

The Collected Works of
James M. Buchanan

VOLUME 15

*Externalities and Public
Expenditure Theory*



*James M. Buchanan, Nobel Laureates Forum,
Tokyo, Japan, November 1988*

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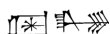
VOLUME 15
*Externalities and Public
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The cuneiform inscription that serves as our logo and as the design motif for our endpapers is the earliest-known written appearance of the word “freedom” (*amagi*), or “liberty.” It is taken from a clay document written about 2300 B.C. in the Sumerian city-state of Lagash.

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Foreword

The core of James Buchanan's work in mainstream economics lies in the theory of public expenditure and externalities. For example, what are almost certainly Buchanan's two most famous articles—"Externality," with William Stubblebine, and "Economic Theory of Clubs"—are firmly located in this area. Both are included in this volume. For reasons outlined in the foreword to volume 1, we chose to reserve these famous papers for inclusion in this volume rather than include them in the introductory volume, so that they could be set alongside other, similarly technical, papers to which they are most closely related. As a result of this decision, the papers in this volume represent a coherent set of pieces focused on aspects of public expenditure theory and constitute all of Buchanan's papers in this area. However, readers should be alerted to Buchanan's book-length treatment of public goods theory, *The Demand and Supply of Public Goods*, which deals with some of the same questions as are engaged in this volume.¹

The theory of public expenditure in economics purports to provide an answer to the question, What should governments do? And the answer to that question revolves around what is *necessary* for government action—namely, some element of market failure. As Buchanan himself and a subsequent generation of public choice scholars have been at pains to emphasize, a necessary condition is not a *sufficient* condition. Indeed, the corresponding analysis of *political* failure has been one of the important motivating elements in public

1. James M. Buchanan and Wm. Craig Stubblebine, "Externality," *Economica* 29 (November 1962): 371–84; James M. Buchanan, "An Economic Theory of Clubs," *Economica* 32 (February 1965): 1–14; *Demand and Supply of Public Goods* (Chicago: Rand-McNally, 1968), volume 5 in the series.

choice scholarship. Nevertheless, the analysis of market failure remains an integral part of the economist's theory of the (productive) state, and the exploration of "the anatomy of market failure" (to use Francis Bator's nice phrase) remains an indispensable exercise to set alongside crucial public choice results. Indeed, understanding when and why markets "fail" also provides insight into why markets *succeed* and thereby into a broader range of institutional design issues.²

Market failure analytics in the economics literature has revolved around a variety of related concepts—externalities, collective consumption, nonexcludability, public goods—all of which command somewhat independent attention. For example, public goods are those goods that are (must be?) consumed in common, such that each individual consumer consumes the total output. Examples commonly offered include lighthouse services, international deterrence, outdoor circuses, and environmental degradation. In each case, if the service is provided to one consumer, it is made available to all other potential consumers in the relevant group. Public goods exhibit in an extreme form the two independent properties of nonrivalness and nonexcludability. To say that a good is "nonrival" is to say that consumption by an individual does not reduce the amount available for consumption by other individuals. A good is nonexcludable if (and only if) it is not possible to exclude any particular individual (for example, one who does not pay for the good) from consuming it. Accordingly, a theatrical performance is "nonrival" in that the consumption of the performance by one observer does not reduce consumption by other observers, up to the limits of theater size. But the performance is totally excludable in that those who do not pay the entrance price do not gain admittance. Alternatively, the blackberries that grow on the common land are fully rival, in the sense that the more blackberries I pick, the fewer are left for you. But the blackberries are also nonexcludable in that access to them is not subject to any pricing device. Economists routinely conceive of fully private goods as both fully excludable and fully rival. Public goods lie, therefore, at the opposite pole of a two-dimensional spectrum, the two dimensions being thought of as the degree of rivalness and the

2. Francis Bator, "The Anatomy of Market Failure," *Quarterly Journal of Economics* 72 (August 1958): 351–79.

degree of excludability. And it is proper here to conceptualize the distinction between public goods and private goods as a spectrum, because both the excludability and rivalness can be present in degrees. Intermediate cases may involve partial nonrivalness or partial excludability. For example, congestion costs may be positive but not sufficient to make collective consumption of each unit produced by multiple consumers less economical than fully individual consumption: the swimming pool at the local resort may be subject to congestion, but the congestion is not sufficient to induce every family to purchase its own backyard pool. Hence we have *partial* nonrivalness in consumption. Similarly, crop dusting my crops will provide some protection against insect pests to the crops of neighbors, both because some of the dust spills over onto neighbors' crops and because the fact that pests cannot breed on my land reduces the supply of insects to the neighbors.

