

AN ECONOMIC THEORY OF SELF-REGULATION

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The nature of regulation has changed quite dramatically over the past decades. After nearly a century of tightening their regulatory control over national economic affairs, many governments are “letting go” – handing responsibility (if not ultimate accountability) for policy-making, implementation, and oversight over to industry associations and other non-governmental actors. In many emerging domains, including the environment and labour standards, industries have pre-empted government regulation by introducing voluntary codes of conduct.

For some time, economists and political scientists have been developing economic theories of regulation to model these changes as a product of the interaction between regulators and regulated industries, and to predict the outcomes of various regulatory arrangements. This paper extends that approach in light of the recent proliferation of industry self-regulation across a wide range of sectors and policy areas. Of particular interest is the voluntary commitment of individual firms, and often, entire industries, to social and environmental codes of conduct, which represents a fairly novel development in the regulatory landscape

Industry self-regulation raises a number of intriguing questions and problems. This paper is primarily concerned with 1) explaining the growth of self-regulatory regimes within the context of regulatory trends in the past several decades, and 2) modelling the dynamics of regulatory compliance when industry is both the regulator and the regulated. How can we explain the pursuit of social and environmental self-regulation by self-interested economic actors? Under which conditions are firms likely to comply with voluntary regulatory regimes? And more generally, what can we learn about industry self-regulation from game theory, principal-agent theory, the

theory of collective action, and recent empirical research into a variety of self-regulatory schemes?

A review of economic theories of regulation and recent regulatory experience

The economics literature has yielded two primary interpretations of government intervention in the economy: a public interest theory and a theory of regulatory capture. The public interest perspective asserts that trustworthy and disinterested expert regulators intervene in the economy to further public objectives. The economic heritage of the public interest theory lays with Pigouvian welfare economics, which portrayed the state as an omnipotent, yet benevolent, maximizer of social welfare that could efficiently correct market failures (Pigou 1932). The growth of regulation since the 1930s was simply a functional response to the changing public needs and interests of an evolving industrial society. Despite its romantic appeal however, the public interest theory has been theoretically and practically discredited for its inability to take into account competing conceptions of the public good, its ascription of heroic and unrealistic attributes to regulators, its underestimation of the power of organised interests, and its failure to explain why regulation often fails to deliver public interest outcomes (Baldwin and Cave 1999: 20-1).

The theory of regulatory capture provides much more accurate predictions about recent regulatory experience. It contends that regulatory developments are driven not by the pursuit of public interest but rather by private interests that lobby for special privileges or regulatory rents. This interest group theory of regulation, however, owes more to the work of Mancur Olson than it does to the interest group pluralism of

Truman (1951) and Dahl (1961).¹ In *The Logic of Collective Action* (1965) Olson posited that since group interests are collective goods, only small, “privileged” groups, or those groups with access to selective incentives, could overcome collective action problems in realising group goals.² Olson predicted the masses of consumers, taxpayers, the poor, and the unemployed would remain latent, while privileged groups such as industry cartels, professional associations, and unions, would organise to further their interests (1965: 49).³

Olson’s insight stimulated members of the Chicago School, beginning with Stigler, to explain how “regulation is acquired by the industry and is designed and operated primarily for its benefit” (Stigler 1971: 3). Stigler asserted that there is a market for regulation, just as there is for other goods and services. In Stigler’s model, government regulators are suppliers of regulatory services (exchanging regulatory rents for various forms of political income or personal gain), while the regulated industry is the primary source of demand.⁴ In the competition for influence, the

¹ In the classical pluralist conception of interest groups, individuals with common goals naturally aggregate into organizations to further their common interests or values. Pluralists such as Bentley and Truman argued that the interplay among interest groups held Western democracies in a competitive equilibrium in which the state is a neutral arbiter (Bentley 1908, Truman 1951, Dahl 1961). Some interest groups got their way, while other did not. But, as McLean points out, that simply showed [pluralists] that “the first had more members than the second, or members that cared more deeply, or both. So it was right and proper that they should get their way” (McLean 2000: 653).

² Olson (1965) argued large groups would not act in the group interest because every increase of group size lowers the “noticeability” and expected value of an individual’s contribution to public goods so that no rational individual would bother contributing. Small groups may succeed, on the other hand, because of the more favourable cost-benefit ratio and because shirking is more easily detected.

