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DUPREY, James Norman, 1929-
THE INFLUENCE OF CREDIT CONDITIONS ON STATE AND LOCAL GOVERNMENTS.

The Ohio State University, Ph.D., 1961
Economics, finance

University Microfilms, Inc., Ann Arbor, Michigan
THE INFLUENCE OF CREDIT CONDITIONS
ON STATE AND LOCAL GOVERNMENTS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of the Ohio State University

By

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The Ohio State University
1961

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CHAPTER I
INTRODUCTION

In this century monetary analysis has eclipsed the type of analysis, termed real, that proceeds from the principle that all economic behavior is capable of being explained in terms of decisions about goods and services. Money is no longer considered to be a fluid that lubricates the wheels of industry and helps speed them on their way, nor to be a facilitating convenience that occasionally gets out of order and must be set right again. Opinion has shifted to the other side; money is now regarded as one of the factors in a mutually interdependent system that determines incomes, consumption, investment, and relative prices. It is always out of order in the sense that it has a pervasive, independent, and not-to-be-neglected influence.

The almost universal acceptance of the viewpoint that money matters has led to the hypothesizing, testing, and reformulation of specific propositions that describe the way in which money influences human behavior. Such propositions are used in the construction of theory that purports to explain the determination of important economic magnitudes and in the formation of policy, both legislative and discretionary, whose objectives are the achievement of accepted social goals and whose methods of attainment involve the management
of money. If the theory is to be useful as an explanatory and analytical tool and something more than a consistent set of statements and if policy is to be effective in promoting and achieving given ends, the hypotheses about money that are held to be valid must be tested and retested as new evidence, ideas, and methods become available.

The present study is an empirical investigation of several widely though not universally accepted propositions about the influence of credit conditions on the borrowing and capital spending of state and local governments. In the following section a brief discussion will be given of the propositions to be tested, of the study objectives, and of the significance of the results. In the succeeding section the procedure to be followed will be considered, and in the final section a preview of the following chapters will be given.

Propositions, Objectives, and Results

The authorities of the Federal Reserve System maintain that the cost and availability of loanable funds are determinants of the amounts borrowed and spent by state and local governments. It is this assertion, stated in broadest terms, that is the subject under investigation. It is an assertion not only about the determinants of spending but also, to judge from the frequency with which the claim has been advanced, an assertion that serves as a basic proposition in
the formation of central bank policy. An understanding of this claim requires a clarification of the terms availability and loanable funds.

The key to the meaning of availability is to be found in the nonprice terms of a loan transaction. In negotiations between a lender and a prospective borrower there are factors of importance other than the price the borrower is willing to pay. Some of the more important factors are the reputation of the borrower, the maturity of the desired loan, the equity position of the borrower, the margin between the amount of the loan and the value of the security (in some cases this is equivalent to the down payment the borrower is willing to make on the proposed purchase of a good), the actual and expected income or revenue available for servicing the loan, and the source of income. All of these factors bear directly on the risk of default and the liquidity of the debt instrument to be obtained by the lender in the loan transaction. If the combination of risk, liquidity, and money return compares favorably with the combination that could be obtained from other borrowers, the loan is granted. If not, the borrower must seek other sources of credit.

The complex of nonprice terms that actually prevails in the market at any one time--loan maturities, downpayment requirements, collateral requirements, and so forth--is usually described by the term availability. This is not to imply that there is either one

1The evidence which supports the statements made in this section about the beliefs and assertions of central bank authorities will be given in Chapter II.

market in which money is traded or one set of relevant nonprice terms. There are many markets, and a different set of nonprice terms prevails in each. In the market for commercial paper, for example, it is primarily the reputation of the borrower and the maturity of the paper that is offered that are important, while in the market for consumer credit it is reputation, downpayment, and expected income that are the significant factors.

The availability and cost of credit adjust to new levels from time to time because of changes in the number of borrowers, the characteristics of those seeking funds, the expectation of lenders, and the quantity of funds lenders can provide. If, for whatever reason, the number of borrowers and the quantity of funds sought should increase, lenders may require higher downpayments, a shorter period of time within which any loan must be repaid, and higher money returns in order to ration the amount of funds they can furnish. In this case the availability of credit has decreased and the cost has increased; the price and nonprice requirements of lenders have become more difficult to meet. In the situation where lenders reduce the requirements in order to invest an excess of funds that could not otherwise be employed to yield an income, the availability of credit has increased and the cost declined. In both cases cost and availability move in opposite directions.3

3Under extraordinary circumstances the cost and availability of credit may not adjust in opposite directions. Such occurrences are to be found in the early 1930's. Ibid., p. 223. It will be assumed hereafter that changes in interest rates are always accompanied by reverse changes in availability. Since the present study is confined to an examination of the empirical data of recent years, years in which extraordinary credit conditions did not develop, this assumption seems
The central bank can alter the cost and availability of credit by using its general monetary controls (open market operations, changes in reserve requirements, and discount rate policy).4 The total quantity of loanable funds, the equivalent of the total quantity of credit, that can be provided during a given time period is equal to money saved, plus the amount of money created or minus the amount destroyed by the commercial banking system, plus the quantity of funds attracted from idle balances. Since the central bank controls the reserves of the banking system, the reserves that support demand deposits, the central bank through the instrumentality of general monetary tools can directly affect the total amount of money created or destroyed and, thus, the total quantity of loanable funds or credit flowing to borrowers. An through changes in the quantity of credit, cost and availability are altered.

The authorities of the Federal Reserve maintain that spending is influenced by such alterations, particularly the spending financed with borrowed funds. With regard to state and local governments who have borrowed heavily in recent years to finance public works, the central bank authorities maintain the following.

First, both the cost and availability of loanable funds are important determinants of the levels of long-term borrowing and capital expenditure. The lower the cost and the greater the availability, entirely justified. In addition, the assumption is employed by the Federal Reserve authorities; see, "The Influence of Credit and Monetary Measures on Economic Stability," Federal Reserve Bulletin, March, 1953, p. 230.

relatively considered, the higher is the level of both bond sales and capital outlays, and the higher the cost and the less the availability the lower are the levels of sales and outlays. Cost and availability have these effects because government officials carefully weigh the costs of borrowing against the benefits to be derived by spending and because some governments operate under legal interest rate ceilings which prevent them from selling bonds when interest rates are high. The effects, however, do not fall evenly on both bond sales and capital outlays. At least in part because some anticipatory borrowing is done when credit conditions are favorable, spending on public projects is influenced somewhat less than borrowing, though the influence is still quite observable.

Second, changes in the cost and availability of credit also affect the levels of borrowing and spending. When interest rates are rising and bond prices are declining, the profits of the middlemen in the municipal market—the underwriters and security dealers who ordinarily hold large inventories of bonds— are reduced and sometimes eliminated. As a reaction to reduced profits and to losses, they discourage state and local governments from attempting an entry into the market with new bonds. Presumably, the faster interest rates rise the more the distributors of bonds exert their influence through advice, consultation, and refusals to bid on new issues advertised for sale. Rising interest rates thus force a reduction in the availability of credit to state and local governments. The final result is a diminished volume of new bond offerings and a lower level of capital spending. When interest rates are either stable or declining, on the other
hand, dealers and underwriters encourage the issuance of bonds. This
in turn affects spending.

And third, the impacts on borrowing and spending described
above are noticeable within a fairly short time of either a change in
or the attainment of a particular level of cost and availability.

Since the evidence on which the foregoing assertions are based
is insufficient,5 it is the purpose of the present study to empirically
test these assertions by an examination and statistical analysis of
the data on bond sales, interest rates, and capital outlays for the
period 1952 through 1959. The results that are established will either
provide firmer support for the position maintained by the central bank
authorities or show that their position is untenable.

In addition, the results of the empirical tests will be useful
(1) in appraising several recent criticisms that have been made of
the effectiveness of monetary policy in controlling inflation, (2) in
evaluating the conflicting claims that have been advanced concerning
the fiscal perverseness of state and local governments during periods
of recession, and (3) in gauging the merits of the many proposals that
have been put forward as measures designed to prevent high interest
rates and low credit availability from seriously retarding the con-
struction of needed community facilities. These arguments, claims,
and proposals will be fully discussed in Chapter II with the objective
of showing how the established results will be of aid in clarifying the
issues involved.

5This evidence is described and evaluated in Chapters II.
The significance that may be attached to the testing of the above assertions and to the use of the results in appraising certain arguments and legislative proposals is enhanced by the fact that state and local governments now hold an important economic position in the American economy, a position that has rapidly expanded in the past few decades and will undoubtedly continue to expand at a remarkable pace in the near future as total population, real income, and the desire for higher levels of community consumption increase.

The importance of state and local governments is indicated by the following. In 1957 they employed more than five and one-half million individuals, an employment figure more than twice that of the federal government with military personnel excluded. Purchases of goods and services, primarily made for the provision of a few major services such as education and highways, were better than $36 billion and compare with federal purchases of $49 and gross investment expenditures of $65 billion. In addition, the total direct expenditures of state and local governments (total spending exclusive of transactions between governments and debt retirements) were $48 billion and compare with the $79 billion in direct expenditures of the federal government.


While the preceding figures are sufficient to show the present importance of state and local governments in the economy, they fail to reveal an important characteristic of these governments: namely, growth. Since the end of the Second World War they have expanded at a faster rate than either the federal government or the economy at large. Direct expenditures quadrupled from $14 billion in 1946 to over $58 billion in 1959, an average increase of $3.5 billion per year. At the same time the direct expenditures of the federal government less than doubled from $66 to $87 billion while the gross national product expanded by a factor of 2.3 from $210 to $480 billion.

This growth of spending has been heavily dependent on the issuance of debt. At the end of the fiscal year 1946 the outstanding debt of state and local governments was slightly less than $16 billion while at the end of 1959 the amount outstanding was over $64 billion. This is an average rate of increase of $3.7 billion per year. When this rate of increase is compared with the previously stated rate of $3.4 billion per year in direct expenditures, the importance of borrowing in the expansion of expenditures becomes evident. Tax revenues and federal grants have risen, but they have not risen fast enough to either eliminate or reduce the necessity of seeking credit year after year.


10Ibid., p. 18; U.S. Bureau of the Census, Governmental Finances in 1959, p. 17.

11Ibid., p. 22; U.S. Bureau of the Census, Governmental Finances, 1902 to 1957, p. 20.
It is in part because of the importance borrowing has had in the past and is likely to have in the future as a method of financing growth, in part because state and local governments are a key feature of the American economy, and in part because the functions performed by these governments have a direct bearing on the welfare of so many individuals that the present study gains in interest and significance.

Procedure

If the claims of the Federal Reserve authorities regarding the influence of credit conditions on state and local governments are indeed true, there should exist significant negative relationships between the following variables from which long-term and seasonal influences have been eliminated: (1) between interest rates, which reflect both the cost of borrowing and the availability of loanable funds, and municipal bond sales; (2) between interest rates and capital spending; (3) between changes in interest rates and bond sales; and (4) between changes in interest rates and capital spending. Should significant negative relationships not exist, this would indicate that the empirical evidence is inconsistent with the claims that have been advanced.

It is the plan of the present study to determine through correlation procedures the degrees of relationship between the variables listed above. If the results should prove consistent with the authorities' assertions, further analysis will be made to determine whether the statistical results are spurious. To find, for example, that variations in interest rates are negatively correlated
with variations in municipal bond sales is not to prove that state and local borrowing is determined by credit costs. It may well be that borrowing is low at one time because tax receipts are high, not because interest rates are high. If the statistical results should prove to be either spurious or inconsistent with the claims of the central bank authorities, the conclusion will be drawn that the claims are not defensible.

