



Another Look at the Study of Regulatory Forms and Outcomes

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HIRSCHEL KASPER, Section Editor

Another Look at the Study of Regulatory Forms and Outcomes

Rodney Fort and Robert Rosenman

Some economists (and fellow travelers in other disciplines) studying regulatory forms, regulatory morphologists if you will, are interested in answers to the following question: What factors determine the forms that regulations take? The thoughts presented here are motivated by our abiding interest in this question. Primarily, our observations concern the fascination of economists with the concept of efficiency, that is, output levels such that prices reflect the full opportunity costs of production. A classic case is negative externality. A well-known result is that a set of regulatory mechanisms exists that will produce an efficient result with price equal to the full social accounting of marginal costs. Economists most often prescribe incentive solutions such as taxes and tradable permits. Regulators, however, have commonly chosen other means of limiting external costs. In the case of fisheries, for example, Rosenman and Whiteman (1986a, 1986b) have detailed how policymakers have chosen catch quotas or season length and gear restrictions, rather than taxing schemes, to limit overcrowding and intertemporal externalities. Efficiency champions chastise regulatory policymakers' choices in fisheries regulation. Regulatory analysts wonder why policymakers choose as they do.

We argue that regulatory inefficiency is the natural result of a process that does not have efficiency as its primary goal. Instead, political decisionmakers are interested in generating reelection potential by redistributing economic surplus among market participants. From the reelection perspective of policymakers, an

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efficient choice is much more likely to involve incremental net gains to reelection potential. This type of politically efficient result may have nothing to do with economic efficiency (although we cite in the conclusion some examples where the opposite is true).

From a policy perspective, we argue that this focus upon efficiency has at least two drawbacks. First, the prescriptions typically offered by economists represent only a subset of the universe of efficient regulatory choices. As a result, judging between alternatives is beyond the efficiency criterion. Second, a focus on efficiency provides policy analysis with little insight. From the perspective of studying regulatory outcomes, policymakers seldom are concerned with efficiency in the first place. One implication of this second drawback is for the reform minded, admittedly only a subset of regulatory morphologists. Incomplete understanding of the reelection motivation leads to a particular set of policy prescriptions that, typically, are ignored by policymakers. Although frustrating, this result is quite predictable. Arguments founded upon efficiency may be logically persuasive, but they are cast in a currency of little value to the reelection ambitions of policymakers.

In drawing attention to these drawbacks, we call for an analysis of regulation that extends beyond efficiency. It is our contention that a focus upon efficiency leads to a needlessly restrictive, less insightful setting for policy analysis. For example, an extended analysis of regulatory outcomes finds the self-interest margins of policymakers to be the primary determinant of regulatory choices. Although one may or may not agree that these margins *should* matter, economists perplexed by why certain regulations take the form they do would do well to extend their analysis to incorporate them.

In this article, we make two basic points. First, the comparison of regulatory mechanisms often involves Pareto noncomparable alternatives, and judging between them can be beyond a strict efficiency criterion. We make this point by exploring the efficiency aspects of regulatory alternatives in a simple model of production externality in a competitive market. Because of the work of Benson and Faminow (1986) and Karpoff (1985, 1987), marginal costs are viewed as a function of the regulatory choice.

Our second point is, given that policymakers focus upon transfers (the meat of the reelection grinder), the focus of those who are interested in explaining and predicting regulatory forms and outcomes properly seems to be the process governing transfers, namely, the political process. This is an argument that insightful regulatory analysis will address the self-interest margins of the relevant decision-makers. In the policy process, these margins are seldom based solely, or even partly, upon efficiency and, in holding the efficiency paradigm dear, analysts are likely to miss the relevant objective functions and constraints determining policy results.¹