³ In 1982, Olson extended his theory of collective action to explain the variance in economic growth among advanced capitalist nations in the post WWII era. His insight was that unless the stake of organised interest groups in the economy is sufficiently large and encompassing (thus raising their per capita stake in society’s overall welfare), will exploit the unorganised masses by redistributing income in inefficient ways and imposing deadweight costs on society (1982: 44). Olson argued that stable societies accumulate these powerful, but narrowly interested “distributional coalitions,” and over time they create rigidity in wages and prices, slow down decision-making, retard innovation, and generate unnecessary levels of regulation (1982: 41-69). The ensuing institutional sclerosis reduces economic efficiency and output, causing vicious cycles of unemployment, losses of aggregate income, falling demand, and reduced investment (1982: 194-210).

⁴ Stigler assumed that demand for government regulation was driven by the collective action problems that industries faced in their attempts to regulate competition privately and by the veneer of legitimacy

concentrated interests of producers (a factor of small group size and high per capita stake), as compared to the dispersed interests of consumers (a factor of large group size and low per capita stake), provide them with more incentive and greater capacity to shape regulatory outcomes. Stigler's work explained the proliferation of government imposed import quotas and tariffs, price controls, farm subsidies, legalized monopolies, licensing regimes, etc., which clearly benefited producers at the expense of consumers during the early-to-mid-twentieth Century.

Peltzman (1976) extended Stigler's work to account for the growing influence of consumer groups in regulatory politics during the 1970s. Noting that discontent voters may vote out incumbents held responsible for higher prices, Peltzman argued that the challenge for government was to design "efficient regulation" whereby prices are raised (and hence the profits of producers and regulators) only to the point where votes gained per dollar of price increase exactly offset votes lost among angry consumers (Mitchell and Munger 1991: 521). Peltzman's vote maximization model showed that the power of consumers as voters places some limit on the ability of regulators to cater solely to the demands of industry and explained the growth of "consumer-friendly" legislation and a range of anti-trust investigations by the FTC in the US during the 1970s (Weingast and Moran 1983).

Whereas Stigler and Peltzman presume that interest group demand for specific legislation is simply translated into political outcomes and largely ignore political institutions, Weingast and Moran (1983) add a model of legislative choice that enriches the theory of regulatory capture. Weingast and Moran argue that while the Stigler/Peltzman model explains why regulation mainly serves the interests of the

provided by government that could disguise the self-interested nature of that regulation (Mitchell and Munger 1991: 520).

regulated industry, it does not explain how benefits are simultaneously delivered to so many diverse interest groups. Following Shepsle, they suggest that legislative institutions, and the committee system in particular, provide the means by which legislators can regularize the provision of benefits to a variety of interest groups while avoiding inter-group conflict (Shepsle 1978). Weingast and Moran point out that the committee system allocates influence over policy in a manner that makes all legislators better off by granting each legislator a near monopoly over the policy issues that are most relevant for his own political support given the particular representation of interest groups in his district.⁵ From this they deduce that interest group demands are incorporated into regulatory policy through congressional committees that maintain tight control over the policy and agency decisions.⁶ So long as the composition of the committee remains stable, then agency policy will likewise remain stable. Thus, the legislative choice model provides a more coherent and thorough picture of the actual legislative mechanisms by which interest group demands get channelled into the policy-making process.

It is also worth noting that the theory of rent-seeking put forth by the Virginia School (Buchanan, Tollison, and Tullock 1980), while closely aligned with the Chicago School, adds an important dimension to the analysis of regulatory expansion.

⁵ The assumption is that representatives will self-select committee appointments and that “each representative chooses actions (voting, introducing new legislation) so as to maximize his political support function generated by the interests within his district.” Representatives from farming districts, for example, will dominate agricultural policy committees and oversee the provision of benefits to their farm constituents (1983: 771).

⁶ Another key assumption of the legislative choice model is that Congress has no trouble controlling agency decisions with an effective system of rewards and sanctions. An opposing view offered by Laffont and Tirole (1991) critiques the Chicago and Virginia Schools for ignoring information asymmetries and implicitly disputes Weingast’s assertion that Congress controls agency decisions. They argue that, “In the absence of such asymmetries, regulated firms would be unable to extract rents and therefore would have no incentive to influence regulatory outcomes. Similarly, voters and legislators would have no difficulty controlling their agents (members of committees and agencies) who thus could not get away with policies favouring interest groups over the common good” (1991: 1090). In contrast, Laffont and Tirole’s agency-theoretic framework suggests that the ability of agencies to hide information from members of Congress explains why regulators have discretion and why interest groups have stakes and power.

