

**The Regulation Dilemma:
Cooperation and Conflict in Environmental Governance**

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Abstract

Across the United States and around the world, businesses have joined voluntary environmental codes proposed by governments and nonstate actors. Many codes require firms to establish internal environmental management systems that seek to improve firms' environmental performance and compliance with mandatory regulations. At the same time, governments are also experimenting with programs that provide incentives for business to self-police their regulatory compliance, and promptly report and correct regulatory violations. In light of these two trends, this paper examines how governments' approach to regulatory enforcement can influence firms' incentives to comply with mandatory environmental laws and to join voluntary codes that could take them beyond compliance. Our inquiry shows that cooperative regulatory enforcement, in which firms self-police their environmental operations and governments provide regulatory relief for voluntarily disclosed violations, yields optimal, 'win-win' outcomes only when both sides cooperate. If firms are likely to evade compliance, governments are better off adopting a deterrence approach. And, if governments insist on rigidly interpreting and strictly enforcing the law, firms may have strong incentives to evade regulations and/or not join voluntary codes. Cooperation, though not easy, is possible if both sides can credibly signal that they will forgo opportunism.

Introduction

Two major overlapping trends are changing the landscape of environmental policy in the United States and around the world. First, thousands of businesses have joined voluntary environmental programs sponsored by governments and nonstate actors (Gibson 1999; Haufler 2001).¹ The US Environmental Protection Agency (EPA) has launched over forty voluntary programs, including the 33/50, Green Lights, and Energy Star programs (Mazurek 1998), installing them as a signature item in their 'reinventing government' movement (Osborne and Gaebler, 1992). Many states have followed suit with voluntary programs of their own (Crowe 2000). As we review in this paper, some of these programs require participating firms to establish environmental management systems (EMS) and to self-police their environmental performance (Coglianese and Nash 2001; N A P A 2001; Kettl and Armacost 2002). Following the programs' guidelines brings firms into compliance with government regulations and often takes firms above and beyond what the law requires (popularly known as 'beyond compliance'). One such EMS-based self-policing program is ISO 14000, which has over 1,200 member-facilities in the US alone (CEEM 2001).

The second major trend is governments' experiments with "regulatory relief programs (sometimes called "compliance incentives"). The rationale for these programs is intuitively appealing: environmental protection agencies offer businesses incentives for complying with

¹ Voluntary programs can vary on five key characteristics (authors 2002). First, different organizations have sponsored voluntary programs, including governments, non-profits, and industry groups. Second, some programs restrict eligibility on more narrow criteria, such as superior environmental performance while others are open to any group who meets the programs' requirements. Third, programs vary their requirements for participating firms, with some requiring environmental management practices, while others requiring pollution reduction targets. Fourth, the incentives for firms to join these programs vary considerably. Government sponsored programs can offer tangible benefits in the form of regulatory relief and flexibility for meeting regulations, streamlined or "one stop" permitting procedures, and technical assistance. Non-governmental sponsored programs' incentive options are more limited, but include important reputational and goodwill benefits for participating firms. Finally, programs vary in the nature of sanctions imposed on firms who do not conform with the program's standards.

regulations, including greater flexibility in how they meet regulations, technical assistance, and sometimes even forgiving violations and eschewing punishments and sanctions. In return, businesses voluntarily work to achieve superior regulatory compliance. The EPA has recently expanded its portfolio of voluntary programs to include Star Track and the National Environment Performance Track and many states have followed suit with their own regulatory relief programs (Crowe, 2000).² Along these lines, both the EPA and about twenty-five states provide firms immunity (civil and/or criminal) and relief for self-reported and promptly corrected violations uncovered through self-audits. Against the wishes of the EPA, some states have gone even further and granted attorney-client privileges to information uncovered during self-audits, with the hope that such protections will strengthen firms' incentives to self-police.

Underlying these trends is a profound urge from many firms and regulators to move from tight-fisted deterrence-based regulatory approaches to a more flexible and voluntary one in which firms self-police and adopt environmentally progressive policies. Yet voluntary environmental codes are controversial, especially regulatory relief programs (Ayres and Braithwaite, 1992). Many environmentalists charge that regulatory relief constitutes a license to pollute and voluntary codes are mere 'greenwashes' that hide firms' true pollution records. Because profit-seeking businesses look to skirt costly regulations, these groups argue, only command and control regulation with strict monitoring and enforcement can compel compliance (Steinzor 1998).

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These state programs vary considerably in the types of incentives they offer firms for participating. Examples of state programs include Florida's Ecosystem Management Agreement, Indiana's 100% Club, Oregon's Green Permits, Wisconsin's Green Tier Permit Program, Georgia's Pollution Prevention Program, Alaska's Environmental Leadership Program, Connecticut's Exemplary EMSs, Illinois' Regulatory Innovation Pilot Program, Maine's Environmental Leaders, Massachusetts' Pollution Prevention Blue Ribbon Panel, Michigan' Clean Corporate Citizens, Minnesota's Project XL, South Carolina's Environmental Excellence Program, Texas' Regulatory Flexibility Program, Virginia's Environmental Excellence Program (Crow, 2000).

Voluntary and regulatory relief programs, if effective, promise superior regulatory outcomes through win-win cooperation between firms and businesses. But if they fail, regulatory enforcement will result in lose-lose conflicts that are all too common in environmental governance. We begin with a theoretical analysis of approaches governments can take for enforcing environmental regulations and how businesses can respond to them. Our analysis of what we call the regulation dilemma shows how governments and firms can look to avoid lose-lose conflict and instead achieve win-win cooperation. However, if firms are likely to evade compliance or cannot credibly signal their cooperative intent, governments are better off adopting an adversarial approach. And, if regulators insist on punishing every violation and strictly enforcing the law, firms have strong incentives to evade government regulation and not join voluntary codes. Voluntary programs and compliance incentives can overcome short term incentives for lose-lose conflict between firms and regulators, but only if each side believes the other is cooperating. To begin addressing how these programs are working in practice, we present data and case studies on ISO 14001, a key voluntary program, and the EPA's Project XL. Our analysis shows that in the US firms are more likely to join ISO 14001 in states provide incentive programs for doing so. Our case studies help shed light on how cooperation can lead to win-win outcomes and how interest groups and other suspicious stakeholders can slow a promising voluntary program (in this case, the EPA's Project XL).

