WELFARE GAINS FROM INNOVATION-INDUCED RENT SEEKING

Alden F. Abbott and Gordon L. Brady

Introduction

Standard economic analysis equates the creation of monopoly power with reductions in welfare. The modern literature has stressed the deadweight costs (Harberger 1954) and the rent-seeking costs of monopoly that arise from competition for monopoly returns (Tullock 1967). Assuming perfect competition for monopoly rents, the total cost of monopoly power is a trapezoid, composed of the triangle of lost consumer surplus ("Harberger costs") plus the rectangle of monopoly profits devoted to rent-seeking activities ("Tullock costs") (Posner 1975). More recently, it has been suggested that because rent-seeking costs are largely sunk costs that cannot be recouped under most conditions, the monetary returns from deregulation may be smaller than previously thought (McCormick, Shughart, and Tollison 1984).

The basic point of this paper is that the net accretion of surplus is what matters, not the individual losses in specific markets. By lifting regulatory impediments, deregulation may open new markets (which would create new demand curves) that would not have existed without such institutional changes. Admittedly, the loss in consumer surplus due to the initial establishment of regulatory regimes is capitalized and, hence, sunk. However, by limiting the focus of deregulatory analyses to the monopolization of an existing market rather than the creation of new markets, the potential gains from

Cato Journal, Vol. 11, No. 1 (Spring/Summer 1991).

Alden F. Abbott is Special Counsel to the General Counsel at the U.S. Department of Commerce. The views expressed herein are his own and should not be considered to reflect the views of the Department of Commerce. Gordon L. Brady is Associate Professor and Director of Environmental Studies at Sweet Briar College. The authors thank James M. Buchanan, Gordon Tullock, and Charles Rowley for commenting on earlier versions of the paper.

deregulation are understated (McCormick, Shughart, and Tollison 1984). We argue that summing monopoly losses across the economy overstates the cost of monopoly because some markets would not exist without the prospects of rents. Our argument is, of course, subject to the usual criticism of partial equilibrium analysis (i.e., improving competition in one market will not necessarily increase the economy's aggregate surplus).

In this paper, we depart from standard models and focus on the role of rent seeking in the creation of new markets, rather than in the monopolization of pre-existing, competitive markets.[1] When monopoly power is created in new markets that would not have existed but for rent seeking, the presence of Tullock and Harberger costs is associated with net increases in welfare (Abbott and Brady 1990). That follows from the fact that new markets yield net accretions to social surplus, even when Tullock and Harberger costs are fully taken into account. Accordingly, any attempt to measure the aggregate welfare costs of monopolization merely by adding Tullock and Harberger costs economy-wide may substantially overstate the burden of monopoly.

Our analysis is also noteworthy in that it examines the possible role of rent seeking in driving regulatory reform. Rent seeking may be crucial to the removal of regulatory obstacles that retard innovation and, thereby, impede the development of new markets. An insight afforded by that analysis is that, even if the sunk costs of regulation cannot be recovered, deregulation may be highly beneficial; the gains from deregulation may go far beyond the elimination of Tullock and Harberger costs that are not yet sunk.

The Economics of Rent Seeking to Promote Regulatory Reform

Consider a hypothetical regulatory regime that precludes firms from employing particular cost-reducing innovations in the production process. We assume that inefficient restriction was established and has remained in place because it has benefited a coalition composed of (1) bureaucrats who wish to maintain strict regulatory controls over industry, (2) firms and workers with political capital in the existing system (entrenched existing firms and unions that seek to minimize competition from potential entrants and cost-reducing competitors), and (3) third-party public interest groups that advocate intrusive regulation.

[1]As discussed below, air pollution control serves as a possible example of a regulatory regime whose efficiency might be enhanced through such rent seeking.

