A STUDY OF THE VOLUNTARY EXCHANGE OR PRICE THEORY OF PUBLIC FINANCE

By

DONALD RAY ESCARRAZ

Bachelor of Science
University of Tampa
Tampa, Florida
1960

Master of Business Administration
University of Wisconsin
Madison, Wisconsin
1961

Submitted to the Faculty of the Graduate School of
the Oklahoma State University
in partial fulfillment of the requirements
for the degree of
DOCTOR OF PHILOSOPHY
August, 1964

A STUDY OF THE VOLUNTARY EXCHANGE OR

PRICE THEORY OF PUBLIC FINANCE

Thesis Approved:

Thesis Adviser

Dean of the Graduate School

PREFACE

The voluntary exchange or price theory of public finance has a history which is as long as the history of the price theory of private goods, if the number of years is the basis for the length of history. However, the price theory of public goods has not achieved the level of acceptability which the price theory of private goods has achieved.

The acceptance of the price theory of public finance by economists in the future will depend, to a large extent, upon its application to real world situations. However, the extent to which it is likely to be applied by economists in the future will probably depend upon the extent to which certain problems and criticisms of the theory are understood.

This dissertation represents an attempt to evaluate the problems and criticisms of the price theory of public finance. All of the specific problems and criticisms could not be treated comprehensively in this paper but I believe that the ones which are most likely to act as barriers to the future application of the theory have been treated. The conclusions derived from the analysis of problems and criticisms do not provide a basis for discussing the specific future applications of the theory. However, the conclusions from this type of analysis do provide a basis for making some general statements about broad areas of future application of the theory.

Despite this recognition of the importance of future applications of the theory, the primary theme of the dissertation is the analysis of

the problems and criticisms of the price theory of public finance. I believe that once these problems and criticisms are more fully understood, specific applications of the theory will more or less naturally follow. The full scope of possible problems cannot be known until they arise from attempts to make specific applications of the theory. However, the motivation to even attempt to apply the theory will not exist until the general criticisms of the theory have been thoroughly analyzed and understood.

My indebtedness is acknowledged to Dr. Ansel M. Sharp who started me into the study of the price theory of public finance and who as my dissertation adviser guided me away from many of the side issues into which I would have otherwise undoubtedly strayed. The cooperation and help of Dr. Julian H. Bradsher in the editing of early drafts of the entire dissertation and of Dr. Richard H. Leftwich in evaluating some of the models developed in Chapters IV and V also deserves special acknowledgement. The editing of the final rough draft by Mrs. Ansel Sharp gave me greater confidence in the finished dissertation and is, therefore, acknowledged. Acknowledgement is also made of the cooperation of Dean Helmer E. Sorenson and Dr. Wilton T. Anderson who, as members of my committee from outside the Department of Economics, kept their doors open to me and who promptly cooperated with Dr. Sharp, Dr. Bradsher and me.

I also wish to acknowledge the work and loyalty of my family. Barbara, my wife, typed the many early drafts of the dissertation despite the fact that she was expecting our third child in May, 1964. Her

work of typing, however, could not have been accomplished without the cooperation of our first two children, Pamela and Paul.

Last, but not least, I wish to acknowledge the work of Mrs. Karen Konstas in typing the final draft of the dissertation. She took over the job of doing the final typing with a very limited time in which to complete the typing of material which was not familiar to her.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

CHAPTER I

INTRODUCTION

The voluntary exchange or price theory of public finance had its origin in the benefit approach to taxation but it never has had the widespread acceptance enjoyed by the benefit approach in the eighteenth and nineteenth centuries. The causes of this lack of acceptance of the voluntary exchange or price theory of public finance is the primary theme of this dissertation. More specificially, an attempt is made to show that the criticisms of the theory are not a sufficient reason to completely reject the theory. In the process of analyzing the major criticisms of the price theory of public finance, suggested approaches to the theory and to the application of the theory to the political process are made.

There are many aspects to the voluntary exchange approach to public finance, but its essence can be understood by simply considering it to be the application of the whole body of price theory to the problem of the supply of goods and services by the government. This view of the theory of public finance requires that the revenues of the government (taxes) be considered together with the expenditures of the government. The expenditures of government must be considered as costs of producing goods and services. The government is, thus, considered to be a producer or firm in the economy, similar to private firms. Economists have not generally accepted this concept of the government. In fact, economists have often

discussed the expenditure activities of the government in terms of the government being a consumer. The concept of the government as a consumer may have been an outgrowth of Adam Smith's concept that some of the expenditures of the sovereign are for unproductive labor. The unproductive labor concept has dropped out of economic literature but not the concept that the government consumes goods and services when it makes expenditures. The nonacceptance of the concept of the government as a producer enters the discussion throughout this dissertation.

The most important theoretical concepts which must be accepted in order to accept the price theory of public finance are related to the revealing of preferences for public goods. The acceptance of the price theory of public finance implies the acceptance of the concept that public goods do provide satisfaction to the individual and that the individual associates the satisfaction with the quantity of the public goods available to him. It is also implied that the individual will reveal his preferences for public goods if given the opportunity. The nonacceptance of these concepts is discussed in the first part of Chapter IV.

Richard A. Musgrave has placed importance on the determination of a single best solution in the allocation of resources when public goods are involved. The question of a single best solution when public goods are involved is treated in the last part of Chapter IV and in Chapter V. The latter chapter is a suggested approach to the price theory of public finance. A model is developed which attempts to show a single best solution analogous to the Pareto optimum.

The acceptance of the price theory of public finance does require that taxes be viewed as a price paid for goods and services. The taxpayer

is a taxpayer-buyer. If the political organization is taken into consideration, the taxpayer can be considered to be a voter-buyer, since he indicates the quantity of goods and services he desires through his vote rather than through the taxes paid. Taxes are the prices paid for the goods and services actually supplied, but the determination of what quantities of goods and services should be supplied is based on the taxpayers' voting in the political process. Therefore, the determination of the individual's taxes is considered to be one of allocating the value or costs of the goods and services. Economists have not generally accepted the concept that taxes are a price or an allocation of value or costs. In fact, taxes are often considered to be little more than a form of coercive activity of government which is inherent in the nature of the state. The nonacceptance of the concept that taxes are a price paid for goods and services is discussed in Chapter VI.

The acceptance of the taxpayer as a voter-buyer may also be implied in the acceptance of the price theory of public finance. In any case, the concept of the voter-buyer does imply the existence of a particular type of political mechanism. The voter-buyer must not only want to reveal his preferences for public goods, he must have a means by which to do so. Therefore, the political mechanism cannot be ignored by an economist accepting the price theory of public finance. The effect which the political mechanism has upon the degree of coercion that exists in taxation is discussed in the last part of Chapter VI. Chapter VII represents a suggested approach to the application of the model suggested in Chapter V to the problem of the role of government in the production of public goods.

The implications of four policy rules of government which determine the role of government in the production of goods are considered.

The summary and conclusions of the dissertation are presented in Chapter VIII. An attempt is made to bring together all of the more or less independent conclusions derived from the analysis of various criticisms and problems of the price theory approach to public finance in a manner which will indicate the direction future work on the theory will have to take if the theory is to gain the acceptance of other economists. Special attention is also given to the applicability and limitations of the theory to three specific areas of study in public finance. The three areas of study considered are: (1) as an explanation of the real world, (2) as a framework for discussing theoretical concepts of public finance in general, and (3) as a framework for policy proposals. The choice of the three areas of application to be considered were determined by the analysis of the criticisms of the theory. Other areas of application may be of equal importance but the framework of the analysis which precedes the conclusions would have to be expanded in order to adequately discuss the application of the theory to these other areas of public finance.

Before entering into the problem of acceptance or nonacceptance of the price theory of public finance, it is necessary to establish what the acceptance of theory has implied to economists in the past. Therefore, Chapters II and III review some of the specific formulations of the voluntary exchange or price theory of public finance which have developed in the history of thought in public finance. Chapter II is a presentation of the nongraphical models of the theory. These nongraphical models indicate that the early formulations of the theory emphasized particular

aspects of price theory analysis. The graphical models of the theory presented in Chapter III provide a broader application of price theory analysis to public finance and more clearly point out the contemporary criticisms of the theory.

CHAPTER II

THE DEVELOPMENT OF THE VOLUNTARY EXCHANGE OR PRICE THEORY OF PUBLIC FINANCE: NONGRAPHICAL MODELS

There are three basic economic questions which are to be answered once the government is accepted as a producer of goods and services: (1) which goods and services shall be produced by the government; (2) what quantity of these goods and services shall be produced; and (3) what tax (price) shall be charged for the goods and services which are produced?

The government has not generally been accepted as a producer of goods and services in the study of public finance. The usual approach to the study of public finance is to limit the use of economic analysis and economic criteria to the problems of taxation, since taxation affects the individual's ability to purchase private goods. Thus, taxation has been the center of emphasis in the study of public finance. However, in contemporary public finance, some attention has also been given to the fiscal activities of government in relation to the effects upon aggregate employment and national income.[1] In any case, the expenditure activities of

---

[1] A. C. Pigou defines public finance so that it does not include what and how much to produce but the definition does include the determination of how much to charge for government goods and services. He also states that since the turn of the twentieth century public finance has been considered to include the study of public expenditures insofar as they may affect employment. A Study in Public Finance (London, 1949), p. 24.

government are considered as one problem and taxes which pay for these expenditures are considered as another problem.

The ability to pay theory of taxation which developed in the classical school of economic thought is consistent with the generally accepted approach to public finance. The government may or may not be accepted as a producer of goods and services. Also, the expenditure activities of government may or may not be considered to benefit individuals.[2] In any case, the determination of government expenditure activities is considered independently from the determination of taxes.

The early ability to pay approaches related taxes to income. In the classical school of thought, the ability to pay theory became a theory based on equal sacrifice of taxpayers. The meaning of equal sacrifice, however, varied from economist to economist. Three distinct types of equal sacrifice which developed were equal absolute sacrifice, equal proportional sacrifice and equal marginal sacrifice.[3] The latter became knows as the least aggregate sacrifice approach. Each represents an attempt to apply economic criteria to the problem of taxation so as to provide the government with an objective basis for determining taxes. Despite these attempts to use an economic criterion based on equal sacrifice to the problem of taxation, the ability to pay economists did not reach agreement as to the

---

[2]Ursula K. Hicks accepts the government as a producer of economic goods which provide satisfaction to the individual. However, she still limits the use of economic analysis and economic criteria to the question of taxation because the determination of what and how much to produce is a part of the political process. Public Finance (New York, 1947), p. 11.

[3]Richard A. Musgrave, The Theory of Public Finance (New York, 1959), pp. 95-96.

tax rate implied by the ability to pay principle of taxation. It has now been shown that the shape of the individual income utility function must be known in order to determine the type of tax implied by the various equal sacrifice theories.[4]

Adam Smith used the phrase "in proportion to their respective abilities" in his first maxim of taxation.[5] Some economists have considered this as a basis for the ability to pay theory of taxation in the classical school of economic thought.[6] However, Book V of The Wealth of Nations constitutes an application of the basic principles of the benefit theory of taxation rather than the ability to pay theory. In fact, Book V in many respects constitutes a broader application of the benefit theory than that applied by many later followers of the theory since Smith also considered what the government should supply.[7]

The benefit theory of taxation as it developed in the classical school of economic thought was primarily concerned with the question of how much should be charged for the goods and services produced by the government. The government was not always considered as a producer of economic goods by these economists but they did accept the idea that government expenditures provide benefits to individuals. Accordingly, the individual should pay taxes according to the benefits received. Whether the theory implied

---

[4]Ibid., p. 98.

[5]Adam Smith, The Wealth of Nations, ed. Edwin Cannan (New York, 1937), p. 777.

[6]Musgrave, p. 66.

[7]Smith, pp. 689-712.

progressive, proportional or regressive taxes has not been agreed upon. However, it appears that the majority of the followers of the benefit theory have accepted proportional tax rates (i.e., most of them have assumed that benefits received by the individual are proportional to income).

The insurance-premium theory of taxation which also developed in the classical school of economic thought was merely a special form of the benefit theory of taxation.[8] It developed in an atmosphere where the emphasis in political thought was on the protective role of government.[9] The political criterion of protection of the individual was accepted as the basis for determining what activities the government should undertake. The taxes to pay for these activities were considered to be analogous to the payment of an insurance premium since the benefits received from the activities were analogous to the benefits received from insurance (i.e., protection).

The voluntary exchange approach to public finance did not develop into a distinct approach until the latter part of the nineteenth century when economists of continental Europe expanded the benefit theory to other problems. The approach represents an extension of the benefit theory to the

---

[8]Edwin R. A. Seligman, Studies in Public Finance (New York, 1925), pp. 182-190.

[9]Although Jeremy Bentham is well known for his concept that the government should provide the greatest good for the greatest number, he limited the function of government to the protection of the individual from pain. The greatest good for the greatest number was believed to follow if the government did limit its activities to those that provided the individual with protection from pain. See Jeremy Bentham, Benthamiana, ed. John Hill Burton (London, 1843) and Jeremy Bentham, The Theory of Legislation, ed. C. K. Ogden (New York, 1931).

questions of what and how much should be produced by the government. In the approach, government activity was not to be limited to the political criterion of protection or to any other political criteria. The expenditure activities of government were to follow or to be explained in terms of economic criteria with economic analysis. Basic to the voluntary exchange approach is the concept that the determination of government expenditures and taxes should be made simultaneously. Expenditures and revenues of the government are part of one process just as they are to a private business firm.

The early writers in the development of the voluntary exchange approach realized that they could not ignore the political process. Even if economic criteria was to be applied to the production of goods and services produced by the government, the productive activity was directly determined in the political process. However, the fact that the political process was discussed in considerable detail should not distract from the main point that each of these early writers was attempting to apply price theory concepts to the problem of the supply of public goods. Each of the nongraphical models of the voluntary exchange approach to public finance emphasizes different aspects of price theory analysis. However, they all consider the government as a producer of economic goods and they all attempt to answer all three economic questions about the supply of these goods in terms of price theory concepts.

Maffeo Pantaleoni

One of the earliest complete formulations of a voluntary exchange approach to public finance was made by an Italian economist, Maffeo

Pantaleoni, in 1883.[10] Pantaleoni attempted to develop an explanation of how parliament should determine public expenditures so that they would be consistent with the exchange theories of W. S. Jevons and Leon Walras. Parliament was accepted as the sole determiner of the expenditures of the government but Pantaleoni stated as a hypothesis that parliament should base its judgments on economic and political facts. By doing this, parliament could answer the basic economic questions of what to produce, how much to produce and how to distribute the costs of the productive activities of the government with the least effects upon the normal operations of the market system of private production.

Pantaleoni takes an aggregate approach in that he considers that parliament must compare the total expenditure of government with the total revenue of government. Parliament should compare the sacrifice caused in the private sector by government's raising of revenues with the satisfactions created in the private sector when expenditures are made by the government. Each expenditure was not to be compared with a corresponding revenue. Each expenditure was to be judged by its effect upon the total expenditure. Likewise, each revenue source was to be judged by its effect upon the total revenue collections measured as the sacrifice made by the private sector. Thus, Pantaleoni's concept involved the marginal utility of expenditure made by the government or public sector of the economy which was to be equated with the marginal utility of expenditure of the

---

[10] Richard A. Musgrave and Alan T. Peacock, Classics in the Theory of Public Finance (London, 1958), pp. 16-27, for an English translation of part of Pantaleoni's book, Scritti varii di Economia.

private sector of the economy.[11] Particular expenditures and particular taxes in the budget of the government can then be determined by considering their affect on the established equilibrium.[12]

The marginal utility of expenditure in the private sector of the economy set the equilibrium condition which the total budget of the government must satisfy. The problem of parliament was to discover the equilibrium condition and then to determine the particular expenditures and particular revenues which will satisfy the equilibrium condition according to the economic theory of exchange.

The separation of the private sector of the economy and the public sector of the economy which developed in the classical and marginal schools of economics was maintained by Pantaleoni but the two sectors were linked by an economic equilibrium condition.[13] To Pantaleoni, the equilibrium of the private sector was assured by the existence of the market mechanism but the equilibrium of the public sector was merely the goal for which parliament should strive. However, Pantaleoni believed that the average intelligence of parliament could achieve the goal he set for parliament and that if nothing else can be said at least the average intelligence of parliament is the most likely means of accomplishing the goal.

---

[11] Equilibrium condition: MUE public goods = MUE private goods. Pantaleoni did not put the equilibrium condition in mathematical form.

[12] Equilibrium condition: $\frac{MU_1}{Tax_1} = \frac{MU_2}{Tax_2} = \ldots = \frac{MU_n}{Tax_n} = MUE$ public goods.

[13] Further consideration will be given to the problems of these equilibrium concepts in Chapter III.

Ugo Mazzola

Another Italian, Ugo Mazzola in 1890,[14] attempted to give a theoretical explanation of the equilibrium condition in the supply of public goods and services. The political process by which equilibrium could be accomplished plays no part in the theoretical model developed by Mazzola. In other words, Mazzola attempted to establish precisely the equilibrium conditions which exist for public goods and which the government must attempt to fulfill if it is to avoid repercussions created when disequilibrium exists with respect to the supply of public goods.

Mazzola's model was limited to public goods which had the characteristics of indivisibility of consumption and/or of joint satisfaction. All other goods and services supplied by the government could be handled through the market mechanism by charging fees for these goods and services. Goods and services which have the characteristics of indivisibility of consumption and/or of joint satisfaction were considered to be public goods which could not be supplied through the market mechanism because of their unique characteristics. The entire model, however, depends upon two other assumptions: (1) These public goods give no satisfaction in and of themselves (i.e., the satisfaction associated with the public good is derived through the consumption of all other goods and services); (2) All other goods and services are supplied through the market mechanism and individuals attempt to maximize their satisfaction through the consumption of

---

[14] Musgrave and Peacock, pp. 37-47 for an English translation of one chapter of Mazzola's book, I dati scientici delle finanza publica.

goods and services acquired in the market place. The first of these basic assumptions is of great importance because it expresses the concept of the complementary nature of public goods. However, Mazzola's particular formulation of this complementary nature of public goods is a difficult one to justify since it assumes that public goods are completely complementary and yield no satisfaction except in relation to the consumption of each nonpublic good.

Mazzola assumed that since the public goods were complementary to the consumption of all other goods, the marginal utility (final degree of utility) of the public goods was a part of marginal utility considered in the attempt to maximize satisfaction in the consumption of all other nonpublic goods. The individual in attempting to maximize his satisfaction of a nonpublic good, therefore, takes into consideration the fact that if he buys x quantity of the nonpublic good, he wants x_1 quantity of public goods supplied. The individual also simultaneously takes into consideration the fact that the supply of x_1 quantity of public good will cost T_1 amount in taxes. The amount of taxes T_1, however, is measured in terms of the marginal utility of the nonpublic good which will have to be given up to obtain x_1 quantity of public goods. The amount of marginal utility from the consumption of nonpublic goods which the individual is willing to give up is equal to the marginal utility of x_1 quantity of public goods.[15]

---

[15]This implies that the marginal utility of a nonpublic good has two equal parts. One part associated with its consumption and one with the consumption of the public good.

This is in accordance with W. S. Jevons' concept,[16] that the maximization of satisfaction, where the problem is the distribution of a commodity in different uses, requires the equalization of marginal utilities of the good in its various uses.[17] Therefore, the marginal utility of the public good is equated with the price (tax) of the public good, at the time the individual makes his decision to maximize his satisfaction by purchasing a nonpublic good. No consumer surplus can exist because the marginal utility of the public good is determined by the marginal utility of the quantity of the nonpublic good actually purchased. The public good has no marginal utility independent of the purchase of the nonpublic good.

Disequilibrium will exist whenever the political process does not make available, to the given individual, x_1 quantity of the public good. The supply of a different quantity of public goods does not change the marginal utility of the public good to the individual since this is determined by his consumption of nonpublic goods. Thus, disequilibrium implies that the given individual must pay for the supply of a quantity of the public good which maximizes someone else's satisfaction but not his own. To Mazzola, this will occur when the political process favors one class of society over another. Implicit in this conclusion is the assumption that each individual in a particular class of society would

---

[16] W. Stanley Jevons, The Theory of Political Economy (4th ed., London, 1924), pp. 58-61.

[17] Mazzola has implicitly assumed that, since the public good and nonpublic good have one utility function for the two goods, they can be treated as one good with different uses.

want the same quantity of the public good[18] and that each class of society would want a different quantity of public goods. However, if the latter is true then equilibrium cannot exist for all of society and the problem of the political mechanism becomes one of deciding which class of society should be permitted to maximize its satisfaction. However, the important thing to Mazzola was that he believed he had discovered the general rule for the supply of public goods in the complementary nature of public goods.

Emil Sax

Emil Sax, a German economist in 1924, presented another complete theoretical model of the public economy which rejected Mazzola's basic assumption of the complementary nature of public goods as well as many of the other earlier formulations of the voluntary exchange approach.[19] Sax rejected the "political school" (i.e., Pantaleoni) because they centered on the determination of aggregate revenues and expenditures of the government by considering the political process. To Sax, the political process was important and can cause equilibrium or disequilibrium but the political process cannot affect the equilibrium conditions which exist in the economy. Sax also rejected the "individualistic school" (i.e.,

---

[18]The assumption is that all individuals of a particular class of society have the same utility function for all nonpublic goods, since this is the only way in which they could experience the same marginal utility for the public good.

[19]Richard A. Musgrave and Alan T. Peacock, Classics in the Theory of Public Finance (London, 1958), pp. 177-189 for an English translation of part of Sax's essay, Die Wertungstheorie der Steuer.

Wicksell and Lindahl) because they centered on the measurement of the individual's subjective evaluation of each expenditure of government and its source of revenue.[20] To Sax, the individual subjective evaluation was important and was a part of the necessary conditions for equilibrium but the individual evaluation did not have to be precisely met by the government to maintain the equilibrium of the system.

Sax's theory followed the political school in establishing the aggregate level of expenditures and revenues separate from the individual items of expenditure and revenue. The emphasis, however, was on the effects of the revenue side of the budget rather than the expenditure side of the budget. The society as a collective association was to determine the aggregate amount of possible private consumption which they were willing to give up to have collective goods and services supplied. This would approximate the total cost of government goods and services by establishing the total revenue to be collected through taxation. The particular types of expenditures to be made by the government were to be established by society as a collective association through the process of setting up a list of public goods and services ranked according to the intensity of need to the society as a whole. Equilibrium of the aggregate expenditures and revenues of the government, therefore, depends upon the political mechanism properly listing the goods and services and supplying them in the order of the intensity of society's needs and upon the political mechanism properly determining the aggregate amount of private consumption which the collective association is willing to give up. Total

---

[20]See page 27 below for an analysis of the Lindahl-Wicksell approach.

expenditures did not have to be compared to the total tax revenues for equilibrium to exist because the government has other sources of revenue, such as borrowing. The total expenditures of government must be compared with total revenues and not just tax revenues for equilibrium to exist.

On the revenue side of the budget, Sax believed that, once the aggregate amount of taxes to be collected was determined, the individual tax shares must be determined by the political mechanism by following the economic principle of equivalence. The principle of equivalence provides the connection between the relative tax share and the aggregate amount of taxes to be collected. For equilibrium to exist, the total tax collected must approximate the sum of the individual evaluations of all individuals in society. In other words, the collective evaluation of the amount of private consumption which society is willing to give up must be based on the same factors which affect the individual's subjective evaluation of the value of the public goods and services to be supplied by the government. The factors which affect the individual subjective evaluation are the individual wealth that exists in the society and the divergence from the average intensity of needs caused by such factors as the amount of population which are too old to work, too young to work, etc. These factors, therefore, form the criteria for the principle of equivalence in taxation. The individual tax share must be based on the individual's wealth which indicates the average intensity of need for public goods and on the variance from the average intensity of need caused by special factors. The assumption is made that the intensity of need varies inversely in proportion to wealth.

These criteria establish, the average intensity of need for each level of wealth holders, and the other factors need only be considered as they are most likely to affect the average. Other individual differences from the average do not have to be considered because equilibrium is maintained just so long as the individual subjective evaluations are reasonably approximated. In other words, the equilibrium of the revenue side of the budget requires only that the total tax bill approximate the sum of the individual's subjective evaluation of what private consumption they are willing to give up to have public goods supplied, and that the individual tax share approximate the individual subjective evaluation of the public goods which are supplied. Equilibrium is not disturbed as long as the approximations are reasonably close and this can be accomplished by considering the factors considered under the principle of equivalence in taxation.

Antonio DeViti DeMarco

In 1936, Antonio DeViti DeMarco presented another formulation of the voluntary exchange approach to public finance.[21] It was not a theoretical presentation like those of Mazzola or Sax but it did contain an application of price theory to all of public finance and this is the essence of the voluntary exchange approach. DeMarco's presentation is more of an explanation and history of all of the specific concepts of of public finance. Therefore, it deals primarily with the tax side but

---

[21] Antonio DeViti DeMarco, The First Principles of Public Finance, tr. Edith Pavlo Marget (London, 1950).

DeMarco carefully states at the beginning that public finance is not just the study of taxation, politics or law. "The discipline which gives the really necessary and fundamental explanation of the phenomena of public finance is, however, economics."[22] No attempt is made to build an economic model or establish equilibrium conditions but the explanation of every concept in public finance is in terms of price or value theory. In other words, DeMarco does not build a model but rather he consistently applies the concepts and models of value theory to the concepts and problems of public finance.

DeMarco's definition of public finance or public economics gives some indication of the extent to which he follows the tradition of earlier Italian economists who advanced the voluntary exchange approach and of the extent to which he added to their approach by extending all of the concepts of value theory to public finance.

> It [public economics] investigates the conditions to which the productive activity of the State must be subjected in order that the choice of the public services which are to be produced, the determination of their respective amounts, the distribution of the costs among the consumers, etc., may take place according to the principles of theory of value--that is, with the least possible waste of private wealth, in order to attain the greatest satisfaction of collective needs.[23]

This definition of public economics contains all of the elements of the voluntary exchange or price theory of public finance. All three of the economic problems related to public finance are specifically stated in relation to the principles of the theory of value (price theory). The

---

[22] Ibid., p. 34.

[23] Ibid., p. 36.

function and goal of public economics is to investigate the means of attaining the greatest satisfaction of collective needs with the least possible waste of private wealth. The relationship of this function and goal to price theory is obvious. Also, the definition considers the state as a producer of goods and services and the taxpayer as a consumer. The state is a producer of goods and services not just when the goods resemble goods which can be supplied through the market mechanism but whenever the state satisfies collective needs.

Public goods and services are classified as either "Special Public Services" or "General Public Services." A public good is in the former classification if it meets both of the following criteria: (1) The supply of the service must be technically divisible into salable units, (2) The service must be constantly demanded by individuals.[24] Public goods and services fall into the second classification, if they do not meet both of the foregoing criteria.

Special public services require fee type pricing which makes their supply somewhat analogous to private goods and services. However, since the government can act monopolistically in the supply of public goods and services, a rule of average cost pricing must be adopted by the government. General public services, on the other hand, are more unique in that they are generally supplied by the government and require a tax type of

---

[24]DeMarco believes that some services such as public safety are an example of a service which is not constantly demanded by individuals. The demand only recurs when public safety is actually impaired. Danger is always present but the individual demand for protection is dormant until the danger is recognized by the fact that the service has not been supplied and someone's safety has not been protected.

pricing. With general public services, individual consumption is an unknown quantity. However, this does not rule out the use of value theory in answering the economic questions about the supply of general public services. Consumption can be assumed to be proportional to income. It is an assumption but DeMarco contends that it has both an empirical and a logical foundation.

Based on his assumption about the relationship between consumption and income, DeMarco develops a concept of individual net income. The concept is analogous to the value added concept of gross national product in that individual net incomes can be summed to arrive at a measure of national income. No income is to be counted twice and no income is to be deducted which is not counted as income of some other individual. Developed, in this manner, individual net income is considered an indication of consumption and, therefore, the measure of individual taxable income. If the sum of the individual taxable incomes is greater than national income, double taxation exists. If the sum of the individual taxable incomes is less than national income, price discrimination exists in the supply of public goods and services.