Our goal is not to provide definitive answers to whether compliance incentives and voluntary programs deliver on promised objectives. Rather, by casting firms' and regulators' decisions in the context of the regulation dilemma, we highlight major issues and promising analytic approaches for addressing these programs. Such inquiry will necessarily be complex, given the variability in voluntary programs, compliance incentives and political contexts. In the analyses that follow, we

hope to show that what is necessary is a better understanding of how specific compliance incentives - such as offering firms technical assistance, regulatory flexibility, and/or regulatory relief- elicit different responses from firms, such as joining an EMS based voluntary program.

This paper builds on ideas developed by Fiorino (1999, 2000) regarding the need to foster 'social learning' in the U.S. environmental governance system. He correctly points out that although existing and future environmental challenges require regulatory institutions to adopt a 'social learning' approach (of which flexible regulation is an important element), their policies and regulatory cultures remain rooted in the 'technical learning' (command and control regulation) mode. Our conceptualization of the regulation dilemma captures this tension between what is desirable and what seems possible. We believe that the regulation dilemma can be overcome, provided we carefully understand firms, regulators and environmental groups' incentives/perceptions in the status quo and how proposed institutional innovations could modify these incentives/perceptions.

In the next section we present the regulation dilemma, highlighting why establishing a cooperative regulatory environment is challenging and how voluntary programs - a hallmark of the social learning approach - can improve firm-regulator interactions. Drawing on a simple prisoners' dilemma game to illustrate the regulation dilemma, we suggest how to transform a deterrence-based regulation into a cooperation-based one. In section three, we propose ways firms and regulators can overcome the tragic logic of the regulation dilemma and produce win-win outcomes. In section four, we outline key questions that academics and practitioners must address in order to capture the benefits of these programs while avoiding their pitfalls. To illustrate the potential for such inquiry, we briefly examine how variations in regulatory approaches have affected firms' ISO 14001 decisions. In the final section, we present our conclusions and areas for further research.

The Regulation Dilemma: The Promises and Pitfalls of Cooperation and Deterrence

In the regulation dilemma, the nature of government-firm interactions, whether they are cooperative or conflictual, depends on how governments enforce regulations and how firms respond to them. Although a cooperative regulatory enforcement may be optimal for both sides, both firms and governments have powerful short run incentives to choose conflict instead. While recognizing that the deterrence-cooperation distinction is not a strict dichotomy, from the government's perspective, the dilemma can be conceptualized as a choice between either 'deterrence' or a 'flexible' approach to regulatory enforcement, while from firms' perspective the dilemma centers on a choice between 'evasion' or 'self-policing.'

Governments adopting a deterrence regulatory enforcement style strive to inspect and audit every firm in order to discover and fully punish every violation, even minor ones. Historically, command and control regulation coupled with deterrence enforcement has been the dominant approach in U.S. environmental governance. In this approach, regulators specify pollution control technologies (such as the 'best available technology' standards) and how much pollution firms can emit or discharge into the atmosphere. But even if governments pursue rigorous enforcement and impose severe penalties for all violations, deterrence enforcement may not deliver on its objectives. If regulations could be enforced at low costs, policy objectives would perhaps be met. But enforcement costs are non-trivial and declining agency budgets (especially in the U.S.) relative to regulatory mandates have undermined enforcement frequency and efficacy (GAO, 1983; Bagby, Murray and Andrews, 1995). Because extant command and control laws are complex and there are thousands of regulated entities, regulators cannot monitor every action of every firm. To illustrate, between 1996-1998, of the 122,226 large regulated facilities nationwide (that is, regulated under at

least one of the major environmental statutes - Clean Air Act, Resource Conservation and Recovery Act, and Clean Water Act), less than one percent were inspected for all the three media (Hale, 1998). Moreover, rigid deterrence enforcement only feeds firms' complaints that high compliance costs hurt productivity and profits (Jaffe, et al. 1995, Walley and Whitehead, 1994), which in turn raise firms' incentives to evade regulations (Van Meter and Van Horn, 1975; Majumdar and Marcus, 2001). Further, deterrence enforcement may contribute to the adversarial relationships among regulators, firms and environmental groups, risking more lawsuits and larger societal costs (Reilly, 1999, Vogel, 1986; Kagan, 1991; O'Leary, 1993; for a critique, see Coglianese, 1996).

The cooperative approach to regulatory enforcement seeks to address many of the deterrence enforcement drawbacks by enlisting firms' cooperation in solving environmental problems based on a foundation of flexibility and mutual trust between firms and governments. In this approach, regulators do not rigidly interpret the law and penalize firms for every violation. Instead, regulators forgo punishing self-disclosed violations, particularly minor ones, reduce the level of sanctioning for severe violations, and provide positive incentives such as technical assistance to help firms achieve compliance (Scholz 1991).³

Just as regulators can choose their regulatory style between deterrence and cooperation, so too can firms choose their "compliance" style for how they will respond to government regulations. Although firms may adopt a mix of management strategies, firms can choose to respond to government regulations with either 'evasion' or 'self-policing.' In the evasion approach, firms look

³ By flexible regulation we mean those rule systems that provide regulators discretion regarding monitoring, enforcement, and sanctioning. There is debate over whether regulations that set stringent standards on outcomes but provide firms with discretion in processes and technology encourage firms to innovate and create win-win situations (Porter and van der Linde, 1996; for a critique, Walley and Whitehead, 1994). This paper does not participate in this debate. Rather, we examine whether a cooperative enforcement style impacts firms' responses to mandatory and voluntary regulation.

for opportunities to skirt environmental regulations to save on compliance costs on the assumption that competitive markets reward facilities that spend less on regulatory compliance. Of course, firms realize that if caught, they may be severely sanctioned. In the self-policing approach, firms monitor their environmental activities, and report and promptly correct violations. They may hope that only severe violations will be fully sanctioned and their prompt voluntary disclosures will encourage regulators to take a lenient view of minor ones.

A win-win interaction occurs if government regulators choose cooperative regulatory enforcement and firms choose the self-police compliance strategy. Regulators win because self-policing lightens their enforcement burdens while achieving superior environmental outcomes. Firms win because the regulatory incentives governments provide under cooperation (forgiveness for minor violations, technical assistance, flexibility with meeting standards) makes compliance easier and improves bottom line profits.

