require both politicians to choose at exactly the same instant. For this reason, this is not the solution concept that we adopt here.

A second (more common) route, which we follow here, is to complete the game-theoretic structure with sufficient additional details in order to go beyond the inexistence result. Let us assume that there is a sequential order through which candidates make their proposal. It is unimportant for the argument if the order is stochastic (the candidate may not know at the beginning of the game who will propose first) and/or the endogenous result of some attrition game (each candidate may propose at any instant and bears a small penalty every instant no candidate proposes). What is essential here is that a candidate proposing knows whether (and what) the other candidate proposed and that proposals are not pure cheap talk.

We also complete the description of the game in a way that will prove useful to tightly characterize the equilibrium. In the baseline game, we assume that a candidate with more ex-ante support is *certain* to win; yet, in practice, there may be many factors that may perturb this certainty, such as for example, small trembles or errors, or purely idiosyncratic factors that make a candidate more appealing. So, let us assume that the probability of winning the election is a function $q^n(x)$ that is strictly increasing in the fraction of votes x in favor of the candidate's proposal, with $q^n(.5) = .5$. Working with $q^n(.)$ is not only realistic, it is also technically useful to smoothen the best response correspondence and dismiss unreasonable equilibrium predictions. Importantly, the function $q^n(.)$ is, in the end, intended as a perturbation to eliminate unreasonable behavior: it is entirely possible that $q^n(x)$ may be such that a candidate with more ex-ante support is *almost* (but not exactly) certain to win. Indeed, to make this perturbation very small, we return to the baseline in the limit, by assuming that $\lim_{n\to+\infty} q^n(x) = 1_{x>.5} + 1_{x=.5}.5$. In this respect, by taking n large, we can return to the case in which the candidate with the most votes is almost certain to win the election.

As one can safely verify, this additional structure preserves the equilibrium under the assumptions of pure exchange (and, thus, it should be thought of as a more detailed description of the game). Namely, there is no possibility to increase support by proposing something different from full-disclosure even after knowing that the other candidate proposed full-disclosure. In game-theoretic terms, the Nash equilibrium under pure-exchange is also an *ex-post* equilibrium and will be unaffected by sequential decision-making.[23]

We move to the production economy. As the two-candidate proposal game is a zero-sum game, the

[22] This may be surprising as instability is very unusual in single-dimensional problem (such as choosing a policy A over a subset of the real line). In fact, all the examples cited here feature (at least) two-dimensional choice problems (such as choosing in $\{x, y\} \in [0, 1] \times [0, 1]$).

[23] Technically, there are also some new equilibria given that the second candidate may also propose any other $A \in [0, 1)$ but, these equilibria are extremely fragile given that for *any* small tremble that the first candidate may change the proposal ex-post, choosing $A \in [0, 1)$ would lead to being more likely to lose the election for no additional gain.

optimal strategy of candidate 1 is to minimize the fraction of votes to be received by candidate 2 (i.e., "min-max" candidate 2). But, then, this requires us to discuss how candidate 2 would propose in response to each possible proposal A_1.

Since the technical analysis of the model is not entirely trivial, we will develop here a set of intuitions that, we hope, will be convincing enough to cope with the shocking conclusions that will emerge from the analysis. Let us first note that candidate 2 has two options to successfully counter proposal A_1. The first option is to campaign to increase disclosure requirements, and in doing so, collect the support from owners with $v > A_1$. This option is more effective when there are more potential non-disclosers under A_1, i.e. when candidate 1 makes a low-disclosure proposal.

The second option is to campaign to reduce disclosure requirements, and then collect the support from some disclosers under A_1 who expect to reduce their disclosure costs and attain a (greater) non-disclosure price. But, if this option is to be chosen, candidate 2 should collect as many disclosers under A_1 as possible, which is achieved by proposing no-disclosure A_2 (see the Appendix for the formal proof). Consequently, this option is more effective when there are more potential disclosers under A_1.

It is thus intuitively apparent that campaigning for less disclosure is desirable when A_1 is small and campaigning for more disclosure is desirable when A_1 is large, as stated next.

Lemma 2.2 *Suppose candidate 1 proposes A_1. Then, defining $\tau = \min(2(\sqrt{1+8c}-1), 2/3)$,*

(i) If $A_1 \geq \tau$, candidate 2 makes a proposal $A_2 = 0$ that receives a fraction of votes $\min(.5\sqrt{1+8c}, A_1)$.

(ii) If $A_1 < \tau$, candidate 2 can make a proposal $A_2 > A_1$ that receives a fraction of votes arbitrarily close to (but strictly below) $1 - .5A_1$.

The office-driven politician does not have inherent preference for policy and responds opportunistically to which policy is already on the table. There are two additional remarks to be made. First, as is intuitive, greater disclosure costs expand the set of proposals A_1 such that candidate 2 campaigns for less disclosure. Second, regardless of the disclosure costs, candidate 2 always campaigns for less disclosure if candidate 1 proposes high enough disclosure requirements $A_1 > 2/3$.

We turn next to the problem of candidate 1. Choosing A_1 too low is clearly suboptimal: in this case, candidate 2 would strictly prefer to pass higher disclosure over no-disclosure, thus, by increasing A_1 ever so slightly, candidate 1 could shrink the fraction of votes received by candidate 2's counter-proposal. For symmetric reasons, choosing A_1 too high may be suboptimal, as candidate 1 could successfully decrease the support for no-disclosure by decreasing A_1. It follows from the argument that candidate 1 will choose the proposal A_1 that makes candidate 2 (almost) indifferent between the two campaigning options.

Lemma 2.3 *Let τ be given as in Lemma 2.2,*

(i) If $c < 7/72$, candidate 1 optimally proposes any standard $A_1 \in [\tau, 1]$. Then, candidate 2 proposes $A_2 = 0$ and receives strictly more than half of the votes.

(ii) If $c > 7/72$, candidate 1 proposes $A_1 = \tau$. Then, candidate 2 proposes $A_2 = 0$ and receives strictly more than half of the votes.

The Lemma 2.3 provides the following rather surprising result: under sequential proposals, candidate 2 will always (in equilibrium) propose no-disclosure. The rationale is as follows. As we explained earlier, candidate 1 strategically proposes to make candidate 2 (nearly) indifferent between the two campaigning options of more or less disclosure. But, campaigning for more disclosure is always, even if just marginally, more difficult. This is because by proposing $A_2 > A_1$, candidate 2 will always lose some required disclosers with $v \in [A_1, A_2)$ while, by contrast, by proposing $A_2 = 0$, candidate 2 gets all the feasible votes in $[0, A_1]$.[24]

Proposition 2.3 *Let $n \to +\infty$ (i.e., the probability that of a candidate with a strict majority winning converges to one), then the probability that $A = 0$ is implemented converges to one.*

It is important, at this point, to pause and note that this result is itself heavily dependent on the existence of exogenous disclosure costs which (one has to admit) has been quite controversial in the literature.[25] We do not know whether the assumption of exogenous disclosure costs, or disclosure costs specified in this manner, is necessarily the right one for all environments. In fact, it is quite possible that, in certain environments, the costs are redistributive instead of dissipative, or are not constant in the firm's value or, even, that some non-disclosers may experience some proprietary costs as information about their future cash flows is revealed to competitors (e.g., Wagenhofer (1990), Darrough (1993), Evans and Sridhar (2002)). While we may not cover all these possible classifications, the result indeed suggests that, conceptually, issues with clear proprietary costs are likely to be more difficult to regulate and point toward complete regulatory breakdowns.

