

Pareto Optimality, External Benefits and Public Goods: A Subjectivist Approach*

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Much of governmental activity is allegedly justified on the grounds of economic efficiency. Pigou in his *Economics of Welfare* first popularized the idea that the existence of external benefits is grounds for government intervention, which would take the form of a subsidy to the activity generating external benefits. Samuelson later identified a group of goods, called public goods, whose characteristics supposedly deemed it necessary for the government to provide these goods.¹ Since the publication of Samuelson's paper, there has been an explosion in the literature justifying various government functions on the grounds of economic efficiency.

It will be argued in this paper that the external-benefits and public-goods arguments are incorrect and are due to a failure to consider all or the correct costs involved in the decision on whether the public sector should subsidize or provide the goods in question. The first part of this paper will briefly discuss the benchmark of economic efficiency, Pareto optimality.

Pareto Optimality

The concept of Pareto optimality has been used to draw much of the policy conclusions of modern welfare economics. Much of the allegedly value-free scientific justification for government comes out of this simple statement of economic efficiency. Consider the following statements, all justified by their authors on the grounds of economic efficiency. The Musgraves justify subsidies for anything generating external benefits:

The consumption or production of primarily private goods can give rise to external benefits. Such benefits are not accounted for in the market and a subsidy is required to correct this defect.²

Hochman and Rodgers justify income redistribution using Pareto optimality:

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Interdependence among individual utility functions may imply that the market-determined income distribution is not optimal in the Pareto sense.³

In an article which would seem to be a parody but unfortunately is not, Geoffrey Brennan advocates income destruction:

Since the most desirable outcome for each individual would occur when all others indulge in mutual income destruction, a problem of free riding . . . arises. Government intervention is thus necessary if the Pareto desirable income destruction for A and B is to occur.⁴

If all of the above statements are correct in a value-free scientific sense, then it becomes clear that much governmental activity can be advocated using Pareto optimality. This section will argue that such statements do not follow from the concept of Pareto optimality.

A typical definition of Pareto efficiency would be: "A given economic arrangement is efficient if there can be no arrangement which will leave someone better off without worsening the position of others."⁵ Thus any exchange or reallocation of resources is only Pareto optimal if the exchange or reallocation will not harm somebody.

It is well known that if perfect competition prevailed throughout the economy and if no externalities existed, the conditions for Pareto optimality would hold. This, however, is quite a different matter from advocating a policy of marginal cost pricing and the internalization of all externalities. By going from statements about the world in a static equilibrium setting if Pareto optimality existed, to statements as to how the world should be, the economist is introducing a value judgment. That is, no matter how one tries, one cannot get normative statements out of positive statements without introducing value judgments. An example at this point will be useful. Economic theory may predict that a person will act up to the point that the marginal cost and the marginal benefit of an action are equated. However, this is a proposition which can never be objectively tested, since costs are subjective (a topic to be considered in the next section). Predicting a person's behavior based upon certain postulates is far different from advocating that "society," as a matter of policy, should act to equate marginal costs and marginal benefits.

James Buchanan provides a further illustration of this point:

Equalities between prices and marginal costs, as objectively observed quantities in full competitive equilibrium, are inferred predictions which depend on the behavioral assumptions upon which the whole theory is constructed. These equalities have no normative significance and they have no direct relationship to allocative efficiency. The methodological muddle in modern economics is perhaps most closely revealed by the unwarranted crossing of the bridge between the inferential predictions of

the genuinely scientific theory and the normative conclusions about efficiency that are so often drawn.⁶

Thus, as Buchanan further points out, nothing can be implied if the predictions that

characterize equilibrium are falsified. No potential gains from trade are indicated if these predictions are not fulfilled. No welfare improvements could be expected from arrangements to ensure that the predicted relationships will be produced.⁷

This, then, is a fundamental problem for modern welfare economics: Policy statements drawn from Pareto optimality turn nonfalsifiable predictive statements into normative statements as to how the world should be.

Therefore we are left with the conclusion that the policy judgments of modern welfare economics do not logically follow from the definition of Pareto optimality. Certainly, these policy statements are not made without value judgments and cannot be passed off as scientific statements.