Price discrimination can exist because of the monopolistic nature of the government in the supply of goods and services. However, DeMarco also recognizes that the single tax-price is based upon the concepts of pure competition and that care must be used in its application to public goods and services. Multiple pricing does not necessarily mean price discrimination exists, according to DeMarco. Price discrimination only occurs with general public services when an individual net income is not taxed on a proportional basis with all other individual net incomes. Multiple

pricing, therefore, exists for general public services in that different individuals pay different prices but price discrimination only occurs when an individual taxable income receives special treatment.[25] Multiple pricing proportionate to individual taxable income is based on consumption and thereby follows the concepts of value theory. Multiple pricing based on special treatment of particular individual taxable incomes is the result of the monopolistic nature of the government in the supply of goods and services and is a case of price discrimination. Likewise, in the supply of special public services, multiple pricing may or may not be evidence of price discrimination, depending upon whether or not it is a result of the monopolistic nature of the government in the supply of these goods. When multiple pricing exists because of differential costs, price discrimination does not exist. In fact, in this case a single price would result in price discrimination. However, if multiple pricing exists in the supply of special public services, only as a result of the monopolistic nature of the government supply, the multiple pricing does result in price discrimination.

The concept of grouping similar special public services together and using a multiple pricing technique so that the total cost equals total revenue is based upon the monopolistic nature of the supply of public goods and, therefore, constitutes a form of price discrimination.[26] Using tax pricing for special public services or attempting to supply general

---

[25] DeMarco, The First Principles of Public Finance, pp. 114-115.

[26] Ibid., pp. 81-88.

public services by using a fee type pricing system also is based on the monopolistic nature of government and is a form of price discrimination. Also, the concept of using the total budget of the government which includes both special and general public services as a basis for the supply of public goods would result in price discrimination. However, the total budget of just general public services is to be used as a basis for the determination of what to produce, how much to produce, and how much to charge. Here individual consumption is assumed to be proportional to individual net income and the sum of all individual net incomes should equal national income.

Summary

The study of public finance has generally been centered upon the determination of taxes and the effects of taxes upon economic behavior in the private sector of the economy. Both the ability to pay theory of taxation and the benefit theory of taxation consider the taxing policies of government separately from the expenditure policies of government. However, the benefit theory does attempt to determine taxes based on the benefits that individuals do receive from the expenditure activities of government.

The voluntary exchange approach to public finance extends the application of economic analysis and economic criteria to the questions of what and how much the government should produce. The expenditures and revenues of government are considered as parts of a single process and not as two separate processes. The government is accepted as a producer of economic goods which provide satisfaction to individuals just as all

other economic goods provide satisfaction. However, the political process is also accepted as the process through which the government establishes its production policy.

Maffeo Pantaleoni, in 1883, was one of the first economists to extend economic analysis to the questions of which goods should be produced and what quantity of these goods should be produced. Pantaleoni's approach can be stated in terms of an equilibrium condition which is assumed to exist between public and private goods (MUE public goods = MUE private goods). The parliament's task is to see that the individual expenditures do not disturb the equilibrium condition (i.e., $\frac{MU_1}{Tax_1} = \frac{MU_2}{Tax_2} = \ldots = \frac{MU_n}{Tax_n} =$ MUE public goods).

Ugo Mazzola also attempted to present a price theory approach to the supply of public goods. It involved the concept that public goods are completely complementary with private goods and provide no satisfaction of their own. Therefore, the allocation of resources should be based on W. Stanley Jevons' concept of the maximization of satisfaction where the problem is the distribution of a commodity in different uses.

Emil Sax did not accept Mazzola's concept of the complementary nature of a public good. Sax's formulation resembled Pantaleoni's but stressed the concept that government only had to approximate the equilibrium conditions. This approximation could be achieved by following his equivalence principle of taxation. The first approximation of this tax principle would be taxes proportional to wealth.

Antonio DeViti DeMarco did not attempt to develop a theoretical model but applied price theory analysis in an explanation of the history of public finance. In the course of this application, DeMarco treated many of

the basic problems of public finance in terms of price theory analysis. He accepted the concept of a proportional income tax for all public goods supplied by taxation because he believed that consumption of these goods was proportional to income. This was not to give an approximation of equilibrium, as in Sax's theory, but was an assumption about the relationship between consumption (benefits) and income.

Each approach to the voluntary exchange theory of public finance emphasizes different aspects. However, all of the approaches have in common the basic concept that price theory analysis should explain which goods and what quantities should be supplied by the government at various prices. The nongraphical models, however, do not represent the clearest statement of the essential elements of the theory. Therefore, the next chapter will be devoted to the graphical presentations of the voluntary exchange or price theory of public finance and some of the problems and criticisms created by these presentations.

CHAPTER III

THE DEVELOPMENT OF THE VOLUNTARY EXCHANGE OR PRICE THEORY OF PUBLIC FINANCE: GRAPHICAL MODELS

The graphical models of the voluntary exchange or price theory of public finance represent an attempt to present the same basic concepts as the nongraphical models. The use of graphical analysis does not reduce the need for considering the political process and does not eliminate all of the problems of applying price theory concepts to the supply of public goods. However, the graphical models provide the clearest statement of the basic elements of the theory and make the nature of some of the problems of the theory more apparent than they were in the nongraphical models.

Erik Lindahl and Knut Wicksell

In 1919, Erik Lindahl, a Swedish economist,[1] presented a simple graphical model which attempted to establish the total expenditure on a public good and the relative tax shares of two classes of society.[2] Class A (the relatively well-to-do) are represented by legislators A and

---

[1] Richard A. Musgrave and Alan T. Peacock, Classics in the Theory of Public Finance (London, 1958), pp. 168-176 for an English translation of a chapter of Lindahl's book, Die Gerechtigkeit der Besteuerung.

[2] No attempt is made to apply the model to the determination of what goods should be supplied by the government.

class B (the relatively poor) are represented by legislators B. It is assumed that there is an even distribution of political power between the two groups. It is also assumed that all economically related public services are lumped together so that the total cost is the total cost of a group of services rather than a single service.

Figure 1 shows the relative share of the total cost of providing a given public good on the abscissa. Reading from left to right, is the relative share of A and reading from right to left is the relative share of B. Various levels of total cost (V through Z) are shown along the ordinate on the right. The curve AR indicates the total expenditure on the public service at various relative cost shares to which legislators A would agree. Logically A legislators are willing to have a greater total expenditure made, if class A of society can pay a smaller percent of the total cost. The curve BS indicates the total expenditure on the public service at various relative cost shares to which legislators B would agree. At X level of total expenditure, group A would agree only if group B would pay 65 percent of the total cost while group B would agree only if group A would pay 72 percent of the total cost.

The equilibrium solution is clearly at the intersection of the two curves (P). The total expenditure to be made on the group of public services is Y. A agrees to pay 60 percent of Y while B agrees to pay 40 percent of the total cost Y.

The fact that the Lindahl model emphasizes the political process in the determination of how much should be supplied and who should pay for the service in a manner consistent with the political principles laid down

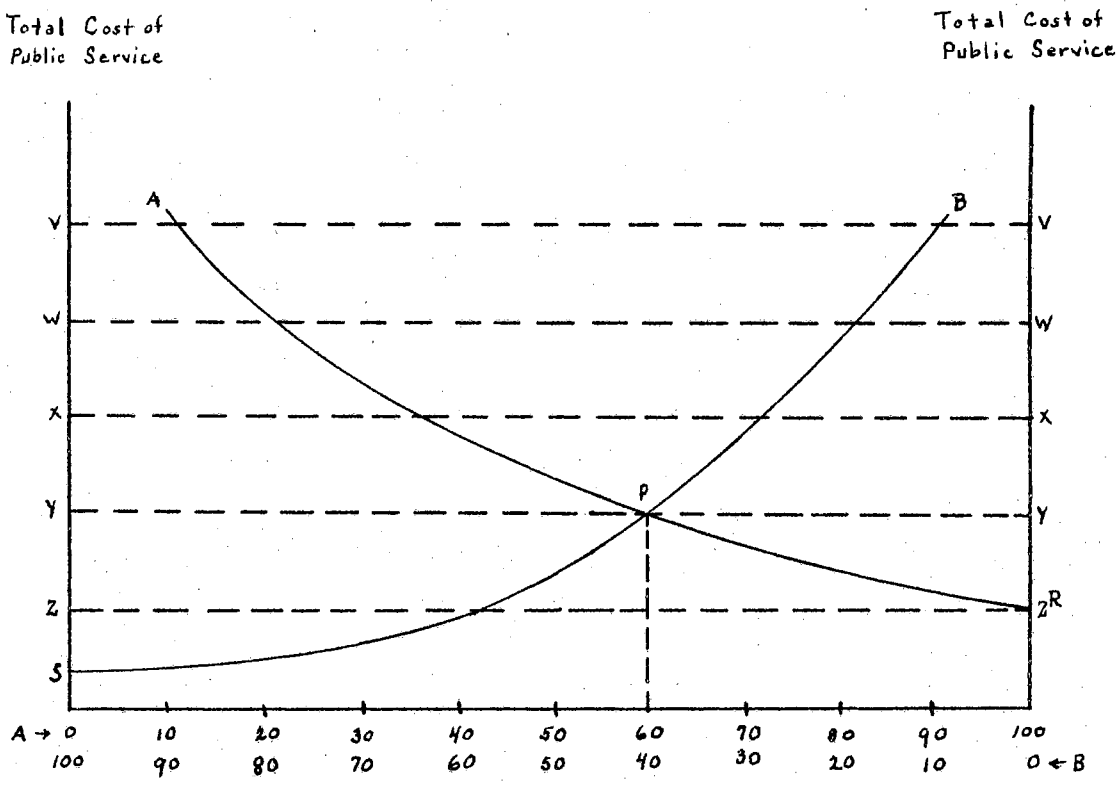


Figure 1. Lindahl Model

by Knut Wicksell has been recognized.[3] However, a presentation of the Lindahl model in terms of Wicksell's unanimity principle[4] may be useful before evaluating the criticisms of the Lindahl model.

In Figure 2, the Lindahl model is traced by the dashed curves AR and BS, with main bill A representing a total expenditure of V, amendment A', a total expenditure of W, etc. Reading the graph in terms of Wicksell's unanimity principle, the abscissa reading right to left measures the percent of group B who would vote for various expenditure bills with various tax plans. Tax plan "a" favors group B while tax plan "i" favors group A. These tax plans can be converted into the terminology of the Lindahl model with the following schedule.

Tax Plan	A	B
a	90% of total cost	10% of total cost
b	80% " " "	20% " " "
c	70% " " "	30% " " "
d	60% " " "	40% " " "
e	50% " " "	50% " " "
f	40% " " "	60% " " "
g	30% " " "	70% " " "
h	20% " " "	80% " " "
i	10% " " "	90% " " "

The curve DQ connecting all of the a' points indicates the percent of A legislators who would vote for the various expenditure proposals with tax plan "a" (i.e., class A of society to pay 90 percent of the total cost).

---

[3]Richard A. Musgrave, "The Voluntary Exchange Theory of Public Economy," Quarterly Journal of Economics, Volume 53 (February, 1939), p. 215, and Musgrave, The Theory of Public Finance (New York, 1959), p. 74.

[4]Musgrave and Peacock, pp. 72-118 for an English translation of Wicksell's original statement of the principle. Carl G. Uhr, Economic Doctrines of Knut Wicksell (Berkeley, 1960), pp. 164-180, or Ben B. Seligman, Main Currents in Modern Economics (New York, 1962), pp. 559-560, for an interpretation of Wicksell's principle.

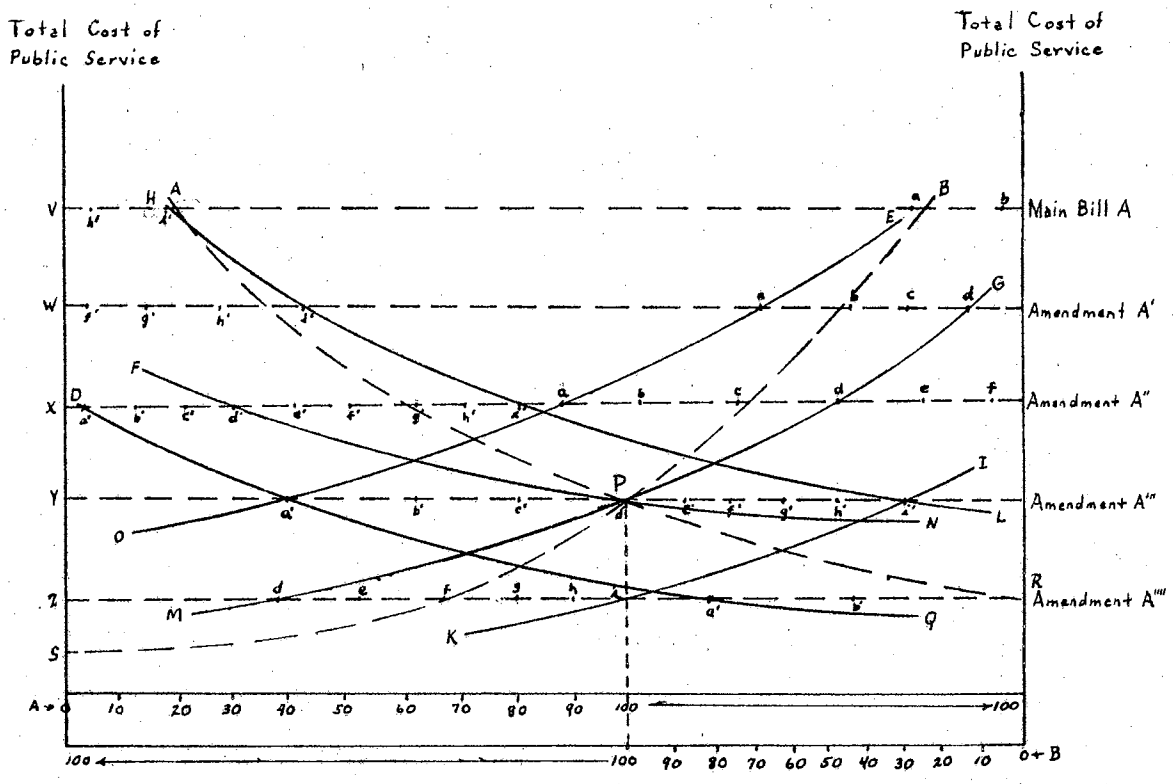


Figure 2. Wicksell Model

The curve OE connecting all of the a points indicates the percent of B legislators who would vote for the various expenditure proposals with tax plan "a" (i.e., class B of society to pay 10 percent of the total cost). The only proposal which can obtain perfect unanimity is Amendment A''' with tax plan "d." In terms of the Lindahl model it is the Y level of total cost with class A paying 60 percent of Y and class B paying 40 percent of Y. On Amendment A'' with tax plan "g," none of the B legislators and only 65 percent of the A legislators would vote for the proposal. On Amendment A'' with tax plan "c" only 15 percent of the A legislators and 75 percent of the B legislators would vote for the proposal.[5]

Both Wicksell and Lindahl, however, recognized the practical limitation that the legislature probably would never be restricted by a perfect unanimity rule. Therefore, Wicksell accepted the concept of approximate unanimity and Lindahl discussed the effects of dropping the assumption of equal political power. The result of either of these practical considerations may be that equilibrium can be achieved in an area around point P depending upon which bill and tax plan approximating Amendment A''' with tax plan "d" is voted on first or which group in society has an advantage in political power.

More specifically using just the Wicksell model, the equilibrium level of expenditure and tax plan can be seen to depend upon the level of unanimity required and the order in which the proposals are voted upon.

---

[5]With the Wicksell-Lindahl model, the question of what goods should be supplied by the government is also determined because only those goods which are capable of receiving perfect unanimity should be supplied.

Assuming 100 legislators in both group A and group B, and assuming that the majority rule is accepted as approximate unanimity, equilibrium can take place for Amendment A'''' with any tax plan, because all of the tax plans will get 100 percent of the vote of the B legislators and enough of the vote of the A legislators to make a majority vote. Tax plans "a" or "b" would also be accepted as an equilibrium proposal with Amendment A''. With Amendment A''', any of the tax plans "b," "c," "d," "e," "f," or "g" will be accepted under the majority rule concept of approximate unanimity. The exact combination of bill and tax plan to be accepted would depend entirely on which one was first presented for a vote.[6]

According to Lindahl, if unequal political power exists, the solution will lie on SPR of the Lindahl model in Figure 1. BPS is the total expenditure which the B legislators would desire at varying tax sharing plans and APR is the total expenditure which the A legislators would desire at varying tax sharing plans. PS is the segment of BPS which is capable of obtaining perfect unanimity and PR is the segment of APR which is capable of obtaining perfect unanimity. Therefore, with Lindahl's concept of unequal political power, which is in terms of one group's ability to force its desires upon the other group, the solution will lie on PS if B has the greater political power and PR if A has the greater political power. However, if unequal political power is accepted as being

---

[6]Wicksell suggests that, in the case of approximate unanimity, all proposals should be voted on and the one with the greatest total vote be accepted. This requirement would limit the equilibrium solutions to Amendment A''' with tax plan "d" and Amendment A'''' with any of the tax plans since these are the proposals which would receive a 100 percent yes vote.

any solution reached by compromise other than the optimum solution which can be reached with perfect unanimity, the equilibrium can be a large number of solutions around the point P in Figure 2. No matter what political conditions exist or which concept of political power is accepted, the combined Wicksell-Lindahl model would appear to be useful in explaining the results of the political process. Equilibrium will take place around point P in any case and all that would remain is to accurately evaluate the political process in order to determine the actual equilibrium which will take place.

In February, 1939, Richard A. Musgrave,[7] published an article with an interpretation of Lindahl's model but Musgrave's conclusions were the opposite of those arrived at in the foregoing interpretation of the Wicksell-Lindahl model.

> To summarize: as an interpretation of the actual expenditure process, the voluntary exchange theory was found unacceptable because of the unrealistic nature of the voluntary exchange assumption in general and of the competitive pricing assumption in particular. As a solution to the theory of tax justice it was found strictly dependent upon the premise of competitive pricing; the definition of the justice problem employed, moreover, appeared excessively narrow. As standards of reference for analysis and appraisal of actual revenue-expenditure policies, the voluntary exchange model and its corollary, the neutral revenue-expenditure process, were found unacceptable.[8]

---

[7] Musgrave, "The Voluntary Exchange Theory of Public Economy," pp. 213-237.

[8] Ibid., p. 231. The consideration of the voluntary exchange theory as a standard of reference for analysis and the meaning and importance of the neutral revenue-expenditure process is the primary concern of the dissertation. It is specifically considered in Chapters VI and VII.

Musgrave's rejection of the theory in general because of the unrealistic nature of the voluntary exchange assumption is based on the fact that "direct compulsion prevails in the legal enforcement of individual tax contributions, independently of the individual's willingness to share a part of the burden."[9] However, one answer to this criticism is that the situation in the private economy cannot be said to be very different. In the private economy, an individual is assumed to have a demand for any particular good which relates the quantities of the good which the individual would want to purchase to various prices. Once the individual has expressed his demand by making the purchase, laws of society, generally, protect the seller from the buyer's changing his mind. In the voluntary exchange model, the individual is assumed to have a similar type of demand for each type of public good. The individual, however, permits his representative in the legislature to interpret this demand schedule. Once the legislator has expressed this demand by accepting a particular level of expenditure and tax plan, the purchase has been made. The laws of society, as in the case of the private good, protect the seller from the buyer's changing his mind. Once the demand is expressed by purchase or by the legislators' voting favorably for the providing of a product or service with a particular tax plan, the transaction is completed and laws protect the parties of the sale from changes in the individual's subjective evaluation of the quantity he wants at the price agreed upon.

---

[9] Taxes as a form of coercion will be considered in more detail in Chapter VI.

The problem which Musgrave seems to have discussed under the heading of the compulsive nature of the political process is just the opposite of compulsion.[10] The problem lies in whether or not the fact that compulsion exists affects the individual's expressed demand. In the private economy it is assumed that it does not.[11] In the political process, it may be more questionable, but, in the opinion of this writer, Musgrave has not given a sufficient reason for the rejection of the theory in general.

Musgrave's rejection of the theory because of the competitive pricing assumption in particular is just a further statement of his rejection of the theory in general. Musgrave did not recognize the oneness of his two bases for the rejection of the theory. He did not consider that compulsion exists only after a demand is expressed and that this compulsion is not very dissimilar to compulsion that exists with a private good once demand has been expressed through a legal purchase of the good. The effects of bargaining power or political power which Musgrave considers are merely an analysis based on an assumption that the existence of compulsion, after a quantity at a price has been expressed, affects the quantity which would be expressed.

Musgrave's analysis, however, is primarily in terms of the individual's realizing that his expressed demand will affect the price. This analysis

---

[10]It is the opposite of compulsion in that it revolves around the individual being free to express his demand without compulsion and to even recontract if an equilibrium solution is not determined which is consistent with the demand expressed.

[11]There is little or no literature on the economic effects of a private firm giving an absolute guarantee of satisfaction or your money back.

is based on Lindahl's statement of the model (i.e., that one individual's demand curve is the other individual's supply curve). Part of the problem, however, seems to be that Musgrave switches his analysis to the individual from the political process.[12] In his analysis, the individual recognizes that his expressed demand is going to affect his cost and, therefore, he will not express his true demand.[13] However, if it is remembered that the voluntary exchange model takes place in a political setting, at least part of Musgrave's criticism can be dropped. The individual is not directly bargaining with another individual for the exchange of two goods. It is two groups of legislators attempting to obtain the quantity of a good, which the individuals, whom the legislator represents, would want at a price consistent with that quantity. The legislator does not have to obtain the lowest possible price for various quantities to satisfy the individuals he represents. All that the legislator must obtain is a quantity and price relationship which the individuals that he represents consider to be satisfactory. Therefore, it cannot be assumed that the demand curves will be affected by the fact that the price is affected by the demand expressed by the legislator. Price cannot be removed from its relationship to quantity just because the good under

---

[12]This criticism of Musgrave's analysis is of particular importance when Musgrave considers the effects of large numbers. If the model is restricted to the political mechanism, the problem of large numbers does not exist in the form stated by Musgrave. The voting on specific expenditure-tax proposals is done by a limited number of legislators representing taxpayer consumers and not by the taxpayer consumers themselves. The problem of the legislator representing a large number of taxpayer consumers is a different problem and is treated in Chapter VII.

[13]The theoretical aspects of the problem of unrevealed preferences are discussed in detail in Chapter IV.

consideration is a public good. If the legislator is attempting to maximize the satisfaction of those individuals whom he represents, he must express a demand which relates quantity and price and it must be a quantity and price relationship indicated by the demand curve in the Lindahl model because this curve by definition is the schedule of quantities which the individuals would want at various prices. To express any other quantity-price relationship would put the legislator in the position of not truly representing the individuals that put him in office. This situation may well exist but this is not the question. In other words, Musgrave's criticism although stated in terms of a theoretical criticism is more akin to a practical criticism that politicians do not perfectly represent those who put them in office.[14]

Musgrave, in 1959, reconsidered his rejection of the voluntary exchange model and came up with the same conclusions.[15] This time, however, his analysis was more specifically in terms of a Cournot duopoly situation. This analysis can be rejected simply because each individual is not a producer trying to obtain a favorable price for the goods he has to sell. The comments about Musgrave's earlier rejection of the theory still apply but it may be good to consider further what the Cournot duopoly analysis would imply. An analogy can be made for this purpose. In the private economy, it would have to be assumed that a stockholder of a large company

---

[14]The theoretical issue involved in the problem is whether or not individuals do consider public goods in terms of a quantity and price relationship which maximizes satisfaction and which they expect their legislators to abide by. This issue is taken up in Chapter IV.

[15]Musgrave, The Theory of Public Finance, pp. 78-80.

tries to get management to set its price so that the stockholder acting as a consumer can purchase a larger quantity of the good produced by the firm. The stockholder and consumer may be one person but this does not mean that as a stockholder, the individual tries to bargain with other individuals (stockholders) just because by so doing he can affect the price he has to pay for the good as a consumer. In the public economy, the individual is a voter and a consumer. This fact, however, does not mean that the individual as a voter will bargain with other voters to affect the price he has to pay for the good as a consumer. The only concern of the individual is that he can purchase a quantity of the good at a price which maximizes his satisfaction. In the case of a private good, this is accomplished by merely seeing to it that the quantity he purchases has a particular relationship to the price determined by the market or by the management. In the case of the public good, this is accomplished by seeing to it that the legislator who represents the individual expresses a quantity and price relationship that maximizes the individual's satisfaction.

Under the consideration of the voluntary exchange theory as a solution to the theory of tax justice, Musgrave rejects the theory because of the noncompetitive nature of the political process and because of the assumption that original distribution of wealth is assumed to be a "just" distribution. The former cause for rejection of the voluntary exchange theory has been discussed and only accepted as a practical limitation to the extent that politicians do not and need not abide by

the desires of the individuals whom they represent. The latter cause for rejection is much more complex and will not be treated here.[16]

Howard R. Bowen

In 1943, Howard R. Bowen[17] presented another formulation of the voluntary exchange or price theory of public finance which was in terms of an individual voting process rather than a political voting process and which was presented more along the lines of accepted price theory analysis.

Figure 3 presents the determination of the ideal output and cost distribution in terms of real goods. The vertical axis measures the quantity of all other goods which the individuals would be willing to give up to obtain social goods and the horizontal axis measures the quantity of the social good desired. The individual curves of marginal substitution are individual demand curves with prices stated in terms of the quantity of all other goods that individual is willing to give up

---

[16]The nature of the state and the concept of the nature of man are important factors in the question of tax justice but will not be discussed here. For one interpretation of the effect of the concept of the nature of the state on the acceptance or nonacceptance of the voluntary exchange theory see: James M. Buchanan, "The Pure Theory of Government Finance: A Suggested Approach," Journal of Political Economy, Volume 57 (December, 1949), pp. 496-505.

[17]Howard R. Bowen, "The Interpretation of Voting in the Allocation of Economic Resources," Quarterly Journal of Economics, Volume LVII (November, 1943), pp. 27-48.

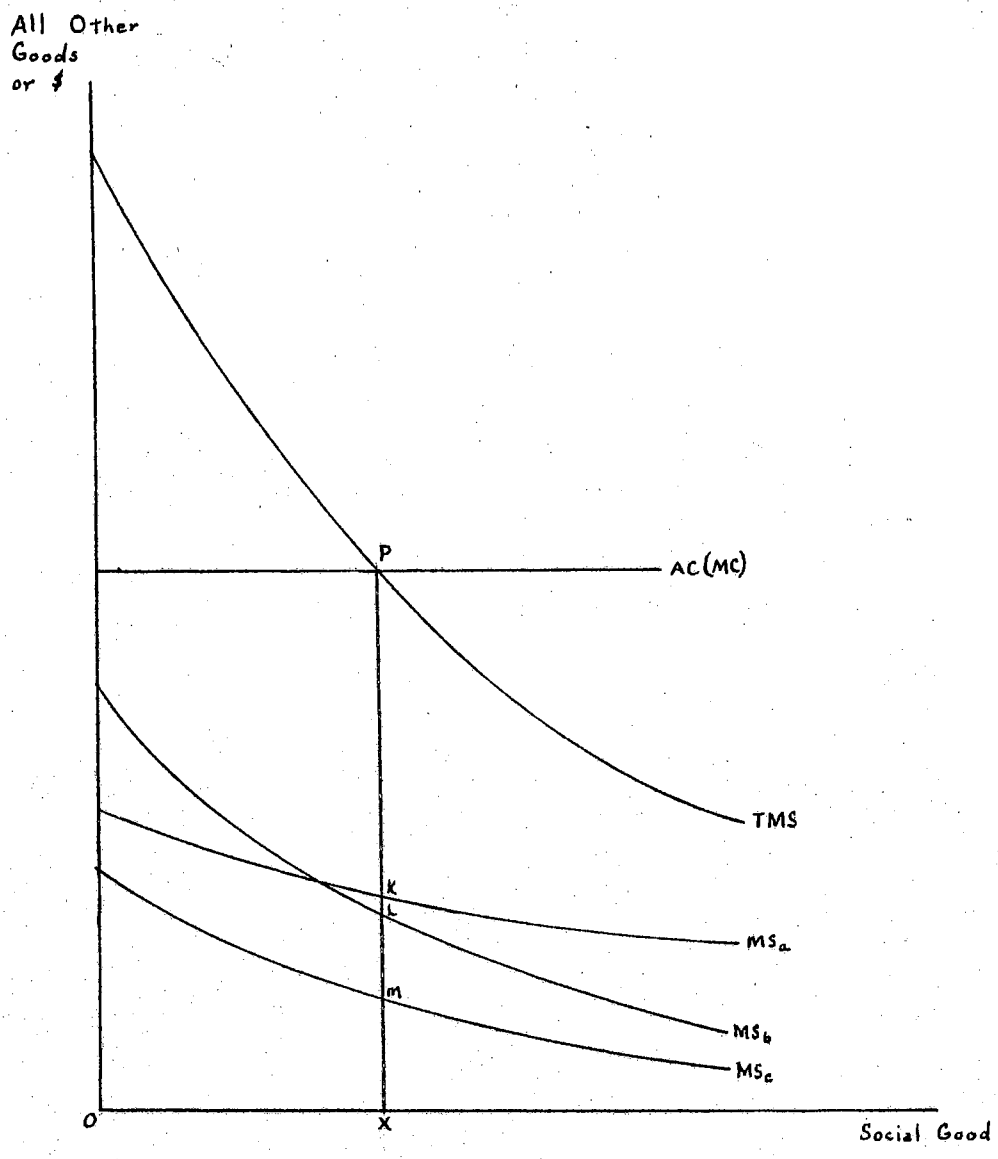


Figure 3. Bowen Model I

to obtain various quantities of social goods.[18] The TMS curve is the total demand curve. Because social goods are defined as those goods for which the demand (supply)[19] cannot be individually held, the total demand curve is obtained by vertically adding the individual demand curves (MS_a and MS_b) rather than by horizontally adding them. The intersection of the marginal cost curve (MC)[20] and the total demand curve at point P determines the "ideal" output. The individual cost shares are determined by the intersection of the vertical line at the "ideal" output and the individual demand curves.[21]

Bowen also shows that the average total demand (TMS/N) and average marginal cost (MC/N) would determine the same "ideal" output (P). The slope of the TMS curve and TMS/N curve would not be the same but the

---

[18]Bowen's use of marginal substitution curves instead of regularly defined demand curves is regretable because it may have contributed to the later use of indifference curves. The adoption of indifference curves by Samuelson and Musgrave has led to considerable confusion and a continued rejection of the theory. The problems developing from Musgrave's analysis are treated at length in Chapter IV.