The unique contribution of the rent-seeking literature is the analysis it provides of the expenditure of resources to secure the rights to monopoly rents created by various regulatory interventions in the economy, much of which flows directly from potential monopolists to politicians and lobbyists (Krueger 1974; Tullock 1990). Virginians note that demand for regulation does not flow from industry alone while legislators and regulatory agencies react passively; government officials have powerful monetary and political incentives to broaden membership among the privileged groups. By devising politically optimal restrictions and entitlements that limit market competition, regulators can maximize their power and revenues. As Mitchell and Munger explain, it follows that “governments will be sorely tempted to offer still more licenses to practice law or medicine or to operate liquor stores, taxicabs, and barber shops” (1991: 526).⁷

With slight differences in emphasis, the theories of regulatory capture and rent-seeking quite adequately capture the dynamics between regulators and regulated industries to explain the growth of regulation during a period of rapid government expansion extending from the Great Depression to the late 1970s. Neither theory, however, predicted the widespread effort to deregulate national economies that followed in the 1980s and 90s as the costs and problems of regulation became more apparent (Baldwin and Cave 1999: 3). As Mitchell and Munger point out, the theory of regulatory capture “does not explain deregulation save for the tautology that the

⁷ Niskanen (1971) makes a similar prediction about the growth of government based on a slightly different set of assumptions about the propensity of bureaucrats to budget-maximize. Niskanen argues that information asymmetries between the bureaucracy and their political principals enables to bureaucrats to hide the agency’s production function and hence increase their budget until the marginal cost exceeds the marginal benefit to a point at which the total output produced would begin to erode the total value to society. The model predicts that with weak sponsor control agencies will deliver twice the level of output that would be optimal in social welfare terms. Niskanen was thinking principally about government service delivery, but applied to regulatory agencies we could predict that bureaucrats will enlarge their regulatory activities well beyond what is required in terms of social welfare in order to maximize agency budgets – hence their salary, power, and patronage – and ensure the survival of the agency.

industry is now, for some reason, better off without regulation” (1991: 522).⁸

Virginians, on the other hand, predict “an ever-growing government with the power to spend on specific groups while taxing everyone through general taxes” that can only be checked by constitutional amendments that limit the powers of government to tax and spend (Mitchell and Munger 1991: 531).

Following in the Chicago School tradition, Gary Becker (1983, 1985) advanced another economic theory of interest groups that explains, better than other economic theories, the trend toward deregulation that began in the 1980s. In Becker’s model, taxpayers and subsidy recipients compete for political influence (taxpayers lobby to lower their taxes, recipients lobby to increase their subsidies). The equilibrium of political favours depends on a range of factors, but most importantly on the impact of the deadweight costs of taxes and subsidies on the production of pressure.

Deadweight costs, according to Becker, tend to lower the effectiveness of subsidized groups and raise the countervailing political power of taxpayers, giving taxpayers an intrinsic advantage in the competition for influence (1983: 381-88).⁹ The implication of Becker’s model is that regulations with high social costs will not survive competition among pressure groups.¹⁰

⁸ In fact, Peltzman (1989) later revisited the Chicago School theory to reconcile its chief predictions with the experience of deregulation. He argues that regulatory rents can eventually be eradicated by the regulation itself, for instance, when faced with price controls at a time when costs are rising significantly. At this point, deregulation becomes more attractive to the regulated industry than the existing regulatory burden (formerly a regulatory rent). Peltzman concludes that the theory of regulatory capture can tell a coherent story about most instances of deregulation.

⁹ Becker points out that an increase in the level of subsidy eventually raises the marginal social cost to a point where deadweight costs discourages pressure from the subsidized group because they benefit less from the subsidies received. A corresponding increase in tax, on the other hand, increases the marginal social cost of taxes and encourages pressure by taxpayers. Becker asserts that, “Since marginal social costs of subsidies tend to rise, and any marginal social benefits tend to fall, as subsidies increase, recipients would be discouraged from exerting additional pressure as subsidies increased, *even without any reactions by taxpayers*” (1985: 334).