In the next section, we will present other objections to government subsidies when external benefits exist. In part of the next section we will demonstrate that, even accepting Pareto optimality as a definition of economic efficiency, government subsidy payments do not meet this criteria.

External Benefits

Modern welfare economics, following in the tradition of Pigou, has used the existence of external benefits as a justification for government intervention on the grounds of economic efficiency. This argument for government intervention follows directly from the acceptance of perfect competition as a policy norm following from Pareto optimality.

The whole argument for governmental subsidy payments in the case of external benefits revolves around the idea that these benefits can be objectively measured by someone not involved in the transaction. This possibility is denied by economists writing in the Austrian and London School of Economics tradition. To economists such as Hayek, Rothbard, Buchanan, Thirlby and Wiseman, costs are by nature subjective and not objectively measurable by an outside observer. An essential feature of Austrian theory, unlike the neoclassical theory, is that cost is directly related to the act of choice. James Buchanan provides an excellent summary of the implications of this subjective, choice-bound theory of costs.

- (1) Most importantly, cost must be borne exclusively by the decision-maker; it is not possible for cost to be shifted to or imposed on others.
- (2) Cost is subjective; it exists in the mind of the decision-maker and nowhere else.

- (3) Cost is based on anticipations; it is necessarily a forward-looking or *ex ante* concept.
- (4) Cost can never be realized because of the fact of choice itself: that which is given up cannot be enjoyed.
- (5) Cost cannot be measured by someone other than the decision-maker because there is no way that subjective experience can be directly observed.
- (6) Finally, cost can be dated at the moment of decision or choice.⁸

Bound up inseparably with the subjective nature of costs is the fact that we live in a world characterized by disequilibrium and uncertainty. Due to uncertainty, individuals will have divergent expectations. As Ludwig Lachmann argues:

In a stationary world it is possible to appeal to the constancy of the "data" and the continuous recurrence of events to justify the belief that all members of such a society will sooner or later become familiar with them and their expectations will converge on the recurrent pattern of events. In an uncertain world this is impossible. Experience shows that different people will entertain widely divergent expectations. This will be so not merely because some men are, by temperament, optimists and others pessimists. Differences in knowledge are here often of fundamental importance.⁹

Thus even individuals with similar knowledge and preferences will not necessarily reach the same choice. The subjective impression of the benefits from an action can and will differ from individual to individual and they cannot in any way even be compared.

The fact that the world is characterized by uncertainty leads to a further argument against subsidizing activities which generate external benefits. Due to uncertainty, not all of the divergent plans can succeed. As a result of the market process, certain of these conflicting plans will succeed and others will be doomed to failure. Activities or goods generating external benefits are no less subject to market failure. However, by providing a subsidy to these goods we are eliminating one test of resource allocation that the market process provides. As a consequence, the entire pattern of resource allocation is altered.

The subjective nature of costs leads to the inescapable conclusion that there can never be objectively measurable external benefits. Costs (or benefits) are subjective and are inseparably tied to the act of choice. That is, an individual not involved in the economic decision or choice can never objectively measure another individual's costs (or benefits). Thus no statement about either the size or the very existence of external benefits can ever be falsified.

Since benefits or costs are tied inexorably to the act of choice, not even a survey of individuals can determine the magnitude of the external benefit. A

choice-bound concept of costs implies that only if a person is actually faced with a choice between alternatives can we say that he prefers one to the other.

Transaction Costs

If costs could be objectively measured, would that eliminate all objections to government subsidies to activities generating external benefits on the grounds of economic efficiency? The answer is a resounding no. There are further reasons why these subsidy payments fail to meet the Pareto criteria for economic efficiency. These reasons have been overlooked due to a lack of understanding of the role which transaction costs play in reducing the gain from any free-market trade. This lack of understanding has led to the error, as we shall see, of taking an explanation as to why certain trades do not take place and turning this explanation into a normative statement that the trade should have taken place.

