

**THE UTILIZATION OF REVENUE BONDS AS A MEANS OF
FINANCING GOVERNMENT IN THE UNITED STATES**

by

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AN ABSTRACT

**Submitted to the School for Advanced Graduate Studies of
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The objectives of this study are to present a comprehensive survey of the characteristics of revenue bonds and to analyze the economic aspects which are peculiar to this type of public credit instrument.

The study of revenue bond financing as a mode of government finance points up the heterogeneous nature of the public credit instruments commonly referred to loosely as "revenue bonds". Consequently this study first defines and delineates public credit instruments so as to avoid the ambiguity connected with the term as it is presently used in public finance literature.

The depression of the 1930's provided the primary stimulus for the growth of revenue bond financing. The federal government, through various work and loan programs, was instrumental in encouraging the use of revenue bond financing. Statutory and constitutional debt restrictions accompanied by public distaste for property taxes have been important factors sustaining the use of revenue bond financing of public enterprises.

Revenue bond defaults occurring during the Great Depression were generally caused by a lessening of demand for the products of the revenue bond financed enterprise. During the period of high level economic activity since 1940 there have occurred few instances of default although bondholders generally have suffered very little loss. In a large portion

of the instances involving default or near-default, the issuing political unit has applied tax money, or has used other less conspicuous means of providing aid, in attempting to avert default. Generally, rate covenants that ordinarily accompany revenue bond issues have not provided an effective means of averting default. If the enterprise is not economically sound, the rate covenant remedy seems to afford little protection from financial loss.

There is every indication, that, on the average, the net interest rate on revenue bond issues is somewhat higher than the net interest rate on general obligation bond issues. The advantage of general obligation bond issues, however, is not as great as first appearances may indicate. Adjusting the net interest rates for the negative effect of size and the positive effect of length of maturity tends to reduce the differential that exists in the interest rates of the original data. These same adjustments applied to special assessment bond issues resulted in a higher net interest rate than for either general obligation bond issues or revenue bond issues.

Although the mere financing by means of revenue bonds does not enhance the debt-paying ability of a political unit, the financing by this type of credit instrument does insure a source of revenue with which to retire the outstanding obligation. This self-liquidating nature of revenue bonds combined with the controls which are ordinarily required by the bond

underwriter gives this type of public credit instrument a "built-in" safeguard with respect to excessive indebtedness.

The most significant economic implications of revenue bond financing as compared with general obligation bond financing occur with respect to pricing policies, equity considerations in the distribution of payments for the products of public enterprises, resource allocation, and the efficiency of public enterprises. In addition to these aspects which are more or less inherent in the case of revenue bond financing, there exists man-made laws which affect the desirability of this means of public finance. A quantitative evaluation of the merits and demerits of revenue bond financing as compared with general obligation bond financing which is applicable to every set of circumstances is not possible.

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CHAPTER I

INTRODUCTION

The Problem

This study deals with the deficit financing of governmental units by means of the issuance of revenue bonds.¹ The aim of this study is to present a comprehensive survey of the characteristics of revenue bonds and the practices that accompany the issuance of this type of credit instrument. Further, this study attempts to analyze the economic aspects that are peculiar to revenue bonds from the view of the borrowing political unit.

In order to accomplish the objectives of this study, ancillary considerations necessarily arise which require investigation and analysis. For example, the questions arise as to why, when, and how the practice of issuing revenue bonds originated in this country. Closely related to these questions are the explanations for the various evolvments that have occurred in connection with this type of public credit instrument.

¹There exists no well-defined generally accepted meaning of the term "revenue bond." A discussion of this concept is given later in this chapter.

This study should aid government practitioners in making decisions regarding the most advantageous public credit instrument in the financing of public enterprises. In accomplishing this objective, the questions pertaining to the default record of revenue bonds must be examined. Also, the closely related matter of the limited liability feature of revenue bonds must be analyzed.

Of course, any evaluation of revenue bonds should provide an analysis regarding the cost to the issuing unit as compared with alternative types of public credit instruments. Not only is it desirable to know the factors, both quantitative and qualitative, that affect the interest costs associated with public credit instruments, but also to determine, insofar as possible, the relative importance of these factors.

Additional questions arise pertaining to the economic effects of revenue bond financed enterprises with respect to such things as incentives toward efficiency, user charges as a method of providing governmental revenues, legal provisions peculiar to this type of credit instrument, and the allocation of resources.

Although each of the aforementioned questions has been analyzed, complete and final answers to all of them cannot be expected. This study will have served its purpose if it provides the stimulus and groundwork

for more extensive investigations in this peripheral area of public finance.

The Apparent Need

Perhaps the most significant development in the field of public debt finance of the past two decades is the rapid growth in the utilization of revenue bonds to finance self-liquidating projects. The use of revenue bonds has not only been increasing relative to total obligations outstanding, but there has also been an extension in the kinds of projects financed by the proceeds of this type of public credit instrument. Immediately following World War II, revenue bonds constituted less than 20 per cent of the total annual issues of state and municipal governments.² The proportion of the total state and local bond issues of the revenue bond type has increased to about 30 per cent in the last few years; in the peak year of 1954, revenue bonds constituted approximately 46 per cent of the total new state and local bond issues. It has been estimated that as of the end of 1955 revenue bonds constituted approximately 25 per cent of the total dollar volume of state and local bonds outstanding.³

²See Chapter II for more detail concerning the growth of this type of financing.

³"State and Municipal Bond Financing," Monthly Review of the Federal Reserve Bank of Richmond, (March, 1956), pp. 3-4.

An economic analysis and appraisal of this type of public credit instrument seems past due. One of the most pressing problems of our state and local government officials is the obtaining of funds to finance public improvement projects which cannot usually be financed from current expenditures. In spite of the pressing problems in this area, public credit instruments commonly referred to as revenue bonds have received very little systematic study.

Many government officials have pondered the relative merits of the various means of public debt financing of the increasing number of commercial type enterprises that society has adjudged to be publicly owned and operated. It is apparent that little has been done concerning a general analysis of the loosely defined area known as revenue bonds.

Scope and Method

This study is not a complete historical analysis of revenue bond financing. A survey of early revenue bond financing is included in order to provide a setting for the study of the subject; however, the time most pertinent to this study is the seventeen-year period from 1940 through 1956.⁴

⁴There have been two studies dealing solely with revenue bond financing, both of which were published just prior to the 1940's. These studies are: John F.

The most pressing initial problem in the study of revenue bond financing is the framing of a precise definition of what constitutes a revenue bond. Once a workable definition is provided for what in this study is termed "true revenue bonds," an analysis is then extended to public credit instruments that possess more or less similar characteristics which have been designated as quasi- and pseudo-revenue bonds.

Chapters II and IV record and analyze certain facts and events pertaining to revenue bond financing. Chapter III records and analyzes the legal aspects of this type of public credit instrument. These three chapters are designed to present relevant material necessary for an evaluation of revenue bonds as a method of financing public projects. Prior to Chapter V, this study does not attempt to judge the relative merits or to evaluate the significance of the various characteristics or attributes of revenue bond financing. These evaluations are confined principally to Chapter VI.

Fowler, Jr., Revenue Bonds (New York: Harper & Brothers, 1936); and Laurence S. Knappen, Revenue Bonds and the Investor (New York: Prentice-Hall, Inc., 1939). In addition to these two general studies there exists a study pertaining to the legality of revenue bonds as viewed by investors and underwriters. This latter study is: Lawrence E. Chermak, The Law of Revenue Bonds (Washington: National Institute of Municipal Law Officers, 1954).

In addition to analyzing the qualitative aspects affecting interest rates on public obligations, Chapter V analyzes the quantitative factors affecting these interest rates by utilizing correlation techniques. In addition to this statistical comparison, the interest rates applicable to revenue bonds and general obligation bonds are further analyzed by holding some factors constant by the selection of specific instances of bond sales.

It is beyond the scope of this study to make recommendations concerning the extension or contraction of the public sector of the economy. This study points up the merits and demerits of revenue bond financing as opposed to general obligation financing under the assumption that society has made the political decision that the function should be undertaken by governmental units. Further, the scope of this study is limited to economic considerations that are, to a large extent, peculiar to the financing of government projects by means of revenue bonds.

By nature, rather than by intent, the analysis of revenue bond financing is primarily concerned with state and local finance. As noted in subsequent sections, however, the federal government is tending to show increasing interest in this type of public credit instrument.

Sources

Information for this study has been secured largely from materials published by highly specialized organizations. These include such publications as the Bond Buyer, Moody's Manual of Governments and Municipals, Ira Haupt and Company's Revenue Bond Service, and the Statistical Bulletin of the Investment Bankers Association of America. In addition, the various publications of the United States Bureau of the Census contain useful statistics pertaining to guaranteed and nonguaranteed debt of various governmental units. Personal conferences with and information received by letters from investment bankers and public finance officials have also provided the basis for much of the material in this study, particularly in Chapter IV.

Definition

The term "revenue bond" does not have a definite, universally recognized meaning. That the concept is either vaguely defined or without uniform definition is understandable in the light of the historical evolution of the securities commonly included in this category. Security dealers have been inclined to include in the revenue bond statistics all governmental bond issues that contain the word "revenue" in their title. Also contributing to the ambiguity of the concept is the

peripheral nature of this type of financing, being very closely associated with the financing practices found in private enterprise and yet applied to the financing of improvement projects in the public sector of the economy.

Another reason that the concept is so indefinite is that revenue bond securities contain so many divergent features. State statutes authorizing revenue bond issues are quite varied with respect to many features of revenue bond issues.

Professor Ratchford has stated that the broad meaning of the term revenue bond "includes all bonds issued under the special fund doctrine."⁵ In this study, true revenue bonds are defined as all long-term bonds which are issued by governmental units or their agencies, payable, both as to principal and interest, solely from the net earnings obtained from non-tax revenues received from the sale of goods and/or services produced by the facility that is acquired with the proceeds of the bond issue.

⁵B. U. Ratchford, American State Debts (Durham, North Carolina: Duke University Press, 1941), p. 497. The special fund doctrine refers to obligations secured solely from new sources of funds derived from a special source which the courts have often ruled do not constitute "debt" since there does not exist an unconditional promise to pay. This doctrine is discussed in greater detail in Chapter III.

Revenue bonds that conform to this definition are, in this study, termed "true revenue bonds" as distinguished not only from general obligation bonds, but also from the many variations of bonds that are commonly classified as revenue bonds.

Distinguishing Characteristics

A principal distinguishing feature of true revenue bonds is that they are not guaranteed by the issuing governmental unit. Revenue bond obligations have no claim upon the general taxing power of the borrowing governmental unit. Owners of revenue bonds may expect payment only if the project that is financed by the bonds produces goods and services of sufficient value to cover average cost of the enterprise plus a sufficient surplus to cover debt amortization. Thus the necessity for specifying in the definition the words "payable solely from the net earnings." General obligation bonds, on the other hand, are legally binding securities of a governmental unit and are secured by the full taxing power of that political unit. These obligations are usually payable from taxes and other general revenues. General obligation bonds are sometimes referred to as "tax-secured" bonds in contrast with revenue bond obligations which are occasionally referred to as "price-supported" or "revenue-secured" bonds.

Another major distinguishing feature of true revenue bond issues is that the enterprise financed is of a "proprietary" nature.⁶ Revenue bonds issued by political units are often referred to as of a "self-liquidating" nature. The self-liquidating feature of revenue bonds results from the sale of goods and services that are produced by the revenue bond financed project. True revenue bonds are issued only for projects that yield goods or services that may be conveniently metered and distributed by the price system. In the above definition, the words "sale of goods and/or services" emphasize that revenue bonds are secured by revenues received from the purchaser of these goods or services much as private businesses obtain funds to discharge their debt obligations.

Special assessment bonds are differentiated from revenue bonds because of the non-proprietary nature of the facilities that are usually financed by special assessment bonds. Furthermore, special assessment bonds are payable from a special tax levy rather than by user charges. Special assessment bonds and revenue

⁶The term "proprietary" is used here to refer to an enterprise which produces and distributes goods and/or services by prices that are determined by impersonal relations between buyers and sellers such as occurs in the case of a private business concern.

bonds do, however, possess the common characteristic of affording, at least theoretically, limited liability to the issuing government.

Pledging user charges as the security for governmental obligations distinguishes revenue bond obligations from other government bonds payable from earmarked revenues, often referred to as "special tax bonds." These special tax bond issues are not usually secured by the full faith and credit of the issuing governmental unit and in this respect they resemble revenue bonds. Special tax bonds and revenue bonds also are alike in that bond payment is made from revenue that is closely related to the public project financed. However, the revenue that is obtained from revenue bond financed projects accrues from payments for goods and services that are more precisely metered to the individual purchaser. For example, a toll is a payment that is directly associated with the service yielded by a revenue bond financed highway. Whereas, special tax bonds issued to finance highway construction are financed by a tax on gasoline and placed in a special fund to be used in payment of these bonds. An individual paying the gasoline tax may never use the particular highway financed with the proceeds of special tax bonds; and even if he should, the payment varies with the consumption of gasoline and not with the consumption of services yielded by the

highway. True revenue bonds are issued only for public enterprises that yield goods and services to the buyer who, of course, receives direct benefits from the purchased commodities. Individuals in the economy choosing not to purchase products or services of the public enterprise receive no direct benefits.

True revenue bonds, as defined in this study, exclude those securities issued to finance a facility even though the revenue pledged as security for the obligations may be partially derived from the financed facility. It is essential that the products and services produced by the revenue bond financed project be sold to the consumer in metered quantities. This requirement of a true revenue bond excludes securities secured by excise taxes. For example, the services emanating from highways financed by gasoline taxes are not metered; consequently, obligations issued to finance highways secured by a tax on gasoline cannot be included in the revenue bond category.

Specifying that revenue bonds must be "long term" distinguishes this type of financing from government obligations that are variously known as "revenue" or "revenue anticipation" bonds, which are short term and of little resemblance to the revenue bonds which form the subject of this study. It is unreasonable to include short term obligations within the revenue bond

category. Only in rare instances would a public enterprise be acquired by bond issues, and the bonds subsequently retired within a period of one year. Short term obligations issued by the various housing authorities throughout the United States resemble revenue bonds in many respects. Such temporary financing methods should be excluded from the revenue bond classification.

It is axiomatic that revenue bonds be "issued by governmental units or their agencies." However, revenue bond financing by political units resembles private financing practices in many respects. In fact, the types of public enterprises financed by revenue bonds frequently coexist in the private and public sectors of the economy. Municipal utilities are examples of such enterprises. Of the nine toll bridges across the Rio Grande River, which separates the State of Texas from Mexico, only three are publicly owned. The other six are privately owned and operated. Many other similar examples could be cited. Of course, the "tax-exempt" status of revenue bonds is of considerable economic significance in distinguishing public financing from private financing.⁷

⁷The term "tax-exempt" is used to refer to the tax status of interest derived from state and municipal obligations. Interest income derived from these obligations is exempt from the federal income tax. See Chapter III for a more detailed discussion of this aspect of certain government obligations.

Our revenue bond definition includes the word "agency" for the purpose of clarifying and making more explicit a broad interpretation of governmental units. Any study dealing with governmental financing by means of revenue bonds must give consideration, not only to the more common units of government such as municipalities, states, and counties, but also to the many branches or agencies of these governments. These agencies of government include such units as special districts, statutory authorities, boards, and commissions. This broad meaning of governmental units follows the definition used by the Bureau of Census in their recent studies of government structure.⁸

The word "acquired" is used in the revenue bond definition to refer to the procuring of publicly owned wealth, whether by outright purchase, by construction, by improvement, or by extension.

Hybrids

From the above discussion it can be seen that long term obligations of political units cannot be neatly classified into separate easily distinguishable classes. At one end of the spectrum are general

⁸U. S., Bureau of the Census, Local Government Structure in the United States. State and Local Government Special Studies, No. 34 (Washington: Government Printing Office, 1954), pp. 1-3.

obligation bonds that are issued to finance public enterprises which produce goods and services that cannot be distributed by the price system either for technical or equity considerations. True revenue bonds occupy a position at the other end of the spectrum.

Between general obligation bonds and true revenue bonds exist all shades of long term obligations of a hybrid nature--some being more closely related to general obligation bonds, while others have more of the characteristics of true revenue bonds. In this study, hybrid bonds of this kind are helpful to classify as "pseudo-revenue" bonds or "quasi-revenue" bonds.

Pseudo-Revenue Bonds

Pseudo-revenue bonds exist primarily as a result of the extension of the special fund doctrine. This type of bond includes securities containing the word "revenue" and often held by the courts as not constituting debt of the issuing political unit. As previously indicated, they are ultimately serviced from tax revenues of the political unit. Included in the pseudo-revenue bond category are bonds used to finance public facilities by pledging earmarked tax receipts.

Also included in the pseudo-revenue bond category are those arrangements whereby an agency, either public or private, constructs a facility for use by a governmental body. An agreement between the two parties, the agency and the governmental unit, is reached prior to construction of the facility or to issuance of the bonds. The duration of the lease and rental price is fixed in such a manner as to provide for the retirement of the principal and interest on the outstanding bonds. Lease-rental agreements of this kind usually provide that the facility may be purchased by the governmental body for a token payment at the end of a specified number of years. Bonds issued in this manner are often referred to as "rental revenue bonds." Lease-rental charges are generally paid from the general fund of the taxing unit.

Lease-rental arrangements are usually entered into in order to circumvent debt limitations. An example of arrangements of this nature is found in Pennsylvania which has enacted permissive legislation authorizing any of its local units of government to create an authority.⁹ These authorities may be for such

⁹"Authorities--Pro and Con," prepared by Pennsylvania Economy League, Inc., Pittsburgh, Pennsylvania, pp. 2-4. (Undated, mimeographed.)

a wide range of purposes as sewage plants, swimming pools, school buildings, waterworks, and airports. Revenue bonds have financed most of the capital improvement projects of these authorities. Many of these authorities have been created simply because revenue bonds do not constitute debt within the limitations of the laws of that state.

The sole characteristic common to both pseudo-revenue bonds and true revenue bonds is the almost universal ruling of the courts that these obligations do not represent debt of the issuing governmental unit. Pseudo-revenue bonds are issued primarily as a means of evading the legal debt limitations and would perhaps be more appropriately designated as "quasi-general obligation" bonds.

Pseudo-revenue bond payments are from tax revenues. These bonds are not issued to finance enterprises of a proprietary nature. Despite the absence of revenue bond characteristics, however, they are frequently listed in the statistics pertaining to revenue bonds.¹⁰

¹⁰For example, the Statistical Bulletin of the Investment Bankers Association and the various compilations of the Bond Buyer pertaining to revenue bonds contain bonds of governmental units that are serviced from specific taxes, although the former organization has established a separate subdivision for "revenue bonds" of this type.

Quasi-Revenue Bonds

The term "quasi-revenue bonds" is used in this study to refer to that portion of public project bond issues of a proprietary nature which, for some reason, do not meet the test of the market. The market test is met whenever investors are willing to invest in the facility to be financed and are willing to accept the net earnings of the enterprise as sole security. In many bond issues, the governmental unit pledges the net earnings of the public enterprise that is to be financed with the provision that should these net earnings be insufficient to prevent default, public tax money would be used to the extent necessary to prevent default on the bonds. These are sometimes referred to as "combination revenue bonds," or bonds with "double-barreled security."

In some instances the market test may not be met because the issuing governmental unit appropriates a portion of the funds that are needed to finance the public enterprise. This governmental aid to the enterprise may not take the form of a money appropriation. In many instances the supplemental aid may be in the form of utilities such as heat, water, or electricity provided to the public enterprise without charge.

Typically, university dormitories are financed by revenue bonds; but supplemental aid to this type of facility is received not only for the necessary utilities, but also for salaries of the dormitory supervisors.

Other hybrid bonds parading under the revenue-bond classification can be cited. The revenue bond issues of the many authorities do not always meet the test of the market. Authorities frequently pledge the earnings not only of the specific facility that is to be financed, but also of existing facilities which may or may not have been financed by revenue bonds and which may or may not be free of debt. Financing by the Port of New York Authority is a good example of this type of practice. Practically all of the outstanding bonds of the Port of New York Authority are secured "equally and ratably" by the net revenues of all the facilities operated by the Port.¹¹ Obligations of this kind tend to resemble general obligation bonds as the earnings of more and more facilities are pledged as security for a new acquisition. Thus all of the revenue-producing assets of an authority are pledged as security for outstanding

¹¹Frederick L. Bird, A Study of the Port of New York Authority (New York: Dun & Bradstreet, Inc., 1949), p. 52.

obligations much as tax revenues derived from the various tax sources of any governmental unit are pledged. Even though the revenue bond obligations issued by governmental units such as the Port of New York Authority tend to resemble general obligation bonds, there still remains the differentiating aspect of "taxing power" which may be used as a means of raising revenue to support general obligation bonds.

Quasi-revenue bonds, as they are defined in this study, must be issued to finance a proprietary enterprise of a governmental unit and must rely primarily upon the earnings of the financed enterprise as security for the outstanding obligations. Obligations in this category are distinguished from true revenue bonds in that revenues pledged as sole security for quasi-revenue bonds do not emanate entirely and specifically from the enterprise financed with the bond proceeds.

The Bond Agreement

Revenue bonds are further distinguishable by provisions of the trust indenture or other similar document which contains the agreement between the issuer and the bondholder. This trust agreement usually accompanies the offering circulars or prospectuses of the revenue

bonds that are to be sold. The agreement is for the protection of the interested parties and contains such things as a description of the bonds that are to be issued, maturity schedule, provision for registrations, call feature, coupon interest rate, bond security, and various other protective covenants. Among other things, the covenants in the contract specify the use of bond proceeds, order in which revenues of the facility will be applied, rates that will be charged, power to issue additional bonds, remedies of the bondholder, and provisions for risk insurance.¹²

Covenants

Funds pledged for the retirement of revenue bonds are derived from revenues obtained solely from the sale of goods and/or services of the financed facility. It is not unusual for the security feature of the agreement to read, "The bonds are valid and binding obligations of (name of governmental unit)." The security provision for quasi-revenue bonds may state that the bonds are general obligations of the commission, secured by a first pledge of the net revenues derived from the operation of the enterprise.

¹²Winthrop S. Curvin, A Manual on Municipal Bonds (New York: Smith, Barney & Co., 1956), pp. 32-35.

Infrequently, revenue bonds are additionally secured by a mortgage on the public facility.¹³

The agreement pertaining to the use of the bond proceeds is for the purpose of protecting the bondholder from misuse of funds. Bondholders naturally desire assurances that the bond proceeds will be spent only with the unqualified approval of the consulting engineer. This section of the agreement usually requires the political unit to segregate bond-proceed money from other funds and to apply any excess funds to a bond fund for the purpose of future bond retirement.

The bond purchaser desires a firm understanding as to how revenue from the facility is to be disbursed and in what order. Therefore, the trust agreement may specify that bond interest and current expenses get first priority on revenues. Whether the agreement specified that the revenues of the enterprise be applied first to debt amortization or to current expenses is of little significance. Revenues for interest and principal will not be available unless the facility is a "going concern," which, in turn, means that funds for current expenses must be met if the enterprise is to

¹³See Chapter III for a discussion of the legal aspects of the mortgaging of government property.

successfully meet all debt obligations. Basically, the enterprise must be economically sound. Legal provisions in the trust agreement pertaining to the order of application of revenues can never transform an unsound venture into a sound one.

Next in order may be the application of revenues to the retirement of principal due in the case of serial maturities or the creation of a sinking fund for retirement of term maturities. Additional revenues are commonly designated for a reserve fund in order to prevent default in case revenues should be less than anticipated. The trust agreement may require additional reserve funds such as for operation and maintenance expenses and, in some cases, taxes.¹⁴ After these provisions, any balance may be used for the general improvement of the enterprise; and, in rare instances, excess earnings may be applied to any purpose of the issuer.¹⁵

¹⁴Requiring reserve revenues of the revenue bond financed enterprise to be pledged for the payment of taxes provides a method by which the issuing unit may obtain funds from the revenue arising from the operation of the enterprise. After debt retirement, these excess funds would ultimately become usable assets of the issuing unit even without a reserve fund provision.

¹⁵Curvin, op. cit.

Prospective bondholders generally require a rate covenant obligating the manager of the enterprise to fix prices of the goods and services of the revenue bond financed facility at a level sufficient to provide revenues for expenses and debt service. These prices are frequently required to be fixed at a level in accordance with the recommendations of the consulting engineers of the project.

Revenue bond indentures vary considerably with respect to the provisions for the future issuance of additional bonds. Of course, the bondholders may, if they so desire, permit the issuance of additional bonds even though contrary to the indenture. In many cases, additional financing allows the public enterprise being financed to expand and provide badly needed up-to-date equipment which may actually reduce the possibility of default. Future bond issues are customarily subordinate to existing obligations unless the issuing political unit reserves the right to issue additional revenue bonds on a parity with earlier issues.¹⁶

Bondholder remedies usually consist of the right to appoint a receiver. If rate covenants have not been

¹⁶A subordinate bond issue is secured by revenues of the financed facility after the servicing of other outstanding obligations.

performed in accordance with the provisions of the agreement, the bondholder may appeal to the courts for an order to the issuer to fulfill the obligations specified in the trust agreement. As stated previously, the bondholders may include in the agreement the right to foreclose. Mortgages on public facilities are becoming a rarity; however, since bondholders are primarily concerned with methods of obtaining revenues above expenses, foreclosure often does little to aid the situation.

The trust agreement usually requires that liability and other appropriate insurance be carried to the maximum allowable or as recommended by the consulting engineers. Bondholders desire insurance that will protect their investment in the event of loss or damage to the facility to be financed. In certain instances the cost of insurance may be prohibitive. Therefore, investors commonly limit the insurance coverage to that "reasonably obtainable." Typically, the bond agreement requires that the financed facility shall be insured against all insurable losses.

The attractiveness of revenue bond issues is increased if the issuing political unit agrees to limit competition of the enterprise being financed. For example, a municipality desiring to finance a toll bridge may agree that additional competing bridges will not be constructed within the municipality until the proposed

toll bridge debt has been liquidated. The issuing political unit could possibly circumvent this provision to limit competition by creating an ad hoc district or agency to finance the competing facility, unless the bond indenture specifically prohibits such action.¹⁷

Another provision sometimes found in a revenue bond indenture is an agreement that the bondholders will be furnished with operating reports of the financed enterprise. These independent audit reports, stating the fiscal condition of the project, help keep the investor informed as to the soundness of his investment.

Of course, the covenants in the revenue bond indenture vary from issue to issue. State law may largely determine many of the provisions in the bond agreement. For example, in the State of Alabama the revenues of an existing facility may not be pledged for bonds issued for the extension or improvement of that facility.¹⁸

¹⁷For example, a municipality may agree to refrain from constructing a bridge in a certain community although it may create an authority which may then be free to build a competing bridge.

¹⁸Lawrence E. Chermak, The Law of Revenue Bonds (Washington: National Institute of Municipal Law Officers, 1954), p. 118.

CHAPTER II

DEVELOPMENT AND USE BY GOVERNMENTAL UNITS

Origin

The origin of revenue bond financing is lost in the pages of history. The pledging of revenue or other securities for government debt has been practiced for centuries. The revenue financing of roads, a toll road constructed by the Assyrians and connecting Syria and Babylon, occurred as early as 1500 B.C.¹ Other early examples of pledging revenue as security for loans include the Venetian loan of 1187 and the City of Florence loan of 1307 pledging salt and seigniorage as security.² As early as 1515 France pledged customs receipts in exchange for a loan.³

A very definite undertaking of revenue financing is found in the history of England in 1663 when

¹George McKelvey, Jr., "A Glance at Toll and Free Roads of the Last 4000 Years," Daily Bond Buyer (Special Convention Issue, November 29, 1954), p. 94.

²Laurence S. Knappen, Revenue Bonds and the Investor (New York: Prentice-Hall, Inc., 1939), pp. 3-4.

³Ibid., p. 4.

parliament gave counties permission to levy tolls on some of the main highways to raise funds for repairs and maintenance.

A century later (1760) England began the practice of pledging tolls to finance roads.⁴ Private companies were chartered and permitted to borrow money for the construction of roads. The debts incurred were to be retired by the total proceeds of the toll collections; afterwards, the roads were to become toll free.

Toll bridges became common in England after 1725 and were operated sometimes by existing municipal corporations, sometimes by private speculators, and sometimes by a public body of commissioners created for the specific purpose.⁵

Harbor authorities were among the earliest and most successful users of revenue bonds.⁶ The Harbor of Dundee Commission in Scotland, created in 1815, had the power to borrow money; but it did not have the power to levy or collect taxes. This governmental authority was the result of the corruption which accompanied the custom of granting favored boroughs or wealthy land owners along the coast the right to

⁴ McKelvey, op. cit., p. 95.

⁵ Knappen, op. cit., p. 5

⁶ John F. Fowler, Jr., Revenue Bonds (New York: Harper & Brothers, 1938), p. 194.

collect charges for the use of ports on the condition that the borough or owner would maintain the port in a satisfactory manner. As a result a harbor commission was created and was required to apply revenues to the retirement of port debt and maintenance.

The Leith Dock Commission and the Clyde Navigation Trust are other examples of early harbor authorities. In 1809 the Clyde Navigation Trust was organized as a municipal corporation to manage the Glasgow Harbor, and in 1825 was granted additional power, giving it a semi-independent status.⁷

The Port of London Authority, established in 1908 and later serving as a model for the Port of New York Authority, is perhaps the best known of the many port and harbor commissions in Great Britain.⁸

In 1817 the first municipal gas works in England was established at Salford, which at that time was part of Manchester.⁹ The original cost of the gas works was paid by taxation, but subsequent authority was granted to incur indebtedness secured by revenues of the gas works. Birmingham, England, issued annuities

⁷Knappen, op. cit., p. 6.

⁸Fowler, op. cit., p. 195.

⁹Adolph H. Zwerner, "Indiana Municipal Revenue Bond Financing," Indiana Law Journal, XII (1936-37), p. 226.

in 1875, constituting a first lien on the revenues of its gas and water systems, payable out of general taxes in event of insufficient revenues.¹⁰ Edinburgh and Glasgow purchased private companies located in their townships in 1868 and issued securities which constituted special liens on revenues received from the sale of gas and its by-products.

Most writers agree that the financing of the Spokane, Washington, waterworks in 1895 is the first American project for which bond issues were payable solely from its revenues.¹¹ Isolated instances of the adoption of some of the principles of revenue bond financing, however, occurred some years earlier. In our own country, the American colonists pledged revenues as security for the first closed turnpike started in 1794 reaching from Philadelphia to Lancaster.¹² This was the beginning of the vast number of similar projects in the new country. In 1835 Philadelphia authorized construction of a gas plant to be owned jointly by the city and private investors.¹³ Bonds were sold in the name of the gas company secured

¹⁰Fowler, op. cit., p. 135.

¹¹Knappen, op. cit., p. 8

¹²McKelvey, op. cit., p. 94.

¹³Fowler, op. cit., p. 18

by the revenues and pledged with the building and equipment. Later the city acquired sole ownership and additional financing was supported by general obligation bonds.

Another instance occurred in 1851 when the citizens of Lebanon, Kentucky, secured legislative authority to construct a cistern for public use in the courthouse yard.¹⁴ Fines and penalties collected by the city were earmarked to pay for the cost of construction.

The New York Legislature authorized issuance of revenue certificates in 1851 to be paid solely by the revenues from the Erie, Tennessee Valley, and Black River Canals.¹⁵ The New York court subsequently held this act invalid and thereby prevented the issuance of the bonds.¹⁶

During the latter half of the nineteenth century, rapidly expanding urban centers were faced with the pressing problem of water supply. Private ownership of water facilities had proved unsatisfactory due to lack of ability or desire to improve health

¹⁴Ibid.

¹⁵E. H. Foley, Jr., "Revenue Financing of Public Enterprises," Michigan Law Review, XXXV (1936), p. 20.

¹⁶Newell v. People, 7 N.Y. 9 (1852).

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The Committee is of the opinion that the Government's solution to the problem of obtaining the necessary public information projects this type of regulation in a negative, possibly ineffectual, manner, by restricting the availability of information to the public and restrictions pertaining to the content of information that states could all too easily be circumvented. The Committee is of the opinion that this type of Government action is not to be designated as "anti-trust" or "anti-competition."¹² It is then entitled for the growth of this type of "information control" to be discouraged by a liberating of government from the burden

10. Barley Joint Note, Public - Issues (1910);
 11. Barley Joint Note, Public - Issues (1910);

This aspect of revenue bond financing is discussed in greater detail in Chapter III.

of state and local governments to diversify their revenue sources.

Growth

Revenue bond financed government projects have become increasingly popular since the 1930's. Only isolated instances of revenue bond financing can be cited prior to the Great Depression. The federal government, seeking to stimulate public works projects during this period characterized by a high level of unemployment, encouraged permissive revenue bond legislation. The desire of officials of the federal government to stimulate self-liquidating projects resulted in the enactment of a tremendous volume of revenue bond legislation during the decade of the 1930's. Every state either enacted initial permissive legislation or amended its existing revenue bond statutes during the 1930's.²⁰ In half of the forty-eight states the initial revenue bond permissive statutes were enacted during this period.²¹ The self-liquidating projects constructed during depression days have, in most instances, worked out according to schedule. This favorable record encouraged the issuance of this type of bond not only

²⁰Knappen, op. cit., pp. 279-93.

²¹Ibid.

to finance projects which can possibly pay for themselves, but also to urge undertakings which do not ordinarily produce revenue. The extent and use of revenue bonds as a credit instrument has continued to expand since World War II.

The tremendous growth of revenue bond financing is indicated by Charts 1 and 2. In the period from 1940 to 1955, revenue bond financing increased by more than nine times while general obligation bond financing increased by more than three times during this same period.²² The dollar value of general obligation bonds issued during the five World War II years, 1941 to 1945 inclusive, was only slightly larger than the dollar value of revenue bonds issued in 1954.²³ Table 1 gives an indication of the relative growth of revenue bond issues in the 1938 to 1955 period. New revenue bond issues ranged from a low of approximately 9 per cent of total state and municipal obligations issued in 1941 to a high of 46 per cent in 1954.²⁴

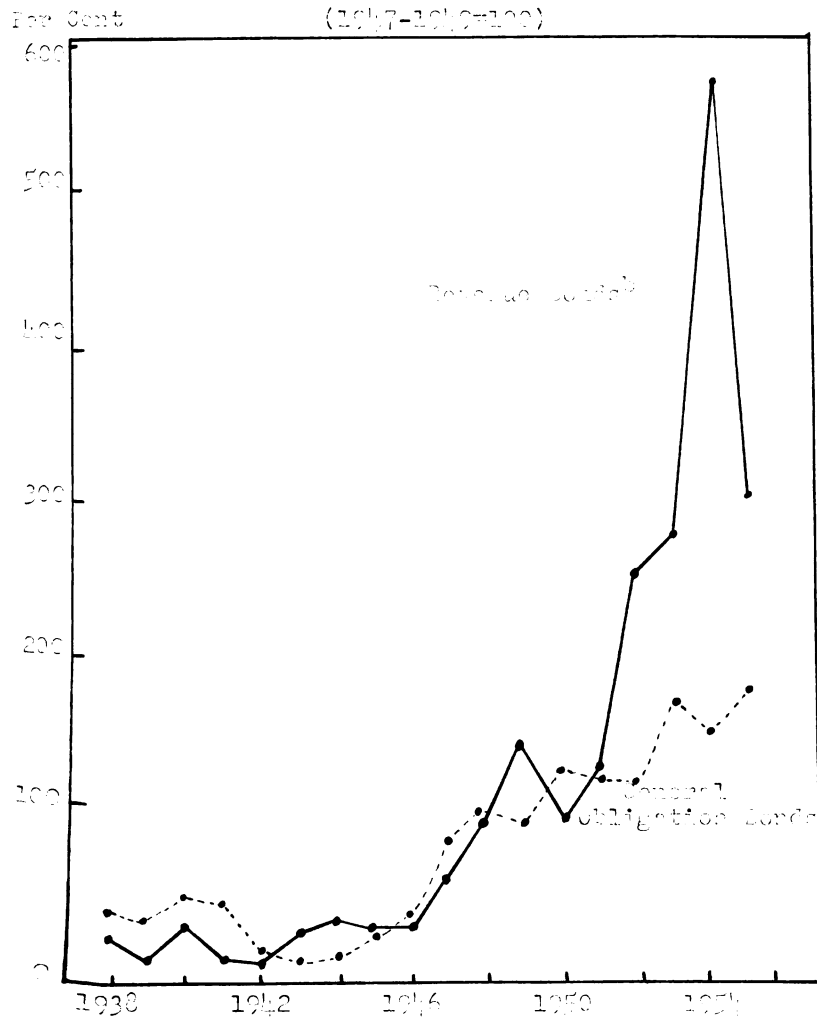
²²See Table 1. Revenue bond figures include refundings and exclude local housing authority bonds.

²³Ibid.

²⁴The relatively large dollar volume of revenue bond financing that occurred during 1954 was at least partially due to the large number of toll highways and toll bridges that were financed in that year. More than a dozen toll highways were either initially or supplementally financed during 1954.

Chart 1

NEW YORK CITY REVENUE AND
OBLIGATION BONDS
(1930-1954)

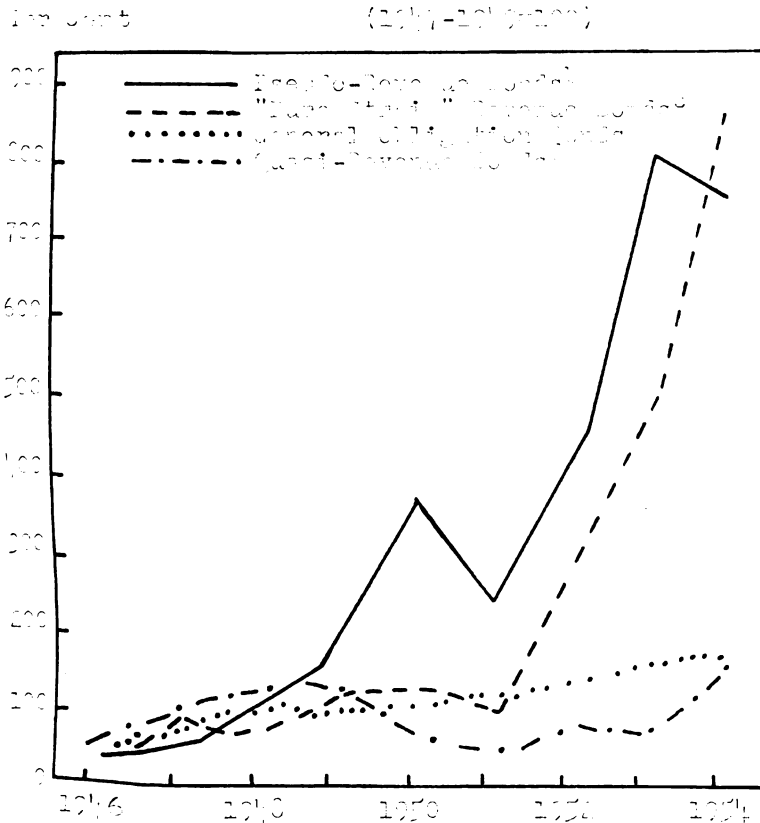


Re-calculated from data received from the Office of
the Board of Finance, 67 Pearl Street, New York, New York.

Revenue bond figures include refundings and
exchange local housing authority bonds.

CHART I

UNITED STATES - FOREIGN DEBT AND INVESTMENT IN THE UNITED STATES
 DEBT AND INVESTMENT IN THE UNITED STATES
 (1946-1954)



^a Calculated from: "Statement of Securities of the United States, 1946-1954 and 1955-1956", U.S. Dept. of the Treasury, Bureau of Public Debt, Washington, D.C., 1955. Includes territorial issues, obligations guaranteed by U.S. Government, and refunding issues. Revenue bond terms differ slightly from legislation given in Chapter I of this study as noted.

^b Secured by pledge from the funds or by a collateral pledge of the funds.

^c Secured only by pledge of earnings of the enterprise financed.

^d Secured by collateral pledge of earnings of similar enterprises in addition to earnings of the enterprise.

TABLE 1

NEW STATE AND TERRITORY DEBT, 1930-1955
 (EXCLUDING THE DEBT OF THE DISTRICT OF COLUMBIA)
 A SUMMARY OF DEBT (THRU 1955)
 (Millions of Dollars)

YEAR	TOTAL	GENERAL OBLIGATIONS	DEBT PAID	REVENUE BOND
1955	15,977	11,214	11,732	29
1954	14,949	10,755	10,214	16
1953	13,550	9,991	9,547	20
1952	11,461	8,938	8,463	33
1951	9,278	7,146	733	22
1950	8,694	6,994	600	16
1949	8,995	7,312	683	23
1948	8,990	7,440	550	10
1947	8,354	6,861	386	16
1946	6,284	595	206	17
1945	619	616	292	25
1944	712	470	212	24
1943	500	352	156	31
1942	576	479	97	17
1941	1,229	1,121	100	9
1940	1,490	1,310	100	13
1939	1,039	931	110	11
1938	1,229	1,070	151	12

^a Calculated from data received from the office of the Bond Buyer, 67 Canal Street, New York, New York.

^b Revenue bond figures include refundings and exclude local housing authority bonds.

Chart 2 gives another indication of the rapid increase in the dollar volume of various revenue bond issues as compared with general obligation bonds.

"Pure strain" revenue bonds issued in 1951 were almost 600 per cent greater than the 1947-1949 average.²⁵

During this same period of time, new issues of general obligation bonds increased by only 14 per cent.

Types of Enterprises Financed by
Various Governmental Units

The existence of many multi-purpose revenue bonds tends to complicate valid generalizations with regard to the dollar volume of expenditures for various types of public enterprises. Not only are there instances in which many types of enterprises are financed within a single revenue bond issue, but also the use of revenue bond proceeds varies considerably from month to month or from year to year. The latter type variation is readily apparent in a comparison of the dollar volume of revenue bonds issued for toll roads. In 1951 revenue bonds issued to finance toll

²⁵Revenue bonds termed "pure strain," as used in the chart, differ considerably from true revenue bonds as defined in this study. Pure strain revenue bonds are secured solely by the net revenues of the enterprise financed but without regard to the equity of the governmental unit prior to the issuance of the bonds. See Chapter I for a discussion pertaining to the classification of revenue bonds.

highways were in the amount of only \$35,000,000 as compared with approximately \$285,000,000 in 1950 and \$500,000,000 in 1952.²⁶ This time-period variation in revenue bond volume is further demonstrated by the variation in the average size of bond issue that occurred during each of the last six months of 1956, as shown by Chart 3. The average size of general obligation bond issues varied only from a low of \$370,000 to a high of \$970,000; whereas, utility revenue bonds²⁷ varied from an average low of \$440,000 per issue to a high of \$7,420,000 per issue; and all revenue bonds, including the category of utility revenue bonds, varied from a low of \$630,000 per issue to a high of \$3,440,000 per issue.

Eliminating the large and more sporadic revenue bond issues, water and/or sewer projects represent more than two-thirds of the dollar value of revenue bond

²⁶A Year End Review of Turnpike Financing (New York: Tucker, Anthony & Company, January 3, 1956), pp. 4-9. (micrographed.)

²⁷The term "utility revenue bonds" as it is used in this instance is defined by the Investment Bankers Association of America as bonds serviced from non-tax revenue, the proceeds used to finance water, sewer, electric power, other projects normally considered to be public utilities, and toll roads, bridges, and tunnels. See Investment Bankers Association of America's Statistical Bulletin, No. 1 (October, 1956), p. 4.

