

SOME QUESTIONS OF PUBLIC CHOICE

While the phrase "cost-benefit analysis" was coined only a few decades ago, the need for such analysis is as old as government, and widespread recognition of that need, particularly for city government, dates back at least to the municipal reform movement at the turn of the twentieth century. I spent the first six years of my professional career, 1936 to 1942, seeking to strengthen the conceptual and statistical bases for evaluating municipal services and carrying out several cost-benefit studies to develop the methodology of empirical work in this area. Five of the chapters of this section are drawn from that early work. The remaining chapters mark later occasions in my career when I have turned to standard economic analysis to illuminate public policy questions.

ESTIMATING PRODUCTION FUNCTIONS

As will be seen immediately from chapter 1.1, the economic theory used in these analyses is elementary and traditional. The interest that the first two essays retain today is in showing what is involved (now as then) in applying simple production theory to concrete managerial problems in the public sector. The conceptual framework of utility theory and the theory of production have to be tailored to the ambiguities of the goals of public services and to practicalities of what can and cannot be measured. These continue to be central difficulties in cost-benefit analysis and public budgeting.

Chapter 1.2 is a summary of a monograph reporting a large-scale field experiment carried out in the California State Relief Administration in 1940-1941, a research undertaking that was comparable in magnitude to the famous Hawthorne experiments conducted in the 1930s in the Western Electric Company. Apart from the income maintenance studies of recent memory, few organizational or social field experiments have been carried out on the same scale. While estimating production functions has never been easy, the administrative turmoil in the California welfare agency, which was embroiled in a violent political battle at the time of the study, made the task exceptionally difficult in

this instance. Nevertheless, chapter 1.2 and the monograph on which it is based retain interest for what they have to say about the methodology of conducting large field experiments.*

On the substantive side, the findings, however useful in the immediate situation, do not reach beyond the particular production functions that were estimated and have few if any broader implications for economic theory or policy. I am not the first or the last economist to have concluded that making empirical estimates of production functions is an arduous and not wholly rewarding business.

THE INCIDENCE OF TAXATION

The economic issues in chapters 1.3 and 1.4 call for somewhat more sophisticated theory than do the issues of the preceding chapters. The consolidation of governmental activities in metropolitan areas was a lively topic in the 1940s as today. The study in the San Francisco Bay area was the first to address in a systematic way the underlying distributional issues — who in a metropolitan area stood to lose or gain from consolidation, and under what conditions. I had not pursued this question very far before I found myself in the thicket of tax incidence theory. I say "thicket" because I discovered, somewhat to my surprise, that various, equally eminent, economists had reached quite different conclusions about the incidence of a real property tax — even without taking into account the added complexities arising from differential taxes in different parts of a metropolitan region.

I will leave to the papers themselves the conclusions I reached on these matters. From a methodological standpoint, I came to realize that the differences among the experts stemmed from differences in their assumptions as to how rational or nonrational people really are in their real estate transactions — in particular, how fully they take into account small tax and service differentials. Harry Gunnison Brown, who pushed general equilibrium analysis to the limit, showed that if there were no friction whatsoever (that is, if rationality was so global that the tiniest side effects were calculated), then the burden of a real estate tax might rest on owners of capital in general, not simply on the owners of building capital or of capital in the locality being taxed. Other distinguished economists — Taussig, for example, and Seligman — had stopped short of this step in tracing the shifting of the tax.

* See also Simon and Divine (1941).

This result showed me that bounded rationality might have implications for a wide range of economic analysis and not just for management. The *ceteris paribus* assumptions of partial equilibrium analysis can be interpreted as removing the "second order" effects that economic actors ignore in their decisions in order to reduce their problems to acceptable levels of complexity.

Two further conclusions follow from this interpretation of *ceteris paribus*. The first is that alternate *ceteris paribus* assumptions for the same problem correspond to different psychological assumptions about what factors the economic actors actually attend to. The second is that replacing partial equilibrium analysis with general equilibrium analysis can be interpreted as a psychological assumption of more global rationality of the actors — the rational expectations hypothesis in its starkest form being merely the extreme step in this progression. The interest in the meaning of *ceteris paribus* and partial equilibrium analysis that was aroused in me by the tax incidence studies led me, much later, to the notions about nearly decomposable systems, which are taken up in chapter 4.2. Chapter 1.3 was reprinted in the *AEA Readings in the Economics of Taxation* (1959). These chapters retain their substantive interest today, although the analysis of tax incidence has been extended and amended by Tiebout (1956) and others to take into account more fully and systematically the role of population mobility in shifting local taxes.

Chapter 1.5 represents a target of opportunity. The preface to the chapter, excerpted from a paper written by Eugene P. Seskin, sets forth the problem, to which Seskin gave an answer under rather restrictive assumptions. He and I then showed that the same answer holds under much more general conditions. This generalization of Seskin's result, published as an appendix to his article, constitutes the brief chapter reprinted here.

PUBLIC EXPENDITURES

Chapter 1.6, on planning, makes a correct point but does not state it as clearly or felicitously as one now could do against the background of modern welfare theory. If one starts out with the assumption of perfect rationality and the attendant machinery of subjective expected utility, Pareto optima, and the Compensation Principle, little room would appear to be left for social decision processes, except, possibly, for decisions about the basic distribution of wealth and income.