The dilemma is that although this cooperation promises superior outcomes, both firms and governments have powerful incentives to behave opportunistically - that is, pursue their self-interest with guile (Williamson, 1975) - thus creating lose-lose interactions. Firms can exploit governments' regulatory relief by evading environmental regulations even more effectively under more lax monitoring, while governments can exploit firms' self-policing by fully punishing regulatory violations voluntarily disclosed in good faith. Governments may fear that firms will interpret regulatory relief as permission to circumvent regulations and a license to pollute. Moreover, many environmental groups suspect firms will inevitably abuse such incentives; for them, regulatory relief means no/little regulation and they consequently pressure regulators to adopt deterrence enforcement. Likewise, firms may fear that opportunistic regulators may interpret voluntarily disclosed violations

as admissions of guilt worthy of substantial punishment, leaving those firms at a competitive disadvantage (through more expensive clean production processes as well as assessed fines) relative to their more evasive competitors. Firms also realize that environmental groups may make it politically and legally problematic for regulators to credibly commit to cooperation (Kollman and Prakash, 2002). Consequently, mutual suspicion about other's opportunism undermines cooperation.

To better illustrate these issues, we recast them into what we call the 'regulation dilemma' (Scholz 1991), an extension of the Prisoners' Dilemma (PD) game (Luce and Raiffa, 1957; Rapoport and Chammah, 1965; Pruitt, 1967; Dawes, 1980). Table 1 shows the payoff schedule for a hypothetical government and firm in the regulation dilemma. Given interdependence, the outcomes for each player depends on her own and the other's choice (cooperation versus evasion/deterrence). The key point is that no matter what the government chooses, firms are better off evading ($b > f$, $d > h$) and no matter what the firm chooses, the government is better off choosing deterrence ($a > c$, $e > g$). This creates a vicious cycle of opportunism and a series of 'lose-lose' outcomes. Unfortunately, this behavioral equilibrium (Nash equilibrium) is 'pareto suboptimal'; each side would be better off if governments chose flexible enforcement and firms chose to self-police (cooperation: g , h).

[Insert Table 1 Here]

Thus, both firms and regulators prefer cooperation (through self-policing and flexible enforcement, respectively) to conflict (through evasion and deterrence, respectively), but only if they are confident the other side will cooperate as well. If each fears the other will exploit cooperation, firms would attempt to evade regulations and governments would choose deterrence. In fact, both regulators and firms know that the other has good reason, at least in the short turn, to promise

cooperation but deliver deterrence or evasion. Thus, as in a prisoners' dilemma game, both sides end up willingly choosing conflict over cooperation (that is, 'defection' is the dominant strategy), even though both would prefer cooperation to deterrence.

In sum, even in command and control policies, the societal benefits from the regulatory enforcement reflect the choices of both governments (deterrence versus flexible enforcement) and firms (evasion versus self-policing). This interdependence holds for adoption of voluntary initiatives by firms as well as the provision of regulatory relief by governments in that final outcomes depends on how one actor anticipates the response of the other. For cooperation to succeed, both actors need to credibly assure the other that they will not behave opportunistically.

Getting to Win-Win: Strategies for Solving the Regulation Dilemma

To achieve win-win cooperation, both firms and regulators must find ways to credibly signal to the other that their cooperative intentions are genuine. Simultaneous signaling may not always be practical; one side may need to signal its future cooperative intentions first to induce the other to move.⁴ Two generic solutions prescribe how actors in PD games can turn defection into cooperation. Fortunately, both of these solutions - building a reputation for cooperation and adopting binding institutional commitments - have real-world counterparts available to firms and regulators.

Incentives to cooperate increase when players engage in long-term, face-to-face, repeated interactions that become informally institutionalized in players' reputations (Axelrod 1984, R. Hardin 1982). Thus, regulators can build a cooperative reputation by forgiving minor offenses. Firms can build a reputation for quickly disclosing and correcting their own violations. Because reputation

⁴ Many different game forms (for example, tit-for-tat) could lead to cooperative outcomes. Further, the payoff matrix may change as actors continually update their perceptions based on previous iterations. For a review of this multi-disciplinary literature see, R. Hardin (1982) and Ostrom (1990).

building takes time and is expensive, the desire to benefit from an existing 'trustworthy' reputation may create incentives to shun opportunism. Yet on the positive side, as trust begets more trust over time and good reputations become solidified, a virtuous circle of cooperation may evolve in place of the vicious circle of opportunism that the simple PD game predicts.

Unfortunately, good reputations alone may not build sufficient trust to induce cooperation. A second cooperative strategy, and perhaps a more durable and effective one, is to have each side commit to cooperation *in advance* before the game has begun. Because both actors may still have strong reasons to suspect the other will behave opportunistically, advance commitments can be made more credible by raising the cost of defection, for example by joining formal or informal institutions that impose non-trivial costs on opportunistic behavior (Milgrom et al., 1990, Ostrom 1990).

Governments can credibly commit to cooperation in advance by establishing regulatory relief programs and environmental audit policies that grant significant immunity to firms' violations discovered through self-audits and voluntarily disclosed to regulators. Among US state governments, regulators have created a wide range of environmental leadership programs that offer participating firms benefits for superior environmental performance. As pointed out in the introduction, there are many types of voluntary programs in environmental policy today, and in different ways they may signal regulators commitment to regulatory flexibility and/or relief. Another way regulators can commitment to more cooperation is through policies and/or laws offering privilege and/or immunity protections for firms' environmental self-audits. The EPA (1986, 1995a, 1995b, 1997, 2000) and about twenty-five states provide regulatory relief to firms that promptly disclose and correct violations uncovered through audits (details in Table 2). Of course, these policies vary across states (Morandi, 1998): some have passed legislation while others have merely

formulated non-binding agency-level policies. Also, some states grant both audit privilege (information gathered in audits is not disclosed to regulatory agencies or the public) and immunity (from fines and penalties) to self-disclosed information while others grant only immunity.

For their part, firms can establish credible commitments to cooperation by subscribing to a voluntary code that requires self-policing and having it audited by third or fourth-parties (as opposed to no audits, internal/first party audits, or second-party audits) (Gereffi et al. 2001; N A P A , 2001). Many voluntary codes, including ISO 14001, do not impose rigid operational constraints on firms but rather encourage them to adopt environmentally progressive policies not required by law. Such policies include having an environmental management system with procedures for regular self-policing and monitoring environmental policies and performance, disclosing violations, and promptly correcting them. Firms can also signal their cooperative intentions by establishing internal organizational structures such as having a senior manager with the rank of Vice-President head their environment department, to implement EMS-based programs. Such institutional and structural commitments signal firm's long-term intentions to internally prepare the organization to meet its self-policing commitments. In fact, many voluntary codes such as ISO 14001, the European Union's Eco-Management and Audit Scheme, and the American Chemistry Council's Responsible Care program specifically require firms to establish internal governance systems to ensure that firms meet their regulatory commitments, both voluntary and mandatory.