In determining through correlation procedures whether significant negative relationships exist, semiannual data for the years 1952 through 1959 will be employed. The selection of these eight years has several advantages. It leaves out the years immediately following the Second World War when shortages existed and the years during the Korean War when credit was rationed by private lenders under the government-sponsored Voluntary Credit Restraint Program. It includes years of prosperity and mild recession as well as years of high and low credit costs. The decision to take semiannual periods also has advantages. Aside from increasing the number of observations, the use of six-month periods increases the homogeneity of the periods with respect to credit conditions. If calendar years were employed, important differences in credit conditions within years would be obliterated, differences which must be isolated in order to determine whether credit conditions influence bond sales and capital outlays.

The approach briefly outlined above should lead to results that either provide support for the position maintained by the Federal Reserve authorities or show their position to be indefensible.
Preview

The remaining portion of the study is divided into five parts, Chapters II through VI. In that which follows a fuller discussion will be given of the arguments on the effectiveness of monetary policy, the conflicting claims on the fiscal pruvenlty of state and local governments, and the legislative proposals designed to prevent credit conditions from retarding the construction of community facilities. The objective of the discussion will be to carefully delineate those issues to which the results of the empirical tests may be applied for clarification. The material presented will also serve to substantiate the statements made above about the assertions of the Federal Reserve authorities and the inadequacies of the evidence on which they are based.

The following three chapters will be devoted to the empirical tests. In Chapter III the data and statistical measures will be presented that bear directly on the proposition that levels of borrowing are in part determined by the cost and availability of credit. In Chapter IV the assertion that changes in interest rates have an affect on bond sales will be examined. And in the succeeding chapter the evidence will be given that pertains to the claim that capital spending is influenced by credit conditions. Each of these chapters will contain a discussion of the data and analytical procedure as well as an interpretation of the statistical measures derived.

The final chapter will summarize the conclusions of the study and the empirical findings on which they are based.
CHAPTER II

CURRENT ISSUES

As indicated in the preceding chapter, there are several current issues in which the relationship of monetary factors to the borrowing and capital spending of state and local governments has a direct bearing. They will now be given a fuller exposition under the headings of monetary policy, fiscal perversity, and community facilities. In discussing each issue particular attention will be given to any assumptions that have been made and hypotheses advanced concerning the influence of the cost and availability of credit on the borrowing and capital spending of state and local governments, the significance of the influence, the reasons for it, and the immediacy of its effect. This approach will serve to focus attention on some of the considerations that shaped the analysis of later chapters and to make known the problems to which the results of the analysis will be applied. In addition, the material presented will serve to substantiate the statements made in the preceding chapter on the propositions put forward by the Federal Reserve authorities regarding the effects of monetary factors on state and local governments and the statements made relating to the empirical evidence on which these propositions are based.
Monetary Policy

Since 1951 heavy reliance has been placed on monetary policy as a method of achieving the given goals of price stability, relatively full employment, and maximum sustainable growth. Such prominence for a type of policy that was considered during the 1930's and 40's to be impotent has given rise to an extended and sometimes heated debate on all matters relevant to the use of this resuscitated method. Are the ultimate goals of policy consistent? What specific tools of policy should be employed? By what standards should the results of policy be judged? These and related questions form the core about which the modern monetary controversy revolves.

The most important aspect of this controversy is that centered on the question of the effectiveness of general monetary controls. Can open market operations, discount rate changes, and reserve requirement alterations be effective in achieving the given goals of policy, particularly price stability, during a period characterized by high and rising levels of income and employment? Several new lines of argument have been developed and presented to show that monetary policy is either ineffective or much less effective than the authorities of the central bank would care to admit. The two arguments that are relevant to the present study together with the replies that have been made by Federal Reserve authorities will be discussed in the following subsections.
The Impact of Monetary Policy

"During the 1955-57 boom the impression gained ground that monetary restraint (achieved by the use of general monetary controls) does not fall with equal weight upon all parts of the economy."¹ Since that time the impression has gained further ground despite the lack of sufficient evidence. It is now a conviction of truth; and as such, it serves as one of the major points in an argument to demonstrate the ineffectiveness of general controls and the need for selective controls.

In a period of relatively full employment, so it is argued,² when total demand is held in check by the use of traditional monetary tools (it is assumed that significant velocity movements are absent), a shift in the composition of aggregate demand may take place and, if the dollar amount of the shift is large, lead to unwanted developments. In the first instance, a shift from one commodity or group of commodities to another will quite likely give rise to price increases in the areas experiencing the heavier demands and to reductions in output and employment in the areas from which demand shifts if price rigidities (a common situation) exist in these areas. In addition, as specific firms or industries attempt to meet the additional calls for their


products by increasing productions, their actions may raise the prices of raw materials and labor and thus may spread any original price increases to other sectors of the economy. In the second instance, a significant change in the composition of total demand may lead to higher levels of investment in the industries to which consumers shift, higher levels of investment that may eventually result in overcapacity in terms of the growth of long-run demand.

In these circumstances, so the argument continues, if monetary policy is applied more stringently to either restrain the pressures that increases prices in particular areas or to offset an actual increase in the price level in order to restore a former level, the price and employment situation will not be corrected. Restraining upward pressures in specific segments of the economy requires a type of policy that either prevents the development of such pressures (that is, prevents large changes in the components of total demand) or selectively dampens consumer demand after the components have altered. Present monetary policy is not of this variety. It is not designed nor is it used to prevent a transfer of purchasing power from one commodity or group to another. If excess demands develop in particular segments because of a transfer, there is no assurance that these segments of the economy will be precisely those most influenced by central bank action if policy is applied more stringently to dampen the excesses. Unless price-raising pressures occur only in the policy-sensitive areas, a harsher policy will quite probably reduce activity and employment in some of the nonexcess areas where policy does have an impact and where prices do not adjust downward.
The offsetting of a rise in the price level in order to restore some previous and lower level calls for a type of policy that impinges only on the price-sensitive and excess-demand parts of the economy and not on the segments where reductions in demand would lead to unemployment. Again it must be said that present controls do not meet the requirements. The selectivity of their impact may not be appropriate in all situations. Conclusion: in attempting during a period of relatively full-employment to restrain demand pressures and offset price increases in specific areas by a harsher application of general controls, the monetary authorities usually fail because their policy does not reduce activity in the areas where it should be reduced in order to maintain a stable level of prices. In endeavoring and failing to reach their goal, the authorities may inadvertently bring about an amount of unemployment that is unacceptable. If there were a high degree of competition and labor mobility in the American economy, a central bank policy that controlled total demand would be effective; for in these circumstances, a price rise at one point would be offset at another when demand shifted. Unfortunately for the officials of the Federal Reserve System, the American economy does not have these characteristics.

While the proponents of this or a like argument do not advocate the adoption and use of selective credit controls as a remedy for all ills, they do believe that their application in conjunction with the use of general controls would give to policy a variably selective impact, not now possessed, that would enable policy makers to check and/or soften any significant changes in the components of aggregate
demand, changes that raise prices and, through an accelerator effect, distort the pattern of growth.

Possibly because of its newness, the above argument has not as yet elicited on official reply from the authorities of the central bank, though they have quite freely admitted that availability and cost conditions have a selective influence as assumed by the critics. On the basis of past statements, however, it seems quite likely that the authorities will disagree with the reasoning contained in and the conclusions drawn from the argument and advance the following two points in their reply. First, since selective credit controls specify the terms and conditions on which credit may be extended for particular purposes, their use automatically involves the central bank in the allocation of credit. But this is discrimination; in addition, it is incompatible with American traditions and institutions. The only task of the central bank is the control of the total amount of credit; the allocation of the total must be performed by free markets. Second, the proper solution to the problems created by the selectivity of monetary policy and the existence of downwardly rigid prices is the adoption of governmental programs that promote competition and not

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3For a statement by the chairman of the Board of Governors on the differential impact of cost and availability conditions, see U.S. Congress, Joint Economic Committee, Hearings, Employment, Growth, and Price Levels, Part 6C, 86th Congress, 1st Session, 1959, pp. 1770-77.


the use of selective credit controls that reduce individual freedom.

Whatever the actual reply of the Federal Reserve authorities may be, the important point to note is the agreement to be found among critics and defenders of monetary policy on the proposition that the availability and cost of credit are factors which influence activity in some areas much more than in others. But is this agreement justified? If the above argument concerning the ineffectiveness of general monetary controls and the recommendation derived from it for the adoption of selective credit controls are to be appraised, this question must be answered. This involves a critical examination on the one hand, of the views of those who discuss the impact of credit conditions on the various sectors of the economy and, on the other, of the evidence on which these views are based. Since the present study is concerned with the state and local government sector (often mentioned as one of the areas most affected by credit conditions), attention will only be given to the views and evidence that pertain to it. No discussion of relative impact will be presented.

One distinction must be noted before proceeding. It was stated that critics and defenders of central bank policy agree that the availability and cost of credit have a selective impact. The phrasing is not by accident. The authorities of the Federal Reserve System maintain that while it may be possible to empirically determine the effects of a change in availability and cost conditions, it is not possible to isolate the impact of a change in monetary policy.6

use of general controls, they claim, has a direct, immediate, but marginal influence on the supply of loanable funds.\(^7\) The response of borrowers to a change in the cost of these funds and in the amounts available to them is a total response that cannot be broken down into one response due to monetary policy and another attributable to other factors. Appropriate methods are simply not available. As a result of this distinction, the Federal Reserve authorities usually refuse to speak of the impact of monetary policy.

While the simple comment has often been made that tight money hurts state and local governments, not a great deal has authoritatively stated or written about the influence of credit conditions on the borrowing and capital spending of these governmental units. In the remaining portion of the present section the considered opinions of the Federal Reserve authorities together with the evidence that supports their opinions will be examined. Though other views have been put forward, they will not be discussed at this point either because they are similar to those of the authorities\(^8\) or because they were offered and will be considered in a different context (fiscal perversity—see section two).

\(^7\)According to the definition employed by the Federal Reserve, the supply of loanable funds "is made up by repayments of debts . . . funds attracted from idle balances . . . funds provided from current bank credit expansion, and most importantly, funds available from current savings of individuals and businesses." Ibid., p. 1771.

The official view of the Federal Reserve is largely contained in the oral and written statements that have been presented to congressional committees by Mr. William Martin, Chairman of the Board of Governors of the Federal Reserve System. As can best be determined, his opinion concerning the influence exerted on state and local governments during the past few years by changes in monetary conditions is as follows.

In the recession of 1953-54, a relaxation of credit restraints "stimulated demands, particularly for residential building and utility expansion, and state and local government borrowing for community facilities." This contracyclical behavior was not carried forward into the prosperity period of 1955-57. During that time, the expenditures of state and local governments rose without interruption. However, after policy had been reversed in the fall of 1957, the increased availability of funds had an important impact on state and local government financing and spending. In many cases, the lower cost of financing encouraged states and municipalities to borrow in order to finance capital projects. In a few cases, lower market rates enabled local governments that had a legal ceiling on permissible interest rates to return to the market. The increase in spending by state and local governments from the summer of 1957 to the summer of 1958 was a billion dollars more than in the corresponding period of the preceding year.

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10 Ibid.

In the latter half of 1958, after business activity had started to increase and monetary policy had been reversed, the reduction in availability and the rise in interest rates served to dampen speculative excesses then developing, to restrain and spread out the volume of new corporate and municipal security financing, and to facilitate the financing of the large Federal deficit outside the banking system. The restraint of corporate and municipal financing followed some anticipatory borrowing by these issuers earlier in the year when long-term interest rates were lower.\footnote{Ibid., p. 464}

The view expressed in these statements may be summarized in the following points. First, both the cost and availability of long-term funds have had a significant influence on the bond sales and, to a lesser extent, the capital outlays of state and local governments during periods of recession when interest rates were low and availability relatively high. The influence during periods of prosperity has not been as pronounced. Second, the influence of credit conditions on bond sales and capital outlays has in part resulted from the economizing behavior of cost-conscious officials. Third, legally fixed ceilings on interest rates have caused officials to postpone bond sales during high cost periods and to sell previously postponed issues during low cost periods. And fourth, expectations during recessions of higher interest rates have been held by officials and have encouraged them to borrow for the financing of future projects.