[19]Bowen speaks of divisibility of demand but yet speaks of social goods not being divisible into units that can be the unique possession of individuals. The possession of individuals refers to the consumption of a supply of goods so that it is actually the indivisibility of supply rather than demand.

[20]Bowen uses the concept that the ideal output exists when MC equals demand if the product has constant or decreasing costs but when AC equals demand if the product has increasing costs. Bowen explains the methodology in the latter case as well as the first two cases but no attempt is made to present the AC determination since MC determination is still the more widely held concept.

[21]Individual cost shares can only be determined in this manner, if it is a constant cost product because in the other cases the revenue would not equal the total cost.

point of intersection would be the same because at this point TMS equals MC and equal numbers divided by the same number are equal. The importance of this concept can be seen in Figure 4 where Bowen assumes that the individual demand curves will fall into a normal pattern of distribution. Assuming a normal distribution, the average equals the mode. Therefore, the modal demand curve is the same as the average demand curve and its use results in the determination of the same "ideal" output as the use of the total demand curve.

The assumption of the normal distribution is also important in the interpretation of the voting process made by Bowen because, if each individual votes on the quantity of the service he would desire, the "ideal" output is both the output which gets exactly one-half of the votes and which gets more votes than any other quantity. In the case of voting on various increments or decrements to a given quantity of a social good, the "ideal" output is the one which gets exactly one-half of the votes yes and one-half no. Smaller quantities will receive a greater number of yes votes than the "ideal" output.

Three assumptions which are explicitly made by Bowen and which were implicit in the presentation, are important: (1) The income distribution is "correct" (i.e., the income distribution has been accepted by society and that it is the same necessary assumption in order to use price theory of private goods for a policy recommendation), (2) The product will be available equally to all individuals so that the differences in demand represent differences in tastes and preferences rather than just differences in benefits (a normal curve of distribution cannot be assumed if benefits are different to each individual voter), and (3) The cost of

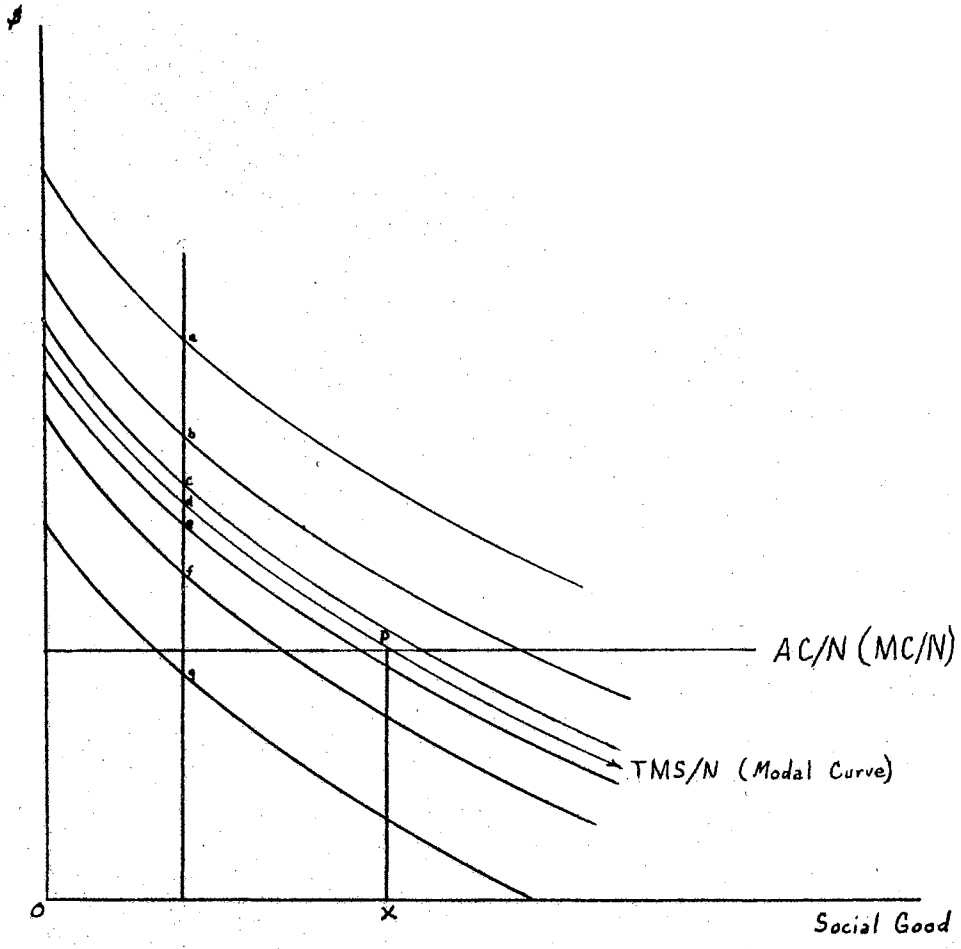


Figure 4. Bowen Model II

producing the product in various quantities is known to the voters and will be divided equally between the voters. This means that the voter automatically knows his cost (AC/N). In other words, the voter knows his relative share of the total expenditure on the social good.

Modification of the second and third assumptions can be accomplished if the assumption is made that those receiving different benefits can be grouped into classes which do receive the same benefit[22] and that the costs will be distributed according to the modal demand for each class but that the individual and classes of individuals are not affected in their expressed demand by the fact that their demand affects their own relative cost share. Figure 5 presents Bowen's model.[23]

The relationship between the Lindahl model and the Bowen model is both interesting and important. Figure 6 presents another Bowen model like Figure 3 and another Lindahl model like Figure 1. The curves of the Lindahl model have been determined by the curves in the Bowen model. The total expenditure is computed by multiplying the quantity by the average cost (AC). The percent of the total expenditure which each individual is willing to pay is computed by dividing the individual's demand by the total cost at each possible output. The output determined by both models is the same. The assumption that average cost is constant

---

[22]An example can be made of education where one class of people have no children and the other classes can be listed by the number of children per family. Under these conditions, each classification of people can be assumed to have the same benefit and, therefore, it can reasonably be assumed that within each classification, tastes and preferences will vary in accordance with a normal distribution.

[23]Bowen's model does not determine the tax-price. It is given by the MC/N curve assumed for each class.

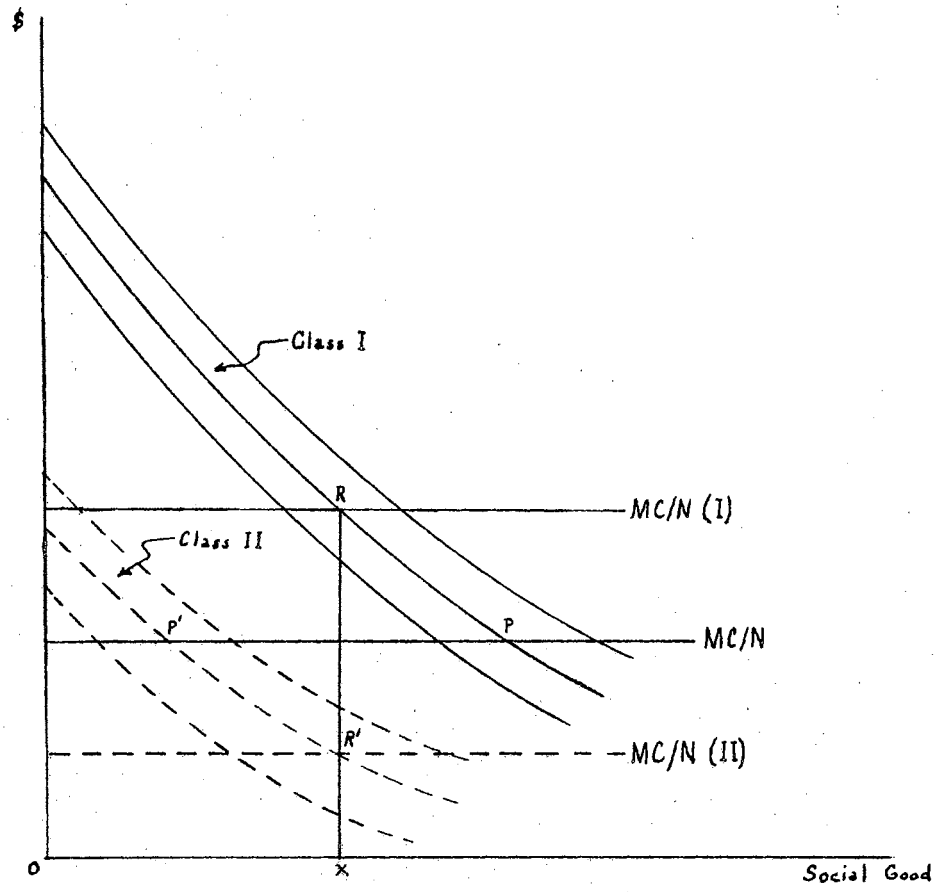
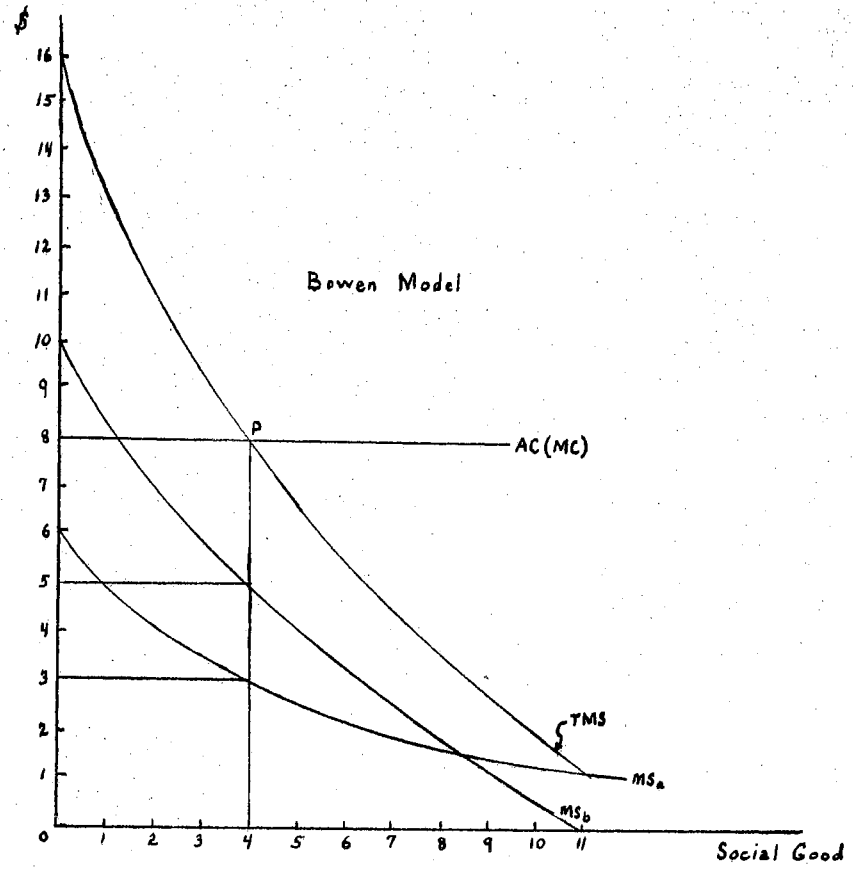


Figure 5. Bowen Model III



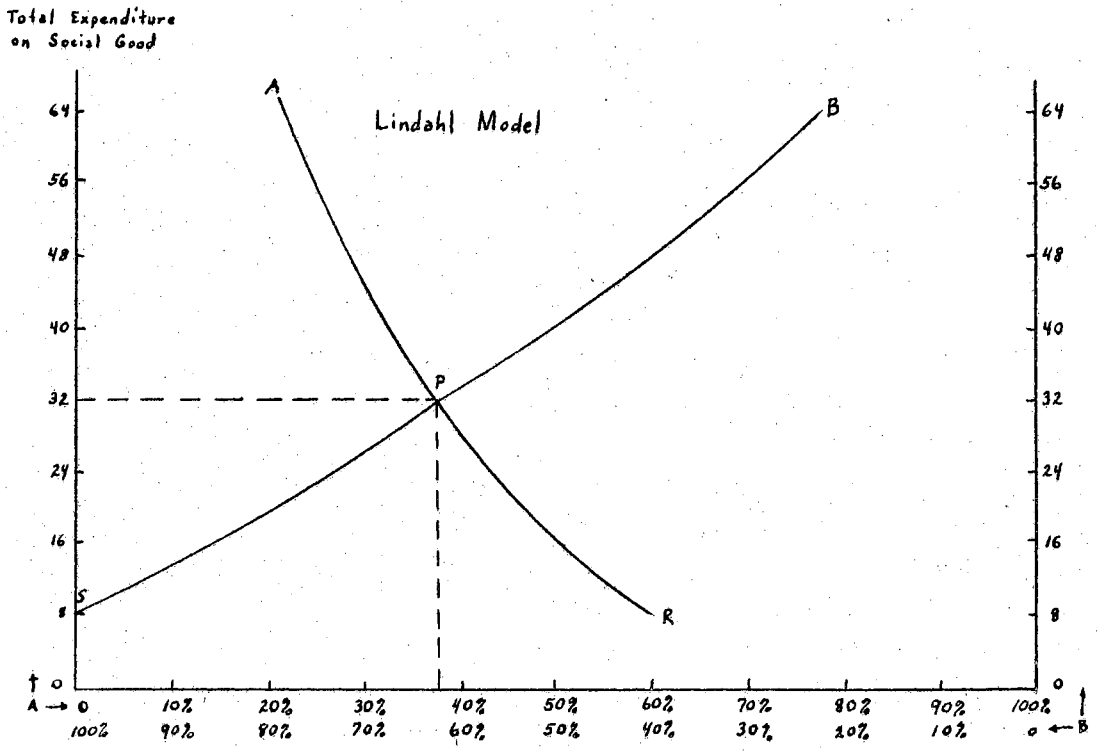


Figure 6. Lindahl Model and Bowen Model I

is essential to the reconciliation of the two models because the equilibrium of the Lindahl model will occur at the output determined by the intersections of average cost and the total demand curve in the Bowen model. Another assumption which is necessary in the reconciliation of the two models is that the AR and BS curves of Figure 1 must be taken as demand curves of two individuals rather than of two groups of legislators. This is the interpretation of the Lindahl model used by Musgrave but it ignores Lindahl's consideration of output being determined in parliament. If the Lindahl model is interpreted to be two groups of legislators representing two classes of individuals in society, it would be necessary to assume that all individuals in each class have the same demand function or that all individual demands are vertically added and the individual cost shares are determined by the modal or average demand of the particular classes of society. The modal curves as developed by Bowen in Figure 5 cannot be used to reconcile the two models because Bowen has started with a given per unit cost for each class of society. To look at it another way, the reconciliation requires two assumptions: (1) The individual demand curves are not affected by the fact that the expressed demand affects the relative cost shares of the individuals, and (2) The legislators have perfectly measured the total demand function of all individuals of society or the modal demand function of the individuals which the particular group of legislators represent.

Bowen's article also brings to light several other points of interest to the price theory of public finance. One point relates to the quantitative measurement of social goods. Bowen makes the point that some social goods like education cannot be measured in simple physical units

of volume, time, or weight. Education consists of buildings, equipment, number of teachers, quality of teachers, etc.[24] Each of these components of education can be measured as separate goods and the theory applied to each. This, however, would only be realistic for a large item like buildings. However, to Bowen, this does not rule out the use of the theory for education as a whole. Quantity can be measured by total expenditures on education if it is assumed that the voters have knowledge of an existing list of priorities.[25] In other words, if the voters know or beforehand establish the order in which expenditures will be made on the component parts of education, the quantity of education can be measured in terms of the total expenditure to be made on education.

These considerations of education made by Bowen point out the problem of not carrying out the concept of the price theory of public finance to its logical conclusions. Buildings, teachers, equipment, etc. are resources used to produce a product, education. The allocation of these resources should be based upon the least cost distribution of resources and not the demand of individuals. Education must be measured in terms of levels of knowledge attained. In other words, the quantity of education which individuals compare with their cost in attempting to maximize

---

[24]Lindahl's concept of voting on all economically related goods at one time may be interpreted to mean the same thing or it may be taken to mean goods related by tastes and preferences. In either case, Musgrave's criticisms of Lindahl, based on the concept that all goods which are capable of being determined by the benefit principle are lumped together in one vote, are not valid.

[25]The concept of and the importance of establishing a list of priorities in expenditures was developed in the discussion of Emil Sax's voluntary exchange theory in Chapter II.

their satisfaction is a quantity in terms of the level of education (eighth grade, high school, college degree, etc.) which individuals want the government to supply. It is clear that levels of education and levels of knowledge are not the same thing even if the function of education is to provide knowledge, but it is reasonable to assume that individuals do measure education in terms of levels of education in our society.

Another important concept discussed by Bowen is the alternatives to voting. Recognizing that the individual voting process is not practical for any unit of government larger than that which can operate on a town meeting basis, Bowen suggests the use of polls of random samples of society by public officials. "If a poll is based on a representative sample of the population and if the questions are put in the same way as if the entire citizenry were voting, the results could be interpreted in exactly the same way [as the vote of all the people]."[26] Bowen is quick to add that it would be necessary that those polled would have to be well informed on the issue and be responsible citizens with a knowledge that their choices will influence policy. These two conditions might be difficult to meet and still have a representative sample of the entire voting public but it is a start in the direction of finding a means by which the political process (that in all modern societies must make the

---

[26]Bowen, p. 43.

ultimate decision as to what and how much of social goods are to be produced by the government) can ascertain the individual demands for social goods.[27]

Milton Z. Kafoglis

In 1962, Milton Z. Kafoglis[28] added to the stock of theoretical models[29] which were related back to the original Lindahl model.[30] Kafoglis's formulation makes use of a derivation of net demand curves for each individual based on the individual's recognition that the consumption of the social goods by other individuals gives him a "windfall" of satisfaction.

---

[27]The function of pressure groups in the modern democratic state may be somewhat similar to the process of polling a segment of the economy, if certain assumptions are made about the nature of the pressure groups and the extent of influence which the pressure groups have in the political process. More will be said about pressure groups in Chapter V.

[28]Milton Z. Kafoglis, Welfare Economics and Subsidy Programs (Gainesville, Florida).

[29]James M. Buchanan, "The Pure Theory of Government Finance: A Suggested Approach," Journal of Political Economy, Volume 57 (December, 1949), p. 496; Paul Samuelson, "Diagramatic Exposition of A Theory of Public Expenditures," Review or Economics and Statistics, Volume 37 (November, 1955), p. 350; and Charles M. Tiebout, "A Pure Theory of Local Expenditures," Journal of Political Economy, Volume 64 (October, 1956), p. 416, are examples of other theoretical frameworks presented in recent years. The Samuelson model was used as a criticism of the voluntary exchange approach to public finance and is reviewed in Chapter IV to the extent that Richard Musgrave used the model as a means of presenting a comprehensive review and criticism of the theory.

[30]Related to the Lindahl model if the Lindahl model is interpreted as a model of individual equilibrium rather than as a model of political equilibrium.

Kafoglis relates his net demand curve model to the concept of "cost of service pricing" and the Bowen vertical summation of demand curve model[31] to the concept of "value of service pricing."[32] To Kafoglis, the "cost of service" concept involves a horizontal summation of adjusted (net) demand curves to arrive at the collective demand. The per unit tax-price paid is the same to all individuals as in the case of private goods without price discrimination. The taxpayer consumer adjusts his consumption according to his adjusted (net) demand curve. The "value of service" concept using a vertical summation of demand curves results in different per unit tax-prices being paid by different individuals but with all individuals consuming the same units of production. The total cost to each individual and total production is shown by Kafoglis to be the same in either case.[33] Therefore, it follows that the net demand curve analysis can be applied where the social good involves joint satisfaction but individual consumption while the vertical summation of demand curve analysis must be applied where the social good has joint consumption.

---

[31]Kafoglis puts the Bowen model in terms of ordinary demand curves rather than marginal substitution curves.

[32]Edwin R. A. Seligman, Studies in Public Finance (New York, 1925), pp. 182-190 set forth the distinction between "cost of service pricing" and "value of service pricing." Seligman related the former to the protection theory of taxation and the latter to the benefit theory of taxation.

[33]Kafoglis's proof of this point is based on the constant marginal cost model of Bowen and a simplified version of the net demand curve derived in detail later on.

The derivation of the net demand curves makes use of indifference curve analysis and income consumption lines which are a familiar part of accepted price theory analysis. Figure 7 presents the indifference maps of two individuals, A and B. The process of adjustment can be made by starting with either individual seeking equilibrium without the knowledge that the consumption of the other individual will affect the satisfaction derived from any given quantity of the social good consumed by the first individual or by starting with both in an equilibrium position before the recognition of "windfall" satisfaction.

Assuming E_o is the original equilibrium combination for A with income level LL and e_o for B with income level ll, the first step of adjustment takes place when A realizes that he has derived satisfaction from the quantity q purchased by B as well as the satisfaction derived from his own purchase of Q quantity of the social good. This additional satisfaction experienced by A results in a lowering of A's marginal rate of substitution for the social good. Graphically this can be presented by indicating the level of satisfaction received by A ($S = Q + q$). At this marginal rate of substitution A would want R combination of goods if he had I_1 income. Since he does not have this level of income, A will adjust his purchases to combination T and take Q_2 quantity of the social good instead of quantity Q. Individual B then recognizes that he received satisfaction from A's purchase of quantity Q_2 of the social good. Therefore, B's marginal rate of substitution for the social good is reduced as shown by position S. Given B's income level ll, he will reduce his purchases of the social good to q_2 from q. This change, however, affects the satisfaction of A since A's purchases were based on B's

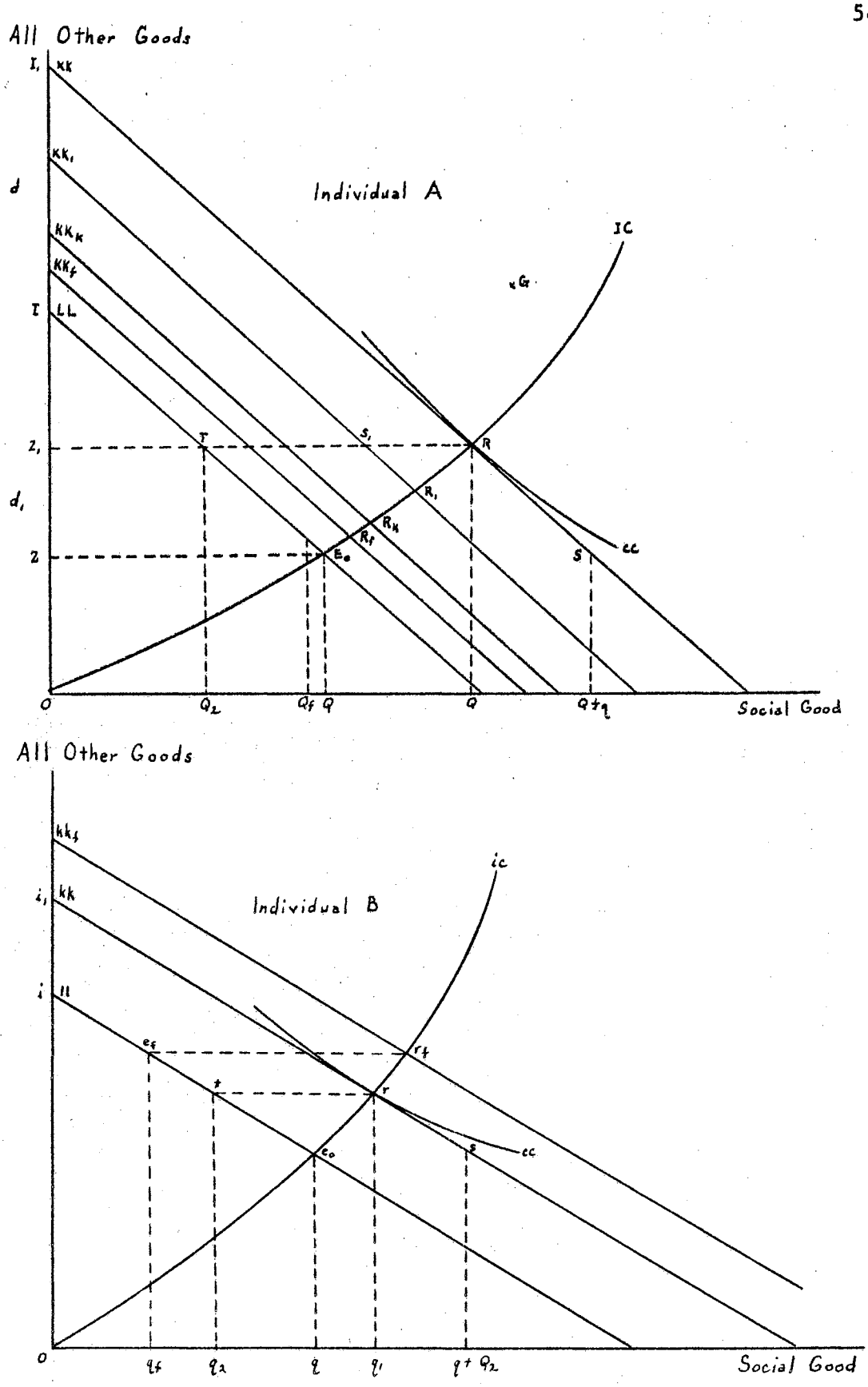


Figure 7. Kafoglis Model - Adjustment of Indifference Map

consumption of quantity q of the social good. A's marginal rate of substitution for social goods has been increased by B's action. Therefore, A must increase his consumption of the social good to U in order to reach an equilibrium consistent with B's purchase of q_2 quantity of the social good. This action, however, alters the satisfaction obtained by B. B must, therefore, make another adjustment.

The result of the adjustment process is the establishment of an equilibrium at E_f for A and e_f for B. The level of satisfaction for B is r_f which is the satisfaction from Q_f and q_f consistent with B's original income consumption curve.