Samuelson's famous articles on "public goods" demonstrated conclusively that for the pure public good case the Pareto optimum is *not* a market equilibrium. But Samuelson does not derive that market equilibrium and is not, therefore, capable of specifying the *degree* of market failure. Some such specification is clearly necessary if the extent of market and political failure is to be compared. Because Buchanan recognizes that this comparison is critical to any complete normative analysis, Buchanan's approach involves an attempt to derive, in any particular case of alleged market failure, what the market equilibrium will be and, hence, the extent and nature of the market failure.³

Several questions arise in this connection. One question is whether the market failure associated with the pure public good is more attributable to nonrivalness or nonexcludability. Samuelson is more inclined to emphasize the nonrivalness attribute because that attribute is sufficient to generate the "optimality conditions" that he derives for public goods and hence also sufficient to demonstrate market failure in general. But in particular special cases—for example, that in which every individual's marginal demand for the public good is identical—no market failure will occur *unless* the public

3. Paul A. Samuelson, "The Pure Theory of Public Expenditure," *Review of Economics and Statistics* 36 (November 1954): 387–89; "Diagrammatic Exposition of a Theory of Public Expenditure," *Review of Economics and Statistics* 37 (November 1955): 350–56.

good is also nonexcludable. That is, an identical price to all users would be sufficient to achieve optimality in this special case, provided that the payment of the price is necessary for a consumer to be admitted. For that reason, the nonexcludability dimension—the capacity of nonpaying individuals to “free ride”—seems to be the more critical element in the market’s failure to achieve Pareto optimality. The same considerations suggest that *differences* in individual marginal evaluations will be relevant in determining the extent of that element of market failure attributable to nonrivalness. Indeed, Samuelson suggests that, even if it were *feasible* to exclude, it could never be “Pareto optimal” to do so, since those excluded could be admitted to the public good at no extra cost *ceteris paribus*. But this conclusion is misleading at best, and downright wrong at worst. One can easily construct cases in which charging a uniform price Pareto dominates charging no price at all within a *market* context, since clearly in that context a *zero* price implies *zero* output. And it can easily be that charging a uniform price *in the market* is more efficient than public provision (with a zero user price) if there is any political failure *at all*.

More generally, in the whole range of intermediate cases, a host of considerations enter that are not present in the pure public goods case. For example, in the polar extreme case, the absence of price excludability creates a presumption that market failure consists in too little of the public good being produced. This presumption translates into a rule of thumb that the proper outcome of government intervention—whether by subsidizing private provision or by direct government provision—will be to increase the output of the good in question. However, as Buchanan shows in the paper with Milton Kafoglis in part 4, this conclusion does not necessarily follow in more complex intermediate cases. If, for example, my immunization shots are a partial substitute for yours in providing you with protection from disease, and vice versa, then the efficient arrangement has to attend to the distribution of immunization shots between us. In a private market equilibrium, generally this distribution will be inefficient and may well lead to more immunization shots in total than would be taken in the efficient outcome where the distribution of shots is such as to maximize gains from exchange. Moreover, when there is government intervention, there will, in general, also be some market response so that, in deriving the final consumption/production equilibrium, account will need to be taken of the interaction between public and

private supply. These issues are engaged in the papers that follow in this volume. Indeed, it is largely Buchanan's work that has exposed them as issues.⁴

Buchanan's general strategy is to explore the multiple dimensions of possible market failure with an eye to delineating clearly the equilibrium outcome and distinguishing that outcome from that in which all possible gains from exchange have been appropriated by the relevant parties. There are two messages that emerge from this work: one is that a proper sense of the *extent* of market failure, rather than its mere *presence*, is relevant in all cases; the other is that "correcting" for such market failure is often a complex multi-dimensional business not captured by direct public provision at zero price and not necessarily involving expansion of market output.