Now let us assume a counter-coalition is formed to lobby for removal of the restriction on the introduction of innovations. The counter-coalition consists of firms that hope to market innovations after the regulatory constraints are lifted. Those firms are motivated by the expectation of earning quasi-rents in the sale of products that embody their innovations.[2]

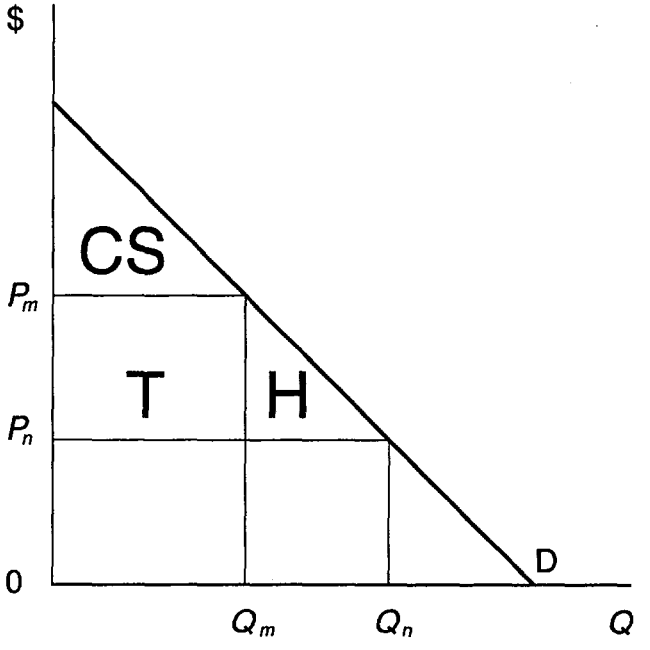
Figure 1 shows the innovative products industry that comes into being as a result of the counter-coalition's success.[3] Compared with the competitive ideal of Q_n sales at a price of P_n per unit, Q_m units are now sold at a price of P_m per unit. Rent seeking by counter-coalition members absorbs resources represented by rectangle T, Tullock costs, and creates Harberger costs represented by triangle H. Those costs are associated with a net increase in, rather than a diminution of, social welfare, since the innovative products market would not have come into being but for the counter-coalition's rent seeking. Therefore, rectangle T merely offsets the gain in producer surplus attributable to the creation of the new market—it does not constitute a waste of pre-existing surplus. Triangle H should not be included in welfare calculations at all. Triangle H merely represents forgone gains in consumer welfare that could have been realized through the supply of additional units of innovative products[4]—not the destruction of pre-existing surplus through a post-monopolization

[2]That expectation might, for example, reflect an intent to rely on legal institutions that facilitate the appropriation of rents, such as patent or trade-secret protection. Alternatively, counter-coalition members might believe that market-specific entry barriers would allow them to price their products above marginal cost for a considerable period of time.

[3]The marginal revenue function is omitted to avoid cluttering the diagram. We employ a partial equilibrium framework and assume that the allocation of resources to the innovative products industry does not yield economy-wide resource shifts that, in the aggregate, lower welfare. We also assume, for purposes of simplicity, a constant long-run marginal cost function for rent seeking (LRMC). While the functional form need not hold (Tullock 1980), our result that welfare is raised in the innovative products industry is not affected, as long as some consumer surplus (portrayed as triangle CS) is created. Furthermore, we also ignore the possible costs arising from the wasted efforts of the beneficiaries of regulation to lobby against deregulation. We believe that omission is reasonable. Such beneficiaries may be reluctant to invest substantial resources in defending a regulatory restriction that is likely to be eliminated because lobbying has publicly spotlighted its harmfulness. Moreover, given the likelihood of additional spillover benefits to innovation, we believe it eminently reasonable to assume that lifting regulatory restrictions will raise net welfare, even taking into account possible wasteful counter-lobbying by beneficiaries of the regulatory status quo ante.

[4]Of course, those additional gains in surplus would have required pricing at marginal cost, a result inconsistent with the existence of appropriable quasi-rents (also represented by rectangle T). The counter-coalition that brought the innovative products market into being would have had no incentive to lobby for regulatory reform had it been denied the opportunity to obtain such quasi-rents.