2.3. Standard-Setting by Self-Regulation

Next, we apply the model of self-regulation to the production economy. As before, we approach the game by backward induction and consider the proposal strategy in round T (final round). At round T, any proposal that is preferred over no-disclosure may pass.

Let us first consider the argument with a simple graphical example, as shown in Figure 4. For a given standard A, we need to compare the no-disclosure market price of $1/8$ to the market price under A. In this example, all firms with $v \geq A$ clearly support A. To check whether disclosers support A, we indicate by $\overline{v}_T$ the point at which $1/8 = P(\overline{v}_T)$ so that disclosers to the right (left) of $\overline{v}_T$ prefer to disclose (not to disclose). Summarizing, all firms with $v \geq \min(\overline{v}_T, A)$ support A while all other firms oppose A. Here, then, this particular $A > .5$ cannot pass.

It is not difficult to generalize this argument. Let us observe that, because $P(.5) < 1/8$, the threshold $\overline{v}_T$ is always strictly greater than .5. It follows that $\min(\overline{v}_T, A) \geq .5$ if and only if $A \leq .5$. In other words, as noted earlier in the pure-exchange economy, only a disclosure regime that is supported by the median may pass. However, contrary to the pure-exchange economy, the median now opposes regimes $A > .5$.

[24] One may argue that the logical argument presupposes that the world is unreasonably "continuous." We disagree. Real events $\tilde{x}$ are taken from a very large reality and thus a discrete model, which can be useful to clarify intuitions in certain models, is by no means not more realistic than a continuous model. Even if the real world were supposed to be discrete, it would be highly questionable to assume that the candidate 2 could pin-point the minimal feasible $A_2 > A_1$ with infinite accuracy.

[25] This is readily admitted by Jovanovic (1982) who, while he uses the assumption, points to its conceptual limitations.

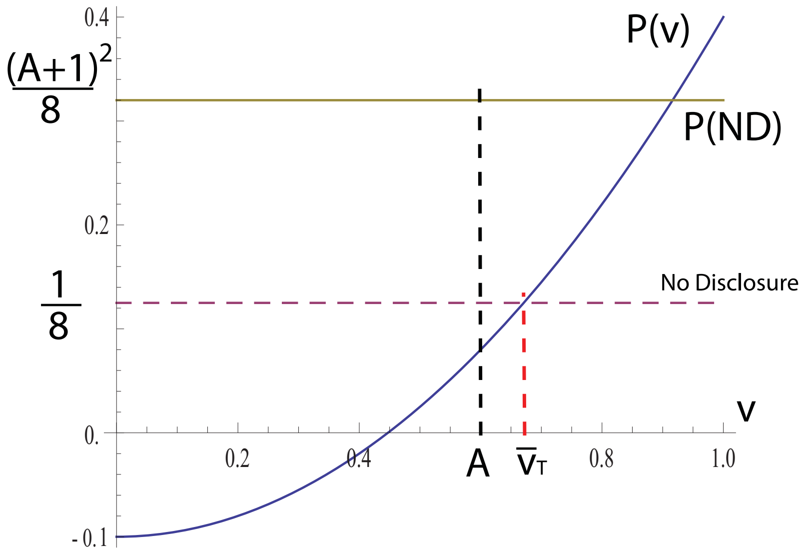

Figure 4: Exit Option at round T vs Proposed Standard A

Lemma 2.4 *In round T, A will pass if and only if $A \in (0, .5]$.*

Having noted that all regimes with $A \leq .5$ can pass, it is immediate to derive what should be the proposal strategy adopted by each proposer. All owners with $v \leq .5$ propose $A = v$ to maximize their perceived market price. The higher-value owners with $v > .5$, who propose with probability .5, will push A as high as they can and thus propose $A = .5$. This implies the following Lemma.

Lemma 2.5 *Firms with a type $v < .5$ propose $A = v$ and the legislation is accepted. Firms with a type $v \geq .5$ propose $A = .5$.*

Using Lemma 2.5, we may then derive the value function $V_T(x)$ expected by a firm with value $v = x$ at the beginning of round T.

$$
\begin{aligned}
V_T(x) &= 1_{x<.5}\left(\int_0^x (v+1)^2/8dv + \int_x^1 (x^2/2 - c)dv\right) + 1_{x\geq .5}\int_0^1 \min((v+1)^2/8, 9/32))dv \\
&= 1_{x<.5}\left(-\frac{11x^3}{24} + \frac{5x^2}{8} + \frac{x}{8} - c(1-x)\right) + 1_{x\geq .5}\underbrace{\frac{23}{96}}_{p_T}
\end{aligned} \tag{2.4}
$$

Let us now emphasize three key features of $V_T(x)$ that - as we will soon see - will be true not only for $V_T(x)$ but also for all $V_t(x)$ in earlier rounds. First, no good news is ever disclosed so that $V_T(x)$ is constant on $[.5, 1]$ (Observation 1); we can then denote $p_T \equiv V_T(1)$ and, for later use, we denote $p_t \equiv V_t(1)$ for $t < T$. In other words, the early public report does not differentiate between good news and average news. Second, $V_T(x) > v^2/2 - c$ for any $x < .5$ (Observation 2); namely, all owners with below-average events prefer to block any new regulation over disclosing their own information. Third, $p_T > P(.5) = 1/8 - c$ (Observation 3), i.e. the median owner is better-off bargaining further (and hoping for some non-disclosure) over disclosing her information.

We now claim that these three fundamental properties remain true for $V_t(x)$ at $t < T$ and, to prove it formally, we proceed recursively assuming that these are true at $V_{t+1}(.)$. To validate the (reverse) recursion, we then need to work through two steps: first, derive the optimal proposal strategy in round t and, second, check that Observations (1)-(3) remain true for V_t. The next Lemma describes the first of these two steps.[26]

Lemma 2.6 *Suppose $V_{t+1}(.)$ satisfies (1)-(3) with $p_{t+1} < 9/32$. At round t, $A \geq 0$ can pass if and only if $A \in [k_t, .5]$, where $k_t = 2\sqrt{2p_{t+1}} - 1 < .5$.*

The Lemma offers one preliminary insight. A necessary condition for a regime to pass is that it should be approved by the median owner. This median owner expects a continuation price p_{t+1} and thus will only approve $(A+1)^2/8 \geq p_{t+1}$. In the production economy, all ownerse with $v \in [.5, 1]$ share exactly the same continuation value p_{t+1} as the median owner (by Observation (3)). Therefore, a regime is approved by the median if and only if it is approved by at least half of all owners. Contrast this with the pure-exchange economy in which approval by the median was *not* a sufficient condition for a regime to pass. Therefore, the condition $(A+1)^2/8 \geq p_{t+1}$ (approval by the median) is a necessary and sufficient condition for a standard to pass. What we then conclude is that the institution has fully aligned the interest of the median owner with the interest of all higher-value owners.