Making Cooperative Enforcement Work: Issues and Analysis

So far our analysis supports both the critics and the proponents of voluntary codes and regulatory relief programs. For proponents, these programs are a win-win for firms and government, especially given the enforcement shortcomings of command and control policies. But proponents are

right only when both firms and regulators cooperate. For critics, especially environmental groups, these programs are worse than deterrence-based policies because firms are unlikely to zealously self-police. The extent to which either is correct depends on whether a significant proportion of firms adopt these programs, and if so, whether these programs improve firms' environmental performance.

Voluntary programs and compliance incentive programs are still relatively new and have not yet received the scrutiny befitting their importance. Drawing on the above analysis of the regulation dilemma we identify three crucial questions that must be addressed before either side can claim victory. First, can governments offer compliance incentives that help induce firms to join voluntary programs? Second, does joining a voluntary program firms provide credible assurance to regulators that they will credibly self-police themselves, and therefore are worthy of their trust? In other words, do voluntary programs and compliance really improve firms' environmental performance? Third, how does the presence of environmental groups that oppose voluntary programs influence firm-regulator dynamics on voluntary programs? We discuss these questions below and present case that highlight key issues in fostering a cooperative environment. Our objective is to point out the relevant questions that scholars and practitioners must confront, given the variability in voluntary programs, compliance incentives, and political contexts.

Issue 1: Can Governments Induce Firms to Join Voluntary Programs?

Despite their promise, participation rates in voluntary programs have fallen short of expectations, particularly in the US, leading some critiques to cast doubt on their efficacy. In some cases, businesses may have good, bottom-line reasons to join these regulations, even without government incentives. First, pollution reduction may uncover waste and save costs (Hart, 1995). Second, suppliers such as banks and insurance companies) may reward firms that join such programs

(Schmidheny and Zoraquinn, 1996). Third, consumers may reward firms that subscribe to such policies (Charter and Polonsky, 1999). Fourth, from a strategic perspective, firms may seek to preempt more stringent standards and influence future rulemaking to their advantage (Salop and Scheffman, 1983), thereby reaping first-mover advantages (Nehrt, 1998). Fifth, voluntary regulations may help industry win legitimacy and trust from various stakeholders (Hoffman, 1997). But these benefits may not be enough to induce all firms to join voluntary codes.

This is where governments may be able promote win-win cooperation by offering firms valuable compliance incentives to join voluntary programs. To illustrate, ISO 14001 requires firms to establish environmental management systems and have them audited by external auditors, an expensive investment with no short run quantifiable benefits (Kolk, 2000). Because audits may uncover self-incriminating evidence of regulatory violations, firms may want governments to promise significant regulatory relief for voluntarily disclosed violations (Kollman and Prakash, 2002). The reason is that such audits may create self-incriminatory evidence that opportunistic regulators and environmental groups may employ against them. Our previous empirical research on ISO 14001 (complete citations not provided to maintain confidentiality) indicates firms are deeply concerned that third party audits, a requirement for ISO 14001 certification, are not protected by attorney-client privileges in most states. Is this concern valid and, if so, has it influenced firms' response rates to ISO 14001? If governments assure firms that information uncovered during third-party audits will not be used against firms, will firms be more likely to join voluntary programs?

Table 2 and Figure 1 bring data to bear on these questions by identifying states that have launched compliance incentive programs, firms ISO adoption rates in each state (Table 2), and the relationship between institutional innovations to foster trust and ISO adoption (Figure 1). Table 2

shows (columns 5, 6 and 7) states that have adopted at least one such institutional initiative. Of these, 27 states have environmental audit policies (with privilege and/or immunity protection) (columns 6 and 7), 23 states have environmental leadership track programs (column 5), and 11 states have both audit policies and leadership programs. Using facilities regulated under the Toxics Release Inventory as a proxy for total number of facilities that would seriously consider joining ISO 14001, Table 2 presents the ISO 14001 adoption rates across states (columns 2-4). Figure 1 summarizes Tables 3; the ratio of ISO14001 certified to total (TRI) facilities is significantly higher ($p < .05$) in states with one or more compliance incentive programs than in states with no programs.

[Insert Table 2 and Figure 1 here]

A policy implication emerges from these results, particularly Figure 1: firms are more likely to self-police and join voluntary programs in jurisdictions that provide institutional mechanisms for regulatory flexibility and/or provide regulatory relief for voluntarily disclosed violations. In other words, by undertaking appropriate institutional innovations, regulators can foster a social learning approach to environmental governance.⁵

Issue 2: Do voluntary codes and compliance incentives improve firms' environmental performance?

Proponents of voluntary programs assume that participating firms self-police their environmental performance, even in the face of short-run incentives to hide regulatory violations. The first question, then, is whether firms that join, say, ISO 14001, actually self-police and disclose pollution regulations to regulators. Environmental groups remain suspicious, and without persuasive

⁵ Based on telephone interviews with 988 manufacturing facilities and regulators in 28 states, Morandi (1998) reports that firms' propensities to use self-audit policies and to report violations are *not* influenced by whether or not a state has audit policies and laws. Our previous research and the analysis presented in this paper challenge the implications of Morandi's study in the context of ISO 14001. Because self-audits are a critical component of voluntary initiatives, credible cooperative commitments from regulators can influence firms' proclivities to join these codes.

evidence confirming that firms become environmentally progressive after joining such programs, perhaps with good reason. They also know that voluntary programs are expensive — ISO 14000 certification can cost more than \$25,000-\$ 100,000 per facility. Environmental managers often find it difficult to justify their firms' adoption of voluntary programs on a strict cost-benefit analysis framework (Prakash, 2000). As a result, top-management support for such programs is critical. Regulators may realize the obstacles facing pro-ISO 14000 managers and, therefore, may require additional credible evidence to trust firms' intentions, such as organizational structures that institutionalize top management support for environmental programs. For example, including a vice president for environmental affairs in corporate governance can signal a firms' commitment to environmental protection; politically powerful environmental managers can persuade firms to adopt progressive environmental policies, including self-policing.