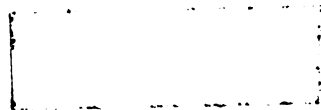
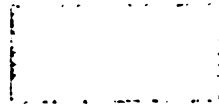
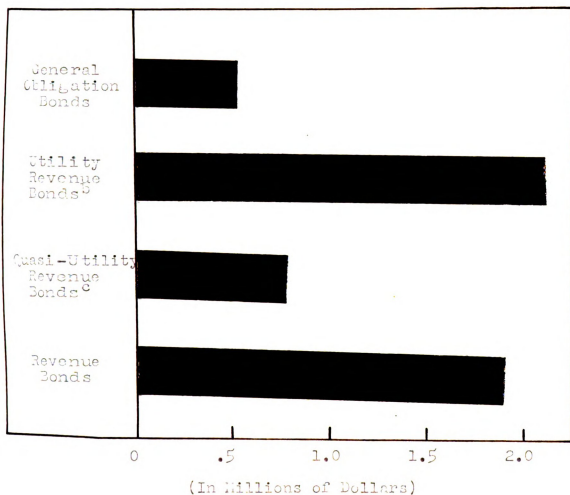


CHART 3

AVERAGE DOLLAR SIZE OF BOND ISSUES^a
(July to December, 1956)



^aComputed from: Investment Bankers Association, Statistical Bulletin, Nos. 1 and 2.

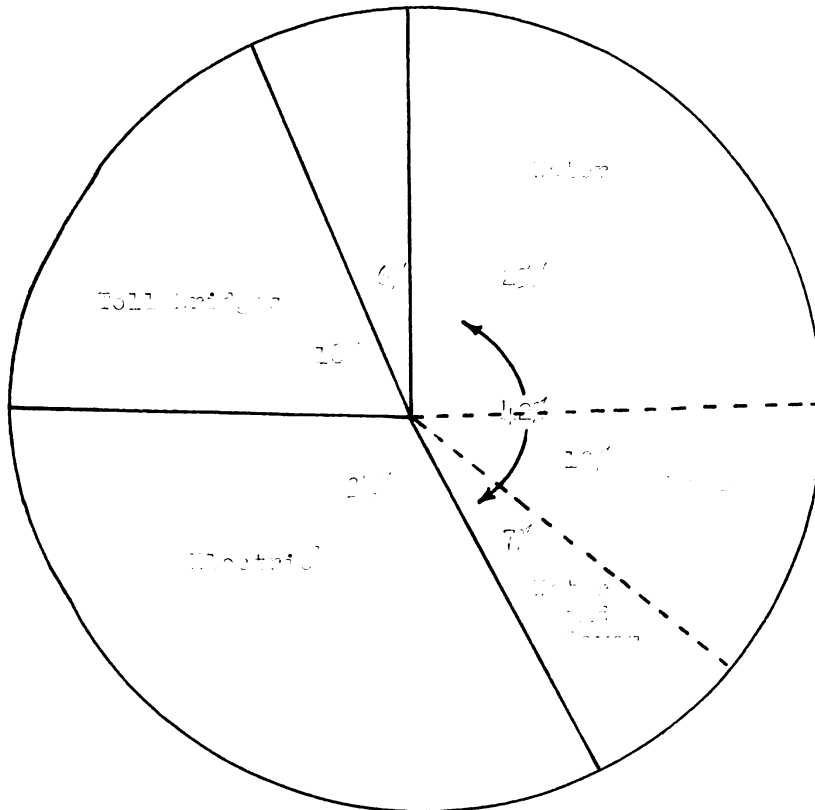
^bBonds issued to finance water, sewer, electric power, other projects normally considered to be public utilities, and toll roads, bridges and tunnels.

^cBonds issued for projects which do not have the characteristics normally associated with a public utility—such as parking lots, hospitals, college dormitories, etc.

CHART 14

PERCENTAGE OF TOTAL REVENUE
(1949-1952 Average)
(Includes 1951 California
of \$500,000 or more)

College and University
Facilities

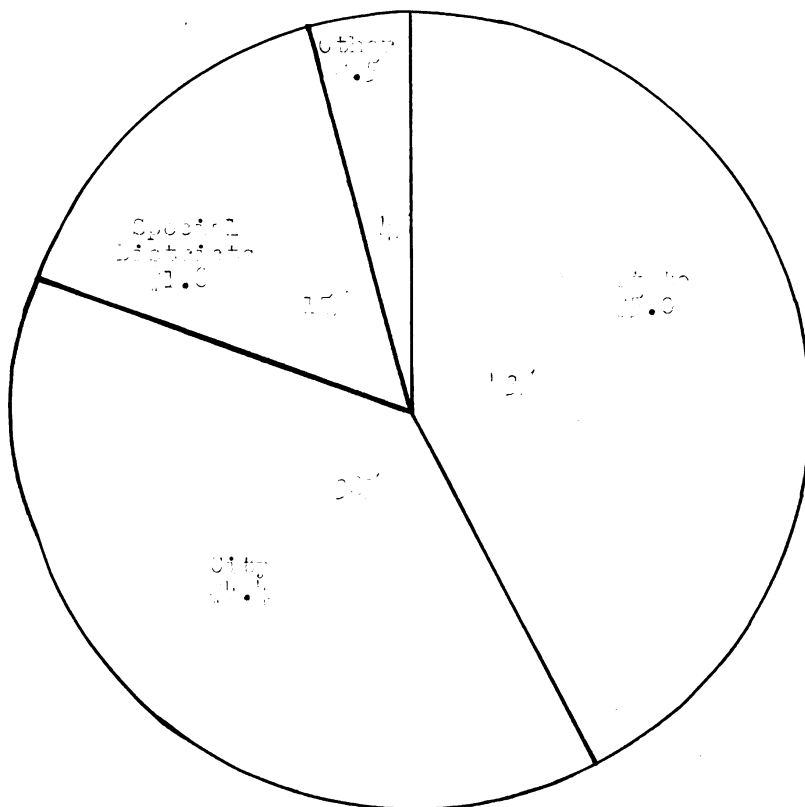


* Calculated from data received from John F. Ryan and Company, Chicago, Illinois. Does not include highway, terminal facility, parking, transit, natural gas, distribution, and miscellaneous revenue bonds.

* Includes a small amount of contribution electric and gas revenue bonds.

PAGE 5

LONG-TERM, HIGH-LEVEL, AND LOW-LEVEL
 OCCUPANCY IN THE UNITED STATES, 1970
 (Amounts in millions of dollars)
 AMOUNTS
 IN MILLIONS OF DOLLARS



Calculated from: U. S. Department of Commerce,
 Bureau of Economic Analysis, Survey of Governmental Activities
 (Washington: U. S. Government Printing Office),
 1970, p. 22.

financed projects as is shown in Chart 4.²⁸ Revenue bond financed electric systems rank second with 34 per cent followed by toll bridges with 18 per cent.

As of June 30, 1955, the total long-term non-guaranteed debt outstanding of all governmental units was \$11,700,000,000.²⁹ Chart 5 shows that the states' portion of this total is 42 per cent compared with 53 per cent for all local units.³⁰ More than 90 per cent of this non-guaranteed local debt was represented by the outstanding long-term obligations of municipalities and special districts.

Federal

The active interest of federal officials in promoting revenue bond financing during the Great

²⁸Based on the average of the years from 1949 to 1952. Revenue bond issues of less than \$500,000 are not included in this compilation.

²⁹Long-term non-guaranteed debt as the term is used by the United States Bureau of Census includes "debt payable solely from pledged specific sources--e.g., from earnings of revenue producing activities (university and college dormitories, toll highways and bridges, electric power projects, public building and school building authorities, etc.), or from specific non-property taxes." This definition, then, includes all types of revenue bonds including pseudo-revenue bonds defined in Chapter I of this study.

³⁰The federal government has a trivial amount of revenue bonds outstanding as discussed in the Federal section of this chapter.

Depression has been previously noted. Some recent proposals by federal officials indicate a continued interest in this mode of finance. For example, pseudo-revenue bond financing was suggested by President Dwight Eisenhower on February 8, 1956, as a means of financing school buildings.³¹ The proposal would give federal aid to state school-building agencies or authorities by buying the school bonds issued by local communities. Once established, the school-building authorities, according to the proposal, would receive rental payments from the school district for a period of time sufficient to retire the bonds. After the bonds were retired, the school buildings would become the property of the community.

President Eisenhower has also requested that the Tennessee Valley Authority be empowered to finance its future needs by the issuance of revenue bonds. The Tennessee Valley Authority has already been permitted to finance, on a temporary basis, additions or extensions from its revenues. Empowering the authority to issue revenue bonds would simply extend this privilege by allowing future revenues to be pledged as security for any bonds issued.

³¹Hoody's Governments and Municipals (1956 Supplement), p. 1412.

The recently enacted Highway Revenue Act of 1954 projected to be financed by the sale of bonds. From such things as federal excise tax on gasoline, oil, and tires.²²

Despite an increase in respect of the Federal Government is, the United States of America will find it difficult, if not impossible, to maintain its position of world leadership without adequate financial resources.

The First Lawrence Case

Title 19 of the United States Code, enacted April 23, 1940, authorized the United States to acquire, construct and operate a project for the purpose of the United States. The project is authorized to be constructed, operated, managed and with the Joint International Commission for the purpose of the project, the operation, and the construction of the project. The United States Government may also give and grant to finance the United States' project of a self-financing project.

Section 1 of Title 19 provides that the project is authorized to be operated and to the Secretary of the Treasury, the dollar value of the project.

²²See, for example, the President (Washington: United States Government Printing Office, 1954), p. 11.

of which shall not at any one time exceed \$105,000,000.³³

The obligations of the corporation shall bear interest at a rate approximately equal to the "current average rate on current marketable obligations of the United States of comparable maturities" as determined by the Secretary of the Treasury.³⁴

The bonds of the Saint Lawrence Seaway Development Corporation would be eligible to be classified as true revenue bonds, as defined in this study, except for their issuance to the Secretary of the Treasury rather than in the money market. As noted above, the interest rate is not determined directly by the market, but by the Secretary of the Treasury. In other respects, however, these bonds may be termed true revenue bonds.

Section 12 of the law indicated the self-liquidating nature of the enterprise by providing that the tolls shall cover, as nearly as practicable, all costs of operating and maintaining the works under the administration of the Corporation, including depreciation, payment of interest on the obligations of the

³³Since the enactment of this legislation, the Wall Street Journal of July 3, 1957, has reported the passage by Congress of H.R. 5278 which increases the borrowing authority of the Saint Lawrence Development Corporation to a total of \$140,000,000.

³⁴Public Law 350, 93d Congress, Chapter 201, 2d Session, S. 2150, approved May 13, 1954.

Corporation, and certain payments in lieu of taxes.

The law requires that the revenue obtained by the Saint Lawrence Seaway Development Corporation shall be sufficient to amortize the principal of the obligations of the Corporation over a period not to exceed fifty years.

The Corporation is subject to the Government Corporation Control Act and to audit by the General Accounting Office. The self-liquidating nature of the enterprise is further indicated by the provision in the law restricting expenditures except those which are of a non-reimbursable nature. The Corporation may, with the consent of another government agency, accept and utilize on a reimbursable basis the officers, employees, and information of any agency of the federal government. All services performed by another governmental agency require an expenditure from the Corporation funds. For example, the Saint Lawrence Seaway Development Corporation reimburses the Corps of Engineers for its work as design and construction agent, the General Services Administration for the use of space in government-owned buildings, and the General Accounting Office for the cost of its audit. The Corporation is required to contribute to the Civil Service Retirement and Disability Fund and pay a fair portion of the cost of the

administration of such funds. Mr. J. H. Marshall, Assistant Administrator of the Corporation, specifically states that the "non-emption of being an alien which will subject to its financial non-emption."²⁵

The Corporation is responsible for the installation and maintenance of navigational aids on the right of the boundary of the Saint Lawrence Seaway, belonging to the United States. The duties for the Corporation are to be included in the toll charges according to a ruling of the Comptroller General. The Corporation is authorized and directed to acquire all lands, rights and interests in lands, including toll stations, and to be obligated to recover all "costs of operating and maintaining the seaway and the administration of the Corporation, including depreciation." Mr. Joseph Marshall, Comptroller General of the United States, in a letter dated December 2, 1954, to the Administrator of the Saint Lawrence Seaway Development Corporation, pointed out that the intent of Congress would be fully that the responsibility for the administration and costs of the portion of the seaway belonging to the United States should be placed on the Corporation and that all costs related to the construction, operation, and

²⁵Letter dated December 11, 1954.

maintenance of the seaway shall be recovered from the tolls collected.

Revenue bonds of the Corporation outstanding as of October, 1956, were in the amount of \$25,000,000, all held by the United States Treasury.³⁶

Lease-Purchase Program

In 1954 the federal government instituted a lease-purchase plan as a method of providing federal government agency buildings.³⁷ Although this program was not financed by the issuance of revenue bonds, the economic aspects of the plan are, in some respects, similar to revenue bond financing. This federal lease-purchase program was designed as a method of acquiring post offices, courthouses, and other federal office buildings. Building sites were selected by the General Services Administration or the Post Office Department, and competitive bids for the construction of the buildings were requested from private contractors. Private investors were to finance the construction cost in return for government lease payments for a certain period of time not to exceed fifty years. The federal government, according to the agreement, was then to

³⁶Moody's Governments and Municipals (1957), p. 26.

³⁷Business Week (March 2, 1957), p. 139.

take title to the buildings. All such lease-purchase plans were subject to approval by the Bureau of the Budget and by Congress.

Of the one hundred forty-nine projects planned in 1956, only two had bids accepted.³⁸ The Post Office Department was in charge of the planning of fifty-one of which forty-eight were approved by Congress and of these, ten were submitted for bids with only one bid acceptable to the government. The General Services Administration had charge of the remaining ninety-eight projects and received only one acceptable bid.

As a consequence of the slowness and unworkability of the building program, Senator Francis Case has introduced a bill establishing a federal agency to manage the financing of government buildings and local public schools by issuing revenue bonds.³⁹ Bonds issued by such an agency are not revenue bonds, as the term is defined in this study, unless the bond proceeds are for the purpose of constructing a building of a proprietary nature. General government office buildings, whether privately or publicly owned, do not ordinarily render services capable of being metered and

³⁸Ibid.

³⁹Ibid.

distributed by the price mechanism.⁴⁰ Obligations issued to finance government buildings such as discussed in this section are, therefore, classified as pseudo-revenue bonds. An enterprise such as a post office, however, would be eligible for true revenue bond financing were it possible to allocate costs and receipts to the particular facility so financed.

Interstate

There exist a few interstate governmental units empowered to finance certain activities by issuing revenue bonds. These include the Cairo Bridge Commission (Illinois and Kentucky); Dubuque Bridge Commission (Illinois and Iowa); Maine-New Hampshire Interstate Bridge Authority (Maine and New Hampshire); Lake Champlain Bridge Commission (New York and Vermont); Port of New York Authority (New Jersey and New York); Delaware River Joint Toll Bridge Commission (New Jersey and Pennsylvania); and Delaware River Port Authority (New Jersey and Pennsylvania).⁴¹

⁴⁰The manner in which prices are set does not affect the method of finance. For example, those in charge of college dormitories may administer prices in some degree just as many businesses sometimes do in the private sector of the economy. The significant feature of revenue bond financed projects is the production of goods and/or services that are conveniently meterable.

⁴¹Moody's, op. cit., 1957, p. a-23. In addition to interstate authorities such as listed in this section, there exist several revenue bond financed authorities of

The activities of the Port of New York Authority illustrate the non-levitation of revenue bond financing of these semi-independent governmental units. The Port's activities represent an investment of more than \$620,000,000 financed wholly by the issuance of Port Authority bonds on its own credit, backed solely by revenues of its own projects.⁴²

The Authority is a municipal corporation instrumental to the State of New York and New Jersey created in 1921 by compact with the consent of the United States. Its purpose was to coordinate the terminal transportation and other facilities of commerce in the Port of New York. It is authorized to lease, operate, and construct terminal and transportation facilities within the New York Port District. The Port is limited entirely to revenue bond financing; and, presently, its obligations are not obligations of either the State of New Jersey or the State of New

an international nature. These include the Longo Bridge Authority (New York and Canada); the Blue Water Bridge operated by the State Commission of Michigan (Michigan and Canada); the American, the International, and the Canadian toll bridges operated by the Detroit Islands Bridge Authority (New York and Canada); and several toll bridges crossing the Rio Grande River (Texas and Mexico).

⁴²Sidney Goldstein, "The Port of New York Authority," Journal of Public Law (Fall, 1956), p. 413.

Work. Facilities in operation for under construction at the end of 1956 are shown in Table 2.¹²

Debt at the end of 1956 was about \$275,000,000. Approximately 170,000,000 of this total are referred to as general government liabilities and are secured by a pledge of net revenues of the United Kingdom's present facilities except the London-Port Authority piers, four air terminals, and the marine terminals.¹³ Another 67,000,000 of the total debt of the Authority are air terminal bonds secured by a pledge of net revenues of the four air terminals. About 10,000,000 of the total debt are marine terminal bonds secured by a pledge of revenues from the marine terminals. The London piers is made up of what is termed as solidated piers, Series 1 through 6, and is secured by a pledge of net revenues of the London-Port Authority piers and additionally, secured by the net revenues of other

¹² Much of the material in the remainder of this chapter has been taken from The Hants and Hampshire Development Board Service consisting of three 1950-1951 volumes. It contains current information on all United States revenue bonds financed privately during at least 17,000,000 of 1956. In addition to a general description of the amount and the issuing unit, the twelve sections of the Service contain information concerning such items as bond ratification, flow of funds (i.e., the order that payments are to be applied to the various bond issues), bond interest, call provisions, agreements contained in the bond resolution, operating revenues and expenses, and a list of the participating companies, and status of additional revenue bonds that may be issued in the future.

¹³ Ibid.

TABLE 2

ESTIMATED COSTS OF PORTS AND AIRPORTS
AS OF 1967
(in millions of dollars)

Facility ^a	Cost ^b
Holland Tunnel and Approaches	72.7
Lincoln Tunnel (third tube - for construction)	132.1
George Washington Bridge and Approaches	76.5
Bayonne Bridge (approach to Fort McMonroe)	13.0
Goethals Bridge (Elizabeth to Staten Island)	7.5
Walterbridge Crossing (North Bay to Staten Island)	13.0
Walterboro Airport (Walterboro, S.C.)	0
Holland Terminal No. 1 (West 11th Street, New York)	22.0
Port Authority Bus Terminal (Brooklyn)	0
Port Authority Terminal (New York Airport)	21.0
Colon - Port Authority Lines	17.6
Port Authority Bus Terminal (West Street, New York)	14.0
Port Union Water Bus Terminal (Lower Manhattan)	11.0
Port Union Water Bus Terminal	0.2
Port Authority Public Facilities	0
Brooklyn - Port Authority Lines	14.4

^aIna Mount and Baysville Bayview Land Service.

^bIn addition to these facilities the Port operates Islip Airport, New York International Airport-John F. Kennedy, and Newark Airport.

^cCost not available.

served from profits of the liquor store system.⁴⁶

New Mexico constructed a court building by issuing bonds secured by a pledge of a \$2.50 fee on every civil action in the state.⁴⁷

The extent of state revenue bond financing is indicated by the statistics pertaining to long-term non-guaranteed debt. At the end of the fiscal year, 1956, state non-guaranteed debt outstanding comprised approximately one-half of the total state debt.⁴⁸ Chart 6 reflects the upward trend in state utilization of non-guaranteed obligations in the financing of capital improvement projects. State utilization of non-guaranteed obligations as reflected by the percentage of non-guaranteed debt to total debt outstanding as of June 30, 1956, varied from zero by the States of Nevada and Vermont to approximately one hundred by twelve states.⁴⁹

The non-guaranteed obligations may in some instances, however, be composed of a considerable amount of pseudo-revenue bonds. For example, as of

⁴⁶R. U. Ratchford, American State Debts (Durham, North Carolina: Duke University Press, 1941), p. 463.

⁴⁷Ibid.

⁴⁸United States Department of Commerce, Bureau of the Census, Summary of State Government Finances in 1956 (Washington: United States Government Printing Office, April 1, 1957), p. 16.

⁴⁹Ibid. See Table 3.

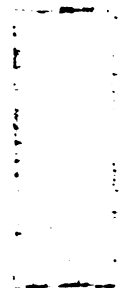
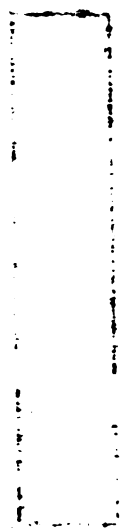
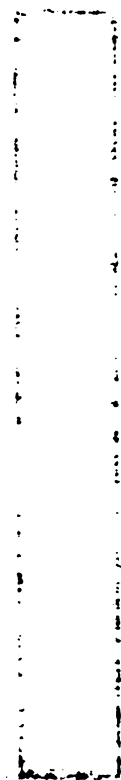
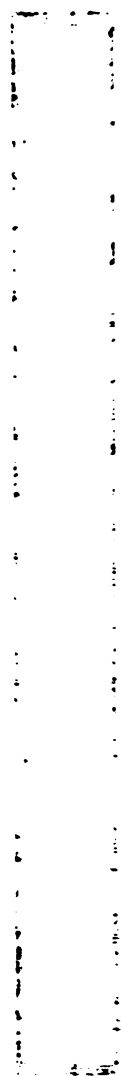
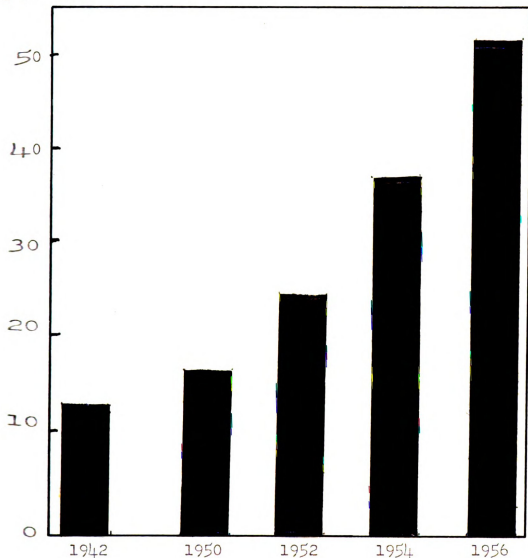


CHART 6

LONG-TERM DEBT OUTSTANDING OF THE FORTY-EIGHT
STATES AS OF JUNE 30, SELECTED YEARS*
(NON-GUARANTEED AS A PERCENTAGE OF TOTAL)

Per Cent



*Calculated from: U. S. Department of Commerce,
Bureau of the Census, Compendium of State Government
Finances (Washington: U. S. Government Printing Office).

TABLE 3

LONG-TERM DEBT OUTSTANDING, BY STATE, AS OF JUNE 30, 1956*
(In millions of dollars)

State	Total	Non-guaranteed	Non-guaranteed as a percent of total
All States	112,643	46,430	51
Alabama	80	45	51
Arizona	6	6	97
Arkansas	113	13	12
California	943	120	13
Colorado	34	34	100
Connecticut	321	200	62
Delaware	139	41	30
Florida	164	164	100
Georgia	236	236	100
Idaho	5	3	62
Illinois	699	446	64
Indiana	321	321	100
Iowa	29	6	20
Kansas	176	176	100
Kentucky	70	70	100
Louisiana	318	83	26
Maine	119	83	70
Maryland	493	323	66
Massachusetts	925	278	25
Michigan	532	301	57
Minnesota	84	1	7
Mississippi	87	87	100
Missouri	8	5	60
Montana	46	39	84

TABLE 3--Continued

State	Total	Non- guaranteed	Non-guaranteed as a percent of total
Nebraska	\$ 8	\$ 8	100
New Hampshire	56	1	2
New Jersey	804	491	56
New Mexico	48	18	37
New York	1,039	767	41
North Dakota	19	5	25
Ohio	591	354	60
Oklahoma	207	165	80
Pennsylvania	1,218	866	73
Rhode Island	65	3	5
South Carolina	217	62	28
Tennessee	110	3	2
Texas	213	107	50
Utah	4	4	100
Virginia	180	170	94
Washington	229	177	77
West Virginia	275	140	51
Wisconsin	6	6	100
Wyoming	4	4	100

*Calculated from: United States Department of Commerce, Bureau of the Census, Summary of State Government Finances in 1956 (Washington: United States Government Printing Office), p. 16.

January, 1955, the State of Louisiana had outstanding approximately \$97,000,000 of highway bonds secured by tax monies earmarked for a special fund, \$49,000,000 veterans' bonus bonds backed by a beer tax, \$16,000,000 Port of New Orleans Commission bonds, \$12,500,000 Greater Baton Rouge Port Commission bonds, and an additional \$125,000,000 supported financially by ad valorem taxes for a total debt of more than \$200,000,000.⁵⁰ Despite this \$200,000,000 debt, most of which is payable from special funds or is self-supporting, all except about \$149,000 are full faith and credit obligations of the state.

The greater portion of bonds issued by state governments consists of highway bonds, payable from taxes on gasoline and motor vehicles, and revenue bonds for toll roads, toll bridges, and public buildings.⁵¹

Toll Roads

As mentioned earlier in this chapter, toll roads experienced a flourishing start in the early nineteenth century in this country. A serious set-back in the development of this new and exciting business adventure occurred, however, when competing methods of transportation began to make their appearance. For example, when the Erie Canal opened in 1825, freight

⁵⁰Ira Hayt, op. cit.

⁵¹Ibid.

from New York City to Buffalo dropped from \$100 a ton to \$15 a ton.⁵² The railroads further expedited deliveries and abolished the original stimuli for the construction of turnpikes.⁵³

The automobile is responsible for the abolition of the toll road. The Pennsylvania Turnpike was the first modern toll road. In 1927 the Pennsylvania State Legislature created the Pennsylvania Turnpike Commission with authority to finance, construct, and operate a turnpike from the proximity of Harrisburg to Littleburg.⁵⁴ An easily accessible right-of-way of the recently completed Southern Pennsylvania Railroad provided tunnels already dug through several parallel mountain ranges, thus presenting excellent topographic conditions. A large volume of traffic was moving between the population and industrial centers at the ends of the proposed turnpike. Despite these apparent advantages, private

⁵²Ray Allen Billington, Westward Expansion, A History of the American Frontier (New York: The Macmillan Company, 1937), p. 324.

⁵³The origin of the word "turnpike" dates back to 1403. Counties in England were given permission to levy tolls on highways to raise funds for repair and maintenance of the roads. Many highway users evaded the collection points and revenues were less than had been expected. Parliament decreed that "turnpikes" or "turnpikes" be erected and every person passing the road at such points.

⁵⁴United States Congress, House, Investigation and Feasibility of Toll Roads and Their Relation to the Interstate Highway Act, 74th Congress, 1st Session, 1935, House Document 137, p. 4.

financial institutions were not interested in buying the bonds. Enlisting federal aid, the commission obtained 40 per cent of the needed capital from the Public Works Administration and sold \$40,800,000 of turnpike bonds to the Federal Reconstruction Finance Corporation.⁵⁵ This issue of bonds, bearing a coupon rate of interest of 3 3/4 per cent, was priced to yield slightly more than 4 per cent. In 1943 another \$1,500,000 issue was sold to cover final construction costs of the turnpike, and in 1946 an additional \$1,500,000 in bonds was issued. In 1948 bonds were again sold, in part to redeem outstanding indebtedness of the original turnpike and partly to finance a 101-mile extension.⁵⁶

Public acceptance of the toll road became widespread by the late 1940's, making possible the liquidation of the entire cost of the Pennsylvania Turnpike. When the manufacturing of automobiles was resumed after World War II, the lack of adequate highway facilities became apparent. Public works construction, in general, had lagged behind during the war, and many states lacked funds to meet all of these needs and to build costly highways. Toll highways financed by revenue bonds offered a means of meeting the financial problem. As an indication of the growth of this type of financing

⁵⁵Ibid., p. 5.

⁵⁶Ibid., p. 7.

of highways, outstanding toll road bonds increased from \$54,000,000 in 1945 to \$491,000,000 in 1951.⁵⁷

The State of Maine Authorized the construction of the second turnpike in 1941; but, because of World War II, the project was postponed. In 1946 the Maine Turnpike Authority sold bonds in the amount of \$15,000,000 to cover the estimated construction cost of a 47-mile length between Kittery and South Portland.⁵⁸ Rising construction costs necessitated the issuance of an additional \$5,600,000. This section was opened in 1947. A 63-mile extension was added in 1955. The initial portion of the Maine Turnpike was the first toll road to be financed wholly by revenue bonds which were secured solely from the earnings of the facility.

Successive sections of the New Jersey turnpike were opened between November, 1951, and January, 1952, carrying trans-state traffic from New York and New England to points South and West.⁵⁹ In 1953 this toll road carried more traffic than all the other five existing major toll roads combined. It was financed

⁵⁷Hugo Duzon, William R. McCallum, and Thomas R. Todd, "Recent Trends in Highway Bond Financing," Public Roads, XXVII (October, 1952), p. 74.

⁵⁸Ibid.

⁵⁹House Document 139, op. cit., p. 8.

by revenue bonds negotiated with a group of insurance companies. Funds were made available as needed on a "forward commitment" basis.⁶⁰ The security for the bonds was wholly dependent upon the toll revenues and other fees of the turnpike.

The 18-mile Denver-Boulder Turnpike was opened to traffic January 21, 1952. Although this road is financed by revenue bonds, the State Highway Department bears the cost of maintenance and operation, and the State is liable for up to 30 per cent of the necessary interest and principal in any one year and for 30 per cent of the necessary reserve funds, payable from regular highway funds. The total principal payments by the state are not to exceed 30 per cent of the original cost estimates which were \$5,300,000.⁶¹ Toll revenues and other fees of the turnpike have been sufficient to meet the debt service and to create an adequate reserve.⁶² The highway department may request that surplus earnings, up to \$75,000 annually, be applied to reimburse the state for the cumulative payments made for operation and maintenance costs.⁶³

⁶⁰Money was supplied as costs were incurred, thus avoiding interest expense on that portion of the money necessary for the complete project until funds were needed as construction proceeded.

⁶¹Ira Haupt, op. cit.

⁶²House Document 139, op. cit., p. 9.

⁶³Ira Haupt, op. cit.

1

West Virginia established a turnpike corporation in 1947 for the purpose of acquiring, constructing, and operating an 84-mile toll road from Charleston to Lincoln.⁶⁴ The 1946, 1947, and 1948 bond issues sold in 1942, and an additional \$11,000,000 bond issue sold subsequent to completion of the project.⁶⁵ The turnpike was completed in 1951 and is operated solely by the revenues of the turnpike system.

The Green River Turnpike completed in 1951, 1952, and includes the project of the 104-mile distance between Clarksburg City and Union.⁶⁶ It was financed by revenue bonds and the state Public Works Program. The 1946, 1947, and 1948 bond issues for the original section sold at an interest of 3.4% per cent, and an additional \$7,000,000 was sold at 3.4% per cent. The Corporation, however, sometimes called the "Will Rogers Turnpike," is now used for completion about 1951, 1952.⁶⁷ This section includes eight-and-a-half miles from Union west past to the state line near Poplar, Missouri.

The New River Turnpike, completed in 1951, 1952, 1953, is financed by revenue bonds and is operated solely by

⁶⁴The State of West Virginia, U.S. Pub., p. 10.

⁶⁵Ibid., pp. 15-16.

⁶⁶House Document 120, U.S. Pub., p. 6.

⁶⁷Ibid., U.S. Pub.

the earnings of the turnpike. Two hundred thirty-six miles in length, this turnpike runs from Kansas City, Kansas, to the Oklahoma border via Lawrence, Topeka, and Wichita. Bonds in the amount of \$160,000,000 yielding 3 3/8 per cent were sold October 1, 1954.⁶⁸

The Ohio Turnpike, completed in October, 1955, and the Richmond-Pittsburgh Turnpike in Virginia due to be completed by mid-1958, are further examples of modern toll roads financed by revenue bonds which are secured solely by the revenues of the project financed.⁶⁹

In recent years a few states have pledged full faith and credit security for toll road bonds, thus financing toll roads by the issuance of general obligation securities. Obviously, a bond additionally secured by the taxing power of the state in event of insufficient revenues from tolls commands a lower interest rate. Revenue bonds issued under such a plan lose their "true" status, since they are not solely dependent upon the earnings of the project so financed.

The State of New Jersey has pledged its credit as guarantee for bonds in the amount of \$225,000,000 to finance construction of the Garden State Parkway,

⁶⁸Ibid.

⁶⁹Ibid.

although the toll revenues are expected to be adequate to pay all interest charges and retire all bonds. Additional funds may be derived from motor fuels and, if necessary, a property tax may be levied. The New York State Thruway Authority has issued an equal amount of revenue bonds guaranteed by the state and revenue bonds secured solely by fees, rentals, and tolls of the Thruway.

Practically all of the toll roads are in the eastern half of the United States with the majority of mileage located in the northeastern states where population is more heavily concentrated. As of January, 1955, 1,461 miles of toll roads were complete; 1,398 miles under construction; 3,368 authorized; and 2,253 miles actively proposed.⁷⁰

Toll Bridges

Toll bridges were prevalent in the early days of the Republic because many state governments lacked the necessary funds for construction of the bridges. Private companies built the greater portion of toll bridges. In 1927 out of two hundred thirty-three toll bridges in operation, only forty-two were publicly owned.⁷¹ Although private toll bridges still exist,

⁷⁰House Document 139, op. cit., p. 18.

⁷¹Finla Goff Crawford, Readings in American Government (New York: F. S. Crofts & Co., 1937), p. 403.

\$37,500,000 which were additionally augmented by the sale of \$6,000,000 of bridge revenue bonds in 1949, providing funds to construct the Chesapeake Bay Bridge. The Chesapeake Bay Bridge was opened to traffic in 1952.

In 1954 the Commission sold \$180,000,000 of bridge and tunnel revenue bonds to finance the construction of the Patapsco Tunnel across the Patapsco River in Baltimore Harbor and to refund the \$34,000,000 of Maryland Bridge revenue bonds which were payable from the net revenues of the Chesapeake Bay-Potomac River and Susquehanna River Bridges. The bonds issued in 1954 are payable from the net revenues of the pre-existing bridges and of the projected Patapsco Tunnel scheduled to be completed sometime before 1958.

Another example of state revenue bond financing of toll bridges is provided by the California Toll Bridge Authority which is authorized to manage, in the name of the State, toll bridges and other toll highway crossings, including approaches, and to issue revenue bonds of the Authority payable in each case from the revenues of the particular bridge or bridges for which the bonds are issued. The Authority is empowered to fix toll rates as provided in the bond agreement. Revenues of each bridge do not have to be accounted for

separately but may be allocated as security for all the bonds to be issued under a specific statute. Bonds of the Authority, according to pertinent California statutes, are not to constitute debt of the State of California.

The State of Michigan is presently constructing a bridge to span the Straits of Mackinac which separate the lower and upper peninsulas of that state. Since 1923 crossings of the Straits have been by ferry, owned and operated by the Michigan State Highway Department.⁷⁴ The average time of ferry crossings is approximately an hour plus a waiting time ranging from approximately forty-five minutes in the fall and spring to one hour and forty-five minutes in the summer. Ferry service is frequently interrupted by ice conditions during the winter months. The new five-mile bridge with a main suspension span of 3,600 feet is estimated to cost about \$100,000,000. Construction cost is high due to the existence of a hidden rock gorge underneath the channel and by the necessity of a one hundred forty-eight foot clearance above water level to facilitate the passage of vessels.

These Mackinac Bridge bonds cannot be classified as true revenue bonds, as defined in this study, due to the appropriation of tax money, not to exceed

⁷⁴Ira Haupt, op. cit.

\$317,000 in any fiscal year, to pay operation and maintenance expenses on the bridge. Bonds do not represent an indebtedness of the state according to the statute establishing the Mackinac Bridge Authority, which is charged with the responsibility of fixing tolls and charges for the use of the bridge.

Other toll bridges that receive state aid in the form of operation and/or maintenance include the City of Bay St. Louis Bridge, which is operated by the Mississippi State Highway Commission, and the Lower Tampa Bay Bridge (Sunshine Skyway), which is operated by the Florida State Improvement Commission. The revenue bonds of the Virginia State Highway Commission are unique in that the Commission may contribute funds for the operation, maintenance, and construction of the revenue bond financed projects; however, it may not unconditionally commit itself to make such a contribution.

Educational Facilities

Revenue bonds have become an important source of funds for the construction of college and university facilities, especially dormitories. Although instances of revenue bond financing occurred prior to the Great Depression, the greatest portion of this type of financing occurred during and since the 1930's.

One of the earliest instances of revenue bond financing of educational facilities was by the State College of Washington. In 1911 the college borrowed \$124,000 to finance the construction of a dormitory hall. The bonds were secured by a first mortgage on land and building and further secured by lease-purchase agreements. From gross revenue from several years of operation, \$100,000 was set aside for the purpose.⁷⁵

A survey by the American Council on Education indicated that \$135,000,000 of the non-graduate college and university financing of 1940 was obtained during the period 1920-1950 by means of revenue bonds.⁷⁶ This compares with \$170,000,000 for the five-year period, 1951-1955, and with an estimated \$206,000,000 for the period 1956-1960.⁷⁷

At least one institution of higher learning in each of thirty-four of the forty-eight states has issued bonds secured by dormitory rentals, tuition payments, or other student fees.⁷⁸ Four states--Michigan, Illinois,

⁷⁵Robert Bruce Sigwart and Rex Lyon, First Financing of Plant Building for State College and Universities (West Lafayette, Indiana: Purdue Research Foundation, 1940), p. 103.

⁷⁶John L. Long and Arthur A. Weiner, Financing of College and University Student Dormitory Buildings (Washington: American Council on Education, 1957), p. 100. Their definition of revenue includes income derived from private colleges and universities.

⁷⁷Ibid., p. 79 and p. 107.

⁷⁸Ibid., op. cit., p. a-20.

bonds and encouraged the purchase of bonds by granting the buyer certain options to buy choice football tickets.⁶¹ Oklahoma Agricultural and Mechanical College financed a large union building by pledging student fees and the net income from such proprietary revenue producing enterprises as the bookstore, radio station, and cafeteria.⁶²

Generally the board of regents or trustees of a state college or university is authorized to issue revenue bonds for building purposes. In some instances, however, the bonds are issued by a state board or bond commission.⁶³ Seven states employ the lease-rental method, involving the leasing of land to a building corporation which issues the bonds to build the dormitory and then leases it back to the university.⁶⁴

The various revenues that are pledged for the security of bonds to finance educational facilities made this type of financing more heterogeneous than many other types of revenue bond financed projects. True revenue bonds issued for the purpose of financing educational facilities are rare. Quasi- and pseudo-revenue bonds are prevalent in the financing of these projects.

⁶¹Ibid., p. 334.

⁶²Ibid.

⁶³Long and Weimer, op. cit., pp. 346-50.

⁶⁴Ibid.

College Housing Program

In recent years the Community Facilities Administration has been underwriting bonds backed by a pledge of revenues from college and university facilities. One responsibility of the Community Facilities Administration, a constituent of the Housing and Home Finance Agency, which administers the housing and community development program of the federal government, is to make loans to educational institutions of higher learning for the purpose of financing student and faculty housing. These loans are made only whenever private financing is not available "upon terms and conditions equally as favorable."⁸⁵ The interest rate, according to the Housing Act of 1950, may not exceed 2.75 per cent per year or one-fourth of 1 per cent more than the interest rate paid by the Housing and Home Finance Agency on funds obtained from the United States Treasury.

Bonds awarded to the Housing and Home Finance Agency are usually secured by a pledge of revenues from the financed facility and in this respect resemble revenue bonds. These bonds cannot be termed "true revenue bonds," however, since they do not meet the test of the market. Low fixed interest rates do not

⁸⁵Public Law 473, 81st Congress, 2d Session, April 20, 1950.

reflect the high value of the water, and the fact that the
 it is used for irrigation.

Other Water Projects

1. For states having water projects that are in
 electric power projects, such as the following:
 There include the following: the Lower River District of
 Indiana,⁶⁶ the Grand River Dam Unit of Oklahoma,
 and the Lower Atchafalaya of the State of New York. The
 latter state (New York) has a dam on the river, 101,000
 of water is being outstanding.⁶⁷ In addition, there are
 issues are for the, such as the International Hydro-
 electric Power Project in the International region
 of the Great Lakes River and the Niagara
 River and of operating and maintaining such projects in
 cooperation with the Upper Canadian Limited Share
 Corporation.

Other miscellaneous state or regional issues include
 the Georgia Water Authority, which is a public
 body from the state. States issuing bonds have no
 loans in the Louisiana Water Authority, which is a public
 authority from the state of Louisiana, and the
 Veterans' compensation bonds payable from a statutory

⁶⁶The Lower River District is a public
 corporation for the Lower River and the Valley
 of the Lower District of Indiana, which is a public
 authority for water power and other.

⁶⁷The Grand, op. cit.

tax, and the Georgia Farmers' Bank has been paying, since 1910, rentals on the land owned by the bank, as the result of an agreement entered into with the Georgia Department of Agriculture, a branch of the United States Department of Agriculture.

Local

In terms of number of issues, however, local financing is used more extensively by local governments than by either state or federal governments. Local governments' debt outstanding is composed almost entirely of obligations of municipalities and special districts. In 1955, municipal and special district debt amounted to \$1,400,000,000, or 12 per cent of the total local government debt outstanding.⁶⁰ The turnover of the local government debt outstanding in 1955 is the only obligation, compared with approximately one-fourth the total amount. Table 9 shows the relative size of the local government debt outstanding compared with the total local government debt outstanding, by size of city. It is shown in the chart, on the next page, that the larger portion of the total outstanding debt of smaller cities is of longer maturity.

⁶⁰ United States Department of Commerce, Bureau of Economic Analysis, Survey of Current Capital Structures in 1955 (Washington: Government Printing Office, August 25, 1956), p. 32.

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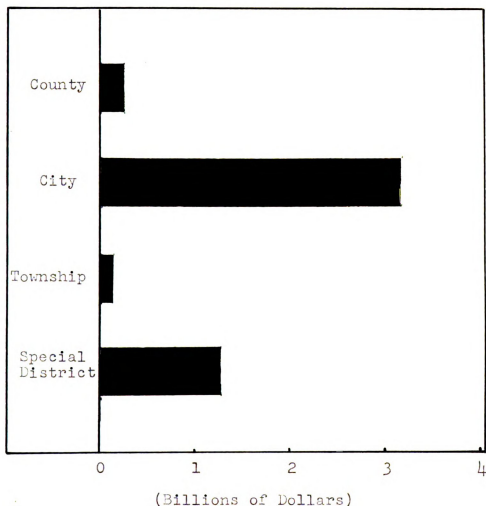
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CHART 7

LONG-TERM NON-GUARANTEED DEBT OUTSTANDING
OF VARIOUS LOCAL GOVERNMENTAL UNITS
AS OF JUNE 30, 1955*



*Calculated from: U. S. Department of Commerce,
Bureau of the Census, Summary of Governmental Finance in
1955 (Washington: U. S. Government Printing Office),
Table 17, p. 32.

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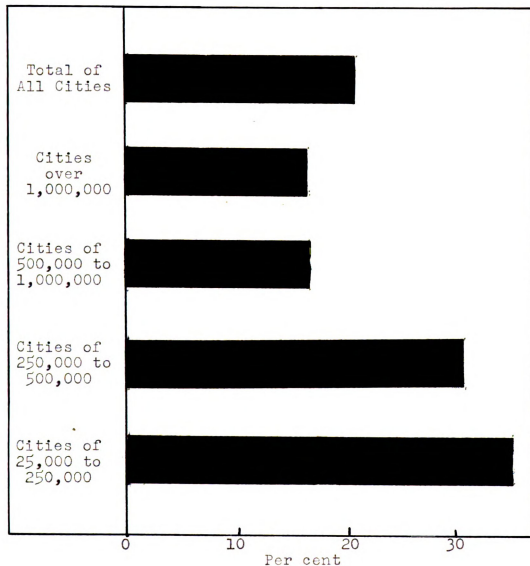
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CHART 8

CITY GOVERNMENT LONG-TERM DEBT
OUTSTANDING AT END OF FISCAL
YEAR, 1954, BY SIZE OF
CITY, 1950 POPULATION*
(NON-GUARANTEED AS A PERCENTAGE OF TOTAL)



*Calculated from: U. S. Department of Commerce,
Bureau of the Census, Compendium of City Government
Finances in 1954 (Washington: U. S. Government Printing
Office), p. 107.