The starting income level can be changed and the process repeated. Figure 7 for individual A indicates points H and G which are equilibrium combinations starting with a lower and a higher income than I. These equilibrium positions are carried over to Figure 8 where a "Net Income Consumption" curve is indicated. The net curve reflects a change in the indifference map resulting from the recognition of joint satisfaction on the part of individual A. Based on the net income consumption curve, a demand schedule can be established which also takes into consideration the joint satisfaction derived from the social good. Again assuming I level of income for A, the price of the social good can be varied (P_3, P_1 and P_2). The quantities Q_h, Q_f and Q_j are determined. These price and quantity relationships are a part of A's net demand schedule (DN_A); e_f is an equilibrium combination for individual B. The balance of B's net demand curve (DN_B) can be derived in the same manner as A's. The two curves can then be horizontally summed to determine the "Net Collective Demand" (CDN). Assuming a constant cost social good, with AC and

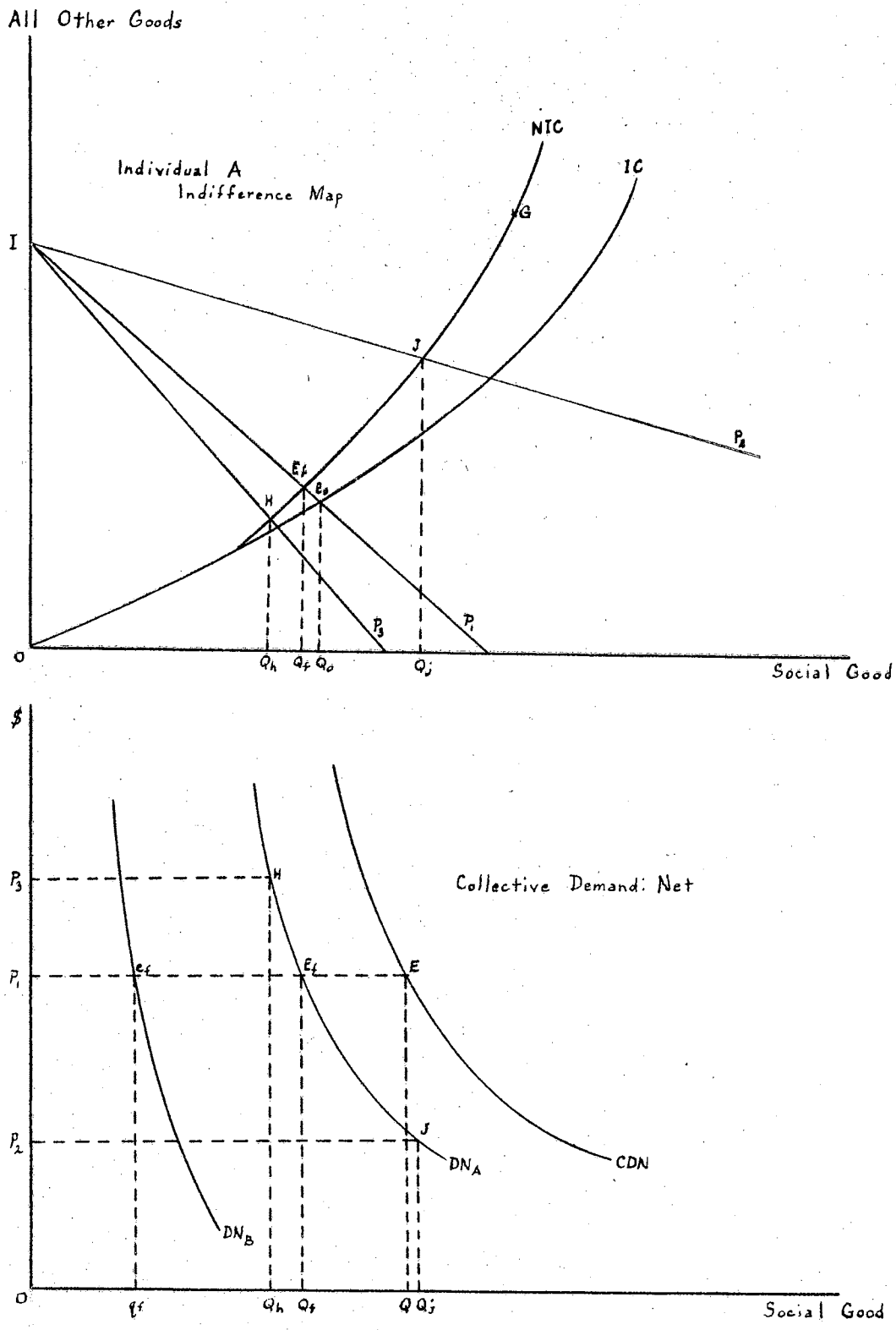


Figure 8. Kafoglis Model - Net Income Consumption Curves

MC equal to P_1, the total output would be Q and both A and B would pay P_1. A would take Q_f and B would take q_f.

Kafoglis's formulation is of particular importance because it points out the distinction and importance of the two types of external economies of consumption; joint satisfaction and joint consumption. The Lindahl and Bowen models involve goods which have the characteristic of joint consumption. The Kafoglis model involves a good which has the characteristic of joint satisfaction. The methodology used in analysis must be consistent with the particular characteristic of the public good which gives rise to the situation where external economies of consumption do exist. This also implies that when a particular methodology is used, the good in the analysis could be discussed in terms of the characteristic with which the methodology is consistent.

Summary

The graphical model of Erik Lindahl is probably the best known voluntary exchange approach model in the United States. However, Richard A. Musgrave's criticisms appear to be accepted as valid by many economists. The analysis of these criticisms was made after showing the relationship between Lindahl's model and Knut Wicksell's unanimity principle. The conclusions of the analysis were that the criticisms are not entirely valid. Some of the criticisms are completely rejected as being the result of a misinterpretation of the Lindahl model. Other of the criticisms do point up problems of the Lindahl model which have not been fully answered but the criticisms do not appear to be a justification for the complete rejection of the price theory of public finance.

The Howard R. Bowen model is another formulation of the voluntary exchange approach. It more closely follows the generally accepted tools of price theory analysis. However, the most important aspect of Bowen's presentation is his emphasis on the voting mechanism. The voting is by individuals and not by representatives of individuals as in the Lindahl model. With this emphasis on the individual voting process, Bowen is able to bring out many of the assumptions which are necessary to obtain an optimum allocation of resources. He also brings up the issue of an optimum allocation when the government is assumed to be based on representatives of individuals determining the output and taxes. Important in this context is Bowen's concept of using random sample polls for ascertaining the desires of individuals.

The most recent model following the general framework of the price theory of public finance is that of Milton Z. Kafoglis. He deals with goods which provide joint satisfaction rather than goods which provide joint consumption as used by Bowen. The model attempts to show how the income consumption curve can be used to determine the adjustment in indifference curves which must be taken into account to arrive at the optimum allocation of resources. The important point, however, is that Kafoglis has made a clear distinction between different types of public goods and shown the difference that the type of good makes in the methodology used to analyze them.

The criticisms concerning revealed preferences have generally been directed at models which involve a good with the characteristic of joint consumption. The next chapter will attempt to evaluate the most basic criticisms raised concerning the revealing of preferences when the public

good is one with the characteristic of joint consumption. The question of whether or not goods with this characteristic are important in the real world is not considered. The definition of a public good is accepted in the analysis of the criticism so that it can be determined whether or not a good with the characteristic of joint consumption does cause different conclusions to be derived from the analysis.

CHAPTER IV

A CRITIQUE OF CRITICISMS: REVEALED PREFERENCES

There are two basic criticisms of the voluntary exchange theory of public finance involving revealed preferences. The first criticism is that the individual will not reveal his true preferences for public goods. The second criticism is that even if the individual did reveal his true preferences for a public good, there is no single solution to the problem of allocating resources analogous to that found in the allocation of resources to private goods. Both criticisms have been raised by Richard A. Musgrave and have apparently been accepted by many economists. In fact, although Musgrave was one of the first to bring the voluntary exchange or price theory of public finance to the attention of American economists, he was also one of its strongest critics and has led the way to the rejection of the theory.[1]

The first criticism was raised by Musgrave in relation to Lindahl's model. The criticism as relates specifically to the Lindahl model was treated in Chapter III. The criticism, however, may be taken as a more general criticism about the applicability of the price theory of public finance to the problem of allocating resources to any good which has the

---

[1]Richard A. Musgrave, The Theory of Public Finance (New York, 1959), and "The Voluntary Exchange Theory of Public Finance," Quarterly Journal of Economics, Volume 53 (February, 1938).

characteristic of joint consumption. Therefore, the first section of this chapter will be devoted to the analysis of the criticism as it applies to the allocation of resources without reference to any particular formulation of the price theory of public finance.

The second criticism is raised by Musgrave in relation to the applicability of the theory in a general equilibrium framework. Therefore, the general equilibrium model which was adopted by Musgrave to state the criticism is presented in the second section of this chapter. The model is also applied to two private goods in order to determine whether it is the allocation of resources to a public good with joint consumption which is not analogous to the allocation of resources to private goods or whether it is the model used in the Musgrave analysis which is not analogous to the theory of the allocation of resources to private goods.

Preferences Will Not Be Revealed

The question of whether or not preferences will be revealed by individuals for a public good through the political process is both a practical consideration and a theoretical consideration. The theoretical issue is whether or not there is something inherent in the nature of public goods or in the supply of and demand for public goods which makes it necessary or likely that the individual acting rationally would not reveal his preferences for the public goods. One situation that might lead to such a conclusion is one in which an individual can derive satisfaction from the supply of a public good without having to express a desire for the good and without having to pay for the good according to his actual individual satisfaction. Musgrave's attempt to illustrate a

situation of this type is based on two propositions: (1) an equal quantity of public goods and services is consumed by all taxpayer-buyers; (2) an individual taxpayer's demand exerts no influence over the quantity of public goods supplied.[2]

The first proposition involves a problem of defining a public good in terms of its characteristics. The public good is said to be a good which has the characteristic that each individual receives benefits from the entire supply as if he were the only individual consuming it (i.e., joint consumption). The equal consumption definition of a public good is accepted as a polar case which is possible even if it may not exist for many goods.[3] The issue is whether or not a good which does fit this definition is likely to be the cause of individuals not revealing their preferences for the good.

Figure 9 presents one possible formulation of the process through which preferences might be revealed even when the equal consumption definition of a public good is accepted and when each individual pays according to his revealed preferences.[4] There are two taxpayers A and B. If taxpayers A and B reveal their true preference, a vertical summation

---

[2]Musgrave, The Theory of Public Finance.

[3]A great deal of discussion was created, in reference to whether or not the equal consumption definition for a public good had any application in the real world, after Samuelson used it in his model as a polar case. Paul A. Samuelson, "Diagramatic Exposition of A Theory of Public Expenditure," Review of Economics and Statistics, Volume 37 (November, 1955).

[4]Ansel M. Sharp and Donald R. Escarraz, "A Reconsideration of the Price or Exchange Theory of Public Finance," to be published in the October, 1964 issue of The Southern Economic Journal.

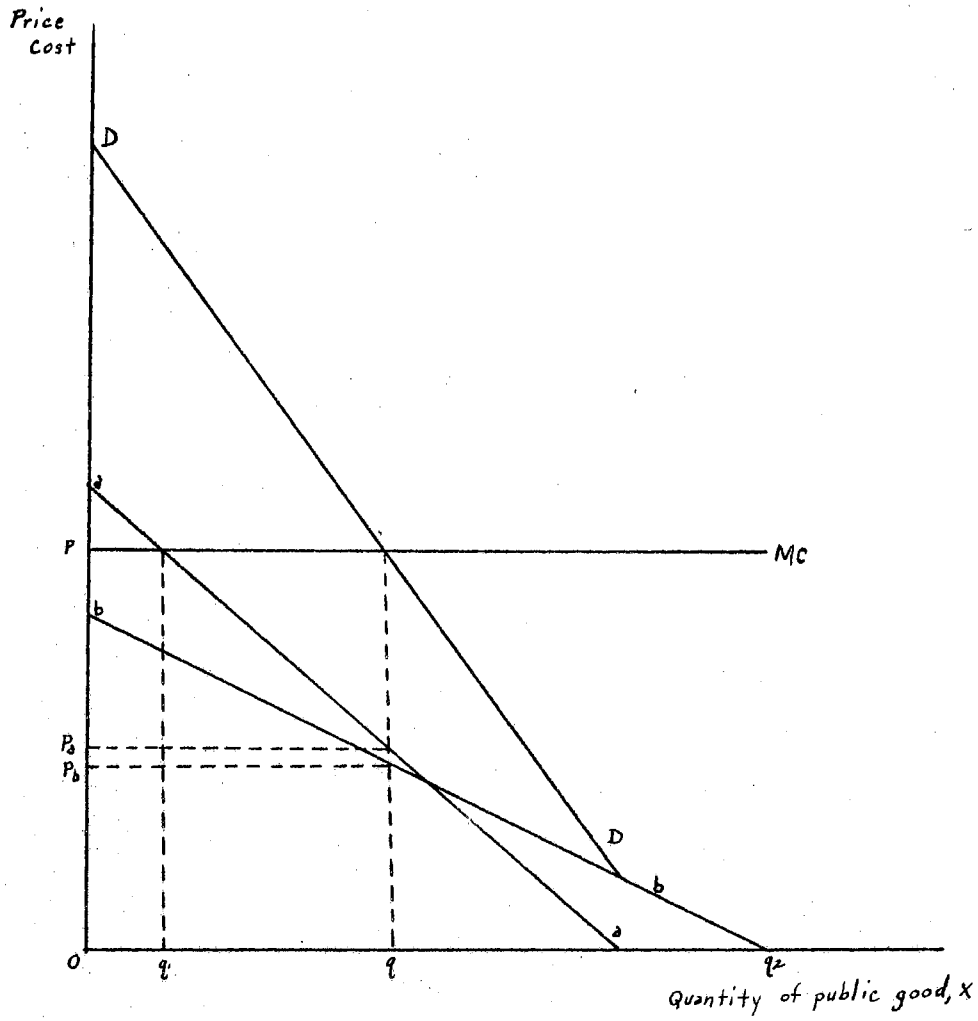


Figure 9. Revealing of Preferences

of their individual demands (aa and bb) would be designated by DD. The optimum amount of public good X, then, is Oq and the optimum distribution of the costs of producing good X is $OP_a \cdot Oq$ for taxpayer A and $OP_b \cdot Oq$ for taxpayer B. Assume that taxpayer A reveals his true preferences and that taxpayer B does not reveal his preferences. The collective demand is only A's demand (aa) and only Oq_1 of good X will be made available for equal consumption. Taxpayer A is in equilibrium but taxpayer B is not. If B's tax share is zero, as it would be if B does not reveal any preference for X, B really desires Oq_2 of X at the existing zero price instead of the quantity Oq_1 which will be made available. Therefore, taxpayer B may have an inclination to reveal, at least, some of his preferences. If B reveals part of his preferences, his tax share of the Oq_1 of X rises above zero and A's tax share declines. At the lower price to A (OP - B's price), A demands a greater quantity of X. The process, followed to its logical conclusions, results in a situation where both A and B do reveal their true preferences.

Musgrave's second proposition involves the question of the effect that having a large number of individuals participate in the determination of what quantity should be produced will have upon a single individual revealing his preferences. In Chapter III, Musgrave's analysis was rejected. The rejection was not due to the use of small numbers in the analysis. The rejection of the duopoly type of analysis was due to the assumption that the individual bargained with other individuals as if he were a producer attempting to maximize his profits. The individual who has preferences for goods is a consumer and not a producer. Therefore, the analysis must be based upon the individual attempting to

maximize his satisfaction. In such an analysis, it is necessary to assume that the individual does have preferences in regard to public goods or that he does receive satisfaction from public goods in relation to the quantities he consumes. The latter will be assumed in the analysis which follows so that simple mathematical expression of the assumption of maximization of satisfaction in terms of marginal utilities may be used.[5]

If the individual derives satisfaction from each public good as he does from each private good, the maximization of satisfaction would be expressed exactly the same for both private and public goods $(\frac{MU_a}{T_a} = \frac{MU_b}{T_b} = \ldots = \frac{MU_y}{P_y} = \frac{MU_z}{P_z})$. The goods represented by a and b can be taken as public goods such as national defense and education and the goods represented by y and z can be taken as private goods such as automobiles and fountain pens.

Given this type of maximization of satisfaction criterion, it would be impossible for the individual to maximize his satisfaction if one of the goods has equal consumption and if at the same time everybody must pay the same price. The tax price and the quantity supplied cannot both be the same for all individuals unless it is assumed that all individuals have identical utility functions for the good. Therefore, the individual under these conditions would have no reason to reveal his preferences for the public good.

---

[5]The acceptance of indifference curve analysis and relative diminishing marginal utility between two goods instead of marginal utility analysis and absolute diminishing marginal utility for all goods does not effect the conclusions about revealed preferences which follow.

However, if the tax price is permitted to vary between individuals and if it is determined by the tastes and preferences of the individual (i.e., in accordance with the benefit theory of taxation), he can maximize his satisfaction. The fact that one of the goods has equal consumption does not interfere with the individual's ability to maximize his satisfaction. In fact, the quantity of the public good which is supplied does not have to be based upon the tastes and preferences of individuals just so long as the individual's tax price is determined by the individual's preferences for the given quantity.[6] Therefore, the individual under these conditions would have a motivation to reveal his preferences for the public good.

The fact that a large number of individuals might be involved is only significant under the foregoing analysis as a practical consideration. The individual maximizing his satisfaction is not affected by the number of other individuals attempting to maximize their satisfaction except as the number of individuals affects the government's ability to base the tax price on the individual's tastes and preferences.[7]

Another practical consideration, however, should be made at this point. The above analysis assumed that the individual knows his tax

---

[6]The fact that the quantity of the public good is not based upon the tastes and preferences of individuals does affect the allocation of resources but it does not affect the individual's ability to maximize his satisfaction or his motivation to reveal his preferences. More is said about the effect of this type of situation on the allocation of resources in Chapter VI.

[7]The effect of various types of organizations upon the applicability of the voluntary exchange or price theory of public finance is treated in Chapter V.

price will be based upon his tastes and preferences for each public good. If it is assumed that the individual accepts the total of government activity as one public good, it would not be necessary to assume that the tax price is based upon the individual's tastes and preferences for each good supplied by the government.[8] The maximization of satisfaction criterion becomes $\frac{MU_G}{T_G} = \ldots = \frac{MU_y}{P_y} = \frac{MU_z}{P_z}$. In this case, G represents all government activity and T_G represents the individual's total tax bill. The allocation of resources to particular public goods such as national defense, highways, education, etc. would have to be based upon the least cost combination of these goods in providing various quantities of the good; total government activity.

Given this type of maximization of satisfaction criterion, it would be possible for the individual to maximize his satisfaction. This follows even if the good, total government activity, is assumed to have the characteristic of equal consumption and if the tax price is not based upon the individual's tastes and preferences. In this case, the individual's $\frac{MU_G}{T_G}$ is determined independent of the tastes and preferences of the individual. The individual maximizes his satisfaction by adjusting

---

[8] DeMarco states a belief that as the practice of special assessment decreased, "the taxpayer, in making up his own budget no longer compares every special assessment with the consumption of the corresponding service but compares the whole of his taxes with the whole of the services he consumes." Antonio DeViti DeMarco, First Principles of Public Finance, trans. Edith P. Marget (London, 1936), p. 110.

his private consumption.[9] Preferences for public goods are revealed but the revealing process must be done through the adjustment of private consumption.[10]

However, if the government does attempt to base the tax price upon individual tastes and preferences, the individual will be able to maximize his satisfaction by adjusting his tax price as an alternative to adjusting his private consumption. Therefore, the individual may have a motivation to reveal his preferences for total government activity through the political process.

In either case, preferences are revealed. In the one case, the assumption about the nature of the political process makes it necessary for the individual to reveal his preferences through his behavior in the market process. If the political process is capable of basing taxes upon individual tastes and preferences, the individual has a motivation to reveal his preferences for the public good in the political process.

---

[9] In accepted price theory of private goods the adjustment takes place solely as a result of the decreased income available for private consumption. In the above formulation of the price theory of public goods, income available for private consumption is reduced by the same process but the individual's adjustment of private consumption is restricted still further by the necessity of making his marginal utility per dollar's worth of spending for each private good equal to the arbitrarily determined marginal utility per dollar's worth of spending for public goods.

[10] Tiebout presents still another means of revealing preferences when he concludes from his analysis that preferences for local government services are expressed by individuals through their choice of suburban community around the large cities in our modern society. Charles M. Tiebout, "A Pure Theory of Local Expenditure," Journal of Political Economy, Volume 64 (October, 1956).

A Large Number of Solutions Exist When Preferences are Revealed

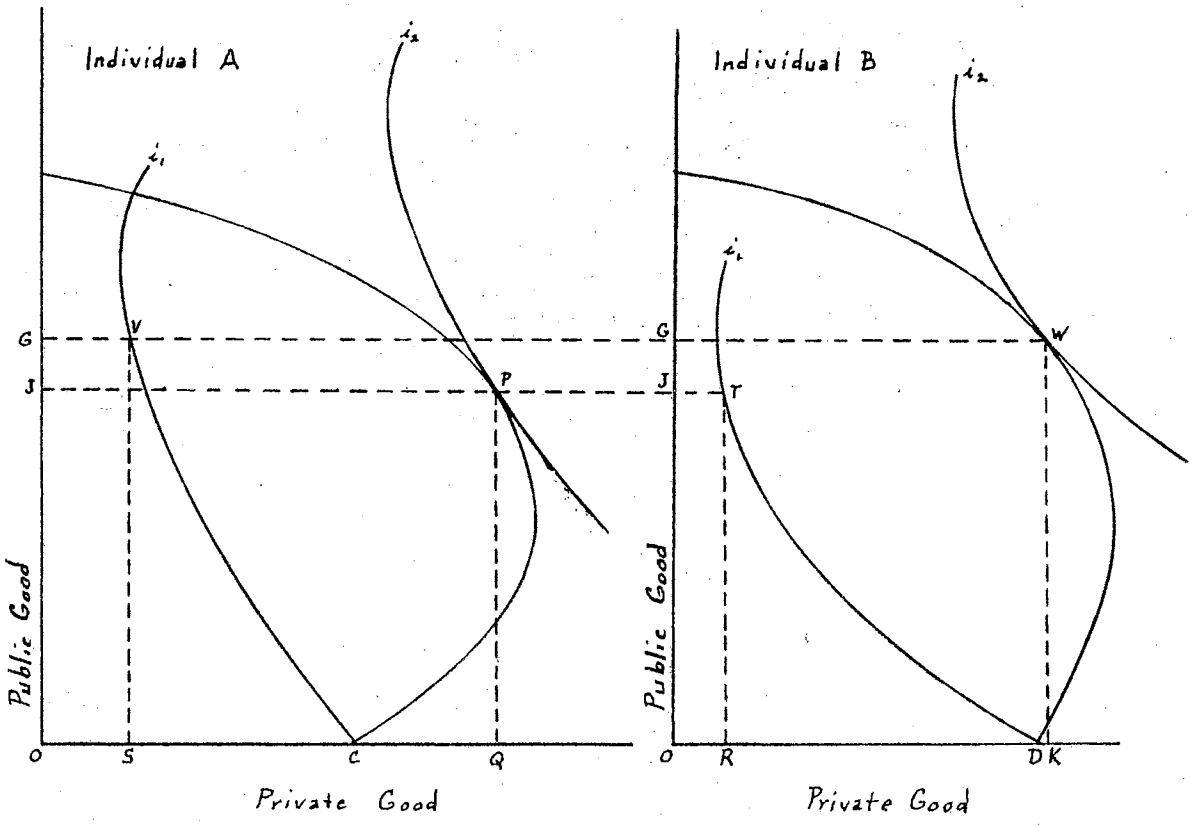
Assuming true preferences are revealed, Musgrave contends that there is still another flaw in the price theory model. "Even if all preferences are revealed, there is no single best solution analogous to the Pareto optimum in the satisfaction of purely private wants. Instead we are confronted with large number of solutions, all of which are optimal in the Pareto sense."[11]

The equilibrium model used by Musgrave to derive these conclusions is based upon a model developed by Samuelson.[12] Figure 10 is a reproduction of the Musgrave version of this model. The first diagram is the familiar transformation curve and the next two diagrams are indifference maps of individuals A and B. OC and OD are said to represent the distribution of income between A and B since OC and OD are the quantities of private goods they could hold if they held only private goods with their income. Individual A is arbitrarily moved along his indifference curve i_1, which contains combination OC of private goods. Given the transformation curve's production limits, this process limits individual B to a specific combination of social and private goods for each point on individual A's indifference curve. Curve MD, therefore, represents the various combinations of public and private goods available to individual B as individual A is arbitrarily moved along his indifference curve i_1. Point W is the point of tangency with the highest possible indifference

---

[11] Musgrave, The Theory of Public Finance, p. 84.

[12] Ibid., p. 81, see footnote.



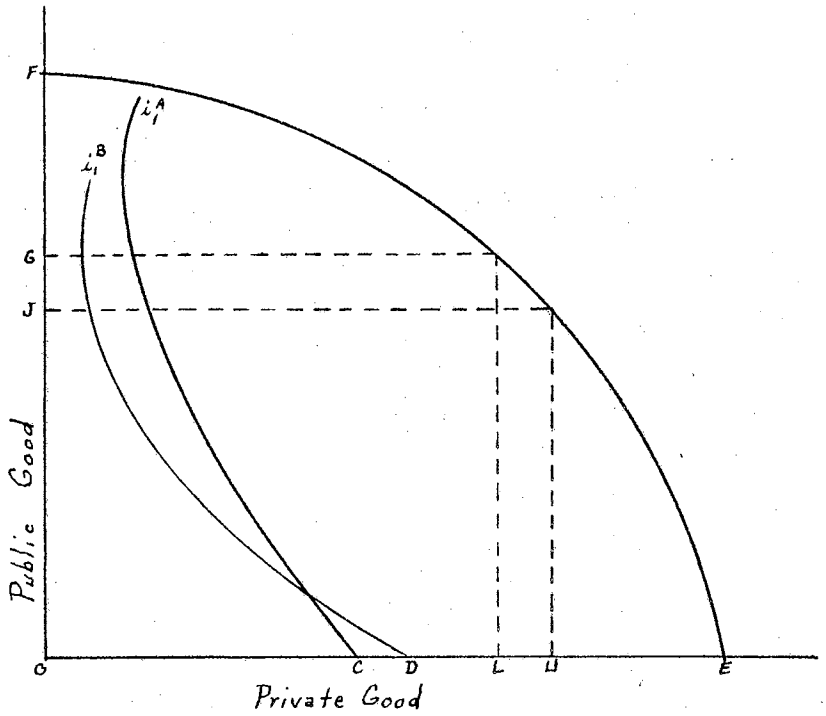


Figure 10. Musgrave-Samuelson Model

curve and determines the quantities OG of public goods and OK of private goods which individual B would desire without individual A being worse off than if he held all of his income as private goods. The same process is then followed for individual A by moving individual B along his indifference curve i_1. Curve NC is then developed and quantities OJ of public goods and OQ of private goods are found to be the combination individual A would desire without making individual B worse off than if he held all of his income in private goods.[13]

The Pareto optima developed in the foregoing analysis are presented on a utility frontier (Figure 11). Point X represents the ordinal measurement of satisfaction for individuals A and B when individual A has the combination P and individual B has the combination T of public and private goods. Point Y represents the ordinal measurement of satisfaction when individual A has the combination V and individual B has the combination W of public and private goods. The other points on the utility frontier could be developed by varying the original distribution of income so that either or both individuals are on a different indifference curve at the start of the analysis. The conclusion drawn from the analysis is that "the area ZYX in Figure 11 shows the infinite number of

---

[13]Musgrave assumes the distribution of income is given and does not change but this is incompatible with the methodology used. If we consider it a general equilibrium view with only two goods and two individuals, the distribution of the physical units represents the income distribution. Figure B shows that the one solution resulted in individual A holding OQ of the private good and individual B holding OR of the private good and the two holding OJ of the public good. The other solution gave individual A, OS of the private good and individual B OK of the private good and both individuals had OG of the public good. It, therefore, does not appear to be correct to say that the distribution of income remains OC/OE for individual A and OD/OE for individual B.

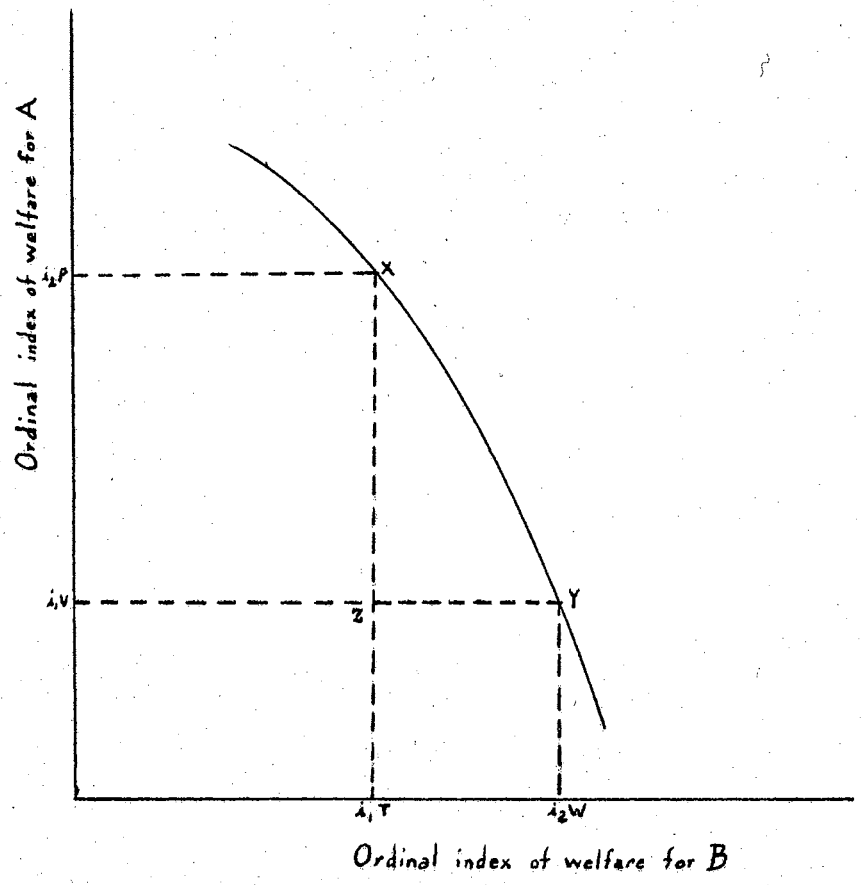


Figure 11. Utility Frontier with Social Goods

possible solutions that leave A, B or both, better off than at Z, where no public services are supplied."[14]

The above review of the methodology used by Musgrave raises the question of whether the arbitrary movement of one individual along an indifference curve, to determine what combination of goods a second individual would like to hold, is compatible with price theory analysis. The "Edgeworth box analysis" of exchange makes use of this method to establish a contract curve which contains an infinite number of Paretian optima. In other words, it establishes those changes in social variables which can take place through "trading."[15]

Trading, however, is not the object of the voluntary payments model. The voluntary exchange approach must be based upon a money economy and not a barter economy. The Musgrave analysis tells us nothing more than what the "Edgeworth box analysis" tells. In other words, it is the barter nature of the analysis (i.e., the arbitrary holding of one individual on a given indifference curve while permitting the other to choose the combination of goods which maximizes his satisfaction) which causes the existence of an infinite number of Pareto optima points.

