



# Modern Public Finance

## Volume I

*Edited by*

**A.B. Atkinson**

*Thomas Tooke Professor of Economic Science and Statistics,  
London School of Economics*

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# Introduction

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Any selection of readings reflects the particular interests of the editor as well as judgements about the importance of different contributions which may be debated by the reader. In the present volume, this is undoubtedly the case. I have however adopted certain general principles in choosing the contents for these two books of readings on 'Modern Public Finance'.

First, I have defined 'modern' as covering the period from 1950. This means that I have excluded such undisputed classics as Ramsey's article (1927) on optimal taxation or the widely-cited paper by Domar and Musgrave (1944) dealing with the impact of taxation on risk-taking. There is no overlap of contents with the American Economic Association *Readings in the Economics of Taxation* (Musgrave and Shoup, 1959) which, along with *Classics in the Theory of Public Finance*, edited by Musgrave and Peacock (1958), provides a most interesting selection of writing from the earlier period of public finance.

Secondly, I have interpreted 'critical writings in economics' as referring to those which have shaped the development of the subject. I have therefore tended to give preference to an article which opened up a field for investigation or which revived interest in a classic question over later, possibly more complete, contributions. As frequently happens, two or more such innovative articles may have appeared at broadly the same time, and I have had to choose between them. There may also have been forerunners whose work for some reason did not attract the attention it merited. 'Influence', rather than priority, has been the criterion I have applied.

Thirdly, I have had in mind the reader whose main interests are outside public finance. I have therefore sought not just to provide a reasonably representative collection of critical work in public finance, but also to include some readings which help relate the subject to other fields. This is particularly important in view of the tendency for economics to become compartmentalized. Many of the same issues arise, for example, in modern macroeconomics, in the theory of finance or in international trade.

Finally, I have tried to concentrate on articles which will continue to be of wide interest for many years and which are not tied to a particular policy context. The volume is intended for an international readership. I have therefore excluded from consideration articles concerned with the application of the principles of public finance to policy problems, such as those presented to the symposium on the 1986 Tax Reform Act in the United States which appeared in the first issue of the *Journal of Economic Perspectives*. This has inevitably meant that applied topics have received less attention; while I have sought to include examples of empirical research, the balance is more towards theory.

In addition to applying these principles of selection, I have been subject to a variety of constraints. The series is limited to journal articles, so that I have not included papers that were published as chapters in books or extracts from monographs. This means that I have not, for instance, included any of the work of Pechman, much of which has appeared in books. The great influence on modern public finance of Musgrave's *Theory of Public Finance* (1959) is reflected only indirectly.

Most important has been the space constraint. Even in two volumes, it has proved impossible to include more than a proportion of the articles which on merit qualify for inclusion. This has given a premium to shorter articles, such as Samuelson's first article on public goods, once described as 'the best value for three pages in economics'. It would have been tempting for this purpose to select *parts* of articles, but as this is often irritating to the reader, all of the articles are reprinted in full.

The page constraint has equally meant that the coverage of topics is selective. I have sought to represent certain branches of the subject adequately, rather than attempt to be comprehensive. Among the topics not included are public enterprises and the regulation of natural monopoly, cost-benefit analysis and investment criteria, fiscal federalism, the public provision of health care or housing, the international dimension of public finance, and public finance in developing economies. If these – or other topics not covered – are your particular interest, then I apologize.

### **Taxation and the Household**

Reference has been made to the classic contributions to public finance. The revival of interest in the subject in the 1970s represented in part a return to earlier questions, applying more modern techniques of analysis, and in part a departure from the traditional view of the subject. Both of these are illustrated by the section of readings in Part I on 'Taxation and the Household'.

New in the recent literature has been the emphasis on quantitative evidence and the use of econometric techniques. Particularly significant in the case of household behaviour has been the greatly increased use of micro-data – that is data on individual households, typically derived from sample surveys or administrative records – to examine the response of taxpayers to taxes and public spending. Public finance research has benefited in this respect from the much greater accessibility of micro-data (where the contribution of official statistical offices has been most important) and from the developments in econometric methods. This has been a two-way process. The negative income tax (NIT) experiment, studied by Burtless and Hausman in Chapter 1, came about as a result of the involvement of economists in investigating alternatives for income maintenance reform. Analysis of the data generated by this experiment raised many new problems and stimulated the growth of interest in micro-econometrics.

A second feature of the article by Burtless and Hausman is the attention paid to the way in which the NIT, or other transfer programmes such as 'Aid to Families with Dependent Children', generate a non-linear budget set for the family. This concern with institutional features of fiscal policy recurs in a number of the readings: for example, the treatment of loss offsets by Mossin in Chapter 3, of tax penalties by Allingham and Sandmo in Chapter 4, and of depreciation and interest deductibility provisions in Part II on corporate taxation.