In 1955 special districts relied more heavily on non-guaranteed debt relative to the amount of their total long-term debt outstanding. Approximately one-third of the special district long-term debt was in the non-guaranteed category.⁶⁹ Next in order were cities with 29 per cent of their total long-term debt being non-guaranteed followed by townships and counties as shown in Table 4.

TABLE 4

LONG-TERM NON-GUARANTEED DEBT CONSTITUTING
OF LOCAL GOVERNMENTAL DEBTS*
(as of June 30, 1955)

Type of Government	Non-Guaranteed Debt as a Per Cent of Each Government's Total Debt Outstanding
Special District	34
City	29
Township	19
County	12
All Local Governments	21

*Calculated from: United States Department of Commerce, Bureau of the Census, Summary of Governmental Finances in 1955 (Washington: Government Printing Office, August 20, 1956), p. 32.

The most common projects financed by revenue bond issues of local governments are water systems, sewer systems, electric systems, toll bridges, and off-street parking facilities. Other enterprises financed

⁶⁹Ibid.

by revenue bond issues of local governments include transit systems, airports, dock and terminal facilities, hospitals, public markets, and various recreational facilities. Revenue bonds are less frequently used to finance such miscellaneous enterprises as incinerators, heating plants, ice and cold storage plants, and garbage disposals.⁹⁰

Water, Sewer, Electric, and Gas Systems

Revenue bond financed water systems represent the most frequent use of revenue bond financing. Frequently both water and sewer systems will be financed with a single revenue bond issue. Occasionally a single revenue bond issue may provide funds for the financing of any combination of water, sewer, electric, or gas systems. An indication of the frequency of these multi-purpose issues is provided in Table 9.

Chart 4 is based on an average of the four-year period, 1949-1952, and excludes issues of less than \$500,000. This chart reveals that water and sewer units comprise over 42 per cent of the less sporadic revenue bond issues. This actually underestimates the importance of revenue bonds issued for water and sewer purposes. An analysis of revenue bonds issued during the fourth quarter of 1956 reveals that approximately

⁹⁰Hoody's, 1957, op. cit., pp. a-23 - a-30.

one-third was issued for all other types of projects.⁹¹
The omission in Chart 4 of sporadic issues, however, tends to overestimate each of the components as a percentage of total revenue bond issues.

The revenue bond financing of electric systems ranks next to water and sewer in terms of the frequency of such issues. The dollar volume of revenue bonds issued to finance electric systems during the fourth quarter of 1956, however, was more than triple the amount issued to finance water and sewer systems.⁹² These statistics tend to overstate the significance of revenue bonds issued to finance electric systems due to the inclusion of an unusually large issue of more than \$163,000,000 issued by the City of Memphis. Excluding the extremely large and small revenue bond issues, the average dollar size of electric system revenue bonds issued during the fourth quarter of 1956 was approximately \$3,000,000. This is almost three times greater than the average revenue bond issue for water and sewer.

As indicated in Tables 5, 6, 7, and 8, natural gas systems are also financed by revenue bonds, but to a lesser extent than are water, sewer, or electric systems.

⁹¹Data obtained from files of the Investment Bankers Association of America, Washington, D. C.

⁹²Ibid.

TABLE 5

NUMBER OF LOCAL GOVERNMENTS WITHIN EACH STATE
 AND DISTRICTS FORMED IN THE TERRITORY OF
 MICHIGAN ON THE DATE OF ADOPTION OF THE CONSTITUTION

State	Prior to	
	1837 ¹	1837 ²
Alabama	37	79
Arizona	2	11
Arkansas	41	69
California	1	24
Colorado	3	4
Connecticut	3	3
Florida	31	59
Georgia	9	21
Idaho	0	2
Illinois	119	171
Indiana	32	119
Iowa	14	57
Kansas	14	22
Kentucky	37	92
Louisiana	14	29
Maine	19	21
Michigan	29	131
Minnesota	2	17
Mississippi	11	32
Missouri	5	23
Montana	3	15

TABLE 5 - Continued

State	Prior to	
	1947 ^b	1957 ^c
Nebraska	3	14
Nevada	0	1
New Mexico	17	19
New York	1	4
North Carolina	0	1
North Dakota	3	9
Ohio	67	115
Oklahoma	0	2
Oregon	2	4
Pennsylvania	30	61
Rhode Island	0	1
South Carolina	26	40
South Dakota	1	3
Tennessee	20	45
Texas	112	177
Utah	42	45
Vermont	0	1
Virginia	4	10
Washington	20	56
West Virginia	30	44
Wisconsin	21	34

^aThe governmental subdivisions of Delaware, Maryland, Massachusetts, New Hampshire, New Jersey, and Wyoming have not issued bonds secured solely by water systems.

^bHoody's Governments and Municipalities (1947), pp. a10 - a11.

^cHoody's Governments and Municipalities (1957), pp. a26 - a28.

TABLE 6

NUMBER OF LOCAL GOVERNMENTAL UNITS WHICH HAVE ISSUED
BONDS SUPPORTED WHOLLY BY THE PAYMENTS OF
PUBLICLY OWNED SYSTEMS, BY STATES

State	Prior to	
	1947 ^a	1957 ^b
Alabama	10	10
Arizona	0	4
Arkansas	25	36
California	0	0
Colorado	1	4
Connecticut	1	1
Florida	5	15
Georgia	0	2
Idaho	0	5
Illinois	17	34
Indiana	19	60
Iowa	3	17
Kentucky	12	23
Louisiana	2	4
Michigan	21	30
Minnesota	2	4
Mississippi	0	2
Missouri	0	6
Montana	2	9
Nebraska	1	6
Nevada	0	1
New Jersey	0	0

TABLE 6 - Continued

State	Prior to	
	1947 ^b	1957 ^c
New Mexico	1	1
New York	1	1
North Carolina	0	1
North Dakota	4	4
Ohio	6	17
Oregon	2	6
Pennsylvania	2	37
South Carolina	1	3
Tennessee	4	14
Texas	35	63
Utah	2	4
Virginia	2	4
Washington	1	17
West Virginia	14	17
Wisconsin	4	14
Wyoming	0	2

^aThe governmental subdivisions of Delaware, Kansas, Maine, Maryland, Massachusetts, New Hampshire, Oklahoma, Rhode Island, South Dakota, and Vermont have not issued bonds secured solely by the earnings of publicly owned sewers.

^bHoody's Governments and Municipalities (1947), p. A40.

^cHoody's Governments and Municipalities (1957), pp. A25 - A26.

TABLE 7

NUMBER OF LOCAL GOVERNMENTAL UNITS WHICH HAVE ISSUED
BONDS SECURED SOLELY BY A REVENUE OF PUBLICLY
OWNED UTILITIES SYSTEMS, BY STATE^a

State	Prior to	
	1947 ^b	1957 ^c
Alabama	10	15
Arizona	1	2
Arkansas	1	1
California	2	5
Colorado	6	8
Florida	7	10
Georgia	0	2
Illinois	8	24
Indiana	11	32
Iowa	4	31
Kansas	3	11
Kentucky	7	10
Louisiana	1	6
Michigan	4	14
Minnesota	1	26
Mississippi	5	7
Missouri	2	9
Nebraska	11	33
Nevada	1	1
New Mexico	3	4

TABLE 7 - Continued

State	Prior to	
	1947 ^a	1957 ^c
New York	0	2
North Carolina	1	3
North Dakota	1	5
Ohio	12	27
Oklahoma	0	1
Oregon	2	5
South Carolina	7	9
South Dakota	1	13
Tennessee	37	49
Texas	10	32
Utah	6	7
Vermont	0	1
Virginia	2	2
Washington	12	24
Wisconsin	2	19

^aThe governmental subdivisions of Connecticut, Delaware, Idaho, Maine, Maryland, Massachusetts, Montana, New Hampshire, New Jersey, Pennsylvania, Rhode Island, West Virginia, and Wyoming have not issued bonds secured solely by the earnings of electric utilities.

^bHoody's Governments and Municipalities (1947), pp. a39 - a40.

^cHoody's Governments and Municipalities (1957), pp. a24 - a25.

TABLE 8

NUMBER OF LOCAL GOVERNMENTAL DIVISIONS HAVE ISSUED
BONDS SECURED SOLELY BY THE EARNINGS OF
PUBLICLY OWNED GAS SYSTEMS, BY STATE^a

State	Prior to	
	1947 ^b	1957 ^c
Alabama	6	57
Arizona	1	2
Colorado	0	1
Florida	3	0
Georgia	0	22
Illinois	3	15
Indiana	4	5
Iowa	0	2
Kentucky	2	10
Louisiana	7	13
Michigan	0	2
Mississippi	4	23
Missouri	0	1
Nebraska	2	3
New Mexico	2	2
North Carolina	0	2
Ohio	0	1
South Carolina	1	5
Tennessee	0	25
Texas	4	12

^aThe governmental subdivisions of states not listed have not issued bonds secured solely by the earnings of gas systems.

^bHoody's Governments and Municipalities (1947), p. 240.

^cHoody's Governments and Municipalities (1957), p. 225.

TABLE 2

NUMBER OF LOOSE COMMITMENT LETTERS WHICH HAVE BEEN
 LOOSE COMMITMENT LETTERS WHICH HAVE BEEN
 LOOSE COMMITMENT LETTERS, 1947-1957

State	Prior to	
	1947 ^b	1957 ^c
Alabama	6	35
Arizona	1	4
Arkansas	2	10
Colorado	0	1
Florida	12	31
Georgia	0	19
Idaho	0	0
Illinois	10	42
Indiana	0	1
Iowa	0	2
Kentucky	4	42
Louisiana	0	20
Maryland	0	2
Michigan	9	45
Minnesota	1	11
Mississippi	2	20
Missouri	0	0
Montana	1	3
Nebraska	0	4
New Mexico	4	10
North Carolina	1	1

TABLE 9 - Continued

State	Index to	
	1947 ^a	1957 ^b
North Dakota	1	6
Ohio	1	1
Pennsylvania	3	3
South Carolina	0	10
South Dakota	0	2
Tennessee	7	21
Texas	60	251
Utah	1	4
Virginia	2	5
Washington	2	40
West Virginia	2	4
Wisconsin	0	3

^aThe governmental subdivisions of California, Connecticut, Delaware, Iowa, Maine, Massachusetts, Nevada, New Hampshire, New Jersey, New York, Oklahoma, Oregon, Rhode Island, Vermont, and Wyoming have not issued bonds secured solely by the earnings of multiple utilities.

^bGoody's Governments and Municipalities (1957), pp. a41 - a42.

^cGoody's Governments and Municipalities (1957), pp. a20 - a20.

The absence of natural gas in some geographic areas partially accounts for the less extensive use of revenue bond financing of gas systems. The average size of revenue bond issues to finance public gas systems during the fourth quarter of 1956 was approximately \$500,000.⁹³

Local governments in the States of Texas, Illinois, Indiana, Michigan, and Ohio lead all others in the utilization of revenue bonds to finance publicly owned utilities.⁹⁴ The differences in the extent of utilization of revenue bond financing among the local governmental units of the various states are due largely to the differences in permissive revenue bond legislation. State laws pertaining to the issuance of revenue bonds have been continuously evolving. Some states such as New York and Massachusetts have tended to restrict the issuance of revenue bonds by their subdivisions except by special acts of the legislature. Other states such as California and Kansas have in recent years broadened the scope of their permissive revenue bond laws.⁹⁵ The extent of utilization of revenue bond financing by local units is also affected by the various

⁹³Ibid.

⁹⁴See Tables 5, 6, 7, 8, and 9.

⁹⁵These legal aspects affecting the variation in the utilization of revenue bonds are discussed in greater detail in Chapter III.

debt restrictions that may be applicable to local governmental units.

Revenue bonds issued for these utilities are usually secured from the pledge of net earnings of the enterprise financed.⁹⁶ It is not uncommon, however, for the local government to pledge the net earnings from an entire existing system as security for revenue bonds issued to construct an extension to that system.

Off-Street Parking Facilities

The parking problem in large cities has become increasingly acute within the last decade. Local governmental units in attempting to alleviate congestion by providing facilities are relying more and more on revenue bonds as the means of finance.

In the three-year interval from the beginning of 1954 to 1957, sixty-four additional cities employed revenue bonds in the financing of off-street parking facilities.⁹⁷ Of course, many of the one hundred and eight cities that have financed off-street parking facilities may have financed more than a single parking facility.

As with other types of enterprises financed by revenue bonds, parking facility receipts from other city-owned parking facilities may be pledged in addition

⁹⁶Ira Haupt, op. cit.

⁹⁷See Table 10.

TABLE 10

NUMBER OF LOCAL GOVERNMENTAL UNITS WHICH HAVE ISSUED BONDS SECURED SOLELY IN THE EARNINGS OF OFF-STREET PARKING FACILITIES, BY STATE^a

State	Prior to ^b		
	1947	1954	1957
California	0	2	10
Colorado	0	1	1
Connecticut	0	0	1
Delaware	0	0	1
Florida	0	2	8
Illinois	0	9	13
Indiana	0	0	3
Iowa	0	2	7
Kansas	0	1	1
Maryland	0	1	1
Massachusetts	0	0	2
Michigan	0	12	31
Minnesota	0	0	1
New Jersey	0	1	4
New Mexico	0	0	1
New York	0	1	1
Ohio	0	1	4
Pennsylvania	0	4	10
West Virginia	2	3	3
Wisconsin	0	3	6

^aThe governmental subdivisions of states not listed have not issued bonds secured solely by the earnings of off-street parking facilities.

^bMoody's Govt. Bonds and Municipals (1947), p. a43 (1954), p. a30 (1957), p. a30.

to receipts arising from the project financed. It is not uncommon that both on-street and off-street parking facilities be pledged as security for the bonds.⁹⁸

Public Transit Systems

Revenue bonds have been used in a few instances for the financing of urban transit systems. Political units are frequently forced to become entrepreneurs out of necessity to provide services which are non-profitable or which fail as existing private enterprises. Such is the case of the modern transit systems. For example, the City of Chicago acquired properties of the Chicago Surface Lines and the Chicago Rapid Transit in bankruptcy proceedings.⁹⁹

In addition to Chicago, the cities of St. Petersburg, Florida; Detroit, Michigan; Seattle, Washington; Cleveland and Shaker Heights, Ohio, have all issued revenue bonds to provide funds for their transit systems.

Airports

Practically without exception, airport facilities have been provided by government expenditures, primarily by federal and municipal governments. Only municipalities have resorted to revenue bonds as a means of

⁹⁸Ira Haupt, op. cit.

⁹⁹Moody's, 1956, op. cit., p. 424.

financing airport facilities. Most airport revenue bond issues have been for relatively small dollar amounts and primarily for the purpose of improving existing airport facilities. Only Cleveland, Kansas City, and Denver have issued revenue bonds for an amount exceeding \$1,000,000.¹⁰⁰ Airport revenue bond issues have occurred largely since World War II.

The financing of a \$3,500,000 airport hangar in Cleveland, Ohio, offers another example of the complexities of revenue bond financing.¹⁰¹ The builders, Thompson-Stearrett Company, Incorporated, of New York City, rent the land required for the hangar and its related facilities from the City of Cleveland. After completion, the facilities will then be leased back to Cleveland on a twenty-five year lease, the title to revert to the city at the end of that period. Rental revenues of subleases executed with airlines and other users are pledged as security for the rental obligation.

Industrial Aid Bonds

Recently a few municipalities have issued revenue bonds to finance factory buildings, equipment, and sites in an attempt to induce industry to locate

¹⁰⁰Ibid., p. 272.

¹⁰¹"Cleveland's New Airport Hangar Will Pay for Itself," American City, LXVII (August, 1952), p. 21.

within their boundaries. Although the use of revenue bond financing for this purpose has been recent, local governmental attempts to influence industry location were practiced more than a century ago. During the railroad building era, competitive grants by municipalities were common.

The City of Topeka offered a \$100,000 bond issue in 1874 as a donation to a private company to aid in the establishment of an ironworks in that city.¹⁰² Only a few years earlier, a town in Maine offered to lend public money to lure a sawmill and box factory to the community.¹⁰³ Many communities have established development credit corporations which continuously seek to entice industry to their locality by various methods, including advertising, exemption from certain tax levies, and financial aid in varying degrees. These development corporations, however, are not financed by revenue bonds and, therefore, are beyond the limits of this study.¹⁰⁴

¹⁰²D. C. Foley, Jr., "Industrial Aid Bonds-Special Points of Current Interest," Municipal Finance, (August, 1951), p. 48.

¹⁰³Ibid., p. 1.

¹⁰⁴These corporations are financed in various ways. For example, one organization netted a total of \$600,000 by placing lunch pails at strategic points around the town into which interested citizens dropped their coins. Another community received \$60,000 annually from the Chamber of Commerce.

Mississippi, with its "Balance Agriculture With Industry" program, enacted in 1936 the first legislation permitting the expenditure of tax money for the purpose of luring industries to Mississippi communities. The Mississippi statute provides for the creation of a board which examines the financial soundness of proposed projects and issues certificates authorizing the municipality to issue general obligation bonds in amounts not to exceed 20 per cent of assessed value of all property within its corporate limits. The bond issue must be approved by a two-thirds majority vote of the electorate. The Mississippi statute specifies a maximum maturity period and interest rate that the bonds may carry. The taxing power and credit of the issuing town must be pledged for the retirement of the bonds.¹⁰⁵

Recent legislation in Illinois, Tennessee, New Mexico, Alabama, Nebraska, and Kentucky permits municipalities to issue revenue bonds to finance industrial buildings backed solely by the rental paid by the lessee for the use of the plants.¹⁰⁶ As in many other states, the property is exempt from ad valorem taxation.

¹⁰⁵"Incentives to Industrial Relocation: The Municipal Bond Plans," Harvard Law Review, LXXVI (1952-53), p. 898.

¹⁰⁶Louisiana and Mississippi permit cities to issue general obligation bonds.

Only in Alabama, Kentucky, and Tennessee have communities issued revenue bonds to any extent in the financing of industrial buildings. Communities in Nebraska and Illinois have presumably been awaiting the testing of the permissive legislation in the courts. New Mexico's legislation is recent and was declared valid by the New Mexico Supreme Court in 1956, reversing an invalid ruling of 1945.¹⁰⁷ In early 1957 Missouri was considering the enactment of legislation authorizing political subdivisions to "issue revenue bonds to acquire lands, erect buildings and plants thereon, and to rent, let, or lease such lands, buildings, and plants to private persons or corporations for business or manufacturing purposes."¹⁰⁸ The Governors of Massachusetts and Rhode Island have proposed the creation of state agencies with authority to build and finance industrial plants by the issuance of bonds.¹⁰⁹

The State of Tennessee has been most active in encouraging the use of revenue bonds to acquire

¹⁰⁷Village of Spring v. Lordrag Co., 24 U.S.L. Week 2265 (New Mexico, 1955). The decision in this case was reversed in 1956, according to Mr. F. C. Peters, Assistant Director of the New Mexico Economic Development Commission, in a letter dated February 21, 1957.

¹⁰⁸House Bill No. 26, 69th General Assembly of the State of Missouri, read first time, January 3, 1957.

¹⁰⁹Catherine Clark, "The Municipal Industrial Bonds--Benefits and Dangers," American City, LXVII (March, 1952), p. 114.

industrial buildings as a means of enticing industry to locate within its borders. Tennessee cities were given authority to issue "Industrial Building Revenue Bonds" in 1951. The law requires that the proceeds of these revenue bonds must be used for the acquisition of buildings for lease to industry. Such bonds are not indebtedness of the city and are exempt from state and local taxes. Rent paid by the industrial user is used to amortize the principal and interest on the bonds. The Act was amended in 1953 to allow counties to issue similar type bonds provided that each issue be approved by referendum of three-fourths of those voting.

Supplemental industrial bond acts were passed in 1955 by the Tennessee Legislature but have not been used as of 1956. The 1955 Act permits cities and counties to issue full faith and credit bonds to be used to build or acquire buildings for lease to industry. Bonds are direct obligations of the city or county, but rental from the buildings is to be used to retire them. Bonds must be approved by three-fourths of the voters and must receive approval of the Building Finance Committee of the Tennessee Industrial and Agricultural Development Commission. The 1955 Act also gave cities and counties authority to set up industrial development boards which can issue bonds for construction of industrial buildings, bonds being payable only from

lease-rentals. Provision is made for cities and counties to pledge full faith and credit for the payment of these bonds provided three-fourths of the voters approve.

As of 1956, the 1951 Act, which authorized Industrial Building Revenue Bonds, had been utilized by some sixteen cities in Tennessee. The largest revenue bond issue was by Sevierville, Tennessee. In 1953 Sevierville issued bonds in the amount of

\$2,700,000 to finance an industrial building subsequently leased to a textile firm.¹¹⁰ Although investment bankers failed to give their approval, city officials were not discouraged since the textile firm had assured them that if the bonds were not marketable, the company would purchase the bonds.

The use of revenue bonds to finance industrial buildings, industrial machinery, and/or sites has met with strenuous objections from security dealers. Despite these objections, an official of the State of Alabama states that "16 municipalities of the state have successfully used these bonds resulting in an increase in employment of over 3,000 employees and an increased annual payroll of over \$9,000,000."¹¹¹

¹¹⁰Letter from Mr. Louis J. Corpton, Resource Development Planner, State of Alabama Planning and Industrial Development Board, Montgomery, Alabama, February 25, 1957.

¹¹¹Ibid.

Other Enterprises

Docks and terminals, hospitals, public markets, and other miscellaneous enterprises are infrequently financed by revenue bonds issued by special districts, counties, and municipalities as well as by state and interstate agencies such as have been previously mentioned in this chapter. The local government financing of these facilities by revenue bonds is usually on a relatively small scale in relation to the total replacement value of the entire facility. Frequently the revenue bond issue will be only for an improvement or extension of an existing facility; therefore, these issues are either of the quasi- or pseudo-revenue bond category. For example, the Coral Gables Terminal revenue bonds issued in 1951 are secured by the rental payments from the municipal transit system in the amount of \$1,800 per month with provision made for a refund to the city should other net income be insufficient to retire the interest and principal on the debt.

Financing Non-Revenue Producing Facilities

As previously indicated, governmental units occasionally finance enterprises and subsequently lease facilities to a private company at a rental price sufficient to amortize the obligations. In an effort to

avoid statutory or constitutional debt limits some governments have attempted to finance non-revenue producing enterprises by the issuance of "pseudo-revenue bonds." In other instances, so-called revenue bonds are issued to finance enterprises which will be unable to be self-supporting; but the enterprise is organized primarily to achieve a certain social objective. Interest rates are not fixed at a level sufficient to amortize the outstanding debt if such a level of interest conflicts with this primary objective. The financing of these non-revenue producing facilities is discussed in the following sections.

Income-Taxable

State and local governments have increasingly resorted to the creation of public agencies or authorities to finance not only such projects as toll roads, bridges, and ports, but more recently to include financing of non-revenue producing facilities such as school buildings, laboratories, state office buildings, court houses, city halls, and even jails.¹¹² The financing of these non-revenue producing buildings in this manner generally requires the creation of an agency, authority, or other public body to issue bonds

¹¹²William Alfred Rose, "Some Recent Developments in Revenue and Financing," The Public Finance, XII (July, 1951), p. 237.

to acquire and possess the facility. The bonds are then payable out of rentals to be paid by another public body in accordance with a leasing agreement. This method of financing has been termed "lease-rental."¹¹³

In 1925 the Supreme Court of Kentucky approved a one-year lease, with option to renew yearly, made by a school district with a private corporation.¹¹⁴ This action set the pattern of the lease-rental device to meet the need for school construction at local levels not possible within the constitutional debt limit.

In addition to Kentucky, the States of Maine, Pennsylvania, and Indiana have financed school buildings by the lease-rental method.¹¹⁵ A separate agency is established by the state or local government with the

¹¹³ These arrangements are similar to the federal "lease-purchase" program as discussed in a previous section of this chapter. The arrangements sometimes differ, however, in that the federal lease-purchase facilities are privately owned until all lease payments have been completed according to contract. State and local governments often set up ad hoc political units which acquire and hold title to a facility until rental payments have amortized the outstanding bonds. These latter agreements, therefore, are between two public bodies rather than between a public body and a private organization.

¹¹⁴ Lawrence H. Chenmoh, The Law of Revenue Bonds (Washington: National Institute of Municipal Law Officers, 1954), p. 103.

¹¹⁵ Eugene C. Lee and Stanley Scott, Financing Local Public Works, Bureau of Public Administration, University of California (June, 1951), p. 18.

power to issue bonds to finance the acquisition of land and construction of the facility. The improvement is leased back to the public body (school board or district) in return for rental payments, which are used to retire the bonds. At the end of the lease period when the bonds have been paid off, title to the facility is usually transferred from the authority to the public jurisdiction.

Pennsylvania has used the lease-rental arrangement to a greater extent than any other state. In addition to school building authorities, Pennsylvania recreated the General State Authority in 1949. This authority has financed improvement projects of many facilities in Pennsylvania such as hospitals, colleges and universities, penal and correctional institutions, police barracks, parks, recreational facilities, and flood control.¹¹⁶ The authority is authorized to issue bonds secured by its full faith and credit. Principal and interest on the bonds are paid from rental and other revenues received from the lessee government. Since 1949 more than four hundred projects have been completed at a total cost of approximately \$140,000,000. The total borrowing power of the authority is \$420,000,000.

¹¹⁶ Annual Report of The General State Authority (Harrisburg, Pennsylvania: The General State Authority, 1956).

As of July, 1966, bonds totaling 255,000,000 had been sold.¹¹⁷

Housing Authorities

Housing authorities issue bonds which have revenue bond characteristics. In most instances these bonds are secured by annual payments to the local housing authority in accordance with an "assistance contract" with the Public Housing Authority. This contract stipulates that the Public Housing Authority will lend the local housing authority an amount not to exceed the level of debt service on the outstanding bonds. This amount may be reduced to the extent that net rental receipts are available for application toward the bonded debt of the housing authority. The interest charge on these federal loans is the going federal rate determined similar to the interest charge on the revenue bonds of the Saint Lawrence Seaway Development Corporation. Similar to these federally-sided housing authority bonds are the securities financing state-aided projects and local government-sided projects. All of these have tax money collaterally pledged and are issued with the understanding that tax money will be the ultimate security for the issued bonds. Since the issuing

¹¹⁷Ibid.

political unit makes no attempt to make the project self-liquidating--the primary purpose of the housing units being the providing of housing for low income families--local housing authority bonds should not be classified as revenue bonds. Even though the housing projects may prove to be self-liquidating, officials are primarily concerned with maintenance of low rents rather than with the maintenance of prices sufficient to amortize the bonds. The services rendered by the financed project are not available to all potential consumers but are restricted to low income families.

Summary

The depression of the 1930's provided the primary stimulus for the growth of revenue bond financing. The federal government, through various work and loan programs, was instrumental in encouraging the use of revenue bond financing. Statutory and constitutional debt restrictions accompanied by public distaste for property taxes have been important factors sustaining the use of revenue bond financing of public enterprises.

The extent of revenue bond financing at the federal level has been relatively insignificant; however, recent proposals indicate a trend toward greater reliance on either quasi- or pseudo-revenue bond financing.

Revenue bond financing offers a convenient form of government finance for interstate governments, the most widely known being the Port of New York Authority. Even though such ad hoc districts may be limited to revenue bond financing, as equity is established in a given enterprise, their obligations tend to take on the characteristics of full faith and credit obligations of a governmental unit. In both instances the full faith and credit of the entire assets of the issuing unit may represent the pledged security for the outstanding obligations.

Revenue bonds issued to finance toll roads, bridges, and tunnels, being more often true revenue bonds, are required to meet the test of the market. In most of the forty-eight states revenue bonds are utilized to finance college and university facilities, as well as water, electric, sewer, and gas systems. These obligations are usually secured by the pledge of revenues from other similar existing projects without regard to the equity of the governmental unit and, therefore, are more generally of the quasi-revenue bond category.

Various methods are continually being devised by all levels of government to finance non-revenue producing projects by the issuance of pseudo-revenue bonds.

Relatively few revenue bond issues meet all of the requirements of the true revenue bond, as the term is defined in this study.

CHAPTER III

LEGAL ASPECTS

The distinguishing features of revenue bonds in government finance have been narrated in the preceding chapters of this study. Basic distinguishing features of the revenue bond have induced litigation which, in turn, has further set apart revenue bonds as a means of financing public projects. Court decisions and legislation have naturally played a part in the development of the revenue bond. The purpose of this chapter is to point up legal aspects peculiar to revenue bond financing which may affect the economic appraisal of this type of government finance.

Restrictions

The authority to issue bonds is generally regarded as an inherent power of a sovereign government. This implies that the federal government and the states, as sovereign powers, inherently possess the authority to issue obligations of indebtedness, including revenue bonds. Restrictions applicable to the power to tax are not relevant to revenue bond financing since the revenues of a government enterprise of a proprietary nature are not ordinarily treated as

a tax. The authority to issue revenue bonds--or other forms of governmental indebtedness, for that matter--is not unlimited even in the case of sovereign governments. The legality of the incurrence of debt is subject to judicial interpretations. Additional restrictions pertaining to the issuance of various types of indebtedness may be self-imposed either by constitution or by statute.

The Public Purpose Doctrine

Whether or not an expenditure is for a public purpose must be considered in the light of evolving customs and conditions. A purpose not heretofore considered public may, under different conditions and circumstances, be considered public. In the words of the North Carolina Supreme Court: "It [public purpose] involves reasonable connection with the convenience and necessity of the particular municipality whose aid is extended in its promotion."¹

The "public purpose" limitation is sometimes treated as an inherent restriction of government. The numerous government defaults of the railroad aid era, however, caused many states to amend their constitutions so as to expressly prohibit expenditures that were not for a public purpose.

¹Greensboro-Wide Point Airport Authority v. Johnson, 36 S.E.2d 403, 409 (1946).

Court cases involving the "public purpose" doctrine generally arise in connection with the spending of public revenues rather than in connection with the levying of a tax. The question of how the revenue is obtained does not ordinarily come before the court. It is only natural for litigation to occur at the time of the public expenditure, or during the planning stage just preceding the construction or acquisition of the facility that is to be financed.

Early Development

The doctrine may have originated in 1837 in a case involving a municipal expenditure for a state canal project.² In this early case, the dissenting opinion expressed the view that the canal project was not local and permitted the "taking of private property for public purposes without compensation."

In Sharpless v. The Mayor of Philadelphia³ the "public purpose" doctrine was unmistakably enunciated. In this case the court stated: "Taxation is a mode of raising revenue for public purposes. When it is prostituted to objects in no way connected with the public interests or welfare, it ceases to be

²Geddes v. Burr, 25 Va. (8 Leigh) 120, 152 (1827).

³Sharpless v. The Mayor of Philadelphia, 21 Pa. 147 (1853).

taxation and becomes a plunder."⁴ The Sharpsless case, occurring a decade and a half prior to the Fourteenth Amendment to the Constitution, involved a taxpayer's suit contesting the validity of the use of public funds by Philadelphia city officials in subscribing to the stock of private railroads operating in the city. Despite the court's statements pertaining to the "public purpose" requirement, the public utility nature of the railroads was sufficient for the court to hold the expenditure as one for a public purpose.

Two decades later (1873) the State of Massachusetts enacted legislation permitting Boston to issue bonds, not to exceed \$20,000,000, for the purpose of aiding the owners of buildings ruined by the disastrous Boston fire. The Massachusetts Supreme Court held the legislation to be unconstitutional.⁵ The Court conceded that the expenditure might be very helpful to the economy of Boston. Nevertheless, the anticipated bond issue was held to be unconstitutional because of the resulting special aid that would be received by the individuals obtaining municipal loans, even though the loans were to be repaid with interest.

In the year following the Lovell case (1874), the United States Supreme Court first embraced the

⁴Id., p. 143.

⁵Lovell v. Boston, 111 Mass. 454 (1873).

"public purpose" doctrine in the well-known case of Iron Association v. Toledo.⁶ The City of Toledo, Ohio, had issued \$100,000 worth of general obligation bonds to aid, through Iron Bridge Manufacturing Company, an entity that it owned, its plan to bridge the Maumee River. The Toledo Bridge and Iron Association of Toledo, a holder of some of the bonds, brought suit. The court held that this extension of credit was outside the public purpose sphere. The question of benefit to the community from a potential gain in economic activity as a result of the new firm's locating there could, the court said, be left to the jury.

Although the Fourteenth Amendment had been adopted some six years earlier, the court chose to rely on the Equal Protection Clause, in so doing, treated the limitation as inherent to the very nature of government. Justice Miller, delivering the opinion of the court, said: "The theory of our governments, State and National, is opposed to the deposit of unlimited power anywhere. . . . We have established, we think, beyond cavil that there can be no lawful tax which is not laid for a public purpose."⁷

Justice Miller reminded the court that earlier decisions involving the extension of municipal credit

⁶Iron Association v. Toledo, 10 Wall 635 (1874).

⁷Ibid., 11. 643-44.

to railroads had been consistently denied on the basis of the "public purpose" doctrine. "Those who came to the conclusion that it was [for a public purpose], held the law for public use."⁸ "Thus the courts could not reach that conclusion held to be void."⁹ In the dissenting opinion, Justice Clifford objected to the court's inference of an inherent limitation of government and expressed the view that courts should not legislate:

. . . on the vague ground that they think it is opposed to a general principle which it supposed to be implicit in the constitution, were neither to define nor the implications of the constitution disclose any such restriction. Such a power is denied to the courts, because to concede it would be to make the courts sovereign over both the constitution and the people, and convert the government into a judicial despotism.¹⁰

It is not surprising that the litigation previously cited in the early development of the "public purpose" doctrine involved the public operation and ownership of enterprises of a self-liquidating nature such as have more recently been financed extensively by revenue bonds. Neither is it surprising that the decisions involving the "public purpose" issue, while not always easily discernible, turn on the question of the legality of expenditure either for a proper government function or the giving of special aid to private

⁸Ibid., p. 631.

⁹Ibid., p. 639.

entities. These questions also arise, either in the courts or in the minds of men, in connection with revenue bond financed projects.

Proper Government Function

As previously indicated, expenditures of public funds in connection with the acquisition of construction of public-utility type enterprises are clearly a proper function of government according to the vast majority of court decisions. Rarely have the courts held enterprises such as electric plants, waterworks, and transit systems to be improper functions of government.¹⁰ The legality of proprietary enterprises of a non-utility nature has not been clearly established. The answer seems to depend largely upon the urgency of the conditions surrounding the project being financed.

¹⁰—Even expenditures for the acquiring of utility projects have been found to violate the "public purpose" doctrine. In an interesting, although somewhat atypical, case, Houldin v. Greenville, 11 S.E. 434, 438 (1890), the Supreme Court of South Carolina proclaimed:

All the powers given to the city council were for the sole [sic] and exclusive purpose of government and not to enter into private business of any kind, outside of the scope of the city government. . . . We cannot suppose that it was intended to give the city council, as such, the right to go into commerce, to buy for the purpose of selling goods, or to enter into any private business or speculation whatever.

This case arose from a proposal that the City of Greenville, South Carolina, purchase an electric plant for the purpose of lighting city streets and supplying electricity to private houses and businesses.

In 1917 the Fourteenth Amendment to the Constitution was used as a basis for challenging the establishment of a fuel yard financed by tax funds of Portland, Maine. The United States Supreme Court ruled that Portland taxpayers had not been deprived of property without due process of law citing the emergency that had existed due to the severe winter and the necessity of an adequate fuel supply.¹¹

Even in this case Justice Day, delivering the opinion of the court, made a valiant, albeit somewhat nebulous, attempt to liken the public ownership and operation of the fuel yard to the latter recognized public utility type enterprises. Justice Day cited an earlier case¹² that had sustained Portland's expenditures to supply water, light, and heat to the community. The fuel yard, according to Justice Day, is no different simply by reason of the mode of delivery to its destination. In one case fuel is delivered by wagon and in the other, through pipes or wires.

The decision rendered in the Loam Association case has not been completely reversed by the Supreme Court of the United States. The more recent decisions

¹¹Jones v. City of Portland, 245 U.S. 217 (1917).

¹²Franklin v. Portland, 111 Me. 486 (1914).

in Jones v. City of Portland¹³ and in Green v. Premier¹⁴ indicate, however, that the "public purpose" doctrine is tending toward a more liberal interpretation by the courts. In both of these cases the high court sustained expenditures for the government ownership and operation of non-utility type enterprises of a proprietary nature.

The Green case involved the legality of expending public funds for the purpose of acquiring and operating (1) a home-building association, (2) a mill and elevator association, and (3) a bank. All of these enterprises were to be financed by bonds of the state-created Industrial Commission of North Dakota. The North Dakota legislature created the Commission under authority of an amendment to that State's constitution. In sustaining North Dakota's expenditures for these enterprises as being within the "public purpose" sphere, Justice Day said: "The due process of law clause contains no specific limitation upon the right of taxation in the states. . . ." ¹⁵ Justice Day also cited the fact that this permissive legislation had the prior approval of North Dakota citizens. He concurred with the finding of the North Dakota Supreme

¹³Jones v. City of Portland, 245 U.S. 217 (1917).

¹⁴Green v. Premier, 253 U.S. 232 (1920).

¹⁵Ibid., p. 232.

Court pertaining to the benefits that would flow to the people from the home-building program and noted North Dakota's unusually heavy economic dependence upon agriculture as justification for expenditures in connection with the flour mills and elevators. The state-owned bank, according to the court, was necessary to implement the other state enterprises.

Five years later the Supreme Court of South Dakota invalidated a state law permitting the State to go into the business of retailing gasoline.¹⁶ The act was designed to regulate the price of gasoline by providing for state competition whenever it was deemed that the price of gasoline was too high. The court held that a constitutional amendment would be necessary if the state were to compete in a non-utility enterprise. The following year a somewhat similar case arose in Nebraska.¹⁷ Again the United States Supreme Court accepted the state court decision despite the rather weak justification given by the latter. The state court upheld the "public purpose" nature of the expenditures for public owned and operated gasoline stations on the basis of the widespread use of gasoline and oil.

¹⁶White Table Oil and Refining Company v. Gurderson, 48 S.D. 637 (1935).

¹⁷Standard Oil Company v. City of Lincoln, 207 N.W. 172, 205 N.W. 962 (1926); affirmed in 275 U.S. 504 (1927).

Somewhat atypical is the decision rendered by the Supreme Court of South Carolina in Nash v. Town of Tarboro. Citing the Loan Association case, the court concluded, "the cost of constructing and maintaining a hotel is not a public purpose."¹⁶ There existed but one dilapidated hotel in the Town of Tarboro, South Carolina, a community of approximately 8,000 residents. Residents of the town testified that visitors to their community often sought accommodations in a neighboring town due to the poor hotel facilities in Tarboro. The citizens sought and obtained from the state authority to acquire a hotel subject to a majority vote of the qualified voters of Tarboro. The court ruled that the legislature could not authorize the city to issue debt obligations for the purpose of constructing and maintaining a municipal hotel.

Governmental Aid to Private Entities

Revenue bond financing of certain projects, particularly in the case of industrial aid bonds as described in Chapter II, resembles instances that have occurred in the past, some of which the courts nullified. The lending of credit to aid railroads is well known.¹⁷ In

¹⁶Nash v. Town of Tarboro, 42 S.C.2d 209 (1945).

¹⁷Caroline E. MacGill, History of Transportation in the United States before 1860 (Washington, D.C.: Carnegie Institute, 1917), pp. 162-80.

litigation pertaining to railroads only in a small proportion of the cases were governments able to repudiate their obligations.

Another interesting case involving the question of the validity of public expenditures to aid a private company occurred in 1872.²⁰ In this case a town in Maine had received authority from the state and from its electorate to issue bonds in the amount of \$10,000 to loan to a prospective firm, a combination sawmill, grist mill, and box factory.²¹ The Maine Supreme Court granted a perpetual injunction on the ground that the bond issue benefited private individuals. The court readily admitted that the industry would benefit the community but chose to consider only the aspects of the expenditure that benefited private individuals.

In this case Chief Justice Appleton restricted borrowing, as well as taxation, saying, ". . . whether the loan be of town bonds or of money, . . . the town must ultimately be liable for their payment, and as the payment is to be raised by taxation, matters not."²²

²⁰Allen v. Inhabitants of Jay, 11 American Reports 185 (1872).

²¹Ibid.

²²Ibid., p. 187. It is interesting to note the court's legal attitude toward the bond issue as contrasted with more recent pronouncements of the courts

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Other decisions forbidding outright aid to private business include Cole v. Lieberman²³ and Hill v. Frank Shoe Manufacturing Company.²⁴

Recent Developments

The Green case is typical with respect to the present status of the "public purpose" doctrine. As in this case, the United States Supreme Court presently seems inclined to accept the decisions of the high court of the states, who, in turn, do not presume to dictate to the people with regard to the realm of the "public purpose" doctrine.

Court approval of revenue bond financing of industrial buildings has not extended the activities deemed proper undertakings of governmental units; for, as previously indicated, the majority of the courts

in cases dealing with the issuance of revenue bonds to finance factory buildings. Justice Appleton said:

The industry of each man and woman engaged in production employment is of benefit to the town in which each industry is employed. This can be predicted of all useful labor of all productive industry. But because all useful labor, all productive industry conduces to the public benefit, does it follow that the people are to be taxed for the benefit of one man or of one special kind of manufacturing? If so, then there is no kind of labor, no manufacturing for which the utility of a town may not be assessed for the benefit of an individual.

²³113 U.S. 1 (1885).

²⁴31 W.2d 117 (1942).

presently accepted in great measure of governmental functions. Illustrative of this view is Justice Stone's comment in a decision involving the validity of the Unemployment Compensation Act of the State of Alaska:

It need not labor the point that expenditures for the relief of the unemployed, consideration of unemployment alone, without proof of injury or of benefits to or the benefits, is a permissible use of state funds.

The evils of the uttermost social and economic waste occasioned by the entire social structure. Apart from poverty, or a less extreme impairment of the savings which afford the chief protection to the working class against old age and the hazards of illness, a matter of inevitable consequence to society as a whole, apart from the loss of the saving power, the legislature could have concluded that unemployment brings in its wake increase in vagrancy and crimes against property, reduction in the number of marriages, deterioration of family life, decline in the birth rate, increase in illegitimate births, impairment of the health of the unemployed and the families, and maltreatment of their children.²⁵

The Mississippi Supreme Court was evidently sympathetic toward Justice Stone's legal views, when in 1938 it validated legislation authorizing the expenditure of public funds for the building and subsequent leasing of industrial plants.²⁶ The financing of these plants was accomplished by the issuance of

²⁵Cornish v. Southern Coal and Coke Co., Inc., 301 U.S. 491 (1937).

²⁶Whitten v. City of Meridian, 170 So. 799 (1938).

General obligation bonds. The purpose of this legislation was to attract industry to the state in order to provide greater employment opportunities for Mississippi citizens. The public purpose of this legislation was sustained for its the state constitution which specifically prohibits the pledging of public credit to private parties.²⁷ The Albritten case reversed an earlier case invalidating a previous statute in the State of Mississippi.²⁸

The literal interpretation of the proper functions of government is again evident in Justice Douglas's following comment:

A state's project is as much a legitimate governmental activity whether it is traditional, or akin to private enterprise, or conducted for profit. . . . A state may deem it as essential to its economy that it own and operate a railroad, a mill, or an irrigation system, or it does to own and operate bridges, street lights, or a sewage disposal plant. What might have been viewed in an earlier day as an imprudent or even dangerous extension of state activities may today be deemed indispensable.²⁹

Court approval of revenue bond financed industrial plants could possibly be interpreted as an

²⁷Id.

²⁸Brooklyn v. Town of Greenville, 133 So. 670 (1934).

²⁹New York v. United States, 326 U.S. 573, 591 (1946).

extension of the functions of government since the majority of previous court decisions had required a constitutional amendment as authority to engage in proprietary activities. This view is strengthened by a pronouncement in an Alabama Supreme Court case that the proposed issue of revenue bonds was not "local" within the meaning of the Alabama Constitution and, therefore, not subject to approval by the electorate.³⁰ As previously noted, however, the Mississippi Supreme Court validated general obligation bonds to finance industrial buildings. This single case of a court validating the issuance of general obligation bonds authorized by statute is fact or distinguished by the economic conditions prevailing in 1938 and by the requirement that action taken by local units of government **was** subject to approval by a Mississippi State Commission.