Figure 12 presents the Musgrave analysis using the private good definition for both goods. The change in definition does cause a basic change in the procedure. This is that the placing of individual A at a point on his indifference curve leaves a line of attainable combinations

---

[14]Musgrave, The Theory of Public Finance, pp. 83-84.

[15]Kenneth E. Boulding, "Welfare Economics," A Survey of Contemporary Economics, II, editor, B. F. Haley (Homewood, 1952), pp. 18-19.

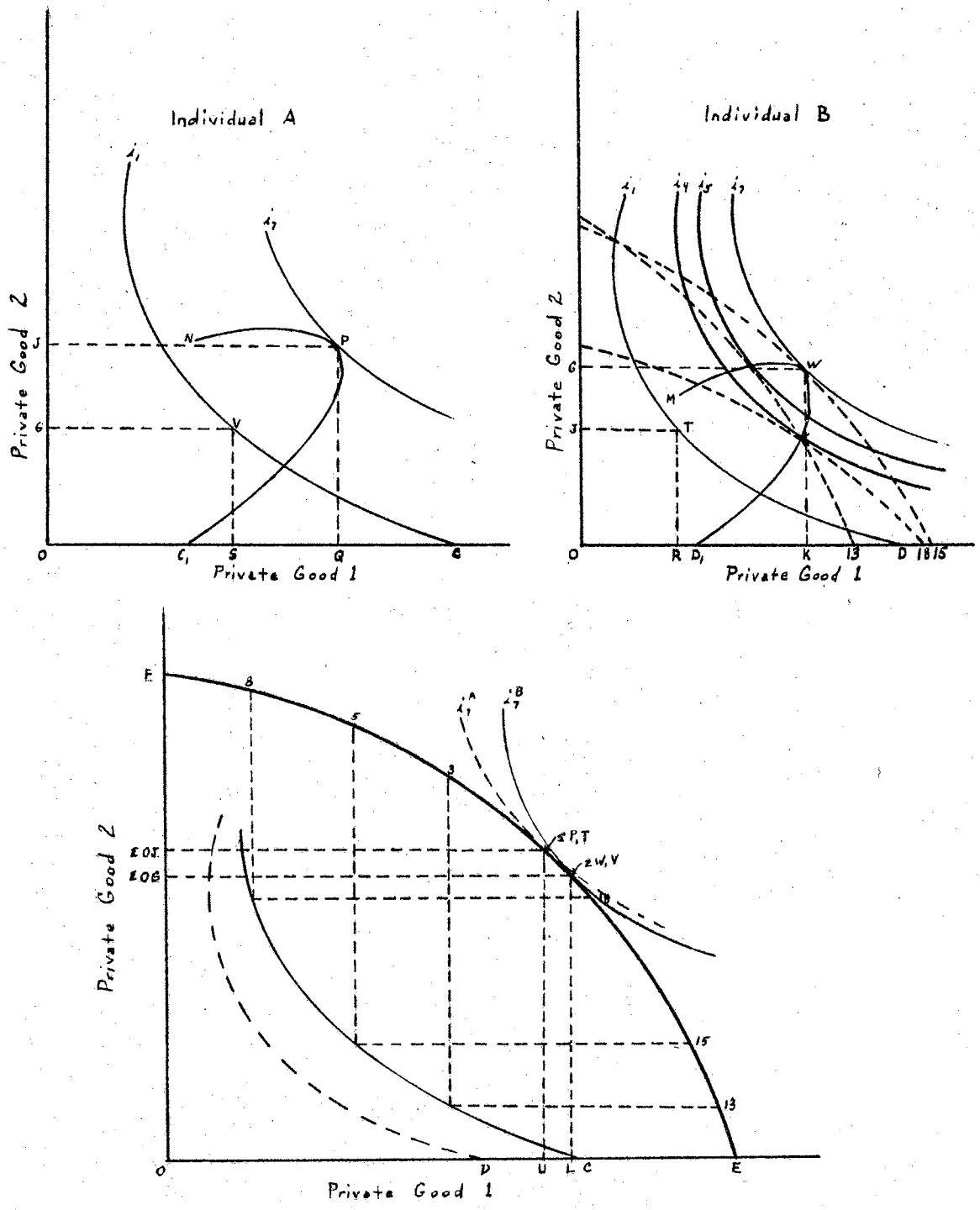


Figure 12. Musgrave-Samuelson Model with Private Goods

(based upon the price ratios set by the transformation curve) available to individual B instead of a specific combination of the two goods. Assuming the individuals maximize their satisfaction, we can still determine the one combination which individual B will hold when individual A is at each point on his given indifference curve. Therefore, we can still determine a curve MD_1, which is analogous to the MD curve found with one good defined as a public good. Using arbitrary movements along individual B's indifference curve, we can determine individual A's NC_1 curve which is analogous to the NC curve found with the public good definition. The combination of private goods 1 and 2 which individual A could hold without making individual B worse off is OQ and OJ, respectively. Individual B could hold OG of private good 2 and OK of private good 1 without making individual A worse off.

The Pareto optima developed in the analysis with two private goods can be presented on a utility frontier (Figure 13). Points X_p and Y_p have the same meaning as points X and Y in Figure 11 except now we are considering the quantity of two private goods to be supplied. The area $Z_pY_pX_p$ shows the infinite number of possible solutions that leave A, B or both better off than at Z_p, where no quantity of private good 2 would be supplied.

It has been shown that the model used by Musgrave results in an infinite number of Pareto optima when a public good and a private good are used or when two private goods are used. Any conclusion derived from Musgrave's model is applicable to price theory in general. Musgrave is correct when he concludes from his public goods model that a single Pareto optimum cannot be reached. However, it appears that the absence of a

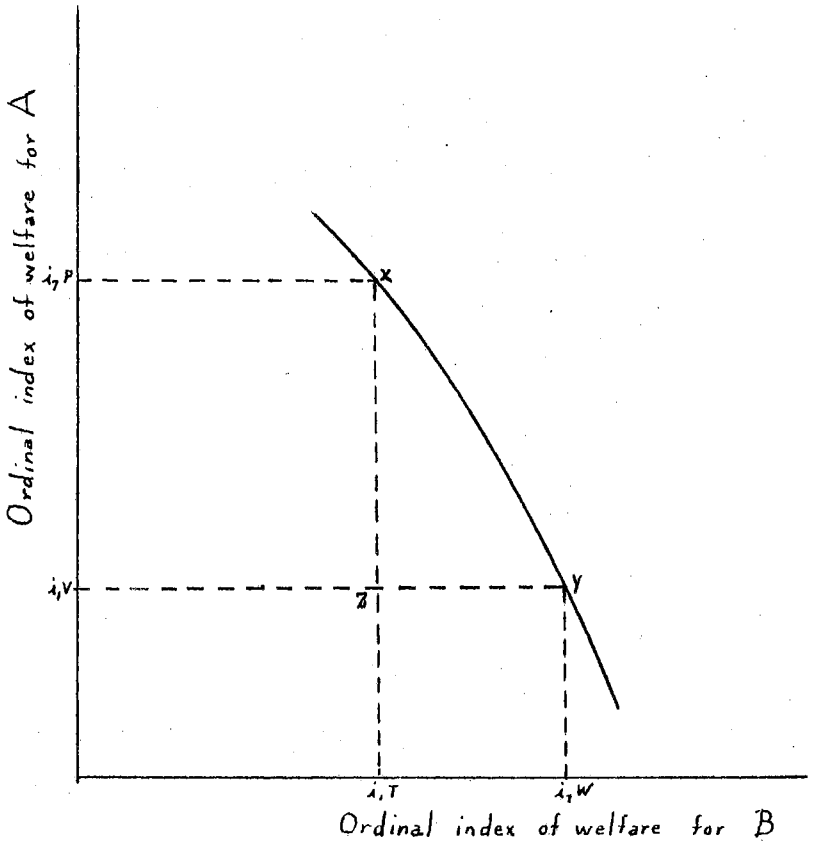


Figure 13. Utility Frontier with Private Goods

single optimum solution is not due to the inclusion of a public good in the model. Therefore, Musgrave's criticism of the price theory of public finance, when preferences are assumed to be revealed, is not substantiated simply because a single Pareto optimum is not reached under the conditions of his model.[16]

Summary

There are two basic criticisms involving revealed preferences: (1) the individual will not reveal his true preferences for public goods, and (2) even if the individual did reveal his true preferences for a public good, there is no single solution to the problem of allocating resources analogous to that found in the allocation of resources to private goods.

The first criticism is based on two propositions: (1) an equal quantity of a public good is consumed by all taxpayer buyers, and (2) an individual taxpayer's demand exerts no influence over the quantity of public goods supplied. A model was presented to show the process by which the individual would desire to reveal his preferences for a public good with the characteristic of joint consumption. The logical conclusion of the analysis, based on the model, was that the individual is motivated to reveal his true preferences. Under the assumption that the individual attempts to maximize his satisfaction, it was concluded that a large number of individuals does not prevent the individual from maximizing his satisfaction unless the large number of individuals prevents the political

---

[16] A modified Musgrave-Samuelson model which is more consistent with price theory analysis of consumer demand and which has a single solution for both private goods and public goods is presented in Chapter V.

process from being organized so that the benefit theory of taxation can be applied. It was also concluded that the individual is motivated to reveal his preferences whenever he knows the benefit principle of taxation will be applied by the political mechanism. In the case where all of the activities of the government are accepted as one public good, the individual is not prevented from maximizing his satisfaction and will reveal his preferences for public goods in the market mechanism or in the political mechanism.

The second criticism was found to be based upon the model used by Musgrave to criticize the price theory of public finance. The conclusions derived by Musgrave are equally applicable to the price theory of private goods. The criticism of the price theory of public goods cannot be accepted unless it is also accepted as a criticism of the price theory of private goods or a new basis for the criticism is formulated.

The criticisms concerning revealed preferences have been a stumbling block in the way of the acceptance of the price theory of public finance. However, they are not the only criticisms which must be overcome for the theory to become very widely accepted. There are at least two basic criticisms concerning taxes and the political process which must be analyzed. One criticism is that taxes are compulsory payments which are not analogous to prices. The other criticism is that the political mechanism cannot be considered to be analogous to the market mechanism. Still other criticisms could be stated in relation to the political process but for the most part they can be treated under the above two broad categories of criticisms. However, before considering the criticisms of

the voluntary exchange theory which are related to the political process, the theory is presented in a graphical model which does provide a single best solution.

CHAPTER V

THE PRICE THEORY OF PUBLIC FINANCE: A SUGGESTED APPROACH

The Pareto optimum is an important concept in the development of the price theory of public finance. Musgrave's criticism that no single best solution exists in the supply of public goods which is analogous to the Pareto optimum in the supply of private goods was rejected in Chapter IV. The rejection of the criticism was based on the fact that the model used by Musgrave to prove the validity of the criticism was not entirely consistent with the price theory of private goods. The model did not yield the Pareto optimum solution when just private goods were used.[1] However, no attempt was made in Chapter IV to present a general equilibrium model which is more consistent with price theory and which does yield a Pareto optimum when just private goods are considered. Therefore, the first step is to develop such a model for private goods and then apply the methodology developed to the supply of public goods.

---

[1]The disturbing thing about the Musgrave-Samuelson model is that the model makes use of a barter exchange determination of price ratios which is analogous to the "Edgeworth box analysis." The arbitrary placing of one individual on his indifference curve while determining the combination of goods the second individual prefers to hold determines nothing more than a contract curve. It, therefore, merely establishes those changes in social variables which can take place through trading. Preferences are not revealed. Preferences are known and the individuals barter in accordance with the known preferences. For a rather cryptic remark on his own methodology see Paul A. Samuelson, Foundations of Economic Analysis (Cambridge, 1948), pp. 237-238.

A Modified Musgrave-Samuelson Model

Figure 14 presents a general equilibrium model for private goods. The three diagrams are basically the same as used in the Musgrave-Samuelson model, but the methodology has been modified. Instead of placing one individual at a point on his indifference curve while letting a second individual obtain the quantities of the goods he wants, the price of one good and the income of both individuals are held constant while price consumption curves are developed for both individuals. The price consumption line gives the combination of the two goods which the individual would desire at various price ratios of the two goods. The analysis up to this point is just the standard procedure for the development of a demand curve. Now, however, price consumption lines are summed rather than converted into demand curves. The combination of the two goods desired by individual A at the price ratio given by 1C line of attainable combinations is added to the combination of the two goods desired by individual B at the price ratio given by 1D line of attainable combinations. This process is merely the summation of the quantities of both goods at a given price ratio between the two goods. It is analogous to the horizontal summation of demand curves except the demand for two goods is stated simultaneously. An equilibrium for consumers is reached when the sum of the individual price consumption lines intersects the transformation curve. However, general equilibrium will only exist when the price ratio of the two goods is also tangent to the transformation curve at the point where the sum of the price consumption lines intersects the transformation curve. In Figure 14, this occurs with the price

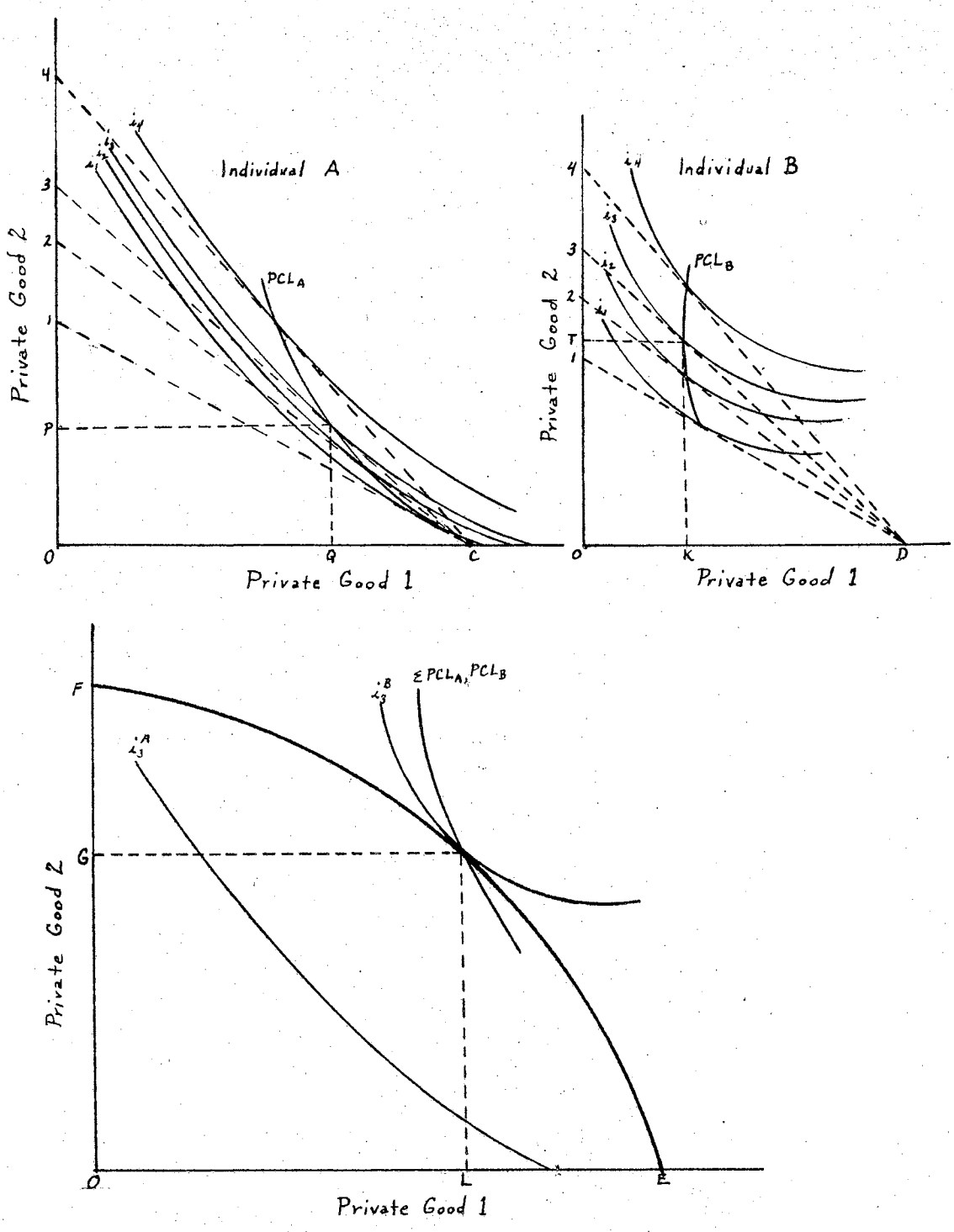


Figure 14. Modified Musgrave-Samuelson Model with Private Goods

ratio given by 3C line of attainable combinations for individual A and 3D for individual B. The tangency can be shown diagramatically by summing the indifference curves i_3^A and i_3^B. With the assumption of pure competition in the markets of the two goods, the prices and allocation of resources shown in Figure 14 represents the general long-run equilibrium solution and is the Pareto optimum solution in the case of private goods. If pure competition does not exist in the market for both goods, the Pareto optimum will not be achieved because then there is no market force to cause the ratio of prices to be equal to the ratio of marginal costs (i.e., the slope of the lines of attainable combinations equal to the slope of the transformation curve).

Figure 15 shows the three possible situations. Point A indicates a situation where the price of private good 1 is greater than the marginal cost of producing private good 1. Point C indicates a situation where the price of private good 2 is greater than the marginal cost of producing private good 2.[2] Point B indicates the Pareto optimum presented in Figure 14. It is apparent that there are an infinite number of solutions depending upon the specific market situations which might exist.[3] However, is it only when pure competition exists that the sum of the

---

[2]In both cases, it is assumed that the price of the other good is equal to or less than the marginal costs of producing the good.

[3]The infinite number of solutions in this model is not the same as the infinite number of solutions which exists in the Musgrave-Samuelson model. In the Musgrave-Samuelson model a specific solution depends upon the bargaining power of the individuals which is assumed to exist in the barter exchange of goods. In this modified model, a specific solution depends upon the market situations which are assumed to exist in the production and exchange economy.

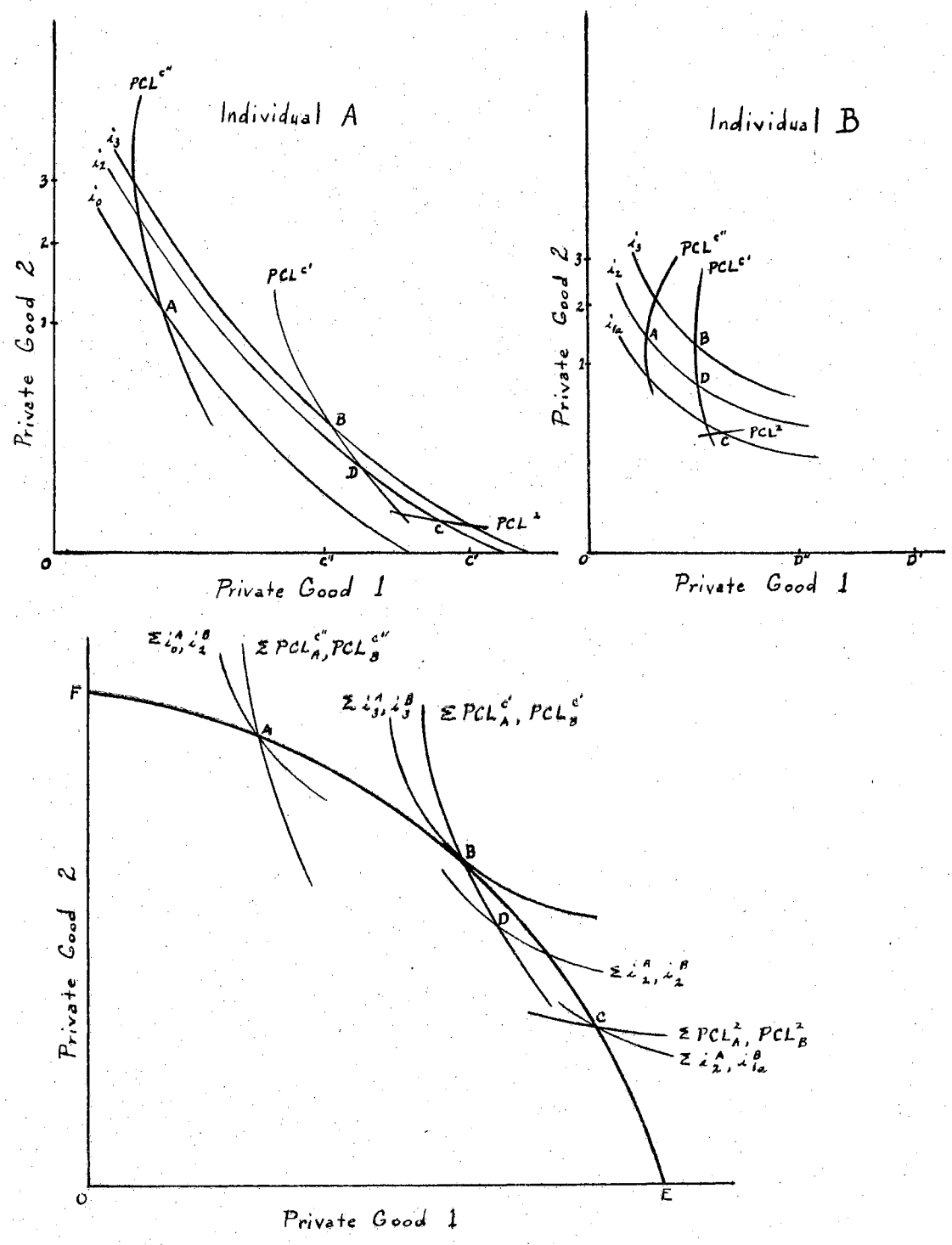


Figure 15. Price Theory Under Various Market Situations

individual price consumption lines intersects the transformation curve at a point where the sum of the indifference curve is tangent to the transformation curve. When any other type of market situation exists in the production of either good, the price of the good is greater than the marginal costs. Therefore, the ratio of prices (i.e., slope of line of attainable combinations and slope of indifference curve when the individual maximizes his satisfaction) cannot equal the ratio of marginal costs. If both goods are produced in monopolistic markets, the ratio of prices may equal the ratio of marginal costs. However, the government can achieve a Pareto optimum allocation of resources even given the equal consumption definition of a public good, if it is assumed that the individuals do express their true preferences for various quantities of the goods at different price ratios. Figure 16 gives the diagramatic presentation of the determination of the Pareto optimum allocation of resources with one good defined as a public good. The methodology used is the same as developed for the private goods model. The procedure for the development of the individual price consumption lines is not changed by the fact that one of the goods is a public good as long as true preferences are revealed. However, due to the change in the definition of one of the goods, the procedure for summing the price consumption curves must be changed. The combination of the two goods desired by individual A, when he must take a given quantity of the public good, is added to the combination of the two goods desired by individual B, when he must take the same given quantity of the public good. This change is just the change to a vertical summation of demand curves from the horizontal

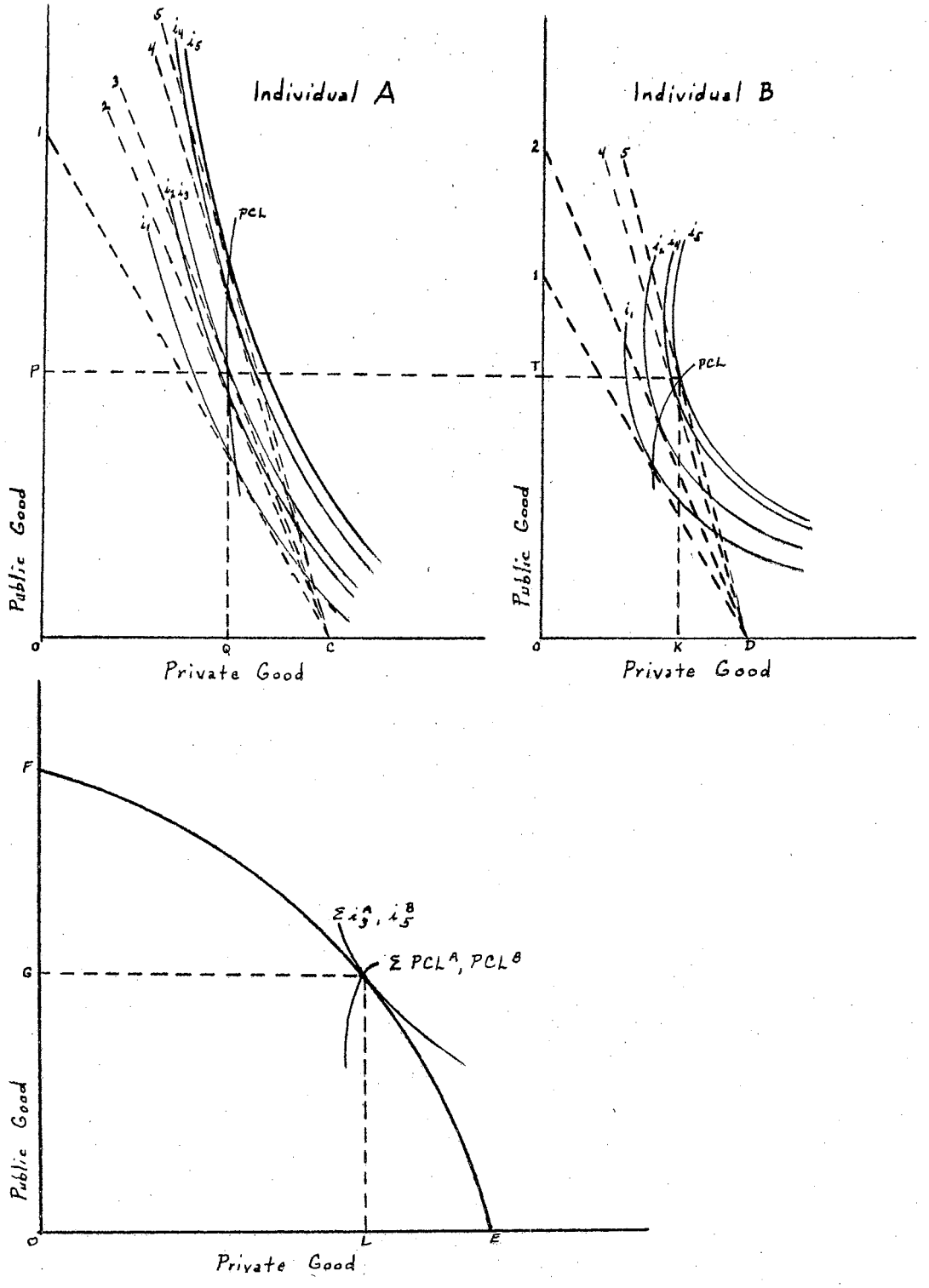


Figure 16. Modified Musgrave-Samuelson Model with Social Goods

summation of demand curves used in the private goods model.[4] The quantity of the public good is held constant and the demand for the two goods is summed whereas, before the price ratio was held constant and the demand for the two goods was summed.