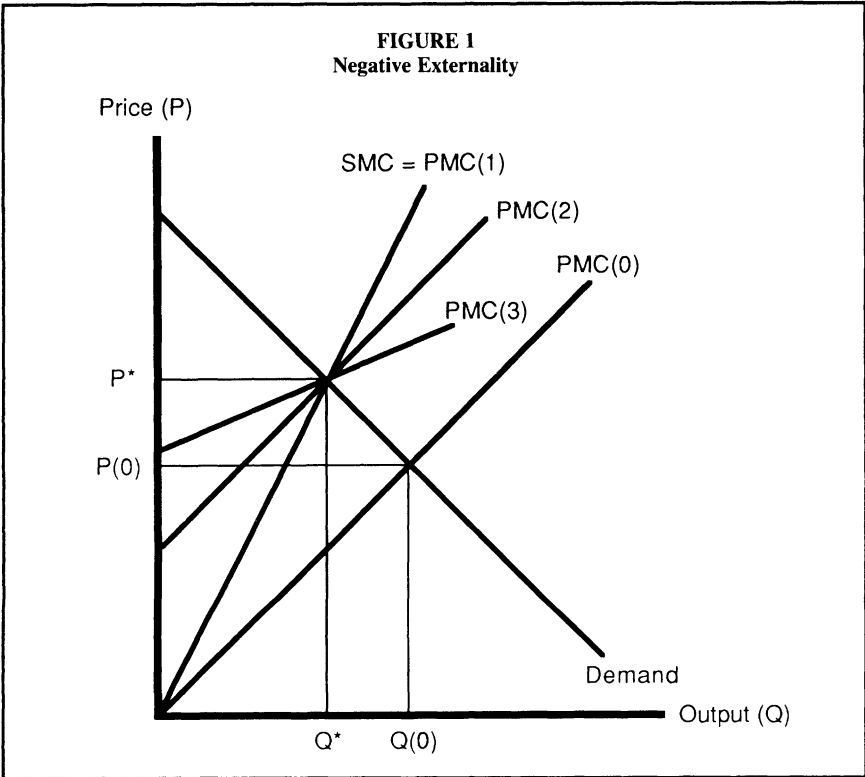
If one is interested in explaining why regulatory outcomes look the way they do in a world where political choices are driven primarily by welfare considerations, transfers will matter more than efficiency losses. This second point is presented by examining the choice of regulatory mechanisms for externalities in a simple model of elected official behavior, extending works such as Buchanan's

and Tullock's (1975). We discuss how the extended analysis of regulation lends insight into actual policy choices. We do this for two complicated externality problems, siting a high-level nuclear waste repository and fisheries regulation. In addition, the extended analysis is applied to the more general case of policymaking by the U.S. Forest Service.

REGULATORY FORMS AND OUTCOMES: EXTERNALITIES

Let private marginal costs be a function of the regulatory tool chosen from the set of possible regulatory tools. We write this as $PMC(r)$, where $r = 0, R$ is the set of regulatory tools. For convenience, we let 0 denote nonintervention. Thus, $PMC(0)$ represents marginal costs in the absence of regulatory intervention. The crucial point of this section is that the comparison of regulatory tools used to shift the industry marginal cost curve can be beyond the efficiency aspects of the mechanisms. Our discussion is at the general level, but an example that we have found useful both in the development of this article and in the classroom is offered in the appendix.

Consider an industry where a negative externality is associated with production. Figure 1 displays the familiar negative externality result. The social mar-



ginal cost curve, SMC , diverges from the marginal cost curve that the industry perceives in the absence of intervention, $PMC(0)$. The difference between these two cost functions is the marginal damage done during production. We assume a constant cost, competitive industry composed of identical firms. For this case, the industry marginal cost curve is the industry short-run supply curve. The socially optimal output is Q^* at price P^* .

However, because of poorly defined and enforced property rights, firms in the industry do not face the full social costs of their actions. Marginal damages are not considered by the firm, and the result is output level $Q(0)$ at a price $P(0)$ where, again, the argument represents the choice (which surely it is) of nonintervention. Given this regulatory choice, overproduction relative to the socially optimal level occurs and efficiency is violated. Society suffers a loss in welfare equal to the excess of SMC over the value represented by the demand curve on units between Q^* and $Q(0)$.