The effects of taxation on labour supply and on savings depend on the way in which these decisions are made by taxpayers. In the case of savings, there has been a marked switch towards reliance on the *life-cycle savings model* (see for instance Auerbach and Kotlikoff, 1987). The application of this model is illustrated here by the articles of Feldstein (Chapter 2) and Summers (Chapter 12). The extent that people save in order to provide for their retirement is important when it comes to assessing the impact of state social security

programmes; this has been a particular concern of Feldstein. The article reprinted here summarizes the theoretical framework underlying his empirical research, and brings out the possible inter-relationship between saving and labour-supply decisions via early retirement.

The readings in this section make extensive use of developments in microeconomic theory, as is further illustrated by Mossin's article in which he addresses the question, asked earlier by Domar and Musgrave (1944) and Tobin (1957–58), whether taxation discourages risk-taking. Applying the expected utility maximization theory of portfolio choice based on the work of Arrow (1965) in place of the earlier mean-variance analysis, he was able to derive more general conclusions, notably concerning the attitude of the investor towards risk (see also Stiglitz, 1969).

The same approach to taxpayer behaviour underlies the analysis by Allingham and Sandmo of income tax evasion, a paper which generated a large literature (for a review, see Cowell, 1990). The authors examine the decision whether to report income in full to the tax authorities and how this decision is affected by the penalty structure and the probability of detection. It is of course open to question how far this kind of decision is determined by maximizing expected utility, but the model provides a valuable benchmark.

## **Taxation and the Firm**

The impact of taxation, notably the corporate profits tax, on the behaviour of the firm has been a major topic for research. The readings in Part II are only a small selection from the large theoretical and empirical literature. Among the important institutional features studied in this literature are the provisions for depreciation of capital, the deductibility of bond interest payments from taxable profits, and the differential treatment of dividends and capital gains in the hands of shareholders. These may affect both financial and real decisions of the firm.

The depreciation of capital is the subject of Chapter 5 by Samuelson, in which he examines the conditions for 'true economic depreciation', under which the present value of an investment is independent of the tax rate. The depreciation provisions are one of the elements entering the cost of capital, which is central to the empirical study of investment behaviour in the United States conducted by Hall and Jorgenson (Chapter 6). The cost of capital is derived from the relationship between the price of a new capital good and the discounted value of future services. This study, although controversial (see for example, Eisner and Nadiri, 1968), has been particularly important in providing an explicit treatment of taxation in econometric investment equations. It also serves to illustrate the role of evidence from time-series – in contrast to the cross-section evidence used in studying labour supply in Chapter 1.

The theory of corporate investment and its relation with financial policy are the subject of Chapter 7 by Stiglitz and Chapter 8 by Miller. The article by Stiglitz brings together the theory of real investment with that of corporate finance, based on propositions such as the Modigliani-Miller theorem on the irrelevance of financial policy. One of the most important points made by Stiglitz is that the relevant cost of capital is the *marginal* cost, rather than the average cost. If at the margin investment is financed by borrowing and interest is deductible, then taxation has no effect on the investment decision (see also Atkinson and Stiglitz, 1980, Section 5–3). This provocative conclusion has major implications for the empirical



work just described and for the analysis by Harberger of the incidence of corporate profits tax (Chapter 19).

The article by Miller starts from the Modigliani-Miller theorem and examines the implications of personal and corporate taxation. He describes an aggregate equilibrium where there is a distribution of taxpayers with different marginal tax rates. Investors are specialized in debt or equity according to their tax rates, and an individual firm is indifferent to its debt-equity ratio. (The role of constraints on individual investors in reaching this result is discussed by Auerbach and King, 1983.)

### Overall Incidence of Taxation

Policy-makers exhibit considerable interest in the question 'Who bears the tax burden?' Among the statistical studies providing answers in the United States are those by Musgrave *et al.* (1951), Musgrave, Case and Leonard (1974), and Pechman and Okner (1974). As these authors have recognized, the calculations involve assumptions about the incidence of taxation – or, more accurately, assumptions about the working of the economy. The need for explicit treatment of the economic model underlying this type of statistical analysis is brought out in Chapter 9 by Prest, where he calls for greater precision as to the question being posed.

A general equilibrium treatment of tax incidence had been provided, among others, by Shephard (1944) and Meade (1955), but it was the article by Harberger (Chapter 10) on the incidence of corporation income tax that led to the widespread adoption by public finance economists of the two-good/two-factor general equilibrium model. In this, they owe a considerable debt to international trade theory, as Harberger clearly recognized. Harberger used the model to examine the incidence of a tax on the use of capital in the corporate sector. As noted earlier, this treatment assumes that capital income is taxed at the margin – an assumption which depends on the financial policy of the firm in the way discussed by Stiglitz in Chapter 7.