This summary is accurate but incomplete. If a comprehensive description is to be given of the official position maintained by Federal Reserve authorities, reference must be made to their view on
the effects that follow from changes in the cost and availability of credit. In an article appearing in the Federal Reserve Bulletin, a publication containing the current thinking of central bank authorities, the claim was made that security dealers and underwriters are particularly sensitive to changes in interest rates and that, as a result, both the volume of new debt sold and the level of debt-financed spending are affected.

Security dealers and underwriters are sensitive to changes in interest rates, so it is claimed, because

they customarily carry a large inventory of securities in the process of distribution. They risk large losses if they are holding large amounts of securities in a period of rising interest rates, since they may not be able to sell them except below cost or may have to carry the securities for some time on borrowed money.  

As a consequence, underwriters and dealers "may be expected to carry securities less readily and hence to discourage security flotations" when interest rates are rising, while they will be more likely "to encourage such flotations" when interest rates are stable or falling.

Since state and local governments do the bulk of their borrowing by selling bonds to underwriters and security dealers who in turn place them with ultimate lenders, the direct implication of these

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14Ibid.

15Ibid.

statements is that the volume of municipal bond sales is diminished when interest rates are rising and augmented when rates are either stable or falling. A further implication, one that must be drawn from the context in which the statements were offered, is that capital spending adjusts with the level of bond sales.17

The authorities find at least partial support for their views on the influence of credit conditions in three studies. The first was done by Richard C. Pickering, a member of the Division of Research and Statistics of the Board of Governors.18 For the years 1953-54 he collected information from the financial press on changes in financing plans. He found that during May, June, and July of 1953, a period of credit restraint and market congestion, a total of approximately $1.6 billion in municipal bonds was sold while bond sales amounting to $340 million were delayed. The total value of delayed sales consisted of the value of bond offers where bids had been rejected on the original day set for sale ($47.2 million), the value of offers where no bids had been received on the original day ($34.9 million), and the value of planned offers where (1) the original day set for sale had been postponed or where (2) plans had been announced for a sale during the period but no final day had been set ($257.1 million). Only in a few instances was it possible for the author to determine the reasons for


the delays. One issue ($96.0 million) of the Mackinac Bridge Authority was postponed, for example, because of unfavorable market conditions and the failure of traffic estimates to indicate sufficient revenues to cover debt service at prevailing rates of interest. In another case, the New Jersey Highway Authority postponed an issue of $150.0 million because of technical complications and market conditions. Both postponements reflected the influence of cost and availability conditions.

The author also found that over 90 percent by value of the offers originally delayed had been reoffered and sold by the end of the year. He attributed this to the changed conditions that prevailed during the latter half of 1953: income and employment were down, monetary policy was much less restrictive, and interest rates were lower. The conclusion of the author was that construction had only been held back briefly by the first delays at midyear.

A study using similar methods was made by the Investment Bankers' Association. By scanning the financial press and noting the bond offers where a day of sale had been definitely set, the authors determined that of the $4,370 million in municipal bonds actually offered for sale during the nine month period from July 1956 to March 1957, a period of credit restraint, $4,049 million were sold on initial offering and $539 million were not. Of the amount not


20 Unlike the procedure used by Pickering, the authors of this work only counted the bond offers where a day had been set to receive and open bids.
Initially sold, $218 million was reoffered and sold in the same period, leaving an unsold total of $321 million as of March 31, 1957, a total that consisted of $75 million in bond offers where no bid had been received and $246 million where bids had been rejected or offers withdrawn prior to the actual bidding date that had been set.

After simply presenting these figures the authors concluded, without stating any reasons, that monetary restraint had had "some effects on state and local government programs."21 This means, presumably, that capital spending was reduced because of the delays encountered in selling bonds. The evidence presented by the authors fails to support any such conclusion.

The third study was made by Frank Morris of the Investment Bankers' Association.22 In order to reveal cyclical trends in bond sales, in the dollar amount of contracts awarded for construction, and in the dollar value of construction put-in-place, he computed twelve-month moving averages for each of the series over the period 1952 through 1958. His analysis indicated a pronounced degree of cyclical variation in municipal bond sales; during the 1953-54 and 1957-58 recessions they increased, reached a peak rate at the recession trough, and then declined as business activity increased. This contracyclical pattern resulted in a shifting of "about 10% of bond sales from the final stages of the boom to the recession and recovery


The same pattern with a smaller amplitude was found for contracts awarded and construction put-in-place. The contracyclical behavior for these series resulted in 5 percent of contracts awarded and a somewhat smaller percentage of construction put-in-place being shifted from the last part of the boom periods to the recession periods. These findings, and nothing else, led the author to conclude that

the impact of monetary controls on state and local governments . . . constitutes a model of what monetary policy should be expected to accomplish. At no time during the period did a restrictive monetary policy "throttle" or severely curtail State and local capital projects. Its impact appears to have been limited to roughly the marginal five percent of capital projects, those having a more postponable nature.24

It may be doubted that this glowing statement concerning monetary policy is completely justified by the data and analysis presented by the author. Assuming that 5 percent of contracts awarded and 10 percent of bond sales were moved from boom to recession, can it be concluded that conditions of cost and availability (not monetary policy) were responsible for this shift? There would be a good case for answering yes if sales and contracts had moved contracyclically during the study period only after conditions of availability and cost had changed. But the author's data do not show this. They show, for example, that monthly bond sales increased, both absolutely and relative to trend, during the six months of boom preceding each of the last two downturns and then continued to increase while economic

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23Ibid., p. 233
24Ibid., p. 249.
activity declined. If this actually happened, it would seem that credit conditions did not have an important influence on sales; the timing relationship is wrong. It is not certain, however, that this actually did happen; the bond sales figures presented by the author are average monthly sales figures obtained by using a twelve-month moving average, a statistical procedure that eliminates detail for the sake of continuity. Since this method obscures timing relationships, it is impossible to determine from the evidence given by Morris exactly when sales turned up or down, or when contracts awarded and construction changed direction. Because of this, his argument that credit conditions have had significant effects is weak. It rests only on an approximate similarity in the movement of economic activity and the movements of bond sales, contract awards, and construction put-in-place.

The results of the three studies reviewed above provide limited support to the beliefs held by the Federal Reserve authorities concerning the influence of cost and availability conditions on state and local governments. When evidence can be supplied that clearly supports these beliefs or that indicates their falsity, economists will be in a better position to evaluate the argument that monetary policy is ineffective because of selective impact.

25Ibid., Chart III, p. 239
Time Lags

Another argument that is a part of the larger debate on the effectiveness of monetary policy and that has a bearing on this study is one in which the central point of difference concerns the importance of movements in the income velocity of money. Is a restrictive monetary policy substantially nullified by compensatory increases in the velocity of money (activation of idle balances) which permit, in effect, a growing volume of expenditures to be financed long after policy has been initiated?

One observer has answered yes in the following terms: An increase in interest rates, a change at least partially caused by the use of general controls, automatically stimulates a more intensive search by all financial institutions for the inactive money balances that can be purchased for an income yielding asset and then used to satisfy the pressing demands of consumers, businessmen, and governments for credit with which to purchase goods and services. The search for and mobilization of idle funds is facilitated by the efficiency of the highly organized financial markets that link together the diverse sectors of the economy and by the existence of a large and liquid national debt that serves as the substitute for idle funds. As a result of the mobilization of funds, the available supply of money is used more intensely to finance increases in total money spending, increases that may continue for some time after central bank action has been taken to restrict the growth of the supply of money. By the

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time a restrictive policy does take effect (that is, by the time velocity stops increasing), prices may have moved upward by a considerable amount.

While admitting that a more intensive use of the supply of money can be a disrupting factor, the authorities of the Federal Reserve maintain that velocity movements can be taken into consideration as policy is formulated and administered and that, as a result, the final effects of central bank action will only be "somewhat delayed." Critics, on the other hand, deny both points: policy cannot be applied more stringently in order to compensate for a faster turnover of money without disrupting financial markets, creating difficult debt management problems, and possibly destroying the expansion that central bank action is supposed to temper. To avoid difficulties, policy must be applied with a gentle hand. But while it is being so applied, a substantial increase in the level of prices may occur because of increased spending financed by a greater turnover of money. The time lag of policy is too long.

27 Lawrence S. Ritter argues that offsetting moves in velocity may actually improve the effectiveness of monetary policy; see his communication "Income Velocity and Anti-Inflationary Monetary Policy," American Economic Review, XLIX (March, 1959), 120-29.


Critics back their contention of a long time lag for monetary policy by referring to the 1955-57 boom when prices rose approximately 8 percent. From the first quarter of 1955 to the third quarter of 1957 the gross national product went up 17.6 percent, from a seasonally adjusted annual rate of $379.0 billion to a rate of $445.6 billion. The money supply, controlled by the central bank, rose 2.7 percent, from a seasonally adjusted total of $131.3 billion to a total of $134.9 billion. As is evident, the income velocity of money climbed during the given period (and without apparent diminution) from a rate of 2.88 to a rate of 3.30, an increase of 14.4 percent. In the fourth quarter of 1957 velocity declined slightly to a rate of 3.28. If the lag of policy is measured from the time a restrictive policy is initiated to the time the income velocity of money either slows down or reaches an upper limit, indicating that central bank action has taken hold, then the data for the 1955-57 boom indicate the length of the lag to have been at least one and one-half years.

While this approach to the estimation of the action-impact lag of monetary policy is accepted and used, it is not the only one that can be applied. The lag can also be measured from the time policy action is taken, as indicated by a change in interest rates or excess reserves, to the time the impact of that action is detected, if at all,

31With the exception of the fourth quarter velocity rate, all figures were taken from Stephen W. Rousseau, "Velocity Changes and the Effectiveness of Monetary Policy," The Review of Economics and Statistics, XLII (February, 1960), Table I, 30. The velocity rate for the fourth quarter was computed from information given in Federal Reserve Bulletin, September 1958, pp. 1080 and 1122.

In expenditures made from loanable funds rather than in total expenditures. An example (the only one known) of this approach is contained in a statistical study by Gehrels and Wiggins. They attempted to determine the variables, both lagged and unlagged, that best predicted manufacturers' fixed investment for the period 1948-55. Among other results, they found that an interest rate variable with a one year lag had a significant effect on investment; that is, the interest rate prevailing at any one time was determined to have an important influence on the amount of investment one year later.

Implicit in this method of determining the lag of policy is the assumption that policy effects are or should be discernable in expenditures from loanable funds; for example, expenditures on consumer durables and new homes. It is, however, a much more limited assumption than that required when the final impact of policy is sought by examining velocity changes; the assumption in this case is that the effects of general controls are or should be detectable in total money expenditures.

As yet, no formal study has been completed on the time required for a change in cost and availability conditions to have an influence on the bond sales and capital outlays of state and local governments. The present study, in which an approach similar to that used by Gehrels and Wiggins is employed, should contribute to the general discussion on how long it takes policy to become effective, a discussion that has largely been based on empirical studies of velocity.

Fiscal Perversity

During the 1930's the federal government accepted the previously rejected responsibility of stabilizing the economy at a high level of production and employment, a responsibility that was formally acknowledged at a later time in the Employment Act of 1946. With this change in the role of the national government and with an accompanying shift in emphasis from monetary to fiscal policy came a new interest in the contributions of state and local governments to economic stability. Upon examination of the record it became evident that these smaller and uncoordinated units of government had been fiscally perverse during the late 1920's and the depression of the 30's; that is, they had added more to the income stream than they had taken from it in the last few years of the 1920's, and they had done precisely the opposite in the depression of the 30's. Concerned that any governmental unit or sector would make a negative contribution to stability, economists and other observers advanced hypotheses to explain the perversity and then offered recommendations which they felt would either reduce the perverseness or eliminate it.