The regulatory problem is achieving (Q^*, P^*) , raising social welfare by reducing the losses just described on units between Q^* and $Q(0)$. We adopt the following categorization scheme. Let regulatory group one (RG1) be the subset of $r = 0, R$ that includes proportional output taxes, surplus extracting permit auctions, discriminating Coasian payment plans, and variable output restrictions. All of the choices in RG1 result in a *pivot* in $PMC(0)$ to $PMC(1)$ and efficiency. Let regulatory group two (RG2) be the subset of $r = 0, R$ that includes constant per unit output regulations such as Pigouvian taxes and Coasian payments. RG2 regulatory mechanisms *shift* $PMC(0)$ to $PMC(2)$ and, again, efficiency reigns. Our final subset, RG3 of $r = 0, R$, is composed strictly of "nonincentive" restrictions such as when policymakers require some sort of cleanup technology that shifts $PMC(0)$ to, say, $PMC(3)$. Unlike uniform pollution standards that force smokestack scrubber technologies into use by all firms, group RG3 shows that it is possible for regulators to choose cleanup technologies that move output to the efficient, socially optimal level.

The important insight for our purposes is that some regulatory choices are comparable and some are not. For example, mechanisms in RG1 and RG2 may be preferable if the efficient outcome (Q^*, P^*) is not known with certainty. Simply, it is easier to change a tax rate (variable or constant) than it is to alter the production process, including a cleanup technology.

Most important for our point, all regulatory choices in the three groups are efficient, but each has different distributional consequences. For example, relative to nonintervention, producer profits are greater under choices in RG1 than choices in RG2. Thus, across the three groups, the regulatory mechanisms are Pareto noncomparable. Interestingly enough, economists have come down strongly in favor of mechanisms in both RG1 and RG2. Favoring constant per unit output taxes over the imposition of cleanup technologies, however, is not necessarily justified strictly on efficiency grounds.

From the perspective of efficiency, the outcomes are equally desirable. In such a case, what policy prescription does the analyst have to offer? Suppose regulatory policymakers care about efficiency (we drop this assumption, shortly). They are confronted by economists prescribing one set of policies that are indistin-

guishable from others on efficiency grounds. Given different efficient categories such as RG1, RG2, or RG3, other criteria will be brought to bear on the question. Even if policymakers cared about efficiency, the criterion leaves them with an infinite number of alternatives; the choice of regulatory mechanisms is beyond the efficiency criterion.²

If such is the case when efficiency leads to a variety of alternative prescriptions, will there not always be some room for the discretion of decisionmakers to make its way into the policy choice? This leads naturally to an analysis of which mechanisms are preferred by policymakers, an analysis that cannot be pursued solely in the context of efficiency because it requires consideration of their objectives and constraints. This becomes especially relevant when efficiency is not as highly revered by policymakers as it is by economists.

BEYOND EFFICIENCY

The specification of the objective function for policymakers requires care. We frame our discussion in terms of elected officials, and discuss the objective of the policymakers before returning to our externality setting. We posit a model where elected officials pursue regulatory policies that result in net voting gains from their constituency. This centers the policy process on the behavior of elected officials rather than administrative agencies, replacing traditional regulatory capture (or runaway bureau) models.³

Broadly, in economic theories of regulation, regulatory choices are viewed from a supply-and-demand perspective.⁴ Elected officials supply regulation (and other government products) to satisfy the demands of important interest groups in their constituency along any given policy dimension, reaping the electoral rewards of their provision. We assume a strict version of the electoral connection (Mayhew 1974). In pursuit of electoral reward, their regulatory choices mirror the demands of important constituent groups. This assumes away part of what has come to be called the “principal-agent problem” of representative democracy (Weingast 1984); no “political slack” exists between elected representatives, regulation demanders, and regulatory policy results.⁵

The form of regulation, one element of political supply, is related to the amount of political support forthcoming from that choice. If elected decisionmakers supply regulation in a way that enhances the welfare of important constituent interests, across the variety of possible forms of regulation, the officials’ reelection chances are enhanced. It is reasonable to expect that the surplus a group would enjoy from preferential treatment and the political support forthcoming from that group (campaign fund contributions, the block vote of the group’s members, trade organization endorsements, and other vote-generating resources) are strongly positively related. For example, workers are voters, and choosing one form of regulation over another would certainly engender the political support of one type of labor organization over another. Other demonstrated dimensions of electoral support related to the type of regulation chosen include payoffs to casework (Fiorina and Noll 1978).