Consider the classic example of the beekeeper adjacent to an apple orchard. The benefits accruing to the apple orchard from the beekeeper's production (pollination) are not considered by the beekeeper in determining his profit maximizing output level.¹⁰ Therefore, from the point of view of the apple grower the beekeeper is "underproducing." Many economists would agree that, since the costs of reaching an agreement are relatively small, this two-person case is not a problem for the government.¹¹ The apple grower can simply bribe the beekeeper an amount up to the size of his perceived external benefits and thus induce the beekeeper to increase production.¹²

As the number of beekeepers and apple growers increases, the costs of reaching an agreement on the size of the payment from the apple growers to the beekeepers increase. If the transaction costs remain less than the possible gains from trading, an agreement will be reached. If, on the other hand, the transaction costs exceed the benefits from any trade, an agreement will not be reached. Under these circumstances many economists argue that the market has "failed" and that government intervention is therefore necessary. However, to argue for the government subsidization of the beekeepers is to ignore the fact that transaction costs are real costs which must be considered when making a trade. In the real world, when collective action does not take place, all that one can conclude is that the benefits of such action are smaller than the costs involved. In no way does this imply that the market has failed.

The existence of transaction costs explains why certain trades do not take place in the market. It does not logically follow from the concept of Pareto optimality that the trade should have taken place. Asserting that the trade should have taken place is equivalent to stating that transaction costs are not real costs and somehow should not have been considered by the parties involved. Again we have an example of purely predictive statements (on

when a trade *will* take place) being turned into normative ones (on when a trade *should* take place).

An analogy at this point might be useful. All of us have wished many times in our lives that we could be instantaneously transported to our destination, be it for work or recreation. Many times the existence of transportation costs (time and money) has led to a decision to stay at home. However, the existence of transportation costs explains why people make certain decisions, and by no means can be used as an argument for government intervention on the grounds of high transportation costs. That is, it would be incorrect to argue that resource allocation is not optimal because of the existence of these transportation costs. On the contrary, any subsidy payments would alter the pattern of resource allocation, making one course of action seem cheaper than it formerly did.

The effect on resource allocation is no less when the government subsidy takes place because of high transaction costs. Resources are diverted from the area of their highest possible value, since subsidy payment makes the activity seem cheaper than it actually is. Ludwig von Mises writes:

For every unprofitable project that is realized with the aid of the government there is a corresponding project the realization of which is neglected merely on the account of the government's intervention. Yet this nonrealized project would have been profitable, i.e., it would have employed the scarce means of production in accordance with the most urgent needs of the consumer.¹³

The "Comparative Institutions Approach"

Many economists recognize some of the difficulties with the argument for subsidization when external benefits exist. They recognize that the government must necessarily forego unanimity in order to lower transaction costs. Yet they make the value judgment, which implicitly involves interpersonal utility comparisons, that intervention should take place when the government lowers transaction costs net of the other costs generated by governmental action. That is, they propose to compare institutions—government and the market—and see which one functions more effectively.

Although economists who advocate comparing institutions recognize that there are substantial costs when the government does intervene, they do not rule out the possibility that these costs might be offset by the government lowering transaction costs. Harold Demsetz, a leading advocate of this approach, explains the technique:

Users of the comparative institution approach attempt to assess which alternative real institutional arrangement seems best able to cope with the economic problem: practitioners of this approach may use an ideal norm to provide standards from which divergences are assessed for all

practical alternatives of interest and select as efficient that alternative which seems most likely to minimize the divergence.¹⁴

Ronald Coase, in his classic article on social costs, discusses the possibility of government intervention improving efficiency when transaction costs are large:

There is no reason why, on occasion, such governmental administrative regulation should not lead to an improvement in economic efficiency. This would seem particularly likely when, as is normally the case with the smoke nuisance, a large number of people are involved and in which therefore the costs of handling the problem through the market or firm may be high.¹⁵

Demsetz also allows for the possibility of the government "improving" resource allocation:

Benefits from the use of nonmarket techniques potentially seem greatest where the cost of contracting is relatively large providing, of course, that the cost of using nonmarket techniques is lower than the contracting cost required by market negotiations.¹⁶