However, if firms do not demonstrate improvement in their environmental performance, changes in organizational structures would become yet another example of greenwash, inviting more skepticism from environmental groups about firms' true intentions. A policy implication then is: in the long run, if joining voluntary programs is not sufficient demonstration of firms' commitments to complying with environmental regulations, other policy and institutional options at the firm level may help close the credibility gap.

The ultimate test any voluntary code or compliance incentive is whether or not it produces a cleaner environment by improving facilities' environmental performance. Improved environmental performance means any combination of improved compliance with mandatory regulations, reduced emissions, and fewer pollution accidents. Such questions span two levels - first, have sufficient numbers of firms joined the programs to make them useful that participating firms self-police, and

second, has the program improved firms' environmental performance? We have already tentatively demonstrated that a large number of facilities (1,200) have joined ISO 14001, with higher rates in jurisdictions that provide regulatory relief. The latter question needs further examination, particularly whether voluntary codes improve firms' performance only when accompanied by credible compliance incentives. For cooperation to work, firms need to credibly signal that they will cooperate and therefore are good candidates for regulatory relief, and governments need to make self-policing worthwhile by ensuring firms that their compliance incentives programs are genuine.

Consider the case of the ISO 14001 requirement that firms conduct an external, third-party audit of their environmental systems. An important payoff of any audit (financial, quality control, or environmental) is that trained auditors can identify problems in management and opportunities for improving performance. Often times, audits conclude with concrete suggestions about how problems can be resolved and opportunities for improvement exploited. However, environmental audits may also uncover regulatory violations and therefore create incriminatory evidence against the firm. This fear may force firms either to eschew ISO 14000 or become wary in sharing information with auditors. The latter will clearly limit the contributions auditors can make in helping the firm improve its performance. It follows then that firms are more likely to improve their environmental performance through voluntary programs where regulators establish policies on audit immunity, or at least provide credible institutional signals (such as by establishing environmental leadership program) that they are serious about fostering a trust-based regulatory environment.⁶

⁶ **The same issue can be examined within a firm that has facilities operating across states with different regulatory relief programs. The issue is whether the beneficial impact of such programs on improving environmental performance would be similar across facilities. Arguably for a firm that subscribes to a voluntary code, facilities operating in jurisdiction with cooperative regulatory enforcement will improve their environmental performance more than facilities operating in non-cooperative environments.**

Proponents of voluntary programs and compliance incentives can point to some emerging examples of firms and regulators successfully using credible institutional commitments to achieve win-win cooperation. For example, though Project XL has achieved mixed results (more of it below), there are some success stories as well. In the Weyerhaeuser Flint River Agreement signed in 1997, the EPA and the state of Georgia, have agreed to, *inter alia*, issue a facility wise permit for the Weyerhaeuser's facility, rather than individual permits for air emissions, effluent discharge, and solid waste. In return, Weyerhaeuser has agreed to, *inter alia*, adopt ISO 14001, adopt effluent limits on biological-oxygen demand, total suspended solids, and adsorbable organic halides that are more stringent than required by law, and improve forest management practice in its forest timberland. In another Project XL agreement with Salem-NH-based HADCO, the EPA, the States of New York and New Hampshire have agreed to regulatory flexibility in solid waste disposal (in terms of testing sludge for solid waste variance that impacts HADCO's disposal cost). In exchange, HADCO, agreed to reduce its mobile source air pollution by 75 percent associated with copper recycling and to install expensive pollution prevention (sludge dryer) equipment that would reduce the quantity of sludge transported by 40 percent.

Issue 3: Do environmental groups play the role of spoilers?

Because they are suspicious that environmental regulators have been captured by business interests, many environmental groups oppose compliance incentives and regulatory relief programs and favor the continuation of adversarial command and control policies. Business-government regulatory interaction is embedded within the broader state-societal relations. In the public policy literature, pluralists (Dahl, 1961) and elitists (Lindblom, 1977) have debated whether businesses have privileged position in the U.S. system in relation to other interest groups. In the U.S.

environmental policy arena, the pluralist perspective seems more plausible given the relatively adversarial system of environmental governance, especially in relation to other developed countries (Vogel, 1986; Kagan, 1991). A key reason for this adversarialism is that U.S. environmental groups are able to significantly influence the media and public opinion and have ample access to policy institutions and processes (Rosenbaum, 1998). While environmental groups may prevent regulators from becoming too "soft" on rogue polluting firms, they may also prevent regulators from cooperating with well-intentioned, self-policing firms.

An important question is whether in jurisdictions with active environmental movements and/or environmentally sensitive public opinion, regulators are less likely to offer regulatory relief to firms joining voluntary codes. Even when regulators do offer such relief, firms may be unlikely to find them credible. Importantly, firms often view governments' promises of regulatory relief through the lens of their experiences with regulators enforcing command and control policies. Given that many environmental groups strongly oppose granting regulatory relief, even to firms that have adopted voluntary programs, firms often want credible assurances that regulators' current promises will endure once pollution violations have been voluntarily disclosed. In such a conflictual climate, stakeholder participation in implementing such programs is a double edged sword: while participation can enhance program credibility it can also provide an easy venue for hostile interests to derail, or at least substantially delay, programs they oppose. A policy implication then is that in along with convincing firms to join voluntary programs and regulators to reward firms for joining them, voluntary program advocate should also persuade environmental groups about the programs' efficacy. Cooperative regulatory enforcement is beneficial only if both firms and regulators cooperate - if one does not, then the cooperating side stands to lose. It therefore follows that if

environmental groups can hinder regulators' efforts to experiment with new policy approaches, firms may be less willing to self-police.

To illustrate how political pressures and environmental groups' skepticism can limit regulators ability to provide compliance incentives to induce superior environmental and regulatory performance, consider the case of Project XL. This is a voluntary pilot program launched in 1995 by the EPA and its state partners as a part of its Reinventing Environmental Regulation program. In trying to preempt criticism that regulatory flexibility is a give-away to polluters, the EPA limited Project XL participation to only facilities with good compliance histories. Unfortunately, such requirements exclude high polluting firms whose participation could produce the greatest environmental gains. Moreover, to further mollify environmental groups and to ensure transparency, the EPA required Project XL applicants to consult with local and national stakeholders during the project negotiation phase, and further promised that it will continue to consider stakeholder input very seriously.