The legal controversy concerning the use of revenue bond financing to entice industry to a given locality turns primarily on the question of the general benefit to the whole community flowing from the expenditure. The "public purpose" doctrine clearly requires that tax monies may be expended only for purposes primarily beneficial to the community as a whole.

³⁰Boyer v. City of Mobile, 57 So.2d 620 (1952).

Revenue bonds, however, may require a different interpretation since it is doubtful or argued that tax money is not being expended. In the case of true revenue bonds the issuing government has no obligation other than to fix prices or pay the bond interest. The possibility seems remote that a taxpayer may have a valid claim of being "taken off" as a consequence of the issuance of true revenue bonds.

Every state that has made use of permissive legislation authorizing revenue bonds to finance industrial buildings has received legal approval of the Supreme Court of their state.³¹ The New Mexico Supreme Court invalidated legislation authorizing revenue bond financed plants, but the decision was later reversed.³²

These validistic decisions have, without exception, circumvented the "private use" argument by holding that tax money is not involved since revenue bonds are utilized. The decisions have been unflinching with respect to the declaration that plans designed to alleviate unemployment are a valid public purpose.

The Kentucky Supreme Court pointed out that the enabling statute contained "no provision permitting the

³¹Herberty v. City of Wichita, 57 So.2d 629 (1952); Collins v. City of Birmingham, 241 A.W.2d 1901 (1951); Wheeler v. City of Miami, 232 A.W.2d 40 (1950).

³²City of El Paso v. Jordan, 302 A.W.2d 920 (1956).

use of general funds or revenues to finance the sale, or the payment of any bonds issued therefor."³³ The Court validated this legislation despite the provision of the Kentucky Constitution prohibiting local units from lending **their** credit to any individual or corporation.³⁴ The issuance of the revenue bonds was not, according to the Court, contrary to the Constitution since the "venture does not involve the use of tax revenues, presently or in the future."³⁵

In approving a state statute, the Tennessee Supreme Court even acknowledged that aid had been given to a private corporation.³⁶ In this case \$4,000,000 of "Industrial Building Revenue Bonds" were authorized by the City of Elizabethton, Tennessee, for the purchase of a site and the building of a factory to be leased to Eastron, Inc. The Court, in validating the bond issue, proclaimed:

The promotion of industry . . . is clearly of incidental public benefit to the municipality where such industry may be located at least, to the extent that it will furnish employment to a substantial number of inhabitants. It is, then, at least incidentally for a public purpose,

³³Paulaner v. City of Knoxville, 232 S.W.2d 80 (1950).

³⁴Ibid., p. 84.

³⁵Ibid.

³⁶Holly v. City of Elizabethton, 241 S.W.2d 1001 (1951).

though it results in the generation of gain to a private corporation.³⁷

This decision is contrary to the usual requirement that private entities may not receive direct benefit.

Apparently, the issuance of revenue bonds to finance the project was the decisive factor in the case. The court cited the fact that local officers had "the legal right to compel the exercise of the taxing power of a municipality for the payment of any part of said bonds"³⁸ and that the act existing not specifically would prohibit the application of taxes to the payment of the bonds. The decision of the court explicitly stated that the validity of the project had been considered only with respect to financing from non-tax sources and indicated that a financing plan involving the levying of taxes might be sufficient reason for a different conclusion.

Permissive Legislation

The initial revenue bond issue in the United States was upheld in the courts by an implied grant of power to the City of Spokane.³⁹ Although the implied power to issue revenue bonds has been sustained in other instances, the consensus of legal opinion would

³⁷Ibid., p. 1007.

³⁸Ibid.

³⁹Winston v. City of Spokane, 42 S. 222 (1905).

seem to indicate that revenue bonds issued without express constitutional or statutory authority are likely to be invalidated by the courts.⁴⁰

Revenue bond obligations of a state are often authorized by statutes for a single purpose. The revenue bond financing of toll roads, for example, is usually expressly incorporated in the state act establishing the turnpike authority or agency that is to administer a specific proposed toll road. Multiple-purpose legislation is sometimes enacted in instances of state or interstate activities such as the Port of New York Authority. Interstate government units must also receive federal approval.

As noted in the preceding chapter of this study, municipalities use revenue bond financing to a greater extent than do other political units. Municipalities, as well as other political subdivisions of the state, ordinarily must look to the state for express authority to issue revenue bonds. In most instances, the authority to issue revenue bonds is contained in various state statutes, although permissive authority may take the form of a constitutional amendment.

Permissive revenue bond enactments may be very broad, or they may be narrow and specific. The former

⁴⁰Michels v. Lovelace, 210 F. 913 (1922).

may contain practically no restrictive conditions with respect to purpose or with respect to type of local unit that may issue such bonds. For example, the North Carolina General Bond Law permits the issuance of revenue bonds for:

. . . airports, docks, piers, wharves, terminals and other transit facilities, abattoirs, armories, auditoria, community buildings, cold storage plants, dairies, markets, studios, swimming pools, hospitals, processing plants for sea products, warehouses, highways, airways, garages, viaducts, bridges and other crossings; also systems, plants, roads and properties used or useful in connection with the obtaining of a water supply and conservation, treatment, and disposal of water for public and private uses; useful or used in connection with the generation, production, transmission, and distribution of gas (natural, artificial, or mined) or electric energy for lighting, heating, and power for public and private uses, together with all parts of any such undertaking and all appurtenances thereto including lands, easements, rights in land, water rights, contract rights, franchises, appurtenances, dams, reservoirs, generating stations, sewage disposal plants, plants for the incineration of garbage, intercepting sewers, trunk collection and other sewer and water lines, filtration works, pumping stations, and equipment.⁴¹

In Texas the general revenue bond law authorizes the issuance of revenue bonds for such projects as "light systems, water systems, sewer systems or sanitary disposal equipment and appliances, or natural gas

⁴¹Chapter 2, Public Laws, Extra Session, 1936, as Amended by Chapters 23 and 24, Public Laws, 1936.

systems, parks and/or swimming pools."⁴² In addition, home-rule cities may issue revenue bonds to finance "such additional purposes as might be prescribed in their respective charters."⁴³

That the permissive statutes may be broad with respect to types of governmental units that may issue revenue bonds is demonstrated by a Michigan statute extending the privilege to "any county, city, village, township, school district, port district or metropolitan district of the State of Michigan, or any combination thereof when authorized by law to act jointly, or any authority created by or pursuant to an act of the legislature."⁴⁴

In other states, the power to issue revenue bonds may be completely absent. The New York Constitution specifically states that only full faith and credit obligations shall be issued by counties, cities, towns, villages, or school districts.⁴⁵ More typical

⁴²John E. McCall, "Municipal Debt--The Legal Side," Proceedings of the Second International Accounting and Finance Institute (Austin, Texas: Institute of Public Affairs, 1956), p. 10.

⁴³Ibid.

⁴⁴Laurence E. Clewett, The Law of Revenue Bonds (Washington: National Institute of Municipal Law Officers, 1951), p. 67 quoting from Michigan Act No. 24 P. A. 1932 as amended, M.C.L. sec. 5-2731 et seq.

⁴⁵Joseph W. McDovern, "The Nonnegotiable Revenue Bond," New York State Bar Association Bulletin, LIII

is the permissive legislation in the majority of states which permit their subdivisions to issue revenue bonds for the purpose of acquiring or constructing utility systems, supplemented by more recent statutes permitting revenue bond financed projects such as off-street parking, port and terminal facilities, airports, and industrial building.

Statutes relating to revenue bond financing do not usually grant to the local units complete freedom in the provision of the contract with the bondholder. The permissive statutes usually place restrictions on such things as bond security, negotiability, refunding, and the submission of the bond proposal to the electorate.

The permissive statute may require that revenue bonds be secured only by net revenues of the acquired project, stating that expenses of operation and maintenance represent a prior claim on the gross revenues of the enterprise. The pledging of revenues of one enterprise for the bonds issued to finance another similar or dissimilar enterprise may be prohibited by the state law.

(1950), pp. 49-55. New York subdivisions have some revenue bonds outstanding due to the issuance of such bonds prior to the adoption in 1939 of the constitution which prohibits such issues. Too, the legislature may, by special act, create an authority empowered to issue revenue bonds.

Revenue bonds issued without a vote of the electorate are often held valid by the courts especially if the pledged security for the bonds is the net revenue of a new enterprise. Of course, the state may require that the revenue bond issues of its political subdivisions be submitted to the taxpayers, but some state statutes do not require that this be done because of the "non-tax" nature of bond retirement funds. In some instances, revenue bond issues are submitted to voter approval in order to obtain an indication of community opinion even though the law does not require approval of the bond issue by the electorate. Voter approval is popular with bond subscribers even though relevant state and local laws do not require an election.

Complying with state permissive statutes is not sufficient to sustain the legality of revenue bond issues. Supplementing and giving immediate authority for the issuance of revenue bonds is the city ordinance or resolution that must be properly executed. This ordinance or resolution may simply state the provisions of the bond contract in accordance with the state statutes and, in addition, must meet the legal requirements of any self-imposed restrictions such as may be contained in the charter or the bylaws of the governmental unit. In addition to meeting the requirements

of law relating to the bond issue, the resolution or ordinance usually describes the revenue bond issue with respect to date, principal amount, call provisions, maturity schedule, place of payment, and provision for registration. The resolution also contains provisions designed to assure the bondholder that the bond proceeds will be applied to the acquisition or construction of the project. Usually the resolution will contain covenants to maintain and operate the revenue bond financed enterprise in such a way as to produce the necessary funds for retirement of the bonds.

The power to issue revenue bonds is not sufficient in itself to validate a proposed revenue bond project. The more or less inherent restrictions arising from judicial decisions with respect to the legality of public expenditures for a proper "public purpose" have been noted in the preceding sections of this chapter. Additionally, legal restrictions of various kinds may prohibit the construction or acquisition of a self-liquidating project. These legal restrictions may arise from many sources, such as the restrictions by the Corps of Engineers as to dams on navigable streams, the federal restrictions on the conversion of roads that have been received Federal funds into toll roads, and the acquisition of properties that may not be within the jurisdiction of the issuing unit.

The Special Fund Doctrine
and Debt Limitations

Historically, periods of defaults by governments have been accompanied by demands that these governments be restrained from incurring obligations of indebtedness. Restrictive measures have taken the form of constitutional and statutory debt limitations.

As a result of constitutional and statutory debt limitations, there has arisen what is known as the "special fund doctrine." The logic of the special fund doctrine is based on the thesis that an obligation is not debt unless there exists an unconditional promise to pay. If the security for an obligation is dependent solely upon funds to be derived from a particular source, the funds of which are so segregated or placed in a special fund, then, according to the theory of the "special fund doctrine," debt has not been created.¹⁶ The revenue that is earmarked for the special fund must be the only legal claim of the creditors. Should the earmarked revenue amounting to the special fund prove to be insufficient to service the debt to which it is pledged, the issuing governmental unit is not legally

¹⁶For example, Article XI, Section 9 of the Colorado Constitution states that principal indebtedness is increased whenever the general assets of a city are available to pay for liabilities.

obligated to make up the deficiency. Funds expended for the special fund may take the form of a levy of an excise tax, or more commonly, the fund of revenues obtained as a result of charges for the goods or services that flow from the financed project.

Revenue bonds would not, strictly speaking, be the "special fund debt"; hence, they would not be included as "debt" obligations of the issuing political unit. It would be proper that the issuance of such revenue bonds, or defined in this way, would never legally increase the indebtedness of the issuing political unit. In the case of quasi- and pseudo-revenue bonds, the court's decision will have to do with the question of debt depends somewhat on the circumstances. Inconsistency of court decisions, on this subject, is not uncommon.

Debt Limit

Debt restrictions with respect to states first appeared in 1842.¹⁷ In that year Rhode Island adopted a constitutional amendment restricting borrowing to a total of \$50,000. Debt exceeding this was permitted only if approved by the vote of the people or "in time of war, insurrection, or invasion."¹⁸ This initial

¹⁷The Constitutional Debt Restriction in the States (New York: The Tax Foundation, 1934), p. 16.

¹⁸Id.

state restriction followed the default and liquidations of indebtedness of the 1870's and 1880's.⁴⁹ The depression of the 1890's was, incidentally, a large volume of local defaults provided the impetus for legislation extending debt restrictions to local units of government.⁵⁰ The local defaults with their existing restrictions were largely due to aid by subscription to railroads in the hope that a railroad would be an invaluable asset to their town. In addition to the debt incurred as a result of the speculative public spending to aid railroads, heavy public spending was incurred to finance other public improvement projects. And, as so often in the case in such periods, waste and corruption were very common.⁵¹ States restricted the borrowing of their local units during the 1870's by prohibiting the lending of credit to private concerns and by limiting the debt-incurring power as represented by their authorized

⁴⁹Paul Studowski and Gordon F. Myers, The Social History of the United States (New York: Nelson Hall, 1912), p. 121-22.

⁵⁰Horace Secrist, The Economic Analysis of the Constitutional Restrictions on Public Expenditures in the United States (Bulletin of the University of Wisconsin: Economics and Political Science Series, Vol. 8, No. 1; Madison, Wisconsin, 1914), pp. 13-31.

⁵¹L. Dickerson Willis and Peter S. Kuchukis, Jr., "Municipal Improvements as Affected by Constitutional Debt Limitations," Colorado Law Review, LXXVII (1937), pp. 177-79.

property.⁵² Subsequently, debt limitations, either statutory or constitutional in form, were made too severe. The need for government services exceeded the quantity that could be financed with current revenues. Consequently, it was only natural that methods would be sought that would permit governmental borrowing in excess of the legal limit.

Some states have from time to time amended their constitutions so as to not expire special bond issues exceeding the allowable debt limit. For example, Louisiana, Michigan, Minnesota, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, and West Virginia have authorized the issuance of veterans' bonus bonds by constitutional amendment.⁵³ The vast majority of states have excepted special bond issues to finance highway construction and maintenance from self-imposed debt restrictions. The "special fund doctrine" as developed by court decisions and the establishment of special districts are other methods employed to circumvent debt limitations.

An early case involving the "special fund doctrine" is Winston v. City of Chicago.⁵⁴ In this case

⁵²Ibid., p. 181.

⁵³Constitutional Debt Control in the States, op. cit., pp. 31-32.

⁵⁴41 P. 280 (1895). It is interesting to note that the special fund doctrine originated in a case

Spothane entered into a contract with Sica signs to furnish funds for the purpose of completing a waterworks system for the city. In return, the Sica signs were to receive obligations of the city, payable solely out of a special fund that was to receive 60 per cent of the receipts derived from the operation of the waterworks.⁵⁵ The contract was challenged on the contention that the obligations constituted a debt in violation of the City of Spokane and thereby breached the constitutional debt limitation.

The State Supreme Court held that the obligations payable from the special fund did not constitute debt within the meaning of the constitutional limitation. The court further held that the only obligation of the city was to make payment from the moneys of the special fund. As a precedent the court cited a similar decision involving payments payable out of a special fund created by an assessment upon property to be benefited by a local improvement.⁵⁶ As bonds payable

involving what is generally regarded as the initial issuance of revenue bonds in the United States. The doctrine did not develop as a result of court ruling according to type of public credit instrument employed but rather according to the substance of the obligation created to pay. The full varieties of revenue bonds and special assessment bonds have been the types of credit instruments involved in court cases involving the special fund doctrine.

⁵⁵ Id., 1. 190.

⁵⁶ Id. v. City of Seattle, 27 P. 462, 463 (1901).

revenues were not tax-exempt. However, it is not the case that revenues from bonds represent debt, according to the reasoning of the court is the validity of the bond's validity to foreclose on existing property of the government. In other words, a taxpayer could be "harmed" either by the bond's validity or by the principal revenues that were currently being received by that government or, in the event of insufficient revenue, by a mortgage foreclosure on principal property that had been acquired by the municipality prior to the bond issue.

In a recent case the court held that debt of a governmental unit was increased as a result of the issuance of revenue bonds because the bond agreement contained a mortgage provision.⁶⁰ Proceeds of the bonds were for the purpose of financing a parking lot. This decision was thus of, however, since most courts have accepted the mortgage clause, provided the mortgage applies only to net assets acquired with the bond proceeds.

The "special fund restraint" is based on the theory of taxpayer immunity; consequently, court

⁶⁰William A. House, "Municipal Revenue Bonds Declared Void," 83 So. 2d 111, 112 (Fla. 1st D.C., 1950), pp. 367-41. It is referred to as Idaho v. City of Boise, 100 So. 2d 111, 112 (Idaho, 1958).

Decisions have distinguished between the pledging of revenues of an existing system and the mortgaging of existing property. Revenue bonds are legal, but not if the possibility of a foreclosed sale by the private creditors may render the taxpayer "worse off" and leave him in a position to require the assistance of a general taxpayer. The ability of courts opinions does not exist. There have been instances in which the courts have allowed the pledging of revenues from an existing enterprise with the caveat holding that the additional loads do not constitute debt in violation of constitutional limitations.⁶¹ América Fomento notes the diversity of opinion in the courts and concludes:

The probable weight of authority on points the view that such a transaction issuing revenue bonds for additions and improvements pledging revenues from the complete system does not create a debt or liability where no mortgage or other lien is placed on the existing property of the municipality.⁶²

The statutory mortgage, giving the bondholder power only to appoint a receiver to operate the facility, is not usually considered to be contrary to the taxpayer's interest.

⁶¹Ward v. City of Chicago, 173 N.W. 810 (1920);
Seaboard v. City of Baltimore, 178 N.W. 435 (1923).

⁶²América Fomento, 11 NW 111 (1911), 200
 171, pp. 175-76.

Rate Covenants

A special fund has been held to represent debt if the creditor can require that the debt is secured by an unreasonable amount in the event money in the fund was insufficient to service the debt. Pricing rates above the existing level at the time of the bond issue has sometimes been described "unreasonable" and tantamount to the levying of a tax.⁶⁵ Later cases, however, clearly indicate a tendency to allow covenants to maintain rates sufficient to amortize the debt and does not give rise to an inflated tax.⁶⁶ The reasoning in these cases is that, in setting utility rates, the political unit does not act in the public interest. The theory is not applied to the payment of interest or principal of revenue bonds.

Ad Hoc Units

The establishment of a special district or an authority permits a governmental unit to evade constitutional debt limits in most circumstances. The courts have held that obligations of ad hoc governments, which may be established by a state or municipality, do not

⁶⁵State ex. Rel. City of New York v. McFerrall, 169 So. 627 (1936).

⁶⁶American Jurisprudence, EIGHTH (1961), Sec. 473, pp. 151-55.

constitute debt of the establishing government to the unit.⁶⁷ By transferring an existing asset to an out-entirety trust, even to issue revenue bonds, debt limitations can be legally circumvented provided the enterprise is not subject to self-liquidation.

Exceptions have sometimes arisen in cases involving quasi- or pseudo-governmental units. Some authorities which were created for the purpose of constructing public office buildings have been held to constitute debt. The unconstitutionality, in these instances, at least partially, hinges on the courts' finding that the revenue bonds of these units constitute payment of debt of the state since proceeds consist of tax money paid to the unit and, in the form of rental payments for the use of the buildings. If the bonds are held to be interpreted as leasehold leases rather than as fully enforceable purchase contracts, the state has to look to validate the contracts.⁶⁸ On the other hand, if the agreements are interpreted as leasehold agreements and not as a non-revenue producing facilities, the state has often held that "revenue bonds" issued to finance the facilities, violate

⁶⁷ See Holmstrom v. Michigan, 106 U.S. 740 (1905); and Stecher v. Pol. Union v. Michigan, 97 U.S. 20 (1901).

⁶⁸ State v. Michigan, (1905), 72 U.S. 23 377 (1905).

term "liability" in addition to the more narrow term "debt." Thus the decisions rendered in the two cases are not inconsistent, according to the Wisconsin Supreme Court⁷³ since the bonds of the New Jersey State Building Authority may not represent legally enforceable obligations, although a liability may exist as a consequence of the issuance of the bonds.

An unusual leasing arrangement was enacted by the General Assembly of Kentucky in 1954.⁷⁴ This legislation provided for the transfer of certain state highways from the Department of Highways to the Kentucky State Highway Authority. Revenue bonds issued by the authority were to be paid from lease payments obtained from the Department of Highways in return for the improved roads built with the revenue bond proceeds. The Court of Appeals affirmed a lower court decision holding the lease payments to be unconstitutional indebtedness.⁷⁵ In spite of the fact that the Kentucky Constitution earmarks monies arising from motor vehicle licenses and fuel taxes, the court objected to this

⁷³Ibid.

⁷⁴Gibson Downing, "Constitutional Debt Limitations--Are Highway Authority Obligations 'Debts' of the State?" Kentucky Law Journal, XLIV, No. 2 (Winter, 1956), pp. 227-33.

⁷⁵Curlin v. Wetherby, 275 S.W.2d 934 (1955).

method of circumventing the constitutional debt limitations. The decision in the Curlin case implies that Kentucky does not subscribe to the special fund doctrine whenever tax money is involved.⁷⁶

The disparity in the decisions arising in the various jurisdictions is pointed up in the upholding of the General State Authority Act⁷⁷ and the Pennsylvania State Public School Building Authority Act⁷⁸ by the Supreme Court of Pennsylvania. In the former case the Pennsylvania Supreme Court declared the law unconstitutional, but on a rehearing the court held that the projects were self-liquidating and, therefore, constitutional. In the latter case the court held the act valid and that the source of revenues for a self-liquidating project was not significant in determining the constitutionality.

⁷⁶The diversity of state supreme court decisions is demonstrated in the case of State ex rel Roddey v. Byrnes, Governor et al, 66 S.E.2d 33 (1951). In this case it was held that bonds to finance a school program did not constitute debt. This decision was reached by the court despite the fact that the issued obligations were secured by the revenue derived from a newly enacted general retail sales and use tax. According to this court, obligations do not create debts of the state or its political subdivisions even though the full faith and credit and taxing powers of the state or its subdivisions are pledged, provided the revenues are reasonably sufficient to pay principal and interest on the obligations.

⁷⁷Kelley v. Earle, 190 A. 140 (1937).

⁷⁸Greenholgh v. Woolworth, 64 A.2d 659 (1949).

Federal Taxation of Bond Interest⁷⁹

The Sixteenth Amendment gives Congress the power to tax income "from whatever source derived."⁸⁰ There exists no general agreement, however, that this amendment removed the immunity from federal income taxation of interest derived from municipal bonds.⁸¹ Municipal bond interest is exempt from federal taxation by reason of a congressional provision accompanying the first and all succeeding income tax acts following the passage of the Sixteenth Amendment in 1913.

⁷⁹This study is concerned with tax treatment peculiar to revenue bond securities. Chapter II pointed out that only a trivial dollar volume of revenue bonds has been issued by the federal government, all of which are of the quasi or pseudo variety. States and their subdivisions which impose a personal income tax make no distinction with regard to interest income on general obligation bonds and revenue bonds.

⁸⁰A complete treatment of the cases and legislation dealing with tax immunity is beyond the scope of this study. A detailed historical treatment of this subject is available in Thomas Reed Powell's two articles, "The Waning of Governmental Tax Immunities," Harvard Law Review, LVIII (May, 1945), pp. 633-74; and "The Remnant of Governmental Tax Immunities," Harvard Law Review, LVIII (July, 1945), pp. 757-805. A history of the tax exemption of bond interest from income taxation is narrated in Lucile Derrick's "Exemptions of Security Interest from Income Taxes in the United States," The Journal of Business of the University of Chicago, XIX (October, 1946), pp. 6-15.

⁸¹The term "municipal bonds" includes the obligations issued by state and local governments including ad hoc units. In addition to revenue bonds the term includes general obligation bonds and special assessment bonds issued by all governmental units except the federal government and its agencies. The bonds of the United States and its agencies are commonly referred to as "government bonds."

In addition to this statutory exemption there remains the possibility that the United States Supreme Court might prohibit the federal taxing of municipal bonds. In the case of Pollock v. Farmers' Loan and Trust Company⁸² the United States Supreme Court ruled that a tax on municipal bond interest would, in effect, be a tax upon the borrowing power of a governmental body and an undue burden upon the political unit. The more recent cases of Graves v. New York ex rel. O'Keefe,⁸³ and New York v. United States⁸⁴ indicate that the Court may now permit the nondiscriminatory federal taxation of interest income derived from municipal securities.

Some of the special attributes of revenue bonds, resulting partially from state and federal court decisions, bestow upon this type of public credit instrument a special significance with respect to immunity from federal income taxation.

The more precarious tax exempt status of revenue bonds is indicated by various legislative proposals that have been made which are designed to discourage the utilization of certain types of revenue bonds.⁸⁵

⁸²157 U.S. 429 (1895) and 158 U.S. 601 (1895).

⁸³306 U.S. 466 (1939).

⁸⁴326 U.S. 572 (1946).

⁸⁵In 1954 the Committee on Ways and Means voted to tax interest on housing agency bonds since they are

Legislation to curb the use of these industrial aid revenue bonds has been proposed. A bill was introduced in the House of Representatives during the First Session of the 85th Congress to amend the Internal Revenue Code of 1954. This bill provides that the interest on certain revenue bonds be subject to the federal income tax if "such obligation is issued in connection with the acquisition, construction, equipment, or other development of property which is to be operated by one or more nonpublic enterprises, and such obligation is not secured by the general credit of the governmental unit issuing it."⁸⁶

This is not the first time that such a bill has been suggested.⁸⁷ The United States House of Representatives of the 83rd Congress approved a bill forbidding the lessees of revenue bond constructed buildings from deducting rental payments that were made to political units as a business expense in computing their federal income tax return.⁸⁸ Of course, the legislation,

secured by a federal agency and interest of federal government bonds are subject to the federal income tax.

⁸⁶H. R. 801 introduced in the House of Representatives, 85th Congress, 1st Session, 1957.

⁸⁷B. U. Ratchford, "Revenue Bonds and Tax Immunity," National Tax Journal (March, 1954), pp. 45-47.

⁸⁸Ibid.

had it become law, would have been applicable only to future arrangements between political units and private concerns.

Even though tax exemption of revenue bond interest is less firmly established, court decisions seem to indicate that the interest on these securities, like the interest on other types of state and local obligations, is "tax-exempt." This exemption appears to be based primarily upon the expressed exemption contained in the various revenue acts. The special attributes of revenue bonds which jeopardize their "tax-exempt" status are the "non-debt" nature of revenue bonds as narrated in the "special fund doctrine" section of this chapter and the uncertain governmental status of many ad hoc units which utilize revenue bonds.⁸⁹ This study is concerned with those aspects of tax immunity from federal income taxation which are peculiar to revenue bond financing.

Tax Exemption and "Non-Debt" Obligations

As previously pointed out in the "special fund doctrine" section of this chapter, state supreme courts

⁸⁹Revenue bonds have been used extensively in the financing of public enterprises of a proprietary nature. The tax treatment of these proprietary enterprises has been subjected to litigation in several instances. The taxation of these activities, however, does not hinge on the type of obligations utilized in the financing of the proprietary enterprise.

have generally held that revenue bond obligations do not represent "debt" of the issuing unit within the meaning of state constitutional restriction on debt limitations. Litigation involving the question of applicability of the federal income tax to interest received on municipal obligations, however, is a federal issue litigated in federal courts. In any case it appears inconsistent to contend that the interest derived from a municipal bond is exempt from the federal income tax while, at the same time, contending that such obligations do not represent debt of the issuing governmental unit.

Court cases involving the question of whether or not the bond is an obligation of the issuing unit have often involved special assessment bonds. The debtor-creditor relationship between an issuing political unit and its bondholders is similar in the case of special assessment bonds and revenue bonds.⁹⁰ Special assessment bonds have been ruled tax exempt if the issuing unit has even a remote contingent liability.⁹¹ In the

⁹⁰Due to the limited liability feature common to both revenue bonds and special assessment bonds, the latter obligations are sometimes included within the meaning of the revenue bond term. For example, see D. B. Goldberg, Tax Immunity and the Revenue Bond, a pamphlet distributed by the Conference on State Defense, 111 Eighth Avenue, New York, New York (undated), pp. 10-13.

⁹¹Commissioner v. Carey-Reed Company, 101 F.2d 602 (1939); Commissioner v. Pontarelli, 97 F.2d 793 (1948); and Bryant v. Commissioner, 111 F.2d 9 (1940).

cases of Commissioner v. Carey-Reed Company, Commissioner v. Pontarelli, and Bryant v. Commissioner, the bonds were of the special assessment type.⁹² In each case the federal court ruled that the cities were obligated, albeit from a special fund. The bonds, according to the court, were obligations of the political subdivisions. Apparently the federal courts view special assessment bonds as obligations of the issuing unit even though that obligation be nothing more than an obligation to collect the funds that are to be used to pay the interest and principal on the outstanding bonds.

The United States Board of Tax Appeals has attempted to distinguish special assessment bonds on the basis of whether a valid debtor-creditor relationship exists between the issuing governmental unit and the bondholder.⁹³ In 1937 the Board held that special assessment bonds of the cities of Kansas City and Saint Louis were not "exempt" since the benefited property owners were indebted to the contractor making the improvements. The charter of each of these two cities, unlike political units whose bond interest was held taxable, stated that the city was not obligated. The

⁹²Ibid.

⁹³Goldberg, op. cit.

only recourse of the bondholder was a foreclosure on the benefited property.

Despite the efforts of the United States Board of Tax Appeals to distinguish between obligations representing some degree of liability to the issuing governmental unit and obligations totally lacking such liability, the Circuit Court of Appeals has reversed practically every case in which the United States Board of Tax Appeals held the interest income taxable.

This was unmistakably demonstrated in a case involving the special assessment bonds that were issued under a 1911 California Act.⁹⁴ In 1938 the United States Board of Tax Appeals held the interest on these special assessment bonds taxable by reason of the nonexistence of a pledge of funds by the issuing municipalities. The contractor was issued warrants giving him authority to collect directly from benefited property owners on a prorated basis.⁹⁵ In case a property owner failed to pay within thirty days, the contractor was issued a bond which represented a lien upon the specific parcel of property. In the event of default, the bondholder could require the city treasurer to sell the delinquent owner's property with the proceeds to be applied to bond

⁹⁴Bekins v. Commissioner, 38 B.T.A. 604 (1938).

⁹⁵Goldberg, op. cit.

payment. The city, by contract with the bondholder, was expressly free from any monetary obligation whatsoever. On appeal to the Ninth Circuit Court of Appeals, the decision of the United States Board of Tax Appeals was reversed.⁹⁶ The Court held that the special assessment bonds were "tax-exempt" and cited the Bryant case as precedent.⁹⁷

In the Bryant case, a taxpayer sought tax exemption on interest derived from special assessment bonds which were issued to obtain funds for street improvements in the City of Los Angeles and in the County of Los Angeles. In reversing the United States Board of Tax Appeals, the court declared that the bonds were "public, not private" and were issued in the performance of an essential governmental function.⁹⁸ The court also felt that the tax exemption enacted in 1913 by Congress was intended to apply to the interest on the many "hundreds of millions of dollars" of special assessment bonds then outstanding.

⁹⁶Avery v. Commissioner, 111 F.2d 19 (1940).

⁹⁷Bryant v. Commissioner, 111 F.2d 9 (1940).

⁹⁸Ibid. It is interesting to note that the court expressly disavowed that a similar conclusion would have been reached in the case of "bonds to repay money borrowed to create works of a proprietary character from whose income for services rendered the bond principal and interest are paid." The improvement of streets and roads in California is a governmental rather than a proprietary capacity.

In a case dealing directly with revenue bonds, the court ruled that revenue or other bonds payable from a special fund, even if the political unit expressly disclaims any liability with respect to taxing power or credit, are "obligations of a state or political subdivision and interest thereon is tax free."⁹⁹

The court cited at length cases involving revenue bonds which had been declared by the courts as being "tax-exempt."¹⁰⁰ That the court might have felt that the Bureau of Internal Revenue was at least partially responsible for the "tax-exemption" of this type of government financing is found in the court's noting a letter from the Bureau to the Alabama Bridge Commission. This letter dated January 26, 1937, with reference to revenue bonds issued by the commission, stated

The bonds will be payable solely from the revenue derived from the toll bridge and when the revenues shall have liquidated the bonds, the bridge will cease to be a toll bridge and will become free.

It is held that your commission is in effect an instrumentality of the State of Alabama and that bonds issued by your commission are in effect bonds of the State, issued in the exercise of the borrowing power of the state. Accordingly, the interest on such bonds is exempt from Federal income tax. . . .¹⁰¹

⁹⁹First National Bank of Birmingham v. United States, 59 F. Supp. 49 (1944).

¹⁰⁰Ibid.

¹⁰¹Ibid.

The above opinion was rendered by the Bureau's letter despite the recital on the face of the bonds that ". . . the bond and interest thereon does not constitute an indebtedness of the state or any municipality, county or political subdivision of the state within the meaning of any constitutional or statutory provision of the laws of the state."¹⁰²

Tax Exemption and the Governmental Status
of Ad Hoc Units Utilizing Revenue Bonds

The governmental status of ad hoc units utilizing revenue bonds has been questioned because of the non-tax nature of funds that are pledged to service these securities. Court decisions which have turned more or less on the governmental status of ad hoc units have been decided only by inferior courts. These court decisions have exempted the interest on revenue bonds of the Port of New York Authority¹⁰³ and the Triborough Bridge Authority.¹⁰⁴ On appeal the Second Circuit Court of Appeals affirmed the decision of the Tax Court. Tacit approval was given to the Circuit Court's decisions when in 1945 the United States Supreme Court

¹⁰²Ibid.

¹⁰³Commissioner v. Shamberg's Estate, 144 F.2d 998 (1944).

¹⁰⁴Commissioner v. White's Estate, 144 F.2d 1019 (1944).

refused to review the case.¹⁰⁵ In the Shamberg and White cases the ruling of the court hinged on the question of the governmental status of the Port of New York Authority and Triborough Bridge Authority.¹⁰⁶ It was held that the former was a political subdivision "fully owned" by the States of New York and New Jersey and the latter a political subdivision of the State of New York. As precedent the court cited earlier cases involving special assessment bonds¹⁰⁷ and two cases having little relation to revenue bonds.¹⁰⁸ The Circuit Court's decision in the Shamberg and White cases, however, was based largely on pertinent portions of the Treasury Regulations. The Treasury Regulations give immunity to bonds issued "on behalf of" the state as well as to bonds issued "by" the state.¹⁰⁹ The court's decision is

¹⁰⁵ 323 U.S. 792 (1945).

¹⁰⁶ Officials of the Port of New York Authority, fearing that the exemption of state and local securities from the registration requirement of the Securities Act of 1933 would not specifically apply to the Authority's obligations, was instrumental in having the exemption apply to the "political instrumentalities" of the state as a safeguard that the Authority would not be covered by the words "political subdivisions" of the state. Chermak, op. cit., pp. 191-92.

¹⁰⁷ Bryant v. Commissioner, 111 F.2d 9 (1940).

¹⁰⁸ Brush v. Commissioner, 300 U.S. 352 (1937) and Helvering v. Griffiths, 318 U.S. 371 (1943).

¹⁰⁹ Opposing the exemption in the case, the Commissioner argued rather convincingly that the compensation received by the employees of the Port of New York

further strengthened by the Treasury's broad interpretation of the term "political subdivision." The term is defined, in part, as ". . . any division of the state . . . which has been delegated the right to exercise part of the sovereign power of the state."¹¹⁰ Further, the definition provides that political subdivisions include ". . . special assessment districts so created such as road districts, sewer, gas, light, reclamation, drainage, irrigation, levee, school, harbor, port improvements, and similar districts and divisions of a State or Territory."¹¹¹

Negotiability

The marketability of a bond is generally considered to be enhanced if it is negotiable.¹¹² Revenue bond obligations have implications that are somewhat peculiar to this type of governmental finance because the issuing unit does not pledge its full faith and credit. Section 1 of the Negotiable Instruments Law states that

Authority had previously been held taxable because ". . . employees of the Port Authority are not employees of the state or a political subdivision. . . ." See Helvering v. Gerhardt, 304 U.S. 405, 423 (1938).

¹¹⁰Bryant v. Commissioner, 111 F.2d 9 (1940).

¹¹¹Ibid.

¹¹²Joseph W. McGovern, "The Nonnegotiable Revenue Bond," New York State Bar Association Bulletin, XXII (February, 1950), pp. 49-55.

an instrument to be negotiable ". . . must contain an unconditional promise or order to pay. . . ."113 Section 3 provides further that ". . . the promise to pay is unconditional though coupled with an indication of the particular account to be debited, but an order or promise to pay out of a particular fund is not unconditional."114

The negotiability of revenue bonds depends upon the court's interpretation of "an unconditional promise to pay." The conditional nature of the true revenue bond does not render it nonnegotiable provided a statute exists expressly permitting the political unit to issue negotiable bonds.¹¹⁵ In other words true revenue bonds may be made negotiable by legislation expressly stating negotiability or may be accomplished by contract written on the face of the bond.¹¹⁶

In the absence of either express statutory authority or recital on the face of the bond, negotiability is determined by the Negotiable Instruments Law.

¹¹³Frank P. Smeal, "Some Aspects of the Negotiability of Municipal Bonds," Intramural Law Review, VIII, No. 1 (November, 1952), p. 34.

¹¹⁴Ibid.

¹¹⁵Citizens Trust and Guaranty Company v. Hays, 180 S.W. 811 (1915); Northern Trust v. Wilmette, 77 N.E. 169 (1906).

¹¹⁶Smeal, op. cit., p. 39.

Under these circumstances revenue bonds would not ordinarily be negotiable. Quasi-revenue bonds, as defined in this study, would be negotiable if a legal contingent liability remains with the issuing unit in the event that pledged revenues from the financed project are insufficient.

Eligibility for Investment by
Fiduciary Institutions

State and national statutes have differentiated between revenue bonds and general obligation bonds with respect to the eligibility of the various fiduciary institutions to underwrite and/or invest in these securities. National banks and state member banks must distinguish between revenue bonds and full faith and credit obligations of political units in accordance with Section 5136 of the Revised Statutes of the United States, as amended. The differentiation of revenue bonds is extended by state statutes regulating other fiduciary institutions with regard to legal requirements of securities purchasable for their investment portfolio.

National Banks

Section 5136 of the Revised Statutes of the United States, as amended, prohibits national banks from underwriting revenue bonds. Presently there is

considerable agitation to ease this restriction.¹¹⁷ Much of the concern of this limitation on commercial banks stems from the trend toward an increasing reliance of governments on revenue bonds.

Not only are commercial banks prohibited from underwriting true revenue bonds but the restriction apparently applies to quasi-revenue bonds. Section 5136 of the Revised Statutes states that commercial banks may underwrite and deal only in "general obligation" securities. General obligation securities are those obligations pledging the full faith and credit of the issuing unit. Bonds in the "special fund doctrine" category are legal since the full faith and credit of the issuing unit is pledged as security for these obligations.

It is significant that Section 5136 has been amended several times since the adoption of the 1933 Banking Act. These amendments have given commercial banks more latitude with respect to underwriting federal government agency securities. As amended, Section 5136 permits commercial banks to underwrite bonds of the International Bank for Reconstruction and Development, the Federal Home Loan Banks, the Central Bank for Cooperatives. Also permitted are the bonds of the various local public housing authorities. Bonds of these

¹¹⁷See Appendix II.

local public housing authorities, however, must be supported by annual payments from the Public Housing Administration.

Other Fiduciary Institutions

Securities eligible for the investment portfolio of non-Federal Reserve member state banks, insurance companies, and trust companies are also regulated by state statutes. Many factors are given consideration in the determination of the eligibility of a government security for the investment portfolio of fiduciary institutions. Much variation exists among the statutes of the various states and in the application of these statutes to different types of financial institutions. Some of the pertinent aspects of the legislation of the more stringent states, such as New York and other New England states, as applied to savings banks are discussed in this study to illustrate the treatment given revenue bonds as contrasted with general obligation bonds. The strategic importance of the eastern states in the field of finance may have a significant influence in the marketability of securities and hence on the rate of interest.

State regulations vary considerably as to investment legality for savings banks within their jurisdiction. These state regulations usually specifically

prohibit savings banks from investing in bonds unless the governmental unit pledges its full faith and credit. However, authority to invest in revenue bonds may be incorporated in the special acts creating authorities. Of course, no state can prescribe that bonds shall be legal investments for savings banks other than their own.

Recent investment legislation pertaining to the legality of revenue bonds in some states may be an indication of the growing importance of revenue bond financing as well as a greater confidence in this type of financing.¹¹⁸ New York, Massachusetts, and Connecticut have all passed legislation since 1953 pertaining to the eligibility of revenue bonds as legal investment for savings banks.¹¹⁹

The New York law makes eligible for investment, obligations of governmental units that are payable out of the revenues of a public utility system providing water, electricity, gas, or sewerage service. If the public utility system is located outside New York State, however, it must serve an area with at least 100,000 inhabitants. The law further provides that the issuing governmental unit shall be either legally obligated or

¹¹⁸"State and Municipal Bonds Legal for Savings Banks," a pamphlet distributed by The Bond Buyer, New York, New York (Revised 1956), pp. 23-25.

¹¹⁹Ibid.

empowered to fix rates at levels that will provide net revenues sufficient to meet maturing interest, principal, and sinking fund payments. The New York statutes also require that the public officers of an eligible revenue bond financed enterprise shall not be permitted to dispose of any of the facilities of the enterprise unless certain provisions are made for the continuance of interest, principal, and sinking fund payments.

Thus all indications point up the more stringent investment requirements of revenue bonds as compared with general obligation bonds. As stringent as these provisions are, they represent a trend toward a more liberal attitude, reflecting a greater confidence in revenue bond financing.

Summary

Revenue bond financing is utilized in the fringe area separating the public and private sectors of the economy. Thus it is only natural for this type of public financing to be challenged in the courts on the grounds of being beyond the proper scope of government and/or representing the giving of special aid to private entities. The decisions rendered by the supreme court in most states indicate an acceptance as a proper public purpose those functions or projects which receive an

affirmative vote of the majority of eligible voters of a political unit.

In some instances the courts have ruled that a taxpayer has no valid reason to contest the issuance of these "non-tax" bonds even if the revenue bond issue has not received the approval of eligible voters. Revenue bonds may thus provide the financial means of extending the government sector of the economy or of providing aid to private entities. In either case, revenue bonds are available only to those enterprises that may charge for services rendered just as is done in the private sector. In contrast to general obligation bond financing revenue bonds may be utilized because the funds obtained for the repayment of the latter type of obligations are not tax revenues.

Permissive revenue bond legislation varies from state to state. In some states the issuance of revenue bonds is prohibited unless specifically authorized by special statutes for a particular purpose. In other states, local governmental units may be granted wide latitude in the issuance of revenue bonds. As a precautionary measure, most revenue bond issues are subjected to a vote of the electorate, although voter approval is not always required by pertinent state statutes because of the "non-tax" nature of bond retirement funds. In

addition to complying with state statutes in the issuance of revenue bonds a local subdivision must also meet any self-imposed legal requirement that may exist in its charter or by-laws.

True revenue bonds are not usually included as "debt" of the issuing unit according to state court decisions. The legal debt status of revenue bonds depends to a considerable extent upon the court's determination of whether or not the bonds may possibly burden the taxpayer, currently or in the future. Quasi- or pseudo-revenue bonds may occasionally be judged by the court to represent debt of the issuing governmental unit by reason of the existence of a conditional pledge of tax money to service the bonds. The creation of ad hoc units has not always met with the approval of the courts in attempts to evade legal debt restrictions if these units do not, in fact, operate revenue producing enterprises.

The "non-debt" legal status of revenue bonds as well as the governmental status of some revenue bond financed enterprises is of special significance with respect to federal income taxation of revenue bond interest. In addition, there have been objections to the use of revenue bonds to finance factory buildings. This use of revenue bonds has provided the stimulus for

proposed legislation to subject the interest income derived from revenue bonds to the federal income tax.