FIGURE 1
INNOVATIVE PRODUCTS INDUSTRY

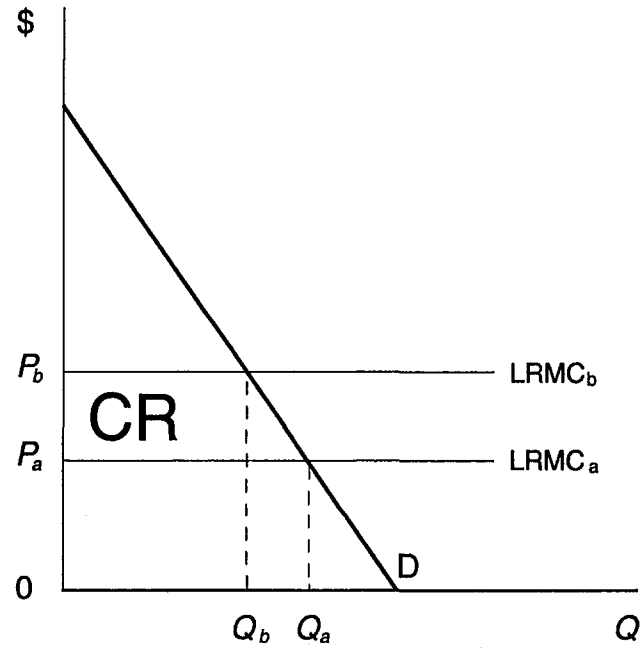


production cutback in an existing market. However, triangle CS represents an unambiguous gain in consumer surplus accruing to purchasers of innovative products in the form of cost reductions that could not have been achieved without rent seeking by innovative products suppliers. In short, rent seeking to lift regulatory barriers to innovation yields unambiguous net welfare gains equal to triangle CS.

Additional benefits may also flow from such rent seeking. Given the imperfect appropriability of research and development (Jaffe 1986; Mansfield, Schwartz, and Wagner 1981; Levin, Klevorick, Nelson, and Winter 1986), some of the knowledge derived in connection with the introduction of new products may spill over to firms other than new product suppliers. That allows such third-party firms to reduce their costs.[5] Consider Figure 2, which shows cost reductions accruing to third-party firms in the widget industry (which is inde-

[5]Research that finds substantially higher social than private rates of return on research and development in a variety of industries, due to spillover cost reductions, is summarized in Bernstein and Nadiri (1988) and Mansfield (1988).

FIGURE 2
THIRD-PARTY EFFECTS



pendent from the innovative products industry). Those cost savings shift the widget industry's supply curve (long-run marginal cost) from $LRMC_b$ to $LRMC_a$, yielding net gains in consumer surplus equal to trapezoid CR.[6]

In sum, rent seeking that eliminates inefficient regulatory restrictions and, thereby, allows the introduction of new markets raises rather than lowers welfare. Tullock costs are more than offset by additional surplus created in the new markets, and Harberger costs merely represent additional potential welfare gains that cannot be realized, rather than the destruction of existing surplus. Further

[6]For purposes of simplicity, third-party firms are portrayed as belonging to one industry (if they resided in different industries, spillover benefits would involve reductions in a variety of distinct, industry-specific, long-run marginal cost schedules). Also, perfect competition is assumed, causing all the welfare gains to accrue to consumers. Under imperfect competition, the aggregate gains would be smaller because of the existence of deadweight welfare losses (Harberger triangles). Moreover, those reduced gains would be shared by producers and consumers in the form of additional consumer and producer surplus. The fundamental point remains, however, that spillover cost reductions to third-party firms would unambiguously raise welfare, whether or not competition were perfect.

accretions to surplus may flow from spillover benefits of innovation (cost-reducing advances in knowledge) to third parties.

Rent Seeking in Air Pollution Institutions

Air pollution control in the United States is an example of a system in which rent seeking might reform regulation and raise welfare by facilitating innovation (Brady, Maloney, and Abbott 1990). That system, established pursuant to the 1970 Clean Air Act, imposes technology-based emissions limitations as a means of achieving desired ambient concentration levels for various air pollutants. The approach was reaffirmed in the 1990 amendments to the act.