The volume begins with three general introductory pieces, *The Bases for Collective Action*, "The Evaluation of Public Services" (written with Francesco Forte), and an extended essay, "'La scienza delle finanze': The Italian Tradition in Fiscal Theory." This latter piece has a broad coverage and could have been as plausibly included in the previous volume on debt and taxes. As we noted in the introduction to volume 14, Buchanan's approach to fiscal theory follows the Italian (and, more generally, Continental) tradition in its rejection of the sharp divide between tax and expenditure sides of the budget that remains something of a feature of Anglo-American public finance outside the Buchanan stable.⁵

The next set of five papers, part 2, focuses directly on the externality topic. Beginning with the previously mentioned classic paper with Stubblebine, this group of papers explores a range of issues associated with the functioning of markets when externalities are present, both in the absence of government-imposed "corrective" taxes (as in "External Diseconomies in Competitive Supply," written with Charles Goetz) and in the presence of corrective taxes (as in "Public and Private Interaction," written with Gordon Tullock, and "External Diseconomies, Corrective Taxes and Market Struc-

4. James M. Buchanan and Milton Z. Kafoglis, "A Note on Public Goods Supply," *American Economic Review* 53 (June 1963): 403–14.

5. James M. Buchanan, *The Bases for Collective Action* (New Jersey: General Learning Press, 1971); James M. Buchanan and Francesco Forte, "The Evaluation of Public Services," *Journal of Political Economy* 69 (April 1961): 107–21; James M. Buchanan, "'La scienza delle finanze': The Italian Tradition in Fiscal Theory," in *Fiscal Theory & Political Economy: Selected Essays* (Chapel Hill: University of North Carolina Press, 1960), 24–74.

ture”).⁶ This section concludes with an analysis of the “institutional structure” of externality relations based on a taxonomy of small-number and large-number cases.⁷ There is a family connection between this latter paper and “Ethical Rules, Expected Values, and Large Numbers” included in volume 1, since both are concerned with the role of numbers of agents involved in the interaction.

Part 3 contains two papers dealing with joint supply or collective consumption. In the famous “clubs” paper, Buchanan examines the optimal conditions for a good that can be jointly consumed by all members of the relevant group but where the good is perfectly excludable. The analysis focuses on specifying the optimal size of the “club”—that is, the optimal numbers of consumers—and the way in which output levels and numbers are interrelated in cases where there is some degree of congestion in consumption. The “joint supply” paper deals with the relation between collective consumption and externality problems.⁸

In part 4, we have assembled six papers that are expressly focused on public goods in the sense that “public goods” is mentioned in all the titles. The extremely close connection with other papers in this volume will, however, be evident. For example, the paper with Kafoglis, which is designed to illustrate the possibility of overexpansion of public goods supply in market equilibrium, has an obvious analytical connection to the “reciprocal externality” paper with Tullock in part 2. Some of the papers in this section are quite brief. Their brevity reflects the fact that they were written as comments on exchanges between other scholars or on some paper by another author. However, these little papers provide considerable insight into Buchanan’s

6. Buchanan and Stubblebine, “Externality”; James M. Buchanan and Charles J. Goetz, “External Diseconomies in Competitive Supply,” *American Economic Review* 61 (December 1971): 883–90; James M. Buchanan and Gordon Tullock, “Public and Private Interaction under Reciprocal Externality,” in *The Public Economy and the Urban Community*, ed. Julius Margolis (Resources for the Future, 1965), 52–73; James M. Buchanan, “External Diseconomies, Corrective Taxes, and Market Structure,” *American Economic Review* 59 (March 1969): 174–77.

7. James M. Buchanan, “The Institutional Structure of Externality,” *Public Choice* 14 (Spring 1973): 69–82.

8. James M. Buchanan, “An Economic Theory of Clubs,” *Economica* 32 (February 1965): 1–14; “Joint Supply, Externality, and Optimality,” *Economica* 33 (November 1966): 405–15.

views on various aspects of the public goods issue and no collection of his thoughts on this topic would be complete without them.⁹

Part 5 contains eight papers that constitute specific applications of these public goods ideas to various budget areas—with “financing the metropolis,” with the health service provision arrangements in Britain, and, more generally, with social security.¹⁰

