

Modern Public Economics

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Raghendra Jha

45°

Modern Public Economics

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Modern Public Economics

In almost all economies, the government plays an important role in the allocation and distribution of resources, as well as the regulation of economic activity. A proper study of public economics is therefore central to understanding modern economics.

Modern Public Economics covers all aspects of state intervention in the marketplace. Part I is a detailed study of classical theories of welfare economics and also explains key concepts in consumer demand theory. Part II analyses the theory of public expenditure, paying particular attention to pure public goods. Part III is an extremely detailed account of the theory of taxation. Subjects covered include the incentive effects of taxation on labour supply, investment and risk-taking; static and dynamic tax incidence; commodity taxation; optimal income taxation and tax reform. Part IV assesses applied problems in public economics and deals with issues such as public sector pricing, international taxation and cost-benefit analysis. Part V deals with key issues in fiscal federalism.

Modern Public Economics is a comprehensive text for advanced undergraduates and postgraduates which will also be very useful for academics and policy-makers who are interested in the latest developments in public economics.

Raghbendra Jha is Professor of Economics at Indira Gandhi Institute of Development Research, Bombay, India. He has taught previously at Columbia University, USA Queen's University, Canada and the University of Warwick, England. He is the author of twelve books, including *Macroeconomics for Developing Countries* (Routledge, 1994). He is an adviser to the Fiscal Affairs Division of the IMF.

Preface

Public economics, loosely defined as the study of government intervention in the marketplace, is a rapidly growing area of research. Until a few years ago, public economics could be thought of as being applied micro theory. Not any more. Branches of economics, which were, just a decade ago, thought to have little connection with public finance, have intruded into the domain of public economics. For example, the theory of regulation which has traditionally been an area of concern for the economics of regulation, is now actively researched by scholars working in public economics. The worldwide attention given to issues of the burden of the public debt has led to considerable refinement of the macroeconomic side of public sector behavior. With increasing integration in international trade and commerce, the international aspects of government behavior are becoming increasingly important. Examples like this can be multiplied considerably.

We who study public economics live in exciting and, sometimes, trying times. From time to time a need is felt to provide a sense of perspective on the state of the art – particularly at its frontiers – from which both practitioners as well as students can benefit. This is what courses and texts are supposed to do.

In writing this book I have tried to provide such a sense of perspective. This book develops the foundations of public economics and explores, in considerable detail, research being done at the frontiers. It is written with upper level undergraduates and postgraduate students of economics as audience. With this objective in mind, key arguments are carefully developed and mathematical proofs are carefully worked out so that there are no ‘missing steps’ for students to fill in. It has been my experience while teaching public economics to students in three countries – Queen’s University, Canada, University of Warwick, UK, and IGIDR and Delhi School of Economics in India – that students find it very hard to work through the missing steps in proofs of papers published in scientific journals or, for that matter, advanced texts. This has the predictable result that teachers have to provide considerable background notes. The present book should help to ameliorate this difficulty. I have made a conscious effort to provide complete proofs which should be easy to follow without the need for any

background notes. This book should also be useful to academics and policy planners who want a complete account of recent developments in the field of public economics.

The book is organized as follows. Part I is entitled 'Welfare Economics' and consists of three chapters. In Chapter 1 I have developed key concepts in consumer demand theory which are heavily used in public economics. The topics covered include direct and indirect utility functions, expenditure functions, compensation, Roy's identity, Slutsky equation and the like. This chapter is quite self-contained so students will not have to appeal to a microeconomic text to learn these concepts. In Chapter 2, the distinction between reaching the Pareto frontier and choosing any point on the frontier is spelt out. This chapter deals with the efficiency question of devising mechanisms under ideal conditions to reach the Pareto frontier. The question of choosing a point on the frontier is developed in Chapter 3. In this context the issue of democratic aggregation of preferences is taken up. The Arrow Impossibility Theorem, Gibbard's Oligarchy Theorem and Sen's Impossibility of a Paretian Liberal Theorem are all proved to emphasize the difficulties involved in democratic aggregation of preferences. At this point the information content of the Arrow framework is explored and it is shown that possibility results emerge when one admits interpersonal comparisons of utility. The utilitarian, neo-utilitarian, Rawlsian and Atkinson's measures of social welfare are all explained in this chapter since these welfare functions have been used extensively in applied and theoretical work.

Part II of the book is entitled 'The Theory of Public Expenditure' and consists of three chapters. In Chapter 4, the presence of externalities as a basic rationale for public expenditure is explored. Solutions to the problems of various types of external effects are explained and assessed. Chapter 5 concerns itself almost exclusively with pure public goods. Various forms of the Samuelson condition for Pareto optimal supply of a pure public good are derived. The free rider problem and attempts at its solution are also discussed here. There is also a brief discussion of voting models of public goods. Chapter 6 takes up some issues of interest in the theory of public goods. We study the theory of clubs and the Tiebout process, the financing of public goods with distortionary taxation and asymmetric information in the theory of public goods.

Part III is entitled 'The Theory of Taxation' and consists of ten chapters. Chapters 7, 8, 9 and 10 deal with the incentive effects of taxes. Chapter 7 deals with effects of taxes on savings, Chapter 8 with labor supply, Chapter 9 with investment behavior and Chapter 10 with taxation and risk-taking. Chapter 11 deals with static tax incidence. The static two-sector general equilibrium model of tax incidence is studied. Then we move to incidence analysis with involuntary unemployment and incidence analysis in the presence of regulation. In Chapter 12 we study tax incidence in some dynamic models. Tax incidence is studied in the basic Solow model as well as in the

Diamond life-cycle model. The notion of balanced growth path tax incidence is also developed. Tax incidence in the Blanchard-Yaari life cycle model is also discussed as well as the issue of tax versus debt finance of government expenditure. Some issues relating to Ricardian equivalence are also dealt with here. We also study tax incidence in monetary growth models. In Chapter 13 we study commodity taxation. We examine the standard elasticity formulae as well as the issue of the limits to redistribution with commodity taxation. Chapter 14 discusses optimal income taxation – linear as well as non-linear. We also study the problem of optimal taxation with incomplete information. In Chapter 15 we study four topics in the theory of income taxation: optimal taxation in a model of endogenous growth, the problem of income tax indexation in an inflationary economy, the problem of time consistency and, briefly, some models of tax compliance. Chapter 16 discusses some aspects of tax reform.