The article by Harberger is impressive not just for its theoretical contribution, but also for its attempt to attach numbers to the United States economy (although see Shoven, 1976). The numerical implementation of the competitive general equilibrium model has been one of the major research areas of the past two decades. Applying computational algorithms along the lines of Kuhn (1968) and Scarf (1967), Shoven and Whalley (Chapter 11) provide a general equilibrium calculation of the effects of capital income taxation. The article contains a clear account of the working of the algorithm and of its application to the Harberger model. A survey of work in the subsequent ten years on applied general equilibrium modelling in public finance is given by Shoven and Whalley (1984).

Of special policy interest is the differential incidence of income and consumption taxes. What are the implications of exempting capital income? For this purpose, we need to move to a dynamic framework. Summers (Chapter 12) investigates the effects of different taxes in the context of life-cycle savings behaviour embedded in a single-sector neoclassical growth model (see also Atkinson and Stiglitz, 1980, Section 8–4). The conclusions reached are subject to debate – and the author is careful to draw attention to some of the qualifications – but the article demonstrates the value of a general equilibrium treatment.

The dynamic perspective raises questions for the empirical analysis of tax incidence. In

Chapter 13, Davies, St-Hilaire and Whalley describe calculations of lifetime tax incidence using a life-cycle simulation model for Canada. The comparison with annual incidence results is of particular interest.

## **Public Goods**

The extent to which public finance has been incorporated into the mainstream of general equilibrium theory is well illustrated by the literature on public goods which – following the contribution of Samuelson (Chapter 14) – has attracted the attention of many economic theorists. Samuelson's aim was to present 'a mathematical exposition of a public expenditure theory that goes back to Italian, Austrian and Scandinavian writers of the last seventy-five years' (Samuelson, 1955, p.350). In the present chapter, he describes the conditions for the optimal provision of a pure public good consumed in equal quantity by all: that the sum of the marginal rates of substitution (between the public good and some private good) must equal the marginal rate of transformation.

The Scandinavian approach to public goods includes the work of Lindahl, which is presented and developed in the article of Johansen (Chapter 15). He explains Lindahl's idea of a 'pseudo' competitive equilibrium where each individual demands a quantity of the public good at a personalized tax share or 'Lindahl' price. A Lindahl equilibrium is a set of personalized prices such that each person demands the same level of the public good, and has the property of Pareto efficiency.

The Lindahl equilibrium is a useful analytical benchmark, but any actual procedure for the determination of the level of public goods provision must take account of the problem of preference revelation. This problem is described by Samuelson in Chapter 14: 'It is in the selfish interest of each person [to] pretend to have less interest in a given collective consumption activity than he really has'. It is however possible to design mechanisms to induce truthful revelation, following the ideas of Vickrey (1961). In the 1970s a sizeable literature was initiated by Clarke (1971) and Groves and Loeb (1975). This is represented here by the article of Tideman and Tullock (Chapter 16) which some readers may find more accessible. There can be little doubt that the design of the mechanism is ingenious; the literature has contributed to a more general treatment of incomplete information in economics (see, for example, Green and Laffont, 1979, and Green, 1985), but the real-world significance of the misrepresentation of preferences in the case of public goods is open to question (Johansen, 1977).

The Samuelson analysis of public good provision has to be modified to allow for the use of distortionary taxation. The importance of such distortions was recognized by Pigou (1947) who argued, in effect, that the rule of equating the sum of the marginal rates of substitution with the marginal rate of transformation understated the cost of public spending. This argument is examined in Chapter 17 by Stern and myself, where we distinguish between the effect on the appropriate benefit measure and that on the appropriate output level for public goods. The findings of the article are a warning that, once one leaves the territory of first-best welfare economics, intuition may be a treacherous guide.

Redistributive objectives are referred to at a number of points in the public goods literature (see Atkinson and Stiglitz, 1980, Section 16–3), but they arise most acutely in the public

provision of *private goods*, such as education or health. This is the concern of Arrow in Chapter 18. Starting from the prescriptions of equality in input and equality in output found in the public debate, he examines the implications of a utilitarian approach to the allocation of public spending.

### Local Public Spending

Local public goods, provided by local communities, constitute an important part of total public expenditure and may have different properties. In particular, as argued by Tiebout in Chapter 19, if there are enough communities, in a world of mobile consumers/voters preferences for public goods will be revealed by the choice of community in which people live. An analogy exists with competitive equilibrium in private goods, both evincing the same property of Pareto efficiency. Tiebout's argument is developed under a set of restrictive assumptions, its theoretical structure being the subject of intensive examination. This has identified problems: a Tiebout equilibrium may not exist, and it may not be Pareto efficient. In Chapter 20, Bewley assembles a range of examples which demonstrates these points and highlights the limitations of the Tiebout approach.