The approach suggested by Coase, Demsetz and others is obviously impossible to implement. Costs are subjective, and which arrangement involves lower net costs can never be determined. In a market transaction, *ex ante* both parties must benefit by the trade or the trade would never have taken place. Government action must necessarily involve coercion, and even if this coercion lowers transaction costs, there is no possible way to determine if these lowered transaction costs are outweighed by the costs to specific individuals of the coercion.¹⁷ Thus, the problems of the comparative institutions approach are very similar to the problems involved in the potential compensation rule suggested by Kaldor. In addition to measurement problems, interpersonal utility comparisons are implicitly being made. That is, the assumption is that these gains and losses can be summed over the individuals and that a determination of the net gain or loss can be made. This utilitarian approach is consistent with this group's position on other issues, especially on property rights.¹⁸

Israel Kirzner suggests a further problem with the comparative institutions approach. Kirzner points out that even if the government could lower transaction costs without cost, one would have to make the further assumption that the government is omniscient in order to conclude that the governmental action would improve resource allocation. Thus Kirzner writes:

A comparison between the efficiency of market resource allocation and that of government cannot, therefore, be made simply on the basis of the cost of market transactions as compared with the cost to government of reallocation. The crucial question for government-market comparisons

must concern the capacity of each of the two systems to bring available opportunities to the attention of decision-makers.¹⁹

Therefore we conclude that the comparative institutions approach, although better than a policy of advocating intervention anytime external benefits exist, is unacceptable.

The market acts to internalize external benefits whenever the costs of doing so are outweighed by the benefits. Allowing the market to operate unimpeded guarantees that all costs will be considered and at the same time insures that no unmeasurable costs will be imposed by government intervention.

What the advocates of the comparative institutions approach, along with other economists, have accomplished is to point out that there are costs of governmental intervention. James Buchanan points out that:

In the real world, political results must embody externalities to the extent that individuals follow self-interest in their capacities as collective decision-makers: individuals are able, by political means, to impose costs on other individuals.²⁰

Thus, Buchanan points out that those who advocate subsidies according to Pigouvian standards are really assuming that man is bifurcated in his behavior:

Man must be assumed to shift his psychological and moral gears when he moves from the realm of organised market activity to that of organised political activity and vice versa. Only if there can be demonstrated to be something in the nature of market organization as such that brings out the selfish motives in man and something in the political organization, as such, which in turn, suppresses these motives and brings out the more "noble" ones, can there be assumed to exist any "bridge" between the orthodox externality analysis and practical policy, even apart from the problem of specific policy prescription.²¹

Public Goods

Related to the arguments that the government should subsidize a good when it generates external benefits is the argument that the government should provide the good when it has public goods properties. The major defining characteristic of a public good is that the consumption of the good by one person does not reduce the amount available to any other person. The second major defining characteristic of a public good is that the costs of exclusion are high, so as to render pricing difficult.

The case of the pure public good can be immediately dismissed. There is simply no good that is nonrival in consumption. Murray Rothbard discusses the often cited examples of national defense and lighthouses:

But national defense is surely not an absolute good with only one unit of supply. It consists of specific resources committed in certain definite and concrete ways—and these resources are necessarily scarce. A ring of defense bases around New York, for example, cuts down the amount possibly available around San Francisco. Furthermore, a lighthouse shines over a certain fixed area only. Not only does a ship within the area prevent others from entering at the same time, but also the construction of a lighthouse in one area limits its construction elsewhere.²²

Indeed, as Rothbard points out, if a pure public good exists it would not be a good at all, “but a natural condition of human welfare, like air superabundant to all, and therefore unowned by anyone.”²³ However, Samuelson and other economists argue that the case for governmental intervention still holds in the nonpolar case or when the good has public good characteristics. Samuelson argues:

However, generally a mixed model that refuses to go into my polar case of a pure public good will not thereby obligingly go into the other polar case of a pure private good. The mixed case has elements of both in it. And while we cannot by pure logic alone deduce that the intermediate case must quantitatively be a blend of the properties of the two poles, we can by logic know that ordinary pricing will be nonoptimal unless it happens to pick up each indirect external marginal utility.²⁴

Thus, it is not enough to demonstrate that a pure public good does not exist in order to refute the Samuelson argument; one must demonstrate that if a good has properties of nonrivalry and nonexcludability that these properties do not justify government provision of the good.