Part IV of the book is entitled ‘Applied Problems in Public Economics’ and consists of three chapters. Chapter 17 is a fairly detailed analysis of issues related to public sector pricing. Marginal cost and efficient and redistributive second-best pricing, non-linear pricing, pricing of joint products and related issues are considered in this chapter. Chapter 18 deals with some issues in international taxation and Chapter 19 has a brief overview of cost benefit analysis.

Part V of the book is entitled ‘Fiscal Federalism’ and consists of two chapters. Chapter 20 deals with key issues in federalism such as the optimal degree of decentralization. Chapter 21 discusses the delegation of grants and taxes within a federal framework. There is an extensive bibliography at the end of the book to help plan further reading.

In writing this book I have run up a long list of acknowledgments. First, I have benefited enormously from my association with Robin Boadway at Queen’s University, Kingston, Canada, during my two spells as visiting faculty. I learnt a great deal from Robin in conversations as well as during my coauthorship with him. Dan Usher was a source of intellectual stimulation while I was at Queen’s as were Isao Horiba (then visiting Queen’s from Tokyo), and Bagala Biswal (then a graduate student at Queen’s). Thanks are also due to two friends and occasional coauthors: Balbir Sahni of Concordia University and Anandi Sahu of Oakland University for their constant encouragement. Throughout the long years over which this book was conceived and written, I benefited greatly from the comments of my students in Queen’s University, Canada, University of Warwick, UK and Indira Gandhi Institute of Development Research (IGIDR) and Delhi School of Economics in India. The students’ evaluation of my class lectures has served as a critical input into this book. I would like to thank each of them individually but they are far too many to mention.

The book in its final form has been written at the University of Warwick. The economics department at Warwick has provided an excellent environment for my work. I owe a great debt of gratitude to Norman Ireland for

making my stay here so pleasant and intellectually stimulating. Tony Addison, Jeff Round, John Whalley, Chris Heady and Mike Waterson also deserve heartfelt thanks from me. I would also like to take this (statistically improbable) opportunity to thank Edmund Phelps who, as my PhD guide twenty years ago, introduced me to the exciting area of public economics. At IGIDR, Bombay, I would like to thank Kirit Parikh for his constant help, support and encouragement. Mudit Kulshreshtha, Nibedita Das and especially Santanu Gupta, all graduate students at IGIDR, have helped with the diagrams. Without Santanu's help the figures would not have been possible.

I have also benefited greatly from the help and support of the economics section at Routledge. Alison Kirk, economics editor, provided consistent and unflinching support. The extremely thoughtful comments of anonymous referees helped considerably in bringing the manuscript to its present form. I am grateful to all these people for their help, patience and friendship. Given these, the task of writing this book was never a chore.

My greatest debt of gratitude is to my family – my wife Alka and our son Abhay. It would be impossible, indeed presumptuous, for me even to begin thanking them.

Raghbendra Jha
Coventry, UK

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Part I

Welfare economics

Introduction to Part I

Part I consists of three chapters and sets the stage for the analysis in the rest of the book. Elements of consumer demand theory are used fairly extensively in public economics because efficiency and welfare implications of public policy changes have to be evaluated and this can only be done in terms of a calculus of individual welfare.

Modern microeconomic theory usually articulates individual consumer behavior in terms of preference orderings or utility functions. In Chapter 1 we study the underpinnings of the theory of consumer behavior. We begin by specifying the basic properties of an ordering such as convexity, continuity, completeness and rationality. We then detail the link between preference orderings and consumer utility functions. Properties of utility functions are then discussed. The Slutsky equation is derived as are the properties of Marshallian and Hicksian demand functions. Constructs such as the indirect utility function and the expenditure function are discussed, as are important results such as Roy's identity, the envelope theorem and compensating and equivalent variations. Throughout the emphasis is on familiarizing the students with the basic results. Hence some complex proofs are eschewed.

In Chapter 2 a survey of Paretian welfare economics is undertaken. We begin by developing the notions of the Pareto criteria and Pareto optimality. The two classical theorems of welfare economics are proved using the notion of consumer orderings and consumer utility functions as (alternative) bases. The point is made that the Paretian criterion cannot help us choose any particular welfare optimum. We then extend the proof of the second optimality theorem to the case of uncertainty. Both the Debreu contingent commodity market solution as well as the security market solution are discussed. The difficulty of extending these results to the case of production economies is considered. There is also a discussion of the theory of second best.

In Chapter 3 we study the problem of making social choice through means other than the Paretian criterion since the latter is not adequate for social choice. Scitovsky indifference curves are derived and the compensation criteria of Kaldor, Hicks and Scitovsky are examined. We then broach

the thorny question of aggregating individual preference to make social choice. The impossibility result of Arrow, Gibbard's oligarchy Theorem and Sen's impossibility of a Paretian liberal are all discussed here. We then consider the problem of informational scarcity in the Arrowian framework and show that it is possible to aggregate individual preference to make reasonable social choice. The possibility results of Strasznick and Hammond are looked at here. Finally some forms of the social welfare function used in applied work are discussed.