¹⁰ Becker goes further, claiming that policies that increase efficiency or raise output – such as public goods with high social benefits – are likely to win out in competition because they produce gains rather than deadweight costs and are therefore more politically popular (1985: 338).

Given Becker's analysis, the fairly sudden shift to deregulation in the 1980s can be understood as an echo of the "regulatory movement" of the 1930s. As he explains, "deadweight costs of regulations and other policies often rise over time as labour and capital become more mobile, as substitutes develop for products that have been made more expensive, and as other costly methods of evading and avoiding the effects of particular regulations are discovered" (1985: 340). Becker points to the deregulation of airlines, banks, security firms, telecommunications, and other industries as evidence that political support for a subsidy or regulation withers when its deadweight cost becomes too large.

By tying together the various permutations of the Stigler/Peltzman theory of regulatory capture with Weingast's model of legislative choice, the Virginian analysis of rent-seeking, and Becker's theory of competition among interest groups, we get a fairly complete picture of recent regulatory experience. Can these same economic theories also explain industry self-regulation? As we will see, economic theories are perfectly applicable to industry self-regulation in general, but the question of regulatory capture depends on the pattern of industry interests and incentives in relation to the policy area in question.

Explaining self-regulation

Industry self-regulation, broadly defined, can be seen as taking place when a group of firms exerts control over its own membership and their behaviour (Baldwin and Cave 1999: 125). There are various forms of mixed regimes, including co-regulation and enforced self-regulation, in which governments mandate self-regulation, provide oversight and enforcement, approve or draft rules, or some combination thereof (Ayres and Braithwaite 1992). But, in this case, we consider only

those regimes in which industry designs and enforces rules themselves, which implies that firms must willingly cooperate with each other to enact and uphold the self-regulatory regime without government interference.

There is a long history of firms cooperating in this manner to set product, technical, and marketing standards (Braithwaite and Drahos 2000). Most of these efforts have been organized through industry associations or bodies such as the International Organization for Standardization (ISO) to serve private ends. For example, product standards that specify physical qualities required for the sale and use of commercial products facilitate international exchange, increase demand, and lower transaction costs, while marketing standards for pharmaceuticals and other similar products discourage bad practice and boost consumer confidence (Haufler 2001).¹¹ Despite the potential for free-riding and the cost burden borne by industry, self-regulation can, in many cases, be considered superior to government regulation because industry participants benefit from their superior expertise to design practical rules, increased efficiency in the rule-making process, and the enhanced flexibility they gain to adapt rules to changing circumstances (Baldwin and Cave 1999: 126-28). Does this conflict with the Stigler/Peltzman assumption that industries demand government regulation to help control the costs of free-riding and disguise the self-interested nature of the regulation? Not necessarily.

The Stigler/Peltzman assumption makes particular sense when there are strong incentives for individual firms to shirk, as in the case of production quotas and barriers to market entry that restrict output or competition in order to raise prices. Remove the incentive to free-ride (as in the case of product standards), or provide for

¹¹ Of course, there is also a long history of firms colluding to heighten barriers to entry, reduce competition from substitute products, and diminish the power of buyers and suppliers over the industry (Gupta and Lad, 1983).

the ability of an industry to detect and selectively punish shirkers (as in the case of a very concentrated and interactive group of multinational pharmaceutical companies), and the cost-benefit equation shifts enough to make collective action in pursuit favourable, industry-controlled rules quite feasible. Thus, where the expected value of cooperation is high, and transaction costs and commitment problems are relatively low, self-regulation is not only predictable, but also consistent with the theory of regulatory capture.¹²

What is less obvious, and indeed counterintuitive, is the recent proliferation of organized efforts by industries to ratchet-up social and environmental performance above and beyond statutory requirements. Given the theories of regulatory capture and rent-seeking set out above it seems unlikely that economic enterprises that exist solely to maximize profits would commit themselves to address non-profit maximizing goals. Yet, at first blush, this appears to be precisely the case in a wide range of industry sectors.