Clearly, the choice of regulatory mechanisms can create tension along the

elected official's margins. For example, suppose two types of regulation, A and B, are aimed at handling the same problem. Output may be greater under regulation A than under B so that output demanders might prefer A. If B is chosen anyway, the explanation under the net voting gains model is that elected officials must have weighed the tradeoff between output demand constituents and other constituents and found the net result to favor regulation under B. In such a setting, efficiency certainly can (and does!) receive short shrift.⁶

To see the insights gained under an extended regulatory analysis, we return to the problem of negative externality and develop a particular version that suits our purposes. Suppose a production unit of interest composed of three producers, A, B, and C, each emitting six units of pollution. Society determines that it is willing to live with a total of six units from all sources. Marginal costs of cleanup are given in Table 1. We purposefully design the strongest comparison possible on efficiency grounds, allowing elected officials to choose between an efficient constant per unit emissions tax and an inefficient uniform restriction on emissions that results in higher cleanup costs than the first alternative.

Both alternatives are designed to achieve a six-unit pollution-ceiling goal. Under a uniform standard, each producer would clean up four units. Costs of cleanup would be \$1,000 for A, \$750 for B, and \$7,000 for C, for a total of \$8,750. An emissions tax of \$1,100 would reduce pollution to the acceptable level at a total cost of \$4,650 (\$2,100 for A, \$1,550 for B, and \$1,000 for C). In addition, the tax would generate revenues of \$6,600 for government. In this case, economists have a justifiable efficiency case for the emissions tax and, if elected officials shared the goal of efficiency, the choice would be clear.

From an extended analysis of regulation that includes the objective function and constraints of those choosing the regulatory mechanism, we gain the following insight. First, producers A and B prefer the standards because their cleanup bill would be lower under that policy (\$1,100 and \$800 savings for producers A and B, respectively). Producer C, on the other hand, prefers the tax (with a cleanup bill under standards \$6,000 greater than under taxes). Hence, while the tax would create a general benefit by lowering costs of cleanup to society, a majority of the producers in this industry would be hurt in a concentrated fashion by that policy. Interestingly, the general social beneficiaries have an ally in the remaining producer C, who will bear harm in excess of the gains to the majority of producers if standards are chosen.

TABLE 1
Marginal Cleanup Costs

Pollution unit removed	Firm A	Firm B	Firm C
1	100	50	1,000
2	200	100	1,500
3	300	200	2,000
4	400	400	2,500
5	500	800	3,000
6	600	1,600	3,500

Taking the reelection imperative of policymakers into account, one of two outcomes should be expected. First, suppose that the majority favoring standards is able to deliver more political currency than the remaining producer C can muster. This is possible, even though producer C can afford to spend \$4,100 more to get its way, if producers A and B can promise more votes (and/or nonmonetary vote generating resources) than producer C's \$4,100 can generate.

For this first possible outcome, from the point of view of elected officials, gainers from the tax include the clearly disgruntled producer C (presumably willing to expend resources up to \$4,100 to get its way), but the remaining gainers are dispersed, their benefits are small on a per capita basis, and they are unlikely to offer any organized support since costs of organization would typically be large. Opponent producers A and B are likely to be organized already and quick to evaluate their losses from the tax relative to the standards. Absent taxes earmarked to compensate producers (an unlikely event), only folly would dictate that an elected official interested in maximizing net voting gains would choose the tax over the uniform standard under these circumstances.

The second outcome that might occur concerns the reverse situation where producers A and B cannot provide more votes (and/or nonmonetary vote generating resources) than the \$4,100 potential offer by producer C. In this case, producer C may get its way in the policy process because it has more to lose than both firms A and B have to gain from the imposition of standards over pollution taxes. It often is lamented that special interests run the political process and the possibility that producer C may win would represent just such a case.