One of the earliest explanations is that of Hansen and Perloff. While their account is supposedly general, it should be

noted that they drew most heavily on the record of the 1930's in searching for and supporting hypotheses. They argued as follows.

During periods of prosperity state and local government officials acquire the optimistic outlook that generally prevails. With unwarranted expectations of a bright future, they undertake costly capital programs that expand and improve community facilities but that require more funds than can be provided by current tax receipts. Instead of raising taxes, a move that would be politically dangerous, officials finance a large portion of their capital outlays by selling long-term debt in a receptive capital market. Expenditures, as a result, exceed revenues; more is added to the income stream than is taken from it at a time when the opposite should be the case.

This behavior is reversed in depressions. When revenues from consumption and property taxes decline, state and local governments reduce by a relatively larger amount their expenditures, particularly their expenditures on community facilities. One of the factors that accounts for this reduction is the difficulty, if not impossibility, of borrowing on reasonable terms. Because investors are reluctant to purchase municipal bonds of any type, interest rates become higher and availability lower. These conditions reduce the willingness and ability to borrow. In addition, many localities, even though they may be willing, are prevented from entering the bond market because their unused capacity to legally incur debt has been eliminated by past excesses in the issuance of debt and by reductions in legal debt
limits brought about by depression induced declines in property values.35

On the basis of their views the authors made several recommendations that were designed to improve the fiscal behavior of state and local governments.36 One of the recommendations was that the federal government establish an intergovernmental loan corporation whose purpose it would be to provide low cost long-term funds during depressions. They also suggested that the legal debt limits of local governments be set as a fixed percentage of yearly revenues averaged over a preceding number of years. If this plan were adopted in place of the then current method of setting limits (a method still in use), it was thought that debt limits, together with net debt outstanding, would not have as much of a tendency to swing upward during prosperity and downward in depression.

Both the explanation and the recommendations derived from it have endured. Mabel Newcomer, for example, in an article published in 1954, stated that the record of the past thirty years had shown state

35Most local governments have legal debt limits that are based on a fixed percentage of the assessed valuation of property within their jurisdiction. Unused debt capacity refers to the net amount of debt that can be issued over and above the net amount of debt outstanding without exceeding the legal limit. Assuming that assessment ratios remain constant, a decline in assessed property values induced by reductions in market values leads to a decrease in debt limits and capacities. There may be, however, a considerable lag between the time market values actually drop and the time assessed values are adjusted downward. In the depression of the 1930's, assessed values did not decline until 1931; see, U.S. Bureau of the Census, A Decade of Assessed Valuation: 1929-1938, State and Local Government Special Study No. 14 (1941), pp. 4-5.

36Hansen and Perloff, pp. 200-209.
and local government finances to be perverse.\textsuperscript{37} Her explanation of why this was so was quite similar to that of Hansen and Perloff. In particular, she emphasized the institutional restrictions on borrowing and the difficulties of marketing securities (high interest rates and low availability) as factors responsible for declines in capital outlays during business slumps.\textsuperscript{38}

The views briefly summarized above have not received complete acceptance. After an examination of recent data and a re-examination of the record of the 1920's, several observers have been convinced and have contended that the Hansen-Perloff-Newcomer account of state and local behavior is incorrect as a general description.\textsuperscript{39} State and local governments, so it is claimed, may contribute to inflationary pressures during periods of prosperity, they may make a negative contribution to stability in long depressions, but their aggregate behavior in mild depressions which interrupt a period of secular growth is of a stabilizing nature; they maintain and perhaps increase expenditures, despite any change in revenues; and they engage in more


\textsuperscript{38}Newcomer, \textit{National Tax Journal}, VII, 103-04. In stressing institutional restrictions and capital market conditions as factors that account for the behavior of capital outlays, it is difficult to determine from the context whether the author has mild or deep depressions in mind.

extensive deficit financing than otherwise in order to pay for capital projects. The empirical evidence, so it is argued, supports these propositions. State and local governments are not perverse at all times.

Their account of why state and local governments run a higher net deficit in mild depressions is as follows. Knowing that their decline in revenues will not be as sharp nor as immediate as the decline in personal incomes; believing that the depression will be mild and short and that their revenues, if they drop at all, will soon pick up; being conscious of the greater availability and lower cost of loanable funds in the capital market; expecting a continuance of the past secular boom after business conditions shortly improve, a continuance that implies a persistence in the growth of demand for (and willingness to pay for) government services and a return to higher interest rate levels—knowing these conditions and expecting these developments, state and local government officials are persuaded to maintain their operating expenditures and to increase the issuance of debt (assuming debt limits permit) in order to step up their capital outlays for projects needed in the future and/or projects delayed in the past. The length of time for which they will continue to hold operating and capital expenditures at high levels and to run a deficit while business continues downward depends a great deal on the strength with which optimistic expectations of the future are held.

40While Baratz and Farr argue that municipal governments are not fiscally perverse in recessions, they state that the argument can be made for state as well as other types of local government; see National Tax Journal, XII, 248.
Whether this explanation of how and why state and local government officials conduct their financial affairs during mild recessions is considered to be in direct conflict with that of Hasen and Perloff depends on whether the explanation of the latter is taken to be general (applicable in all cases) or partial (applicable as an account of behavior during deep depressions and boom periods). While it would seem that the two explanations supplement rather than conflict with one another, doubt still exists on the issue. Do state and local governments actually contribute to stability in mild recessions by increasing their issuance of debt and their capital outlays? If so, is it because they are taking advantage of the favorable cost and availability conditions that prevail? The results established in Chapters III and IV should provide answers to these questions.

**Community Facilities**

As noted in Chapter I, state and local governments have been under constant pressure in recent years to expand the coverage, improve the quality, and increase the number of offered services. These pressures have arisen from an almost steady surge in population, an unrelenting movement to the suburbs, and a continual increase in the level of prosperity. If forecasts of the near future are correct, these dynamic factors will continue to change and to create greater demands for governmental services.

The nonfederal governments have found it difficult to expand as required: while their tax revenues have gone up, partly as a result of higher tax rates and larger national products, they have not grown
since 1946 by an amount sufficient to obviate heavy municipal borrowing each year. Assuming that expenditures for education, highways, hospitals, and other services and facilities will have to increase during the next decade if service levels are to be at least maintained, the question arises of whether state and local governments will have the economic base, the methods, and the courage to tax for the necessary revenues.\textsuperscript{41} If the tax base continues to grow as it has in the past, if the federal governments releases some of its tax sources, if state and local governments have the types of taxes that can be used to tap new sources and released sources, and if they take the final steps necessary in the years ahead to raise revenues, then state and local governments will continue to operate as effective instruments of democratic government, will continue to render the traditional services they have performed in the past, and will provide the new services that changing conditions require. The responsibility of the federal government in this situation will be to provide a favorable environment; namely, stability, growth, and level prices. If state and local governments do not have the fiscal capacity and the will to tax, then the federal government may be forced to assume a more important role in rendering and/or financing the services of the lower level governments. Many observers would not care to see this last development.

Because of a desire to see the nonfederal portion of our government system survive and prosper, quite a few observers have advanced plans for the improvement of state and local governments.\textsuperscript{41} The remaining part of the paragraph was adapted from Walter H. Heller, "The Changed Setting of State-Local Finance," Municipal Finance, XXX No. 1 (August, 1957), 31-34.
financial position. Several of the proposals were specifically designed to increase the demand for municipal debt and thereby reduce the cost of borrowing. If adopted, the final effects of these plans would be, so it has been stated,\(^{42}\) to relieve state and local governments during booms of the tight money pressures that might otherwise eliminate many projects of high social priority and to provide during recessions better access to loanable funds with which to increase the construction of needed facilities. The more important proposals for which these final effects have been claimed are the following.

1. Establish a federal government loan agency which would (1) obtain its funds either from the Treasury or from the sale of agency bonds and (2) purchase state and local obligations when they could not otherwise be sold at low or reasonable rates of interest.\(^{43}\)

The popularity of this proposal is indicated by the fact that in 1958 similar bills were introduced in the Senate (S.3497) and House (H.R.11474) which incorporated the loan fund idea.\(^{44}\) Briefly summarized, the bills proposed the setting up of a $2 billion revolving loan fund to be administered by the Community Facilities Administration of the Housing and Home Finance Agency. Obligations of state and local governments for the purpose of financing essential public works were to be purchased by the agency at rates of interest not in excess of

\(^{42}\)Ibid., p. 38

\(^{43}\)See, for example, Hansen and Perloff, p. 204.

the annual average interest rate on all interest bearing obligations of the United States plus one-fourth of one percent. Maturities of the obligations were not to exceed 50 years except in emergency situations. The agency was to obtain its initial $2 billion by selling notes and other securities to the Treasury. Despite the fact that the Senate passed the measure, the House rejected it on August 1, 1958.

2. Require member banks to hold a given percentage of their deposit liabilities in municipal securities.45 This is a variant of the security-reserve schemes that were prevalent after World War II.

3. Change the laws to permit federal savings and loan associations to purchase the bonds of state and local governments.46

4. Of a shareholders income from an investment company, exempt that portion from the federal income tax that represents interest earnings from the company's holdings of municipal bonds.47

5. And lastly, have the federal state governments guarantee the principal of municipal securities.48

Residing below the surface of the above proposals is the assumption that lower interest rates have a significant effect or influence on both the issuance of municipal debt and the construction of capital projects. As brought out in the Senate hearings on the bill to


47 Ibid., p. 113; Levitt, Municipal Finance, XXX, No. 1, 20.

create a federal loan agency for the purchase of state and local securities, this assumption does not have universal acceptance. A representative of the Investment Bankers' Association, for example, while admitting that the proposed agency would supply cheaper money for many localities than could be found in the private market, testified that it "would not provide any appreciable amount of additional construction for public facilities but would merely substitute federal financing for private financing." The Commissioner of the Community Facilities Administration agreed with this view. The point at issue has not as yet been settled. Would a reduction in interest rates stimulate borrowing and increase the amount of construction for community facilities?

**Summary**

As pointed out in Chapter I, the Federal Reserve authorities make several claims regarding the influence of credit conditions on state and local governments. The evidence on which these claims are based, evidence that is contained in three empirical studies is far from convincing. One study by the research staff of the Board of Governors shows that some state and local governments delayed the sale of their bond issues during the spring of 1953 as interest rates rose. Though a determination could not be made in every case, some of the issues that were withdrawn from the market were withdrawn because of credit conditions--high interest rates and a congested market. However, because over 90 percent of the issues originally delayed were

49Ibid., pp. 183-84  50Ibid., p. 37
reoffered and sold in the fall, the final effects of credit conditions on capital spending was, as admitted in the study, small if not insignificant. This evidence, which relates only to one short period of time, would not seem to be an adequate basis on which to make the claim that cost and availability conditions have an influence on both borrowing and capital outlays.

A similar type of study by the Investment Bankers Association indicates that during the latter half of 1956 and the first quarter of 1957, a period when interest costs were again rising, bond issues totaling over $500 million were not sold on original offers. However, of the amount not initially sold, over $200 million in bonds were re-offered and sold within the same period. While this result is interesting, the study is inadequate in that no material is presented to show why sales were delayed and how capital spending was influenced if at all.

A third study using data for the period 1952 through 1958 shows that bond sales increased during the 1953-54 and 1957-58 recessions and declined during the preceding and intervening boom periods, that contracts awarded by state and local governments for new construction followed the same pattern on a much more modest scale, and that the value of new construction put-in-place fluctuated only slightly with the business cycle. This evidence led the author of the study to conclude that the fluctuations in all series were the result of monetary policy, though the fluctuations could just as well have been the result of changes in any other short term factor. Even assuming this conclusion to be correct, the fluctuations in the value of construction
put-in-place are so small as to indicate that monetary policy has little effect on spending.