Haufler's (2001) review of industry self-regulation revealed that, "In the past decade, most major multinational corporations – and many smaller ones – have rushed to develop new codes of conduct that set standards for their behaviour on issues that top the international agenda" (p.1). An OECD fact-finding mission reviewed some 246 social and/or environmental codes of conduct alone, which represents only a sample of the total numbers of codes in existence (OECD 2001).¹³

¹² While the benefits of self-regulation are well documented for industry participants (Ayres and Braithwaite 1992), it is harder to explain as maximizing behaviour on behalf of government officials unless you assume either that regulators get utility from off-loading responsibility for certain policy areas in order to focus on more desirable ones (e.g., Dunleavy's bureau-shaping argument, 1991); that industry is actively compensating an official in return for the right to self-regulate; that bureaucrats are being provided with incentives to control the agency costs; or, that regulators would prefer not to do their jobs and therefore get utility from allowing business associations to do it for them.

¹³ Social and environmental self-regulation comes in many forms. Codes of conduct are just one form. Other examples include product labelling and certification schemes, supply-chain auditing, and

Assuming that a significant number of commitments to improve the social and environmental performance of industry are credible (i.e., that they are more than just rhetoric and fancy window-dressing), how can they be explained?¹⁴ Are corporate leaders acting altruistically, and hence, against the better interests of shareholders (Henderson 2001)? Is a new “industrial morality” taking hold in which firms are becoming responsive to “industry-wide normative frameworks” that compel firms to balance self-interest with other values (Gunningham and Rees 1997: 376)? Or, are these voluntary commitments somehow in line with economic self-interest, and therefore consistent with broader economic theories of interest group behaviour?

A growing body of empirical examples suggests that social and environmental self-regulation can only be adequately understood within an instrumental framework. For example, while altruism or industrial morality might be able to explain some instances of responsible corporate conduct, they cannot explain how many long-standing and effective self-regulatory programs such as Marine Stewardship Council in the fisheries industry, the Sustainable Forestry Initiative, or the Fair Labour Association, persist despite obvious financial pressures from shareholders, employees, and other industry stakeholders with a direct economic stake in financial performance of participating firms (Gereffi et al. 2001). Furthermore, a normative theory is not consistent with empirical observations that compliance is higher in self-regulatory regimes with rigid monitoring and formal sanctions than in those with informal

corporate social and environmental performance reporting. In a more detailed analysis it would make sense to differentiate between these various arrangements. For the purpose of this paper, it will suffice to refer to all such arrangements as self-regulatory regimes or systems.

¹⁴ Empirical studies suggest that there is a spectrum of credibility (Cohen and Webb 1998; Gunningham and Rees 1997; Haufler 2001; Lennox and Nash 2003). Some commitments have proven to be credible because the self-regulatory programs have delivered measurable improvements in industry performance. In other cases, the commitments may have been credible, but the program itself proved to be ineffective in producing results. Other commitments were clearly never credible in the first place. As John Braithwaite put it, they are simply “an attempt to deceive the public into believing in the responsibility of an irresponsible industry” (Ayres and Braithwaite 1992).

sanctions such as peer pressure (Lennox and Nash 2003).¹⁵ A rational choice perspective that conceptualizes industry self-regulation as either strategic behaviour or overtly profit-maximizing (albeit in a longer-term perspective than is often customary), explains these empirical observations and a good deal more without resorting to ad-hocery.

At least three main incentives motivate firms to adopt behaviour that might otherwise appear to be contrary to economic self-interest:

- *Reputation.* Reputation is increasingly recognized as an important economic asset (Wheeler et al. 2001). Firms that are perceived to be poor social and environmental performers endanger their relationships with customers, employees, investors, business partners, and other important stakeholders, particularly as social expectations for responsible conduct grow and activists become more adept at exposing corporate offenders. In some cases, reputation is clearly a shared asset (hence a collective good) and the actions of one renegade firm can tarnish public perceptions of an entire industry (King et al. 2001). Industry self-regulation can help control visibly rapacious behaviour and signal an industry's good intentions to stakeholders.
- *Legal and regulatory risk.* As globalisation proceeds, public uneasiness has arguably given rise to demands for more direct regulation of multinational corporations (Enviroics 2002). The threat of government regulation has enticed many industries to introduce more flexible self-regulatory regimes

¹⁵ If industrial morality could explain social or environmental self-regulation then we should expect high levels of compliance even in the absence of formal sanctions because firms acting in accordance with norms or values, rather than economic self-interest, would not require additional incentives to comply.

to ward off the high costs and burdens associated with statutory laws (Haufler 2001). At the very least, having a regime in place may enhance the opportunity for industry to shape any forthcoming legislation. Some heavily polluting industries meanwhile, see self-regulation as a buffer against potential legal liabilities associated with negative externalities (Lennox and Nash 2003).