Our example is not nearly as ingenious as the real thing. During the reelection bid of Washington State's Governor Booth Gardner in 1988, cleanup of Puget Sound was a featured issue. Subsequently, a cigarette tax increase was enacted to carry out the cleanup. The Puget Sound pollution problem was not one of cigarette smoke or cigarette butt littering. However, in a classical example of political choice, a dispersed, unorganized (and likely to stay that way) group was taxed (with small impact on each individual smoker whose demand is highly inelastic), much to the delight of the concentrated, organized, group of producers located on Puget Sound. The producers' cleanup costs are zero and any other alternative regulatory choice can at best yield the same result from their perspective. In all likelihood, any alternative would be far worse from the producers' point of view.

Hurting no firms and dispersing costs over politically bankrupt smokers is a logical extreme example of the point made in our discussion of the data in Table 1. For regulatory morphologists, the lesson is that the objective function of policymakers provides important additional analytical leverage; welfare transfers are an important determinant in actual policy choices.

FURTHER LESSONS FROM THREE APPLICATIONS

To extend the insight offered by a more extensive study of regulation, we offer three applications: siting a high-level nuclear waste repository, fishery regulation, and policymaking by the U.S. Forest Service. The first two examples concern externalities, the former in a straightforward fashion and the latter in a

common-pool resource setting. The third is a more general example concerning natural resource policy. In each case, efficiency explanations of regulatory choices are found wanting; much more insight is had from the extended analysis discussed above.

Siting the High-Level Nuclear Waste Repository

For siting the high-level nuclear waste repository (HNWR), the question is where to put an externality-generating activity, and the analysis of the previous section is relevant. One policy choice would leave the siting and storage problem in the hands of waste generators by choosing an efficient tax scheme to deal with such waste. Another policy choice might involve violations of efficiency. Rosenman, Fort, and Budd (1988) have shown that current government approaches to selecting an HNWR site ignore important current costs associated with the increased risk and intergenerational welfare transfers inherent in the choice. Because regulatory mechanisms of both types have been devised, but the latter was chosen, regulatory analysts have an interesting puzzle that goes beyond the efficiency criterion.

The crux of the HNWR siting problem is that producers of waste and those who live, or will live, near them will gain at the expense of current and future generations that populate, or would have populated, the chosen storage site unless proper compensation schemes are implemented. Accordingly, the site-selection process includes a \$100 million per year "signing bonus" for the state that eventually accepts the HNWR. This raises at least two important issues. First, as it currently stands, the site-selection process clearly does not depend solely upon efficiency (even though it has the result of screening states with higher perceived costs) because the compensation package is independent of the actual site chosen. Thus, only an extended regulatory analysis will lend any insight into the actual choice. Second, the target of analysts frustrated by the current choice is the U.S. Department of Energy (DOE). An extended analysis can lend insight into whether DOE is truly the correct target. For example, if the HNWR siting choice actually resides with DOE, why would it be so generous (or stingy, as the case may be)? The existence of compensation carries the overtones of electoral politics. Indeed, Senator Bennett Johnston (D-Louisiana) brought the bonus measure to light, not DOE.⁷

We explain the \$100 million compensation bonus as follows. The case of siting the HNWR is atypical in one important respect. Although the benefits of the political siting decision are concentrated (to inhabitants of waste-generating areas), the costs are concentrated as well (at the waste-repository area). Thus, the usual reciprocal vote trading (logrolling) behavior in the legislature will be disrupted. The benefits to elected officials concerned with relocating nuclear waste will be in a dollar currency directly payable to other legislators' constituents. We surmise that \$100 million may not be nearly enough to leave individuals at the HNWR site just as happy as they were in the absence of both the site and the lump-sum payment. Over the 10,000 year lifetime of the HNWR, compen-

sation in the billions of dollars may be needed (depending on discount rates and the level of perceived risk) to fully compensate those at the site.