The Environmental Protection Agency (EPA) established the framework for a limited market in pollutant permits in 1974. However, EPA trading rules inefficiently constrain intrafirm and interfirm trade. Prohibitions on trading between existing firms and new sources, and limitations on trading by firms that shut down for any reason, cause firms to extend the lives of old, more heavily polluting capital stock and delay the introduction of new, more cleanly operating plants (Maloney and Brady 1988). While that "retirement delay" effect directly retards innovation by keeping existing equipment in operation, EPA regulations also discourage innovation by preventing firms from introducing less-expensive, innovative pollution control equipment or processes. For example, those regulations prohibit firms from controlling pollution through more cost-effective methods that include converting to naturally low-sulfur fuels (such as natural gas or low-sulfur oil) or processed fuels, or to equipment that has not received EPA recognition as the "best available technology."[7]

Lifting the existing EPA restrictions on emissions trading would reduce the cost of achieving a given degree of air pollution abatement. It would allow firms with the lowest cost structures to purchase rights to pollute and spur the introduction of new technologies and the retirement of obsolete equipment.[8] However, public choice analysis suggests that such a change would be a disadvantage to entrenched firms, bureaucrats, and environmentalists that have a stake in the retention of the current system of complicated trading rules (Brady, Maloney, and Abbott 1990). Accordingly, the revocation of those rules may require lobbying (rent seeking) by a coalition of

[7]For a discussion of the monopolies created by equipment specification and various laws, see Ackerman and Hassler (1981) and Yandle (1989).

[8]The knowledge associated with the development of those new technologies might also bestow spillover, cost-reduction benefits on third-party firms in areas other than pollution control.

firms that would benefit from unconstrained pollution rights trading, including purveyors of more cost-effective pollution control innovations that hope to develop a new market for their products. The existence of appropriable quasi-rents (obtainable, for example, through the use of patents or trade secrets) might be required to induce such lobbying. In sum, consistent with our prior model, it is presumed that rent seeking that succeeded in liberalizing pollution rights trading would raise welfare.

Policy Implications

We have shown that rent seeking that succeeds in lifting regulatory restrictions and, thereby, brings forth markets for products that embody new technologies raises rather than diminishes welfare. That is because the gains in surplus in the new markets more than offset rent-seeking costs.

A separate but related point is that monopoly power exercised in new markets that would not have come into being but for the profit-seeking activities of entrepreneurs and scientists (for example, new genetically engineered drugs that are developed solely because of the prospect of patent protection) should be viewed differently from monopoly power exercised in formerly competitive markets.[9] In the former case, as in the case of regulatory reform that lifts barriers to innovation, there is a net increase in welfare; welfare effects are measured by subtracting Tullock costs from the larger sum of consumer and producer surplus brought forth by a new market.[10] In the latter case, there is a decline in net welfare measured by the sum of Tullock and Harberger costs, with no countervailing growth in surplus, since no new market has come into being.

It follows that the overall welfare effects of monopoly power should not be derived merely by summing Tullock and Harberger costs across industries in which market power is exercised. Such an aggregate measure should be reduced by the sum of new surplus plus

[9]We distinguish profit-seeking activities that directly bring forth innovations in the absence of regulatory obstacles (for example, research and development expenditures) from the previously discussed rent-seeking lobbying activities that yield regulatory changes required for the introduction of innovations. Of course, profit-seeking activities may also involve some Tullock costs. For example, rival firms competing for a patent monopoly may wastefully duplicate some research.

[10]As in the case of rent seeking to overturn regulatory obstacles to innovation, discussed previously, Harberger triangles should be ignored. Those triangles merely represent potential additional surplus that was not realized, rather than welfare losses from the inefficient reduction in output as a competitive market is transformed into a monopolized market.