The inadequacies of these studies point to the need for additional evidence and analysis to either validate or invalidate the claims of the central bank authorities. The material presented in later chapters should fill this need and, in addition, provide results which will be of value in answering the following questions: What sectors of the economy are influenced by monetary policy? In what sectors might it be appropriate to introduce selective credit controls in order to prevent price rises that result from shifts in the composition of aggregate demand? Do state and local governments contribute to the stability of the economy during mild recession by increasing their issuance of debt and their spending? And lastly, should proposals designed to lower the cost of borrowing to state and local governments be enacted in order to prevent high interest rates from retarding the construction of needed community facilities?
CHAPTER III

BORROWING AND THE LEVEL OF INTEREST RATES

The central bank authorities place a great deal of faith in the proposition that credit cost and availability conditions influence municipal bond sales: the lower the interest cost and the greater the availability the larger is the volume of bond sales, while the higher the cost and the less the availability the lower is the volume of sales. In effect, this is a statement that credit conditions, whose level and movement are the responsibilities of the central bank, are important determinants of the amounts borrowed by state and local governments in the long-term capital market. They are important determinants, so it is believed, both because state and local officials attempt to minimize interest costs and because some governments operate under legal interest rate ceilings which prevent them from selling bonds when interest rates are high.

An examination of the proposition that credit conditions influence bond sales involves a consideration of two questions. First, is the statement of the authorities consistent with the data on interest rates and municipal bond sales? And second, if the facts are consistent with the statement, is the consistency spurious or is it the result of a direct relationship between interest costs and state and local borrowing? The answer to the first question will be considered in the
following section, while in the succeeding section material will be presented that is relevant to an investigation of the second. The final section will contain an interpretation of the evidence and a discussion of the reasons offered by the central bank authorities to explain the influence of credit conditions on state and local governments.

**Interest Rates and Bond Sales**

In order to determine whether the data on borrowing and interest rates are consistent with the proposition that cost and availability conditions are important determinants of municipal bond sales, the following procedure was employed.

First, the years 1952 through 1959 were selected as a study or test period. This selection excludes the years immediately following World War II when material shortages existed and the years of the Korean War when credit was rationed by private lenders under the government-sponsored Voluntary Credit Restraint Program. On the other hand, the study period includes years of prosperity and mild recession as well as years of high and low interest rates.

Second, six-month intervals were used as the basic time unit. The choice of semiannual periods was made in order to increase both the number of observations within the eight year test period and the homogeneity of the time units with respect to credit conditions. Had calendar years been chosen, important difference in credit conditions within years would have been obliterated.
Third, since a direct measure of availability conditions does not exist, the assumption was made that interest rates in the municipal bond market could be employed to represent both the cost of borrowing and the availability of credit to state and local governments. In addition to being used in theoretical and empirical investigations, the assumption is employed by the central bank authorities in their discussions of monetary policy.

Fourth, semiannual data on interest rates and municipal bond sales were collected, adjusted for seasonal variation, and then further adjusted to eliminate such secular factors as population growth by fitting long-term trends and computing the deviations from trend.

And fifth, the deviations from trend, deviations resulting from chance and cyclical factors, were compared in order to determine whether the short-run fluctuations in bond sales during the years 1952 through 1959 were inversely related to the short-run fluctuations of interest rates as implied by the claim that cost and availability conditions are determinants of borrowing by state and local governments.

The data, the long-term trends, the deviations from trend, and the statistical measures of relationship between deviations will be presented and discussed in the following subsections.


Presented in Table 1 are the seasonally adjusted data for gross and net bond sales. Gross sales (G) represent principal amounts of bonds sold through competitive bidding for all purposes by state and local governments within the United States and by local governments in the territories and insular possessions of the United States. Also included are the bonds known to have been privately sold or placed and the debt obligations purchased in 1952 and 1953 by the now defunct Reconstruction Finance Corporation.

The data on net bond sales (N) represent, at least theoretically, total bond sales less bonds redeemed. It is difficult to say how closely this ideal is approached. The Federal Reserve Board, the compilers of the basic series, does not state the area of coverage (presumably, it is the continental United States) nor whether private sales are included in the totals. Neither is the method of estimation given.

The average bond yields of Table 1, denoted in further discussions by the symbol U, are simple averages of monthly average yields to maturity of fifteen high-grade municipal bonds as computed by

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### Table 1

**Bond Sales of State and Local Governments, Average Yields on Municipal Bonds, and Average Interest Rates on Treasury Bills, United States, Semiannually, 1952-1959**

(Sales in Billions of Dollars, Seasonally Adjusted)

<table>
<thead>
<tr>
<th>Period</th>
<th>Gross</th>
<th>Net</th>
<th>Municipal Bond</th>
<th>Treasury Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>2.351</td>
<td>1.11</td>
<td>2.060</td>
<td>1.610</td>
</tr>
<tr>
<td>II</td>
<td>2.061</td>
<td>1.39</td>
<td>2.315</td>
<td>1.855</td>
</tr>
<tr>
<td>1953 I</td>
<td>2.394</td>
<td>1.68</td>
<td>2.660</td>
<td>2.065</td>
</tr>
<tr>
<td>II</td>
<td>3.165</td>
<td>2.02</td>
<td>2.780</td>
<td>1.715</td>
</tr>
<tr>
<td>1954 I</td>
<td>3.460</td>
<td>2.25</td>
<td>2.450</td>
<td>.925</td>
</tr>
<tr>
<td>II</td>
<td>3.508</td>
<td>2.15</td>
<td>2.295</td>
<td>.950</td>
</tr>
<tr>
<td>1955 I</td>
<td>2.584</td>
<td>1.77</td>
<td>2.430</td>
<td>1.355</td>
</tr>
<tr>
<td>II</td>
<td>3.392</td>
<td>1.93</td>
<td>2.625</td>
<td>2.100</td>
</tr>
<tr>
<td>1956 I</td>
<td>2.903</td>
<td>1.98</td>
<td>2.735</td>
<td>2.450</td>
</tr>
<tr>
<td>II</td>
<td>2.544</td>
<td>1.32</td>
<td>3.125</td>
<td>2.805</td>
</tr>
<tr>
<td>1957 I</td>
<td>3.153</td>
<td>2.05</td>
<td>3.430</td>
<td>3.120</td>
</tr>
<tr>
<td>II</td>
<td>3.808</td>
<td>2.25</td>
<td>3.760</td>
<td>3.325</td>
</tr>
<tr>
<td>1958 I</td>
<td>4.117</td>
<td>2.92</td>
<td>3.325</td>
<td>1.360</td>
</tr>
<tr>
<td>II</td>
<td>3.332</td>
<td>2.28</td>
<td>3.795</td>
<td>2.185</td>
</tr>
<tr>
<td>1959 I</td>
<td>4.334</td>
<td>2.34</td>
<td>3.890</td>
<td>2.885</td>
</tr>
<tr>
<td>II</td>
<td>3.333</td>
<td>2.16</td>
<td>4.000</td>
<td>3.885</td>
</tr>
</tbody>
</table>

Note: Bond yields are the average yields to maturity of fifteen high-grade municipal bonds as computed by Standard and Poor's Corporation. Treasury bill rates are average market rates on three-month bills.

Stan and Poor's Corporation. Since the compilers base their calculations on the prices of bonds in the secondary market for municipal bonds, a market in which trading is rather limited, it is not known how accurately the yield series reflects the cost of borrowing.

The average three-month Treasury bill rates of Table 1, denoted by the symbol V, are simple averages of the monthly average rates as computed by the Federal Reserve Board. Since interest rates on Treasury bills proved to be a better indicator of general economic conditions than rates on municipal bonds (see Chart II), they have been included in order to compare the fluctuations in bond sales with the fluctuations in business activity.

**Time Trends**

The series described above show variation caused by cyclical, chance, and long-run factors. The gross borrowing series, for example, displays a strong upward trend during the eight years of the study period (see Chart I) that is the result of such factors as population growth, movement to the suburbs, and increases in living standards; the series also displays cyclical characteristics that may or may not be the result of credit conditions. In order to isolate the cyclical and chance components in each series for purposes of comparison, linear trend lines were fitted by the method of least squares. The

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5The yields of the fifteen high-grade bonds are based on Wednesday closing prices and the monthly figures are averages of the four or five weekly figures for the month. U.S. Office of Business Economics, *Business Statistics: 1957*, p. 248.
basic assumption of this method, a rather strong assumption, is that
the fitted trend lines reflect only the action of secular forces and
the deviations from trend only the play of cyclical and chance factors.
The trend equations that were computed follow:

1) \( G_t = 2.36206 + .092981 T \)
2) \( N_t = 1.42252 + .063526 T \)
3) \( U_t = 1.92962 + .123537 T \)
4) \( V_t = 1.18700 + .114691 T \)

\((t, T = 1, 2, 3, \ldots, 16)\)

The symbol \( T \) represents the time period measured in six-month units
with origin at October 1, 1951. The symbols \( G_t^*, N_t^*, U_t^*, \) and \( V_t^* \)
represent the computed trend values at time \( t = T \) of gross sales in
billion of dollars, net sales in billions of dollars, average municipal
bond yield in percent, and average three-month Treasury bill rate in
percent. The time trends for gross and net bond sales are shown in
Chart I; the trends for municipal bond yields and Treasury bill rates
are plotted in Chart II.

Under the assumption stated above, these equations have the
following interpretation. In the absence of chance and cyclical factors
gross bond sales would have increased every six months during the years
1952 through 1959 by \$93 million, net bond sales by \$63 million, average
bond yields by 12/100 of a percent, and Treasury bill rates by 11/100
of a percent.
CHART I
GROSS AND NET BOND SALES OF STATE AND LOCAL GOVERNMENTS, UNITED STATES,
SEMIANNUALLY, 1952-1959

Billions Dollars

Billions Dollars

0 1.0 2.0 3.0 4.0

0 1.0 2.0 3.0 4.0

Source: Table I

Time Trends

Gross Sales

Net Sales

52 53 54 55 56 57 58 59
CHART II

AVERAGE RATE ON TREASURY BILLS AND AVERAGE MUNICIPAL BOND YIELD
UNITED STATES, SEMIANNUALLY, 1952-1959

Per cent

Municipal Yield

Time Trends

Treasury Bill Rate

Source: Table I.
Deviations from Trend

The absolute deviations from trend were found by taking the difference between the actual value of the variable concerned and the computed trend value. In terms of the above trend equations, the absolute deviations are defined as follows:

5) \( G_t - \hat{G}_t = G_t - 2.36206 - .092981 T - s_t \)
6) \( N_t - \hat{N}_t = N_t - 1.42252 - .063526 T - n_t \)
7) \( U_t - \hat{U}_t = U_t - 1.92962 - .123537 T - u_t \)
8) \( V_t - \hat{V}_t = V_t - 1.18700 - .114691 T - v_t \)

\((t, T = 1, 2, 3, \ldots 16)\)

where \( g_t \) equals the absolute deviation of gross sales in billions of dollars in period \( t \), \( n_t \) equals the deviation of net sales in billions of dollars, \( u_t \) equals the deviation of the average municipal bond yield in percent, and \( v_t \) equals the deviation of the average Treasury bill rate in percent. The absolute deviations are presented in Table 2.

In order to determine whether there were any significant negative relationships between deviations in bond sales and interest rates, correlation procedures were used. The following equations of average relationship, together with correlation coefficients and standard errors, were obtained:

\[ C \text{ coefficients of correlation were also computed to determine the degrees of relationship between the deviations in bond sales and the deviations in interest rates lagged by one period. The results were not significant.} \]
Asterisks denote computed or most probable values and subscripts denote independent variables. The standard errors were computed with N equal to 16.

Not all of these relationships are statistically significant. At the 5 percent level of significance with 15 degrees of freedom a correlation coefficient of at least .482 is needed before a relationship may be considered more than the result of chance. Thus, only relationships 10, 11, and 12 may be considered statistically significant.