Fishery Regulation

Karpoff's (1987) analysis of fisheries regulation offers insights consistent with the arguments presented here. Referring to traditional controls, such as catch quotas or entry restrictions, he notes that at times "fishermen have actively opposed regulations that . . . appeared to promise the fishermen positive fishing rents" (p. 180). This opposition is attributed to the different welfare distribution effects of alternative regulations. Thus, inefficient regulations "are the results of rational maximizers exploiting the political process for redistributive gains" (p. 181).

Karpoff demonstrates how fishing-gear restrictions impose inefficiencies on firms in the market that favor one group of fishermen over another. He uses two types of fishermen, indigenous fishermen with small-scale, labor-intensive operations and fishermen from outside the geographic area with large, capital-intensive operations. He concludes that in fisheries involving the Pacific salmon and the North Pacific halibut, the resulting regulations have focused on season restrictions rather than entry restrictions. Because season restrictions and gear (capital) constraints favor the labor-intensive fishermen, the distributional advantage is toward the growing (in number) indigenous fishermen who are (presumably) politically favored.

U.S. Forest Service

In another example, moving beyond the efficiency criterion lends important insight into the policies of the U.S. Forest Service (FS) (Stegner 1990; Stegner and Fort 1991). The literature concerning the FS is steeped in the tradition of regulatory capture and current charges that the FS is out of control. As one observes the FS, the prevailing view that the FS is a runaway bureaucracy is untenable. Although once a servant of the timber industry, because of the increasing relative scarcity of first-growth timber area, in much of its jurisdiction the FS is now a regulator serving fundamentally diametrically opposed groups—producer interests and recreational enthusiasts. This changing tide of interest group importance for the Forest Service has moved the focus of its activity into the arena of congressional politics.

What does an efficiency orientation say about the policy choices of the FS? Only that they are inefficient. If one is interested in why these choices are made, the efficiency criterion is unsatisfying. Changes in regulatory outcomes derived from changes in oversight subcommittee constituency preferences have offered much more insight on just why regulatory choices look the way they do.⁸ If Congress is running the policy process, then an important reason why the FS altered its policy activities toward recreational enthusiasts must derive from an alteration in constituency interest and, consequently, an alteration in the margins that drive electoral decisionmaking.

We suggest the following methodology for an investigation of FS policy. Suppose the interests of a FS oversight and/or budget subcommittee's constituency change. For example, environmentally sound road building might become more important relative to other FS activities. Linking constituency and subcommittee preferences (using the environmental scores given to congressmen by concerned groups), one can explore whether, and how, the agency policy mix changed to suit the new preferences imposed upon the subcommittee. In an application of a polytomous discrete choice model to the FS policy mix, the right-hand side would include the preference information on the subcommittee and the tools of its control over the FS, for example, budget allocations.

Such an investigation of the FS is directed by the question of how regulation occurs and by the origin of regulatory form. It is a direct extension of current beliefs about regulation to a more complete accounting of the tradeoffs between efficiency and the reelection margins that confront policymakers. From this perspective, regulatory outcomes can endure only as long as they are more beneficial to congressmen in terms of net electoral gains in their districts than other possible regulatory schemes.

SUMMARY AND CONCLUSIONS

From the perspective of studying regulatory forms and outcomes, we make two points. First, the economists' revered concept of efficiency often is insufficient for the task confronting policymakers who must choose between alternative regulatory mechanisms. For a given problem, many regulatory forms will be efficient, rendering that concept deficient for policy choice. Second, a focus on efficiency does not provide much insight into the actual choices of policymakers in a variety of arenas. The self-interest margins of those making the policy decisions will be just as vital as it is for other kinds of choices. If inefficient regulatory mechanisms are the result of policymakers' balancing their own self-interest margins, studies of regulatory form that ignore this aspect of policy choice are hamstrung from the start. An extended analysis of regulatory policy proves insightful, and we hasten to call for just such a redirection.

Second, our findings have implications for those bent on the reform of regulation, rather than just the study of its form. The failure of policy reformers, including many economists, is a direct result of their inability to present proposals having any relationship to the self-interest of policymakers. Indeed, often the efficient regulations proffered are suboptimal from the perspective of elected regulatory policymakers. This is a recipe for reform failure.