Harberger triangles in imperfectly competitive markets that would not have existed without profit-seeking initiatives, including regulatory reform efforts.[11] Accordingly, Posner's (1975) suggestion that monopoly costs may account for as much as 4 percent of GNP, derived by adding estimates of Harberger (1 percent of GNP) and Tullock (3 percent of GNP) costs, may significantly overstate the welfare burden of monopoly.

A final implication of our analysis is that deregulation may bestow substantial welfare benefits on the economy even if the rent-seeking costs that first brought forth regulation cannot be recouped. As we have seen, to the extent deregulation yields cost-reducing innovations that would not otherwise have existed, surplus may be created both in a newly formed industry that sells innovative products and in unrelated industries that enjoy spillover benefits from innovative activity. The possible existence of significant welfare benefits creates a public policy rationale for regulatory reform in appropriate areas, such as air pollution control, even if previously incurred Harberger and Tullock costs are permanently lost to the economy.

References

Abbott, Alden F., and Brady, Gordon L. "Tollison Rents and Tullock Costs: The Case of Environmental Regulation." *Public Choice* 65 (1990): 157–200.

Ackerman, B. A., and Hassler, W. T. *Clean Coal/Dirty Air, or How the Clean Air Act Became a Multibillion-Dollar Bail-out for the High Sulfur Coal Producers and What Should Be Done about It.* New Haven, Conn.: Yale University Press, 1981.

Bernstein, Jeffrey I., and Nadiri, M. I. "Interindustry R and D Spillovers, Rates of Return, and Production in High-Tech Industries." *American Economic Review* 78 (May 1988): 429–34.

Brady, Gordon L.; Maloney, Michael T.; and Abbott, Alden F. "Political Limits of the Market for 'BAT Medallions.' " *Regulation* (Winter 1990): 61–64.

Harberger, Arnold. "Monopoly and Resource Allocation." *American Economic Review Proceedings* 44 (May 1954): 77–87.

Jaffe, Adam B. "Technological Opportunity and Spillovers of R&D: Evidence from Firms' Patents, Profits, and Market Value." *American Economic Review* 76 (December 1986): 984–1001.

Levin, Richard C.; Klevorick, Alvin K.; Nelson, Richard R.; and Winter, Sidney G. "Survey Research on R and D Appropriability and Technologi-

[11]Consistent with our prior discussion, Harberger costs in such "innovation-driven" industries would not be counted at all. The subtraction of Harberger triangles would exactly counterbalance their inclusion in the original economy-wide aggregation of welfare costs.

cal Opportunity, Part I: Appropriability." Working paper. New Haven, Conn.: Yale University, Department of Economics, 1986.

Maloney, Michael T., and Brady, Gordon L. "Capital Turnover and Marketable Pollution Rights." *Journal of Law and Economics* 31 (April 1988): 203–26.

Mansfield, Edwin. "Intellectual Property Rights, Technological Change, and Economic Growth." In *Intellectual Property Rights and Capital Formation in the Next Decade*, pp. 3–26. Edited by Charles E. Walden and Mark A. Bloomfield. Lanham, Md.: University Press of America, 1988.

Mansfield, Edwin; Schwartz, Mark; and Wagner, Samuel. "Imitation Costs and Patents: An Empirical Study." *Economic Journal* 91 (December 1981): 907–18.

McCormick, Robert E.; Shughart, William F.; and Tollison, Robert D. "The Disinterest in Deregulation." *American Economic Review* 74 (December 1984): 1075–79.

Posner, Richard A. "The Social Costs of Monopoly and Regulation." *Journal of Political Economy* 83 (August 1975): 807–27.

Tullock, Gordon. "Efficient Rent Seeking." In *Toward a Theory of the Rent-Seeking Society*, pp. 97–112. Edited by James M. Buchanan, Robert Tollison, and Gordon Tullock. College Station: Texas A&M University Press, 1980.

Tullock, Gordon. "The Welfare Costs of Tariffs, Monopolies, and Theft." *Western Economic Journal* 5 (June 1967): 224–32.

Yandle, Bruce. *The Political Limits of Environmental Regulation*. New York: Quorum Books, 1989.