The fact that relationship 9 is not significant indicates that during the period 1952 through 1959 the volume of gross bond sales by state and local governments was not consistently high when the cost of borrowing in the municipal bond market was relatively low and consistently below trend when the cost of borrowing was relatively high. Though the cost of securing funds and the volume of sales varied considerably during the eight years of the study period, the variation exhibited by these series shows no inverse commonness. There were, of course, some semiannual periods within the eight year interval when a high average interest cost was accompanied by a low volume of sales.

---

<table>
<thead>
<tr>
<th>Period</th>
<th>Gross Sales</th>
<th>Net Sales</th>
<th>Municipal Bond Yields</th>
<th>Treasury Bill Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>-.104</td>
<td>-.374</td>
<td>.007</td>
<td>.308</td>
</tr>
<tr>
<td>II</td>
<td>-.486</td>
<td>-.162</td>
<td>.138</td>
<td>.439</td>
</tr>
<tr>
<td>1953 I</td>
<td>-.247</td>
<td>-.136</td>
<td>.360</td>
<td>.534</td>
</tr>
<tr>
<td>II</td>
<td>.431</td>
<td>.346</td>
<td>.356</td>
<td>.069</td>
</tr>
<tr>
<td>1954 I</td>
<td>.633</td>
<td>.506</td>
<td>-.097</td>
<td>-.833</td>
</tr>
<tr>
<td>II</td>
<td>.588</td>
<td>.350</td>
<td>-.376</td>
<td>-.925</td>
</tr>
<tr>
<td>1955 I</td>
<td>-.429</td>
<td>-.097</td>
<td>-.364</td>
<td>-.635</td>
</tr>
<tr>
<td>II</td>
<td>.286</td>
<td>-.001</td>
<td>-.293</td>
<td>-.005</td>
</tr>
<tr>
<td>1956 I</td>
<td>-.296</td>
<td>-.010</td>
<td>-.306</td>
<td>.231</td>
</tr>
<tr>
<td>II</td>
<td>-.748</td>
<td>-.742</td>
<td>-.040</td>
<td>.471</td>
</tr>
<tr>
<td>1957 I</td>
<td>-.232</td>
<td>-.072</td>
<td>.141</td>
<td>.671</td>
</tr>
<tr>
<td>II</td>
<td>.330</td>
<td>.066</td>
<td>.348</td>
<td>.762</td>
</tr>
<tr>
<td>1958 I</td>
<td>.546</td>
<td>.670</td>
<td>-.211</td>
<td>-1.318</td>
</tr>
<tr>
<td>II</td>
<td>-.332</td>
<td>-.030</td>
<td>.136</td>
<td>-.608</td>
</tr>
<tr>
<td>1959 I</td>
<td>.577</td>
<td>-.033</td>
<td>.107</td>
<td>-.022</td>
</tr>
<tr>
<td>II</td>
<td>-.517</td>
<td>-.281</td>
<td>.094</td>
<td>.863</td>
</tr>
</tbody>
</table>

Source: Tables 14, 15, 16, 17, Appendix.
and, conversely, a low interest cost by a high volume of sales. However, these periods were counterbalanced by others in which the deviations in cost and sales were not inverse to one another. Any claim that gross sales are large in amount when credit conditions are favorable and small in amount when conditions are unfavorable, a claim that implies a high degree of regularity between fluctuations in credit conditions and fluctuations in gross long-term borrowing by state and local governments, must be rejected.

In discussions of the effectiveness of monetary policy or the fiscal behavior of state and local governments, however, it is not gross borrowing that is of primary importance; it is net borrowing and the spending thereby financed that is of significance. The correlation coefficient of \(-0.544\) that measures the degree of relationship between net bond sales and municipal bond yields (see equation 11 above) shows that during the years of the study period net sales varied inversely with yields. When the average bond yield, which measures the cost and availability of credit, was below its trend value, net sales were, on the average, above trend (relatively high); and when the average yield was above trend, sales were relatively low. Though the regularity with which this happened does not substantiate the claim of the central bank authorities that credit conditions are important determinants of state and local borrowing (interpreted to mean net borrowing), it does indicate that the claim of the authorities is consistent with the facts.

Two further points concerning the above results must be noted before proceeding. First, since the correlation coefficient of \(-0.544\) is not large, though it is large enough to be considered significant,
the total variation in net bond sales about trend is only partly accounted for by the variation in yields. As will be discussed in the next chapter, changes in cost and availability are also associated with deviations in net sales and statistically account for a portion of the variation that is left unexplained by variations in the level of credit conditions.

Second, relationship 12 shows that deviations in net bond sales are significantly related to deviations in Treasury bill rates; the coefficient of correlation is -.688. Since Treasury bill rates are a better measure of the level of general business activity than are municipal bond yields, though not the most suitable measure that could be employed, this rather high negative correlation coefficient indicates that relatively more net borrowing was done by state and local governments in the past two mild recessions than in the other years of the study period when business conditions were healthier. This contra-cyclical borrowing behavior is obvious from an inspection of Chart I.

**Income and Bond Election Results**

The fact that state and local governments consistently borrowed more on a net basis when interest costs were relatively low and borrowed considerably less when interest rates were high raises the question: Did state and local governments follow this borrowing pattern during the study period as a response to credit conditions, or as a response to some other factor that fluctuated with credit conditions?

To determine whether the fluctuations in net borrowing were statistically related to, and thus possibly caused by, some other
factor, an analysis was made of the dollar volume of bonds approved by voters at state and local elections and the income of state and local governments. Net borrowing may have been consistently high when credit costs were low, for example, not because it was relatively inexpensive to borrow, but because the amount of bonds approved for sale by voters was large. Or, borrowing may have been consistently high when interest costs were low because income was relatively low at the same time and because governments attempted to maintain expenditures by greater net borrowing in the belief that income would soon regain lost ground.

Presented in Tables 3 and 4 and portrayed in Charts III and IV are the semiannual data on income and bond election approvals. The income figures are those compiled by the United States Department of Commerce. They include transfers from the federal government, grants-in-aid, but exclude receipts of unemployment compensation funds, receipts from utilities, liquor stores, and other commercial activities, and funds obtained through the sale of existing assets. The bond election figures are those collected by the research staff of the Bond Buyer.

In order to isolate the fluctuations in both income and bond approvals so that comparisons could be made with the fluctuations in net bond sales, time trends were calculated. The trend equations follow:

13) \[ Y_t^\ell = 16.37152 + 0.72623 T + 0.02349 T^2 \]

14) \[ B_t^\ell = 1.67929 + 0.04118 T - 0.00784 T^2 \]

\( (t, T = -8, -7, \ldots, 0, \ldots, 8) \)

---

**TABLE 3**

STATE AND LOCAL GOVERNMENT INCOME, UNITED STATES SEMIANNUALLY, 1952-59

(Billions of Dollars, Seasonally Adjusted)

<table>
<thead>
<tr>
<th>Period</th>
<th>Income&lt;sup&gt;a&lt;/sup&gt; (Y)</th>
<th>Computed&lt;sup&gt;b&lt;/sup&gt; Trend Value of Income (Y*)</th>
<th>Deviation from Trend (Y-Y* = y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>12.5</td>
<td>12.439</td>
<td>.061</td>
</tr>
<tr>
<td>II</td>
<td>13.0</td>
<td>12.860</td>
<td>.140</td>
</tr>
<tr>
<td>1953 I</td>
<td>13.5</td>
<td>13.328</td>
<td>.172</td>
</tr>
<tr>
<td>II</td>
<td>13.9</td>
<td>13.842</td>
<td>.058</td>
</tr>
<tr>
<td>1954 I</td>
<td>14.4</td>
<td>14.404</td>
<td>-.004</td>
</tr>
<tr>
<td>II</td>
<td>14.8</td>
<td>15.013</td>
<td>-.213</td>
</tr>
<tr>
<td>1955 I</td>
<td>15.4</td>
<td>15.669</td>
<td>-.269</td>
</tr>
<tr>
<td>II</td>
<td>16.3</td>
<td>16.371</td>
<td>-.071</td>
</tr>
<tr>
<td>1956 I</td>
<td>17.2</td>
<td>17.121</td>
<td>.079</td>
</tr>
<tr>
<td>II</td>
<td>18.0</td>
<td>17.918</td>
<td>.082</td>
</tr>
<tr>
<td>1957 I</td>
<td>19.0</td>
<td>18.762</td>
<td>.238</td>
</tr>
<tr>
<td>II</td>
<td>19.7</td>
<td>19.652</td>
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</tr>
<tr>
<td>1958 I</td>
<td>20.4</td>
<td>20.590</td>
<td>-.190</td>
</tr>
<tr>
<td>II</td>
<td>21.5</td>
<td>21.575</td>
<td>-.073</td>
</tr>
<tr>
<td>1959 I</td>
<td>22.9</td>
<td>22.606</td>
<td>.294</td>
</tr>
<tr>
<td>II</td>
<td>23.5</td>
<td>23.685</td>
<td>-.185</td>
</tr>
</tbody>
</table>

<sup>a</sup>Estimated total income includes personal tax and nontax receipts, corporate profits tax accruals, indirect business tax and nontax accruals, contributions for social insurance, and federal grants-in-aid. Receipts of liquor stores and utilities and funds obtained through the sale of existing assets are excluded.

<sup>b</sup>Computed trend values were obtained from the following equation with origin at October 1, 1955: Y* = 16.3715 + .7262 T + .0235 T^2.

### TABLE 4

VALUE OF BONDS APPROVED BY VOTERS FOR ISSUE BY STATE AND LOCAL GOVERNMENTS, UNITED STATES, SEMIANNUALLY 1952-59

(Billions of Dollars, Seasonally Adjusted)

<table>
<thead>
<tr>
<th>Period</th>
<th>Approvals (B)</th>
<th>Computed* Trend Value of Approvals (B*)</th>
<th>Deviation from Trend (B-B*)&lt;sub&gt;b&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>1.05</td>
<td>1.007</td>
<td>.043</td>
</tr>
<tr>
<td>II</td>
<td>1.26</td>
<td>1.150</td>
<td>.110</td>
</tr>
<tr>
<td>1953 I</td>
<td>.83</td>
<td>1.278</td>
<td>-.448</td>
</tr>
<tr>
<td>II</td>
<td>.97</td>
<td>1.389</td>
<td>-.419</td>
</tr>
<tr>
<td>1954 I</td>
<td>1.29</td>
<td>1.485</td>
<td>-.195</td>
</tr>
<tr>
<td>II</td>
<td>1.44</td>
<td>1.566</td>
<td>-.126</td>
</tr>
<tr>
<td>1955 I</td>
<td>2.09</td>
<td>1.630</td>
<td>.460</td>
</tr>
<tr>
<td>II</td>
<td>1.13</td>
<td>1.679</td>
<td>-.549</td>
</tr>
<tr>
<td>1956 I</td>
<td>2.22</td>
<td>1.713</td>
<td>.507</td>
</tr>
<tr>
<td>II</td>
<td>2.37</td>
<td>1.730</td>
<td>.640</td>
</tr>
<tr>
<td>1957 I</td>
<td>1.90</td>
<td>1.732</td>
<td>.168</td>
</tr>
<tr>
<td>II</td>
<td>1.11</td>
<td>1.719</td>
<td>-.609</td>
</tr>
<tr>
<td>1958 I</td>
<td>1.72</td>
<td>1.689</td>
<td>.031</td>
</tr>
<tr>
<td>II</td>
<td>1.93</td>
<td>1.644</td>
<td>.286</td>
</tr>
<tr>
<td>1959 I</td>
<td>1.50</td>
<td>1.584</td>
<td>-.084</td>
</tr>
<tr>
<td>II</td>
<td>1.32</td>
<td>1.507</td>
<td>-.187</td>
</tr>
</tbody>
</table>

*Computed trend values were obtained from the following equation with origin at October 1, 1955:

\[
B^* = 1.6793 + .04118 T - .00784 T^2.
\]

CHART III

STATE AND LOCAL GOVERNMENT INCOME, UNITED STATES, SEMIANNUALLY, 1952-59

Source: Table 3.
CHART IV

BONDS APPROVED BY VOTERS FOR ISSUE BY STATE AND LOCAL GOVERNMENTS, UNITED STATES, SEMIANNUALLY, 1952-59

Billions Dollars (Seasonally Adjusted)

Source: Table 4.
where $\gamma_t$ is the computed trend value of income in period $t$ equal $T$ in billions of dollars, $\beta_t$ is the computed trend value of bond approvals in billions of dollars, and $T$ is the time period in six-month intervals with origin at October 1, 1955. The trend values that were calculated are shown in Tables 3 and 4, and the trend equation for bond approvals, equation 14, is plotted in Chart IV.