The intersection of the sum of the price consumption curves with the transformation curve provides a consumer equilibrium as long as the government charges each individual according to his expressed demand. In Figure 16, individual A will pay for the public good in accordance with the price ratio given by 3C line of attainable combinations and individual B will pay for the public good in accordance with the price ratio given by 5D line of attainable combinations.[5]

The solution presented in Figure 16 is the Pareto optimum allocation of resources because the summation of indifference curves i_3^A and i_5^B is tangent to the transformation curve.[6] The same conditions for general equilibrium and for the Pareto optimum allocation of resources have been met in the public goods model as in the private goods model. The market

---

[4]This is in accordance with Bowen's concept of vertically summing demand curves but is not the same thing as Samuelson's summation of indifference curves. See footnote 6, below.

[5]This is taxation in accordance with the benefit theory of taxation which provides consumer equilibrium.

[6]The method of summing indifference curves is the same as that used by Samuelson. The existence of a single Pareto optimum is the result of holding income constant in the analysis. The difference between the methodology used here and Samuelson's methodology is that it employs the summation of price consumption lines (i.e., demand schedules of the two goods) to insure consumer equilibrium rather than using the exchange analysis of the "Edgeworth box" type which only insures that one individual is not made worse off while the other is permitted to become better off.

conditions cannot be assumed to force the allocation of resources toward the optimum but, if pure competition exists in the private goods market and if the government prices in accordance with expressed demands for the public good, the government can achieve a Pareto optimum allocation of resources.

The Pareto optimum or single best solution analogous to the Pareto optimum may represent a specific role for government in the production of public goods. However, the model developed in this chapter involves assumptions which may be subject to certain criticisms. Therefore, the next section of this chapter is a discussion of a couple of the major criticisms which may be raised against the suggested approach. Chapter VII will deal with the role of government in relation to the voluntary exchange approach and the model developed here.

Important Assumptions in the Model

The assumption that income is given data in the model is the assumption most likely to be criticized. The acceptance of income as given may be taken as an implication that the existing distribution of income is the "best" distribution.[7] Obviously, there are many countries where such an assumption would rightfully be subject to criticism because of the extreme inequities of the existing income distribution. However, some economists may accept income as given on the grounds that it is the best

---

[7]Musgrave has emphasized the concept of separating the allocation of resources from the distribution of income. One reason for this separation is the assumed necessity of accepting the given income in the allocation of resources as the "best" distribution of income.

assumption possible in most situations and because there is no objective basis for evaluating what is the "best" distribution of income.[8] This justification is not the only justification for accepting income as given in the suggested approach.

The income which is accepted as given in the model is neither a personal income distribution nor a functional income distribution.[9] It is not a distribution of income at all. The income which is accepted as given is the income which the individual expects to use in the consumption of goods during the period covered by the model. The amount of this income depends upon the individual's wealth and the individual's share of the personal income distribution in the past as well as upon many other factors. The main point is that the sum of the individual incomes does not have to equal the distribution of income in any particular period of time. The fact that this income may be low for a particular individual because he holds very little wealth and/or he has not had a favorable share of the personal income distribution in the past may not be of too much importance. The suggested approach is to accept the individuals own evaluation of what income he expects to have available and wants to use for the consumption of goods. The fact that income is given in the model does not suggest which distribution of income is "best."

---

[8]Delbert A. Snider, Economics Principles and Issues (Homewood, 1962), p. 616.

[9]Personal income distribution shows how income is divided among individuals and families, irrespective of the sources of the income. Functional income distribution shows the income flowing from the payment for resources in the form of wages, interest, rents, and profits. Ibid., pp. 578-579.

The use of price consumption lines instead of just indifference curves may also be subject to certain criticisms. The slope of an indifference curve may be considered as the demand for one good in terms of another good.[10] However, this is only true in a barter analysis where there is no production of goods. In this case, the slope of the indifference curve (i.e., the marginal rate of substitution of one good for the other) can be considered as a demand for the one good in terms of the other good. The marginal rate of substitution only gives the value (price) of a good to one individual when his activity is restricted to trading a quantity of the good he has for some quantity of the other good.

In a market society, the individual is assumed to have an income available for spending on goods and services which are to be produced by business firms. Therefore, the marginal rate of substitution does not constitute a demand for the good. The price consumption line on the other hand is a statement of the demand for both goods. If the assumed price of the first good is not consistent with the market situation in the production of that good, the market will cause a change in the price. The assumption that the market situation is one of pure competition makes it possible to determine the price of the one good before starting the analysis and avoid the complications of adjusting and readjusting prices.[11] The fact remains that price consumption lines are a statement of the

---

[10] Ibid., pp. 314-315.

[11] When pure competition exists in the production of both goods the price of each must equal the marginal costs of producing each good. Therefore, the ratio of prices (slope of the line of attainable combinations) must equal the ratio of marginal costs (slope of the transformation curve).

demand for both goods when income is given in a market society. Figure 15 indicates the effect of the type of market situation on the allocation of resources to the production of goods.

Summary

The nongraphical models of the voluntary exchange or price theory of public finance were presented in Chapter II. Each model emphasized different aspects of price theory analysis and different aspects of the political process. Despite the differences, all of the nongraphical models did represent attempts to answer all three economic questions related to public goods (i.e., which goods and services shall be produced by the government, what quantity of these goods and services shall be produced, and what tax-price shall be charged for the goods and services which are produced).

The graphical models of the price theory of public finance presented in Chapter III were also based on the concept that expenditures and revenues of government should be determined simultaneously. Many limitations and criticisms were pointed out in relation to the various graphical models. However, the two basic theoretical criticisms which concern the revealing of preferences were not treated until Chapter IV. In Chapter IV, these theoretical criticisms were rejected. Preferences, if they do exist, will be revealed either by modifying private good consumption behavior or by affecting the tax-price of public goods. The criticism that even when preferences are assumed to be revealed there is no single best solution analogous to the Pareto optimum solution in

the supply of private goods was shown to be dependent upon the barter exchange type model used to present the criticism.

In this chapter, a modified Musgrave-Samuelson model was developed which indicated that there is a single best solution in the supply of public goods which is analogous to the Pareto optimum solution in the supply of private goods. Also, two of the most likely criticisms of the suggested model were discussed. The acceptance of income as given does not imply that the present distribution of income is the best distribution. It merely represents the acceptance of the individual's own evaluation of the income to be used for consumption as the proper starting point of economic analysis. This acceptance of income as given has the same implications as generally considered in the price theory of private goods. The use of price consumption lines as the joint demand schedules of two goods is more acceptable than the use of the marginal rate of substitution as the joint demand schedules of two goods in a production economy. The use of the marginal rates of substitution as demand schedules is only consistent with a barter exchange economy where known preferences are revealed through direct exchanges of goods.

The criticisms of the voluntary exchange or price theory of public finance have been stumbling blocks to the widespread acceptance of the theory. However, the theoretical and practical criticisms not directly related to the political process have not been found in this study to be sufficient reason for the rejection of the price theory of public finance. Therefore, the next two chapters will treat first the criticisms directly related to the application of the theory to the political

process and then a suggested approach to the study of the determination of constitutional and policy rules of government.

CHAPTER VI

A CRITIQUE OF CRITICISMS: TAXES AND THE POLITICAL PROCESS

There are two broad categories of criticisms involving taxes and the political process. The first criticism is that taxes are a compulsory payment which cannot be considered analogous to prices. The second criticism is that the political mechanism cannot be considered to operate in a manner analogous to the operation of the market mechanism. Both of these criticisms are implicit in E. R. A. Seligman's history of taxation.[1] He presents the history of taxation as an evolutionary process, moving from the voluntary contributions to tribal chiefs, to compulsory payments, such as direct taxation by a central government.[2]

The first criticism is more or less explicit in Seligman's history of taxation because taxes are considered to be compulsory in a modern society. However, since a history of taxation places taxes in the setting of the political organization which happens to exist at various points in

---

[1] Essays in Taxation (London, 1913), pp. 1-6.

[2] DeViti DeMarco on the other hand has presented the history of taxation as an evolution in forms of voluntary payments, moving from voluntary contributions of goods and services to tribal chiefs, to voluntary contributions of money such as with direct taxation by a central government. The existence of constitutional provisions of all representative governments that no tax be determined or collected unless it is approved by the representatives of the people is cited as evidence that taxes are still voluntary in nature. Antonio DeViti DeMarco, First Principles of Public Finance, trans. Edith Pavlo Marget (London, 1936), p. 120.

history, Seligman's view of the compulsory nature of taxation may be related to the second criticism instead of the first. This recognition that taxes must be discussed in relation to some particular political mechanism is an important point in any discussion of the coerciveness of taxes. It is also necessary to consider the coerciveness relative to some specifically stated criterion.[3] Therefore, the discussion of taxes places them in a specified political mechanism and the conclusions are in terms of the degree of coercion relative to prices determined in a specified market situation.[4]

The second criticism is also difficult to analyze since there are so many factors which have to be assumed as given or treated in relation to various alternatives. Therefore, the approach taken in the second section of this chapter is to define various political situations in terms similar to accepted definitions of market situations. The similarities and differences which exist between the hypothetical situations are discussed in terms of the degree of coercion which would exist in the supply of goods

---

[3]Patinkin gives a good discussion of voluntary and involuntary employment pointing out the necessity of having an established criterion upon which to evaluate the degree of voluntariness that exists in a particular situation. Don Patinkin, Money, Interest and Prices (Evanston, 1950), pp. 211-214.

[4]Coercion must be discussed in terms of the degree of coercion because compulsion exists in every form of organization. DeViti DeMarco states: "Compulsion exists in every legal association of individuals; in business organizations, in partnerships, in the church, and especially in labor unions." DeViti DeMarco, First Principles of Public Finance, p. 50n.

and services.[5] The conclusions, therefore, are in terms of the degree of coercion in one political situation relative to alternative political situations and relative to various market situations.

In the discussion on the political mechanism presented in section two of this chapter, it becomes apparent that the constitutional rules establish the political situation when the government operates under a constitution. Therefore, the next chapter is a discussion of the determinates of constitutional rules and of the effects of some constitutional rules and policy rules upon the supply of public goods.

Prices and Taxes

The consideration of the point at which compulsion to act in a specified way in the case of both prices and taxes is one approach to considering the degree of coercion which exists for taxes relative to prices. It is assumed in the discussion that prices are impersonally determined in a purely competitive market situation, and that taxes are impersonally determined by a vote of all the individuals in the society.

The market determines the individual's per unit price of a good by the equality of the total demand for the good and the total supply of the good. The total demand for the good is the sum of the individual demands. The individual demands are expressed by the individuals' purchasing the good in the quantity desired at the price that it is offered for sale.

---

[5] Haavelmo's discussion of the need for a comparison between alternative economic models or frameworks under which a society may operate is the basis for the approach used here. Trygve Haavelmo, "The Notion of Involuntary Economic Decisions," Econometrica, Volume XVII (1950), p. 1.

The market supply schedule of the good is the sum of the quantities which will be produced by individual firms at various marginal costs. Each firm must offer the good for sale at the per unit price determined by the entire market for the good because if a firm offered it at a higher price the firm would have no sales and if a firm offered it at a lower price the firm would not be able to cover the costs of production in the long run.

The vote determines the individual's tax per unit of the good by the equality of the total demand for the good and the marginal cost of the government production of the good. The total demand for the good is the sum of the individual demands. The individual demands are expressed by the individuals' voting on the quantity that they would desire at all of the various prices possible. The government is under a policy rule to deliver the quantity of the good to each individual in accordance with their expressed demand at the tax-price determined by the equality of the total demand and the marginal costs of production. In both of the above frameworks of analysis, the good can be assumed to be the same good so as to eliminate problems which are related only to the differences in types of goods generally supplied through the use of prices and those generally supplied through the use of taxes.

The issue basic to the analysis is what constitutes a sale in the market. The legal and accounting concept of a sale is accepted in this analysis.[6] A sale takes place at the time at which some legally binding

---

[6]The concept of the point of sale in accounting has been one of the never ending problems of the accountant. W. Paton and W. Paton, Jr., Corporation Accounts and Statements (New York, 1955), Chapter 10.

evidence of sale has changed hands between the buyer and seller. This means that the point (time) of sale is dependent upon policy rules of the government as to what is considered as legally binding evidence of a sale. It logically follows that a sale in the market is a compulsory act once it is considered to have taken place and that the price is a compulsory payment once the sale has taken place. The legally binding evidence of sale may be the exchange of money or goods for goods. It may also be the joint signing of a contract which legally binds the buyer to pay a certain sum (the sale price) at a specified time and the seller to physically deliver certain goods at a specified time.[7] Neither money nor goods have to physically exchange hands for a sale to take place. The sale price stated in the contract reflects the per unit price to the individual determined in the market.

The point of sale, in the case of a tax, is when the individuals of society cast their votes for the quantity of the good desired at the various possible prices. The government is legally bound by a policy rule to establish the price in accordance with the vote of the individuals and the marginal cost or production. The individual is legally bound to accept the quantity of the good that he voted for at the tax-price set in accordance with the established policy rule. The casting of a vote is fully analogous to the signing of a contract. No money or goods exchange hands between buyer and seller or between taxpayer and government at the

---

[7]The laws and customs of nations regarding when and what constitutes a sale vary as to the degree of compulsion exerted by the government to enforce contracts of sale, but most nations whose economic system can be classified as a market system make the contract for sale a legally binding transaction.

point of sale, but once the point of sale is reached, the price or tax and the quantity to be supplied are determined. Once the sale is consummated the price and tax are both compulsory under the given policy rules. Before the point of sale is reached, there is no market price and likewise no tax-price.

The conclusion that taxes are no more coercive than prices is dependent upon the type of political mechanism which is assumed to exist. The conclusion clearly may not be valid if the political mechanism does not provide a means by which individuals vote for both quantities and prices of each good. The conclusion also may not be valid if the government is not subject to a policy rule which makes taxes and quantity of the good supplied dependent upon the expressed desires of individuals. However, the conclusion makes it clear that there is nothing inherent in the collection of taxes which is more coercive than the collection of a price. Taxes and prices are merely a means of expressing the payment side of a transaction. If coercion exists in taxation it is not because a tax was used as a means of payment instead of a price. Coercion in taxation must result from some factor which effects the level of taxes to be collected for a good or the quantity of the good to be supplied at a particular level of taxes.

The Market Mechanism and the Political Mechanism

The degree of coercion which exists in the political mechanism relative to that which exists in the market mechanism may be analyzed by defining different political situations (i.e., constitutional rules) in terms

of accepted definitions of market situations.[8] The political situations like the market situations are merely hypothetical situations. Specific real world political situations come closer to being described by one of the hypothetical situations than any of the others. However, no specific real world political situation is completely described by any of the hypothetical situations. Therefore, the conclusions only refer to hypothetical situations. However, the conclusions are likely to apply for the real world situation as long as it can be said that a particular real world political situation is described most closely by one particular hypothetical situation.

Market polypoly is "a state of mind of sellers' who know that they have competition, but, in making up their minds about changing their selling or productive policies do not ponder over what their competitors' reactions might be."[9]

Political polypoly is a state of mind of voters who know that they have competitors in the form of other voters with different desires for the same public good, but, in making up their minds about voting for particular selling or productive policies do not ponder over what their voter-competitors' reactions might be.

---

[8]For purposes of analysis, Machlup's terminology is adopted because it is based on the psychological aspects of the market which are more easily compared with the psychological aspects of the political situations and because it considers the market situations separately from the concept of the entry of new firms, plipoly. Fritz Machlup, The Economies of Sellers' Competition (Baltimore, 1952).

[9]Ibid., p. 136.

In market polypoly, it is usually considered that many buyers and many sellers of a homogeneous product exist. In political polypoly, this condition is not of importance. The buyers and sellers are the same individuals in a very direct sense and the existence of many is assured. All of the individuals which constitute a governmental unit of society are both the buyers and the sellers. A homogeneous product is also not an issue since all voters vote on the production of each good separately. Even in the case where the economic good is considered to be all governmental services, the homogeneous product condition is met by the political mechanism. The necessary condition is that government acts in accordance with the vote of the individuals in regard to the quantity and price of the good to be supplied and in accordance with known policy rules of government. The government is thus considered to be nothing more than an organization for the production of the goods and services desired by the individuals of society.

It would be necessary that the voting be for various quantities of the good at various possible prices in order to meet the conditions of the voluntary exchange theory. A vote on one quantity of the good at one price is not sufficient for a governmental organization which is to be neutral in its own productive activities. The government must know the various combinations of quantities and prices that individuals desire so that they can be compared with the cost of producing the various quantities of the good. The essence of such a political situation is that the voter reveals his true preferences without concern about the preferences which others are revealing. The voter knows that the governmental organization is restricted by constitutional rules that require the production policy

of the government to be based on the total revealed preferences and costs of production. He also knows the constitutional rules require the taxation policy of the government to be based on the individual preferences for the quantity of the good to be supplied to the individual.

The situations in the market and political mechanism are basically the same as those used in the analysis of taxes and prices. The conclusion, as would be expected, is the same. Only now it can be said that under the defined market situation and political situation there is no difference in the degree of coercion which would exist.

Market oligopoly is a state of mind of sellers who know that they have competitors, and, in making up their minds about changing their selling or production policies, do take into consideration what their competitors' reactions might be.[10]

Political oligopoly is a state of mind of governmental officials who know that they have competitors (other governmental officials), and, in making up their minds about changing their selling or production policies, do take into consideration what the competitors' reactions might be.

The usual cause of market oligopoly is fewness of sellers, which gives the individual seller an awareness of the fact that his actions affect the total market situation and that others notice his actions and react to them. Political oligopoly is similar in that its cause is the fewness of voters directly affecting the total market situation. Based on the considerations made in Chapter IV, it is assumed that true preferences would be revealed by individuals if they had the opportunity to

---

[10]Ibid., pp. 349-353.

vote. Therefore, the difference between political polypoly and political oligopoly is not considered to be the desire of the individual to reveal his true preferences. The difference is that in political polypoly the government as an organization is neutral in the determination of quantity of goods to be produced whereas in political oligopoly the government as an organization is not neutral. The situation is one where the government's selling and production policies are directly determined by a vote of representatives of individuals in the society rather than a vote of all individuals in the society. Each representative is aware of the fact that his actions affect the total market situation and that his competitors notice his actions and react to them. His competitors are the representatives of other individuals in the society. Each representative will temper his actions because of the reactions which might be forthcoming from his competitors. The consequences of the constitutional rules are that the representative is aware of his position in the determination of what and how much at what price is to be produced by the government, and each representative takes into consideration the reactions of other representatives when deciding the preferences he will reveal.

It is still possible but not necessary to assume that each representative is attempting to obtain for those whom he represents the quantity and price relationship for each public good which they would desire. If the representative is not attempting to obtain the quantity and price relationship desired by the individuals he represents, it can be considered that coercion is greater than in political polypoly. The higher degree of coercion is a result of a situation where the constitutional

rules for political organization do not permit the type of voting necessary for the government to be neutral in the determination of selling and production policy.

Market monopoly is a state of mind "of a seller who knows neither any individuals nor any particular groups of sellers with whom he is in competition."[11]

Political monopoly is a state of mind of a government official who knows neither any governmental officials nor any particular groups of society (political party) with whom he is in competition.

In market monopoly, the individual seller is unaware of a need for considering the reactions of any other sellers in the market. Therefore, his selling and production policies can vary greatly depending upon the motivation which is assumed to be the basis of his actions. He does not believe that the market process will require him to choose any particular policy. The pessimistic monopolist will attempt to make the most of the situation for himself in the short run. The optimistic monopolist may attempt to maintain his position by operating to make the most of the situation in the long run or he may attempt to maintain his position by advertising and research.[12]

Political monopoly is very similar to market monopoly. The single government official determines the selling and production policies for all public goods without having to compete (vote) with any other governmental officials or political parties. He does not feel a need for

---

[11]Ibid., p. 544.

[12]Ibid., pp. 555-557.

considering the reactions of any other representatives of individuals of society because he believes he is the sole representative of the people. However, he may be pessimistic about his position because other representatives of the people may gain popular or military support. Therefore, he will attempt to make the most of the situation for himself in the short run. The political monopolist may also be optimistic about his position because he feels that he can act to prevent any other representative of the people from interfering with his position. As a result, he may operate to make the most of his situation in the long run by relying upon his influence over all possible competitors (all other political officials or all other political parties) or he may attempt to maintain his position by propaganda and by public demonstrations of being the "true" representative of the people.

In political monopoly, the taxpayer is reduced to a buyer and serves little if any role in the determination of what is to be produced. The potential buyer of a good in the market may be faced with a higher price and, therefore, must modify the quantity which he purchases due to the existence of a monopoly seller. The taxpayer-buyer of a public good has no such opportunity in the case of political monopoly. Public goods which have the characteristics of jointness of supply would have both price and quantity determined independent of the desires of the individual. Even without the characteristic of jointness of supply, in the case of political monopoly, the price and quantity might both be determined arbitrarily. The only opportunities for the individual to obtain his desires in regard to public goods are to escape from the political control of the governmental unit under which he has lived or to find

some governmental official, or group which can take over as the accepted representative of the people.

Coercion in political monopoly is considerably greater than under market monopoly. Market monopoly may cause higher prices than under alternative market situations but the individual can still adjust the quantity of the good he purchases in accordance with the higher price. Therefore, economic freedom, in one sense at least, is not restricted by the existence of market monopoly. This, however, is not true for political monopoly, where both quantity and price are arbitrarily set by the government. Economic freedom is restricted and coercion does exist. However, the individual can still maximize his satisfaction for all goods, if he considers all governmental services as a single good. In this case, he must alter his consumption of private goods in accordance with the marginal utility per dollar's worth of public goods arbitrarily established by the actions of the political monopolist.

Coercion does not depend upon whether or not the individual can maximize his satisfaction because the individual can always maximize his satisfaction by altering what he considers as an economic good. The degree of coercion does depend upon the constitutional rules that have been established in the society. A change in the type of the market situation may not affect the degree of coercion that exists. Therefore, the political mechanism is more coercive in nature than the market mechanism unless it is assumed that the political mechanism can be classified as political polypoly.

Pliopoly is the term applied by Machlup to the concept of the entry of new firms in an industry and it is the existence of pliopoly which

tends to eliminate profits in the supply of goods in the market mechanism.[13] Pliopoly, however, does not have to be restricted to the actual entry of new firms. It depends upon an objective evaluation of an outsider as to whether or not is is probable that new firms will enter any given industry.

A similar concept could be developed for the political mechanism.[14] Political pliopoly would refer to the probability that the officials in the government will act in accordance with the desires of the individual in the society. The existence of political pliopoly would, therefore, tend to eliminate coercion in the political mechanism. The objective factors which should be considered in evaluating whether or not governmental officials are likely to act in accordance with the desires of the individuals in society are complex, but at least a few could be briefly pointed out. The most obvious is whether or not there is a regular process by which the individual can express his desires. Another would be

---

[13] Ibid., p. 211.

[14] The political mechanism has no automatic factors which tend to eliminate profits. Whether or not the government should make profits could be established in the form of a constitutional rule or, as is more likely, in the form of a policy rule of government. The absence or presence of profits in the supply of public goods is of extreme importance since it determines whether the total budget of the government will be a surplus budget, balanced budget or deficit budget. Therefore, four possible policy rules are listed with their affect upon the total budget, assuming that they are consistently applied to the pricing of every public good. (1) Average Cost Pricing Rule--balanced budget, (2) Marginal Cost Pricing Rule--budget determined by the value of goods supplied having increasing or decreasing costs, (3) Maximum Production of Public Goods Pricing Rule (i.e., increasing cost goods at average cost and decreasing cost goods at marginal cost)--deficit budget, and (4) Minimum Production of Public Goods Pricing Rule (i.e., increasing cost goods at marginal cost and decreasing cost goods at average cost)--surplus budget.

whether or not desires are expressed for just a quantity at a given price or a price at a given quantity or for various quantities at various possible prices. Still another would be whether or not the governmental policy rules encourage the governmental official to act in accordance with the desires of the individuals in the society.

It can be considered, from these few factors affecting the existence or nonexistence of political pliopoly, that it would be most likely to occur under the constitutional rules (political situation) classified as political polypoly. The individual voter does have the opportunity to express his desires for the various quantities at the various prices through the voting process and the policy rules of government require the governmental official to act in accordance with the vote-expressed desires of the individuals in society. However, political pliopoly is not necessary because governmental officials once in office may be able to circumvent the policy rules or even the constitutional rules. Therefore, political pliopoly is not assured as a component part of political polypoly but it is most likely to exist under the constitutional rules of political polypoly.

In the case of political oligopoly, the three objective factors leading to political pliopoly, listed above, are not an inherent part of the political situation. However, this does not rule out the possibility of political pliopoly existing. Under political oligopoly, the extent to which the representative can reveal desires different from the "true" desires of the individuals whom he represents, depends upon the constitutional rules as to the voting for representatives and upon the

constitutional rules[15] as to the voting (balloting) process for specific goods and services. In other words, the likelihood of coercion (the absence of political pliopoly), depends upon whether or not the representative is aware of possible reactions on the part of the voters that choose the representative and this may in turn depend, at least in part, on the knowledge that the voter is likely to have concerning whether or not the representative actually does attempt to express the desires of those whom he represents. If the representatives had to cast ballots for various quantities at various prices for each public good because of a constitutional rule, the voters could be aware of the fact that the representative is modifying the individual voter's true preferences. If the representative merely casts a vote for or against a specific quantity and price of each public good, as is usually the case, the voter has less opportunity to be aware of the modification of the individual voter's true preferences. The latter constitutional rule makes it possible for the representative to bargain in the political process, before the decision to produce any public good comes to a ballot, and to assure himself that his vote can be cast without causing reactions on the part of those who vote the representative into office.

---

[15] DeMarco states the necessary conditions as follows: "Only if the taxpayers participate in the initial calculation of wants, in which each person judges the economic advisability of paying a given tax in order to obtain in exchange a given public service, and only if this calculation is subjected to annual revision and is open to criticism and continuous public discussion by the Press, the political parties, the parliament, is it possible to have a guarantee that what is involved is a productive public expenditure--that is one which is regarded as such by those who bear the cost." First Principles in Public Finance, p. 118.

Political pliopoly is least likely to occur under the constitutional rules of political monopoly. The only apparent reason that political pliopoly might exist would be because of the altruistic motives of the governmental official. The existence of policy rules of government, which correspond to the objective factors considered above, would constitute an objective factor indicating the existence of political pliopoly even in the case of political monopoly. The policy rules of the government replace the constitutional rules as objective factors but policy rules are not controlled or limited by other constitutional rules in the case of political monopoly and, therefore, depend upon the public spirit of the governmental officials.

The conclusion to be drawn from the analysis of the market mechanism and political mechanism in regard to coercion is that the political mechanism is likely to be more coercive than the market mechanism but that the degree of coercion in the political mechanism is dependent upon the constitutional rules that establish the particular mechanism. Also it can be concluded that certain constitutional rules and/or policy rules of the government can be considered as objective evidence that the degree of coercion present in any specific political situation is less than it otherwise would have been.

Summary

There are two broad categories of criticisms concerning taxes and the political process: (1) Taxes are compulsory payments and are not analogous to prices; (2) The political mechanism cannot operate in a manner analogous to the operation of the market mechanism. The view

that the history of taxation is an evolutionary process moving from voluntary payments to compulsory payments is related to both criticisms because taxes are considered within the particular political mechanisms which exist at various points of time. Taxes must be discussed in terms of some existing political mechanism or some hypothetical political mechanism.

When taxes are considered in an "ideal" hypothetical political mechanism, they are no more coercive than prices. This conclusion is only valid for the hypothetical political mechanism used in the analysis. However, at least it can be said that taxes are merely the payment side of a transaction just like prices. The degree of coercion depends upon the political mechanism which determines the amount of taxes to be collected, and the quantity of goods and services to be supplied and not upon the form of payment made to obtain the goods and services.

The comparison of hypothetical market situations (market polypoly, market oligopoly, and market monopoly) with hypothetical political situations (political polypoly, political oligopoly, and political monopoly) resulted in the conclusion that the political mechanism does not have to be more coercive than the market mechanism. However, this conclusion depends upon the possibilities of having a political mechanism which corresponds to the hypothetical situation of political polypoly. In the real world, the political mechanism is more likely to correspond to the hypothetical situation of political oligopoly. Therefore, the political mechanism is likely to be more coercive than the market mechanism. However, the existence of certain factors which correspond to hypothetical political pliopoly may be considered as evidence that the degree of coercion is less than it would otherwise be.

The analysis of this chapter has shown that constitutional rules and policy rules of government do have an effect upon economic variables and economic analysis. Therefore, the next chapter represents a suggested approach to the problems related to the political process.