The Tiebout model has also provided the basis for empirical research, of which Chapter 21 by Oates is an early example. He examines the extent to which local property values reflect local decisions with regard to taxes and public provision. The study also illustrates use of a different kind of data. Variation across geographical units (in this case 53 municipalities in New Jersey) has been extensively employed as a source of evidence in econometric public finance.

The incidence of local taxation is the subject of the final chapter by Mieszkowski in which he is concerned with the local counterpart of the tax incidence question of Part III. This article is the standard reference for the 'new view' of local property tax.

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# Contents

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*Acknowledgements*

vii

*Introduction*

ix

## **PART I TAXATION AND THE HOUSEHOLD**

1. Gary Burtless and Jerry A. Hausman (1978), 'The Effect of Taxation on Labor Supply: Evaluating the Gary Negative Income Tax Experiment', *Journal of Political Economy*, **86** (6), December, 1103–30 3
2. Martin Feldstein (1976), 'Social Security and Saving: The Extended Life Cycle Theory', *American Economic Review*, **66** (2), May, 77–86 31
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4. Michael G. Allingham and Agnar Sandmo (1972), 'Income Tax Evasion: A Theoretical Analysis', *Journal of Public Economics*, **1** (3/4), November, 323–38 50

## **PART II TAXATION AND THE FIRM**

5. Paul A. Samuelson (1964), 'Tax Deductibility of Economic Depreciation to Insure Invariant Valuations', *Journal of Political Economy*, **LXXII**, February–December, 604–6 69
6. Robert E. Hall and Dale W. Jorgenson (1967), 'Tax Policy and Investment Behavior', *American Economic Review*, **LVII** (3), June, 391–414 72
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8. Merton H. Miller (1977), 'Debt and Taxes', *Journal of Finance*, **XXXII** (2), May, 261–75 130

## **PART III OVERALL INCIDENCE OF TAXATION**

9. A.R. Prest (1955), 'Statistical Calculations of Tax Burdens', *Economica*, New Series, **XXII** (85–88), 234–45 147
10. Arnold C. Harberger (1962), 'The Incidence of the Corporation Income Tax', *Journal of Political Economy*, **LXX** (3), June, 215–40 159

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12. Lawrence H. Summers (1981), 'Capital Taxation and Accumulation in a Life Cycle Growth Model', *American Economic Review*, 71 (4), September, 533-44 226
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#### PART IV PUBLIC GOODS

14. Paul A. Samuelson (1954), 'The Pure Theory of Public Expenditure', *Review of Economics and Statistics*, XXXVI (4), November, 387-89 257
15. Leif Johansen (1963), 'Some Notes on the Lindahl Theory of Determination of Public Expenditures', *International Economic Review*, 4 (3), September, 346-58 260
16. T. Nicolaus Tideman and Gordon Tullock (1976), 'A New and Superior Process for Making Social Choices', *Journal of Political Economy*, 84 (6), December 1145-59 273
17. A.B. Atkinson and N.H. Stern (1974), 'Pigou, Taxation and Public Goods', *Review of Economic Studies*, XLI (1), 119-28 288
18. Kenneth J. Arrow (1971), 'A Utilitarian Approach to the Concept of Equality in Public Expenditures', *Quarterly Journal of Economics*, LXXXV (3), August, 409-15 298

#### PART V LOCAL PUBLIC SPENDING

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22. Peter Mieszkowski (1972), 'The Property Tax: An Excise Tax or a Profits Tax?', *Journal of Public Economics*, 1 (1), April, 73-96 359

# **Part I**

## **Taxation and the Household**





# The Effect of Taxation on Labor Supply: Evaluating the Gary Negative Income Tax Experiment

Gary Burtless

*HEW*

Jerry A. Hausman

*Massachusetts Institute of Technology*

A model of labor supply is formulated which takes explicit account of nonlinearities in the budget set which arise because the net, after-tax wage depends on hours worked. These nonlinearities may lead to a convex budget set due to the effect of progressive marginal tax rates, or they may lead to a nonconvex budget set due to the effect of government transfer programs such as AFDC or a negative income tax. The nonlinearities affect both the marginal wage and the "virtual" nonlabor income which the individual faces. The model is estimated on a sample of prime-age males from the Gary negative income tax experiment.

The economic theory of consumer choice derives consumer demands under the assumption of a constant price which is independent of quantity demanded by the consumer. Empirical estimation of consumer-demand functions then depends on a functional relationship between the price of a commodity and the amount of the quantity which is consumed. Many actual situations do not conform to these classical assumptions. Totally within the private sector, nonlinear prices may arise in industries with substantial fixed costs. Here average price and marginal price are not equal so the choice of the "correct" price to put in the demand function is not straightforward. Electricity prices are the most important example of this situation. The existence of government income tax and income

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