Interestingly, the prior finding that no good news are ever disclosed (or $A > .5$) continues to hold in the production economy, as it is driven here by the same primitive force, namely the veto of the median. However, not just $A = .5$ may pass in rounds $t < T$; rather, regimes with some non-disclosure of bad news, with $A \in [k_t, .5]$, may now pass. Intuitively, by realigning the preference of all owners with $v \geq .5$, the production economy has partially eroded the pivotal role held by the median.

The optimal proposal strategy in round t is now immediate. Owners with $v > .5$ would prefer to, but cannot, set a standard $A = v > .5$. As a result, they choose the maximal feasible standard $A = .5$. Owners with $v \in [k_t, .5]$ pass their preferred standard $A = v$. Finally, owners with $v < k_t$ are unable to pass any standard such that they do not disclose, and optimally delay the process for one more round in the hope of reaching the final round.

Lemma 2.7 *Suppose $V_{t+1}(.)$ satisfies (1)-(3). At round t, owners with value $v < k_t$ wait for one round, owners with $v \in [k_t, .5]$ pass $A = v$ and owners with $v > .5$ pass $A = .5$.*

What remains to be done to verify the recursion hypothesis and check whether, as a result of the proposal strategy in Lemma 2.7, $V_t(.)$ does indeed verify Observations (1)-(3).

Proposition 2.4 *There exists $\{k_t\}_{t=1}^T$ such that, at every round t, owners with value $v < k_t$ wait for one round, owners with $v \in [k_t, .5]$ pass $A = v$ and owners with $v > .5$ pass $A = .5$.*

Unlike pure-exchange, there is not one but a continuum of disclosure regimes that may pass in each round. They all future no-disclosure of favorable events but some moderately unfavorable events in

[26]For the more technically-conscious reader, note that we have simplified the problem using the tie-breaker assumption that any standard must be supported by the largest set of firms. Thus, $A = 0$ cannot pass because firms with $v \in [0, .5)$ support while firms in $[.5, 1]$ oppose (up a translation, $[0, .5)$ is a strict subset of $[.5, 1]$). Another manner to rule out $A = 0$ is to assume that any proposal must receive a strict majority or if c is not too large.

$[k_t, .5]$ may also not be disclosed. To obtain a complete resolution of the model, we examine now whether we can further characterize the sequences $\{k_t, p_t\}$ and, by taking the limit over T, describe the outcome of the regulatory process when the horizon of regulatory rounds is large.

Proposition 2.5 *As the number of rounds T becomes large, the standard $A = .5$ is passed with probability one.*

The production economy features both arbitrary production costs and benefits of disclosure; as a result of these forces, the ex-ante socially desirable level of disclosure A^* may be above or below $.5$. Yet, as we show here, the output of the (multi-round) self-regulated institution still implies $A = .5$, completely ignoring the costs or benefits of disclosure. Further, this occurs despite the fact that for any finite number of round, these aspects do play some role (through k_t).

The intuition is that the emergence of $A = .5$ in the pure-exchange as an equilibrium goes much deeper than simply ignoring costs and benefits of disclosure. The key is that the self-regulated institution transfers proposal ability to the private sector and, in doing so, endogenously gives agenda-setting power to the median owner. But the median owner need not care much about the social value or cost of information when she can implement her preferred regulation. First, when not disclosing at $A = .5$, the owner does not incur any disclosure costs so that the cost is entirely shifted to the (politically non-represented) low-value owners. Second, the median owner primarily cares about pooling with higher-value firms so that the opportunity cost of inefficient investment is entirely shifted to (politically non-represented) high-value owners. As a result, the institution becomes completely insensitive to the presence of costs or benefits of disclosure.

We did briefly allude to this take-away but there is only one way to interpret this basic finding. The self-regulated instituion, just like electoral competition, is a collective mechanism that aggregates individual preferences. Since each preference does reflect a private interest (which, in turn, contains productive efficiency as one concern), it is commonly-argued that some political or collective supervision of the standard-setter is indeed desirable so that the social aggregator will translate (at least) some of these efficiency concerns into the final policy. Denis Beresford himself, when Chairman of the FASB, has repeatedly commented on the need for some political supervision (though Sir David Tweedie, at the IASB, has certainly been more reserved on the matter).

However, the social aggregator induced by electoral competition or self-regulation eliminates efficiency concerns entirely, and is entirely fueled by reporting concerns. At the end, the choice in each of these institutions is *unrelated* to the social optimum; it may be too low or too high. The electoral competition will induce no regulation, even if the cost of disclosures had been minimal. The self-regulated institution will pass $A = .5$ even if costs are extremely large, possibly leading to a complete shutdown of a large portion of the economy. This is the main reason why an effective institution should not entirely rely on the social aggregation and must incorporate a stated mission; this is the case that we discuss next.

2.4. Standard-Setting by a Mission-Driven Standard-Setter

Let us finally revisit the problems faced by a mission-driven standard-setter. Since the economy now features a clearly defined surplus-maximizing disclosure level, we make the natural assumption that the regulator is benevolent and maximizes social surplus (trying to reach as close as possible to A^*). It is worth noting that the analysis generalizes very easily to situations in which the regulator has some other objective, simply replacing A^* by A^s.

The regulator makes a proposal and firms decide whether or not to support that proposal. The SK bound is, as before, measured as the fraction of owners that strictly oppose the new regulation proposed by the standard-setter against no regulation.

All prospective non-disclosers, with $v \geq A$, support the proposal over non-disclosure. All prospective disclosers, with $v < A$, oppose the proposal if $v^2/2 - c < 1/8$. Solving for the indifference threshold $\overline{v}$,

$$\overline{v} = \frac{1}{2}\sqrt{1+8c} \tag{2.5}$$

It follows that the fraction of opposers is given by $\min(A, \overline{v})$ and, as in the case of pure-exchange, political resistance (weakly) increases as the standard-setter proposes more disclosure.

Lemma 2.8 *The standard-setter can implement a standard A if and only if $A \in [0, \overline{A}]$, where $\overline{A} = 1$ if $\alpha \geq \frac{1}{2}\sqrt{1+8c}$ and $\overline{A} = \alpha$ if $\alpha < \frac{1}{2}\sqrt{1+8c}$.*

The Lemma implies the following immediate characterization of the standard-setter's proposal strategy.

Proposition 2.6 *In equilibrium, the standard-setter proposes and implements $A = \min(A^*, \overline{A})$.*

By assumption, the standard-setter's proposal will be more directly related to the cost of disclosure. However, this only occurs when the SK bound α is large enough relative to the disclosure costs so that the social optimum A^* lies below the maximal politically-feasible regime. When $A^* > \overline{A}$, on the other hand, the regime $A = \alpha$ must be implemented and depends only on the standard-setter's independence.