The conditional nature of the pledge securing revenue bonds sets this public credit instrument apart from general obligation bonds with respect to negotiability. Revenue bonds may be rendered negotiable, however, by appropriate legislation or recital on the face of the bond expressly stating the bond to be negotiable.

Revenue bonds are more restricted than are general obligation bonds with respect to eligibility for the underwriting and/or investing by certain fiduciary institutions. These legal restrictions reduce the demand, and therefore the price, for this type of security.

These more or less unique legal aspects of revenue bonds as narrated in this chapter impart to this type of public credit instrument peculiarities which may affect their economic appraisal. The following chapters focus attention on certain characteristics of revenue bonds which can best be interpreted in the light of these peculiar legal aspects of revenue bonds.

CHAPTER IV

DEFAULTS

Instances of revenue bond default must be analyzed in order to properly evaluate revenue bonds as a mode of government finance. The economic conditions and financial arrangements associated with instances of default, as well as the eventual settlement or "cure," are relevant to an economic appraisal of revenue bond financing as compared to the alternatives that may be available to the various governmental units. Comparisons of the financial arrangements associated with defaults on revenue bonds and other types of public obligations may aid in evaluating the revenue bond as a public credit instrument. The purpose of this chapter is to describe and analyze those instances of financial difficulty associated with revenue bond financed projects.

Definitions

In a sense revenue bonds that fail to meet the scheduled payments of interest and/or principal do not represent defaults of the issuing unit since the "full faith and credit" of the unit is not pledged. Instances of default on revenue bonds which are issued with the

understanding that the net revenues of the financed project are the sole security pledged to the payment of interest and/or principal may be more aptly described as simply a case of an uneconomic investment.¹ Theoretically, the credit of the issuing government would not be jeopardized as a result of the failure of revenue bonds to meet scheduled payments since the nonpayment of revenue bonds would not affect the solvency status of the issuing governmental unit.

"Technical defaults" are defined as instances of delay in payment of overdue interest and/or principal due to legal reasons.² Technical defaults and other temporary or minor defaults which are not due to uneconomic investments are not pertinent to the economic appraisal of revenue bonds. Of primary concern, therefore, are those instances of financial difficulty arising from uneconomic investments which include defaults or near failure of revenue bond financed projects and the accompanying refundings or other financial arrangements resulting from such difficulty.

In addition to the use of the term "default" to refer to the nonpayment of interest and/or principal

¹An uneconomic investment may be defined as investment in an enterprise the earnings of which fail to cover average costs including debt service expenses.

²A. M. Hillhouse, Municipal Bonds, A Century of Experience (New York: Prentice-Hall, Inc., 1936), p. 14.

according to schedule, the revenue bond contract may specify that the failure of the management of a facility to perform covenants according to the bond agreement constitutes default. For example, the trust agreement of the Oklahoma Turnpike Authority (Northeastern Turnpike) defines events of default to include "failure to carry out with reasonable dispatch the construction of the turnpike, material damage to any substantial part of the turnpike which is not promptly repaired, failure for thirty days after notice to perform the covenants contained in the trust agreement and, under certain conditions, failure to pay any final money judgment after entry thereof, the appointment of a receiver of the turnpike or the revenues thereof and the institution of certain proceedings for the benefit of creditors."³

In conformity with the usual custom, however, the term "default" is used in this study in its broad meaning to refer to instances of financial difficulty accompanied by failure to pay interest and/or principal when due. This does not mean that bondholders suffer loss, however, since in many cases the political unit may subsequently pay all claims of the bondholders including accumulated interest.

³Official statement of the First Boston Corporation pertaining to the Oklahoma Turnpike Authority (Northeastern Turnpike) dated December 8, 1954, p. 13.

Remedies

In the event of default, holders of revenue bonds have several courses of action which may be pursued. These actions are usually referred to as "remedies," although such actions may not prevent financial loss to the bondholder. Of course, any remedy available to the bondholders must not be expressly prohibited by pertinent revenue bond statutes. Usually the bond agreement will "spell out" the remedies that are available to the bondholders.

Perhaps the most common remedy available to bondholders is the appointment of a receiver to operate the revenue bond financed project. For example, the receivers or trustees selected by the bondholders may take possession and control of the enterprise of the political unit and proceed to operate same and to collect and receive the income therefrom so long as may be necessary to restore all payments of interest and principal on the outstanding obligations to a current status.⁴ This is a recurring privilege that may occur from time to time as often as the occasion may arise. The appointment of a receiver is a popular remedy because the project maintains its "public" status and

⁴Lawrence E. Chermak, The Law of Revenue Bonds (Washington, D. C.: National Institute of Municipal Law Officers, 1954), pp. 185-86.

thus enjoys tax, regulation, and franchise advantages not available to the project if it operates in the private sector of the economy. Also, the appointment of a receiver does not destroy the "non-debt" status of the obligations as may occur in the case of the mortgage remedy.⁵

Mandamus and injunction are other legal remedies available to bondholders. The former is a legal order to perform in accordance with the bond agreement, and the latter is a legal order to refrain from acts injurious to the financial interest of the bondholders.

There are no remedies, however, that can protect the revenue bondholder's investment from losses due to economically unsound ventures. For example, if revenue bonds are issued to finance a water system in a community in which it later develops that the water supply is no longer present, legal remedies in such cases are of little value. Of course, pseudo-revenue bonds may be issued that bind the issuing political unit to a conditional pledge of tax monies in the event earnings of the financed enterprise prove deficient.

Rate covenants may be effective in preventing loss to the bondholder depending upon the alternatives

⁵The legal aspects of the mortgage remedy are discussed in detail in Chapter III.

that are available to consumers.⁶ For example, a rate covenant may require that the charges for the goods or services emanating from a revenue bond financed enterprise shall be such as to produce revenues sufficient to provide for operations, maintenance and repairs, bond principal, interest, and reserves for various purposes. It is not always possible, however, to set prices that will produce a certain dollar amount of gross or net revenues. The existence of financial stress may be an indication that the price is above the level that would produce maximum profit. If higher rates will produce a greater amount of net revenues, then the rate covenant may be an effective remedy in preventing default. Thus the effectiveness of the rate covenant in preventing default depends, to a great extent, upon the elasticity of demand for the commodity or service supplied by the revenue bond financed enterprise.

Defaults Prior to 1940

Prior to the depression of the 1930's, the number of revenue bond issues outstanding was relatively insignificant. For this reason, a valid comparison of the default record of the revenue bond with that of the

⁶Rate covenants refer to the various sections of the bond agreement pertaining to rates that shall be charged under various levels of earnings of the enterprise.

general obligation bond is not permissible. The Great Depression of the 1930's is the only time period, however, in which revenue bonds have been subjected to the stresses of low economic activity.

Water Systems

Among the earliest revenue bonds were those issued to finance municipal water systems. Consequently, the Great Depression subjected more of this type of revenue bond to the test of low economic activity.

One of the first instances of default involved the \$300,000, six per cent revenue bonds issued in 1913 by Centralia, Washington, which were contested in the courts because of the below par sale price; however, the Washington Supreme Court finally validated the bonds.⁷ The earnings of the water system were sufficient to meet debt requirements; therefore, this was not a case of uneconomic investment.⁸ After the legality of the issue was established by the Washington Supreme Court, the bondholders were paid in full as per the bond agreement.

The City of Herrin, Illinois, issued \$640,000 of revenue bonds in 1925.⁹ Three years later, the net

⁷John M. Fowler, Jr., Revenue Bonds (New York: Harper & Brothers, 1938), p. 21.

⁸Laurence S. Knappen, Revenue Bonds and the Investor (New York: Prentice-Hall, Inc., 1939), p. 115.

⁹Ibid., p. 119.

earnings pledged as security for the bonds were barely sufficient to service the outstanding bonds. Actual default did not occur until 1932; however, the financial difficulty was apparent in 1928 when the city leased the water system to a non-profit organization representing the bondholders for \$1.00 per year. From 1936 to 1938, the water system was operated by court-appointed receivers.¹⁰ Despite the rate covenants contained in the bond contract, the water system failed to yield sufficient net revenues to meet debt requirements. Subsequent financial arrangements and refundings resulted in considerable financial loss to bondholders.

In 1930 the City of Portvue, Pennsylvania, experienced a default on revenue bonds issued to finance a water system.¹¹ As in the case of Herrin, Illinois, default occurred as a result of insufficient earnings of the enterprise. The court ruled that bondholders would be allowed to foreclose as per the bond agreement if the city failed to establish a sinking fund and pay about \$4,000 in accrued interest.¹² Principal and interest payments were eventually made without loss to the bondholders.

¹⁰Ibid., pp. 119-20.

¹¹Ibid.

¹²Moody's Government and Municipals (1935), p. 1461.

Three early defaults in water revenue bonds occurred in Texas--all involved the failure of a dam financed by revenue bonds. In December, 1929, Cross Plains, Texas, issued \$67,000 of water and sewer bonds to construct a new reservoir and dam.¹³ In 1934 the dam gave way and the city sought to nullify the revenue bond issue, claiming the bonds were issued illegally because an election was not held as required by law. The city lost in District Court but was upheld in the Court of Civil Appeals and again by the Commission of Civil Appeals. The court held the bonds were void since a majority vote of the people is necessary according to pertinent Texas statutes in the case of bonds issued for improvements for amounts larger than \$5,000.¹⁴ The court did not rule on the right of bondholders to reclaim the reservoir and pipelines. The decision of the Commission of Civil Appeals was adopted by the Texas Supreme Court.

Another case of default involving complete loss to bondholders occurred in Hamlin, Texas. Prior to 1929 the citizens of Hamlin had retired the general obligation bonds which were originally issued to finance their

¹³Knappen, op. cit., p. 116.

¹⁴Radford v. City of Cross Plains, 86 S.W.2d 204 (1935).

water system.¹⁵ In 1929 the city issued more than \$100,000 of revenue bonds to finance the construction of a new dam, pumping station, and other equipment necessary to utilize the new water supply. These bonds were secured by revenues from the entire system. As in the case of Cross Plains, the new dam financed with the proceeds of the revenue bonds failed with the first rain. The court declared the bonds to be "invalid and unenforceable" by reason of their issuance without a vote of the people as required by Texas statutes.¹⁶

Corpus Christi was the third Texas city to have the misfortune of dam failure in connection with revenue bond financed water systems. In 1927 Corpus Christi issued \$2,000,000 of revenue bonds subsequently supplemented by a \$725,000 subordinate issue to finance the construction of a dam.¹⁷ In 1930 the dam was partially destroyed. An attempt was made to make the project sound by repairing the dam with the proceeds of a \$500,000 Reconstruction Finance Corporation loan after obtaining permission from bondholders to make the loan senior to bonds then outstanding. In the meantime, a taxpayer challenged the validity of the revenue bond

¹⁵City of Hamlin, Texas v. Brown and Crummer Investment Company, 93 F.2d 680 (1937).

¹⁶Ibid., pp. 684-85.

¹⁷Knappen, op. cit., pp. 122-28.

issue. Corpus Christi and the bondholders' committee challenged the validity of the bond issue in the courts for several years until on April 20, 1940, the United States District Court of Appeals in New Orleans, reversing a lower court decision, ruled that the bond issue was void.¹⁸ The United States Supreme Court refused to review the case. The litigation did not end here, however. The bondholders' committee then sought in court to recover from the city on the basis of benefits received by Corpus Christi from the bond proceeds. Litigation continued until 1947 when a suit against Corpus Christi for the recovery of properties purchased with the revenue bond proceeds was decided in favor of the bondholders. In this case the Court of Civil Appeals held that the bondholders were entitled to certain property or \$1,833,558, the estimated value of that property.¹⁹ On appeal the Texas Supreme Court denied the petition of the city for a writ of error. In this final ruling of the Civil Appeals Court, bondholders obtained a judgment in the form of a general obligation debt, payable from ad valorem taxes or water revenues.

Final settlement was made with bondholders on September 3, 1948. At that time \$2,033,000 of bonds

¹⁸Moody's Government and Municipals (1947), p. 1129.

¹⁹Moody's Government and Municipals (1949), p. 1169.

were outstanding in addition to interest on this amount of principal since February, 1937.²⁰ Bondholders eventually received slightly more than \$700 for each \$1000 bond after deducting the expenses of the bondholders' committee.

Educational Facilities

During the 1930's at least ten instances of default occurred involving revenue bonds issued to finance college and university dormitories.²¹ Three of these defaults occurred in 1932, two in 1933, one each in 1934 and 1935, and three in 1938. The latter three bond issues were purchased by the lending agencies of the United States Government.

The financial difficulties of revenue bonds issued to finance facilities of educational institutions during the 1930's were due to a decline in the demand for the services of the facility. Two of the ten, however, were partially attributed to failure of pledged money to materialize. In each instance the bonds were issued prior to the financial collapse of 1929. Consequently, lower enrollment and more intense competition

²⁰Ibid.

²¹Source of the material for this section is from the publication, Debt Financing of Plant Additions for State Colleges and Universities, by Robert Bruce Stewart and Roy Lyon, published by Purdue Research Foundation, West Lafayette, Indiana (1948), Part V. The names of the educational institutions involved in financial difficulty are not given in this publication.

in the student housing market caused revenues to decline below expectations which were based upon a period of prosperity.

Of the ten defaults, not a single case involved failure to pay principal and in only one case did bondholders sacrifice interest. In most instances defaults were temporary and were subsequently "cured." In the majority of these refundings, however, bondholders received new bonds with a lower coupon rate of interest.

In addition to refundings providing, in some instances, for lower coupon rates and a lengthening of the maturity date in others, there were a few instances of the application of tax money to the payment of the revenue bond debt. In one instance tax money was applied directly; and in two others, both involving athletic plants, the issuing institution agreed to lease the plant for one year periods and to pay a fixed sum for services rendered to the institution.

This lease arrangement was a legal maneuver that permitted the university to apply tax money to debts originally secured only by revenues from the athletic plants. In effect the educational institution was both lessee and lessor. Evidently the legality of this stratagem was strengthened by the one-year lease provision. It was understood, however, that successor

officers would renew the lease until all bonds were retired even though they were not legally bound to do so.

There was no instance of a default on educational facilities attributable to the failure of public officials to perform bond covenants. In fact, as illustrated by the application of tax monies to the payment of bonds, public officials may have been guilty of failure to protect the interest of the taxpayer.

Other Types of Enterprise

The first known revenue bond issue to finance city street transportation was issued by Seattle, Washington, in 1918.²² A long controversy among the private owner, city officials, and citizens of Seattle preceded the purchase of the transportation system for \$15,000,000.²³ Principal and interest on the bonds issued to the private owners represented a first lien on the gross earnings of the system. The city also agreed to purchase from the private seller the electric power necessary to operate the transportation system at one cent per kilowatt.

²²Moody's Government and Municipals (1941), p. 1368.

²³Paul H. Douglas, "The Seattle Municipal Street Railway Systems," Journal of Political Economy, XXIX (June, 1921), p. 461.

Rising labor costs and the increasing use of automobiles contributed to the inability of the system to meet debt service requirements. Although sometimes hampered by political disagreements, there appears to have been a sincere effort to operate the system efficiently and profitably. For example, the city restricted taxi service, eliminated low revenue yielding transit routes, and raised fares. Final settlement was made in 1939 when the transit system received a loan of \$10,200,000 from the Reconstruction Finance Corporation. The proceeds were to be used to pay outstanding indebtedness and rehabilitations.²⁴ According to the provisions of this plan, the original private company received \$3,250,000 in payment of its holdings of \$8,336,000 principal and accrued interest.²⁵

The Alabama State Bridge Corporation, created for the purpose of constructing bridges in Alabama, experienced financial difficulty during the 1930's.²⁶ The \$5,000,000 six per cent coupon bonds issued in 1929 were more than the income of the corporation could service. Scheduled bond principal payments were not made on maturing bonds after December 1, 1934, and several

²⁴Moody's Government and Municipals (1940), p. 1302.

²⁵Ibid.

²⁶Ratchford, op. cit., p. 519.

years thereafter. In the subsequent refunding which occurred in 1936 bondholders accepted lengthened maturity bonds with lower coupon rates which were secured by a pledge of lease payments to be received from the Alabama State Highway Department.²⁷ Tolls on the bridges were subsequently abolished, and the State Highway Department paid rentals sufficient to service the bonds from the proceeds of a two cent gas tax which was initially pledged to the securing of other state highway bonds.²⁸ In 1937 the Federal Government also contributed Agriculture Department funds to the state under an act designed to encourage the conversion of toll bridges into free bridges.²⁹

The municipal electric system of Wagoner, Oklahoma, was involved in financial difficulties following the issuance of obligations in 1927. The obligations were issued to finance the purchase of diesel engines and other electric generating equipment replacing an older city-owned generating system.³⁰ These obligations, amounting to more than \$55,000, were unusual in that the purchase price of the new generating equipment

²⁷Moody's 1941, op. cit., p. 109.

²⁸Ibid.

²⁹Ratchford, op. cit.

³⁰Fairbanks, Morse and Company v. City of Wagoner, Oklahoma, 81 F.2d 209, 211 (1936).

was payable in monthly installments from savings attributable to the new equipment. Savings were to be computed by comparing the cost of producing electricity of the new system with the average cost of production in the fiscal year, 1926-1927, the last full year of production using the older-type generating equipment. The savings thus incurred, or portions thereof, were to be applied to the payment of the issued obligations. It was expressly agreed that "monthly installments shall be paid only from said savings . . . and from no other fund, money, property, or assets of the city. . . ." ³¹

On March 16, 1928, the city began operation of the new generating equipment. Two months later, however, a newly-elected light and water commissioner replaced the engineer, who originally operated the electric generating equipment, with an inexperienced and incompetent man. It was alleged that the commissioner did this deliberately for the purpose of "creating the impression upon the inhabitants of the city that the diesel engines were inefficient, expensive to operate, and not capable of carrying the rated capacity load specified in the contract." ³² It was also alleged that the commissioner's objective was to ruin the engine so

³¹Ibid., pp. 212-13.

³²Ibid., p. 213.

that the city would then be free to purchase electric energy from the Public Service Company of Oklahoma, a private utility. Despite severe abuse, the engines continued to operate until October, 1930.

During the ensuing litigation, the city purchased electric energy from the Public Service Company of Oklahoma. The cost per kilowatt ranged from a minimum of .4 of a cent to a maximum of 1.4 cents, which was more than the previous average cost to the city.³³

The court ultimately directed that Fairbanks, Morse and Company, bondholder and seller of the equipment, was entitled to make the necessary repairs and to operate and retain earnings of the power plant until all obligations were liquidated in accordance with the original agreement.

The surprising feature of this case is the basic soundness of the electric enterprise. Following the installation of the new equipment, earnings were satisfactory to meet debt requirements despite attempts to purposively sabotage the electric generating equipment. It should also be noted that the obligations were secured by a pledge of only a portion of net earnings since the

³³Ibid., p. 214.

previous system was paying its way and, in addition, contributing to the general revenues of the city.

The state capitol building of Montana was financed with bonds pledging income from land grants.³⁴ During the depression the land income declined to such an extent that interest on these pseudo-revenue bonds could not be paid as scheduled. The outstanding obligations were held by a state trust fund which, according to the state constitution, required the state to guarantee all investments.³⁵ Accordingly, in 1939 these bonds plus accumulated interest were refunded into "full faith and credit" obligations.

In 1931 the Port of New York Authority barely averted default on revenue bonds issued to finance the Staten Island bridges.³⁶ The States of New York and New Jersey gave aid to the Authority by transferring the Holland Tunnel to the Authority in return for revenue bonds. The additional revenue arising from the Tunnel was sufficient to meet the scheduled payments on outstanding revenue bonds.

³⁴Ratchford, op. cit., p. 520.

³⁵Ibid.

³⁶Ibid.

Defaults Since 1940³⁷

Although defaults have been relatively rare during the past sixteen years, there have been a few instances of financial difficulty on general obligation bonds as well as on revenue bonds. Revenue bond defaults have occurred in connection with practically all types of public enterprises although defaults on revenue bond financed toll bridges appear to be significantly greater than for other types.

Toll Bridges

There have been several recent instances of default on revenue bonds issued to finance toll bridges. In some instances it is too early to predict the final outcome of these bond issues.

Two Nebraska Bridges

Prior to World War II the State of Nebraska authorized the Burt County Bridge Commission to construct, operate, and maintain a toll bridge across the Missouri River in the vicinity of Decatur, Nebraska.³⁸ The Decatur Bridge was to bisect the approximately 100 mile distance between two existing bridges across the

³⁷Much of the material for this section was obtained by letters from investment bankers, state and municipal officials. For more detail, see Appendix III.

³⁸"The Decatur Bridge," a statement by Shield & Company, appearing in the Daily Bond Buyer, February 19, 1956, pp. 532-33 and 545.

Missouri River. The planning for this bridge was interrupted by World War II, and it was not until 1950 that the Bridge Commission completed plans and obtained a certificate from the Chief of Engineers of the Department for War authorizing the construction of the bridge at a particular site. In the meantime the Missouri River had broken out of its original channel and moved eastward of the proposed bridge site. Alternative sites were then considered, but rejected since the army intended to return the unpredictable river to its original channel.

Soon after obtaining the authorizing certificate the Bridge Commission sold \$1,970,000 of bonds with a coupon of 3 3/4 per cent maturing in thirty years. Using these proceeds the Bridge Commission was able to complete the construction in the fall of 1951. The "dry land" bridge could not be opened to traffic, however, due to the fact that the Missouri River had now moved even farther to the east of the bridge site. The river had not been put back under the bridge as originally planned. After considerable lobbying by the underwriters and investors, Congress finally approved a \$2,000,000 appropriation in 1954 for the purpose of reconstruction of the banks along the Missouri River. The river was finally flowing under the bridge by the latter part of 1955; but for the lack of a toll booth, tolls were not begun until early in 1956.

In the meantime, interest was paid on the outstanding obligations from a special fund until April, 1952.³⁹ Subsequently, the bridge bonds lapsed into default and the bondholders attempted to retrieve their money from the underwriters. The underwriters refused to buy back the bonds but did offer \$250 for each \$1000 bond as an option to buy each bond for an additional \$750 within a period of five years.

The meandering of the Missouri River may not have constituted the sole reason for financial difficulty with this bridge. During the early life of the bridge traffic was only about one-third as great as had been estimated by traffic engineers. Revenues have since been bolstered, however, by an agreement with a pipeline company to rent space for tubes on the bridge crossing for an annual payment of \$8000. It is too early to predict the final outcome of this project. During 1956 the bonds were selling at about 60 per cent of par.

Another unusual case is the Bellevue, Nebraska, Toll Bridge. This bridge, sometimes referred to as the "approachless bridge," was completed in 1952. The Bellevue Bridge Commission of Nebraska had issued \$2,800,000 of bonds with a coupon of 4 per cent maturing

³⁹Ira Haupt and Company's Revenue Bond Service.

in thirty years. These bonds defaulted in May, 1954, primarily because of a lack of access roads. The bridge has been described by one public official as being "accessible only by helicopter."⁴⁰ The approach on the Nebraska side consisted of a gravel road, and on the Iowa side the bridge led into a corn field.

In an effort to improve the revenue position of the toll bridge, the underwriters paid \$223,000 to pave a five-mile length of road connecting the bridge with an interstate highway. As of the latter part of 1956, plans for other access roads had not been completed. In June, 1956, after approximately four years of operation, the toll bridge traffic amounted to slightly more than 5,000 vehicles for the entire month, which is approximately 15 per cent as much as the original estimate by the bridge engineers. Market value of the bonds during 1956 fluctuated around 40 per cent of par, which is an indication that this bridge may be in for more financial difficulties than the Decatur Bridge.

Two West Virginia Bridges

Revenue bonds issued to finance the construction of the Dunbar-South Charleston Toll Bridge and the Memorial Toll Bridge at Parkersburg, West Virginia, have

⁴⁰Wall Street Journal, July 24, 1956, cited by Ira Haupt.

recently defaulted. In both instances toll revenues have not materialized as had been expected prior to construction.

The Dunbar Bridge was financed by revenue bonds in the amount of \$4,200,000 which were issued in 1952 at 4 per cent payable in 1992. The paying agent has stated that interest due August, 1956, was not available because of insufficient revenues. In early 1957, however, the paying agent announced that sufficient funds were then on hand for the past-due August, 1956, coupon. There were no provisions, however, for payment of coupons due February, 1957.

The Parkersburg Bridge revenue bonds were issued in 1953 in the amount of \$6,500,000 and defaulted in January, 1956, because traffic and revenues failed to measure up to engineer's estimates. Bridge access improvements are still being made and traffic volume may increase as these access roads are improved. Prior to construction the toll bridge was estimated to average 6,400 vehicles daily, but actually has experienced a daily traffic volume of only about 1,400 vehicles. The city-owned Memorial Toll Bridge competes with the state-owned Parkersburg-Belpre free bridge.

It is too early to predict the eventual outcome of this project. There has been some speculation that

an authority might be created to operate both the Memorial Bridge and the Parkersburg-Belpre Bridge as toll bridges, pledging all revenues to the liquidation of the revenue bonds outstanding.⁴¹

Other Toll Bridges

At least four other toll bridge projects have experienced financial difficulty. These include the Fernandina Port Authority Bridge (Florida), the Thousand Islands Bridge (New York), the Dade County Causeway (Florida), and the Toll Bridge of Nebraska City (Nebraska).

On November 1, 1951, the Fernandina Port Authority in Florida defaulted on interest payments on the outstanding bonds of an original issue in the amount of \$4,600,000.⁴² A refunding plan was initiated at the time of default in which a new issue of the Ocean Highway and Port Authority replaced the then outstanding revenue bonds. A reduced interest rate and increased security distinguished the refunding bonds from the original issue. The interest on the refunding bonds was secured by a pledge of gross tolls from the bridge. In addition a sinking fund was established which receives

⁴¹Ira Haupt, op. cit.

⁴²Wylie Kilpatrick, Revenue and Debt of Florida Municipalities and Overlying Governments (Gainesville: University of Florida, 1953), p. 102.

\$40,000 annually from the gasoline excise tax accruing to Nassau and Duval Counties. The sinking fund also receives funds from the net tolls of the enterprise. Should the sinking fund fail to accumulate sufficient revenue to retire the debt and finance maintenance costs, the state is then liable for any balance that may be needed to meet these expenses payable from the state gasoline tax.

Holders of the original bonds accepted the refunding plan; and as of June 30, 1955, more than \$4,500,000 of the original bonds had been exchanged for the refunding, leaving some \$40,000 of bonds outstanding unexchanged. Interest is current on the new issue.

The Thousand Islands Bridge Authority experienced a reduction in traffic during World War II which resulted in default on interest due September 1, 1943, through September, 1946.⁴³ Traffic was reduced due to gas rationing during the war with the result that toll revenues declined more than 35 per cent between 1940 and 1944.⁴⁴ The bonds were refunded in 1946 with a new issue of \$3,560,000 of 2 per cent revenue bonds. These refunding bonds were for the purpose of retiring the more than \$3,000,000 of 4 1/4 per cent bonds which were

⁴³Moody's Government and Municipals (1946), p. 729.

⁴⁴Ibid., p. 719.

still outstanding at the time of refunding. A portion of the proceeds of the refunding bonds was for the purpose of making payment on the overdue, unpaid interest.

The bridge bonds of Nebraska City, Nebraska, barely averted default by a refunding operation. As in the case with the Thousand Islands Bridge, travel restrictions during World War II reduced revenues to such an extent that in June, 1943, the city adopted a resolution to refund \$846,000 of revenue bonds to prevent default on principal payment due January 1, 1944.⁴⁵ Under the new refunding plan the 2 3/4 per cent revenue bonds payable serially to January 1, 1957, were extended to January 1, 1962.⁴⁶ Bondholders agreed to accept the new bonds in exchange for their holdings, and the City Council approved the new issue dated July 1, 1943.

The Dade County Causeway in Florida experienced minor financial difficulty due to inability to complete the causeway according to schedule. World War II restrictions on the use of building materials delayed the project for several years. The first \$4,000,000 issue of revenue bonds was issued in 1941. In 1946 another \$1,500,000 issue was necessary to complete the

⁴⁵Ibid., p. 625.

⁴⁶Handbook of Public Revenue Bonds, unpagged handbook of Tripp & Company, Inc., 40 Wall Street, New York, New York (1946).

construction of the causeway. Income immediately after opening was not sufficient to meet interest payments, but the bondholders did not insist upon full payment of interest due March 1, 1948. Funds have since become available, and the project is presently meeting scheduled interest payments.

As of the end of 1956, at least six other bridges either were barely earning revenue equal to interest charges or were using cash reserves supplemented by earnings to prevent default.

Water Systems

There have been a few minor defaults on water revenue bonds, all involving communities with a population of less than 10,000.⁴⁷ Two small issues, one in Arkansas and one in Tennessee, experienced financial difficulties due to water supply failure. The wells supplying water to the communities went dry because of the drought. A community in Kentucky has a small issue

⁴⁷Information pertaining to these instances was revealed in letters to the writer. The writer prefers not to identify these small governmental units which have been involved in financial difficulties. The identification of governmental units previously cited as having experienced financial difficulties are differentiated from those cited in this section in that those cited previously either were well-known to municipal bond dealers or had been recorded in earlier publications. The reasons for the defaults, which are of most significance, are preserved in this study.

of revenue bonds outstanding; and reports indicate that city officials used the income from the water system, which should have gone into a sinking fund, to build more extensions. Consequently, the remaining revenues were insufficient to service the debt. A small community in Michigan experienced difficulty in making payment on an issue of water revenue bonds. Evidently the debt service on the bonds was simply more than the enterprise earnings could support. A receiver was appointed in 1949, and the system is still being operated by same.

Other Types of Enterprises

Revenue bonds issued to finance a college dormitory in the State of Idaho defaulted in 1952. The 1951 state legislature failed to appropriate money for the operation of the college; consequently, it was forced to cease operations in the fall of 1951. The institution, formerly known as the Northern Idaho College of Education, reopened in the fall of 1955 as the Lewis-Clark Normal School. The state was reported to be considering making an appropriation for the payment of matured obligations.⁴⁸

At least two revenue bond financed parking facilities were earning revenues that were barely

⁴⁸Moody's Government and Municipals (1957), p. 418.

sufficient to meet interest payments as of the end of 1956. In fact, one of these, the Kansas City, Missouri, Auditorium Plaza Garage, was able to avoid default only because the city assumed a portion of the operating expenses. The Philadelphia Parking Authority, although not in default as of the end of 1956, was having difficulty meeting its financial commitments.

The earnings of at least six turnpikes were barely sufficient to meet bond interest. These include the Indiana Turnpike, the Kansas Turnpike, the Kentucky Turnpike, the Maine Turnpike, the Ohio Turnpike, and the West Virginia Turnpike. Modest turnpike earnings may be attributed to the recentness of the projects. A slight decline in traffic, however, could result in an alarming amount of default for this type of public enterprise.

Although not actually in default, the West Virginia Turnpike, as of April, 1957, is earning only a little over half of the bond interest requirements; and the payment of interest due June 1, 1958, appears doubtful. The state legislature has indicated that the state may appropriate tax money to aid in the payment of the bonds. The 1957 legislature adjourned without passing an appropriation bill to aid the turnpike; however, the Senate did pass and send to the House a resolution recommending a complete study of the methods that the state could pursue to prevent default.

The Natural Gas System of Lexington, North Carolina, which was financed by revenue bonds, averted severe financial difficulties by application of surplus monies emanating from other city-owned utilities. Two other natural gas systems, one in Alabama and one in Tennessee, are marginal, although default had not occurred as of the end of 1956.⁴⁹

Comparison of Default Record by
Type of Credit Instrument

During the depression of the 1930's there were some known instances of political units maintaining payments on revenue bonds although general obligation bonds lapsed into default. For example, Mobile, Alabama, and Asheville, North Carolina, successfully serviced revenue bond obligations while the general obligation bonds of these cities were in default.⁵⁰ The revenue bonds of these cities, however, were secured by a pledge of earnings plus a collateral pledge of tax funds.

Lakeland, Florida, defaulted on both general obligation bonds and special assessment bonds during the 1930's although electric and water revenue bonds continued to earn sufficient revenues for debt

⁴⁹Ira Haupt, op. cit.

⁵⁰Knappen, op. cit., p. 131.

service.⁵¹ In fact, debt service requirements on Lakeland's revenue bonds were earned more than five times in the same years that general obligation bonds were experiencing financial difficulty.

Another example of revenue bonds faring better than general obligation bonds during the financial difficulties of the 1930's is the street railway bonds of Detroit.⁵² Other governmental units experiencing greater financial difficulty during the 1930's with general obligation bonds than with revenue bonds include Eastland, Stamford, and Brownsville, Texas; Royal Oak, Michigan; and Port Townsend, Washington.⁵³ O'Fallon, Illinois, experienced financial difficulty with special assessment debts, whereas its water revenue bonds continued to maintain earnings sufficient to pay debt service requirements.

A different conclusion appears justified in the case of the defaults on revenue bonds that were issued to finance educational facilities. These revenue bonds would not likely have defaulted had the facility been financed with the proceeds of general obligation bonds. In fact, as is pointed out in an earlier section of this chapter, several of the financial difficulties

⁵¹Ibid., pp. 131-32.

⁵²Ibid., pp. 122-32.

⁵³Ibid., pp. 132-37.

pertaining to revenue bond financed facilities were eventually cured by the application of tax funds.

Available evidence suggests that revenue bonds may fare better during periods of low economic activity, whereas general obligation bonds fare better during prosperity. Although both may be subjected to financial stresses due to acts of God or other unpredictable happenings, revenue bonds tend to be subject to additional risk factors. For example, during periods of full employment the nonpayment of principal and/or interest on outstanding general obligation bonds or revenue bonds may arise due to the occurrence of a catastrophe similar to those experienced by some cities on rare occasions. A flood or a hurricane may destroy large portions of a community and, of course, its tax-paying ability. In addition the nonpayment of revenue bonds may also occur--as the experiences of some communities have shown--because of mishaps of a less severe nature such as drought or failure of a dam. Of course, the obligations of one-industry communities may be poor risks; but this would be true regardless of the type of credit instrument utilized by the community.

It cannot be accurately determined whether the defaults and near-defaults that have occurred since the 1940's in connection with revenue bond financed enterprises would have defaulted had they been financed with

"full faith and credit" obligations. The instances of default occurring in connection with enterprises such as the Decatur and Bellevue, Nebraska, toll bridges might have defaulted simply because of the sheer weight of the debt. This seems plausible especially if the obligations had been issued by a small community with low tax-paying ability. In other instances it would seem reasonable to assume that "full faith and credit" obligations would have successfully met the scheduled debt payments even if forced to curtail governmental services.

Summary

Defaults have occurred more frequently during depressions; however, the conspicuous feature of defaults is the reckless public borrowing that precedes the period of low economic activity. Prior to the 1930's, a substantial portion of the proceeds of public borrowing was devoted to projects of a commercial or semi-commercial nature.

Revenue bonds and special assessment bonds, although issued as a limited liability of a governmental unit, have often resulted in "full faith and credit" obligations when subjected to financial strains.

Revenue bond defaults during the depression were generally caused by a lessening of demand. Several

Texas cities issued revenue bonds that were ruled invalid by the courts, although it seems plausible that this would not have occurred had the projects not suffered physical damage which rendered them less able to meet debt service requirements.

Generally, rate covenants that ordinarily accompany revenue bond issues have not provided an effective means of averting default. If the enterprise is not economically sound, the rate covenant remedy seems to afford little protection from financial loss.

During the period of high level economic activity since 1940 there have occurred few instances of default although bondholders generally have suffered very little loss. In a large portion of the instances involving default or near-default, the issuing political unit has applied tax money, or has used other less conspicuous means of providing aid, in attempting to avert default.

CHAPTER V

COMPARATIVE ANALYSIS OF INTEREST RATES

The importance of interest rates as a consideration in government finance is demonstrated by the additional burden arising from a small increase in the effective interest rate. Assuming a repayment schedule of twenty equal yearly payments, an increase of one per cent in the interest rate will cost the borrowing government an amount equal to 10.5 per cent of the principal or face amount of a bond issue. Over the twenty-year period on an issue of \$1,000,000, this one per cent difference in the interest rate would amount to a total interest cost of \$105,000.

Increasing debt service costs may force the curtailment of outlays for urgently needed governmental activities. Further, the burden of these fixed costs may become so great as to threaten the very existence of a necessary political unit. This is especially true of state and local units of government, the area in which revenue bonds have been utilized to the greatest extent.

Price and Yield

Municipal bonds are usually issued in \$1,000 denominations. Unlike corporate bonds, municipals are more often quoted on a yield basis rather than a dollar price of so much per \$100 of par value.¹ The trading of municipals on a yield basis is essentially another way of quoting the price of a bond to an investor in terms of a percentage.

The yield varies inversely with the price. Given a certain coupon rate of interest, the higher the price of the bond the lower the yield. Knowledge of any three of the four factors--price or cost, nominal or coupon rate, maturity schedule, and yield--makes possible the solution for the remaining unknown fourth factor.

The purchaser of a municipal bond is buying the present value of the face of the bond in addition to the present value of a series of semi-annual interest payments. If municipal bonds were always purchased at par, that is at 100, the yield would be equal to the coupon rate regardless of maturity. In most cases, municipal bonds are purchased either at a discount, below 100, or at a premium, above 100. If a municipal bond is purchased at a discount, the maturity value of \$1,000 is

¹Municipal dealers often compare the yield on municipal securities in terms of "basis points." A "basis point" is one hundredth of one per cent of the yield.

greater than the purchase price. The difference is treated as additional interest accruing during the life of the bond, in which case the yield is greater than the coupon rate of interest. On the other hand, a municipal bond sold at a premium will yield something less than the coupon rate of interest.

The computation of the net interest rate² is complicated somewhat in the case of an entire issue of serial bond issues.³ The underwriter of a serial bond issue is usually permitted to name multiple or "split coupon" rates of interest. Bonds within a serial issue then may contain several different coupon rates which apply to particular bonds within the issue. Serial issues containing a multiple coupon arrangement complicate the computation of net interest rate on such issues but do not change the concept. The net interest rate, in any case, is a single percentage which reflects the true interest return on an investment if held to maturity considering coupon interest payments adjusted

²The term "yield" is equivalent to the term "net interest rate." The former term, however, is usually used in connection with the percentage return to the bond purchaser; whereas, the latter term refers to the cost of money to the borrower expressed as a percentage.

³A serial bond issue has maturities scheduled each year over a period of years in varying numbers; whereas, in the case of term bonds, the entire issue has a single maturity.

for premium or discount. The net interest rate is an average rate of return on the entire serial issue.

In awarding bids to municipal bond dealers, it is the usual custom to compare bids on the basis of the "net interest cost." The net interest cost is calculated simply by determining the amount of interest expense incurred by the governmental unit during the life of the bond issue. Of course, the determination of interest expense necessitates the addition of any discount to, or the subtraction of any premium from, the total amount of interest payable as computed from the application of coupon rates to the face amount of the bonds.

The net interest rate and the net interest cost expressed as a percentage are not equivalent. The ratio of the net interest cost to the total number of bond years expressed as a percentage, however, gives a rough approximation to the net interest rate.⁴ The net interest rate gives consideration to the time period in which interest dollars are received. On the other hand, the net interest cost treats a dollar of interest received in a near period the same as a dollar of interest received in a more distant period. Of course,

⁴The number of bond years is calculated by multiplying the number of bonds in the issue times the respective number of years these bonds remain outstanding and totaling the results. For example, suppose an

a dollar of interest received in a more distant period should be discounted more than a dollar received in a near period. For this reason municipal bond dealers quite commonly specify higher coupon rates on the earlier maturing bonds of a serial issue. A bidder may be "low bidder" by concentrating on the total interest cost on an issue and arranging coupon rates such as to receive interest dollars during the early life of the bond issue. Thus a bidder may be the low bidder as measured by net interest cost even though a competitor may submit a losing bid with a lower net interest rate.

Theoretically, coupon rates could be arranged so as to receive the entire interest payment in the first few maturity periods. In such a case only principal payments remain outstanding in the following time periods. Bonds maturing during the latter period of the life of the bonds would then carry a zero rate of

issue contains 100 bonds to mature serially over a period of six years as follows:

Bond Number	Years to Maturity	Number of Bonds	Bond Years
1-10	1	10	10
11-20	2	10	20
21-30	3	10	30
31-50	4	20	80
51-75	5	25	125
76-100	6	25	150
		<u>100</u>	<u>415</u>

The issue in this illustration has a total number of bond years of 415 and average life (bond years divided by number of bonds) of 4.15 years.

interest. As a matter of practice the bidder cannot reduce the coupon rate on the longer maturities to a zero or near-zero level without endangering the marketability of the issue.

Factors Affecting Municipal Interest Rates

The most important and basic factor determining the yield or net interest rate on municipal bonds is the supply and demand of loanable funds. These factors are determined by the money market and usually are not affected by the actions of an individual state or local unit of government. Taken together, however, state and local governments continue to play an increasing role in the demand for loanable funds. These political units are confronted with the problem of financing more capital improvement projects such as hospitals, highways, and school buildings to meet the demands of an increasing population. The urgency of many of these public improvement projects tends to make this portion of the demand for loanable funds somewhat inelastic. This inelasticity of demand has been quite vividly demonstrated during the recent 1956 period of "tight money."⁵ During this

⁵"Tight money" is a term commonly used to refer to a market condition in which the demand for loanable funds exceeds the supply at interest rates which are considered typical or normal. An "easy money" market is an antonymous situation.

period, governments generally continued their financing plans much as they would have done at lower interest rates. There were some municipal bond offerings withdrawn from the market, but in most cases these were postponed for a period of nine months or less.⁶ This inelasticity of demand for funds is also demonstrated by governments' borrowing being seemingly unaffected by the various phases of the business cycle.

Tax Exemption

The most important distinguishing feature of state and local government bond issues is that the interest income is not subjected to the federal income tax. Municipal bond interest is also quite frequently exempt from state income taxation. The exemption of municipal bond interest from federal taxation is of considerable importance, the advantage varying directly with the applicable federal income tax rate schedule. For example, a municipal bond yielding 3 per cent is equivalent to a taxable bond yielding 4 per cent for the individual in a 25 per cent marginal tax rate bracket. For an individual in a 90 per cent marginal tax rate bracket, a 3 per cent tax-exempt municipal is equivalent to a taxable bond yielding 30 per cent.

⁶ See statements in Investment Bankers Association Statistical Bulletin, No. 3 (April, 1957), pp. 2-4.

The effect of tax exemption upon the magnitude of municipal interest rates is not easily determined. Some studies have indicated that the net interest rates on tax-exempt securities may average approximately one per cent less than the net interest rates on comparable taxable securities.⁷ Considerable variation appears to exist in this difference from one time period to another. Changes in the level of federal income tax structures account for some of this variation.

All types of municipal securities, including revenue bonds, are treated similarly with respect to tax exemption. The net interest rates applicable to the various types of municipals, therefore, should not be affected differently because of tax exemption. There remains the rather remote possibility that the uncertainty associated with the more precarious tax-exempt status of revenue bonds, as discussed in Chapter II, may result in higher interest rates on this type of security.

⁷Lucile Derrick, "Exemption of Security Interest from Income Taxes in the United States," The Journal of Business of the University of Chicago, XIX (October, 1946), p. 40; Lyle C. Fitch, Taxing Municipal Bond Income (Berkeley, California: University of California Press, 1950), pp. 6-28; and John D. Long and Arthur M. Weimer, Financing of College and University Student Permanent Housing (Washington, D. C.: American Council on Education, 1957), pp. 197-203.

In addition to the supply and demand of loanable funds and the "tax-exempt" status, the net interest rate applicable to a revenue bond issue depends upon many other factors. If it were not for the "tax-exempt" status of revenue bonds the interest rate applicable to this type of governmental security would more nearly resemble the interest rate on corporate bonds. This resemblance is demonstrated by the similarity of the criteria used in appraising the credit risk involved in various revenue bond securities and corporate bonds. For example, among the most essential information in appraising a revenue bond financed enterprise are such items as coverage, revenue lien, maintenance of adequate insurance, disposition of surplus revenues, management of the enterprise, and the elasticity of demand for the goods or services emanating from the enterprise.⁸ These foregoing criteria would also be given consideration in appraising the credit risk involved in connection with corporate securities.