Many environmental groups have strongly opposed Project XL (for an example of such criticism directed towards Project XL and Intel's Arizona facility, see High Tech, 2001). Some have questioned whether the EPA has the legal authority to "dilute" the regulatory and statutory requirements it is using to induce firms to join Project XL. Project negotiations between the regulators and applicant firms have been much longer than anticipated, often taking about 24 months to complete (EPA, 1999c). Not surprisingly then, firms have become impatient with the long, transactions cost intensive process of negotiating Final Project Agreements.⁷ At program launch, the

⁷ For an excellent account of problems in negotiating Project XL at a tape manufacturing plant of 3M, see Marcus et al. (2002). The authors argue that the quid pro quo basis of Project XL -regulatory flexibility in lieu of superior performance — was flawed. In particular, there is a lack of agreement among various actors on the meaning of

EPA proposed a goal of having 50 such pilot projects. However, as of August 1999, only fourteen projects achieved implementation with another 31 under negotiations (EPA, 1999c). Though the EPA has tried to address some of its shortcomings, the modest success in Project XL highlights the challenges in adopting programs that foster a cooperative environment and provide some sort of regulatory flexibility to firms.

Conclusions

The efficacy of voluntary codes and regulatory relief initiatives are central issues in current debates about the command and control foundations of environmental governance, and the quest to adopt a social learning perspective to address environmental challenges. Given the conflictual climate of environmental governance in most jurisdictions throughout the US, the prospects and efficacy of voluntary programs and compliance incentives remain open questions. This paper examined how governments and firms can escape the lose-lose trap that the regulation dilemma threatens and reap the benefits of large-scale cooperation and adoption of voluntary programs.

More fundamentally, this paper contributes to the new public management literature and its application to environmental regulation (Fiorino, 2000; Kettl and Armacost, 2002). To transform lose-lose dilemmas into win-win outcomes, firms and governments need to adopt and nurture practices that credibly signal their cooperative intentions. Credible signals may emanate from past behavior or by institutionalized pledges about future behavior, particularly if such pledges receive third/fourth party verification. Institutional pledges, including establishing formal rule systems and organizational structures to enforce them, may be particularly important cooperation because they create hurdles for actors to renege on their cooperation promises. The context of regulator-firm

superior environmental performance that is expected of the participating companies.

interactions, such as whether the regulatory context is adversarial, also bears on how actors perceive each other's promises of cooperation (Granovetter 1985). Further, exogenous events in ostensibly unrelated areas, such as the recent Enron scandal, can potentially influence debates about the efficacy of voluntary codes and the role of third-party auditors in verifying firms' compliance.

This paper also has important implications for designing performance assessment, such as those prescribed in the Government Performance Results Act and in various state initiatives. Effective cooperation promises to reduce bureaucratic outputs - inspections, notices of violation, regulatory sanctions and the like - while improving policy outcomes - less pollution released into the atmosphere. A performance assessment emphasizing outputs may undermine cooperation by pushing agencies to adopt a more deterrence-based enforcement style, even if they prefer cooperation instead. Our analysis implies that performance measurement systems must focus more on outcomes than outputs since the regulation dilemma suggests that the correlation between outputs and outcomes is not always straightforward. While outcomes based measures may be preferable, they are notoriously difficult to develop and implement, particularly in environmental areas. Political overseers and environmental interests must have confidence that cooperative enforcement is not simply the lax enforcement by a bureaucracy that has been captured by regulated industry.⁸

We have employed the PD game to illustrate the regulation dilemma. Granovetter (1985) correctly notes that the perceived PD payoffs critically depend on the social context in which the

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This question is important because Government Performance Results Act of 1993 (White House, 2002) requires federal agencies first identify and then meet measurable performance goals. Some EMS-based voluntary programs such as ISO 14001 cannot guarantee that firms will indeed improve their environmental or regulatory performance. Indeed, the key attribute — flexibility for firms in deciding appropriate technologies and outcomes - that makes them attractive for both firms and regulators, also raises questions about their fit with other objectives of public policy. This raises important questions for the proponents of new public management as some of the policy objectives - fostering a more cooperative climate along with meeting specific policy outcomes - may be in conflict.

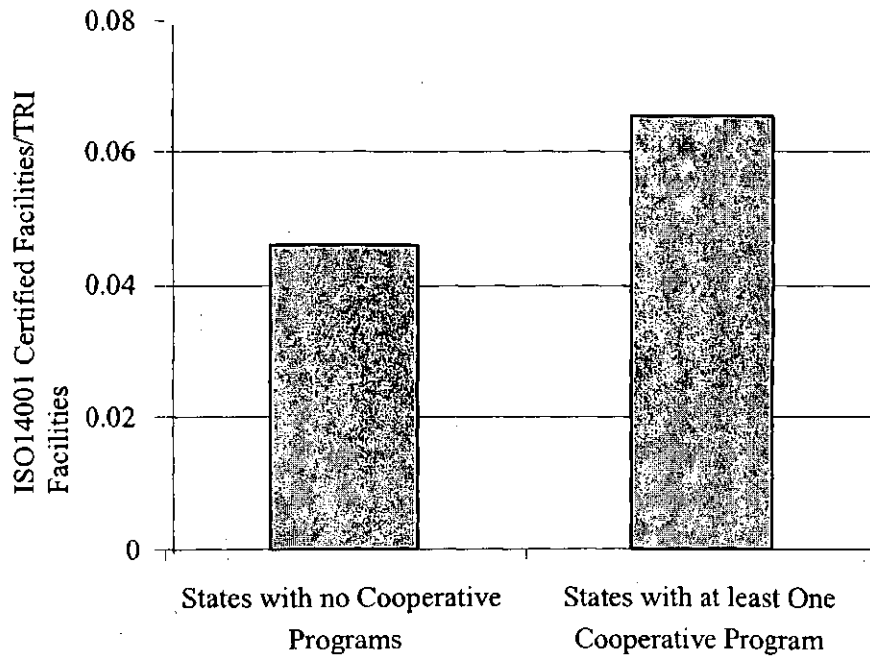
actors are embedded. Not surprisingly then, self-policing and voluntary codes seem to be more popular in some sectors/industries than in others, and trade associations seemed to have played a critical role in this respect (Haufler, 2001; Kollman and Prakash, 2002). In this paper, we focused on the role of reputations and institutional devices in creating trust and thereby fostering cooperation. However, this issue can be further examined in much greater detail by specifying institutional conditions, policy processes, and actor attributes that facilitate trust and how this may translate into cooperation between firms and regulators.