The cost of disclosure also directly affects the ability (and willingness) of the standard-setter to implement particular regimes. As shown in Proposition 2.6, increasing c (weakly) decreases $\overline{A}$ and, as a result, the standard-setter will face more intense political pressures against more disclosure. But, vice-versa, an increase in c also reduces the target regime A^* that the standard-setter aims to implement. To compare these two forces, we may note from Proposition 2.6 that A^* may be implemented if and only if $\alpha \geq \min(A^*, \frac{1}{2}\sqrt{1+8c})$. This bound may be easily rewritten to yield the following Corollary.

Corollary 2.1 *The social optimum A^* is implemented by the standard-setter if and only if either (a) $c \leq \frac{1}{72}(23 - 8\sqrt{7})$ and $\alpha \geq \frac{1}{2}\sqrt{1+8c}$ or (b) otherwise, $\alpha \geq A^* = \max(0, 1 - 2\sqrt{2c})$.*

Corollary 2.1 reveals that $\min(A^*, \frac{1}{2}\sqrt{1+8c})$ is inverse U-shaped in the disclosure cost. For small disclosure costs, below approximately $c = 2.6\%$, increasing the costs increases political resistance more, and thus shrinks the set of α such that A^* may be implemented. For higher disclosure costs, greater disclosure costs expand the set of α such that A^* may be implemented. Of course, when c is very large, $A^* = 0$ becomes optimal and it can be implemented regardless of α. In this respect, while the negative consequences of more political pressures (through α are clear, the effect of disclosure costs on the ability of the standard-setter to implement A^* is ambiguous.

Typically, the standard-setter may face a wide range of problems, some of them may feature different disclosure costs. One may extend Corollary 2.1 to obtain a simple bound on α such that the standard-setter would always be able to implement A^* regardless of the cost. Because $\min(A^*, \frac{1}{2}\sqrt{1+8c})$ is inverse U-shaped, the worst case scenario for implementing A^* is realized at $c = \frac{1}{72}(23 - 8\sqrt{7})$. This implies the following Corollary.

Corollary 2.2 *If $\alpha \geq \frac{1}{3}(\sqrt{7} - 1)$ (or, approximately, 55%), the standard-setter will always be able to A^*.*

Using a worst-case scenario analysis, we have used the model to derive a simple bound on the minimum amount of political independence to be granted to the standard-setter in order to achieve the social mission. Importantly, the standard-setter does not need to be a dictator and may be partially sensitive to some amount pressures. For example, the numerical result suggest that the standard-setter should be given (in this particular specification) the ability to resist pressures by at least 55% of all firms. Undoubtedly, this number is quite large and much smaller minorities can affect standard-setting processes as they exist today.

So, in summary, do mission-driven standard-setters implement higher-quality standards and, given that they directly incorporate social objectives, do they lead to preferable social outcomes? The answer to this question, unfortunately, is that it depends. A standard-setter that is heavily constrained by political pressures will be forced to implement $A = \alpha$, possibly far below the level that is socially optimal. On the grounds of social efficiency, the institution may well dominate electoral competition (which, one may recall, passes no-disclosure) but it does not compare unambiguously with the self-regulated institution. The self-regulated institution (although perhaps for the wrong reasons) can attain $A = .5$ and could be preferable to a mission-driven institution whose decision process can be blocked by any vocal minority. In fact, a mission-driven institution is only desirable once proper political safeguards have been put in place.

3. Concluding Remarks: Toward a New Research Paradigm

Although the idea is certainly open to theoretical speculation, it is ultimately very difficult to empirically measure what the best accounting standard should be, let alone what practical rules would implement it. Popular claims in favor of one particular accounting treatments are typically driven by self-interested motives (sometimes unconsciously) and the notion of a surplus-maximizing policy remains evasive. Researchers have made repeated attempts to approach this question, but such normative questions remain unsettled.

We propose in this paper a research agenda that would shift the debate from the actual standards toward the institutions that create accounting standards. Even if normative research were to ultimately agree on accounting standards, such insights will not be put to use unless the institutional form allows it. A sound discussion of the institutional determinant of accounting is required for the normative agenda to be successful. Vice-versa, deficient institutions give us a causal explanation as to why and how policy-making may fail.

And, yet, even though we have tried to make some exploratory progress toward understanding alternative accounting institutions, we still know very little about them and much remains to be done. Here, our objective has been to develop the positive regulation paradigm into disclosure research, ask a few questions, and provide fewer answers. Our insights at this stage are limited in scope and methodology, and call for a much richer development of the research agenda. For example, should there be one regulatory body or two competing institutions? We do not know. Should accounting be regulated, or will the market provide disclosure on its own and overcome reporting motives? We do not know. How should accounting institutions interact with other institutions that regulate the judiciary or banking system? We, again, do not know.

Nevertheless, it is appropriate to conclude this study with a word of hope. Accounting is rich and complex, but so are the many issues on which positive regulatory economics has been so successful. What we can hope is to decompose the complexity with modesty and awe, approaching one issue at a time. But disclosure regulation is one issue among the many just waiting to be solved. While the number of unanswered questions is still daunting, the paradigm offers a cornucopia of research agendas, and aspirations to unwind some of the inmost core forces behind accounting policy-making and design more effective institutions.

Bibliography

Allen, Abigail and Karthik Ramanna, "Are Democrats conservative? Towards a theory of the role of standard setters in standard setting," 2010. Harvard Business School Working Paper.

Amershi, Amin H., Joel S. Demski, and Mark A. Wolfson, "Strategic behavior and regulation research in accounting," *Journal of Accounting and Public Policy*, 1982, *1* (1), 19–32.

Ball, Ray, "Infrastructure Requirements for an Economically Efficient System of Public Financial Reporting and Disclosure," *Brookings-Wharton Papers on Financial Services*, 2001, pp. 127–183.

Baron, David P. and John A. Ferejohn, "Bargaining in Legislatures," *American Political Science Review*, 1989, *83* (4), 1181–1206.

Basu, Sudipta, "The Conservatism Principle and the Asymmetric Timeliness of Earnings," *Journal of Accounting and Economics*, 1997, *24* (1), 3–37.

____ **and Gregory B. Waymire**, "Accounting is an Evolved Economic Institution," *Foundations and Trends in Accounting*, 2008, *1-2* (2), 1–174.

Beresford, Dennis R., "How to Succeed as a Standard Setter by Trying Really Hard," *Accounting Horizons*, 1997, *11* (3), 79–90.

____ , "Congress Looks at Accounting for Business Combinations," *Accounting Horizons*, 2001, *15* (1), 73–86.

Bernheim, Douglas and Michael D. Whinston, "Menu Auctions, Resource Allocation, and Economic Influence," *The Quarterly Journal of Economics*, 1986, *101.*

Bertomeu, Jeremy and Robert M. Magee, "From Low-Quality Reporting to Financial Crises: Politics of Disclosure Regulation along the Economic Cycle.," 2010. 2010 Annual Conference of the Journal of Accounting and Economics.

____ **and** ____ , "Political Pressures and the Evolution of Disclosure Regulation," 2010. Northwestern University Working Paper.

____ **, Anne Beyer, and Ronald A. Dye**, "Capital Structure, Cost of Capital, and Voluntary Disclosures," *Accounting Review, forth.*, 2011.