The fundamental error in arguing that the market reaches an inefficient solution due to consumption being nonrival (that is, where the marginal cost of an extra person's consumption is zero) stems from a failure to realize that costs are subjective and can be dated only at the moment of choice. Consider for a moment the Musgraves' argument for public provision of bridges:

Consider, for example, the case of a bridge which is not crowded so that A's crossing will not interfere with that of B. Charging a toll would be quite feasible, but so long as the bridge is not heavily used, the charge would be inefficient since it would curtail the use of the bridge, the marginal cost of which is zero. . . . These are situations where exclusion can be applied but should not because consumption is nonrival. . . . Hence, a political process of budget determination becomes necessary.²⁵

The problem with the Musgraves' argument is that the marginal cost they are using is not the marginal cost which is relevant to the decision they are analyzing: whether the bridge should be built by the private or the public sector. Marginal cost changes at the moment in time it is being observed, and there are many marginal costs one could talk about in this example. These would, for example, be the marginal cost to the decision-maker at the

moment the choice is made to build the bridge or not; the marginal cost to the decision-maker at the moment the decision is made to operate the bridge for that day or for that week or for that hour, etc. Israel Kirzner makes a similar argument when explaining the confusion in the literature over long-run and short-run costs:

It is entirely appropriate to ask with respect to each decision separately, what the producer planned to sacrifice to obtain the product at the time that the decision was made. Thus, for any given product, an entire series of questions can validly be asked about the cost at which the product has been produced. And an entire series of different, equally valid answers to these questions must be given.²⁶

Therefore it is quite clear, when cost is placed in a choice-bound context, that the relevant marginal cost in the Musgraves' example is the cost of the bridge at the time of construction. The problem they are seeking to solve is tied to *this* marginal cost and not to the marginal cost of an extra car. Indeed it is unlikely that the marginal cost of an extra car will ever be relevant to any real-world decision.

To summarize our argument, when a decision is being reached whether the market or the government should provide the bridge services, the relevant marginal cost is the cost of constructing the bridge. After the bridge is built and the decision is to operate for that day, for example, then the relevant marginal cost is the cost of operation for that day. The marginal cost of an extra car is irrelevant since it will not usually be an entrepreneur's decision whether to allow an extra car on or not. Thus the cost of consumption in the public goods argument seems nonrival only because the wrong cost is being looked at. The cost relevant to the decision of building or not building the bridge clearly involves the sacrifice of real resources. Thus, those who argue for public provision, by looking at cost from the wrong moment in time, assume away the very problem that has to be answered. That is, by speaking of marginal cost at a moment in time which presumes that it has been built, they are implicitly assuming that the bridge is already built.

Pay television is another favorite example for those who would argue that the market is inefficient. Paul Samuelson asks:

For what, after all are the true marginal costs of having one extra family tune in on the program? They are literally zero. Why then prevent any family which would receive positive pleasure from tuning in on the program from doing so? Upon reflection, you will realize that our well known optimum principle that goods should be priced at the marginal costs would not be realized in the case of subscription broadcasting.²⁷

Again, as in the bridge example, the marginal cost that is being examined by Samuelson is irrelevant to the question. The marginal cost relevant to the

decision of provision of the new station is the cost of investing in the new station. After the station is built, a possibly relevant cost would be the cost of an extra program. The only time the marginal cost of an extra viewer might be relevant to the decision-maker, is when the decision must be made to provide that viewer with a descrambling device to receive the signal. Thus *the fact that the marginal cost of the additional viewer is zero is an irrelevant marginal cost to any real decision; in the subjective sense not really a cost at all.*

Since the marginal costs being used by Samuelson and others are irrelevant, it is not surprising that they cannot shed light on real-world decisions. Jora Minasian points out that in the case of pay television the marginal cost pricing rule proposed by Samuelson

can serve neither as an analytical vehicle for deciding whether it is economic to have more than one channel operating in an area or in a country, nor discriminate among kinds of programs to be put on the air. Therefore, the rule provides no economic criterion for evaluating total resource utilization in television broadcasting, or the alternative uses of a given amount of scarce television broadcasting resources at a given time and place.²⁸

Harold Demsetz similarly argues that a policy of zero pricing leads to further problems:

Firstly, and obviously, valuation information about the bridge is sacrificed. (*Is not valuation information one of the most important public goods?*) Secondly, the alternative methods of financing the building of bridges may also lead to inefficiency, especially by degrading valuation information elsewhere. This is most easily seen by supposing that an excise tax is levied on other goods to finance bridges. Such a tax will lead to inefficiently small rates of production of these other goods (assuming competitive markets).²⁹

Economists such as Minasian and Demsetz, while at least pointing out some of the costs of government provision of goods, again (as in the case of external benefits) opt for the comparative institutions approach in determining if the private market is efficient. In the public goods case, the issue is not only which method of provision (private or public) has higher transaction costs, but also the related issue of which has the higher exclusion costs. Harold Demsetz provides the argument:

A distinction must be made between public goods subject to high contracting cost and those subject to low contracting cost. It is difficult to envision a situation in which it is possible to exclude one's neighbors from benefiting from the installation of an effective antimissile missile. The cost of excluding nonpurchasers from benefiting is so great that if the purchase of such missiles is left to private individuals all are likely to wait for their neighbors to make the purchase. But if the cost of exclud-

ing nonpurchasers is low, the case for the allocation by Government is weakened.³⁰

The immediate question to Demsetz and others is how high must exclusion costs be before the government should intervene? The approach which Demsetz would suggest is to compare the costs of alternative arrangements. Again, as in the case of transaction costs, this is impossible. Certainly, at the very least, the costs imposed by government coercion are unmeasurable. Exclusion costs, like transaction costs, are real costs which must be taken into account to insure efficient resource allocation. Any policy which ignores these costs can only lead to a distortion of the pattern of resources. As previously pointed out, the method of comparing alternative institutions is unworkable, involves an unsupported value judgment and involves interpersonal utility comparisons.

Finally, one must not overlook the fact that the institutional arrangements themselves may be a cause of market failure. Murray Rothbard points out:

The fact that the State provides a service means that, unlike the market, its provision *of the service is completely separated from its collection of payment*. Since the service is generally provided free and more or less indiscriminately to the citizens, it naturally follows that every individual—assured of the service—will try to shirk his taxes. . . . And this condition cannot be a justification for the State action; for it is only the *consequence* of the existence of the State action itself.³¹

Davis and Winston provide an excellent illustration of this point:

Imagine that the government decided to alter the institutional arrangements or organization of the market for bread, which is certainly a private good. Suppose that the government decided to separate the act of paying from the act of obtaining the bread. . . . The bread is distributed on a first come, first serve basis. One might observe that this institutional arrangement would certainly affect the functioning of the market mechanism. Consumers could not be counted upon to reveal their preferences at the revenue center. Nor would the distribution center fare much better since consumers could simply take the bread they wanted, if it happened to be available, no matter what their payment at the revenue center. Price could not perform its traditional functions. The institutional arrangements cause market failure.³²

Thus one must be careful in other areas such as national defense not to use as a rationale for government intervention the consequences of the very intervention itself.

Summary and Conclusions

The standard used to judge economic efficiency, Pareto optimality, is not a value-free measure. In addition, many unwarranted policy conclusions have

been drawn from this concept, by turning nonfalsifiable predictive statements into normative statements as to how the world should be.

The existence of external benefits has been used as a justification for government intervention in the form of subsidy payments to the activity generating the benefits. This mistaken mainstream argument is due to a failure to consider all costs involved in a free-market trade. Transaction costs are real costs and will be considered by the market when internalizing external benefits. The comparative institutions approach championed by such writers as Harold Demsetz involves the unacceptable value judgment that efficiency should be measured by which institutional arrangement gives the largest possible total product.

The "public goods" argument for government provision of certain goods is due in part to a failure to recognize that costs are subjective and bound to the moment of choice. This mistaken use of costs leads to the incorrect conclusion that consumption is nonrival. Thus, the fact, for example, that the marginal cost of an extra car on a bridge is zero, is irrelevant to the decision whether to build the bridge or not.

If the arguments in this paper are correct, then it is clear that there is no value-free justification for government expenditures. Indeed we can even go beyond that and state that there is not even any logical basis, from an economic standpoint, for government subsidies or provision of goods.