CHAPTER VII

CONSTITUTIONAL RULES AND POLICY RULES OF GOVERNMENT: A SUGGESTED APPROACH

The study of constitutional rules and policy rules of government cannot be ignored by the economist who follows the voluntary exchange or price theory of public finance. This fact was recognized by the early followers of the voluntary exchange approach and it is true today. The analysis of the criticisms related to taxation and the political process presented in Chapter VI confirms the point that the type of political mechanism which exists affects economic factors.

However, the study of constitutional rules may be considered primarily the function of the political scientist rather than the function of the economist. The economist cannot ignore the constitutional rules even if it is accepted that these rules are primarily the concern of the political scientist. Taxation and the allocation of resources by the government is affected by the type of political mechanism which exists. Therefore, the suggested approach is that the economist accept the responsibility of defining the political situation which is assumed in his economic analysis. The economist also should accept the responsibility of being acquainted with the rationale of any given political mechanism and the effects of the given mechanism upon economic factors. The first part of this chapter adopts this approach to consitutional rules by reviewing one possible rationale for the existence of the representative

form of government and by pointing out some of the implications which such a political mechanism may have upon economic analysis.[1]

Constitutional rules only determine the role of government in the supply of public goods in the hypothetical political situation defined as political polypoly. Therefore, in most political situations, it is likely that policy rules will determine the role of government in the supply of public goods. These policy rules are directly the concern of the economist.

There are an infinite number of possible policy rules which define an infinite number of roles of government in the supply of public goods. The second part of this chapter is an application of the model of the price theory of public finance suggested in Chapter V. The objective of the analysis is to indicate some of the implications of various possible policy rules to economic analysis. The particular rules analyzed were chosen because they can readily be treated with the particular formulation of the price theory of public finance suggested in this dissertation. Many more possible policy rules could be stated and should be analyzed but other frameworks of analysis may be necessary. Therefore, the analysis which is presented represents a suggested approach to the question of just what various possible policy rules mean in the economic analysis of the allocation of resources by the government to public goods.

---

[1]The framework of this analysis and some of the conclusions are derived from the work of James M. Buchanan and Gordon Tullock, The Calculus of Consent (Ann Arbor, 1962).

The Representative Constitutional Form of Government

A representative constitutional government (political oligopoly) need not be opposed to rational behavior of an individual attempting to maximize his satisfaction even though, on the surface at least, political polypoly is the ideal system. Political polypoly may be considered to be the ideal form of governmental organization in the sense that, under perfect conditions, it is neutral in its effect upon the individual's behavior in the consumption of privately produced goods (i.e., the political mechanism works as efficiently as the market mechanism and the individual maximizes his satisfaction by equating the marginal utility per dollar's worth of all goods, including public goods).[2]

The reason that a representative form of government is not inconsistent with rational behavior of individuals is that there may be some costs associated with the act of collective decision making.[3] In other words, there may be costs associated with obtaining any specified number of individuals to vote in favor of any particular proposal and costs associated with taking a vote of all individuals on various quantities and various prices for a particular good. In the latter case, the costs can be expected to increase as the number of individuals increases. In the former case, the costs can be expected to increase as the number of people necessary to vote in favor of a particular proposal increases.

---

[2]This is the question of neutrality mentioned earlier in regard to Richard A. Musgrave's criticisms of the Lindahl model which was taken up in Chapter V.

[3]Buchanan and Tullock, The Calculus of Consent, p. 44.

The unanimity rule would, therefore, have the greatest cost of decision making associated with it. The conclusion is that it can be considered rational for an individual, attempting to maximize his satisfaction, to prefer the representative form of government over one which requires individuals to vote on the supply of each good produced by the government.[4]

This conclusion is even more likely to hold true, if there are additional constitutional rules establishing a system of checks and balances which limit the functions of the various branches of government so that the branches of government are somewhat analogous to the market organization.[5] The function of the legislative branch can be limited to the interpretation of the quantity and price of particular goods desired by individuals of the society. The function of the executive branch can be limited to the determination of how to combine resources in the production of the goods determined as desirable by the legislative branch. The function of the judicial branch can be limited to the evaluation of whether or not the other two branches of government have acted within all of the constitutional rules established by the society.

However, once established, with the legislative branch being established to interpret the desires of all individuals of the society, the representatives that make up the legislative branch may come under the pressures of minority groups of individuals organized to obtain exclusive benefits for the group which are to be paid for by all of the individuals

---

[4] Ibid., pp. 115-116.

[5] These may be considered as additional factors to be considered as evidence that political pliopoly does exist.

of the society.[6] These pressure groups are a natural outgrowth of the system, if the assumptions about rational economic behavior are accepted because small groups of individuals find that they can gain more in benefits than it costs to organize and obtain the benefits.[7] The result is that the constitutional rules establishing the representative form of government do not operate as they were intended to operate. The benefits from the goods supplied by the government become separated from the costs (taxes). The majority of the society, rather than the minority of the society, must adjust their private consumption to maximize their satisfaction as a result of the government supply of goods.

The unanimity principle in the political process has been suggested as a theoretical answer to the problem of tax-justice (i.e., the elimination of coercion in taxation).[8] Under political polypoly, the unanimity rule creates greater costs of decision making but may in certain situations eliminate coercion[9] since a tax may not be considered to be coercive if

---

[6]DeMarco's conclusions about pressure groups are similar but stated in terms of his own framework of analysis. The pressure groups are considered to be evidence of a monopolistic element in government. The conclusions are that if capital owning pressure groups win, higher prices must be paid to private firms, and, if labor pressure groups win, higher prices will have to be paid in the form of higher costs of production. First Principles of Public Finance, p. 50.

[7]Buchanan and Tullock, The Calculus of Consent, pp. 286-287.

[8]See the analysis of the Wicksell-Lindahl model in Chapter III.

[9]The situation where the unanimity rule would be necessary would be where political polypoly existed but the good in question had the characteristic of jointness of supply and where another rule existed requiring the same price to be charged all taxpayers.

every individual has agreed to it in advance by voting for the specified tax for specified quantities of the goods to be supplied. In the representative form of government (political oligopoly), the unanimity rule does not eliminate coercion unless two further assumptions are accepted: (1) the representatives do vote exactly as the individuals whom they represent would vote,[10] and (2) the representatives do represent equal numbers of individuals of the society. However, even in the case where these assumptions are not accepted, the unanimity rule may be a part of the constitutional rules rationally chosen by the individuals of the society. The costs of decision making in alternative systems may make it so that individuals prefer an imperfect system. In other words, the individuals decide that there are more social (external) costs associated with having any alternative set of constitutional rules than there are benefits to be gained by having the alternate rules. The unanimity rule is one possible rule which is included in the set of constitutional rules in an attempt to insure that the benefits to be gained by a change to an alternative set of constitutional rules are less than the social costs associated with it.[11]

---

[10]This assumption implies that all individuals represented by a given representative have the same utility function for all public goods.

[11]Buchanan and Tullock suggest another possible constitutional rule or government policy rule which might be more practical in a society where pressure groups have already developed and are believed to have an effect upon the representative in his decision making process. The rule would require that all goods which benefit a particular minority group be paid for by special taxation of another equal in size minority group. The logic of this rule is to establish a basis for countervailing powers to operate without causing a growth in the countervailing powers. The Calculus of Consent, pp. 291-294.

It might be accepted as a valid conclusion that, no matter which of the possible constitutional rules exist, coercion does not exist as long as unanimity exists concerning the existing constitutional rules.[12] In other words, as long as each individual in the society agrees to the existing constitutional rules, it can be assumed that they believe that the gains to be derived from changing to any alternative set of rules do not equal the costs of making the change.[13] However, some of the costs of changing to an alternative set of constitutional rules may be the direct result of the existing constitutional rules regarding the process of changing constitutional rules. Therefore, the question of whether or not coercion can be said to exist under a condition where the constitutional rules are not functioning as they were intended to function but where unanimity exists in regard to keeping the existing constitutional rules is a problem beyond the scope of this analysis.

At least it can be said that the determinates of the political situation which exists are the constitutional rules and policy rules under which the government operates. The role of government in the production of public goods, however, is indeterminate in political oligopoly and all other political situations except political polypoly. Therefore, it is important to consider various possible policy rules which do define the role of government in the production of public goods with the price theory of public finance as the framework. Each of the remaining sections

---

[12] Ibid., pp. 250-253.

[13] Ibid., pp. 260-262.

of this chapter treats a possible policy rule and some of the implications the rule may have for economic analysis.

Public Goods Neutral as to the Optimum Allocation of Resources

The model developed in Chapter V and presented in Figure 16 is a statement of public goods being neutral as to the optimum allocation of resources. Therefore, all which was stated in the previous chapter is implied in considering this role of government. However, much more is also implied by adopting this concept. Before discussing some of these other implications it may be best to clarify one of the possible results of the government not fulfilling this role of government.

Figure 17 indicates the effect of government producing a smaller quantity of public goods than that which is necessary for the optimum allocation of resources. Point A represents the optimum allocation. Point B represents the allocation when the government produces a quantity which is not based upon the equality of the total demand for public goods and the marginal cost of producing the public goods. The tax-price is still determined by the benefit theory of taxation and the price of private goods is the same as would be determined in a purely competitive market if the government did provide an optimum allocation of resources. Consumer satisfaction is not prevented by the fact that the government did not fulfill its role of being neutral as to the optimum allocation of resources.[14] However, the optimum allocation of resources will not be

---

[14]The maximization of individual satisfaction is the result of tax-pricing according to the benefit theory of taxation and is independent of the optimum allocation of resources.

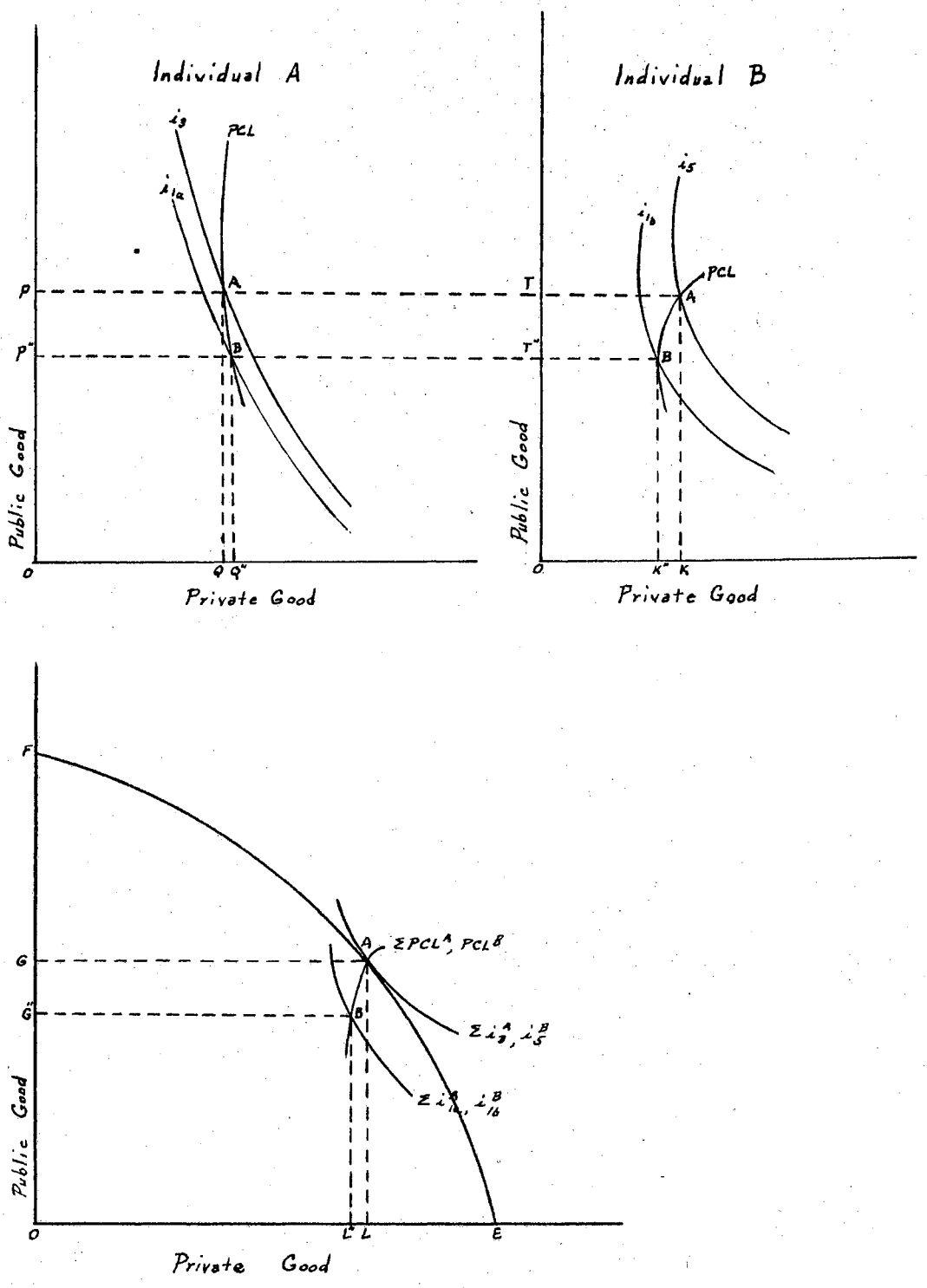


Figure 17. Public Goods Neutral as to Optimum Allocation of Resources

achieved unless the government does produce the quantity of public goods based upon the tastes and preferences of individuals. The acceptance of this role of government appears to naturally follow from the economist's acceptance of the Pareto optimum allocation of resources for private goods but the implications of this acceptance to the role of government are not so readily acceptable.

The assumption that income is given in the model (Figure 16) was discussed in Chapter V. The conclusion was that the given income does not imply that the given income is the "best" distribution of income. The given income is not a distribution of actual income. The model does, however, imply which functional distribution of income is the "best."[15]

All actions of the government are assumed to be the result of attempting to obtain the optimum allocation of resources. This allocation of resources implies a specific functional distribution of income.[16] Once public goods are included with private goods in the determination of the allocation of resources, the functional distribution is likely to be nearly the same as the personal income distribution.[17] Therefore, a specific

---

[15]The functional distribution of income is the income distribution resulting from the payment of wages, rents, interest and profits to the owners of resources used in the production of goods.

[16]It is assumed that the government has no role in changing the existing ownership of resources.

[17]The personal distribution of income is the distribution of income irrespective of source. It may include transfer payments, gifts, etc. which are not included in the functional distribution.

personal income distribution is virtually implied in the model and it must be accepted as the "best" distribution given the original expected incomes of individuals.

Another assumption of the model which has special significance in regard to the role of government is the assumption that pure competition exists in the production of private goods. The Pareto optimum cannot be achieved unless pure competition exists. Therefore, it is implied that the role of government extends government activities to activities taken to achieve purely competitive markets. In fact, it is implied that the government should either take over the production of all goods not produced in purely competitive markets or set prices according to marginal costs in those markets so as to bring about the same allocation of resources.[18]

Still another necessary assumption in the model is the assumption that individuals do reveal their true preferences. The implication is that political polypoly exists as the political situation. At least, it must be assumed that in some way voters do express their true preferences for public goods, because if not, the result may be something like that illustrated in Figure 17 where benefit theory taxation existed but not an optimum allocation of resources. Therefore, a voting process must exist which permits voters to vote for the various prices they are willing to pay for various quantities.

---

[18]This was the role of government proposed by Knut Wicksell. See Carl G. Uhr, Economic Doctrines of Knut Wicksell (Berkeley, 1960).

Pareto Optimum Allocation of Resources as a Standard of Reference

The policy rule of government of obtaining the optimum allocation of resources may very well be modified because of some of the assumptions and implications inherent in this approach to the role of government. The economic justification for modifying the role of government is basically the same as it was for saying that it was rational for individuals to choose a representative form of government instead of having a political situation which more closely corresponds to political polypoly.[19] The additional costs of decision making are greater than the value to be gained by obtaining the optimum allocation of resources. Also, the additional costs of having the government produce all goods not produced in a purely competitive market may be greater than the value to be gained by obtaining the optimum allocation of resources. It is not certain that additional costs would be involved but the government must control its production by policy rules and must maintain a means of seeing to it that the policy rules are carried out. The market mechanism on the other hand operates to bring about an allocation of resources by producers attempting to maximize their profit. In the case of the government supply of goods, therefore, the cost of producing the same good might be more than if the good were produced by private profit seeking firms. In any case, it appears that individuals might rationally choose a role for government which does not require the government to obtain the Pareto optimum allocation of resources.

---

[19] James M. Buchanan and Gordon Tullock, The Calculus of Consent (Ann Arbor, 1962).

If the Pareto optimum allocation of resources is accepted merely as a standard of reference rather than as a policy rule regulating the government's activities, the model presented in Figure 16 is still the basis for the evaluation of the role of government. However, the interpretation of the implications of the assumptions used in the model is changed.

The functional distribution of income resulting from the optimum allocation of resources is still considered as the "best" income distribution. However, it need not be the income distribution which actually results from the production of public goods. The Pareto optimum allocation of resources and its resulting functional distribution of income does not have to be obtained because the role of government is just to use the optimum as a standard of reference.

The government may also use the purely competitive market in the production of private goods as a standard of reference. Actions should be taken to bring about pure competition but the cost of these actions should also be taken into consideration. Also, the political polypoly situation may be considered as the standard of reference but a representative form of government (political oligopoly) may be accepted. This acceptance of political oligopoly is valid especially if other policy rules exist which indicate the presence of political pliopoly.[20]

The role of government in this case is not clearly defined. It is dependent upon the ability of the political mechanism to obtain the information about the tastes and preferences of individuals both in regard to the production of public goods and in regard to the extent to which the

---

[20]See Chapter VI.

government should act to obtain pure competition in the markets for private goods. However, the starting place for analyzing the role of government is still the Pareto optimum allocation of resources. The government should act to obtain this allocation of resources unless it is determined that the individuals of society consider the costs of obtaining this allocation greater than the value to be gained from obtaining it.

The problems of achieving this role of government are many but most of them are practical rather than theoretical. Practical limitations exist for all of the possible roles of government and it is difficult, if not impossible, to say which role of government has the greatest problems of application. Therefore, they will not be discussed here.

Public Goods Neutral as to Prices of Private Goods

Another possible role of government is that public goods are to be produced to maximize production of goods without affecting the existing prices of private goods.

Figure 18 presents a model showing this role of government. The market price of private goods is assumed to be given as a result of whatever market situation actually exists in the production of the private goods.[21] The government has no responsibility to modify the market structure. However, the quantity of the private good which is taken by consumers is permitted to vary. Only the price of private goods is not to be affected.

---

[21]The model assumes monopolistic markets exist in the production of private goods. If pure competition did exist the model would be the same as shown in Figure 16.

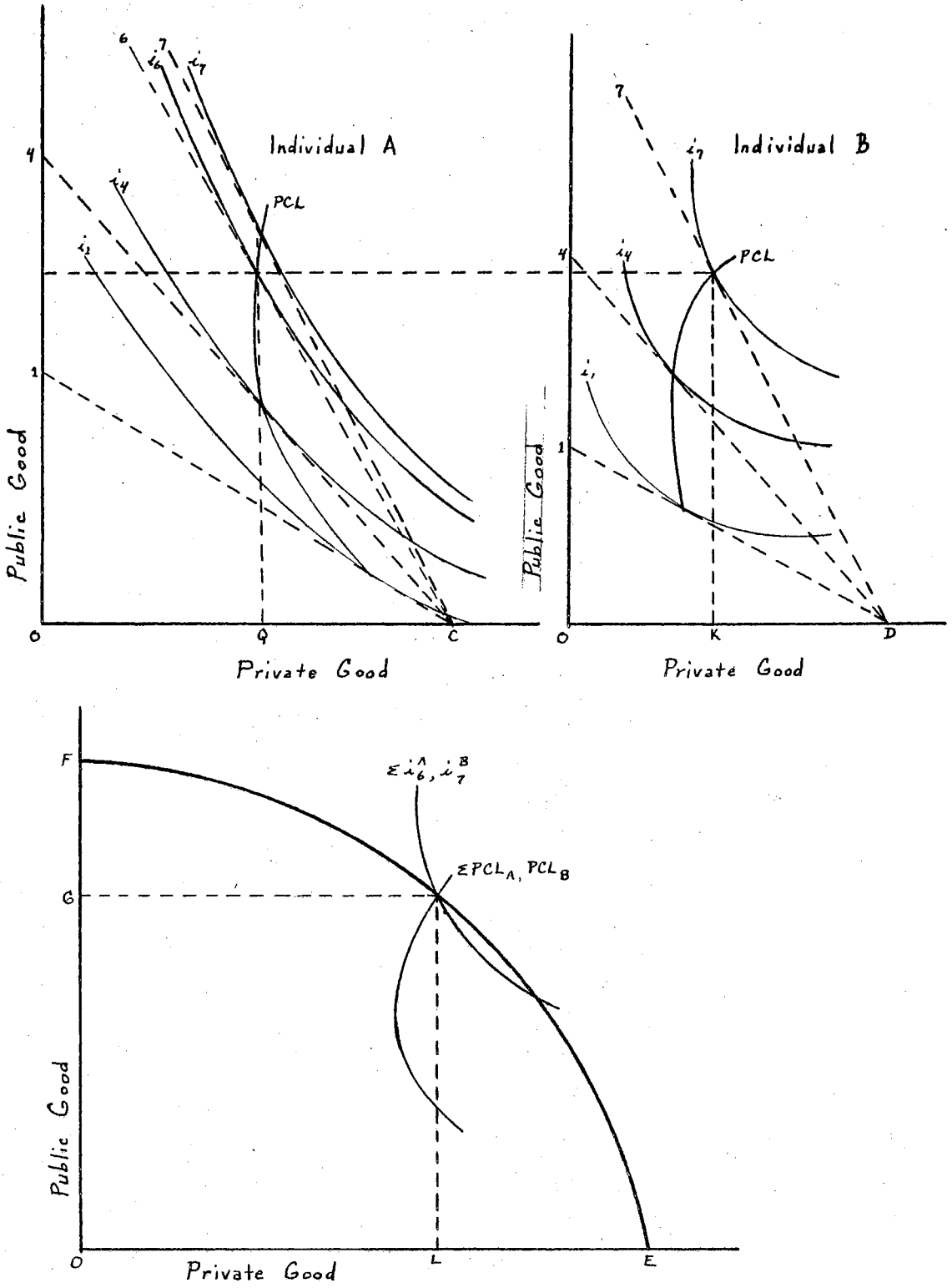


Figure 18. Public Goods Neutral as to Prices of Private Goods

Therefore, the government determines the quantity and tax-price for public goods so that the individual will maximize his satisfaction by only adjusting the quantity of private goods he purchases.

The resulting distribution is considered to be the "best" but very little can be said about what it would be. It would probably be close to the existing distribution of income since the price of private goods is not changed. However, the quantity of private goods taken may change. Therefore, the resulting distribution of income may be different than the original functional distribution of income.

The role of government in tax-pricing can still be in accordance with the benefit theory of taxation, as is shown in the model. The individual, therefore, is able to maximize his satisfaction. The government adjusts the quantity of production to maximize the total production of goods without affecting the price of private goods. The resulting tax-price may not be based on the marginal costs of production. It is possible that the government may have to charge a tax-price less than the marginal costs of production in order to maximize production without affecting the price of private goods. It is also possible that the quantity of private goods taken would also increase as a result of the government producing goods and selling them at less than the marginal costs of producing the public goods.[22]

---

[22]In this case, it is assumed that more income would be created by the government production of goods than would be spent as taxes in payment for the public goods.

Public Goods Neutral as to the Private Sector of the Economy

Figure 19 is a model of the government producing public goods so as not to affect the production of goods in the private sector of the economy. The methodology used in the model is the same as before with the exception that both the price and quantity of private goods is given instead of just the price. The government adjusts its production of public goods so that neither the existing price nor the existing quantity of private goods is affected. The "best" distribution of income is considered to be the existing functional distribution of income.[23]

The role of government in tax-pricing can be in accordance with the benefit theory of taxation as shown in the model when individual A is assumed to take quantity OQ of the private good and individual B is assumed to take quantity OK of the private good. The individuals are still able to maximize their satisfaction in this case. However, since the government's role is to affect neither price nor quantity of private goods, the consistencies of the demand for private and public goods with the benefit theory of tax-pricing is an exceptional case.[24]

The existing quantity of private goods must be consistent with a single quantity of public goods when the equal consumption definition for

---

[23]The only change in the existing functional distribution of income is that the government also makes payments of wages, rents, interest and profits which might be different than the payments which existed before.

[24]Whether or not the government should prive according to the marginal costs of production cannot be stated without more definite assumptions about these costs and the existing market structure.

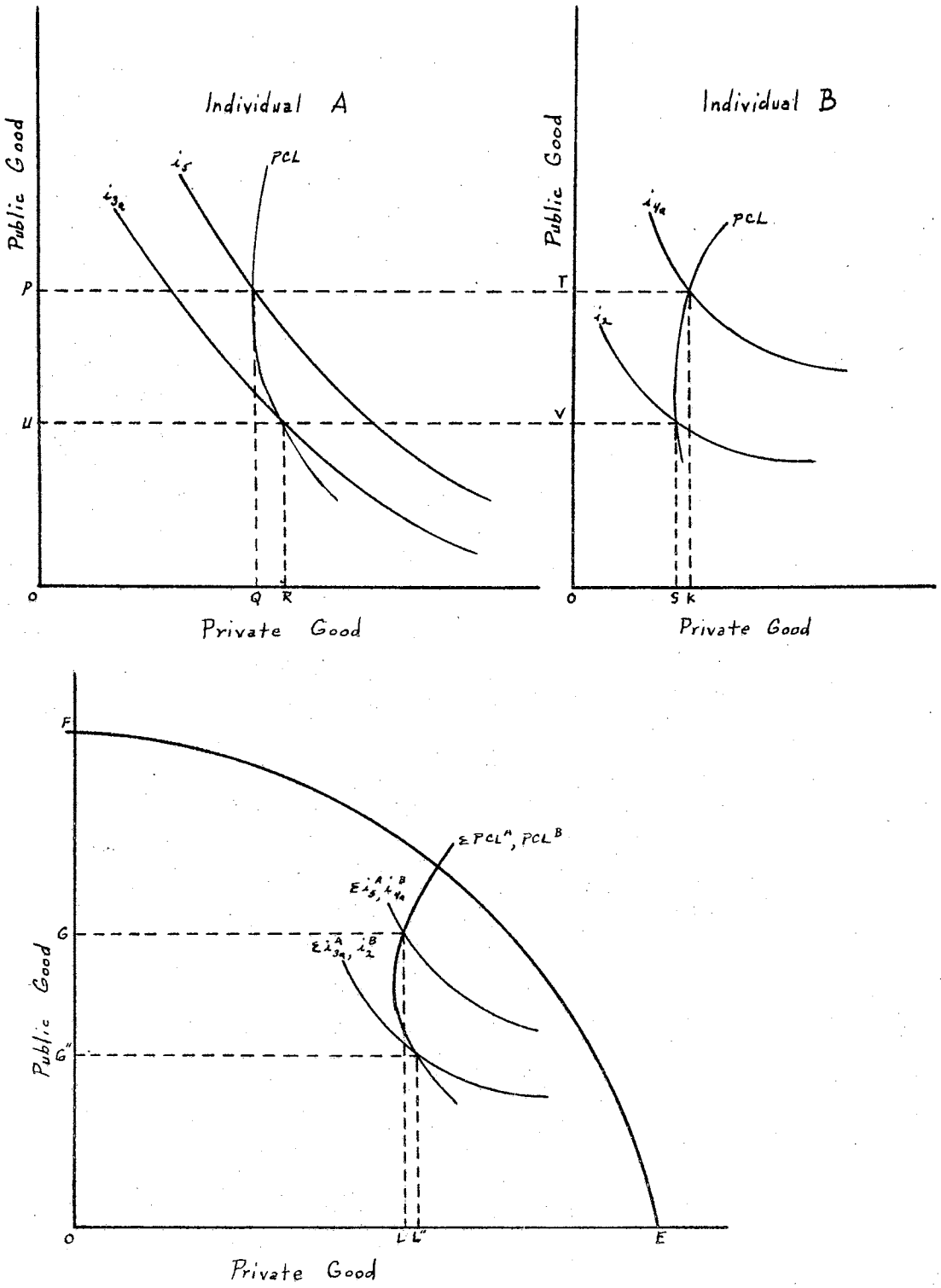


Figure 19. Public Goods Neutral as to Private Sector of the Economy

a public good is used.[25] If the assumed quantity of private goods taken by individual A had been OR instead of OQ, the government could not use the benefit theory of tax-pricing and still accomplish its role since individual A would only want OU quantity of the public good. If the government did reduce the production of the public good to the quantity OU, individual B would only want OS quantity of private goods instead of the originally assumed quantity OK. Therefore, the government is unable to apply the benefit theory of taxation to fulfill its role of being neutral to the production of private goods unless the quantity of private goods taken happens to be consistent with a single quantity of public goods.