Beyer, Anne and Ilan Guttman, "Voluntary Disclosure, Disclosure Bias and Real Effects," 2010. Rock Center for Corporate Governance at Stanford University Working Paper No. 85.

——— **, Daniel A. Cohen, Thomas Z. Lys, and Beverly R. Walther**, "The financial reporting environment: Review of the recent literature," *Journal of Accounting and Economics*, 2010, *50* (2-3), 296–343.

Black, Duncan, "On the Rationale of Group Decision-making," *Journal of Political Economy*, 1948, *56* (1), 23–34.

Bloomfield, Robert, Theodore E. Christensen, Jonathan Glover, Sue Haka, Karim Jamal, James A. Ohlson, Stephen Penman, Kathy Petroni, Eiko Tsujiyama, and Ross L. Watts, "Comments on the Proposed SEC's 20102015 Draft Strategic Plan," *Accounting Horizons*, 2010, *24* (1), 3–87.

Caplin, Andrew and Barry Nalebuff, "On 64%-Majority Rule," *Econometrica*, 1988, *56* (4), 787–814.

Darrough, M., "Disclosure Policy and Competition: Cournot vs. Bertrand," *Accounting Review*, 1993.

Deakin, Edward B., "Rational Economic Behavior and Lobbying on Accounting Issues: Evidence from the Oil and Gas Industry," *Accounting Review*, 1989, *64* (1), 137–151.

Demski, Joel S., "The General Impossibility of Normative Accounting Standards," *Accounting Review*, 1973, *48* (4), 718–723.

——— , "Choice among Financial Reporting Alternatives," *Accounting Review*, 1974, *49* (2), 221–232.

——— **, Haijin Lin, and David E.M. Sappington**, "Asset Revaluation Regulation with Multiple Information Sources," *Accounting Review*, 2008, *64* (1), 869–891.

Dye, Ronald A., "Earnings Management in an Overlapping Generations Model," *Journal of Accounting Research*, 1988, *26* (2), 195–235.

——— , "Classifications Manipulation and Nash Accounting Standards," *Journal of Accounting Research*, 2002, *40* (4), 1125–1162.

——— **and Shyam Sunder**, "Why Not Allow FASB and IASB Standards to Compete in the U.S.?," *Accounting Horizons*, 2001, *15* (3), 257–271.

——— **and Sri S. Sridhar**, "A positive theory of flexibility in accounting standards," *Journal of Accounting and Economics*, 2008, *46* (2-3), 312–333.

Einhorn, Eti and Amir Ziv, "Intertemporal Dynamics of Corporate Voluntary Disclosures," *Journal of Accounting Research*, 2008, *46* (3), 567–589.

Evans, John H. III and Sri S. Sridhar, "Multiple Control Systems, Accrual Accounting, and Earnings Management," *Journal of Accounting Research*, 1996, *34* (1), 45–65.

——— **and** ——— , "Disclosure-Disciplining Mechanisms: Capital Markets, Product Markets, and Shareholder Litigation," *Accounting Review*, 2002, *77* (3), 595–626.

——— **, R. Lynn Hannan, Ranjani Krishnan, and Donald V. Moser**, "Honesty in Managerial Reporting," *Accounting Review*, 2001, *76* (4), 537–559.

Ewert, Ralf and Alfred Wagenhofer, "Economic Effects of Tightening Accounting Standards to Restrict Earnings Management," *Accounting Review*, 2005, *80* (4), 1101–1124.

Farber, David B., Marilyn F. Johnson, and Kathy R. Petroni, "Congressional Intervention in the Standard-Setting Process: An Analysis of the Stock Option Accounting Reform Act of 2004," *Accounting Horizons*, 2007, *21* (1), 1–22.

Fields, Thomas D. and Ronald R. King, "Voting Rules for the FASB," *Journal of Accounting, Auditing and Finance*, 1996, *11* (1), 99–117.

Goex, Robert F. and Alfred Wagenhofer, "Optimal impairment rules," *Journal of Accounting and Economics*, 2008, *48* (1), 2–16.

Grossman, Sanford J. and Oliver D. Hart, "Disclosure Laws and Takeover Bids," *Journal of Finance*, 1980, *35* (2), 323–334.

Hochberg, Yael V., Paola Sapienza, and Annette Vissing-Jorgensen, "A Lobbying Approach to Evaluating the Sarbanes-Oxley Act of 2002," *Journal of Accounting Research*, 2009, *47* (2), 519–583.

Hopwood, Anthony G., "Wither Accounting Research?," *Accounting Review*, 2007, *82* (5), 13651374.

Horngren, Charles T., "The marketing of accounting standards," *Journal of Accountancy*, 1973, *136* (4), 61–66.

Jamal, Karim, Michael Maier, and Shyam Sunder, “Enforced Standards Versus Evolution by General Acceptance: A Comparative Study of E-Commerce Privacy Disclosure and Practice in the United States and the United Kingdom,” *Journal of Accounting Research*, 2005, *43* (1), 73–96.

Jovanovic, Boyan, “Truthful Disclosure of Information,” *Bell Journal of Economics*, 1982, *13* (1), 36–44.

Kanodia, Chandra S., “Effects of Shareholder Information on Corporate Decisions and Capital Market Equilibrium,” *Econometrica*, 1980, *48* (4), 923–953.

——, “Accounting Disclosure and Real Effects,” *Foundations and Trends in Accounting*, 2006, *1* (3), 167–258.

Kothari, S.P., Karthik Ramanna, and Douglas J. Skinner, “Implications for GAAP from an analysis of positive research in accounting,” *Journal of Accounting and Economics*, 2010, *50* (2-3).

Kramer, Gerald H., “A dynamical model of political equilibrium,” *Journal of Political Equilibrium*, 1977, *16* (2), 310–334.

Kydland, Finn E. and Edward C. Prescott, “Rules Rather than Discretion: The Inconsistency of Optimal Plans,” *Journal of Political Economy*, 1977, *85* (3), 473–492.

Lambert, Richard, “Discussion of Implications for GAAP from an analysis of positive research in accounting,” *Journal of Accounting and Economics*, 2010, *50* (2-3).

Liang, Pierre J., “Equilibrium Earnings Management, Incentive Contracts, and Accounting Standards,” *Contemporary Accounting Research*, 2004, *21* (3), 685–718.

Lo, Kin, “Economic Consequences of Regulated Changes in Disclosure: the Case of Executive Compensation,” *Journal of Accounting and Economics*, 2003, *35* (1), 285–314.

Lundholm, Russell J., “Public Signals and the Equilibrium Allocation of Private Information,” *Journal of Accounting Research*, 1991, *29* (2), 322–349.

Matthews, R.C.O., “The Economics of Institutions and the Sources Of Economic Growth,” *Economic Journal*, 1986, *96* (4), 903–918.

Moonitz, Maurice, “The Valuation of Business Capital: An Accounting Analysis,” *American Economic Review*, 1951, *41* (2), 157–165.

Ohlson, James A. and A.G. Buckman, “Toward a Theory of Financial Accounting: Welfare and Public Information,” *Journal of Accounting Research*, 1981, *19* (2), 399–433.