But in a world condemned by bounded rationality to the second best,

this conclusion does not follow. In such a world one could well conclude that certain of society's scarce resources might better be allocated through a social decision process in terms of social criteria of choice than through the market in terms of individual calculations of utility. The institutional, political, decision cannot be made on the basis of market criteria, since until it has been made, the domain of applicability of the market criteria has not been defined. My paper might be interpreted as an argument that economic choices take place in an environment of political institutions and not vice versa.

The planning chapter, written in reply to a paper by Alfred E. Neal, does not, of course, deal with the implications of the Arrow Impossibility Theorem, which was published a decade later. I would simply point out that the Arrow Theorem does not hold if interpersonal comparison of utility is admitted and does not hold in any event if we give up the high standards of rationality and consistency of choice that are embedded in the axioms on which it rests.

MILK AND AIR

In most domains of public policy, except for monetary and fiscal policy, the applications of economic analysis call less for sophisticated theory than they do for common sense combined with simple principles drawn from elementary price theory. Such simple uses of economic principles are illustrated by chapters 1.7 and 1.8, which are the products of committees I chaired for the governor of Pennsylvania and for Senator Muskie's Senate sub-committee monitoring the Clean Air Act, respectively.

Milk Price Control

The review by a blue ribbon committee of milk price control in Pennsylvania undertaken at the request of Governor Scranton in 1965 had no immediate practical result. The "public" members of the committee — that is, I (as chairman) and two others who had no discernible interest in the milk business — were badly outnumbered and, when we failed to bring about a schism among representatives of the partially conflicting interests in the industry, were thoroughly routed. (The industry representatives were all solidly united in a fear of competitive markets.) Thereupon, the public members decided to issue their own report, whose appendix analyzed the economics of the industry. We hoped that this document might persuade some people of the futility of price regulation. Although it produced no change in law or

regulation at that time, it may later have exerted some influence toward replacing chaotic state control of prices in the western half of Pennsylvania with more sensible federal regulations.

The appendix is reproduced here not as an example of a successful political document, which it was not, but as an indication of my notion of the appropriate level of economic analysis in treating questions like these. The report is the product, of course, of the three committee members who signed it, but they left me a rather free hand with the appendix.

Automobile Emissions

The report whose summary appears as chapter 1.8 was produced by a Coordinating Committee on Air Quality Studies (CCAQS — pronounced "Seequack") that was created in 1973 by the National Academy of Sciences and National Academy of Engineering in response to a request from the Senate Committee on Public Works for an evaluation of the reasonableness of the air quality and auto emission standards that had been established by the Clean Air Act. I served as chairman of CCAQS.

CCAQS was responsible for coordinating the activities of a number of satellite committees and drawing their findings together into an overall set of recommendations. The logic of the committee structure reflected the logic of the task, viewed as a problem in cost-benefit analysis. As that logic ran, automobile designs (each associated with its cost) determine the levels of various noxious emissions. These emissions, together with others from nonautomotive sources, determine, by the laws of atmospheric chemistry and meteorology, the quality of the air breathed by local populations. Air quality affects levels of health, the pleasantness of the environment, and rates of deterioration of paint and stone. The benefits of improving health and the pleasantness of life in a purer environment must then be balanced against the costs of producing the improvement.

Mirroring this logical structure, there were set up under CCAQS a Committee on Motor Vehicle Emissions (redesign of autos and its costs), a Committee on the Relationship of Emissions to Ambient Air Quality, a Committee on Medical and Biologic Effects of Environmental Pollutants, and a Committee on the Costs and Benefits of Automotive Emission Control. The first three committees were to estimate their respective components of the "production function," while the Cost-Benefit Committee was to assess benefits of air quality improvements and to advise on the methodology to be used by CCAQS in its overall

evaluation.

There was only one hitch with this procedure: The state of scientific and technical knowledge did not permit the ambient air quality committee or the health-effects committee to estimate the marginal coefficients that were needed from their components of the system. The cost-benefit committee did produce some estimates of marginal effects — including an independent estimate of health effects from epidemiological data, as well as some estimates of the values that consumers place on purer air. These estimates rested on shaky assumptions of the ability of consumers to judge levels of pollution and their consequences, but fortunately they pointed in the same direction as other "common sense" indications of costs and benefits. Hence the committee was spared an agonizing decision as to its confidence in these "iffy" sophisticated analyses.

The concept of marginal effects was entirely foreign to the health effects committee and its constituent panels. The available medical technology was geared to measuring the thresholds at which detectable health effects appeared and not the magnitudes of these effects in relation to the magnitudes of their causes. Hence while the inputs of the medical effects committee had a considerable influence on CCAQS's judgment of the reasonableness of the existing air quality standards, they had little influence on the judgment of the balance of costs and benefits. The fact that these two sets of questions were answered in semi-independence of each other was just one more example of human bounded rationality — in this case produced by limitations on available knowledge.

So here we have a perhaps not untypical example of how reasonable men reach decisions on questions that "in principle" admit economic analysis but in fact do not provide the data that would permit the analysis to be carried out in any literal way. Chapter 1.8 reproduces the principal part of CCAQS's summary statement, which reflects quite clearly the way it went about its reasoning.

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