All in all, the regulation dilemma shows that regulatory relief is not always superior to deterrence and membership in voluntary programs is not a sufficient guarantee of improved firms' environmental performance. Rather, the optimal blend of regulatory relief, deterrence, self-policing, and voluntary programs, depends on the degree to which governments and firms can overcome incentives for conflict and instead establish cooperation.

Table 1: The Regulation Dilemma

Government	Firm	
	Evasion	Self-policing
	<i>Conflictual Context</i>	
Deterrence	2, 2 (a, b)	5, 1 (e, f)
	<i>Cooperative Context</i>	
Flexible enforcement	1, 5 (c, d)	4, 4 (g, h)

Figure 1: Compliance Initiatives and Firms ISO 1400 Registration



Difference is significant at $p < .05$

Table 2: State-Level Adoption of ISO 14000

State	Firms Joining Voluntary Programs			State Compliance Incentives		
	# of ISO 4000 Certified facilities	# of TRI Facilities	# of ISO 14001 Facilities/# of TRI Facilities	Environmental leadership programs	Laws & policies on audit immunity	Laws & policies on audit privilege
AK	4	16	0.250	no	yes	yes
AL	24	539	0.045	yes	no	no
AR	10	403	0.025	no	no	yes
AZ	13	237	0.055	yes	yes	yes
CA	109	1,406	0.078	yes	no	no
CO	17	195	0.087	yes	yes	yes
CT	18	319	0.056	yes	no	no
DE	2	72	0.028	no	no	no
FL	27	611	0.044	yes	no	no
GA	38	746	0.051	yes	no	no
IA	11	416	0.026	no	yes	yes
HI	0	28	0.00	no	no	no
ID	2	72	0.028	no	yes	yes
IL	57	1,321	0.043	yes	no	yes
IN	89	1,041	0.085	yes	no	yes
KS	3	271	0.011	no	yes	yes
KY	33	456	0.072	no	yes	yes
LA	15	343	0.044	no	no	no
MA	29	472	0.061	yes	no	no
MD	9	195	0.046	no	no	no
ME	10	82	0.122	yes	no	no
MI	129	919	0.140	yes	yes	yes
MN	15	467	0.032	yes	yes	yes
MO	21	583	0.036	no	no	no
MS	9	325	0.028	no	no	yes
MT	0	42	0.000	no	yes	yes
NC	49	833	0.059	yes	no	no
ND	1	44	0.023	no	no	no
NE	10	174	0.057	no	yes	yes
NH	15	109	0.138	no	yes	yes
NJ	42	569	0.074	yes	no	no
NM	5	60	0.083	no	no	no
NV	2	88	0.023	no	yes	yes
NY	53	700	0.076	no	no	no
OH	93	1,642	0.057	no	yes	yes
OK	10	297	0.034	no	no	no
OR	19	258	0.074	yes	no	yes
PA	64	1,334	0.048	yes	no	no
RI	10	133	0.075	no	yes	no
SC	35	500	0.070	yes	yes	yes
SD	2	75	0.027	no	yes	yes
TN	40	666	0.060	no	no	no

TX	73	1,369	0.053	yes	yes	yes
UT	9	37	0.243	no	yes	yes
VA	12	464	0.026	yes	yes	yes
VT	2	37	0.054	no	no	no
WA	20	293	0.068	yes	no	no
WI	24	865	0.028	yes	no	no
WV	4	174	0.023	no	no	no
WY	1	39	0.026	no	yes	yes
Total	1,289	22,309	0.061	23	22	26

Sources:

ISO facilities: CEEM (2001)

TRI facilities: EPA (1999b)

Environmental Leadership programs: Crow (2000)

Audit privilege and Laws: Housman (2001)

References

- Ayres, I. & Braithwaite, J. (1992) Responsive Regulation, Oxford University Press.
- Axelrod, R. (1984) The Evolution of Cooperation. New York: Basic Book.
- CEEM (2001) ISO 14001 Registrations - North America, *Update*, Extra Edition, September 2001.
- Charter, M. and Polonsky, MJ, 199, Greener Marketing, 2nd ed. Sheffield, UK: Greenleaf
- Coglianesi, C. (1996) Litigating within relationships: Disputes and Disturbances in the regulatory process, Law & Society Review 30: 735-765.
- Coglianesi, C. and Nash, J. ((2001) Regulating from the inside, Washington, D.C.: Resources for the Future.
- Crow, M. (2000) Beyond Experiments, The Environmental Forum, May/June: 20-29.
- Dahl, R. (1961) Who Governs?, New Haven, CT: Yale University Press.
- Environmental Protection Agency (EPA) (1986) Environmental Auditing Policy Statement, Federal Register 51: 25004-25006.
- Environmental Protection Agency (EPA) (1995a) Voluntary Environmental Self-policing and Self Disclosure Interim Policy Statement, Federal Register 60: 16875-16878..
- Environmental Protection Agency (EPA) (1995b) Incentives for Self-Policing and Self Disclosure Interim Policy Statement, Federal Register 60: 66706-66709.
- Environmental Protection Agency (EPA) (1997) Audit Policy Interpretive Guidance, January 1997. <http://es.epa.gov/oeca.audpolguid.pdf>, 01/07/2000.
- Environmental Protection Agency (EPA) (1999a) Action Plan for Promoting the Use of Environmental Management Systems, December 20,1999. <http://www.epa.gov/ems/plan99.htm>, 01/07/2000.
- Environmental Protection Agency (EPA) (1999b) 1999 Toxics Release Inventory, State Fact Sheets.<http://www.epa.gov/tri/tiidata/tri99/state/completereport.pdf>; 04/22/2002
- Environmental Protection Agency (EPA) (1999c) Project XL: 199 Comprehensive Report, <http://www.epa.gov/projectxl/>; 09/06/2002