Persson, Torsten and Guido Tabellini, *Political economics : explaining economic policy*, MIT Press, 2002.

Plantin, Guillaume, Haresh Sapra, and Hyun Shin Shin, “Marking to Market: Panacea or Pandora’s Box?,” *Journal of Accounting Research*, 2008, *46* (2), 435–460.

Plott, Charles R., “A Notion of Equilibrium and its Possibility Under Majority Rule,” *American Economic Review*, 1967, *57* (4), 787–806.

Ramanna, Karthik, “The implications of unverifiable fair-value accounting: Evidence from the political economy of goodwill accounting,” *Journal of Accounting and Economics*, 2008, *45* (2-3), 253–281.

—— **and Ewa Sletten**, “Why do countrise adopt International Financial Reporting Standards,” 2010. Harvard Business School Working Paper.

Ray, Korok, “One Size Fits All? Costs and Benefits of Uniform Accounting Standards,” *Georgetown University Working Paper*, 2010.

Rubinstein, Ariel, “Perfect Equilibrium in a Bargaining Model,” *Econometrica*, 1982, *50* (1), 97–110.

Sapra, Haresh, “Do Mandatory Hedge Disclosures Discourage or Encourage Excessive Speculation?,” *Journal of Accounting Research*, 2002, *40* (3), 933–964.

Shin, Hyun Song, “Disclosures and Asset Returns,” *Econometrica*, 2003, *71* (1), 105–133.

Shubik, Martin, “A Note on Accounting and Economic Theory: Past, Present, and Future,” *Accounting, Economics, and Law*, 2011, *1* (1), 123–139.

Simpson, Paul B., "On Defining Areas of Voter Choice: Professor Tullock on Stable Voting," *Quarterly Journal of Economics*, 1969, *83* (3), 478–490.

Sleet, Christopher and Sevin Yeltekin, "Politically credible social insurance," *Journal of Monetary Economics*, 2008, *55*.

Stigler, George J., "The Theory of Economic Regulation," *Bell Journal of Economics*, 1971, *2* (1), 3–21.

Stocken, Phillip, "Credibility of Voluntary Disclosure," *Rand Journal of Economics*, 2000, *31* (2), 359–374.

Sunder, Shyam, "Political economy of accounting standards," *Journal of Accounting Literature*, 1988, *7*, 31–41.

——, "IFRS and the Accounting Consensus," *Accounting Horizons*, 2009, *23* (1), 101–111.

—— **and Charles R. Plott**, "Efficiency of Experimental Security Markets with Insider Information: An Application of Rational-Expectations Models," *Journal of Political Economy*, 1982, *90* (4), 663–698.

Tweedie, David, "The Financial Crisis and Regulatory Arbitrage: A real-world stress-test of accounting standards," 2009. Address to 2009 Meetings of the American Accounting Association, available at http://commons.aaahq.org/posts/1712fa20b0.

Wagenhofer, Alfred, "Voluntary Disclosure with a Strategic Opponent," *Journal of Accounting and Economics*, 1990, *12*, 341–363.

Watts, Ross L., "Conservatism in Accounting Part I: Explanations and Implications," *Accounting Horizons*, 2003, *17* (3), 207–222.

—— **and Jerold L. Zimmerman**, "Towards a Positive Theory of the Determination of Accounting Standards," *Accounting Review*, 1978, *53* (1), 112–134.

—— **and** ——, "The Demand for and Supply of Accounting Theories: The Market for Excuses," *Accounting Review*, 1979, *54* (2), 273–305.

Williams, Michael G., John S. Hughes, and Carolyn B. Levine, "Influence of Capital Gains Tax Policy on Credibility of Unverified Disclosures," *Accounting Review*, 2010, *85* (2).

Williamson, Oliver E., "The New Institutional Economics: Taking Stock, Looking Ahead," *Journal of Economic Literature*, 2000, *38* (3), 595–613.

Zeff, Stephen A., "The Rise of Economic Consequences," *Journal of Accountancy*, 1978, *146* (6), 56–63.

——, "Political Lobbying on Proposed Standards: A Challenge to the IASB," *Accounting Horizons*, 2002, *16* (1), 43–54.

——, "The Evolution of U.S. GAAP: The Political Forces Behind Professional Standards," *The CPA Journal*, 2005.

Zmijewski, Mark E. and Robert L. Hagerman, "An income strategy approach to the positive theory of accounting standard setting/choice," *Journal of Accounting and Economics*, 1981, *3* (2), 129–149.

Technical Appendix

Omitted Proofs in Section 1.3

Before solving the model explicitly in section 2.3, we introduce some technical preliminaries that rely on some properties of an educated guess about the expected market price at the beginning of a regulatory round. By way of notation, let us define as $V_t(x)$ as the expected market price at the start of round t for a firm with value x. In short-hand, we refer to this function as the continuation price.

As suggested earlier, we make a "guess" (which will be verified later on) that $V_t(x)$ can be explicitly written as a function that is quadratic in parts.

$$G_t(x) = (1/2)^{T-t}(-\frac{3}{4}x^2 + \frac{3}{2}x) + (1 - (1/2)^{T-t})(1_{x<1/2}x + 1_{x\geq 1/2}3/4) \tag{3.1}$$

The first important property of $G_t(x)$ is that it admits a simple solution for the regulatory choice game in which one and only one reporting regime may be proposed and passed in the current round.

Lemma 3.1 *Suppose that the continuation price at round $t < T$ is given by $G_t(x)$. Then, at round t, a proposer with value $v \geq 1/2$ proposes and passes $A = 1/2$ and a proposer with value $v < 1/2$ chooses a proposal that fails (for example $A = 1$) leading to the next round.*

Proof of Lemma 3.1: The main idea of the proof is to show that, conditional on a continuation price equal to $G_t(.)$, only the regulation $A = 1/2$ may pass. We decompose the proof in several steps.

Step 1. Preferences of Disclosers. We examine whether a firm with value v prefers to disclose its information over continuing for one more round. Specifically, a firm with value v prefers to disclose if $v > G_t(v)$. Note that $G_t(v) > v$ for all $v \leq 1/2$, i.e. all firms with below-average values oppose a regulation that requires them to disclose. In addition, we know that: (a) $G_t(.)$ is continuous, strictly increasing and concave on $(1/2, 1)$, (b) $G_t(1/2) > 1/2$ and $G_t(1) = 3/4 < 1$. Therefore, there exists a unique $v_0 \in (1/2, 1)$ defined by $G_t(v_0) = v_0$ such that all firms with $v < v_0$ oppose disclosure of their information while all firms with $v > v_0$ support disclosure of their information.