Coverage

The most important consideration in evaluating a revenue bond is the ability of the financed enterprise to produce net revenues, which is commonly referred to

⁸ Guide for Municipal Bond Credit Files, undated publication of the American Bankers Association, pp. 12-20.

as "coverage." "Coverage" is the ratio of net earnings available for debt service to the average annual debt service requirement. For example, a revenue bond issue requiring an annual average principal and interest payment of \$100,000 secured by a pledge of net earnings which have been or are expected to be \$175,000 annually is said to have a coverage of 1.75 times. Net earnings may refer to either estimated earnings in the case of an enterprise not yet in operation or historical earnings in the case of an established enterprise. Of course, historical earnings are more significant in the evaluation of a revenue bond issue. Coverage may also be measured in relation to the maximum principal and interest requirements rather than to the average annual principal and interest requirements.

The amount of coverage considered adequate by investment dealers varies with such things as type of enterprise and reserve funds available for debt service. As a general rule, however, a mandatory coverage of less than 1.25 times is considered unacceptable.⁹

Revenue Lien

The "revenue lien" refers to the restrictions on the obligor in the issuance of additional bonds on a

⁹William C. Whittemore, "Considerations in the Selection of Revenue Bonds," The Daily Bond Buyer, November 28, 1955, p. 98.

parity with the original issue. Typically, the bond indenture requires a minimum coverage for a certain period of time prior to any issuance of additional bonds on a parity with the original issue. For example, the bond indenture may state that the issuing agency shall not issue additional revenue bonds on a parity with the original issue unless a minimum coverage of 1.5 times occurred in the two preceding years. Revenue bonds subordinated to the original issue may be issued without consent of bondholders and regardless of the extent of coverage. Insufficient coverage may result either in the inability of a revenue bond issue to attract bidders or in bids reflecting a higher net interest rate.

Other Non-Quantitative Factors

Other things being equal, the credit risk of a revenue bond financed project would be greater should the obligor not agree to maintain adequate insurance as is usually carried by similar private companies. If the project were of such a nature that it could not be insured, such risk would also be reflected in a higher interest cost.

Advertising the sale of the bond issue and providing facts pertinent to a proper evaluation of the issue are other factors that may affect the price of the bond issue. Distributing a bond prospectus or other

descriptive circulars may interest a few more underwriters and thus tend to raise the price of the bonds. Closely related to advertising is the effect of a favorable rating on bonds that are to be offered for sale. Financial reporting services are necessarily conservative and will underrate a bond simply because of insufficient information. The provision of up-to-date information to such rating agencies as Dun and Bradstreet, Standard and Poor's, and Moody's may earn a political unit a higher quality rating and a higher price for its obligations.

The date of bond sale may make a significant difference in the effective interest rate that a government pays on its borrowings. For example, if several issues are scheduled to be sold on the same day in a market area, bond underwriters may be forced to omit bids on some of these issues due to their inability to properly investigate and evaluate all issues that are being marketed on that date. Higher interest rates may result; therefore, either because of fewer bids or because the bidder, not having sufficient time to investigate the issue, bids less (higher yield) in order to hedge against uncertainties.

Other factors that may affect the effective interest rate include the quality of the management of

the financed enterprise, reserve funds available, credit promotion, character of the area serviced by the revenue bond financed enterprise, and even the reputation of the legal firm employed to set up and pass on the legality of the bond issue.

Effect of Size and Length of Time to Maturity

A portion of the interest rate differential occurring among similar types of municipal bonds may be attributed to the difference in the dollar size and the length of time to maturity of the issue.¹⁰ A determination of the effect of these measurable variables facilitates a more precise comparison of the different types of bond issues with respect to the net interest rate to the issuing government.

¹⁰Other studies have analyzed the effect of size and/or length of time to maturity upon the net interest rate although none, as far as can be determined, have used the method employed in this study. The effect of maturity length is analyzed in the studies by Long and Weimer and by Derrick referenced in footnote 7. An analysis of the effect of size on the net interest rate of municipals is contained in "The Size Characteristics of Municipal Bond Issues," Investment Bankers Association Statistical Bulletin (January, 1957), pp. 1-4. The study by the Investment Bankers Association analyzed the effect of size upon the net interest rate on unlimited general obligation bonds issued in September, 1956. This study is based upon a total of forty-five issues, eighteen of which were rated "Aa" (Moody's) and twenty-seven were rated "A." Issues selected for comparison were sold in September, 1956, and with average maturities of from eight to sixteen years. This study concluded that the sample analyzed revealed no significant relationship between the net interest rate and the size of issue.

Method

In an attempt to determine the effect of size and length of time to maturity, municipal bond sales occurring throughout the United States during the third quarter of 1955 were selected because this time period represented a recent period of no unusual activity in the municipal bond market.¹¹ Data pertaining to both the net interest rate and average maturity is available on only a portion of the total United States municipal bond sales.¹² This necessitated the selection of only those issues on which the average maturity years and the net interest rate were given simultaneously.

After eliminating third quarter refunding, school district, and other issues for which there was insufficient data, there remained eighty-two general obligation bond issues, twenty-four revenue bond issues, and eighteen special assessment bond issues. The twenty-four revenue bond issues and the eighty-two general obligation bond issues are estimated to constitute approximately 10 per cent of the total number of

¹¹Data were taken from The Bond Buyer, Monthly Sales Supplement of August, September, and October, 1955. Data are given in Appendix IV.

¹²Average maturity is used in this study as a measure of the length of time a bond issue is scheduled to remain outstanding. Average maturity is the ratio of total number of bond years to the number of bonds issued.

non-school obligations issued throughout the United States during the third quarter of 1955.¹³

Seventy of the eighty-two general obligation bond issues are obligations of a city. The remaining issues were divided between counties and special districts with eight being obligations of the former and four being obligations of special districts. Half of the eighty-two general obligation issues were for the purpose of financing water and/or sewer projects, twenty-five for financing street improvements, and five for financing hospitals. The proceeds of the remaining issues were for financing miscellaneous projects such as park equipment, swimming pools, and fire stations. It was not possible to determine whether the general obligation bond issues were secured by a limited or unlimited tax rate.¹⁴

Of the twenty-four third quarter revenue bond issues, all but four are obligations of cities. The

¹³The available data is not sufficient to estimate the proportion of the total special assessment issues comprised by the eighteen special assessment issues. Indeed, the limitations of the data make the revenue bond and general obligation bond estimates very approximate.

¹⁴A limited tax issue refers to those bond issues that represent "full faith and credit" of the issuing unit but pledging only revenues from a limited tax rate. An unlimited tax issue is secured by the taxing power of the issuing unit regardless of the rate that may have to be levied to raise the revenue required for the retirement of the outstanding bonds.

remaining four were obligations of ad hoc districts--two water districts, one bridge authority, and one turnpike authority. The proceeds of eighteen of the twenty-four revenue bond issues were for the purpose of financing utility systems, thirteen of which were water and/or sewer systems. Of the remaining six, half were issued to finance parking systems, one to finance a toll bridge, one to finance a turnpike, and one unknown. These revenue bond issues were obligations of governmental units in sixteen different states. Four states--Florida, Iowa, Michigan, and Virginia--each had three issues.

All of the special assessment bonds were obligations of municipalities. Nine were issued to finance street improvements, eight to finance sewer systems, and one to finance a community building. Of the eighteen special assessment bond issues, fourteen were issued in Ohio and the other four in Michigan.

Interest rates on municipal bond sales in the United States consummated during the fourth quarter of 1956 were also analyzed.¹⁵ This time period was extremely atypical in that municipal interest rates reached a post-war high resulting in many issues being withdrawn from the market. For analyzing the effect of

¹⁵Data for the fourth quarter of 1956 was taken from the files of the Investment Bankers Association, Washington, D. C.

various factors on interest rates during a "tight" money market, the fourth quarter of 1956 was a most appropriate time. Pertinent data was available for forty-four revenue bond issues and sixty general obligation bond issues; of the latter group twenty-nine were limited tax issues, and thirty-one were unlimited tax issues. There were only two sales of special assessment issues during this period--too few to yield any useful results.

Of the forty-four revenue bonds issued during the fourth quarter eight were obligations of governmental units located in Texas. Florida, Illinois, Indiana, Iowa, and Ohio issues numbered from three to five each. Governmental units in ten other states were the issuers of at least one issue. Thirty-seven of the forty-four revenue bond issues were obligations of cities and five were obligations of ad hoc districts. The issuer of the remaining two issues was not determinable. All of the bonds were issued to finance utility systems--thirty-four for water and/or sewer and the other ten for electric systems.

About half of the twenty-nine limited general obligation bonds were issued by school districts, ten by municipalities, and four by special districts. The purpose of the remaining issues could not be determined. Approximately half of the twenty-nine limited general

obligation bonds were issued to finance primary and secondary educational buildings. The proceeds of seven issues were for the purpose of financing roads, five for the purpose of financing sewer systems, and one for the purpose of financing a water system. Fifteen issues were obligations of school districts; twelve were issued by municipalities; and two are county issues. Geographically, the issuers of the limited general obligation bonds were concentrated in the three states of Michigan, Ohio, and Pennsylvania. These three states accounted for twenty-seven of the twenty-nine issues with the governmental units of Texas and Louisiana each issuing one.

Of the thirty-one unlimited general obligation bond issues, seven were the obligations of governmental units located in California; four were the obligations of governmental units located in Minnesota; three were the obligations of governmental units located in Ohio; and the remaining seventeen were issued by governmental units geographically dispersed throughout the United States. Of the thirty-one, fifteen were issued to finance education, ten to finance water and/or sewer systems, two to finance roads, and four to finance other types of improvements.

The proceeds of the unlimited general obligation bonds were used to finance education, sewer systems,

water systems, and roads. Fifteen of the issues were obligations of school districts, ten were obligations of cities, four were obligations of counties, and two were obligations of special districts.

Interest rate data for both the third quarter of 1955 and the fourth quarter of 1956 which are analyzed in this chapter are not entirely representative with respect to geographical location, purpose of issue, or type of issuer. The shortcomings of the data are most noticeable with respect to the lack of state issued obligations; the absence of revenue bonds issued to finance college and university dormitories; and the geographic concentration of issues in the Midwest and, to a lesser extent, in the South. These limitations of the data should not significantly affect the comparisons of net interest rates for the various types of public credit instruments. It is recognized, however, that any atypical aspect of an issue may also affect its net interest rate.

The limitations of these data arise primarily because of the nonrandomness of the issues selected. As a practical matter, data pertaining to net interest rates on past, present, and future issues can never be selected at random. This limitation is inherent with data which is available over a period of time.

Generalizations to other than the data analyzed in this chapter should, therefore, be made with caution.¹⁶

Multiple correlation analysis is applied to these data to facilitate the comparison of the magnitude of net interest rates applicable to the various types of municipal obligations. A determination of the effect of the quantitative factors--size of issue and average length of time to maturity--on the net interest rates of the various types of credit instruments permits more precise comparisons. Multiple correlation analysis allows a comparison of the average net interest rates effective on the various types of credit instruments with size and average maturity length held constant.

Multiple correlation analysis is employed to measure the relationship between the net interest rate (dependent variable) and the dollar size of bond issues (independent variable) and between the net interest rate and the average length of time to maturity of bond issues (independent variable). The functional relationship existing between either of the independent variables and the net interest rate is not readily

¹⁶The measures of reliability presented in Appendix IV are based on the assumption of randomly selected variables, which is unrealistic in the case of these data. For this reason, caution should be exercised in the strict application of probabilities that are normally associated with the measures of reliability presented in the Appendix.

discernible. The true relationship is masked because of the correlation existing between the two independent variables.

Experimentation with the data indicates that a linear relationship exists between the net interest rate and average length of time to maturity. In particular, a curvilinear relationship as depicted by the square root of average length of time to maturity fails to account for as much variation in interest rates as a linear relationship. The relationship between the net interest rate and the dollar size of issue appears to be negative but at a declining rate. In order to facilitate the measurement of this curvilinear relationship, therefore, the dollar size of issue is converted to common logarithms.

As previously discussed, there are many non-quantitative factors in addition to size of issue and length of time to maturity which affect municipal interest rates. The averaging process can be expected to cancel, at least partially, these non-quantitative factors.¹⁷ For example, individual issues within each category may be issued by governmental units with either an impressive or unimpressive past payment record. It

¹⁷In a subsequent section of this chapter revenue bond and general obligation bond interest rates are analyzed with some non-quantitative factors controlled.

does not seem reasonable, however, that the degree of favorableness of the past payment record of a political unit would be closely associated with the type of credit instrument utilized. Thus as long as a particular attribute which may affect the magnitude of the net interest rate of an issue is not uniquely associated with a particular type of credit instrument, the averaging process may be expected to yield more reliable comparisons.

Prior to the application of multiple correlation analysis to these data the net interest rate applicable to each issue is expressed as a ratio of Moody's weekly Aaa municipal bond index¹⁸ of the week immediately preceding the date of the sale. For example, an issue sold on September 19, 1955, at a net interest rate of 3.438.

¹⁸The Aaa rating by Moody's Investors Service refers to the degree of financial risk that is associated with a municipal issue. This rating is assigned to bonds which are considered to be of the highest quality. The general obligation Aaa index is an average of five of these tax-exempt securities. The components of the average are reviewed and changed periodically if an oversupply or other factors are evident which would not truly reflect the Aaa rating. The yields are adjusted to a twenty-year maturity basis. The components used as of the fourth quarter of 1956 are:

Connecticut -	20 year maturity and 2% coupon
Maryland -	15 year maturity and 2% coupon
Illinois -	16 year maturity and 1 3/4% coupon
New York State -	25 year maturity and 2 1/2% coupon
Cincinnati School District, Ohio -	24 year maturity and 2% coupon

Moody's Aaa index for the week ending September 17, 1955, was 2.32.¹⁹ The resulting ratio of the net interest rate to Moody's Aaa index is 1.48 which is the value utilized to represent this particular issue. All other issues are treated in a similar manner.

Moody's Aaa municipal bond index was selected as being the best available index of a "pure" or "riskless" interest rate that prevails in the fully tax-exempt market.²⁰ Adjusting the net interest rate applicable to any particular issue by dividing it by Moody's Aaa index for the corresponding date should provide a measurement free of certain money market factors. These market forces which the index attempts to remove apply generally to the whole tax-exempt market rather than a particular issue. These money market factors include such things as the supply and demand of tax-exempt securities, federal income tax structures, anticipated changes in federal reserve monetary policies, expectations regarding changes in federal income tax structure,

¹⁹Prior week indexes of Moody's Aaa municipal issues were used rather than the next following weekly index because of the practice among underwriters of using existing yield indexes as a basis in arriving at bids.

²⁰Yields on treasury issues may more nearly represent a "pure" or "riskless" interest rate although an index of treasury issue yields is less useful in this study because the interest derived from these issues is subject to the federal income tax.

and the many disturbances caused by political crises. In other words, the adjustment should remove, admittedly somewhat imperfectly, certain market variations which apply to all municipal securities irrespective of the merits of a particular issue. The resulting ratio of effective interest rate to Moody's Aaa bond index should provide a more meaningful comparison from one time period to another.

Findings Using Third Quarter 1955 Data

TABLE 11
AVERAGES OF VARIABLES
Third Quarter 1955

Type of Bond Issue	N	\bar{X}_1	\bar{X}_2	\bar{X}_3
General Obligation	82	1.12	150	96
Revenue	24	1.46	455	197
Special Assessment	18	1.28	56	75

N = Number of bond sales in each group.

\bar{X}_1 = Arithmetic mean of the ratio of net interest rate to Moody's Aaa municipal bond index.

\bar{X}_2 = Arithmetic mean of the size of issue, in thousands of dollars.

\bar{X}_3 = Arithmetic mean of the average number of months to maturity.

Table 11 shows the difference among the averages (arithmetic means) of the three variables for the three types of bond issues. This table shows that revenue bonds are sold to yield a higher interest rate than the other two categories. Revenue bond issues are also for larger amounts and mature over a longer period of time.

A more revealing comparison can be made by adjusting the net interest rate (X_1) for dollar size of issue (X_2) and average number of months to maturity (X_3).²¹ This is accomplished by adjusting the three types of issues to twelve years as a typical length of time to maturity and \$250,000 as a typical size of a bond issue. The resulting adjusted net interest rates and the adjusting coefficients are shown in Table 12.

The net regression coefficients in Table 12 denote the relationship between the dependent variable (net interest rate) and the independent variables (size and maturity period). These regression coefficients are used to adjust the net interest rate figures to the same size and average maturity.

In the case of revenue bonds, the effect of the dollar size of issue is more than counterbalanced by the effect of length of time to maturity, thereby reducing

²¹In this section and the section following, the ratio of the net interest rate to Moody's Aaa municipal bond index is referred to simply as the "net interest rate" or symbolically, X_1 .

the adjusted net interest rate from 1.46 as shown in Table 11 to 1.38 as shown in Table 12. The effective interest rate of the other two groups is increased after

TABLE 12

ADJUSTED NET INTEREST RATES
AND ADJUSTING COEFFICIENTS^a
Third Quarter 1955

Type of Bond Issue	N	Adjusted \bar{X}_1	$b_{12.3}$	$b_{13.2}$
General Obligation	82	1.23	-.17	.003
Revenue	24	1.38	-.32	.003
Special Assessment	18	1.51	-.07	.004

N = Number of bond sales in each group.

Adjusted \bar{X}_1 = Average net interest rate adjusted to dollar size issue of \$250,000 and to average maturity of 12 years.

$b_{12.3}$ = Net regression coefficient which indicates the effect of size of issue (X_2) on net interest rate (X_1) with average length of time to maturity (X_3) held constant.

$b_{13.2}$ = Net regression coefficient which indicates the effect of average length of time (in months) to maturity (X_3) on net interest rate (X_1) with size of issue (X_2) held constant.

^aFor example, in the case of general obligation bonds an increase in size of issue from \$10,000 to \$100,000, which would be an increase of one logarithm, is assumed to decrease the effective interest rate by .17 per cent; and an increase of one month in average time to maturity is assumed to increase effective interest rate by .003 basis points.

adjustment because the average length of time to maturity, which varies directly with the net interest rate, outweighs the average dollar size of issue, which varies inversely with the net interest rate.

Adjusting the average net interest rate for maturity length and size of issue as indicated in Table 12 reveals that general obligation bonds were sold at the highest price (lowest interest rate) followed by revenue bonds and special assessment bonds in that order.²² The difference in the net interest rate of general obligation bonds and revenue bonds, then, is not as great as originally shown in Table 11. Before adjusting the different types of bond issues for length of maturity and size, special assessment bonds appear to yield a lower net interest rate than revenue bonds. Whenever length of maturity and size of issue are taken into consideration, however, special assessment bonds yield a higher net interest rate than do either revenue bonds or general obligation bonds.

Table 13 portrays the relative net interest rate assuming that size and length of time to maturity affect all types of issues in the same manner. This is

²² Adjustments in Table 12 assume that the regression coefficients calculated for each type of public credit instrument correctly portrays the true underlying relationship that exists between the independent variables and the dependent variable.

TABLE 13

AVERAGE INTEREST COST ADJUSTED TO
EQUAL SIZE (\$250,000) AND EQUAL
LENGTH OF TIME TO MATURITY
(12 YEARS)
Third Quarter 1955

Type of Bond Issue	Adjusted \bar{X}_1
General Obligation	1.23
Revenue	1.35
Special Assessment	1.38

Adjusted \bar{X}_1 = Average net interest rate adjusted to dollar size issue of \$250,000 and to average maturity of 12 years, using constant coefficients ($b_{12.3} = -.17$ and $b_{13.2} = .003$) for all three groups in accordance with values applicable to general obligation bonds.

accomplished by adjusting the net interest rate of each type of bond issues by an equal $b_{12.3}$ and $b_{13.2}$ factor of $-.17$ and $.003$, respectively, the values computed for general obligation bonds.²³

²³These estimates of the regression coefficients in Table 13 and in other instances throughout this chapter are used as an indication of the typical effect of the independent variables upon the dependent variable. There is some evidence that these are the best estimates of the true underlying relationship that exists between these variables. The magnitude of the net regression coefficient indicating the effect of average length of time to maturity on net interest rate ($b_{13.2}$) is fairly consistent for the three categories. There exists no such consistence among the three categories with respect to the effect of size. The magnitude of the net regression coefficient relating size of issue to the net interest rate ($b_{12.3}$) pertaining to general obligation

The average net interest rate on special assessment bonds, according to Table 13, is now higher than the average net interest rate on the other two categories. If the adjusting factors which are used in these calculations are reliable, the apparent difference in the net interest rate on general obligation bonds and revenue bonds is not nearly as great as first appearances indicate.

A comparison of the dispersion in the net interest rates that exists among the three categories is shown in Table 14. The special assessment bonds vary more on the average than the general obligation bonds, even though geographical area is somewhat less restricted. The larger amount of dispersion present in revenue bond interest rates reflects the greater amount of variation that exists in the risk associated with revenue bond obligations as well as variation due to the greater range in size and length of time to maturity.

Table 15 shows the proportion of the total variation in net interest rates that is explained by size and length of time to maturity. Only in the case of special assessment bonds is the amount of variation

bonds is intermediate in size between the $b_{12.3}$ values for revenue bonds and special assessment bonds. General obligation bond regression coefficients are also based upon a greater number of issues. The net regression coefficients for general obligation bonds tend to be more reliable. See measures of reliability in Appendix IV.

TABLE 14

VARIATION IN NET INTEREST RATES
Third Quarter 1955

Type of Bond Issue	N	Variance ^a
General Obligation	82	.051
Revenue	24	.092
Special Assessment	18	.068

N = Number of issues in each group.

^aVariance is a statistical term that is used to measure the scatter of the data about the arithmetic mean. The larger the variance the smaller the uniformity in net interest rates within a given category and vice versa. Variance is the square of the standard deviation.

TABLE 15

COEFFICIENTS OF MULTIPLE DETERMINATION
Third Quarter 1955

Type of Bond Issue	N	$R^2_{1.23}$
General Obligation	82	.43
Revenue	24	.46
Special Assessment	18	.21

N = Number of issues in each group.

$R^2_{1.23}$ = Coefficient of multiple determination which denotes the proportion of the total variation in the net interest rates that is accounted for by size and length of time to maturity.

accounted for by size and maturity relatively insignificant. The other two groups show a high degree of consistency. In each of these groups, size and length of time to maturity account for almost half of the variation present in net interest rates in the case of issues analyzed in this study.

Table 16 tends to establish that the relationship between interest rate and size of issue is not as great as the relationship between interest rate and

TABLE 16
RELATIVE IMPORTANCE OF SIZE OF ISSUE AND
AVERAGE LENGTH OF TIME TO MATURITY
ON THE NET INTEREST RATE
Third Quarter 1955

Type of Bond Issue	$d_{12.3}^2$	$d_{13.2}^2$	B_2	B_3	$r_{12.3}$	$r_{13.2}$
General Obligation	.07	.36	-.43	.69	-.46	.65
Revenue	.11	.35	-.70	.86	-.60	.67
Special Assessment	.03	.18	-.12	.41	-.13	.41

$d_{12.3}^2$ and $d_{13.2}^2$ = Coefficients of separate determination, which are the proportion of the total variation that is explained by the dependent variables, X_2 and X_3 , respectively.

B_2 and B_3 = Beta coefficients, which are the regression coefficients transposed to standard, comparable units.

$r_{12.3}$ and $r_{13.2}$ = Partial or net correlation coefficients, which are the relative counterparts of the net regression coefficients.

the length of time to maturity. It is significant that the maturity length is more closely related to the net interest rate than is the size of issue in every instance.

Findings Using Fourth Quarter 1956 Data

The relative high interest rates prevailing during the fourth quarter of 1956 apparently lessened the effect of size and length of time to maturity on net interest rates as is shown in Table 17. The proportion of the total variation in the net interest rates that is explained by size and maturity was smaller in all three groups of the fourth quarter of 1956 than for any of the third quarter of 1955 groups with the exception of special assessment bonds.

A possible explanation of why the fourth quarter of 1956 data produced different magnitudes of relationships than were computed for the third quarter of 1955 lies in the "tight" money market. Whenever interest rates are at a high level, the supplier of loanable funds does not incur the same risks associated with the uncertainty of the money market as are incurred during a period characterized by a low level of interest rates. If interest rates are at a high level when bonds are purchased the investor feels more confident that such an investment will yield as much, if not more, than could

be obtained by waiting to make the investment at some future time. Thus the purchaser of municipal bonds during a period of low bond prices (high interest rates)

TABLE 17
VARIANCES, REGRESSION COEFFICIENTS, AND
COEFFICIENTS OF MULTIPLE DETERMINATION
Fourth Quarter 1956

Type of Bond Issue	N	Variance	$b_{12.3}$	$b_{13.2}$	$R_{1.23}^2$
Revenue	44	.031	-.11	.001	.23
Limited General Obligation	29	.037	-.08	.001	.07
Unlimited General Obligation	31	.021	-.10	.001	.14

N = Number of issues in each group.

Variance is a statistical term that is used to measure the scatter of the data about the arithmetic mean. The larger the variance the smaller the uniformity and vice versa. Variance is the square of the standard deviation.

$b_{12.3}$ = Net regression coefficient which indicates that the effect of size of issue (X_2) on net interest rate (X_1) with average length of time to maturity (X_3) held constant.

$b_{13.2}$ = Net regression coefficient which indicates the effect of average length of time to maturity (X_3) on net interest rate (X_1) with size of issue (X_2) held constant.

$R_{1.23}^2$ = Coefficient of multiple determination which denotes the proportion of the total variation in the net interest rates that is accounted for by size and length of time to maturity.

does not include in his bid price an amount to cover the risks associated with a possible rise in future interest rates because interest rates are already at a high level. Bidders would be most conscious of the length of time to maturity during a period of low interest rates in order to have some hedge against the possibility of an increase in interest rates on future issues.

Another explanation for the reduced strength of the relationships in the fourth quarter of 1956 as compared with the third quarter of 1955 may lie in the withdrawal from the market of issues that were unacceptable to the issuer. The issuer may be primarily concerned with the absolute magnitude of the net interest rate as the measure of an acceptable bid. If the bid seems relatively high or "costly," the issuer may withdraw the issue without giving consideration to such factors as the length of time to maturity. This explanation seems plausible in view of the larger average size of issue for the fourth quarter of 1956 as shown in Table 17 compared with the third quarter of 1955 as shown in Table 11. The size of revenue bond issues, for example, averaged better than \$750,000 in the fourth quarter of 1956 compared with approximately \$450,000 in the third quarter of 1955. This larger average size of issue in the fourth quarter of 1956 is not accompanied

by a longer length of maturity that is normally associated with larger size of issues.

The greater uniformity in net interest rates of the fourth quarter of 1956 as reflected in the size of the variances shown in Table 17 compared with variances of the third quarter of 1955 shown in Table 14 also indicates a selection of issues, perhaps by a combination of bidders choosing the better quality bonds and issuers rejecting the higher bids.

TABLE 18
AVERAGES OF VARIABLES
Fourth Quarter 1956

Type of Bond Issue	N	\bar{X}_1	\bar{X}_2	\bar{X}_3
Revenue	44	1.44	759	187
Limited General Obligation	29	1.26	202	96
Unlimited General Obligation	31	1.35	193	137

N = Number of issues in each group.

\bar{X}_1 = Arithmetic mean of the ratio of net interest rate to Moody's Aaa municipal bond index.

\bar{X}_2 = Arithmetic mean of the size of issue, in thousands of dollars.

\bar{X}_3 = Arithmetic mean of the average number of months to maturity.

Table 18 shows the averages of the net interest rate, the size of issues in thousands of dollars, and the average maturity periods for the fourth quarter 1956 data. Revenue bonds again exhibit a higher average net interest rate as well as a much larger average dollar size and length of maturity. Contrary to expectations, the average net interest rate on limited general obligation bonds is lower than the average net interest rate applicable to unlimited general obligation bonds.

Table 19 shows the difference in the average net interest rate for the fourth quarter 1956 data after all three groups have been adjusted to a size of \$250,000 and a length of maturity of twelve years, and assuming the same relationships between the net interest rates and the independent variables of size and maturity as

TABLE 19
UNADJUSTED AND ADJUSTED NET INTEREST RATES
Fourth Quarter 1956

Type of Bond Issue	Unadjusted Average Interest Rate	Adjusted Average Interest Rate
Revenue	1.44	1.39
Limited General Obligation	1.26	1.37
Unlimited General Obligation	1.35	1.35

computed for third quarter 1955 general obligation bonds. After adjusting with these coefficients, revenue bonds demanded the highest interest rate and unlimited general obligation bonds were marketed at the lowest interest rate. Limited general obligation bonds, which appeared as the most favorable type of credit instrument before adjustment, are intermediate in magnitude after adjusting for size and length of maturity.

A comparison of the net interest rate applicable to revenue bonds in the third quarter of 1955 and the fourth quarter of 1956 is shown in Table 20. These results reveal that a higher net interest rate prevailed in the "tight" money period after adjustment for size and length of maturity.

TABLE 20

COMPARISON OF NET INTEREST RATES ON REVENUE BONDS
BEFORE AND AFTER ADJUSTMENT FOR DOLLAR SIZE
AND AVERAGE LENGTH OF TIME TO MATURITY
Third Quarter 1955 and
Fourth Quarter 1956

Time Period	Unadjusted Average Net Interest Rate	Adjusted Average Net Interest Rate ^a
Third Quarter 1955	1.46	1.35
Fourth Quarter 1956	1.44	1.39

^aAdjusted average net interest rate computed by applying b12.3 and b13.2 regression coefficients of $-.17$ and $.003$, respectively.

Summarizing the findings pertaining to the effect of size and average length of maturity, it is concluded that the evidence is overwhelming that municipal bond interest rates are affected positively by a lengthening of time to maturity and negatively by the size of issue. It is significant that the multiple correlation analysis revealed similar relationships to exist between size of issue and the net interest rate and between average length of time to maturity and the net interest rate for every group of bond issues in both the third quarter 1955 and fourth quarter 1956. Although it is not possible to state precisely the magnitude of the relationships, the positive relationship found to exist between interest rates and length of time to maturity and the negative relationship found to exist between interest rates and size of issue has been substantiated. Charts 9 and 10 portray these relationships although perhaps not the precise magnitudes that may exist in all time periods.

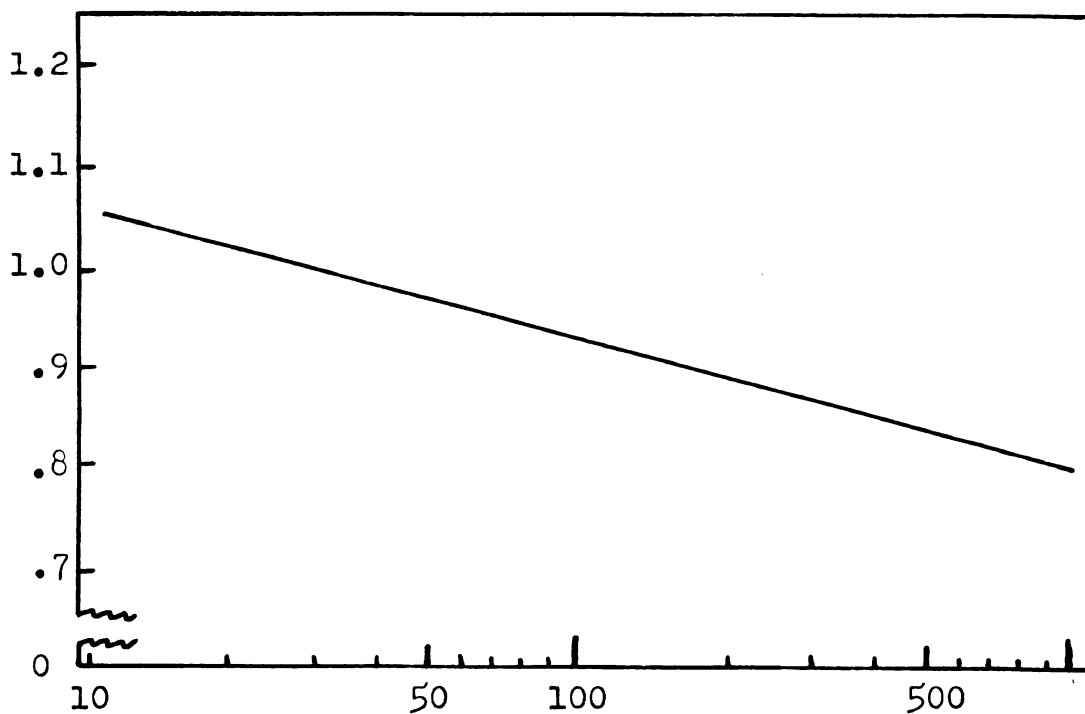
Comparison of Interest Rates with Some
External Factors Controlled

Another means of comparing the net interest rate on general obligation bonds and revenue bonds is by eliminating the effects of the time of sale and the issuing governmental unit by selecting instances of bond sales consummated on the same day by the same governmental

CHART 9

RELATIONSHIP OF NET INTEREST RATE
TO THE SIZE OF ISSUE
Third Quarter 1955

X_1 = Net
Interest
Rate^a



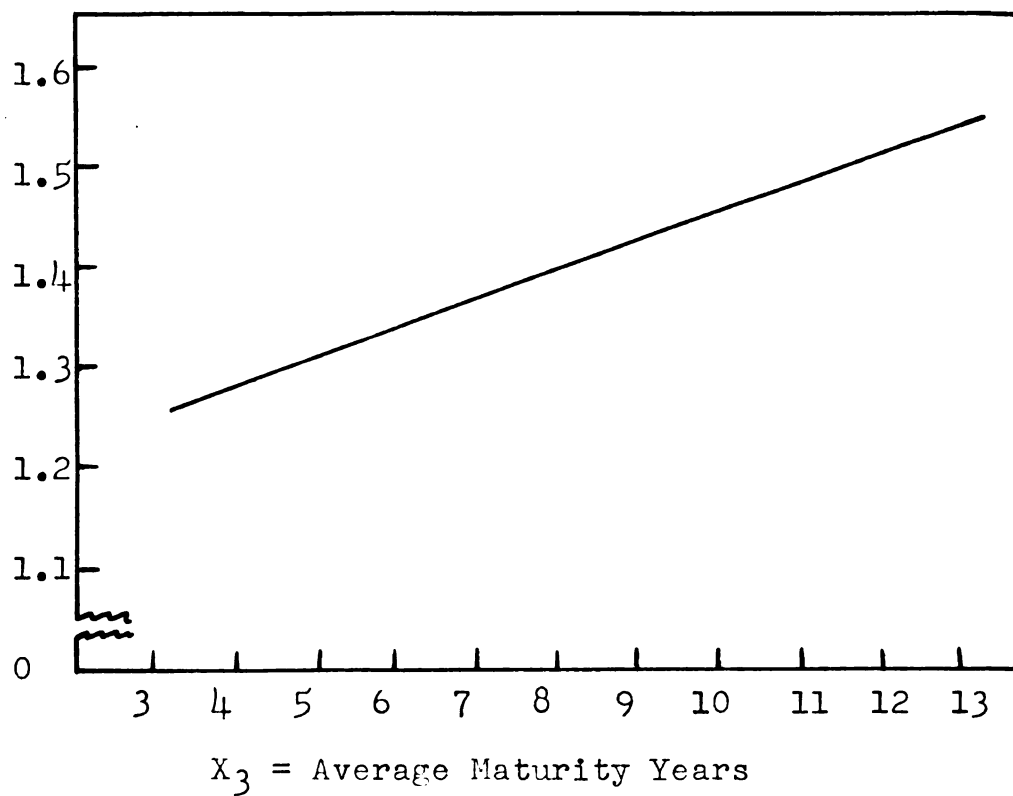
X_2 = Amount of Issue in Thousands of Dollars

^aNet interest rate, as the term is used here, is the ratio of the actual net interest rate to Moody's Aaa municipal bond index.

CHART 10

RELATIONSHIP OF NET INTEREST RATE TO AVERAGE
LENGTH OF YEARS TO MATURITY
Third Quarter 1955

X_1 = Net
Interest
Rate^a



^aNet interest rate, as the term is used here, is the ratio of the actual net interest rate to Moody's Aaa municipal bond index.

unit. In addition, each pair of issues for which pertinent data are listed in Table 21 was appraised by the same law firm.

The first comparison in Table 21 consists of a revenue bond issue and a general obligation bond issue of the City of Monahans, Texas. Monahans issued a revenue bond issue in the amount of \$350,000 with an average length of maturity of fourteen years and a general obligation bond issue in the amount of \$50,000 with an average length of maturity of seven years. In this case the revenue bond issue was sold at net interest rate of 3.869, and the general obligation bond issue was sold at a net interest rate of 3.105. Adjusting the interest rates for size and length of maturity according to estimates derived from third quarter 1955 data results in a lessening of the apparent difference in the net interest rate to approximately one-half of its original magnitude.²⁴ After adjustment for size and average length of time to maturity, the net interest

²⁴Throughout this section adjustments of the net interest rate for the quantitative variables of size of issue and maturity length assume the basic underlying relationship between these variables and the net interest rate as was indicated to exist in the case of third quarter 1955 general obligation bonds. If this assumption does not hold for the issues analyzed in this section, then the analysis presented here would be altered, but not significantly, unless the effect of size and maturity length is considerably different from the magnitudes used in this analysis.

TABLE 21

TEXAS MUNICIPALITIES SELLING TWO SEPARATE
BOND ISSUES ON THE SAME DATE
1956^a

City	Type of Bond ^b	Net Interest Rate	Moody's Rating	Size	Average Maturity Years
Monahans	R.B.	3.869	--	\$ 350,000	14
	G.O.	3.105	--	50,000	7
Odessa	R.B.	3.228	Baa	\$ 750,000	8
	G.O.	3.107	A	150,000	9
Austin	R.B.	2.515	Aa	\$1,250,000	11
	G.O.	2.659	A	320,000	11
Grand Prairie	R.B.	3.555	--	\$ 350,000	18
	G.O.	3.495	Baa	250,000	19
Pampa	R.B.	3.389	A	\$1,147,000	15
	G.O.	3.135	A	1,000,000	13
Brownsville	R.B.	3.942	--	\$ 500,000	10
	R.B.	3.977	--	270,000	11

^aSources: Texas Bond Reporter, various 1956 weekly issues (published by Municipal Advisory Council of Texas, Austin, Texas); Moody's Bond Record (April 5, 1957).

^bR.B. denotes revenue bond issues and G.O. denotes general obligation bond issues.

rate on the revenue bonds issued by Monahans, Texas, is still greater than the net interest rate on its general obligation bonds.

Another case similar to the issues of Monahans is the pair of issues of the City of Odessa, Texas. The revenue bond issue in the amount of \$750,000 with an average length of maturity of eight years has a Baa Moody rating and sold at a net interest rate of 3.228. The general obligation bond issue in the amount of \$150,000 with an average length of maturity of nine years has an A Moody rating and sold at a net interest rate of 3.107. The difference in net interest rate is again lessened after being adjusted for size and maturity although the interest rate on the revenue bond issue remains preceptibly higher than the interest rate on the general obligation bond issue.

Austin, Texas, sold a general obligation bond issue in the amount of \$320,000 at a net interest rate of 2.659 and a revenue bond issue in the amount of \$1,250,000 at a net interest rate of 2.515. Both issues had an average maturity period of eleven years. In this case after adjusting for size of issue, the interest rate on general obligation bonds is approximately the same as in the case of the revenue bonds. This instance is the first evidence of a lower interest rate for a revenue bond issue either before or after adjustment for

size and length of time to maturity. It is reasonable to assume that the lower interest rate on these revenue bonds issued by Austin, Texas, is explained by the better quality of this issue as indicated by the Aa Moody rating.

Grand Prairie, Texas, sold both a general obligation bond issue and a revenue bond issue with only a slight difference in the net interest rate applicable to the two issues. The higher interest on the revenue bond issue conforms with previous findings. In this instance the slightly greater average maturity of the general obligation bond issue is compensated by the slightly larger size of the revenue bond issue.

The Pampa, Texas, pair of issues is similar to the previous comparison. A portion of the difference in net interest rates of these two issues may be attributed to the small one-year difference in their maturity period. The sizes of the two Pampa issues are practically equal. These data again indicate a higher net interest rate on the revenue bond issue.

The data concerning the Brownsfield, Texas, issues is a comparison between two issues of revenue bonds. This comparison reveals a small difference in the net interest rates which may be explained by the difference in size and average length of time to maturity. Of course, some of the interest rate differential may be

attributable to "coverage" or other factors which may affect interest rates as discussed at the beginning of this chapter.

Summary and Conclusions

There is every indication that, on the average, the net interest rate on revenue bond issues is somewhat higher than the net interest rate on general obligation bond issues. The advantage of general obligation bond issues, however, is not as great as first appearances may indicate. Adjusting the net interest rates for the negative effect of size and the positive effect of length of maturity tends to reduce the differential that exists in the interest rates of the original data. These same adjustments applied to special assessment bond issues resulted in a higher net interest rate than for either general obligation bond issues or revenue bond issues.

The analysis of the default record of revenue bond issues in the previous chapter of this study as well as a comparison of the ratings of revenue bonds with general obligation bonds²⁵ suggests that the

²⁵Moody's Bond Record of April 5, 1957, listed fifty-eight governmental units with a single rating on both general obligation bond issues and revenue bond issues. Of these fifty-eight units, fifty-two had identical ratings on both types of issues, five units were given a rating immediately superior on general obligation bond issues, and one unit was given a rating two "notches" higher on its revenue bond issues.

differential in the net interest rate on these two types of public credit instruments may be at least partially attributable to the legal restrictions that discriminate against revenue bonds in primary and secondary markets.²⁶

²⁶Legal restrictions pertaining to the underwriting and investing of funds in revenue bonds are discussed in Chapter III.

CHAPTER VI

ECONOMIC ASPECTS

In the previous chapter of this study it was shown that revenue bonds are typically a more expensive means of borrowing money as compared with general obligation bonds. In order to justify the use of revenue bonds as a means of providing immediate funds, as distinguished from revenues that must ultimately be raised in liquidating the debt thus created, there must exist counterbalancing advantages of this type of credit instrument. This chapter is concerned with an evaluation of the advantages of financing government projects by the issuance of revenue bonds as compared with other types of public credit instruments.¹ This study is not concerned with the circumstances which justify government borrowing rather than a pay-as-you-go policy since the criteria for making such a determination are not peculiar to the type of credit instrument employed.

Pricing Policies

Revenue bond financing demands that charges for goods and/or services produced by the financed enterprise

¹The analysis in this chapter, unless otherwise stated, refers to true revenue bonds as the term is defined in Chapter I.

be priced at a level sufficient to pay all costs including debt service.² General obligation bond financing, on the other hand, permits charging or covering costs by taxation. The minimum price striven for in the case of commercial products emanating from revenue bond financed enterprises is the average cost of production.³ It is a minimum price striven for because there are usually provisions in the revenue bond contract for reserve funds as an added safety measure for the bondholder. Of course, demand conditions may, in rare instances, prohibit average cost pricing, and thus default occurs.

²The term "costs" is used here to include all contractual payments to factor owners. In addition to debt service payments, it includes administrative, operational, and maintenance costs. A revenue bond financed enterprise does not involve implicit costs since all money capital is borrowed. To the extent that principal payments are greater than depreciation actually incurred, contractual payments would be greater than the actual costs incurred by the enterprise. A revenue bond financed enterprise would not, in most circumstances, be amortized over a longer period of time than its actual life.

³The enterprise might possibly be able to charge different prices to various buyers. Revenue bond financed enterprises do charge different prices such as the higher charges for trucks than for passenger cars on toll highways. The nature of the products emanating from revenue bond financed enterprises, however, make segregation of the market difficult. In any case, the minimum price (the weighted average of all prices) striven for must equal the average cost of operating the enterprise.