It may be assumed that the government can still produce quantity OG of the public good by charging individual A the tax-price given by the 5C line of attainable combinations. In this case, the government does not affect the price or quantity of private goods which is taken but individual A is not satisfied with the quantity of public goods which he receives.[26] Therefore, the government may have to exert its unique position in the production of goods to accomplish the role of being neutral as to the private sector of the economy.

---

[25] If the equal consumption definition of a public good is rejected, the individual can adjust the quantity of public goods so as to maximize individual satisfaction.

[26] In this case, taxes become more coercive than prices determined in the market.

Summary

It is suggested in this chapter that the economist is not primarily concerned with the factors determining constitutional rules but that he should understand the rationale behind the existing constitutional rules and the implications that these rules may have upon his analysis.

The analysis indicated that even though political polypoly is the least coercive type of political situation, the individual may rationally choose to live in a political oligopoly situation because of the costs of making decisions in political polypoly. The existence of political oligopoly, however, may lead to the creation of pressure groups. Pressure groups in turn lead to a greater degree of coercion. Other constitutional and policy rules may exist which tend to make the situation less coercive than it otherwise would be.

The role of government in the production of goods is not necessarily specified by the constitutional rules. However, the policy rules of government may define the role of government in the production of goods. The optimum allocation of resources provides one possible policy rule of government which defines the role of government in the production of goods. It is implied by this rule that the government should produce all goods which could not be produced under conditions of pure competition. It is also implied that the government has a role to perform in insuring that pure competition does exist in the production of all goods produced in the private market sector of the economy.

The optimum allocation of resources may also be accepted only as a standard of reference for the government in the production of goods. In

this case, the role of government is to provide marginal cost pricing in the production and sale of all goods when the individuals of society consider the gains to be obtained by the actions taken by the government are greater than the costs of taking the action. Thus, it would be accepted that a less than optimum allocation of resources might be rationally chosen by the individuals of society when the costs of obtaining the optimum would be greater than the individuals' evaluation of the gain to be obtained from having the optimum allocation of resources.

Another policy rule which is consistent with the benefit theory of tax-pricing is that the government should provide maximum production of goods without affecting prices determined in the existing market structure of society. The government would have no role in determining the market structure and would provide public goods at a tax-price equal to or less than the marginal costs of production. The private production of goods would be affected by the actions of government but not the prices of goods produced in the private sector of the economy.

Still another possible policy rule for government is that the government should maintain the existing market structure of the economy. Both prices and quantities taken of privately produced goods are not to be affected by the actions of the government in the production of public goods. In this case, the role of government is only consistent with the benefit theory of tax-pricing if the equal consumption definition of a public good is rejected or if the market determined quantities and prices of private goods are assumed to be consistent with the tastes and preferences of individuals for the private goods and a single quantity of public goods.

If neither of these conditions are accepted, this policy rule of government implies a role of government which is inconsistent with the price theory of public finance.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

The voluntary exchange or price theory of public finance had its origin in the writings of economists from continental Europe during the nineteenth century. The theory represents an expansion of the benefit theory of taxation and price theory analysis to the problem of allocating resources to the production of public goods. The expansion of economic analysis to public goods requires that the political process be taken into consideration. Pantaleoni, an Italian economist, did recognize the necessity of considering the operation of the political process. In fact, Pantaleoni's writings emphasized the way in which the political process operated in determining the allocation of resources to public goods. Mazzola, another Italian economist, followed Pantaleoni's political approach to some extent. However, Mazzola also emphasized the characteristics of a good which made it a public good.

In Sweden, Wicksell and Lindahl also recognized the necessity for considering the political process and the way in which the process determined the actual allocation of resources to public goods. However, Wicksell and Lindahl gave greater emphasis to the concept of individual choice of public goods. Individual preferences for public goods were considered to be the standard by which the government should try to adjust its process of allocating resources.

Sax, in Germany, attempted to integrate the political approach of Pantaleoni and the individualistic approach of Lindahl into a new formulation of the voluntary exchange theory. In the process, Sax emphasized the practical consideration that the political process cannot operate in a manner which would satisfy all individuals. Sax, however, held that the theory was applicable to the real world because the government could approximate the conditions necessary to satisfy individuals by following certain expenditure and tax policies.

DeViti DeMarco, another Italian, applied the whole of price theory analysis to the concepts of public finance. He did not attempt to formulate a new framework of analysis. Instead, DeViti DeMarco's work represents an application of price theory analysis to the problems of explaining and interpreting existing concepts in public finance.

American economists did not actively participate in the early development of the voluntary exchange theory. However, since Musgrave's criticisms of the Lindahl formulation of the theory, American economists appear to have taken a greater interest in the theory. The works of Bowen, Kafoglis and Buchanan are significant contributions both to the understanding of the theory and to the application of the theory tc specific allocation problems. Nevertheless, the criticisms raised by Musgrave and others have never been adequately analyzed. Apparently, the criticisms have been generally accepted by economists. The application of the theory has, therefore, been limited to allocation problems where the cricicisms could be avoided.

The emphasis of this dissertation has been upon the criticisms which stand as stumbling blocks to the future acceptance and application of

the voluntary exchange or price theory of public finance. The criticisms were divided into those related to revealed preferences of individuals and those related to the operation of the political process. In each case, a suggested approach was also presented.

The first of the criticisms related to the revealing of preferences is that an individual will not reveal his true preferences for public goods. The analysis indicates that the criticism is not sufficient reason to entirely reject the theory. A process of revealing preferences was presented which showed that an individual is motivated to reveal his preferences because if he does not the quantity of the public good supplied at his tax-price will be inconsistent with his preferences for the public good. It was also suggested that the individual must reveal his preferences if he is going to maximize his satisfaction from all goods which provide satisfaction. The basic assumption appears to be whether or not individuals have preferences for public goods and not whether or not they actually reveal the preferences.

The second criticism related to the revealing of preferences is that even if preferences were revealed there is no single best solution in the allocation of resources to public goods analogous to the Pareto optimum solution in the case of private goods. The analysis indicated that the criticism was based upon the particular model used by Musgrave to state the criticism. The Musgrave-Samuelson model was presented with public goods and then with just private goods. The result was that an infinite number of solutions was shown to exist even when just private goods are considered. The difficulty appears to be that the model applies

methodology which is consistent with a barter exchange economy instead of a monetary and production economy.

A suggested approach to the price theory of public finance was presented. Basically, the approach represents an attempt to modify the Musgrave-Samuelson model in order to make it more consistent with price theory analysis and with a monetary and production economy. The modified model was developed with just private goods to show the Pareto optimum solution and to make clear the conditions which must be met to have a single best solution analogous to the Pareto optimum when public goods are considered in the model. Then the model was developed with public goods. A single best solution analogous to the Pareto optimum solution was found to exist. The modifications in the Musgrave-Samuelson model which were necessary to determine a "best" solution were the holding of income constant and given and the using of price consumption lines as demand schedules for the two goods. Criticisms which might develop from the two modifications of the Musgrave-Samuelson model were also discussed.

The criticisms related to the political process were also broken into two broad categories. The first category is concerned with taxes as a means of payment for goods and services. The second category is concerned with the political mechanism as a means of determining taxes and output for public goods.

The analysis of taxes as a means of payment indicated that taxes are no more coercive than prices. Both taxes and prices are compulsory payments once the amounts to be collected or paid have been determined. In a market society an individual must pay the price for goods and services once it is agreed upon just as he must pay the tax once it is

agreed upon. The difference between taxes and prices, if there is a difference, must be the result of the manner in which agreement is reached. If taxation is more coercive than pricing, it is because taxes are determined in the political process while prices are determined in the market process.

The political mechanism as a means of determining taxes and output for public goods was analyzed by defining various possible political situations in terms similar to those accepted in defining various market situations. Political polypoly was found to be the only situation where the political mechanism was no more coercive than the corresponding market mechanism, market polypoly. However, the real world political situation is more likely to correspond to political oligopoly. Therefore, it was concluded that the political mechanism in the determination of taxes and output is likely to be more coercive than the market mechanism in the determination of prices and output. To some extent the criticisms of the voluntary exchange or price theory of public finance related to the political process are substantiated. However, the role of government in the production of public goods is not determined by the constitutional rules which establish the situation defined as political oligopoly. Therefore, other factors defined as resulting in political pliopoly and the policy rules of government which exist in any given political situation are important to the economic analysis of the allocation of resources to public goods.

A suggested approach to the problems of analyzing constitutional rules and the role of government in the production of public goods was made. It was suggested that constitutional rules are primarily the

concern of the political scientist and not of the economist. However, the economist should be acquainted with the rationale behind the existing political situation and with some of the factors associated with the situation which might have an effect upon economic analysis. Therefore, the rationale behind the acceptance of a representative form of government by individuals and some of the factors associated with the representative form of government which might affect economic analysis were presented.

It was suggested that the economist is directly concerned with policy rules of government when the rules determine the role of government in the production of public goods. Therefore, the suggested modified model of the price theory of public finance was used to analyze some of the possible policy rules which do determine the role of government in the production of public goods. The analysis indicated that the various policy rules do hold implications which are important to economic analysis. Of even greater importance to the theme of this dissertation, the analysis also indicated that the model of the price theory of public finance may be useful as an analytical tool.

The applicability and limitations of the price theory of public finance to three broad areas of study are considered in the remainder of this chapter. The three areas of application are (1) as an explanation of the real world, (2) as a framework for policy proposals, and (3) as a framework for discussing concepts of public finance.

Applicability and Limitations of the Theory as an Explanation of the Real World

The political mechanism which is necessary for the government to be able to provide an optimum allocation of resources is not likely to exist in the real world. Therefore, political polypoly is not an explanation of the operation of the political process in the real world. Neither is the optimum allocation of resources model an explanation of the actual allocation of resources by the government in the real world. These limitations are obvious to even the casual observer of the actual political process who understands the necessary conditions of political polypoly and of the optimum allocation of resources model. However, this consideration does not have to affect the acceptance of the price theory of public finance as an explanation of real world events. The same type of observations can be made in relation to the pure competition model and the real world market situations. Market oligopoly is the most likely market situation in the real world just as political oligopoly is the most likely political situation. The difference which affects the relative acceptability of the two frameworks of analysis lies in the fact that the economic implications of market oligopoly have been developed and studied by leading economists of England and the United States while the economic implications of political oligopoly have never been systematically set forth. The development of precise definitions for political situations and of analysis of the economic implications of political situations is essential to the future application of the price theory of public finance to real world situations.

The political polypoly model which does provide an optimum allocation of resources is important to economic analysis even if it does not provide an explanation of the operation of the real world political process or of the operation of the real world allocation of resources to public goods. In a democratic representative society, it is likely that the general principles of the optimum allocation of resources model can be applied to specific real world allocation problems. Two broad examples of application may be considered for illustrative purposes. It can be considered that the increased allocation of resources to public goods during the recent history of the United States can be explained as an increased demand for public goods relative to the demand for private goods. Also, the changing structure of government in the United States (i.e., the growth of federal government relative to state and local governments and the growth of state governments relative to local governments) may be explained in terms of the inability of smaller units of government to obtain the economies of scale which are possible in the production of those public goods which have had an increased demand.

The two examples of application are only of importance in that they indicate the possibility of applying the general principles of the price theory of public finance to real world events. The important application of the general principles of supply and demand theory is in the area of specific allocation problems such as the allocation of resources to education, highways, public health, etc. The general equilibrium model of the optimum allocation of resources is not the appropriate model for analyzing these specific allocation problems. The general principles of price theory analysis, however, do provide the necessary tools of

analysis. The question of which tools of analysis are most appropriate depend upon the situation being investigated.

In any case, there is no apparent reason why the tools of price theory analysis would not provide insights into the allocation of resources to public goods in the real world. The political situation which exists will have to be taken into consideration but this limitation is not sufficient reason for rejecting price theory tools of analysis.

Applicability and Limitations of the Theory as a Framework for Policy Proposals

The hypothetical political situation defined as political polypoly and the optimum allocation of resources model do provide objective criteria for making policy proposals. However, there are many problems of applying the conditions of the hypothetical situation and of the model to real world allocation problems. Whether or not these problems of application can be overcome cannot be known until attempts are made to interpret the concepts into specific proposals. In any case, it is likely that any proposals for sweeping changes in the operation of government would not be accepted in our society. Policy proposals by economists are called for by our society and by the governmental organizations which represent society. Therefore, as particular situations arise, the economist can make proposals which will tend to make the operation of government come closer to political polypoly and the production of public goods come closer to the optimum allocation of resources if the theoretical concepts can be interpreted into reasonable policy proposals.

Political polypoly as a hypothetical set of constitutional rules is primarily the concern of the political scientist. However, the economist may very well be concerned with proposed changes in constitutional rules which affect the government's ability to interpret the demands of individuals for public goods. One example of such a change can be considered for illustrative purposes. The state of Oklahoma has considered several proposed changes in its constitution relating to representation in its legislative branch. A nonpopulation basis for representation is likely to result in the favored group having a greater vote in the allocation of resources by the state. The economist has a responsibility to point out what effects the various proposals might have upon the allocation of resources.

The optimum allocation of resources model and policy rules which determine the role of government in the production of public goods are more directly the concern of the economist. This fact does not imply that the economist should propose a policy rule that will make the optimum allocation of resources the role of government in the production of public goods. Such a policy rule would probably not be accepted by our society. Other considerations must be taken into consideration. These other considerations, however, do not prevent the economist from evaluating specific proposals in particular situations and stating whether or not the proposal will cause the allocation of resources to more closely correspond to the optimum allocation than the present allocation of resources. In other words, the optimum allocation of resources can serve as a standard of reference for policy proposals by economists. In many specific allocation problems, it may be that the proposal based

upon the optimum allocation of resources would be acceptable to our society. The problems of measurement and interpretation of the situation in this case would be the primary stumbling blocks to the acceptance of the proposals. In any case, the price theory of public finance provides the theoretical framework for objectively analyzing policy proposals. Whether or not the proposals would be accepted by our society with our existing political situation can only be answered when specific proposals are actually made.

Applicability and Limitations of the Theory as a Framework for Discussing Concepts of Public Finance

The area of most importance to the present application of the price theory of public finance is that of discussing concepts of public finance. Future applications of the theory to specific allocation problems ultimately depends upon whether or not economists think of public finance in terms of applying price theory concepts to public goods. If economists discuss public finance concepts in terms of price theory concepts, the application of the theory to specific problems will more or less naturally follow.

DeViti DeMarco's work is a classic example of what can be done in this area. The general principles of price theory analysis can be applied to existing concepts in public finance. The basic problem lies in the economist's existing views that the government acts in an arbitrary manner not related to the demands of society for public goods and that taxes are coercive payments. Taxes can be discussed as prices paid for the goods and services produced by the government. The government can be

discussed as a producer of economic goods. It may be necessary to recognize the fact that the political process is likely to be more coercive than the market process in the allocation of resources. This limitation need not interfere with discussing the production of public goods in terms of the process being a transaction which has a payment side and a production side that are determined by supply and demand.

Kafoglis' work in defining public goods in terms of the existence of external economies and diseconomies is another example of what can be done to apply price theory concepts to the discussion of concepts of public finance. It is conceivable to define public finance as the study of goods which have the characteristics of external economies or external diseconomies. Any good with these characteristics is of public concern. It, therefore, may be considered as a public good even if it is not presently produced by the government. In any case, it appears that a great deal more work can be done in the area of defining public goods as to the characteristics of the goods. National defense can be discussed as a good with the characteristic of jointness of consumption. The allocation of resources to national defense can be discussed in terms of the supply and demand for national defense. The fact that the existing political mechanism cannot perfectly measure the demand must enter the discussion but this need not interfere with the discussion of national defense as a public good.

The discussion of problems of employment and national income which have become important in the area of fiscal policy of government are not readily adaptable to the price theory framework. Therefore, it is reasonable to assume that it will be necessary to maintain elements of

aggregate analysis in the discussion of public finance concepts. However, the use of general equilibrium frameworks which are based on price theory concepts by Gurley and Shaw and Patinkin in the area of monetary theory may indicate that this type of framework can be applied to other areas. The relationship of employment and national income to the price theory of public finance represents another area of future development of theory.

The main point to be made is that the future development and application of the voluntary exchange or price theory of public finance depends to a large extent upon the application of the general principles of price theory analysis to existing concepts of public finance. If and when economists discuss taxes as prices, the government as a producer, the activities of government as public goods, and the allocation of resources by government based upon supply and demand, the price theory of public finance will be applied to specific problems of government.

SELECTED BIBLIOGRAPHY

Books

American Economic Association Committee. A Survey of Contemporary Economics. Ed. B. F. Haley. Homewood: Richard D. Irwin, Inc., 1952.

_____. Readings in Fiscal Policy. Homewood: Richard D. Irwin Inc., 1955.

_____. Readings in Price Theory. Homewood: Richard D. Irwin, Inc., 1952.

_____. Readings in the Theory of Income Distribution. Philadelphia: The Blakiston Company, 1946.

Arrow, Kenneth J. Social Choice and Individual Values. New York: John Wiley and Sons, Inc., 1951.

Benson, Charles S. The Economics of Public Education. Boston: Houghton Mifflin Company, 1961.

Bentham, Jeremy. Benthamiana. Ed. John Hill Burton. London: Simpkin, Marshall and Company, 1843.

_____. The Theory of Legislation. Ed. C. K. Ogden. New York: Harcourt, Brace and Company, 1931.

Boulding, Kenneth E. Principles of Economic Policy. Englewood Cliffs: Prentice-Hall, Inc., 1958.

Bowen, Howard R. Toward Social Economy. New York: Rinehart and Company, Inc., 1948.

Bryce, Murray D. Industrial Development. New York: McGraw-Hill Book Company, Inc., 1960.

Buchanan, James M. The Public Finances. Homewood: Richard D. Irwin, Inc., 1960.

_____. Public Principles of Public Debt. Homewood: Richard D. Irwin, Inc., 1958.

Buchanan, James M., and Gordon Tullock. The Calculus of Consent. Ann Arbor: The University of Michigan Press, 1962.

Clark, John B. The Distribution of Wealth. New York: The Macmillan Company, 1923.

Colm, Gerhard. Essays in Public Finance and Fiscal Policy. New York: Oxford University Press, 1955.

Dahl, Robert A., and Charles E. Lindblom. Politics, Economics and Welfare. New York: Harper and Brothers, 1953.

DeViti DeMarco, Antonio. First Principles of Public Finance. Tran. Edith Pavlo Marget. London: Jonathan Cape, 1936.

Downs, Anthony. An Economic Theory of Democracy. New York: Harper and Brothers, 1957.

Fellner, William. Modern Economic Analysis. New York: McGraw-Hill Book Company, Inc., 1960.

Friedman, Milton. Essays in Positive Economics. Chicago: The University of Chicago Press, 1953.

Gough, J. W. The Social Contract. Second Edition. London: Oxford University Press, 1957.

Groves, Harold M. Financing Government. New York: Henry Holt and Company, 1958.

Gurley, John G., and Edward S. Shaw. Money in a Theory of Finance. Washingont D. C.: The Brookings Institution, 1960.

Hayek, Friedrich A.. Individualism and Economic Order. Chicago: The University of Chicago Press, 1948.

Hicks, Ursula K. Public Finance. New York: Pitman Publishing Corporation, 1947.

Hoffding, Harald. A History of Modern Philosophy, Volume II. Trans. B. E. Meyer. London: Macmillan and Company, Ltd., 1924.

Jevons, William Stanley. The Theory of Political Economy. 4th Edition. London: Macmillan and Company, Ltd., 1924.

Kafoglis, Milton Z. Welfare Economics and Subsidy Programs. Gainesville: University of Florida Press, 1961.

Knight, Frank H. Freedom and Reform. New York: Harper and Brothers, 1947.

Lerner, Abba P. The Economics of Control. New York: The Macmillan Company, 1944.

Leftwich, Richard H. The Price System and Resource Allocation. New York: Holt, Rinehart and Winston, 1960.

Little, I. M. D. A Critique of Welfare Economics. London: Oxford University Press, 1957.

Locke, John. Locke and Liberty. Ed. Massimo Salvadori. London: Pall Mall Press, 1960.

_____. The Second Treatise of Government. Ed. Thomas P. Peardon. New York: The Liberal Arts Press, 1952.

Machlup, Fritz. The Economics of Sellers' Competition. Baltimore: The Johns Hopkins Press, 1952.

Marshall, Alfred. Principles of Economics. 8th Edition. New York: Macmillan Company, 1949.

Miller, Hugh. An Historical Introduction to Modern Philosophy. New York: The Macmillan Company, 1947.

Musgrave, Richard A. The Theory of Public Finance. New York: McGraw-Hill Book Company, Inc., 1959.

_____, and Alan T. Peacock, eds. Classics in the Theory of Public Finance. New York: The Macmillan Company, 1958.

National Bureau of Economic Research. Public Finances: Needs, Sources and Utilization. Princeton: Princeton University Press, 1961.

Patinkin, Don. Money, Interest and Prices. Evanston: Row, Peterson and Company, 1956.

Paton, William, and William Paton, Jr. Corporation Accounts and Statements. New York: The Macmillan Company, 1955.

Pigou, A. C. A Study in Public Finance. Third Revised Edition. London: Macmillan and Company, Ltd., 1949.

_____. The Economics of Welfare. Second Edition. London: Macmillan and Company, Ltd., 1924.

Robinson, Daniel Sommer, ed. An Anthology of Recent Philosophy. New York: Thomas Y. Crowell Company, 1929.

Rolph, Earl R. The Theory of Fiscal Economics. Berkeley: University of California Press, 1954.

Samuelson, Paul A. Foundations of Economic Analysis. Cambridge: Harvard University Press, 1948.

Seligman, Ben B. Main Currents in Modern Economics. New York: The Free Press of Glencoe, 1962.

Seligman, Edwin R. A. Essays in Taxation. London: The Macmillan Company, 1913.

_____. Studies in Public Finance. New York: The Macmillan Company, 1925.

Smith, Adam. An Inquiry into the Nature and Causes of the Wealth of Nations. Ed. Edwin Cannan. New York: Random House, Inc., 1937.

Smullyan, Arthur, Paul Dietrichson, David Keyt, and Leonard Miller. Introduction to Philosophy. Belmont, California: Wadsworth Publishing Company, Inc., 1962.

Snider, Delbert A. Economics Principles and Issues. Homewood: The Dorsey Press, Inc., 1962.

Stigler, George J. The Theory of Price. New York: The Macmillan Company, 1947.

Strayer, Paul J. Fiscal Policy and Politics. New York: Harper and Brothers Publishers, 1958.

Thilly, Frank. A History of Philosophy. Revised by Ledger Wood. New York: Henry Holt and Company, 1951.

Uhr, Carl G. Economic Doctrines of Knut Wicksell. Berkeley: University of California Press, 1960.

Weintraub, Sidney. Price Theory. New York: Pitman Publishing Corporation, 1949.

Journals

Bowen, Howard R. "The Interpretation of Voting in the Allocation of Economic Resources," Quarterly Journal of Economics, Volume LVII (November, 1943), pp. 27-49.

Bowen, William G., Richard G. Davis, and David H. Kopf. "The Public Debt: A Burden on Future Generations," The American Economic Review, Volume L (September, 1960).

Brown, Harry G. "The Incidence of a General Output or a General Sales Tax," Journal of Political Economy, Volume 47 (April, 1939), p. 254.

Buchanan, James M. "Individual Choice in Voting and the Market," Journal of Political Economy, Volume LXII (1954), pp. 334-343.

_____. "Politics, Policy and the Pigovian Margins," Economica, Volume XXIX, New Series (February, 1962).

_____. "Pricing of Highway Services," National Tax Journal, Volume V (June, 1952), pp. 97-107.

_____. "The Pure Theory of Government Finance: A Suggested Approach," Journal of Political Economy, Volume 57 (December, 1949), pp. 496-505.

Colm, Gerhard. "In Defense of the Public Interest," Social Research, Volume 27 (1960), pp. 295-307.

Downs, Anthony. "The Public Interest: Its Meaning in a Democracy," Social Research, Volume 29 (1962), p. 1.

Due, John F. "Toward a General Theory of Sales Tax Incidence," Quarterly Journal of Economics, Volume 67 (May, 1953).

Graff, J. DeV. "On Making a Recommendation in a Democracy," The Economic Journal, Volume LXXII (June, 1962), p. 293.

Haavelmo, Trygve. "The Notion of Involuntary Economic Decisions," Econometrica, Volume XVII (1950), p. 1.

Head, J. G. "Public Goods and Public Policy," Public Finance, Volume XVII, No. 3 (1962).

Kafoglis, Milton Z. "Highway Policy and External Economies," National Tax Journal, Volume XVI (March, 1963), p. 68.

_____. "Price Theory and Tax Equity in Highway Finance," Highway Research Board Bulletin 222. Washington D. C.: National Academy of Sciences, 1959.

Kendrick, M. Slade. "Public Expenditure: A Neglected Consideration in Tax Incidence Theory," The American Economic Review, Volume 20 (March, 1930).

Knight, Frank H. "Some Fallacies in the Interpretation of Social Cost," Quarterly Journal of Economics, Volume XXXVIII (1924), pp. 586-606.

Leibenstein, Harvey. "Notes on Welfare Economics and Theory of Democracy," The Economic Journal, Volume LXXII (June, 1962), p. 299.

Meade, James E. "External Economies and Diseconomies in a Competitive Situation," Economic Journal, Volume LXI (August, 1952), pp. 54-67.

Musgrave, Richard A. "The Voluntary Exchange Theory of Public Finance," Quarterly Journal of Economics, Volume 53 (February, 1938), p. 212.

Robertson, D. H. "Those Empty Boxes," Economic Journal, Volume XXXIV (March, 1924), pp. 16-21.

Samuelson, Paul A. "Aspects of Public Expenditure Theories," Review of Economics and Statistics, Volume 40 (November, 1958).

_____. "Diagramatic Exposition of a Theory of Public Expenditures," Review of Economics and Statistics, Volume 37 (November, 1955), pp. 350-356.

_____. "The Pure Theory of Public Expenditure," Review of Economics and Statistics, Volume 36 (November, 1954).

Scitovsky, Tibor. "The State of Welfare Economics," American Economic Review, Volume XLI (1951).

_____. "Two Types of External Economies," Journal of Political Economy, Volume LXII (1954), pp. 143-151.

Sharp, Ansel M. "A General Theory of the Public Debt," The American Journal of Economics and Sociology, Volume 19 (October, 1959).

Tiebout, Charles M. "A Pure Theory of Local Expenditures," Journal of Political Economy, Volume 64 (October, 1956), pp. 416-424.

Weisbore, Burton A. "Education and Investment in Human Capital," The Journal of Political Economy, Volume LXX (Supplement, October, 1962), pp. 106-123.

Young, Allyn. "Pigou's Wealth and Welfare," Quarterly Journal of Economics, Volume XXVII (August, 1913), pp. 671-686.

VITA

Donald Ray Escarraz

Candidate for the Degree of

Doctor of Philosophy

Thesis: A STUDY OF THE VOLUNTARY EXCHANGE OR PRICE THEORY OF PUBLIC FINANCE

Major Field: Economics

Biographical:

Personal Data: Born in Chicago, Illinois, November 24, 1932, the son of Enrique and Edith May Escarraz; married in Chicago, Illinois, May 24, 1952, to Barbara Fay Swartz; children born in Chicago, Illinois, October 31, 1955, Pamela Kay, in St. Petersburg, Florida, November 12, 1959, Paul Edward, in Stillwater, Oklahoma, May 19, 1964, Peter James.

Education: Attended grade school in the Chicago Public School system; graduated from Chicago Vocational High School in 1950; received the Bachelor of Science degree from the University of Tampa, with a major in Accounting, in June, 1960; received the Master of Business Administration, from the University of Wisconsin, with a major in Accounting, in June, 1961; completed requirements for the Doctor of Philosophy degree in August, 1964.

Professional Experience: Employed as an assistant buyer, N. Shure Company, Chicago, Illinois from 1950 to 1953; served in the United States Army as a cryptographer from 1953 to 1954; employed as business manager, Orville J. Swartz Company from 1955 to 1957; conducted research study with Dr. Robert Sandmeyer of Oklahoma State University in the summer of 1963 to determine the expenditures made in the state of Oklahoma for mental health during the year 1962; taught a section of Principles of Economics as a graduate assistant at Oklahoma State University during the academic year 1963-64; acted as a supervisor in the Economic Research Office of the College of Business at Oklahoma State University during the summer of 1964.