- *First-mover advantages.* According to Porter, moving early to adopt higher standards (particularly environmental standards) provides an opportunity to upgrade products and processes and enhances the ability to compete internationally (Porter 1990). Porter cites the international lead enjoyed by Japanese makers of refrigerators and air-conditioners who moved early to reduce energy consumption in the late 1970s and early 1980s (just as the world was recovering from the oil crisis) as one among many examples. Thus, self-regulation provides one vehicle for industries to collaborate on breakthrough standards and technologies that can enhance national competitiveness.

These instrumental explanations suggest the emergence of self-regulatory regimes within select industries is a rational response to external pressures in the marketplace and the broader societies in which firms operate. The motivations driving industries are consistent with conventional economic predictions about how rational firms will behave in competitive markets. More specifically, one could predict that social and environmental codes of conduct and other self-regulatory regimes are most likely to be introduced when reputation for responsible conduct counts with key stakeholders; when the threat of statutory government regulation or legal liabilities is

credible; and when there are potential first-mover advantages in adopting higher standards early. Thus while social and environmental self-regulation may appear to further public interests, these initiatives are advanced for largely selfish reasons. This need not necessarily imply capture in the sense the social and environmental self-regulation only benefits the industry (though it might under some circumstances). It very well may be that both private and public interests may be advanced simultaneously, or that the two are constantly in tension. The key to explaining social and environmental self-regulation, however, is to look for the private incentives, while the key to evaluation is to measure the impact on public objectives.

That industry commitment to improve social and environmental performance self-serving behavior is generated by entirely self-serving motivations is not necessarily a bad thing. Indeed, if we take opportunistic behaviour as our starting point we are in many ways in a better position to design institutional arrangements that will permit cooperation and credible commitments, and ultimately, effective self-regulation. As transaction cost economists point out, distrust may spur the creation of stable institutions that, although raising transaction costs, facilitate gains from exchanges that might not otherwise have been possible (Levi 1999; North 1990; Williamson 1993). In the next section we turn briefly to examine the actual performance of self-regulatory regimes and consider the implications for the design of these institutions. After all, it is one thing to have a sufficient rationale for industry self-regulation; whether these systems *actually* enhance social welfare by improving social and environmental performance in practice is an entirely different matter.

Modelling compliance in self-regulatory regimes

A rational explanation for the emergence of industry self-regulation neither explains precisely how these systems come into existence nor whether they are effective in producing compliance with their stated objectives and standards. As we saw earlier, the existence of a group interest by no means guarantees that a group will successfully mobilize to realize its goal. Indeed, most of the strategic benefits of industry self-regulation listed above are collective goods – if one firm opts to supply them it cannot feasibly exclude other competing firms in the industry from enjoying the benefits – and hence we should anticipate collective action problems.

Furthermore, in most circumstances, one firm acting alone is not sufficient to supply these goods in the first place; they require, by definition (i.e., their low jointness of supply), a large critical mass of industry participants to secure the benefits (Oliver and Marwell 1988).¹⁶ Even one reckless maverick in the industry can easily erase the gains of the group.

To explore these matters further we return to some standard economic theories and models. The prisoner's dilemma illuminates the dynamics of group cooperation and provides some predictions for when we might expect firms to comply with a self-enforcing agreement. Then, assuming that a group of firms *can* organize themselves to implement a self-regulatory regime within their industry, we look at one example of how principal-agent problems could ultimately undermine its effectiveness.

¹⁶ Arguably, the ability to keep the industry free of government regulation is the only pure public good. If only one firm's behaviour is exemplary, and all of the rest are poor performers, then government regulators intent on regulating will not be convinced otherwise. Reputation is excludable to some degree and may even be a differentiator between competing firms in some cases, but as mentioned, there is also ample evidence that reputation is a collective good for industries. Furthermore, when a group of firms invests in building a positive reputation for the industry it can be difficult to either exclude free-riders or prevent poor performers from eroding it. First-mover advantages are clearly excludable, but again, Porter and others cite some evidence that small groups of firms benefit when they share the risks and rewards of working on new environmental standards, processes, and technologies.