Step 2. Preferences of Non-Disclosers. We examine whether a firm with value v prefers not to disclose under regime A. In this regime, the non-disclosure market price is $(A + 1)/2$ so that the firm supports the regime if $(A + 1)/2 > G_t(v)$. First, suppose that $A \geq 1/2$. Then, $(A + 1)/2 = 3/4 \geq G_t(x)$ therefore all non-disclosers support the regulation. Second, suppose that $A \in [(1/2)^{T+2-t}, 1/2]$. By developing $G_t(1/2)$, this condition can be rewritten equivalently as $(A + 1)/2 \in [G_t(1/2), 3/4]$. Again, we know that: (a) $G_t(.)$ is continuous, strictly increasing and concave on $[1/2, 1]$, (b) $G_t(1/2) \leq (A + 1)/2$ and $G_t(1) = 3/4 \geq (A + 1)/2$. Therefore, there exists a unique $v_1 \in (1/2, 1)$ defined by $G_t(v_1) = (A + 1)/2$ such that all non-disclosing firms with $v < v_1$ support the non-disclosure regime while all non-disclosing firms with $v > v_1$ oppose the non-disclosure regime. For further reference, the threshold is given by:

$$(1/2)^{T-t-1}(-\frac{3}{4}(v_1)^2 + \frac{3}{2}v_1) + (1 - (1/2)^{T-t-1})3/4 = (A + 1)/2$$

This Equation is quadratic with a unique solution in $[1/2, 1]$.

$$v_1 = 1 - \sqrt{\frac{1 - 2A}{(1/2)^{T-t-1}}} \tag{3.2}$$

Third, suppose that $A < 2G_t(1/2)$. Let us now simply note that $\lim_{x \to (1/2)^-} G_t(x) < (A + 1)/2$, so that strictly more than half of all firms are non-disclosers that oppose such a regime; we do not need to consider these regimes further since they cannot pass.

Step 3. Regulatory Choice High A. Consider a regulation with $A > 1/2$, and let us examine the support for this regulation. Then, (a) all non-disclosers support (by Step 2); (b) all disclosers with $v \in (v_0, A)$ support as well (by Step 1), (c) all disclosers with $v < \min(v_0, A)$ oppose (by Step 1). First, suppose that $v_0 \geq A$. Then, $1 - A$ non-disclosers support while A disclosers oppose: the regulation cannot pass since more than half of all firms oppose. Second, suppose that $v_0 < A$. Then, $1 - v_0$ firms support while v_0 firms oppose. Since $v_0 > 1/2$, more than half of all firms oppose and, again, the regulation cannot pass.

Step 4. Regulatory Choice Low A. Consider a regulation with $A \in [2G_t(1/2) - 1, 1/2]$, and let us examine the support for this regulation. Then, all firms with v between A and v_1 support while other firms oppose (by steps 1 and 2). Therefore, the support for the regulation is given by $L(A) = v_1 - A$, i.e.

$$L(A) = 1 - \sqrt{\frac{1 - 2A}{(1/2)^{T-t-1}}} - A \tag{3.3}$$

This function is convex in A, therefore it may be maximal at only $A = 0$ or $A = 1/2$. The first candidate $A = 0$ implies a market price of $1/2$, because $\lim_{x \to (1/2)^-} G_t(1/2) > 1/2$ and G_t is continuous on $[0, 1/2)$, $L(0) < 1/2$. The second candidate follows from Steps 1 and 2 and implies that L(A)¡1/2 for any A∈ $[2G_t(1/2) - 1, 1/2)$ and only $A = 1/2$ may pass the voting stage.

Step 5. Proposal Choice. From Step 3 and 4, we know that only $A = 1/2$ may pass. Since $G_t(x) \leq 3/4$, all firms with $v \geq 1/2$ propose $A = 1/2$. By step 1, all firms with $v < 1/2$ are better-off if they do not disclose, i.e. if they do not pass $A = 1/2$, i.e. they choose to pass any regulation $A \neq 1/2$ which fails and leads to the next round.□

Lemma 3.2 *Let $t \in (1, T)$ and suppose that the continuation price is given by $G_t(x)$. Then, the continuation price at $t-1$ is given by $G_{t-1}(x)$.*

Proof of Lemma 3.2: At round t, Lemma 3.1 implies that $A = 1/2$ is passed if the proposer has value $v \geq 1/2$ and, otherwise, the proposer delays the regulatory choice by one period. Therefore, the continuation price at round $t-1$ is given by:

$$\begin{aligned}
\hat{V}_{t-1}(x) &= 1/2G_t(x) + 1/2(1_{x<1/2}x + 1_{x\geq 1/2}3/4) \\
&= (1/2)^{T-t-1}(-\frac{3}{4}x^2 + \frac{3}{2}x) + (1/2 - (1/2)^{T-t})(1_{x<1/2}x + 1_{x\geq 1/2}3/4) \\
&\quad +1/2(1_{x<1/2}x + 1_{x\geq 1/2}3/4) \\
&= (1/2)^{T-t}(-\frac{3}{4}x^2 + \frac{3}{2}x) + (1 - (1/2)^{T-t})(1_{x<1/2}x + 1_{x\geq 1/2}3/4)
\end{aligned}$$

This last term is the expression of $G_{t-1}(x)$ which concludes the proof.□

Lemma 3.3 *Suppose that for some t, $V_t(x) = G_t(x)$, then, for all $t' \leq t$, $V_{t'}(x) = G_{t'}(x)$ and the regulatory choice is such that $A = 1/2$ is passed with probability $1/2$ and the regulation proposed fails with probability $1/2$.*

Proof of Lemma 3.3: The induction hypothesis is "$V_{t'}(x) = G_{t'}(x)$". By assumption, it is satisfied at $t' = t$. Further, when satisfied at t', it is satisfied at $t'+1$ by Lemma 3.2; this implied by induction that $V_{t'}(x) = G_{t'}(x)$ for all $t' \geq t$. The regulatory choices at t' then follows from Lemma 3.1.□

To complete the resolution of the model in section 2.3, we simply need to solve the model starting from the last period, derive the regulatory choice and update the continuation prices in the previous period until we (hopefully) reach a point such that $G_t(x) = V_t(x)$. Once such a point is reached, we may then use Lemma 3.3 to derive the regulatory choices for all remaining periods up to the first period of the game.

Omitted Proofs in Section 2.2

Proof of Lemma 2.2: Suppose candidate 1 proposes A_1.

Step 1. We consider the two proposal options discussed in text, (a) $A_2 < A_1$ or (b) $A_2 > A_1$.

(a) This option implies that candidate 2 can collect support from the lower-value firms $v \in [A_2, A_1)$ disclosing *and* bearing the disclosure costs under A_1. The firm in $[A_2, A_1)$ that is indifferent between the two proposals must satisfy $v = k$ as given by $(A_2 + 1)^2/8 = k^2/2 - c$, or:

$$k = .5\sqrt{(1 + A_2)^2 + 8c}$$

Noting that that $k > A_2$, the fraction of votes received by candidate 2 proposing A_2 is given by, for any $A_2 < A_1$,

$$\psi(A_2, A_1) = .5A_2 + \min(k - A_2, A_1 - A_2) \tag{3.4}$$

The function $\psi(.,.)$ can be verified to be decreasing in A_2 which, in turn, implies that $A_2 = 0$, or no-disclosure, is indeed the most preferred decrease in disclosure. Because of the disclosure costs, increasing the fraction of firms that are no longer required to disclose increases the support for the proposal. Note that $\psi(0, A_1)$ is increasing in A_1; that is, the support for no-disclosure increases if candidate 1 proposes more disclosure.