This does not suggest that efficiency champions should abandon their paradigm but, rather, that they will be much more likely to achieve their goals when policy prescriptions are backed by the relevant political currency, reelection potential. Although self-interest justifications for efficiency may be elusive, they do arise. For example, Baden and Stroup (1981) were among the first to point out that a natural coalition exists between environmentalists and individuals revering efficiency. An example of the grounds for such a coalition is provided by Lenard

(1981), who argued persuasively that both more timber and more wilderness are potentially available from the efficient use of National Forest lands.

APPENDIX

We extend our analysis to include the firm and examine the short-run impacts of regulation on firms in the market. This has proved useful to us both as a classroom teaching device and as an interesting examination question. Care must be exercised to make the welfare comparisons between both (1) the absence and presence of any regulatory intercession and (2) the different types of regulatory choices.

Assume quadratic total costs, $TC = 100 + (10 + X)q + q^2$, where X is the externality. Unlike our approach in Figure 1, the externality is assumed constant on a per unit output basis. We let q represent firm output. Including the externality, firms incur marginal costs given by $MC = (10 + X) + 2q$, aggregating to an inverse industry supply function (under constant long-run costs) of $P = (10 + X) + (2/m)Q$, where m is the number of firms, P is the price of the good, and Q is aggregate supply. Alternatively, if the externality is ignored by the firms, the marginal cost and supply curves would be $MC = 10 + 2q$ and $P = 10 + (2/m)Q$, respectively. Let there be a simple inverse demand curve of $P = 10 = Q$. Nonintervention in this market would result in zero profit (price, short-run average cost, and short-run marginal costs equal for each firm) and short-run equilibrium values of $m = 7$, $q = 10$, $P = 30$, and $Q = 70$. The producer's surplus for each firm would equal 100, and the total consumers' surpluses would be 2,450, a surplus total of 3,150. The calculation of the social loss caused by excessive output would be the first interesting puzzle for students.

One way of internalizing the externality would be to institute a per unit tax equal to the per unit externality, X , at the optimal level of output (a Pigouvian tax). Suppose in this case that $X = 10$. Each firm that stays in the market continues to produce 10 units, but one less firm stays in the market because output falls to 60 and the market price rises to 40. Producer's surplus for each firm remains at 100, consumers' surpluses fall to 1,800, and the sum is now 2,400. Tax collections are 600. In the case of the constant per unit output tax, the cost of the externality is shared by consumers of the output, the firm driven from the market, and suppliers of inputs to that firm. All costs, in terms of lost surplus, are paid by agents involved in the market.

An alternative policy tool would be a tax rate proportional to output, that is, a variable per unit tax, T , on the firm so that $T = rq$, where r is the coefficient of proportionality. Under this type of tax, the additional cost to the firm of another unit of output is rq^2 . The result is a pivot in the marginal cost and supply curves, rather than a shift upward. For comparative purposes, it is possible to find a value for the coefficient of proportionality, r , that will achieve the same industry output as the per unit tax. In our example, with $Q = 60$, the coefficient that does the job is $r = 1.25$. Firm output under this proportional tax is 6.67 with nine firms in the market. For each firm, producer surplus remains at 100, for this surplus is simply returns to capital at the market rate (under competition) and must remain the same. Although producer surplus to each firm remains constant, industry surpluses increase to 900 by virtue of the higher number of firms. Consumers' surplus remains at 1,800, and tax collections are 300. Thus, under a proportional tax of rq , while output would be efficient, important differences would exist relative to a constant per unit tax. In our experience, students find this enlightening.

First, tax revenues under the constant per unit tax are 600, whereas revenues under the proportional tax are 300. Choosing a proportional tax rather than a constant per unit tax results in a transfer to this industry, all accruing to the firms in the industry. The second difference is that more firms remain in the industry under the choice of a proportional tax. In the case of the proportional tax, the cost of the externality is shared by consumers in this market and others outside the market (through the transfer) even though the tax is

efficient. This transfer goes to support the additional firms in the market relative to the per unit tax.