It is evident, then, that the price charged to the purchaser of goods and/or services emanating from a revenue bond financed enterprise shall be at least equal to average cost.⁴ Thus revenue bond financing forces average cost pricing of government produced goods and/or services emanating from the revenue bond financed enterprise. Justification for the deficit financing of a particular project by revenue bonds, then, must at the same time justify the charging of a minimum price equal to average cost. If marginal cost pricing produces a more desirable distribution of goods and services than average costs at the point of intersection of the marginal cost and average revenue curves, then revenue bond financing produces undesirable pricing policies.⁵ If the costs of a revenue bond financed enterprise are such that the intersection of the marginal cost and

⁴In fact the revenue bond covenant usually specifies that prices shall be set at levels to produce revenue sufficient to meet all expenses including debt service. To the extent that a revenue bond financed project is amortized over a shorter period of time than the actual life of the project, the price charged would necessarily be above average cost.

⁵The argument for marginal cost pricing--a price which equates the marginal cost of production with demand--is based upon the theory that optimum utilization of resources occurs only when the cost of production of an additional unit is equal to price. The production of any smaller quantity, according to the argument, is not desirable since the production of additional units adds less real cost to the economy than the price charged.

average revenue curves occurs above the average cost curve then the pricing policies followed by a revenue bond financed enterprise are not necessarily in conflict with marginal cost pricing as advocated by some economists.⁶ In all probability, however, the point of intersection of the marginal cost and average revenue curves would occur below the average cost curve in the case of revenue bond financed projects. Revenue bond financed projects typically are concerns with relatively high fixed costs as compared with total costs. Variable

⁶The general controversy regarding the merits of marginal cost versus average cost pricing is merely touched on here as a detailed discussion is beyond the scope of this study. A complete discussion of all economic aspects of this subject would be a study in itself. Here it is sufficient to point out the controversial nature of the average cost-marginal cost pricing argument. If the arguments favoring marginal cost pricing were complete, then revenue bond financing could not ordinarily result in the most desirable distribution of the products emanating from commercial type public enterprises. See Robert W. Harbeson, "A Critique of Marginal Cost Pricing," Land Economics, XXXI (February, 1955), pp. 54-74 and "Marginal-Cost Versus Full-Cost Pricing by Governmental Business Enterprises," Proceedings of the Forty-Eighth Annual Conference on Taxation, ed. Ronald B. Welch (Sacramento, California: National Tax Association, 1956), pp. 157-67; I. M. D. Little, A Critique of Welfare Economics (Oxford: Oxford University Press, 1950), Chapter XI; J. E. Meade, "Price and Output Policy of State Enterprises," Economic Journal, LIV (December, 1944), pp. 321-28; N. Ruggles, "The Welfare Basis of the Marginal Cost Pricing Principles," and "Recent Developments in the Theory of Marginal Cost Pricing," Review of Economic Studies, XVIII, Issues I and II (1949-50), pp. 29-46 and 107-26; William Vickrey, "Some Objections to Marginal Cost Pricing," Journal of Political Economy, LVI (June, 1948), pp. 218-38 and "Some Implications of Marginal Cost Pricing for Public Utilities," Proceedings of the American Economic Association, XLV (May, 1955), p. 619.

costs are a relatively minor portion of such revenue bond financed projects as bridges, highways, the St. Lawrence Seaway, water, sewer, and electric systems, college dormitories, and airports. Thus it appears that if marginal cost pricing is pursued, a deficit would not only result, but would likely be predictable before the project is initiated, a situation that is not compatible with revenue bond financing.

Marginal cost, according to the argument, is best because any higher price unnecessarily restricts demand and hence the total product would be reduced solely by reason of the price exceeding the cost of producing an additional unit. If there is no additional cost connected with the production of another unit of the good or service, total product is reduced if a price is charged, thereby restricting consumption.

Marginal cost pricing is considered by many economists to be most appropriate in the setting of government prices for the commercial activities of government.⁷ Indeed, the argument for marginal cost pricing of the goods and/or services is strengthened by the absence of any significant amount of additional social costs accompanying such production. In fact, it would appear that there is a greater probability of

⁷Ibid.

attending indirect social benefits. Certainly in the case of college and university dormitories there are additional social benefits attending government activity that fosters education.

There are, however, several valid reasons that may justify average cost pricing of the products of revenue bond financed projects. Perhaps the most damaging argument against marginal cost pricing is the non-existence of marginal cost pricing in the private sector of the economy. Our economy consists largely of firms with high fixed costs in relation to total costs operating in markets characterized by some degree of monopolistic competition. Under these conditions marginal cost pricing in the private sector of the economy will likely result in losses which the private entrepreneur will attempt to avoid if the demand schedule permits. Average cost then becomes the minimum long-run price in the private sector of the economy. Marginal cost pricing in the public sector and the higher average cost pricing in the private sector results in proportionately more resources being devoted to the public sector. This distribution of resources between the private and public sectors of the economy could be improved by transferring resources from the public sector to the private sector. If average cost pricing occurs in the

private sector, there is less justification for the lower marginal cost pricing in the public sector.

The logic of marginal cost pricing is further made less justifiable to revenue bond financed projects because of the assumption that deficits incurred can be met by levying a tax that does not influence other resource allocation. It is, indeed, most unrealistic to assume that such a tax is either possible or desirable. If it is not desired to alter the allocation of resources, there is no reason for the tax. In the case of a tax levy to finance a deficit incurred by a government enterprise, therefore, any reduction of the income or savings would result in reduced expenditures and fewer resources devoted to other enterprises.

The rates that are charged for the products of a revenue bond financed enterprise are not usually subject to public regulation. The non-regulation of these public enterprises combined with the customary revenue bond covenant requiring the issuing governmental unit to refrain from the construction of competing facilities makes possible the charging of prices much higher than the average cost of production. The high prices charged for the products of a publicly owned revenue bond financed project, however, are recouped by the governmental unit. This tends to lessen the inequities

accompanying the exorbitant prices. Although the beneficiaries of these recouped charges may not be identical with those making the higher payments, the burden tends to be more equitably distributed than if the surplus charges had remained at the disposal of a private monopolist.

Effects Upon Resource Allocation

The study of revenue bond financing points up the maladjustments that may result from the decisions of governments which may be insensitive to cost-price relationships. If society determines that it is desirable for a government to perform certain functions which are not of a welfare nature, then a departure from the results that would likely be obtained in the free market may produce undesirable allocation of resources. This is vividly demonstrated in the transportation industry, an area involving a considerable amount of revenue bond financing.

The experience with toll roads financed with revenue bonds indicates the extent to which the users of free roads are being subsidized by the taxpayer.⁸ Toll

⁸Of course, any particular individual may be a "subsidized" motor vehicle user and at the same time be making other payments to government that are eventually spent to finance roads, etc. Such an individual would not be a subsidized motor vehicle user but such offsetting payments would not often occur.

roads constructed in the most desirable locations are having financial difficulty meeting debt service requirements. Of course, toll roads incur some costs not incurred by "free" roads⁹ and offer a more superior service than do most free roads; nevertheless, the location is selected such as to "skim the cream" from the traffic density areas and results in a most favorable construction site pricewise. Even with these advantages, toll-highway enterprises do not always pay such costs as police patrol or make a contribution toward social costs that are incurred due to traffic fatalities.

In the ten-year period from 1945 to 1954 the amount of property tax and miscellaneous tax revenues collected for highway and street purposes in the United States amounted to more than 25 per cent of the total revenues collected for such purposes.¹⁰ In this same period state highway-user imposts have never exceeded 60 per cent of the total revenues collected for highway and street purposes.¹¹ Local streets and roads receive

⁹The most obvious costs incurred only in the case of a toll road are the costs associated with the collection of tolls.

¹⁰Wilfred Owen et al, Policies to Combat Depression, a report to the National Bureau of Economic Research published by Princeton University Press, 1956, pp. 261-63.

¹¹More than 10 per cent of total revenues collected for highway and street purposes during the 1945-1954 period were federal funds derived from undetermined sources. Less than 4 per cent of the revenues were derived from toll receipts.

an even greater proportion of finances derived from property and other general tax revenues.¹²

The extent of the difference between the amount of taxes collected by New York City from levies associated with motor vehicle ownership and use¹³ and the costs of traffic control, roadway, bridge, and tunnel construction and maintenance has been estimated at approximately \$25,000,000 annually.¹⁴ The city of Baltimore, in 1955, is estimated to have incurred a deficit of \$1,500,000 in connection with the excess of expenditures that were incurred in the providing automobile services and facilities compared with tax revenues derived from Baltimore's motor vehicle users.¹⁵

It is true that toll highways do not ordinarily receive any portion of the tax money that is paid by the motor vehicle user such as the excise tax on gasoline and the property taxes that are levied on the motor

¹²Owen, op. cit.

¹³Includes city revenues derived from the motor vehicle use tax; parking meters authority tolls; sales and use taxes on automobiles, accessories, and fuel; and minor amounts received from the State in connection with the arterial highway program.

¹⁴Lyle C. Fitch, "Transportation Pricing in a Metropolitan Area," Proceedings of Forty-Eighth Annual Conference on Taxation, ed. Ronald B. Welch (Sacramento, California: National Tax Association, 1956), p. 171.

¹⁵E. L. Tennyson, "Taxation and Urban Transit: A Reply," Current Economic Comment (March, 1956), p. 62.

vehicle owner. These taxes paid by the passenger automobile user, however, are not equivalent to the amount paid on toll roads which are typically equivalent to a gasoline tax of approximately twenty-eight cents per gallon.¹⁶

The subsidizing of the motor vehicle user results in more resources being devoted to the motor vehicle transportation area than would occur if the price system were used as a guide to allocate resources. Subsidizing the automobile user not only results in more resources devoted to streets and highways, but also to goods and services that complement these facilities.¹⁷ The greater the subsidy to this portion of the transportation industry the greater will be the divergence

¹⁶U.S., Congress, House, Progress and Feasibility of Toll Roads and Their Relation to the Federal-Aid Program, 84th Congress, 1st Session, 1955, House Document 139, p. 22. This document estimated a toll rate for passenger cars of 1.75 cents per vehicle-mile. This is based upon the assumption of a rate of interest, on term revenue bonds issued for a forty year period, of 3.5 per cent. Assuming that a passenger car consumes one gallon of gasoline for every 16 miles traveled, the toll charge of 1.75 cents per vehicle-mile is equivalent to an excise tax of twenty-eight cents per gallon of gasoline.

¹⁷It should be noted that the greater social benefit associated with the consumption of a commodity is not sufficient reason, as apparently adjudged by our society, for a government-furnished good or service. For example, automobiles and roads are almost perfect complements. Highways would be of little use without automobiles with which to utilize them. Automobiles yield as much social benefit, therefore, as do highways. The distinguishing feature is that the collecting of a price is technically more difficult in the case of roads than for automobiles.

of resources from substitutes such as transit systems and railroads.¹⁸

Perhaps the financial problems of some industries could more readily be solved by placing costs upon competing industries which benefit from government expenditures. The subsidies that are sometimes provided transit systems should not be necessary if other competing forms of transportation are bearing the full costs, including all social costs, associated with these competing transportation industries. Thus if motor vehicle users are bearing the full costs, including all social costs, associated with the use of automobiles, then transit companies ought to be allowed to exit from the transportation system.

User Charges as a Basis of Raising Governmental Revenues

The issuance of revenue bonds, like any other type of public credit instrument, is simply a means of deferring payment. Revenues must eventually be obtained in order to retire these obligations. Unlike other types of public credit instruments, revenue bonds do not

¹⁸Transit systems and railroads are used merely as an illustration. These methods of transportation may also be subsidized. If this is true, the method of transportation receiving the greatest relative subsidy would receive the greatest relative share of resources to the detriment of substitute industries and to the benefit of industries that complement the industry receiving the greatest relative amount of subsidy.

permit the issuing government alternatives in the raising of revenues to meet these obligations. The instant a revenue bond is issued, the method of payment is determined; namely, by user charges. An appraisal of revenue bonds as a mode of government finance, then, is concerned with the equitableness of user charges as compared with taxes. To a large extent, a proper decision regarding the issuance of revenue bonds or general obligation bonds turns on whether the enterprise should be financed by user charges or by taxation.

A disadvantage of general taxation is the inability to adjust the quantity of government activities in accordance with the individual's scale of preferences. Each individual has a different scale of preferences, and the scale of preferences of any particular individual may differ considerably from the community average. Although indivisibilities make a perfect adjustment impossible, for all practical purposes, revenue bond financed enterprises produce products which permit the individual to purchase quantities of certain goods and/or services in accordance with his own scale of preferences.

If society does not intend a governmental function to be subsidized, user charges may be considered as producing the most desirable distribution of the government "burden," just as prices produce the most desirable

distribution of the private "burden." The determination of which goods and services, what quantities, what combination of resources, and which technical processes to utilize is determined in the operation of the free market much as resources are allocated in the private sector of the economy.

It is not possible to set down any set of principles or tenets that are universally recognized as "best" with respect to the equitable distribution of government costs. Individuals have different views as to what constitutes an equitable distribution of government. The "fair" distribution of government costs is to a great extent a subjective matter; however, students of public finance have advanced several criteria to aid in the evaluation of the various means of raising governmental revenues.

Benefits Received by the Purchaser

One disadvantage of taxes in the allocation of the tax burden is the inability to measure benefits. This difficulty is avoided with user charges. The benefits bestowed on the purchaser of the products of a revenue bond financed enterprise are measurable, just as benefits are measured by prices in the private sector of the economy. Of course, the monopolistic nature of revenue bond financed enterprises may allow prices that

are higher than competitive prices although this may also occur in the private sector of the economy in which case the surplus profits accrue to the private monopolist instead of going into the government till. Even monopoly prices subject the purchaser to no more abuse than may taxes which are levied to extract contributions by means of the coercive power of government.

The products of revenue bond financed enterprises may benefit others, but this occurs throughout the private sector of the economy. It is impossible to give consideration to all of the extra benefits emanating to society simply by reason of government operation. Benefits to other than the users are given no consideration in the private operation of enterprises similar to those that are financed by the issuance of revenue bonds. Is it more important for a community with a publicly owned transit or electric system to subsidize the users than for a similarly situated community with a privately owned system?

The products of revenue bond financed enterprises are much more likely to benefit the user and to produce less benefits of a social nature. For example, a "free" highway usually increases property values in the surrounding area although a toll highway with its limited access does not usually confer such secondary

benefits. In fact, a toll road cutting across farm lands represents, to the farm owner, an undesirable barrier.

It is possible to further isolate the benefits by raising or lowering the prices of products emanating from the revenue bond financed project. For example, benefits that may accrue to a property owner from the construction of a revenue bond financed water system may be offset by proper pricing policies with respect to connection charges. This charge could surely be such as to cause the owner to pay in accordance with benefits received from the improvement. Benefit only results because of the possible use of that improvement. It is true that it would be difficult to establish a "fair" connection charge, but this difficulty is not lessened by levying a property tax in an attempt to avoid possible inequities. How often, in the administration of property tax, does the assessor place a higher valuation on a vacant lot because of the addition of a water line adjacent to the property?¹⁹

¹⁹A hybrid of general obligation, special assessment, and revenue bonds has been devised by North Dakota municipalities in order to levy a charge for benefits flowing to property owners in addition to users of a commercial type enterprise. This unique financing plan is utilized in connection with the financing of water and sewer systems. Warrants are issued to provide the necessary funds to finance the facility. These warrants are payable from various sources. At the time of the

True revenue bond financing tends to benefit the future generation at the expense of the present generation. Although the bond covenant of a revenue bond financed project may not require a reserve for depreciation, as a matter of practice, the facility usually remains in good operating condition after the revenue bonds have been liquidated. This means that the next generation inherits a facility that is free of debt and capable of producing products that provide utility to the community. The future generation gains whether the products of this facility are distributed with or without a charge. As a practical matter, it would be almost

issuance of the warrants, not more than one-fifth of the cost of improvement including interest may be paid from a tax on general property within the city. Revenues from the financed utility may be irrevocably pledged to the repayment of the borrowed funds until all principal and interest are liquidated. This amounts to an additional and supplemental security for the bondholder with all the rights of other revenue bonds as previously discussed in this study. The city covenants to establish rates in such a manner as to be sufficient (coupled with the tax) to meet all payments on the obligations. Additionally, the city may place a special levy against properties benefited by the improvement. These special assessments are liens on the benefited property and must be paid along with other general taxes. The property owner may not elect to pay general property taxes without paying the special assessments that are due. The special assessment levies may amount to the full pro rata share of the cost of the improvement less the amount to be paid from general property taxes. (See Harold E. Mueller, "A New Method of Financing Water and Sewer Projects in North Dakota," The Bond Buyer, January 4, 1947; and Hugh H. Barber, "North Dakota's Pattern for Financing Sewer and Water Projects," The Bond Buyer, January 10, 1950.)

impossible to amortize the debt over the life of the facility. Toll bridges and toll roads, for example, quite commonly are amortized over a period of thirty years. Any longer period of time would mean that the total interest cost paid by society would rise proportionately. Considered from the point of view of financing with general obligation bonds as an alternative, however, revenue bonds appear to be preferable in the distribution of costs in relation to benefits received over a period of time. Revenue bonds are amortized over a longer period of time, which more nearly corresponds to the length of the useful life of the project financed.

Nonrevenue Considerations

Anytime a price is exacted from members of society it is bound to have consequences other than the raising of revenue. Occasionally a tax or government administered price is fixed at a certain level for the specific purpose of encouraging or restricting the consumption or production of certain commodities. The administrators of a revenue bond financed enterprise have little latitude in the setting of prices primarily designed to restrict or encourage the consumption of goods and/or services emanating from a revenue bond financed enterprise.

The very nature of revenue bond financed projects excludes the administrating of prices to accomplish extra-revenue goals.²⁰ This is not to say that a revenue bond financed enterprise exists primarily to raise revenue; but rather that in distributing the products emanating from the enterprise, the price charged must be determined by the demand schedule. The production or consumption of revenue bond financed services cannot be either discouraged or encouraged by arbitrarily setting high or low prices respectively.

The obtaining of revenues to retire debt from net revenues is of utmost importance in the operation of the enterprise. Practically all true revenue bond financed projects contain covenants in the bond contract specifically requiring rates that will produce the required net revenues to meet the various fund requirements. Of course, in the case of quasi- or pseudo-revenue bond financed enterprises, extra-revenue objectives may be given consideration. Nonfiscal objectives are uppermost in the case of pseudo-revenue bond financed public housing and to a lesser extent in the financing of college and university housing. In

²⁰Many revenue bond financed enterprises barely earn net revenues sufficient to amortize the debt which practically excludes the consideration of nonfiscal objectives in determining the price to be charged for their products.

cases involving extra-revenue consideration to any great extent, the enterprise would have to be capable of yielding an extra margin of profit if true revenue bond financing is to be available as a means of providing funds for the project.²¹

If unmeterable or welfare services are produced jointly to any great extent, and the production of one of these jointly produced services conflicts with the profitable operation of the enterprise, then the project must be profitable in spite of regulations requiring that these jointly produced services not be reduced or placed in secondary or inferior production status. For example, the multiple-purpose nature of the Tennessee Valley Authority may prevent the revenue bond financing of such an enterprise. The flood control, navigation, and recreational aspects of the Tennessee Valley Authority enterprise are not easily meterable services, and their production conflicts with the most profitable operation of the enterprise in the production of

²¹For example, true revenue bond financing would be available to finance the construction and operation of state liquor stores. The amount of capital required in this case is relatively small in relation to the surplus profit presently obtainable from these operations so that the conflict of extra-revenue considerations is not sufficient to prevent the use of revenue bond financing of these enterprises. The bond covenant which ordinarily accompanies the issuance of revenue bonds (requiring that rates be maintained at a sufficient level to produce net revenues of a certain amount) does not conflict in this case with the revenue objective.

electricity. Thus the production of these unmeterable services cannot occur unless the production of electricity is profitable despite their production. Even then the prospective underwriter of a revenue bond issue would not, in all probability, agree to the production of nonrevenue producing services which might cause a reduction in the net revenues of the enterprise.

Other Attributes of User Charges

User charges are convenient to pay. Payments are usually made in relatively small dollar amounts and involve only as much time and trouble as the purchasing of goods and services from private businesses. In the case of tolls, payment is made at the time of the transaction with a minimum of delay. User charges do not involve the expense of record keeping as is necessary in the case of income taxes. The average individual probably pays greater lump sum dollar amounts in the case of income and property taxes.

Another desirable characteristic of user charges is the tendency of these payments to be less "painful" than other government levies. It is evident that many individuals do not object as much to payments which involve a transfer of goods or services as they object to the payment of a tax. A tax payment, in contrast to user charges, is often viewed as an unnecessary burden

and is disassociated with government produced benefits.²² User charges which involve transactions of tangible goods and/or services are more palatable to members of our society.

User charges compare favorably with other methods of raising revenue with respect to the criterion of certainty. Whether the charge be for the use of electric energy, college housing, or a toll bridge, the amount of levy is not arbitrary. The amount of the charge is ordinarily made available on request or posted for all to see. Income taxes, property taxes, and most types of business taxes involve a greater degree of uncertainty.

It is usually considered desirable to diversify the revenue producing structure of a governmental unit.

²²Indicative of the greater willingness to pay user charges is the experience of the Public Service Commission of New York. A 1945 New York law required the Public Service Commission of that state to refrain from initiating rate reduction proceedings in the case of municipally operated electric plants unless twenty-five or more active consumers requested such proceedings. The Commission reported that 30 per cent of the municipalities were earning a rate of more than 20 per cent on the plant in service. A year later only minor requests for rate changes had been initiated by consumers despite the high rate of profit. See Jules Backman and Earnest Kurnow, "Pricing of Government Services," National Tax Journal (June, 1954), p. 133. In contrast to user charges, the complaints against property tax levies are numerous in almost every community. Formal complaints against other tax levies may not be so numerous but it is evident that many individuals object more vigorously to these levies than to other price payments.

Complete reliance on one or a few sources of revenue tends to cause an excessive amount of instability in the receipts of a political unit. To the extent that a revenue bond financed enterprise reduces the taxes that would otherwise be necessary, user charges have the desirable feature of diversifying the tax structure of a governmental unit.

Revenue bonds have a distinct advantage of providing a financing medium that is easily adaptable to the reorganization of outmoded political units. Several governmental units may combine and finance the performance of a governmental function particularly if that function is one susceptible to revenue bond financing. The advantage of revenue bond financing is indicated by the extensive use of this type of financing by special districts and authorities.

Counter-Cyclical Aspects

Being more or less "depression born," revenue bonds may offer a financial means of stabilizing the cyclical swings of state and local government expenditures which have heretofore only increased the magnitude of the ups and downs of the cycle. General obligation bonds have always proved to be difficult to issue during periods of depression. In fact, as discussed in Chapter IV, local governmental units are usually under strain to

meet outstanding debt during depression periods, much of which is supported by property taxes.

In some respects revenue bonds may tend to contribute to a greater upswing during periods of prosperity. The urgent nature of public expenditures seems not to decrease with a high level of economic activity and revenue bonds offer a financial means of avoiding debt limitation statutes. Also, a high level of economic activity bringing forth a higher standard of living in the private area such as more automobiles, leisure time, electricity, and water using appliances, leads to greater demands for the complements of the products of revenue bond financed enterprises. For example, the recent toll road building era resulted from the postwar traffic congestion that would probably not have occurred during a period of recession. In other words, individuals would not have purchased the large number of automobiles nor had the funds to finance automobile travel as they have had during this unparalleled period of prosperity. How many underwriters would bid for revenue bonds pledging the net revenues from a bridge or highway during a period such as the 1930's or in a period only half as severe? The "coverage" on toll highways and toll bridges is barely sufficient in the present inflationary period. Hospitals, docks and

terminals, and even college dormitories, electric, sewer, and water systems would in all probability experience difficulty in obtaining funds in a period of recession. In fact, if a period of low economic activity appeared eminent, it seems likely that governments would not easily obtain funds to finance the aforementioned projects.

Enterprises that produce goods and services that are cheaper substitutes of other goods and services that are purchased freely during a period of prosperity may fare better. For example, a transit system may offer a more economical means (lower cost) of transportation than do private automobiles. The demand for city transit services would, therefore, be utilized to a greater extent during a depression period. In such instances, revenue bond financing may offer a more favorable counter-cyclical financial medium. Public facilities producing goods and services that are less expensive substitutes of other goods and services are, however, in the minority.

Another consideration of the effectiveness of revenue bond financed projects in counteracting the swings of the cycle is the effect of the public financing of these projects on private investment. Revenue bond financed enterprises are capable of being successfully

operated in both the public and private sectors of the economy. Government expansion in this area may possibly discourage private investment. For example, government construction of water or electric systems could conceivably discourage private investment. The construction and operation of toll roads or toll bridges, however, is not likely to discourage private investment. In any case, private investment would not be reduced by more than the increase accruing as a result of the increase in public expenditures. The monopoly nature of electric, water, and gas systems excludes, for all practical purposes, the construction of more than one such enterprise in each community.

Two qualifications need to be stressed in the above statements regarding the inadequateness of revenue bond financing as a means of combating depression. First, revenue bond financing is naturally more sensitive to changes in the interest rate. To the extent that interest rates serve in attenuating the business cycle, then revenue bonds also may improve rather than accentuate the magnitude of the cycle. In this connection it should be remembered that, although to some extent revenue bond financing was depression born, much of the revenue bond financing of the 1930's was not financed on the open market but aided by federal funds.

In this study, government financial aid given to a project does not constitute true revenue bond financing.

Second, much of the financing parading under the name of revenue bond financing is in reality pseudo-revenue bond financing. A self-liquidating project that does not have to meet the test of the market may, indeed, be easier to finance in periods of low economic activity. For one reason, people seem more willing to authorize a project that does not entail the levying of additional taxes, even though the revenue to finance the enterprise must be obtained from the income of the individuals of the community, but not necessarily in the same amount from each as the tax alternative.

A much greater use of revenue bonds (during depression or recession) would in all probability occur only as the issued revenue bonds approach general obligation bonds. Pledging revenues of a commercial type enterprise with an additional pledge of the taxing power appears to offer the only type of public credit instrument that can reasonably be expected to contribute significantly to the stabilizing of the business cycle. Of course, the purchasing of "revenue bonds" by the federal government may be an effective financial means of combating depression, but the federal government has the financial means of providing such funds without resorting to the purchase of state and local obligations.

Limited Liability of the
Issuing Government

A portion of the interest charge on revenue bonds may be thought of as a payment for limited liability. Other things being equal, it may be desirable for a governmental unit to incur debt of limited liability rather than to pledge all tax revenues from all sources.²³ Securing a loan with only a portion of the revenues available to a political unit may aid the unit in avoiding financial ruin. If such a catastrophe is avoided, the unit may be able to continue to provide critically needed community services such as education, police protection, and fire protection.

In view of the past experiences with revenue bonds being assumed and paid out of general tax funds, the limited liability feature is a dubious advantage. If a revenue bond is sold with the understanding that the bond principal and interest is to be paid from the net earnings of an enterprise, the bondholder can hardly expect that tax funds be applied to service the bond. In fact, public officials who apply tax money to debt service of revenue bonds may be considered to have misused public funds. There is a responsibility to the

²³A borrowing political unit may benefit from a conditional pledge just as it may be advantageous for an individual to secure a loan only with a certain asset or the earnings therefrom rather than with all of his assets.

taxpayer as well as to the bondholder. Each has a right to expect conformity to the bond contract. Public officials should assume responsibility for the terms of that contract. The responsibility to the bondholder includes the protection of earnings that are to be applied toward debt service. Public officials should exert every effort to promote the efficient operation of the revenue bond financed enterprise so as to make net earnings as large a portion of gross earnings as possible and to comply with other bond covenants. Public officials should similarly be held accountable to the protection of the taxpayer's interests which means that the terms of the bond contract should not be altered in favor of the bondholder.

Chapter IV of this study documented instances of tax money applied to the payment of revenue bonds. This application of tax money, although usually contrary to the intent of the pertinent state statutes, may occur in many ways. Several instances of the forthright appropriation of tax money were noted in the previous chapter. In at least one instance the Supreme Court of the state has upheld the application of tax funds to the payment of defaulted college dormitory revenue bonds.²⁴ Court

²⁴"Court Upholds Idaho Payment of Defaulted College Bonds," The Bond Buyer, November 12, 1955, p. 3.

approval was based upon the fact that the dormitory was owned by the state and that the legislature could pay for the building or "put into effect a plan designed to pay for it."²⁵ Other methods of applying funds to distressed revenue bonds have been more subtle. The plans "designed to pay for it" often include the application of tax monies to the payment of part of the expenses of the enterprises giving the appearance that "net revenues" have thus been increased. Occasionally the issuing unit has created a public corporation and thereby is able to evade the intent of the permissive law by establishing a lease-rental arrangement, although the original financing was of a true revenue bond nature. The case of the Decatur Toll Bridge of the Nebraska Burt County Bridge Commission, as narrated in Chapter IV, appears to be a case of the application of federal funds to "bail out" a public project which failed to work out as planned. Of course, if federal funds in the same amount were intended to be spent irrespective of the financial difficulties that were being encountered by the Bridge Commission, the federal expenditures should not be regarded as an example of the application of tax funds.

It may develop, however, that the government and taxpayer may be made "worse off" even if tax money is

²⁵Ibid.

not applied in order to avoid default. Credit is valuable; and if a government is going to pay for limited liability but still be penalized by suffering a loss in credit standing, that government will pay in the form of increased costs on future borrowings.

An early Oregon law, for example, required that cities of that state must guarantee payment of their special assessment bonds.²⁶ In extolling the virtues of the law, a public official indicated that it benefited the city through reduced interest costs. He compared the experiences of Portland, Oregon, with those of Spokane, Washington. Portland had applied tax money to retire its special assessment bonds, while Spokane had allowed extensive and prolonged defaults to occur on special assessment bonds. The better treatment accorded the obligations of Portland in the market was shown by the sale in late 1926 of new special assessment issues with a coupon rate of 6 per cent. These bonds sold at a premium sufficient to reduce the effective rate to 4.40 per cent. On the other hand, new special assessment bonds issued by Spokane were, according to the official, "almost unsalable except at high interest rates and drastic discounts."²⁷

²⁶A. M. Hillhouse, Municipal Bonds, A Century of Experience (New York: Prentice-Hall, Inc., 1936), p. 104.

²⁷Ibid.

There also appears to be a relationship between the appraised quality of general obligation bonds and revenue bonds of the various units of government as indicated by Moody's ratings. In Chapter V the similarity of ratings on general obligation bonds and revenue bonds of the same governmental unit was noted. It seems unrealistic that the profitableness of an enterprise, which is the primary criterion for rating revenue bonds, should vary so directly with taxpaying capacity. This tends to support the thesis that the performance of a governmental unit on its general obligation bonds and revenue bonds is considered together. Additional support for the practice of a more or less similar rating on general obligation bonds and revenue bonds is shown by the common practice of bond underwriters giving consideration to the default record of the issuing unit in evaluating the credit quality of either type of bond.

In conclusion, the numerous instances involving the application of tax money to the payment of revenue bonds which have experienced financial difficulty indicates that the limited liability feature of these bonds is of little real value. Additionally a governmental unit may pay higher interest rates on its general obligation bonds if it has experienced financial difficulty

on its revenue bonds. If past experience is reliable in an evaluation of the future, it appears safe to conclude that revenue bonds are, in effect, general obligations of the issuing unit. The performance of a political unit with regard to revenue bonds is scrutinized by prospective underwriters in their evaluation of the quality of the general obligation bonds of the governmental unit. Thus it appears that any increase in the interest payment for the limited liability feature of a revenue bond is not justifiable.

Restrictions in the Underwriting of
and Investing in Revenue Bonds

Chapter III discussed the legal aspects of state and federal statutes which restrict the underwriting of and investing in revenue bonds by certain fiduciary institutions. Of particular interest is the restriction appearing in the seventh paragraph of Section 5136 of the Revised Statutes of the United States. Section 5136 does not prohibit a national bank from "dealing in, underwriting, and purchasing for its own account"²⁸ securities which are obligations of the United States or the general obligations of any state and its

²⁸Another portion of Section 5136 does provide that the Comptroller of the Currency may permit a national bank to "purchase for its own account" certain investment securities prescribed by the Comptroller of the Currency even if such securities are not general obligations of a governmental unit.

subdivisions.²⁹ Bonds not secured by the full faith and credit of a governmental unit are not general obligations and are thus ineligible with respect to a national bank's participation as a principal in the marketing of these securities.

National banks may not underwrite revenue bonds since these securities do not represent full faith and credit obligations of a governmental unit. The Comptroller of the Currency may permit a national bank to purchase revenue bonds for its own account subject to certain limitations and restrictions.³⁰

Several arguments have been advanced purporting to show why commercial banks³¹ should continue to be prohibited from underwriting revenue bonds.³² These arguments are presented and analyzed below.³³

²⁹Section 9 of the Federal Reserve Act, as amended, subjects state member banks to the same limitations and conditions as are applicable to national banks.

³⁰The par value of revenue bonds of any one issuing unit that may be purchased by a bank is limited to 10 per cent of the capital and surplus of the purchasing bank.

³¹Although the present prohibition applies only to national and member banks, various state regulations may also restrict non-member commercial banks.

³²"Underwriting and Distribution of Revenue Bonds by Commercial Banks," a memorandum prepared by the Committee for Study of Revenue Bond Financing, 44 Wall Street, New York, New York (January 3, 1955).

³³The merits and demerits of permitting commercial banks to underwrite revenue bonds is considered

The first argument is based on the intent of Congress presently and at the time of the enactment of the Glass-Steagall Banking Act of June 16, 1933. It was not then, and is not now, according to those favoring a continuation of the restrictions in the underwriting of revenue bonds, the intent of Congress to permit revenue bonds to be underwritten by commercial banks.

The Banking Act of 1933 forbids anyone from engaging in the "issuing, underwriting, selling, or distributing" of securities if at the same time engaging in "the business of receiving deposits subject to check.

. . ."³⁴ Excepted from this prohibition, however, were the "obligations of the United States or general obligations of any States or of any political subdivision thereof. . . ."³⁵

only from a comparative point of view. Section 5136 of the Revised Statutes of the United States presently permits commercial banks to underwrite general obligation bonds. An examination of the merits of this provision of the present law is beyond the scope of this study. Similarly, this study is not concerned with an economic appraisal of the merits and demerits of permitting banks to underwrite corporate securities. It would appear that this whole area should be subjected to a critical evaluation. A solution to the problem is complicated by the similarity of the various securities.

³⁴48 Stat. 189 (1933) as amended 49 Stat. 707 (1935) 12 U.S.C. Section 378.

³⁵48 Stat. 184 (1933) as amended 12 U.S.C. Section 24.

The aforementioned restrictions on commercial banks arose because of the tendency during the 1920's of some large commercial banks to engage in investment banking which the then Comptroller of the Currency and other banking officials viewed as objectionable. Congress sought to safeguard the depositor by separating commercial banking from investment banking. When Congress passed the Banking Act of 1933 revenue bond financing was practically non-existent. It has only been since World War II that governmental units have issued, to any great extent, bonds completely disclaiming any liability. Many of the relatively small amount of revenue bonds that were issued prior to World War II were secured by a pledge of tax funds and specific earnings. Commercial banks are permitted to underwrite these pseudo-revenue bonds provided the issuing government pledges its full faith and credit.

It does appear that Congress intended to exclude the special assessment bonds of governmental units due to the financial difficulties that this type of public obligation had encountered during the early part of the Great Depression.³⁶ Whether Congress intentionally excluded revenue bonds or simply failed to include them

³⁶"Commercial Bank Underwriting of Public Revenue Bonds," a memorandum prepared by a group of commercial banks (January 20, 1955), p. 7. (Mimeographed.)

because of their minor significance, therefore, cannot be reliably determined.

The present intentions of Congress should be ascertainable in the next few years. Two identical Senate bills were introduced during the First Session of the Eighty-Fourth Congress by Senator John W. Bricker, and by Senators Homer A. Capehart and Russell P. Long.³⁷ Both bills would permit commercial banks to underwrite obligations issued by governmental units or their agencies except obligations payable solely from the proceeds of special assessment bonds. The bills were read and referred to the Committee on Banking and Currency of the United States Senate. It appears that Congress will give consideration to this or similar legislation in the near future.

Another argument advanced against the practice of permitting commercial banks to underwrite revenue bonds is based upon the riskiness of this type of security. Revenue bonds are similar to corporate securities and, according to this argument, would lower the investment and loan standards of commercial banks. This study has not revealed any weakness in revenue bond issues which can be considered as sufficient grounds to permit the present discrimination against

³⁷S. 2290 and S. 2713 (1955). See Appendix II.

revenue bonds.³⁸ There is little evidence that revenue bonds are more risky than general obligation bonds as indicated by the default record narrated in Chapter IV. The default record of revenue bonds compares favorably with general obligation bonds. Any additional risk that may be incurred by a holder of revenue bonds as compared with general obligation bonds during a period of prosperity is likely to be counterbalanced by a lesser degree of risk on revenue bonds during a period of low economic activity.³⁹ A high degree of risk associated with a bond issue is not peculiar to revenue bond issues, although it is possible to find individual revenue bond issues which contain a large amount of risk. The risk associated with revenue bonds issued by such units as the Port of New York Authority, the City of Los Angeles, and the City of Chicago would appear to compare favorably with the highest quality general obligation bond issues. There are many general obligation

³⁸Whether or not there exists weaknesses in special assessment bonds sufficient to discriminate against these bonds is not within the scope of this study. Special assessment bonds are ineligible for bank underwriting in the Glass-Steagall Act and in both S. 2290 and S. 2713.

³⁹Although it is not possible to "prove" a greater or lesser amount of risk associated with revenue bonds as compared with general obligation bonds, there is some evidence that revenue bonds are less risky during a period of low economic activity and vice versa. See Chapter IV for a more complete discussion of the default experience of revenue bonds.

bond issues that are of a poor risk quality as shown by ratings assigned to many issues by the various rating agencies.

A third argument opposing the underwriting of revenue bonds by commercial banks relates to the trivial amount of such underwriting that would be done by these banks even if given the necessary legal authority. Only a few commercial banks are actively engaged in the underwriting of general obligation bonds, say those opposing permissive legislation. Thus, permitting commercial banks to underwrite revenue bonds would result in little increased competition for these securities with a corresponding small reduction in the net interest rate.

In the 1949-1953 period commercial banks were estimated to have underwritten one-third of the total of all general obligation bonds issued by state and local governments.⁴⁰ The participation of commercial banks in the underwriting of revenue bonds, if permitted by law, would undoubtedly increase the competition for these obligations. Other things being equal, any increase in the competition for the obligations of a governmental unit is desirable. Even though relatively few commercial

⁴⁰Speech of the Honorable Homer E. Capehart of Indiana in the Senate of the United States on June 30, 1955.

banks actively engage in the underwriting of municipal securities, it is possible that competition would be increased in localities most deficient of a market for their obligations.

Chapter V of this study presents evidence that the smaller dollar size revenue bond issues do not fare as well interest rate wise as the smaller general obligation bond issues. This is demonstrated by the larger absolute value of the revenue bond regression coefficient which relates effect of size of revenue bond issues to the net interest rate.⁴¹ The additional competition of a local bank located in a small community would tend to reduce the interest costs of these small governmental units.⁴²

⁴¹The Third Quarter 1955 data shows that the net interest rate (more precisely the ratio of net interest rate to Moody's Aaa Index) decreased by 32 basis points for every increase of one logarithm in dollar size (in thousands) of issue compared with a decrease of 17 basis points on general obligation bonds.

⁴²Statements by the American Bankers Association indicate that permitting national banks to underwrite revenue bonds would result in a "widening of the market for such revenue bonds, lowering financing costs." The Board of Directors of the Association of Reserve City Bankers expressed a somewhat similar view and recommended that the differentiation between general obligation bonds and revenue bonds be removed. The reason, as given by this group, is as follows: "In recent years so-called revenue bonds and dedicated-tax bonds have become increasingly popular with issuing bodies. Such bonds of acceptable investment quality are customarily purchased and held by banks in their investment portfolios, and the restriction against bank underwriting of such bonds

In addition to restrictions pertaining to the underwriting of revenue bonds by commercial banks, other fiduciary institutions such as savings banks are not permitted by state law to invest in revenue bonds. As noted in Chapter III some of these state laws have recently been revised making revenue bonds eligible for investment. Of course, this does not make all revenue bonds eligible for investment; but it tends to reduce the discrimination with respect to type of obligation. Revenue bonds are placed on the legal lists of various states as the fiduciary regulatory bodies see fit. Under these conditions each particular bond issue is treated independently. This treatment does not, however, completely remove the discrimination against revenue bonds since general obligation bonds are quite often eligible as a group rather than by the judging of each issue separately.⁴³

is unrealistic and unnecessary. A wider interest in the underwriting of revenue bonds and increased competition to purchase them will result in lower borrowing costs for issuers." (See Hearings before the Committee on Banking and Currency, United States Senate, Eighty-Fourth Congress, Second Session, November, 1956, pp. 95 and 98.)

⁴³The practice of placing revenue bonds on legal lists on the merits of the particular issue is not being criticized here. It does seem that if this practice is desirable because of the risk associated with an issue in the case of revenue bonds, a similar practice should be followed in the case of general obligation bonds.

There appears, then, little justification for distinguishing between revenue bonds and general obligation bonds in the underwriting of revenue bonds by commercial banks. Any increase in competition for revenue bonds, no matter how small, ought to be instituted unless there is some valid reason against such action. The arguments against the underwriting of revenue bonds by commercial banks, as compared with general obligation bonds, have little, if any, merit.⁴⁴

Efficiency of Revenue Bond
Financed Projects

It is not possible, in our present state of technical development, to objectively quantify the degree of efficiency that is attained by public or private enterprises. The relative efficiency of various enterprises may be approximated by observing the presence or absence of incentives that make for greater efficiency and by observing the results that are obtained such as prices charged, management organization, and techniques employed.

The incentive for the efficient operation of revenue bond financed enterprises arises from the

⁴⁴Admittedly, the intent of Congress at the time the restriction was placed on the statutes cannot be accurately appraised. The small volume of revenue bonds at that time, however, may account for the wording of the statute.

necessity of utilizing every means available to establish a solvent enterprise. This is especially true in the case of a new enterprise in which the governmental unit has no equity, as is the case with true revenue bond financing. The sources that tend to make for greater efficiency arise from the necessity of the issuing governmental unit to explore, with the aid of highly trained consulting engineers, every feasible means of reducing the costs of the enterprise.

The issuing governmental unit is naturally interested in discovering ways of demonstrating a high level of net earnings of an enterprise in order that coverage will be sufficiently attractive to prospective underwriters to be willing to underwrite the project. Further, the greater the efficiency that can be demonstrated the more favorable will be the bids of the prospective underwriters and hence result in a lower net interest cost. Marginal enterprises would be especially subject to a thorough inspection in order to insure, as nearly as possible, a profitable project.

Protective covenants of the revenue bond resolution may be advantageous. For example, a municipal bond underwriter may not be willing to invest in a project unless a qualified engineer has been employed to establish its feasibility. Furthermore, the underwriter can be expected to be much more thorough in an economic

appraisal of a project than would ordinarily be the case if the project is financed with tax money. The requiring of regular inspections, periodic certified audits, and the maintenance of insurance are other desirable safeguards. The incentive to see that these safeguards are accomplished or placed in effect is greater in the case of a revenue bond financed project.

The National Committee on Governmental Accounting recommended that a periodic audit by independent accountants be made of governmental units and their agencies.⁴⁵ In addition to the advantages of an audit in providing assurances that public funds have been properly accounted for and that public officials have complied with the various legal provisions, an independent audit may reveal more economical procedures that may be instituted such as the utilization of modern equipment. The agreement between the issuing governmental unit and the underwriter that accompanies practically all revenue bond financed projects provides for periodic audits by independent accountants.