For further use, let us write $\psi(0, A_1)$ more explicitly:

$$\psi(0, A_1) = \min(k, A_1) = \min(.5\sqrt{1 + 8c}, A_1) \tag{3.5}$$

(b) The second option available to candidate is to slightly increase disclosure, which allows the candidate to collect the support from (nearly all) of the firms with $v > A_1$. The support for such a proposal is thus given to slightly less than

$$\psi(A_1, A_1) \equiv .5A_1 + 1 - A_1 = 1 - .5A_1$$

. Note that the support received by campaigning for more disclosure is decreasing in A_1.

Step 2. Define $\phi(A_1) \equiv \max(\psi(0, A_1), \psi(A_1, A_1))$, the supremum of the fraction of votes received by candidate 2 against A_1. Note that $\psi(A_1, A_1)$ is strictly decrasing in A_1 and $\psi(0, A_1)$ is weakly decreasing in A_1, with $\psi(A_1, A_1) > \psi(0, A_1)$ (resp. $\psi(A_1, A_1) < \psi(0, A_1)$) at $A_1 = 0$ (resp. $A_1 = 1$). Therefore, the two functions intersect once at some threshold τ such that for $A_1 > \tau$, candidate 2 chooses option (a), i.e. $A_2 < A_1$, and for $A_1 < \tau$, candidate chooses option (b), i.e. , i.e. $A_2 > A_1$,

(a) Suppose that $c < 7/72$, then, $\psi(0, \tau) = \psi(\tau, \tau)$ implies that $\psi(0, \tau) = .5\sqrt{1 + 8c}$. Solving for $1 - .5\tau = .5\sqrt{1 + 8c}$, we have that:

$$\tau = 2(\sqrt{1 + 8c} - 1)$$

(b) Suppose that $c > 7/72$, then $\psi(0, \tau) = \psi(\tau, \tau)$ implies that $\psi(0, \tau) = \tau$. Solving for $1 - .5\tau = \tau$, we have that: $\tau = 2/3$.

In summary, we have that $\tau = \min(2(\sqrt{1 + 8c} - 1), 2/3))$.$\square$

Proof of Lemma 2.3: This Lemma is a direct application of Lemma 2.2.

(a) Suppose that $c < 7/72$. Then, as shown in Lemma 2.2, the fraction of votes received by candidate 2 (at the optimal proposal) is strictly decreasing when A_1 varies from 0 to τ, and then constant when A_1 varies from τ to 1. It follows that candidate 1 should choose $A_1 \in [\tau, 1]$. But, then, the best response of candidate 2 is to choose $A_2 = 0$.

(b) Suppose that $c > 7/72$. Then, again from Lemma 2.2, the fraction of votes received by candidate 2 is strictly decreasing when A_1 varies from 0 to τ, and then strictly greater than at τ for any $A_1 > \tau$. It follows that candidate 1 should choose $A_1 = \tau = 2/3$. Against this proposal, candidate 2 will achieve exactly $2/3$ votes by proposing $A_2 = 0$ and strictly less than $2/3$ by proposing $A_2 > A_1$. Thus, proposing $A_2 = 0$ is optimal.$\square$

To obtain the Proposition, let us simply note that, as n becomes large, the probability that candidate 1's proposal is implemented converges to zero. Therefore no-disclosure is implemented with a probability that converges to one.

Omitted Proofs in Section 2.3

Proof of Lemma 2.6: Consider round t subject to $V_{t+1}(.)$ verifying Observations (1)-(3). Observations (1) also implies that $p_{t+1} \equiv V_{t+1}(1) = V_{t+1}(.5)$, where p_{t+1} is the expected price for any above-average firm if round t fails.

Let us first consider a proposal $A > .5$ at round t. By Observation (2), all owners with $v < .5$ oppose (they prefer waiting over disclosure) and by Observation (3) some firms that are close to .5 oppose as well. It follows that such standard may never pass. In particular, no further disclosure over above-average news may pass.

To continue the analysis, consider $A = .5$; this standard clearly received the support of all firms with $v \geq .5$ and thus will pass. Recall that in the pure-exchange, this was the only standard that could pass. However, this is no longer true here.

To see this, consider $A < .5$. We know from Observation (1) that all firms $v \geq .5$ face the same continuation price p_{t+1} and thus would vote in exactly the same manner. This implies in particular that $A < .5$ passes if and only if it received the support of the group of above-average firms, i.e. $P(ND) = (A + 1)^2/8 \geq p_{t+1}$. There exists a minimal level of A such that this is possible, given in the Lemma.$\square$

Proof of Proposition 2.4: Observation (1) is by far the easiest to check. Regardless of who the proposer is, there is never any disclosure over above-average outcomes; further, if $v < k_t$, all firms with $v > .5$ expect to obtain p_{t+1} which again does not depend on v. Thus, Observation (1) is indeed verified and, no information about favorable events in previous periods, does imply that no further information will be provided in earlier rounds.

Observations (2) and (3) are also fairly straightforward. When disclosing, a firm with $v \leq .5$ will obtain $v^2/2 - c$ which is strictly less than the least informative standard $A = 0$. In particular, for those firms, the value function $V_t(x)$ must be an average between disclosure, some non-disclosure standard $A \in [k_t, .5]$ and $V_{t+1}(x)$. The two last terms are greater than the surplus conditional on disclosure, and thus it must remain true that the below-average firms prefer waiting over disclosing.

Putting these observations together, we have verified that the recursion hypothesis indeed holds true.□

Proof of Proposition 2.5: From Lemma 2.6, we know that $k_t = 2\sqrt{2p_{t+1}} - 1$. We also know that p_t is given by the expected price at the beginning of round t of a firm with $v \geq .5$. This in turn may be recovered from Proposition 2.4 by considering the proposal strategy, i.e. (a) with probability $1 - k_t$, round t fails leading to an expected price p_{t+1} in the next round, (b) when the proposer is with $v \in [k_t, .5]$, the standard $A = v$ is passed leading to a price $P^{ND} = (v + 1)^2/2$, (c) finally, with probability $.5$, the standard $A = .5$ is passed, leading to a surplus $(.5 + 1)^2/8$. Taking an average over each of these events yields the following recursion equation for p_t,

$$p_t = (1 - k_t)p_{t+1} + \int_{k_t}^{.5} (1 + x)^2/8dx + .5(1 + .5)^2/8 \tag{3.6}$$

Substituting $k_t = 2\sqrt{2p_{t+1}} - 1$, we have that:

$$p_t = \frac{9}{32} + 2p_{t+1} - \frac{8}{3}\sqrt{2}p_{t+1}^{3/2}$$

This recursive equation has a unique stable fixed point given by:

$$p_{LT} = \frac{9}{32} \tag{3.7}$$

In particular as T becomes large, p_1 converges to $9/32$. From Lemma 2.6, it follows that $k_1 = 2\sqrt{2p_2} - 1$ must then converges to exactly $.5$ as $T \to +\infty$.□