The deviations from trend (actual values minus computed values) of income and bond approvals were correlated with the deviations on net bond sales to find the degrees of association between the variables.

The following equations of average relationship, correlation coefficients, and standard errors were obtained:

15) $n^*_y = .00645 - .62576 y$ \hspace{1cm} (r = -.3007, \sigma_n = .3183)
16) $n^*_b = -.00836 - .35976 b$ \hspace{1cm} (r = -.3941, \sigma_n = .3067)

where $n^*$ is the computed or most probable value of the deviation in net sales, $y$ is the deviation in income, $b$ is the deviation in bond approvals, $r$ the correlation coefficient, and $\sigma_n$ the standard error computed with $N$ equal to 16.

Neither correlation coefficient is significant. The coefficient of $-.3941$ that measures the degree of relationship between bond approvals and net sales is not significant because the sign is incorrect.\(^9\) And though the correlation between income and net sales is inverse as indicated by the negative sign of the coefficient, it is not large enough to be considered more than the result of chance.\(^10\)

\(^9\)Deviations in net sales were also correlated with deviations in bond approvals lagged by one period. The coefficient in this case was $-.6918$

\(^10\)With 14 degrees of freedom, the computed $t$ value is $-1.18$. At
If the deviations in bond approvals had been positively correlated with the deviations in net sales, it would have been possible to contend that net sales were high at times because the value of bonds approved by voters was correspondingly high and low at other times because the value of bond approvals was low. The assertion that credit conditions are the important short-run determinants of state and local borrowing would have been seriously weakened in this case. Rather surprisingly, the relation between approvals and net sales is negative, not positive. Thus, the volume of new debt approved for sale by voters cannot be used to explain the cyclical pattern of net long-term borrowing.

The coefficient of -.3007 indicates that fluctuations in income are negatively, though insignificantly, correlated with the fluctuations in net sales. Income dipped slightly below trend in the past two recessions when interest rates were down and moved above trend in the other years of prosperity when interest costs were relatively higher (see Table 3). The deviations in income, however, never exceeded 300 million dollars, a figure considerably smaller than many of the deviations in net sales. Had the income fluctuations been decidedly wider and the amount of variation in net sales statistically accounted for by these fluctuations notably greater, a case might have possibly been made for the hypothesis that state and local governments, in the belief that the recessions would be short, increased their net borrowing during the mild downturns of the recent past in order to maintain

the 5 percent level of significance using a one-sided test, a t value of less than -1.76 is needed before a coefficient may be considered more than the result of chance.
expenditures and decreased their net borrowing in other years as income advanced above trend. Since the deviations in income and the correlation coefficient were so small, this hypothesis can be dismissed as a possibility.

**Interpretation**

Before proceeding, it may be well to briefly review the above results. First, it was shown that net borrowing by state and local governments fluctuated inversely with bond yields during the years of the study period. On the average, they borrowed more when rates were low than when high. Second, the fluctuations in net sales were not found to be positively associated with bond approvals by voters. And third, though income deviated from trend and the deviations were found to be negatively associated with deviations in net sales, the fluctuations of income were extremely small and incapable of statistically accounting for the observed variation in bond sales.

On the basis of this evidence acceptance can be given to the claim advanced by the central bank authorities, the authorities who are responsible for credit conditions, that the cost and availability of loanable funds are important determinants of borrowing by state and local governments. This acceptance, however, must be qualified. Since only the two most promising alternatives, income and bond election results, were examined, the possibility cannot completely be dismissed that some factor other than credit conditions, a factor not included in the analysis, was responsible for the behavior of net bond sales during the years of the study period.
Debt Limits

Before turning to the question of why credit conditions have affected state and local governments, one implication of the results presented above will be discussed—the significance to local governments of debt limits on outstanding debt.

The amount of debt outstanding is a matter of some concern to local officials. There are two reasons for this, the first of which may be termed legal. In each of the forty-eight states there are constitutional and statutory regulations which limit the total amount of debt a local government may have outstanding at any one time. The most common feature of these regulations is the limitation of local debt to some stated percentage of the assessed value of taxable property within the governmental unit. (California, for example, limits city indebtedness for public improvements to 15 percent of the assessed value of all real and personal property within the city.) Such limitations, though they do not apply to all types of debt, though they

11 Because of the differences between state governments and local governments in the nature and restrictiveness of the limitations that apply to borrowing, only local governments are discussed. This is not to imply that the amount of outstanding debt is a matter of no importance to state officials.


13 California, Annotated Codes (Wests, 1954), Vol. XXXVI, Sec. 43605.
may be changed, and though they may sometimes be avoided, are important restrictions that demand attention if not compliance.\textsuperscript{14}

It is more, however, than a matter of legal limitations; it is also a matter of financial prudence. Local officials are well aware of the fact that both underwriters and investors make a careful analysis of a local government’s financial position before bidding on or investing in any new obligations of that government. They are also aware that one of the credit factors given the most careful examination by investors is the ratio of debt to tax base or to some other income index.\textsuperscript{15} Not only are officials conscious of these facts, but many of them, to judge from a sample of statements,\textsuperscript{16} are quite anxious to heed the wishes of underwriters and investors and to keep their outstanding debt below prudent levels which may be below legal limits.

Hansen has argued that local governments reduced their borrowing and their debt financed spending in the depression of the 1930’s in part because property values, assessed values, and debt limits


\textsuperscript{16}See the February, 1957, issue of Municipal Finance, volume 29, in which five case studies in municipal debt management are presented.
based on assessed values all declined as economic conditions worsened.\textsuperscript{17} The evidence he presents on assessed values supports his argument.

During the 1950's there were two recessions; one starting in 1953 and the other in 1957. Did assessed values together with debt limits decline during these recessions? Since information on assessed values does not exist, this question cannot be answered directly. However, the data on net borrowing by both state and local governments presented above in Table 1 strongly suggest that debt limits were no more important to local governments in these recessions than at other times.

The figures on total outstanding debt of local governments by fiscal years shown in Table 5 confirm this impression.\textsuperscript{18} The outstanding debt of local governments rose rapidly in the fiscal years ending in 1954 and 1955 and those ending in 1958 and 1959. Had property values and debt limits actually been declining in the recessions encompassed by these years, total debt would not have risen by such substantial amounts.

While the data suggest that debt limits were no more important during recessions than other periods in the past decade, they have been

\textsuperscript{17}Hansen and Perloff, \textit{State and Local Finance in the National Economy}, pp. 57-58.

\textsuperscript{18}Semiannual data for the years 1952-59 on borrowing by local governments is not available. The only breakdown between state and local governments is that given by the Bureau of the Census on a fiscal year basis.
important. Total outstanding debt of local governments more than doubled in the years 1952-59 (see Table 5). In this expansion some governments exhausted their debt capacity, that is, they increased outstanding debt until legal debt limits were reached. A survey conducted in 1958 by the American Municipal Association of 129 cities in 28 states revealed that 18 out of the 129 cities, or approximately one-sixth, had used three-fourths or more of their debt-incurring capacity; in addition, 6 of the 129 cities had no unused capacity whatsoever. 19

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When the amount of a local government's outstanding debt approaches the legal or self-imposed debt limit, the officials of that locality when considering the issuance of new debt to finance a capital project must either devise a means of avoiding the debt limit or delay the sale of new bonds until enough old debt has been retired to permit the new debt to be issued within limitations. In these circumstances the amount of bond retired becomes an important factor in deciding when to sell new bonds.

The fact that local government debt has increased rapidly since World War II and has brought some governments to their legal limits and others to their self-imposed limits explains why gross bond sales have followed a more erratic pattern than net sales (see Table I and Chart I). In the year 1955, for example, the amount of debt retired jumped from $800 million in the first half of the year to approximately $1,450 million in the second half, an increase of $650 million. At the same time, gross sales moved from $2.58 billion in the first half to $3.39 billion in the second half, an increase of $800 million. Exactly this same course of events was repeated in 1957 and 1959—a change in debt retirements accompanied by a corresponding change of the same magnitude in gross bond sales. Had the amount of debt retired per half year shown little variation from one period to the next, the behavior of gross bond sales would have been similar to that of net sales during the years 1952-59, and the fluctuations in gross sales about trend would have been associated with the fluctuations in municipal bond yields.
The Response to Credit Conditions

The question of why state and local governments responded to credit conditions will now be considered. Did state and local governments borrow relatively more when interest rates were low in the municipal bond market because interest rate ceilings prevented a substantial number of these governments from selling bonds when interest rates were higher? Or, was there relatively more borrowing in low interest-cost periods because officials were attempting to minimize costs?

Interest rate ceilings—Limits on the maximum interest rates that may be paid by state and local governments are quite universal. They vary from one state to the next and are contained in constitutions, legislative enactments, and specific borrowing authorizations. The limits may be general in scope, applying to borrowing by all governmental units, or they may be specific, applying only to particular classes of governments or to borrowing for designated purposes.

The authorities of the Federal Reserve have stated that more borrowing is done by state and local governments when interest rates are relatively low because, at least in part, some governmental units are prevented from borrowing when interest costs are high.20 The ceilings are institutional barriers which automatically make monetary policy effective in reducing net long-term borrowing when credit conditions are tight and in stimulating net borrowing when market conditions are allowed to ease.

20 Supra, p. 22
While it would be an endless task to search all state constitutions, all state laws, and all specific borrowing authorizations to find the legal ceilings that presently apply or have applied in the recent past, the evidence that has been collected strongly suggests that state and local governments in the years 1952-59 were not forced to delay bond sales because market rates of interest were higher than legal maximums.

The evidence referred to was collected by Netzer in a study of the institutional obstacles to borrowing.\textsuperscript{21} The following points from his study are relevant. First, only one state, Louisiana, has a constitutional restriction of 6 percent that applies to all borrowing by all governmental units. Second, no ceilings applicable to an entire class of governmental units (for example, school districts) were found in a cursory examination of state laws to be less than 5 percent. And third, a thorough investigation of statutory restrictions in Illinois revealed that there were no ceilings of less than 4 percent applicable to any specific class of governmental units (for example, cities with a population less than 25,000) or to borrowing for specific purposes.\textsuperscript{22}

Since the average municipal bond yield did not exceed 4 percent at any time during the eight years of the study period (see Table 1),


\textsuperscript{22}Of the 185 separate statutory authorizations applicable to local government borrowing in Illinois, only 14 were found to contain ceilings of 4 percent. In the remaining 171 authorizations ceilings were either set at 5 percent and above or not specified. \textit{Ibid.}
this evidence, though incomplete, would seem to rule out the possibility that constitutional and statutory restrictions on interest rates interfered to any considerable extent with the sale of bonds in these same years.

There remains, however, one other possibility. As indicated above, ceilings may be specified in particular borrowing authorizations as well as in constitutions and state laws. There may have been cases in the past where a particular borrowing authorization contained a ceiling that was well above market rates at the time of the authorization but that proved to be too low when an attempt was made to sell the approved bonds. While the number of such cases is unknown, it seems quite likely that the number has not been large. Why would voters or a governing council authorize an act of borrowing and at the same time include an interest rate ceiling in the authorization which was so close to market rates as to effectively prevent the sale of bonds at a later time after market rates had risen?