Financing an enterprise by revenue bonds emphasizes the economic importance of the time element,

⁴⁵C. T. Zlatkovich, "Engaging Independent Public Accountants," Proceedings of the First Governmental Accounting and Finance Institute (Institute of Public Affairs, The University of Texas, Austin, Texas, May, 1955), p. 89.

particularly during the construction period.⁴⁶ The bond underwriter ordinarily requires assurance that the project will be completed by a specified time. If a project is delayed, revenues will not begin according to schedule; and default may result. There occurs this same waste of resources whenever a project is delayed unnecessarily regardless of the method of finance. The utilization of revenue bonds focuses attention on the importance of the time aspect although the same time delay on a general obligation bond financed project may go practically unnoticed.

There is some evidence that the management of revenue bond financed projects is superior to the management of general obligation bond financed enterprises. This is exemplified in the modern techniques that are employed in connection with some revenue bond financed projects. For example, at least six turnpikes make use of modern toll collection and recording devices.⁴⁷ Punched card toll ticket dispensing is designed to speed up toll collections and provide a safeguard against revenue loss.

⁴⁶To the extent that revenue bond financing makes possible projects not available through other means, this type of financing may result in a saving of time of individuals of society. For example, the saving of time on the Michigan Mackinac Bridge compared with the existing ferry is estimated to average approximately two hours for each automobile driver.

⁴⁷"The Latest in Tolls," American City (May, 1957), p. 167.

Revenue bond financed enterprises apparently have instituted other desirable revenue safeguards that are not ordinarily present whenever an enterprise is financed by tax money. For example, covenants in revenue bond financed parking facility contracts sometimes require bonded personnel or other safety precautions to insure that revenues are properly accounted for, thus reducing the chances of embezzlement.

Revenue Bonds and Debt Restrictions⁴⁸

It is sometimes argued that the issuance of revenue bonds permits a political unit to increase the volume of urgently needed services by issuing general obligation bonds to finance those government functions not capable of being financed by the issuance of revenue bonds. According to this argument, the issuance of revenue bonds conserves the general obligation bonded indebtedness that may be incurred in a governmental unit. The conservation of general obligation bond borrowing may be desirable in view of legal restrictions limiting the amount of debt that may be incurred by political units. A political unit does not have a greater debt-paying capacity, however, simply because a portion of its debt consists of the revenue bond type obligation.

⁴⁸The legal aspects of constitutional and statutory debt restrictions were narrated in Chapter III.

Two governmental units could be similarly situated in every respect except for the type of bond issued to finance a publicly owned commercial activity. If one community finances its electric system by the issuance of revenue bonds and the other by general obligation bonds, the ability to support a given amount of debt is the same in both instances since all payments must be paid from income.⁴⁹

Revenue bonds ordinarily do permit the issuing unit to avoid legal debt restrictions. Whether this is an advantage or a disadvantage depends upon the desirability of the legal restrictions. Legal debt restrictions are the result of man-made laws and should be repealed or revised if they are objectionable.

Historically, legal debt restrictions have been imposed because of the resulting insolvency or near-insolvency of governmental units following periods of reckless borrowing. Taxpayer rebellion against property taxes also has been a stimulus in promoting legal debt restrictions.

⁴⁹Indeed, a third similar community with a privately owned electric system and consequently entirely free of outstanding public obligations to finance such a system would have no greater debt-servicing ability. The relevant factor is the dollar amount of such payments compared with the income of the taxpayers. All payments, regardless of whether termed taxes, user charges, or prices, must be paid from income.

The issuance of true revenue bonds automatically places safeguards on the resulting debt. Additional revenue bond debt does not, at least theoretically, threaten the solvency of the issuing governmental unit and automatically provides for the necessary revenue with which to liquidate the newly issued obligations.

In fact, this automatic control which is inherent in revenue bond financing is more effective than statutory and constitutional limits upon indebtedness because of the many loopholes in these legal restrictions.⁵⁰ Revenue bond financing is also effective in providing for the retirement of the revenue bond created debt within the life of the project.

These debt-servicing characteristics inherent in revenue bond financing reduce the need for state supervision of this type of local borrowing. A governmental unit utilizing true revenue bond financing needs no commission to check or investigate its borrowing practices. The natural interests of the bond underwriter and bondholders are sufficient to provide sufficient safeguards on revenue bond debt. On the other hand, quasi- and pseudo-revenue bond financing does not have the same degree of built-in safeguards as does true

⁵⁰For example, legal restrictions are sometimes avoided by manipulation of assessed property values and by the creation of new overlapping governmental units.

revenue bond financing. It would seem desirable, therefore, that debt represented by quasi- and pseudo-revenue bonds should be subjected to the same restrictions deemed to be desirable in the case of general obligation bonds.

Summary and Conclusions

The preceding portion of this chapter has presented an economic analysis of the attributes which are peculiar to revenue bond financing. The peculiarities of revenue bond financing result from court decisions, statutes, public finance practices, or inherent characteristics of this type of public credit instrument. The distinguishing features of revenue bonds do not always produce results necessarily different from general obligation bond financing. Rather, results that must occur in the case of revenue bonds may, but do not necessarily, occur in the case of general obligation bond financing. For example, revenue bond financing forces a minimum price equal to average cost while general obligation bond financing results in prices which may or may not equal average cost.⁵¹

The very nature of revenue bond financing eliminates the possibility of utilizing this type of public

⁵¹If a revenue bond financed project cannot, because of demand conditions, charge prices sufficient to cover average cost, then default occurs.

credit instrument to finance many types of public projects. True revenue bond financing is limited to public facilities which are revenue producing enterprises and which produce meterable services. The revenue bond credit instrument is also limited to the financing of those enterprises which produce goods and/or services which society does not deem desirable to distribute with regard to welfare considerations.

On the other hand, some of the attributes of revenue bonds permit this type of credit instrument to be utilized to aid private entities. Revenue bonds issued to finance the construction of factory buildings which are subsequently leased to a private manufacturer is a case in point. Such practices are tantamount to the sale of the benefit of the tax-exempt privilege of the issuing political unit. The issuance of these industrial aid bonds provides another reason for subjecting municipal bond interest to the federal income tax.

The most significant economic implications of revenue bond financing as compared with general obligation bond financing occur with respect to pricing policies, equity considerations in the distribution of payments for the products of public enterprises, resource allocation, and the efficiency of public

enterprises. In addition to these aspects which are more or less inherent in the case of revenue bond financing, there exists man-made laws which affect the desirability of this means of public finance.

The use of revenue bonds as a means of financing government activities forces the purchaser of the services emanating from these activities to pay a price equal to average cost. Subsidies do not occur whenever payments are equal to average cost as may occur in the case of general obligation bond financing. Thus revenue bond financing avoids the attendant disadvantages to unsubsidized industries which produce goods and/or services that are close substitutes of the publicly-owned subsidized industry.

Revenue bond financed enterprises are likely to be more efficient than a similar general obligation bond financed enterprise. The issuer of revenue bonds pledges only the net revenues of the facility, thus causing the bond underwriter to check all phases of the project prior to construction. The incentive toward efficiency arises primarily from the bond contract and the necessity for a thorough investigation with respect to the feasibility of the project. The bond contract ordinarily contains provisions which tend to insure low total costs in relation to revenue. Thus in addition

to a thorough investigation as to the feasibility by a qualified engineer, bond underwriters naturally insist upon the operation of the facility in accordance with the best available business practices.

Although the mere financing by means of revenue bonds does not enhance the debt-paying ability of a political unit, the financing by this type of credit instrument does insure a source of revenue with which to retire the outstanding obligation. This self-liquidating nature of revenue bonds combined with the controls which are ordinarily required by the bond underwriter gives this type of public credit instrument a "built-in" safeguard with respect to excessive indebtedness.

The higher interest cost associated with revenue bonds can be justified only if the favorable non-quantitative attributes discussed in this study outweigh the additional interest cost. It is evident that at least a portion of this higher interest cost on revenue bonds is due to the legal restrictions affecting commercial bank underwriting of these securities. There may be valid reasons for the prohibition, but any justification ought not be based upon the relative riskiness of revenue bonds as compared with general obligation bonds. The treating of general obligation bonds and

revenue bonds in a similar manner would, in all probability, reduce the differential in the net interest rates presently applicable to these two types of securities. In the case of a particular project and in certain periods of time the merits of revenue bond financing may outweigh the higher interest cost associated with this type of public credit instrument. A quantitative evaluation of the merits and demerits of revenue bond financing as compared with general obligation bond financing which is applicable to every set of circumstances is not possible.

APPENDIX I. COPY OF H. R. 3117*

A BILL

To add a new section 274 to the Internal Revenue Code of 1954 to provide revenue and eliminate unfair competition by denying a deduction for amounts paid by a private industrial or commercial organization to a State or local government for the use of property acquired or improved by the government by issuing industrial development bonds.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Internal Revenue Code of 1954 is amended by adding at the end of section 273 the following new section:

"SEC. 274. PAYMENTS TO ISSUER OF TAX-EXEMPT OBLIGATIONS.

"(a) GENERAL RULE.--No deduction shall be allowed for amounts paid or accrued to a State, a Territory, a possession of the United States, or any political subdivision of any of the foregoing, or the District of Columbia, for the use or occupancy of property acquired or improved out of the proceeds of any industrial

*Introduced in the House of Representatives, 84th Congress, 1st Session, January 26, 1955.

development revenue bond authorized after February 8, 1954.

"(b) DEFINITION.--For purposes of subsection (a), the term 'industrial development revenue bond' means any obligation--

"(1) issued (whether before or after the acquisition or improvement of the property concerned) to finance the acquisition or improvement of real property which is to be used to any substantial extent by non-public lessees for manufacturing articles; and

"(2) which does not pledge the full faith and credit of the issuing authority for the payment of interest and principal."

APPENDIX II. COPY OF S. 2290*

A BILL

To assist cities and States by amending section 5136 of the Revised Statutes, as amended, with respect to the authority of national banks to underwrite and deal in securities issued by State and local governments, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the last sentence of paragraph "Seventh" of section 5136 of the Revised Statutes of the United States, as amended (12 U. S. C. 24), is amended to read as follows: "The limitations and restrictions herein contained as to dealing in and underwriting investment securities shall not apply to obligations issued by a State or political subdivision or agency of a State or political subdivision, except obligations payable solely from the proceeds of special benefit assessments, or the International Bank for Reconstruction and Development, or the thirteen banks for cooperatives organized under the Farm Credit Act of 1933, or any of them, which are

*Introduced in the Senate of the United States, 84th Congress, 1st Session, June 22, 1955.

at the time eligible for purchase by a national bank for its own account: Provided, That no association shall at any one time hold obligations issued by the International Bank for Reconstruction and Development, or the thirteen banks for cooperatives organized under the Farm Credit Act of 1933 or by any one of said thirteen banks for cooperatives, or obligations issued by a State or political subdivision or agency of a State or political subdivision (other than general obligations of a State or political subdivision or such agency) as a result of underwriting, dealing or purchasing for its own account (and for this purpose obligations as to which it is under commitment shall be deemed to be held by it) in a total amount, with respect to any one of such issuers, exceeding 10 per centum of its capital stock actually paid in and unimpaired and 10 per centum of its unimpaired surplus fund."

APPENDIX III

Instances of default occurring since 1940 were ascertained by addressing letters of inquiry to individuals in positions to have knowledge of such defaults. Accordingly, the letters on the following pages were sent to municipal bond dealers, city officials in the larger cities, and state finance officers. These letters were mailed during the latter part of January and early February, 1957; and the bulk of the replies were received during the latter part of February.

As a check on the reliability of the answers of city officials, letters of inquiry were also mailed to officials of cities known to have incurred defaults.¹ The wording of the letters was changed slightly to conform to the information given in Moody's listing of known defaults occurring since 1930. Replies were received from 18 of the 33 cities known to have defaulted, and only one acknowledged a default.

Replies from municipal bond dealers produced more satisfactory results. Out of a total of 106

¹Moody's Government and Municipals (1956), p. a-34.

letters of inquiry, 67 replies were received with 39 reporting at least one instance of default. Increased confidence in the answers supplied by municipal bond dealers is justified since returns from the same geographical area in many cases listed the same instance of default. Better replies from bond dealers may be partially attributed to their more complete knowledge of the subject.

Replies were received from 36 of the 48 state finance officers. Only 5 of the 36 officers replying reported at least one instance of default, mostly of a minor or technical nature. Two of these defaults involved revenue bonds.

Selection of respondents was on a geographic basis. Actually, municipal bond dealers are familiar with the municipal bond market over wide geographic areas. One New York firm supplied information on more than half of the total default instances that were ultimately reported.

Letters of Inquiry Mailed and
Replies Received, by State

State	City Officials		Municipal Bond Dealers	
	<u>Letters Mailed</u>	<u>Replies Received</u>	<u>Letters Mailed</u>	<u>Replies Received</u>
Ala.	2	1	1	1
Ariz.	1	0	2	1
Ark.	1	1	1	1
Calif.	8	8	1	1
Colo.	1	1	2	2
Conn.	4	4	1	0
Del.	1	1	1	1
Fla.	1	1	2	1
Ga.	1	1	3	2
Ida.	1	0	1	1
Ill.	2	2	5	2
Ind.	5	3	0	0
Iowa	1	1	1	1
Kan.	1	1	3	2
Ky.	1	1	2	1
La.	3	2	2	2
Maine	1	0	1	1
Md.	1	1	1	1
Mass.	6	3	2	0
Mich.	3	2	2	1
Minn.	3	2	3	3

State	City Officials		Municipal Bond Dealers	
	Letters Mailed	Replies Received	Letters Mailed	Replies Received
Miss.	1	0	2	1
Mo.	2	1	2	2
Mont.	1	0	0	0
Neb.	1	1	3	0
Nev.	1	0	0	0
N. H.	1	0	1	0
N. J.	5	2	3	1
N. M.	1	1	1	1
N. Y.	6	6	10	5
N. C.	1	1	3	3
N. D.	1	0	1	1
Ohio	4	4	9	6
Okla.	2	1	2	1
Ore.	1	1	1	1
Penn.	4	3	9	3
R. I.	1	1	1	0
S. C.	1	0	1	1
S. D.	1	0	1	1
Tenn.	4	3	3	2
Texas	6	4	4	4
Utah	1	1	2	2
Ver.	1	0	1	1
Vir.	2	1	3	1

State	City Officials		Municipal Bond Dealers	
	Letters	Replies	Letters	Replies
	<u>Mailed</u>	<u>Received</u>	<u>Mailed</u>	<u>Received</u>
Wash.	2	1	3	2
W. V.	1	0	1	1
Wis.	1	1	1	1
Wyo.	<u>1</u>	<u>0</u>	<u>1</u>	<u>1</u>
Totals	102	69	106	67

BAYLOR UNIVERSITY
SCHOOL OF BUSINESS
WACO, TEXAS

OFFICE OF
DIRECTOR OF RESEARCH

February, 1957

(Copy of letter sent to state finance officers)

Mr. John Doe
State Treasurer
City, State

Dear Mr. Doe:

We are doing a study on the subject of "revenue bond financing." We have encountered difficulty in obtaining figures with respect to defaults of revenue bonds. From past experience in situations of this kind, we have found that persons in your position are valuable sources of information pertaining to their state.

Perhaps you can provide us with answers to the following questions:

1. Does (State) have records pertaining to revenue bonds issued and outstanding for all of its political subdivisions, such as cities, counties, special districts, etc.?
2. As you know, the number of defaults in recent years is very small. Generally, bondholders have suffered very little, if any, loss even in the few default instances that have occurred. Nevertheless, would you inform us of any defaults, no matter how minor, occurring since 1940 that have come to your attention? We would be interested in knowing the type of bond (G.O. or revenue), the issuing unit, the project financed with the proceeds of the bond sale, and any description as to cause for the default.

We are enclosing a self-addressed, stamped envelope for your convenience in replying. Even if the data requested is not available, we would appreciate an answer. Any bits of information that you can furnish us will be helpful in our study.

Sincerely,

W. J. Thomas
Director

WJT:lr
Enclosure

BAYLOR UNIVERSITY
SCHOOL OF BUSINESS
WACO, TEXAS

OFFICE OF
DIRECTOR OF RESEARCH

February, 1957

(Copy of letter sent to bond dealers)

Mr. John Doe
Municipal Bond Dealer
City, State

Dear Mr. Doe:

We are doing a study on the subject of "revenue bond financing." We have encountered difficulty in obtaining comparable data with respect to defaults of revenue bonds and G. O. bonds.

As you know, the number of defaults in recent years is very small. Generally, bondholders have suffered very little, if any, loss even in the few default instances that have occurred. Nevertheless, would you inform us of any defaults, no matter how minor, occurring since 1940 that have come to your attention? We would be interested in knowing the type of bond (G.O. or revenue), the issuing unit, the project financed with the proceeds of the bond sale, and any description as to cause for the default.

We are enclosing a self-addressed, stamped envelope for your convenience in replying. Even if you know of no defaults in your area, we would be interested in this fact. Any bits of information that you can furnish us will be helpful in our study.

Sincerely,

W. J. Thomas
Director

WJT:bb
Enclosure

BAYLOR UNIVERSITY
SCHOOL OF BUSINESS
WACO, TEXAS

OFFICE OF
DIRECTOR OF RESEARCH

February, 1957

(Copy of letter sent to city finance officers)

Mr. John Doe
City Treasurer
City, State

Dear Mr. Doe:

We are doing a study on the subject of "revenue bond financing." We have encountered difficulty in obtaining figures with respect to defaults of revenue bonds. From past experience in situations of this kind, we have found that persons in your position are valuable sources of information pertaining to their locality.

As you know, the number of defaults in recent years is very small. Generally, bondholders have suffered very little, if any, loss even in the few default instances that have occurred. Nevertheless, would you inform us of any defaults, no matter how minor, occurring since 1940 that have come to your attention? We would be interested in knowing the type of bond (G.O. or revenue), the issuing unit, the project financed with the proceeds of the bond sale, and any description as to cause of the default.

We are enclosing a self-addressed, stamped envelope for your convenience in replying. Even if you know of no defaults in your area, we would be interested in this fact. Any bits of information that you can furnish us will be helpful in our study.

Sincerely,

W. J. Thomas
Director

WJT:lr
Enclosure

BAYLOR UNIVERSITY
SCHOOL OF BUSINESS
WACO, TEXAS

OFFICE OF
DIRECTOR OF RESEARCH

February, 1957

(Copy of letter sent to city finance officers
of known defaulting cities)

Mr. John Doe
City Treasurer
City, State

Dear Mr. Doe:

We are doing a study on the subject of "revenue bond financing." We have encountered difficulty in obtaining figures with respect to defaults of revenue bonds. From past experience in situations of this kind, we have found that persons in your position are valuable sources of information pertaining to their locality.

As you know, the number of defaults in recent years is very small. Generally, bondholders have suffered very little, if any, loss even in the few default instances that have occurred. Nevertheless, would you inform us of any defaults, no matter how minor, occurring since 1930 that have come to your attention? We would be interested in knowing:

Type of bond (G.O. or revenue) _____

Issuing unit _____

Project financed with the
proceeds of the bond sale _____

Underwriter _____

Date of issue _____

Any description as to cause of the
default, ultimate loss or cure _____

We are enclosing a self-addressed, stamped envelope for your convenience in replying. We would like to have your reply even if you do not have the information requested above. Any bits of information that you can furnish us will be greatly appreciated.

Sincerely,

W. J. Thomas
Director

WJT:lr
Enclosure

APPENDIX IV. MULTIPLE CORRELATION
ANALYSIS OF NET INTEREST RATES
APPLICABLE TO MUNICIPAL BONDS

Chapter V of this study presents an analysis of net interest rates applicable to selected municipal bond issues sold during the third quarter of 1955 and the fourth quarter of 1956. This Appendix presents more complete details of the data and computations used in determining the values of the statistics presented in the body of Chapter V.

Data

BOND SALES REPORTED DURING
THIRD QUARTER 1955

Date of Sale	Dollar Size of Issue (in Thousands)	Average Maturity (Months)	Net Interest Rate
GENERAL OBLIGATION BONDS			
7-25	\$ 250	142	2.13
7-12	50	36	1.76
6-21*	249	90	2.18
7-27	310	123	2.45
6-30*	60	36	1.66
7-27	62	36	2.50
6-28*	132	186	3.468

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
7-25	\$ 20	40	2.403
8-8	200	128	2.54
8-17	338	68	2.21
8-22	35	38	2.74
8-30	280	44	2.20
9-7	17	104	2.755
9-19	40	141	3.438
9-8	27	72	2.864
9-19	60	78	2.50
9-22	365	126	2.517
9-6	50	60	2.56
7-11	84	66	1.99
7-6	100	106	2.69
7-20	50	36	1.96
7-7	500	128	2.338
7-6	120	144	2.741
7-21	28	74	3.163
7-15	30	72	2.97
7-21	500	124	1.89
7-12	200	72	2.123
7-6	1,050	72	2.08
6-30*	20	130	3.13
8-1	75	54	2.03
7-28	3,000	126	2.142

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
8-1	\$ 420	131	2.61
8-24	1,000	80	1.99
8-17	355	112	2.95
9-1	790	66	2.075
8-30	600	129	2.7835
9-27	240	33	2.573
9-19	475	88	2.474
9-19	85	60	2.355
9-26	350	188	2.114
7-11	500	93	2.0534
7-18	75	86	2.409
7-27	586	96	2.205
7-6	225	118	2.367
7-11	36	68	2.50
7-14	909	135	2.24
7-6	193	36	1.861
7-21	58	238	3.17
7-20	630	80	2.228
7-24	92	64	2.19
7-14	338	70	2.74
7-6	123	18	1.74
7-1	174	70	2.44
6-30*	30	130	2.92

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
8-11	\$ 575	130	2.44
8-10	750	120	2.366
8-4	25	75	2.49
8-15	190	66	2.86
8-16	45	62	2.42
8-17	250	72	2.35
8-30	280	44	2.20
9-20	56	141	2.515
7-21	4,000	248	3.239
7-25	54	36	1.99
7-21	90	60	1.97
7-6	166	56	1.988
7-27	2,700	204	4.459
7-19	103	136	3.04
7-14	388	51	2.29
7-20	130	84	2.69
7-5	9	70	2.95
7-11	223	140	2.74
8-23	60	150	4.47
8-10	92	105	1.997
8-10	2,000	135	2.1205
8-11	29	72	2.48
8-23	500	80	2.594

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
8-3	\$ 63	126	3.484
9-20	70	142	2.539
9-6	30	90	2.786
9-7	25	147	3.14
9-19	276	129	2.19

REVENUE BONDS

7-13	140	178	4.99
7-18	4,000	152	2.589
7-19	550	166	3.11
7-20	198	237	3.43
7-12	23	124	2.744
6-23*	100	138	3.208
7-18	130	273	4.93
6-28*	173	244	3.368
7-6	225	162	2.857
8-1	1,200	255	3.24
8-26	836	180	2.34
8-22	300	188	3.478
8-25	1,000	110	2.493
8-25	500	106	2.66
8-23	100	124	3.39
8-29	1,400	303	4.00
8-9	221	148	3.00

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
8-23	\$ 1,640	258	3.99
8-10	965	178	3.24
9-14	716	246	3.75
9-14	345	228	3.18
9-2	140	96	3.40
9-28	69,000	480	3.50
9-20	500	154	2.55

SPECIAL ASSESSMENT BONDS

7-26	313	62	2.75
6-29*	178	42	1.74
7-27	11	72	2.42
7-20	167	70	2.185
7-14	36	68	2.5
7-15	17	135	3.46
7-5	33	68	2.59
8-8	27	32	4.00
7-25	83	62	3.25
8-15	60	70	2.48
7-29	42	70	3.209
8-15	33	69	2.874
8-15	9	100	2.98
8-9	48	70	2.208
8-16	52	72	3.36

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
9-28	\$ 261	68	2.78
9-24	63	142	4.21
9-26	216	81	2.93

*Third quarter bond sales were taken from the Municipal Bond Sales Supplement of the Daily Bond Buyer. Municipal bond sales reported during July, August, and September were occasionally consummated during the latter part of the second quarter of 1955 as noted.

BOND SALES REPORTED DURING
FOURTH QUARTER 1956

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
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REVENUE BONDS

11-13	\$ 33	144	4.75
11-19	50	156	3.48
10-12	98	216	4.00
10-29	150	96	4.31
12-19	150	240	4.65
11-26	151	156	3.995
10-29	190	228	4.297
11-27	270	132	3.977
12-5	500	156	4.74
11-29	550	108	4.286
10-3	750	132	3.228
12-4	750	144	4.169

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
10-11	\$ 750	264	4.92
12-11	2,000	132	3.893
12-11	2,275	348	4.395
12-17	2,750	312	4.06
11-13	2,800	108	3.950
11-13	5,000	192	3.73
11-14	7,410	240	3.584
10-30	128	144	3.593
10-29	200	204	4.77
12-4	1,100	192	3.879
11-5	1,575	240	4.194
11-27	1,950	312	4.73
10-9	2,655	228	5.03
10-29	2,800	288	4.234
12-12	3,000	180	4.43
10-29	250	216	4.155
10-9	750	96	3.228
11-28	850	216	3.975
10-2	1,147	192	3.389
10-1	1,425	264	4.053
12-13	1,685	240	3.845
10-16	3,197	252	3.587
10-9	100	96	4.470
12-13	150	84	4.00

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
10-29	\$ 205	108	3.761
10-1	325	132	3.477
10-24	500	192	4.617
11-27	500	120	3.934
10-9	4,000	132	3.514
12-5	4,500	252	4.415
10-24	7,500	156	3.412
11-8	13,500	192	3.379

LIMITED GENERAL OBLIGATION BONDS

10-25	23	72	3.83
10-18	36	120	3.45
10-15	125	60	2.572
10-9	150	132	3.00
10-18	190	84	2.71
11-12	225	168	3.872
10-23	350	120	3.107
11-14	350	120	3.94
11-15	625	144	2.855
11-14	750	120	4.423
12-13	800	144	3.93
12-13	1,350	120	3.81
11-14	3,000	156	3.475
10-2	3,100	48	2.881

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
10-31	\$ 3,875	168	2.794
12-8	12	84	4.00
11-2	87	144	4.74
12-4	190	84	3.48
12-3	225	24	4.49
12-18	293	72	3.57
12-28	44	72	3.40
11-1	12	48	2.968
12-6	54	84	4.66
10-11	65	72	2.88
11-16	74	84	3.75
12-20	102	72	4.35
12-13	243	72	2.99
11-8	547	108	3.745
11-9	200	144	3.17

UNLIMITED GENERAL OBLIGATION BONDS

12-4	65	84	3.972
12-4	85	108	3.97
12-18	105	180	4.551
12-11	110	132	4.343
12-13	180	168	3.912
12-13	206	144	4.12
11-15	235	168	3.954

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
10-9	\$ 235	132	4.716
12-13	246	120	3.90
10-17	445	180	3.78
12-13	500	144	3.893
10-22	530	228	3.784
10-16	685	121	3.67
11-27	700	121	3.36
12-4	1,000	192	3.93
10-10	1,075	192	3.35
12-18	2,500	156	3.891
11-14	10,000	132	3.624
11-5	10	36	3.22
11-29	14	96	4.37
11-27	34	60	3.75
11-20	35	60	3.35
10-22	530	228	3.784
11-20	44	48	3.79
10-22	500	204	3.145
10-2	15	72	4.49
10-2	150	96	3.12
10-31	400	240	3.65
10-10	800	240	3.520

Date of Sale	Dollar Size of Issue (In Thousands)	Average Maturity (Months)	Net Interest Rate
11-1	\$ 4	84	4.22
11-13	270	72	3.499

Source: Files of the Investment Bankers Association of America, 425 Thirteenth Street, N.W., Washington 4, D. C.

GENERAL OBLIGATION MUNICIPAL BOND YIELDS
THIRD QUARTER 1955 AND FOURTH
QUARTER 1956, BY WEEKS

Third Quarter		Fourth Quarter	
Week Ending*	Aaa Yields	Week Ending*	Aaa Yields
June 18	2.08	Sept. 22	2.63
25	2.09	29	2.62
July 2	2.14	Oct. 6	2.61
9	2.19	13	2.63
16	2.23	20	2.68
23	2.24	27	2.72
30	2.27	Nov. 3	2.74
Aug. 6	2.29	10	2.79
13	2.34	17	2.85
20	2.34	24	2.98
27	2.34	Dec. 1	3.01
Sept. 3	2.34	8	3.02
10	2.34	15	3.04
17	2.32	22	3.05
24	2.27	29	3.05
Oct. 1	2.27		

Source: Moody's Investors Service.

*Yields are based on Thursday's figures.

Explanation of Symbols

An estimating or regression equation is computed in order to express the functional relationship between the dependent and independent variables. This equation is:

$$X_{c1.23} = a_{1.23} + b_{12.3} X_2 + b_{13.2} X_3$$

where:

$X_{c1.23}$ = the computed value of the ratio of the
net interest rate to Moody's Aaa
Municipal Bond Index

X_2 = Logarithm of the dollar size of issue

X_3 = Average number of months to maturity of
the issue

The 1.23 subscripts after X_c and a indicate that an estimation is made of the X_1 (net interest rate) from the variables X_2 (size) and X_3 (maturity).

$a_{1.23}$ = value of $X_{c1.23}$ when $X_2 = 0$ and $X_3 = 0$
in the estimating equation

$b_{12.3}$ = net regression coefficient which indicates the effect of size of issue (X_2) on net interest rate (X_1) with average length of time to maturity (X_3) held constant

$b_{13.2}$ = net regression coefficient which indicates the effect of average length of

time to maturity (X_3) on net interest rate (X_1) with size of issue (X_2) held constant

Or, the equation may be put in terms of the original data. Then the equation is:

$$X_{c1.23} = w (a_{1.23} + b_{12.3} \log X_2 + b_{13.2} X_3)$$

where:

w = Moody's Aaa municipal bond yield

And now X_2 is the size of issue in dollar amount.

In terms of deviations from the means, the normal equations used in solving simultaneously for the estimating equation are:

$$\sum x_1 x_2 = b_{12.3} \sum x_2^2 + b_{13.2} \sum x_2 x_3$$

$$\sum x_1 x_3 = b_{12.3} \sum x_2 x_3 + b_{13.2} \sum x_3^2$$

where the original data is expressed in terms of the following symbols:

Σ = upper case Greek letter sigma, meaning

"take the sum of"

x_1, x_2, x_3 = values in the X_1, X_2, X_3 series

expressed as deviations from their

respective arithmetic means

In addition to terms already explained, other terms used in the following computations are:

$R_{1.23}^2$ = coefficient of multiple determination,
which denotes the proportion of the

total variation in the net interest rates that is accounted for by size and average length of time to maturity

$s_{1.23}$ = standard error of the estimate, which is a measure of dispersion of the data about the regression plane

$d_{12.3}^2, d_{13.2}^2$ = coefficients of separate determination, the proportion of the total variation that is explained by the dependent variables, X_2 and X_3 , respectively

$B_{12.3}, B_{13.2}$ = beta coefficients, the regression coefficients transposed to standard, comparable units

$r_{12.3}, r_{13.2}$ = partial or net correlation coefficients, the relative counterparts of the net regression coefficients

$r_{12}^2, r_{13}^2, r_{23}^2$ = coefficients of determination, the measure of the relative amount of variation in: (1) variable X_1 explained by the variation in variable X_2 ; (2) variable X_1 explained by the variation in variable X_3 ; and

(3) variable X_2 explained by the variation in variable X_3

$\sigma_{R_{1.23}}$ = standard error of $R_{1.23}$, a measure of reliability of $R_{1.23}$

$\sigma_{b_{12.3}}, \sigma_{b_{13.2}}$ = standard error of net regression coefficients, measure of reliability of $b_{12.3}$ and $b_{13.2}$

t = in this Appendix, test to determine if partial coefficients of correlation are significantly different from zero

F = in this Appendix, test to determine if multiple coefficients of determination are significantly different from zero

Computations

Third Quarter 1955

The original data for the eighty-two general obligation bonds is summarized as follows:

$$\Sigma X_1 = 91.6984 \quad \Sigma X_2 = 178.5195 \quad \Sigma X_3 = 7913$$

$$\bar{X}_1 = 1.1183 \quad \bar{X}_2 = 2.1771 \quad \bar{X}_3 = 96$$

$$\Sigma x_1^2 = 4.1497 \quad \Sigma x_2^2 = 26.2494 \quad \Sigma x_3^2 = 176,096$$

$$\Sigma x_1 x_2 = -1.7978 \quad \Sigma x_2 x_3 = 799.2756 \quad \Sigma x_1 x_3 = 450.0034$$

Making the required substitutions in the two general equations gives:

$$-1.7978 = b_{12.3} 26.2494 + b_{13.2} 799.2756$$

$$450.0034 = b_{12.3} 799.2756 + b_{13.2} 176,096$$

Solving these simultaneous equations gives:

$$b_{12.3} = -.1698 \quad (\sigma_{b_{12.3}} = .0362)$$

$$b_{13.2} = .00333 \quad (\sigma_{b_{13.2}} = .00044)$$

Substituting in the following equation:

$$a_{1.23} = \bar{X}_1 - b_{12.3} \bar{X}_2 - b_{13.2} \bar{X}_3$$

Gives:

$$a_{1.23} = 1.1183 - (-.1698)(2.1771) - (.00333)(96)$$

$$a_{1.23} = 1.1669$$

The estimating equation, then, is:

$$X_{c1.23} = 1.1669 + (-.1698) \log X_2 + .00333 X_3$$

Substituting in appropriate formulas, the following values are obtained:

$$R_{1.23}^2 = \frac{b_{12.3} \sum x_1 x_2 + b_{13.2} \sum x_1 x_3}{\sum x_1^2} = .434$$

$$\sigma_{R_{1.23}} = \frac{1 - R_{1.23}^2}{\sqrt{n - m}} = .064$$



$$\bar{s}_{1.23} = \sqrt{\frac{\sum x_1^2 - (b_{12.3} \sum x_1 x_2 + b_{13.2} \sum x_1 x_3)}{n - m}} = .17$$

$$d_{12.3}^2 = \frac{b_{12.3} \sum x_1 x_2}{\sum x_1^2} = .074$$

$$d_{13.2}^2 = \frac{b_{13.2} \sum x_1 x_3}{\sum x_1^2} = .361$$

$$B_{12.3} = b_{12.3} \sqrt{\frac{\sum x_2^2}{\sum x_1^2}} = -.427$$

$$B_{13.2} = b_{13.2} \sqrt{\frac{\sum x_3^2}{\sum x_1^2}} = .685$$

$$r_{12.3} = \sqrt{\frac{R_{1.23}^2 - r_{13}^2}{1 - r_{13}^2}} = -.466$$

$$t_{r_{12.3}}^2 = \sqrt{\frac{r_{12.3}^2 (N-m)}{1 - r_{12.3}^2}} = 4.68 \text{ (significant at .05 level)}$$

$$r_{13.2} = \sqrt{\frac{R_{1.23}^2 - r_{12}^2}{1 - r_{12}^2}} = .646$$

$$t_{r_{13.2}}^2 = \sqrt{\frac{r_{13.2}^2 (N-m)}{1 - r_{13.2}^2}} = 7.52 \text{ (significant at .05 level)}$$

The original data for the twenty-four revenue bonds is summarized as follows:

$$\Sigma X_1 = 35.0771 \quad \Sigma X_2 = 63.7950 \quad \Sigma X_3 = 4,728$$

$$\bar{X}_1 = 1.4615 \quad \bar{X}_2 = 2.6581 \quad \bar{X}_3 = 197$$

$$\Sigma x_1^2 = 2.2088 \quad \Sigma x_2^2 = 10.6276 \quad \Sigma x_3^2 = 161,100$$

$$\Sigma x_1 x_2 = -.7327 \quad \Sigma x_2 x_3 = 837.3073 \quad \Sigma x_1 x_3 = 245.4215$$

Making the required substitutions in the two general equations gives:

$$-.7327 = b_{12.3} 10.6276 + b_{13.2} 837.3073$$

$$245.4215 = b_{12.3} 837.3073 + b_{13.2} 161,100$$

Solving these simultaneous equations gives:

$$b_{12.3} = -.3200 \quad (\sigma_{b_{12.3}} = .0951)$$

$$b_{13.2} = .00319 \quad (\sigma_{b_{13.2}} = .00077)$$

Substituting in the general equation gives:

$$a_{1.23} = 1.4615 - (-.3200)(2.6581) - (.00319)(197)$$

$$a_{1.23} = 1.6843$$

The estimating equation, then, is:

$$X_{c1.23} = 1.6843 + (-.3200) \log X_2 + .00319 X_3$$

Substituting in appropriate formulas, the following values are obtained:

$$R_{1.23}^2 = .460$$

$$\sigma_{R_{1.23}} = .118$$

$$\tau_{1.23} = .24$$

$$d_{12.3}^2 = .106$$

$$d_{13.2}^2 = .354$$

$$B_{12.3} = -.702$$

$$B_{13.2} = .861$$

$$r_{12.3} = -.602$$

$$t_{r_{12.3}}^2 = 3.45 \text{ (significant at .05 level)}$$

$$r_{13.2} = .669$$

$$t_{r_{13.2}}^2 = 4.13 \text{ (significant at .05 level)}$$

The original data for the eighteen special assessment bonds is summarized as follows:

$$\Sigma X_1 = 23.0000 \quad \Sigma X_2 = 31.4874 \quad \Sigma X_3 = 1353$$

$$\bar{X}_1 = 1.2778 \quad \bar{X}_2 = 1.7493 \quad \bar{X}_3 = 75$$

$$\Sigma x_1^2 = 1.2293 \quad \Sigma x_2^2 = 3.5210 \quad \Sigma x_3^2 = 12326$$

$$\Sigma x_1 x_2 = -.4913 \quad \Sigma x_2 x_3 = -58.5615 \quad \Sigma x_1 x_3 = 54.8467$$

Making the required substitutions in the two general equations gives:

$$-.4913 = b_{12.3} 3.5210 + b_{13.2}(-58.5615)$$

$$54.8467 = b_{12.3} (-58.5615) + b_{13.2} 12326$$

Solving these simultaneous equations gives:

$$b_{12.3} = -.0712 \quad (\sigma_{b_{12.3}} = .1697)$$

$$b_{13.2} = .00411 \quad (\sigma_{b_{13.2}} = .00238)$$

Substituting in the general equation gives:

$$a_{1.23} = 1.2778 - (-.0712)(1.7493) - (.00411)(75)$$

$$a_{1.23} = 1.0932$$

The estimating equation, then, is:

$$X_{c_{1.23}} = 1.0932 + (-.0712) \log X_2 + .00411 X_3$$

Substituting in appropriate formulas, the following values are obtained:

$$R_{1.23}^2 = .212$$

$$F = \frac{R_{1.23}^2 + (m-1)}{1 - R_{1.23}^2 + (N-m)} = 1.03 \text{ (not significant at .05 level)}$$

$$s_{1.23}^2 = .25$$

$$d_{12.3}^2 = .028$$

$$d_{13.2}^2 = .183$$

$$B_{12.3} = -.120$$

$$B_{13.2} = .412$$

$$r_{12.3} = -.129$$

$$r_{13.2} = .407$$

Fourth Quarter 1956

The original data for the forty-four revenue bonds is summarized as follows:

$$\sum X_1 = 63.5751 \quad \sum X_2 = 126.7189 \quad \sum X_3 = 8232$$

$$\bar{X}_1 = 1.4449 \quad \bar{X}_2 = 2.8800 \quad \bar{X}_3 = 187$$

$$\sum x_1^2 = 1.3478 \quad \sum x_2^2 = 17.3458 \quad \sum x_3^2 = 188,444$$

$$\sum x_1 x_2 = -1.1173 \quad \sum x_2 x_3 = 721.3411 \quad \sum x_1 x_3 = 133.6764$$

Making the required substitutions in the two general equations gives:

$$-1.1173 = b_{12.3} 17.3458 + b_{13.2} 721.3411$$

$$133.6764 = b_{12.3} 721.3411 + b_{13.2} 188,444$$

Solving these simultaneous equations gives:

$$b_{12.3} = -.1117 \quad (\sigma_{b_{12.3}} = .0417)$$

$$b_{13.2} = .00114 \quad (\sigma_{b_{13.2}} = .00040)$$

Substituting in the general equation gives:

$$a_{1.23} = 1.4449 - (-.1117)(2.8800) - (.00114)(187)$$

$$a_{1.23} = 1.5104$$

The estimating equation, then, is:

$$X_{c_{1.23}} = 1.5104 + (-.1117) \log X_2 + .00114 X_3$$

Substituting in appropriate formulas, the following values are obtained:

$$R_{1.23}^2 = .228$$

$$\sigma_{R_{1.23}} = .120$$

$$s_{1.23} = .16$$

$$d_{12.3}^2 = .093$$

$$d_{13.2}^2 = .136$$

$$B_{12.3} = -.401$$

$$B_{13.2} = .425$$

$$r_{12.3} = -.412$$

$$t_{r_{12.3}}^2 = 2.90 \text{ (significant at .05 level)}$$

$$r_{13.2} = .430$$

$$t_{r_{13.2}}^2 = 3.05 \text{ (significant at .05 level)}$$

The original data for the twenty-nine limited general obligation bonds is summarized as follows:

$$\Sigma X_1 = 36.4417 \quad \Sigma X_2 = 66.8507 \quad \Sigma X_3 = 2940$$

$$\bar{X}_1 = 1.2566 \quad \bar{X}_2 = 2.3052 \quad \bar{X}_3 = 101$$

$$\Sigma x_1^2 = 1.0666 \quad \Sigma x_2^2 = 12.3124 \quad \Sigma x_3^2 = 41929$$

$$\Sigma x_1 x_2 = -.6214 \quad \Sigma x_2 x_3 = 313.4081 \quad \Sigma x_1 x_3 = 24.1604$$

Making the required substitutions in the two general equations gives:

$$-.6214 = b_{12.3} 12.3124 + b_{13.2} 313.4081$$

$$24.1604 = b_{12.3} 313.4081 + b_{13.2} 41929$$

Solving these simultaneous equations gives:

$$b_{12.3} = -.0804 \quad (\sigma_{b_{12.3}} = .0617)$$

$$b_{13.2} = .00118 \quad (\sigma_{b_{13.2}} = .00106)$$

Substituting in the general equation gives:

$$a_{1.23} = 1.2566 - (-.0804)(2.3052) - (.00118)(101)$$

$$a_{1.23} = 1.3227$$

The estimating equation, then, is:

$$X_{c1.23} = 1.3227 + (-.0804) \log X_2 + .00118 X_3$$

Substituting in appropriate formulas, the following values are obtained:

$$R_{1.23}^2 = .074$$

$$F = 1.03 \text{ (not significant at .05 level)}$$

$$S_{1.23} = .19$$

The original data for the thirty-one unlimited general obligation bonds is summarized as follows:

$$\Sigma X_1 = 41.9691 \quad \Sigma X_2 = 70.8684 \quad \Sigma X_3 = 4260$$

$$\bar{X}_1 = 1.3538 \quad \bar{X}_2 = 2.2861 \quad \bar{X}_3 = 137$$

$$\Sigma x_1^2 = .6574 \quad \Sigma x_2^2 = 16.2859 \quad \Sigma x_3^2 = 103,058$$

$$\Sigma x_1 x_2 = -.7919 \quad \Sigma x_2 x_3 = 839.7110 \quad \Sigma x_1 x_3 = 16.6730$$

Making the required substitutions in the two general equations gives:

$$-.7919 = b_{12.3} 16.2859 + b_{13.2} 839.7110$$

$$16.6730 = b_{12.3} 839.7110 + b_{13.2} 103,058$$

Solving these simultaneous equations gives:

$$b_{12.3} = -.0982 \quad (\sigma_{b_{12.3}} = .0462)$$

$$b_{13.2} = .00096 \quad (\sigma_{b_{13.2}} = .00058)$$

Substituting in the general equation gives:

$$a_{1.23} = 1.3538 - (-.0982)(2.2861) - (.00096)(137)$$

$$a_{1.23} = 1.4462$$

The estimating equation, then, is:

$$X_{c_{1.23}} = 1.4462 + (-.0982) \log X_2 + .00096 X_3$$

Substituting in appropriate formulas, the following values are obtained:

$$R^2_{1.23} = .143$$

$$F = 2.33 \text{ (not significant at .05 level)}$$

$$\bar{s}_{1.23} = .14$$

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