The prisoner's dilemma

Cournot argued that collusion between firms to increase returns is not a stable equilibrium even with only two firms. If one sells the agreed upon quantity while the other, relying on this, sells the quantity that will give it the maximal net return, then the cheating firm will receive a higher pay-off than it would under collusion. Like many other examples where cooperation could yield joint benefits, collusion between firms has the structure of a Prisoner's Dilemma game (see payoff structure below).¹⁷ Indeed, by the same logic we should expect that rational firms that could benefit from an enhanced reputation for social responsibility or the absence of government regulation by collectively agreeing to modify their present behaviour will be unable to realize these gains. The paradox is that individually rational strategies, lead to collectively irrational outcomes.

Player A	Player B	
	Cooperate	Defect
Cooperate	10,10	-1,11
Defect	11, -1	0,0

Despite Cournot's prediction, firms do collude and we also have plenty of examples of functioning self-regulatory systems, so how can this seemingly non-rational behaviour be explained? Many analysts have assumed that unless there is a coercive power (e.g., government) to enforce a binding contract, the dominant strategy is always to defect. Indeed, this explains why Stigler and Peltzman found that industries often prefer to lobby governments to rig markets for them (1971; 1976).

¹⁷ The Prisoner's Dilemma game is conceptualised as a non-cooperative game in which all players have perfect information. Players can't communicate, or if they can, they can't make binding commitments. Both players prefer the cooperate-cooperate outcome. Both players are also tempted, however, to defect as they gain a greater payoff if they free-ride on the contribution of the other player. Since both players assume that the other will free-ride, they both opt to defect, yielding a sub-optimal outcome. The game is said to have a dominant strategy in the sense that the player is better off choosing to defect, no matter what the other player chooses. This outcome is a Nash equilibrium because neither player has an incentive to alter their strategy independently of the strategy choice of the other.

However, in his theory of self-enforcing agreements, Telser (1980) provides an alternate solution to the prisoner's dilemma modelled on the possibility of repeating gains from cooperation.

Telser argues that, "a self-enforcing agreement between parties remains in force as long as each party believes himself to be better off by continuing the agreement than he would be ending it" (1980: 27). Telser explains that "a party to a self-enforcing agreement calculates whether his gain from violating the agreement is greater or less than the loss of future net benefits that he would incur as a result of detection of his violation and the consequent termination of the agreement by the other...Both parties adhere to an agreement if and only if each gains more from adherence to, than violations of, its terms" (p. 28). For such an agreement to work there must always be a positive probability of receiving gains in the future and uncertainty about the length of the horizon giving the implication that there is no last period of play. Indeed, the longer the expected horizon (and hence the greater the potential net gains in the future), the greater the dominance of the self-enforcing agreement over the alternative, non-cooperation (p. 41).

Self-enforcing agreements are inherently fragile, but they provide a basis from which to build an effective self-regulation system. The ever-present threat of government regulation may provide an adequate deterrent against defection from a self-regulatory agreement. The possibility of endangering future gains from trade by acquiring a reputation for irresponsible behaviour may compel firms to act benevolently in the present. Any particular situation will depend on the structure of the pay-offs for each player: how costly is it to comply, how often will violation be detected, how substantial are the future gains from cooperation in the present, or how

credible is the threat of future harm? Ashby et al. (2003) provide the example of self-regulation in the UK advertising industry, in which they suggest that the credible threat of statutory laws to regulate advertising changed the payoff structure of a Prisoner's Dilemma game so that it became an Assurance Game in which the benefits of self-regulation that accrued to individual firms exceeded their share of the costs. Add to this a rigorous system of monitoring to detect violations and a set of sanctions to further deter non-cooperation, and we can start to see the contours of an effective self-regulatory regime. We return to these institutional design considerations in a moment. In the next section we assume that a group of firms have overcome their collective action problem and set up some form of institutional mechanism to administer a self-regulatory program, but observe that design weaknesses can produce detrimental principal-agent problems.