- Fiorinio, D. J. (1999). Rethinking Environmental Regulation, Harvard Environmental Law Review, 23:441-469.
- Fiorinio, D. J. (2000) Environmental Policy as Learning. Public Administration Review 61(2)
- Fukuyama, F. (1995) Trust: The Social Virtues and the Creation of Prosperity. New York: Free Press.
- General Accounting Office/GAO (1983) Waster water dischargers are not complying with EPA pollution control limits, RE CED 84-53: Washington, DC .
- Gereffi, G., Johnson, R. G., and Sasser, E (2001) NGO-Industrial Complex. Foreign Policy July-August.
- Gibson, R. B., editor (1999) Voluntary Initiatives: The New Politics of Corporate Greening. Broadview Press.
- Granovetter, M. (1985) Economic Action, Social Structure, and Embeddedness. American Journal of Sociology 91 (3) :481-510.
- Hale, Rhea, 1998, The National Expansion of Star Track, U.S. Boston: Environmental Protection Agency, Region I.
- Hamilton, J. T. (1995) Pollution as news: Media and stock market reactions to the Toxic Release Inventory data. Journal of Environmental Economics and Management, 28, 98-113.
- Hardin, R. (1982). Collective Action. Baltimore: Johns Hopkins University Press.
- Hart, S. L. (1995) A natural resource-based view of the firm. Academy of Management Review, 20, 986-1014.
- Haufler, V. (2001) A Public Role for the Private Sector, Washington, DC: Carnegie Endowment for International Peace.
- High-Tech Production (2001) Project XL Translates to Extra Lenient Deregulation, http://www.svtc.org/hightech_prod/liaisons/xl/xlaction.htm; 09/06/2002
- Hoffman, A. (1977) From Heresy To Dogma. San Francisco, CA: New Lexington Press.
- Housman, VA (2001) State Audit Privilege and Immunity Laws, email, November 16,2001. On File.
- Jaffe, A. B., Peterson, S. R., Portney, P. R., & Stavins, R. N. (1995) Environmental regulation and the competitiveness of U.S. manufacturing, Journal of Economic Literature 33: 132-163.

- Kagan, R. (1991) Adversary legalism and American government. Journal of Policy Analysis and Management 10:369-406.
- Kettl, D. and Armacost, M. H. (eds.) (2002), Environmental Governance: A Report on the Next Generation of Environmental Policy, Washington, DC: The Brookings Institution.
- Kolk, A. (2000) The economics of environmental management. Prentice Hall/Financial Times.
- Kollman, K. and Prakash, A. (2002) EMS-based regimes as club goods. Policy Sciences.
- Lindblom, C E. (1977) Politics and Markets. New York: Basic Books.
- Luce, R. and Raiffa, H. (1957) Games and Decisions. New York: Wiley.
- Majumdar, SK and AA Marcus (2001) Rules Versus Discretion: The Productivity Consequences of Flexible Regulation, Academy of Management Journal, 44: 170-179.
- Marcus, A. A., Geffen, D. A., and Sexton, K (2002) Reinventing Environmental Regulations: Lessons from Project XL, Washington, DC: Resources for the Future.
- Mazurek, J. (1998) The use of voluntary agreements in the united states: an initial survey, OECD, ENV/EPOC/GEEI(98)27/FINAL, <http://www.oecd.org/env/docs/epocgeei9827.pdf>; 07/31/200
- Milgrom, P. R., North, D. C., Weingast, B. R. (1990) The role of institutions in the revival of trade. Economics and Politics 2:1-23.
- Morandi, Larry (1988) State Environmental Audit Laws and Policies, Washington, DC: National Conference of State Legislatures.
- National Academy of Public Administration/NAPA (1995) Setting Priorities, Getting Results. Washington, DC: NAPA.
- National Academy of Public Administration/NAPA (2001) Third-Party auditing of Environmental Management Systems. Washington, DC: NAPA.
- Nehrt, C. (1998) Maintainability of first-mover advantages when environmental regulations differ between countries. Academy of Management Review, 23, 77-97.
- O'Leary, Rosemary (1993) Environmental Change: Federal Courts and the EPA. Philadelphia: Temple University Press.

Osborne, D. & Gaebler, T. (1992) Reinventing government: How the entrepreneurial spirit is transforming the public sector. Boston: Addison Wesley.

Ostrom, E. (1990) Governing the commons. Cambridge University Press.

Organization for Economic Cooperation and Development (OECD) (1989) Economic instruments for environmental protection, Paris: OECD.

Orts, E. W. (1995) Reflexive Environmental Law, Northwestern University Law Review, 89:1227-1340.

Porter, M., & van der Linde, C. (1995) Toward a new conception of the environment-competitiveness relationship. Journal of Economic Perspectives, 9, 97-118.

Prakash, A. (2000) Greening the Firm, Cambridge University Press.

Pruitt, D. (1967) Reward structure and cooperation. Journal of Personality and Social Psychology 7:21-27.'

Rapoport, A. and Chammah, A. (1965) Prisoner's Dilemmas: A Study of Conflict and Cooperation. Ann Arbor: University of Michigan Press.

Reilly, W.K. (1999) Foreword. In K. Sexton, A. A. Marcus, K. W. Easter, & T. D. Burkhardt (editors) Better Environmental Decisions, pp.xi-xv, Washington, DC: Island Press

Rosenbaum, W. A, 1998, Environmental politics and policy, 4th ed, Washington, DC CQ Press

Rousseau, D. M. , Sitkin, S.B., Burt, R. S., and Camerer, C. (1998) Not so different after all: A cross-discipline view of trust, Academy of Management 23: 393-404.

Salop, S.C. & Scheffman, D. T. (1983) Raising rivals' costs. American Economic Review, 73,267-271.

Scholz, J. T. (1991) "Cooperative Regulatory Enforcement and the Politics of Administrative Effectiveness," American Political Science Review 85:115-136.

Schmidheny, S and Zorraquin, F. (1996) Financing Change. Cambridge, MA : MIT Press.

Steinzor, R. I. (1998) Reinventing Environmental Regulation: The Dangerous Journey from Command to Self-Control. Harvard Environmental Law Review, 22(1)

Van Meter, D.S., and Van Horn, C.E., 1975, The policy implementation process, Administration & Society, 6:445-488.

Vogel, D. J. (1986) National Styles of Regulation. Ithaca, NY: Cornell University Press.

Walley, N. & Whitehead, B. (1994) It's not easy being green. Harvard Business Review, May-June, 46-51.

White House (2002). Government Performance Results Act of 1993,
<http://www.whitehouse.gov/omb/mgmt-gpra/gplaw2m.html#h2>; 09/08/2002

Williamson, O. E. (1975) Market and Hierarchies. New York: Free Press.