The final section, part 6, provides Buchanan’s thinking on the redistributive aspects of government activity. These five papers should be read in association with the paper “The Political Economy of Franchise in the Welfare State,” which appears in volume 13, since the latter paper gives an account of the “supply” side of the democratic redistributive process. Readers may also wish to consult the eighth chapter of *The Reason of Rules*, which deals with redistribution in a more explicitly constitutionalist way.¹¹

9. James M. Buchanan, “Cooperation and Conflict in Public Goods Interaction,” *Western Economic Journal* 5 (March 1967): 109–21; Buchanan and Kafoglis, “A Note on Public Goods Supply”; James M. Buchanan, “Public Goods in Theory and Practice,” *Journal of Law and Economics* 10 (1967): 193–97; “Breton and Weldon on Public Goods,” *Canadian Journal of Economics and Political Science* 33 (February 1967): 111–15; James M. Buchanan and A. Pinto Barbosa, “Convexity Constraints in Public Goods Theory,” *Kyklos* 33, Fasc. 1 (1980): 63–75; James M. Buchanan, “Public Goods and Natural Liberty,” in *The Market and the State: Essays in Honour of Adam Smith*, ed. Thomas Wilson and Andrew S. Skinner (Oxford: Clarendon Press, 1976), 271–86.

10. James M. Buchanan, “Public Goods and Public Bads,” in *Financing the Metropolis: Public Policy in Urban Economics*, ed. John P. Crecine, vol. 4 (New York: Sage Publications, 1970), 51–71; “Principles of Urban Fiscal Strategy,” *Public Choice* 11 (Fall 1971): 1–16; *The Inconsistencies of the National Health Service*, Occasional Paper no. 7 (London: Institute of Economic Affairs, 1965); *Technological Determinism Despite the Reality of Scarcity: A Neglected Element in the Theory of Spending on Medical and Health Care* (Little Rock: University of Arkansas Medical School, 1990), 3–17; “The Budgetary Politics of Social Security,” in *Social Security’s Looming Surpluses: Prospects and Implications*, ed. Carolyn L. Weaver (Washington, D.C.: AEI Press, 1990), 45–56; “Social Security Survival: A Public Choice Perspective,” *Cato Journal* 3 (Fall 1983): 339–54; “Social Insurance in a Growing Economy: A Proposal for Radical Reform,” *National Tax Journal* 21 (December 1968): 386–95; “Commentary,” *Income Redistribution*, ed. Colin Campbell (Washington, D.C.: American Enterprise Institute, 1977): 99–101.

11. James M. Buchanan, “What Kind of Redistribution Do We Want?” *Economica* 35 (May 1968): 185–90; “Distributive and Redistributive Norms,” in *Liberty, Market, and State: Political Economy in the 1980s* (Brighton, England: Wheatsheaf Books, 1986), 159–64; “Government Transfer Spending,” in *Government Controls and the Free Market: The U.S. Economy in the 1970s*, ed. Svetozar Pejovich (College Station: Texas A&M University

Mention should be made here of those applications of the externalities and clubs ideas that Buchanan exploits in the context of the theory of federalism. Externalities often have a spatial dimension; political jurisdictions can be thought of as spatially based “clubs.” However, as Buchanan and Goetz point out in “Efficiency Limits of Fiscal Mobility,” the application of clubs theory to the study of federalism is not direct and requires a significant supplementation. The relevant papers are gathered with other papers on federalism in volume 18 in the series, *Federalism, Liberty, and the Law*.¹²

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Press, 1976), 122–40; “Who Should Pay for Common-Access Facilities?” *Public Finance* 27, no. 1 (1972): 1–8; “Who Should Distribute What in a Federal System?” in *Redistribution through Public Choice*, ed. H. Hochman and G. Peterson (New York: Columbia University Press, 1974), 22–42; “The Political Economy of Franchise in the Welfare State,” in *Capitalism and Freedom: Problems and Prospects*, ed. Richard T. Selden (Charlottesville: University Press of Virginia, 1975), 52–77; Geoffrey Brennan and James M. Buchanan, *The Reason of Rules: Constitutional Political Economy* (Cambridge: Cambridge University Press, 1985), volume 10 in the series.

12. James M. Buchanan and Charles J. Goetz, “Efficiency Limits of Fiscal Mobility,” *Journal of Public Economics* 1 (1972): 25–43.

PART ONE

*Public Services
and Collective Action*