Principal-agent problems

When a group of firms decide to establish a self-regulatory regime they enter into an implicit contract. The contract effectively commits each participant to observe and obey the rules of the association. The problem is that the principal (in this case, the self-regulatory association) may not have perfect information about what type of agents (the industry participants) are voluntarily joining the self-regulatory regime, giving rise to the problem of adverse selection. Indeed, some firms may join to secure the insurance and signalling benefits of membership, but have no actual intention of following through with the commitments. Once an agent has joined, the principal may not have perfect information about whether or not the agent is actually following through with its contractual obligation, giving rise to a moral hazard. To be sure, there are bound to be occasions when firms operating in competitive markets will feel pressure to shirk, but will choose not to report this to the principal. These information

asymmetries and conflicts of interest turn out to highly important in determining the success of a self-regulatory regime.

Lennox and Nash (2003) provide an empirical example of adverse selection. In 1989, a group known as the Chemical Manufacturer's Association (CMA) launched the 'Responsible Care' initiative in response to growing public criticism of the industry. The voluntary initiative required participants to sign a set of principles and implement six codes of environmental management practice. However, the CMA did not require third party review or certification of firm performance and did not adopt explicit sanctions for non-compliance. After conducting a statistical analysis, Lennox and Nash found that participants in the Responsible Care program were actually *more* polluting on average than other chemical firms in the United States. The authors conclude that without screening mechanisms and effective sanctions self-regulatory programs will attract poor performers. "Left unchecked," they warn, "adverse selection will undermine self-regulatory programs as low quality firms...reduce the differentiation benefits membership may provide" (2003: 2).

Some institutional design considerations

The forgoing discussion of difficulties in achieving compliance and coping with principal-agent problems suggests that institutional remedies are a necessary component of effective self-regulation. As Elinor Ostrom points out "All efforts to organize collective actionby a set of principals who wish to gain collective benefits, must address a common set of problems. These have to do with coping with free-riding, solving commitment problems, arranging for the supply of new institutions, and monitoring individual compliance with rules" (Ostrom 1990: 27). Any successful self-regulatory system is therefore likely to require an institutional

setting to enhance group interaction in order to secure and reinforce credible commitments (e.g., through regular meetings of industry participants in which best-practices are shared); mechanisms to monitor and report industry performance on an ongoing basis (e.g., hiring an independent auditor that can collect, analyse, and distribute information); and an appropriate and enforceable set of sanctions in place to punish free-riders and shirkers when necessary.

Perhaps the most difficult of these three elements are the sanctions because self-regulation is voluntary by definition and any pure form rules out legal recourse and external enforcement. Some observers argue that expulsion is the best available sanction (Lennox and Nash 2003). Other observers have suggested that industries arrange for a neutral third party not just to monitor performance, but also to report the results publicly in order to shame lagging firms (Sabel et al. 2000). Still others submit that self-regulation is too fragile and that “enforced self-regulation” with a pyramid of enforcement strategies is required whereby industry rules are ultimately backed by government enforcement when necessary (Ayres and Braithwaite 1992). While there is insufficient scope to explore these institutional design issues further within this paper, they surely require much more attention if self-regulation is to become a credible policy option.

Conclusions

Industry self-regulation deserves to be taken seriously. Not only is the practice growing in a wide range of industry sectors and policy areas, it is also gaining support from governments and even a number of skeptical observers in the world of social and environmental NGOs. This suggests that the practice of self-governance is gaining momentum. By no means, however is industry self-regulation a panacea. On one

hand, self-regulatory regimes offer some important advantages over more traditional command and control models of regulation that could be harnessed to create a more responsive regulatory system. On the other hand, there are many examples of failed attempts at self-regulation and certainly some inherent weaknesses in a great many others that have succeeded.

The economic theory of self-regulation presented in this paper is merely a starting point for a much more ambitious research program to understand the forms and limits of industry self-regulation. Thus far, we can conclude that the emergence of self-regulatory systems is a rational, self-interested response to external pressures in marketplace and the broader societies in which firms operate. We can predict that self-regulating systems will emerge when the expected value of cooperation is high, and transaction costs and commitment problems are relatively low. We can also anticipate free-riding and principal-agent problems when institutional arrangements do not provide adequate mechanisms for monitoring and enforcement of rules.

Still required are more precise models and more effective tools for constructing a more comprehensive theory of self-regulation. We need to more clearly spell out the conditions under which we can expect effective industry self-regulation to emerge. We need much more empirical research to evaluate their effectiveness. Finally, a more thorough understanding of the institutional arrangements that support cooperation and compliance with rules will pave the way for the adoption of self-organizing systems of self-governance in many facets of the economy and society.

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