In passing judgment on the Pareto optimality characteristics of these taxes, one must turn to the plight of tax revenues. Then, the role of policymakers' own goals, which need not be concerned with efficiency, become apparent. Suppose that the taxes are used to compensate those that suffer from the externality. The constant per unit tax results in just enough to compensate those who suffer (600 in tax revenues, just equal to the total level of damages for the assumed constant per unit externality) while the proportional tax collections are insufficient for this purpose (300 in tax revenues). The difference between the two is the transfer to additional firms under the proportional tax, either from uncompensated sufferers or general tax revenues. Thus, the constant per unit tax may be a Pareto improvement relative to doing nothing, but the proportional tax cannot be judged an improvement because of the transfers from outside the market. Neither need be an improvement in welfare if tax revenues do not go to those who suffer from the externality.

With this example, the stage for a lively classroom discussion is set. From the perspective of efficiency, the outcomes are equally desirable, but they remain Pareto noncomparable. The perfect lead-in questions that force students to confront our second observation are: In such a case, what policy prescription does the analyst have to offer, and how will political decisionmakers respond?

NOTES

1. The crux of this point perhaps is best illustrated by the difference between maximizing surpluses with efficient regulation and efficiently redistributing the surpluses from an inefficient regulatory choice. This idea of the conservation of surpluses is an important consideration in the behavior of elected officials (the first reference we know of is by Becker [1976] in his comments on Peltzman [1976]). However, there is a difference between the efficient redistribution of surplus and maximizing the size of the surplus to be redistributed. Certainly, the size of the summed consumers' and producers' surpluses is maximized when production is at the efficient level. However, it is the determination of the size of the surplus that can feasibly (politically) be redistributed that renders the notion of efficient production (and maximal surpluses) of little relevance to policymakers.
2. It has been pointed out to us that the Kaldor-Hicks criterion greatly reduces the space of efficient regulations. Thus, the choice is not beyond the efficiency criterion. Our response is twofold. First, there certainly can be more than one regulatory choice that satisfies the Kaldor-Hicks criterion. Second, simply choosing the Kaldor-Hicks criterion embodies a normative focus on potentially compensable, efficient regulations. There is no reason to suspect that policymakers will embrace this version of an efficiency criterion any more than the criterion of efficiency itself. We thank an anonymous referee for raising the question of just how a Kaldor-Hicks approach fits into our discussion.
3. Fiorina (1982), Noll and Owen (1983), Weingast (1980, 1984), Weingast and Moran (1982, 1983), and McCubbins and Schwartz (1984) are representative of the growing body of literature that calls into question the capture model as a reasonable description of regulatory choice.
4. A detailed treatment of the evolution of this literature is outside our purposes. In its early phase, one must acknowledge Buchanan and Tullock (1962), Downs (1967), Tullock (1967), and Niskanen (1971). In a second phase, the development of the theory of economic regulation, a forerunner of what is now evolving as the economic theory of regulation, must be noted. Works include Stigler (1971), Peltzman (1976), Hirshleifer (1976), and Becker (1976). The evolution continues through the works of Fiorina (1982), Weingast (1980, 1984), and Weingast and Moran (1982, 1983). An introductory public choice summary on the incentives imposed by electoral settings can be found in Gwartney, Stroup, and Clark (1983).
5. Political slack refers to the ability of elected officials to pursue policy goals that are independent of those either directly or indirectly related to the interests of constituent interest groups. On this topic, the relevant works are Kau and Rubin (1979), Kalt (1981), Kalt and Zupan (1984), Peltzman (1984), and Lott (1987).
6. This does not mean that efficiency is irrelevant once a mechanism is chosen. After the mechanism is chosen, the preservation of surplus for redistribution is imperative to political ends (Becker 1976; Gardner 1983, 1987).
7. We thank one of the referees of the *Journal of Economic Education* for pointing this out to us.

8. These tests are based upon theoretical observations and empirical analysis of the Nuclear Regulatory Commission by Weingast (1980), the Federal Trade Commission by Weingast and Moran (1983), and the Securities and Exchange Commission by Weingast (1984). See also Stegner and Fort (1991).

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