NOTES

1. Paul Samuelson, "The Pure Theory of Public Expenditures," *Review of Economics and Statistics* 36 (November 1954).
2. Richard and Peggy Musgrave, *Public Finance in Theory and Practice*, 2nd ed. (New York: McGraw-Hill, 1976), p. 79.
3. Harold Hochman and James Rodgers, "Is Efficiency a Criterion for Judging Redistribution," *Public Finance* 26 (February 1971):351.
4. Geoffrey Brennan, "Pareto Desirable Redistribution: The Case of Malice and Envy," *Journal of Public Economics* 2 (April 1973):178.
5. Musgrave, *Public Finance*, p. 67.
6. James Buchanan, *Cost and Choice* (Chicago: Markam Publishing Co., 1969), p. 40.
7. *Ibid.*, p. 41.
8. *Ibid.*, p. 43.
9. Ludwig Lachmann, "Ludwig von Mises and the Market Process," in *Capital, Expectations and the Market Process* (Kansas City: Sheed, Andrews and McMeel, 1977), p. 187.
10. The beekeeper might consider the apple orchard if he either were altruistic or owned the apple orchard.
11. At this point one might notice an obvious inconsistency with the external benefits argument. At what exact point are transaction costs large enough to justify intervention?

12. Indeed this is what does take place in the real world and in cases other than when two parties are involved. See Stephen Cheung, "The Fable of the Bees: An Economic Investigation," *Journal of Law and Economics* 16 (April 1973).
13. Ludwig von Mises, *Human Action*, 3rd rev. ed. (Chicago: Henry Regnery Co., 1966), p. 659.
14. Harold Demsetz, "Information and Efficiency: Another Viewpoint," *Journal of Law and Economics* 12 (April 1969):1.
15. Ronald Coase, "The Problem of Social Cost," *Journal of Law and Economics* 3 (1960):18.
16. Harold Demsetz, "Contracting Costs and Public Policy," in *The Analysis and Evaluation of Public Expenditures* Vol. 1, Joint Economic Committee, U.S. Congress (Washington, D.C.: Government Printing Office, 1969), p. 169.
17. There are no costs to the government intervention only if the good in question is a pure public good and marginal benefit taxation is used. Both conditions are impossible in the real world. See James Buchanan, "Politics, Policy and Pigouvian Margins," *Economica* (February 1962):27.
18. See, for instance, Coase, "Social Cost," and Harold Demsetz, "Toward a Theory of Property Rights," *American Economic Review* 57 (May 1967).
19. Israel Kirzner, *Competition and Entrepreneurship* (Chicago: University of Chicago Press, 1973), p. 230.
20. Buchanan, "Politics, Policy", p. 27.
21. *Ibid.*, pp. 27-28.
22. Murray N. Rothbard, *Man, Economy and State* (Los Angeles: Nash Publishing, 1970), p. 885. Ronald Coase, "The Lighthouse in Economics," *Journal of Law and Economics* 17 (1974) points out that, contrary to popular belief, the lighthouse has been historically supplied by the private sector.
23. Rothbard, *Man, Economy and State*, p. 885.
24. Samuelson, "Aspects of Public Expenditure Theories," *Review of Economics and Statistics* 60 (November 1958):332.
25. Musgrave, *Public Finance*, p. 51.
26. Kirzner, *Competition*, p. 192.
27. Samuelson, "Aspects of Public Expenditure," 335.
28. Jora Minasian, "Television Pricing and the Theory of Public Goods," *Journal of Law and Economics* 7 (October 1964):73.
29. Harold Demsetz, "The Exchange and Enforcement of Property Rights," *Journal of Law and Economics* 7 (October 1964):21.
30. Demsetz, "Contracting Costs," pp. 172-73.
31. Murray N. Rothbard, "Toward a Reconstruction of Utility and Welfare Economics," *Occasional Papers Series*, #3 (New York: Center for Libertarian Studies, 1977), p. 34.
32. Otto Davis and Andrew Winston, "On the Distinction Between Public and Private Goods," *American Economic Review* 57 (May 1967):361-62.