Minimizing costs.--If legal interest rate ceilings cannot be accorded a leading role in the explanation of why state and local governments responded to credit conditions, what factor can be given the leading position? The authorities of the Federal Reserve, in addition to stating that ceilings on interest rates account for part of the response, have also stated that more state and local governments enter the market to borrow when interest rates are relatively low because of the substantial savings to be gained in total borrowing costs by selling bonds at such times.23

23 Supra, p. 22
While there is virtually no direct testimony from state and local officials to either support or contradict this explanation, the rationale of the explanation certainly favors its acceptance. On a $1 million issue of twenty-year term bonds, for example, a one-half of 1 percent difference in the interest rate that must be paid means a difference in the total debt service cost over the life of the bonds of $100,000, a difference equal to 10 percent of the amount borrowed. In both of the last two recessions interest costs in the municipal market dropped by approximately this amount--one-half of 1 percent.

Had an official postponed the sale of bonds from early 1953 when interest rates were relatively high until early 1954 when economic activity and credit costs were at low points, or had he sold bonds in the first part of 1954 in anticipation of higher rates in the future, the savings to his community would have been large.

Since contradictory evidence is lacking, the explanation offered by the central bank authorities can be tentatively accepted on the basis of its plausibility. It is not, however, a complete explanation of why state and local governments borrowed relatively more in the years 1952-59 in response to low interest rates. Account must be taken of the investment practices of commercial banks, the largest institutional purchasers of municipal bonds.

Loan assets are the primary concern of commercial banks, municipal bonds a secondary concern.24

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have consistently switched to municipal obligations during recessions when the demand for loans was slack, the amount of funds available for commitment large, and the level of interest rates generally low. And in periods of economic expansion when the demand for loans was more substantial, they have consistently cut back on their purchases of municipals (see Table 6). The shifts by commercial banks have been

**TABLE 6**

<table>
<thead>
<tr>
<th>Year</th>
<th>Acquisitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952</td>
<td>1.0</td>
</tr>
<tr>
<td>1953</td>
<td>.6</td>
</tr>
<tr>
<td>1954</td>
<td>1.8</td>
</tr>
<tr>
<td>1955</td>
<td>.1</td>
</tr>
<tr>
<td>1956</td>
<td>.2</td>
</tr>
<tr>
<td>1957</td>
<td>1.0</td>
</tr>
<tr>
<td>1958</td>
<td>2.6</td>
</tr>
<tr>
<td>1959</td>
<td>.4</td>
</tr>
</tbody>
</table>


quite large and have resulted in an increased flow of investment funds to the municipal market in low interest-cost periods—recessions.\(^{25}\)

\(^{25}\) Individual investors are also important purchasers of municipal bonds. They have in the past partially withdrawn from the market in recessions and have re-entered as interest rates rose. While this behavior has been opposite to that of commercial banks, the withdrawal of individuals during recessions has been more than offset by the buying policies of commercial banks and other financial institutions. *Ibid.*, p. 69.
Since underwriters, many of whom are commercial banks, security dealers, and the financial advisors of government officials are well aware of the practices of bond purchasers, at least a part of the response of state and local governments to low interest rates must be attributed to the investment policies of commercial banks. State and local governments not only sold more bonds during recessions in an effort to minimize debt service charges, they also issued more obligations in order to take advantage of the more receptive market that awaited these obligations.

Summary

Net bond sales by state and local governments fluctuated substantially from trend in the years 1952-59. In addition to being associated with the level of business activity, the fluctuations in net sales were found to be significantly related to fluctuations in the average municipal bond yield, a measure of the cost and availability of loanable funds in the municipal market. On the average, net sales were below trend when interest rates were relatively high and above trend when interest rates were low.

The fluctuations of net bond sales, associated with both the level of business activity and credit conditions, were not found to be the result of variations in either income or the value of bonds approved by voters. On the basis of this evidence acceptance can be given to the claim of the Federal Reserve authorities that cost and availability conditions are important determinants of borrowing by state and local governments.
One implication of the empirical results concerns the importance of debt limits and debt retirements. During the depression of the 1930's assessed property values and the debt limits on which they were based declined as economic conditions worsened and forced a curtailment of debt issuance by local governments. The fact that local debt increased more rapidly in the mild recessions of 1953-54 and 1957-58 than at other times in the eight years of the study period strongly suggests that debt limits were no more important during these recessions than the preceding and intervening periods of prosperity. This does not mean, of course, that debt limits have not been important. The rapid growth of debt since World War II has brought some local governments to the limits of their debt capacity and thus forced the officials of these governments to give consideration to the amount of debt scheduled for retirement in their decisions to undertake the issuance of new debt.

The explanations of why state and local governments have responded to credit conditions remain for consideration. Did legal interest rate ceilings force state and local governments to delay the sale of bonds during high interest-cost periods until later periods of relatively cheap credit? A recent study of interest rate limitations found that ceilings were commonly set above the 4 percent level. Since the average municipal bond yield has remained below this point in the past decade, the existence of these institutional barriers would not seem to serve as an adequate explanation of the behavior of state and local governments.
The authorities of the Federal Reserve have stated that the cyclical pattern of state and local net borrowing is to be explained in terms of cost minimization. While there is a great deal of plausibility in this suggestion, it would not seem to be a complete explanation of events. Consideration must be given to the investment policies of banks and other financial institutions. Commercial banks have in the past consistently provided more funds to the municipal market during recessions when interest rates were low and have cut back on their purchases of municipal obligations when economic activity and the demand for loans was greater. These shifts have meant an increased flow of funds in low interest-cost periods, an increased flow to which the suppliers of municipal bonds have responded in an effort to acquire needed funds when available.
CHAPTER IV

BORROWING AND CHANGES IN INTEREST RATES

The marketing of new state and local government obligations is performed by underwriters and security dealers. The underwriters, both commercial banks and investment banking firms, purchase new municipal obligations and then sell the obligations either directly to investors or to security dealers who place them with their own customers. In this process of distribution underwriters and security dealers ordinarily carry large bond inventories.\(^1\) The value of these inventories and the profits of the middlemen who carry them are immediately affected by any change in the market price of bonds. If bond prices advance (interest rates decline), distributors of bonds gain on their holdings; and if bond prices fall, particularly if the decline is not anticipated at the time the underwriters purchase the municipal obligations, profit margins are reduced and possibly eliminated.

The authorities of the central bank have stated that underwriters and security dealers, because of the impact of price changes on their profits, actively encourage state and local governments to issue more bonds when bond prices are either rising or expected to rise and

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\(^1\) In a 1949 study of security markets the average inventory of new and old obligations as a percentage of total municipal sales was found to be 30 percent. Irwin Friend, G. Wright Hoffman, and Willis J. Winn, *The Over-the-Counter Securities Market* (New York: McGraw-Hill, 1958), pp. 116, 263.
discourage flotations when bond prices decline. Presumably, the more bond prices change the more profit margins are affected and the more the distributors of bonds exert their influence through advice to government officials and through interest shown in new issues offered by sale by state and local governments.

The purpose of the present chapter is to examine and discuss this proposition. In the following section data and statistical measures will be presented that are pertinent to the question of whether the evidence of the period 1952 through 1959 is consistent with the statement of the central bank authorities. In the succeeding section the statistical measures will be interpreted and the reasons offered by the authorities to explain the impact of changing bond prices evaluated.

Statistical Analysis

If the assertion is true that changes in interest rates affect the volume of obligations issued by state and local governments because of the direct impact such changes have on the value of inventories held by underwriters and security dealers, then fluctuations in municipal bond sales should be statistically related to changes in municipal bond yields. To determine whether the data of the period 1952-59 show evidence of this relationship, changes in bond yields were first calculated and then correlated with the deviations in bond sales presented in Chapter III. The yield changes and the statistical measures of relationship will be presented and discussed in the following sections.

2Supra, p. 22.
The changes in average yields (AU) given in Table 7 were derived from the same basic series (average monthly yields on 15 high-grade municipal bonds as computed by Standard and Poor's Corporation) that was employed to obtain the six-month average yields of Table 1. The following is an illustration of the procedure used to calculate changes in average yields.

The average monthly yields for the months of June and July of 1959 are 4.04 and 4.04 percent respectively; the average for the two months is 4.04 percent. For December, 1959, and January, 1960, the average yields are 4.05 and 4.13 percent respectively; the simple average for the two months is 4.09 percent. The difference between 4.09 and 4.04 percent is 0.05 percent, the absolute increase in bond yields during the last half of 1959.

Equations of Average Relationship

To determine the statistical relationship between changes in yields and fluctuations in bond sales, the data of Table 7 were correlated with the deviations in bond sales previously given in Table 1. Two equations of average relationship, together with

4 Ibid.
5 Deviations in both gross and net bond sales were correlated with changes in yields. Though the proposition that interest rate changes influence bond sales obviously applies to gross bond sales, net sales were included because of the greater importance of net borrowing in discussions of monetary policy.
### TABLE 7

**ABSOLUTE CHANGE IN THE AVERAGE YIELD ON FIFTEEN HIGH-GRADE MUNICIPAL BONDS, UNITED STATES SEMIANNUALLY, 1952-59**

(Percent)

<table>
<thead>
<tr>
<th>Period</th>
<th>Change in Bond Yield*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>0.010</td>
</tr>
<tr>
<td>II</td>
<td>0.325</td>
</tr>
<tr>
<td>1953 I</td>
<td>0.555</td>
</tr>
<tr>
<td>II</td>
<td>-0.445</td>
</tr>
<tr>
<td>1954 I</td>
<td>-0.150</td>
</tr>
<tr>
<td>II</td>
<td>-0.035</td>
</tr>
<tr>
<td>1955 I</td>
<td>0.190</td>
</tr>
<tr>
<td>II</td>
<td>0.125</td>
</tr>
<tr>
<td>1956 I</td>
<td>0.090</td>
</tr>
<tr>
<td>II</td>
<td>0.625</td>
</tr>
<tr>
<td>1957 I</td>
<td>0.330</td>
</tr>
<tr>
<td>II</td>
<td>-0.355</td>
</tr>
<tr>
<td>1958 I</td>
<td>-0.040</td>
</tr>
<tr>
<td>II</td>
<td>0.500</td>
</tr>
<tr>
<td>1959 I</td>
<td>0.185</td>
</tr>
<tr>
<td>II</td>
<td>0.050</td>
</tr>
</tbody>
</table>

*Computed from Standard and Poor's average bond yield series.

**Source**: Survey of Current Business.
correlation coefficients and standard errors, were determined.

They are:

\[ g^* = 0.130265 - 1.047355 \Delta U \quad (r = -0.6797, \sigma_g = 0.3343) \]

\[ n^* = 0.087821 - 0.706096 \Delta U \quad (r = -0.6258, \sigma_n = 0.2603) \]

where \( g^* \) is the most probable value of the deviation in gross sales in billions of dollars and \( n^* \) is the most probable value of the deviation in net sales also expressed in billions of dollars. The standard errors were computed with \( N \) equal to 16.

At the 1 percent level of significance with 14 degrees of freedom a correlation coefficient of 0.6226 is needed before a relationship may be considered more than the result of chance. This indicates that both of the above relationships are significant. It is interesting to note that while deviations in bond yields are not significantly related to deviations in gross sales, changes in bond yields are.

The moderately large negative correlation coefficients that were obtained indicate that during the years of the study period the volume of bond sales, both gross and net, varied inversely with changes in municipal bond yields. The greater was the increase in the cost of borrowing, the lower, on the average, was the level of bond sales. And the greater was the decline in the cost of borrowing, the higher, on the average, was the volume of sales.

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7Deviations in bond sales were also correlated with changes in bond yields lagged by one time period. The coefficients were not found to be significant.

8*Supra*, p. 56.
This is illustrated in Chart V, a scatter diagram in which each of the sixteen points (one for each of the six-month periods in the years 1952-59) represents an observed value of the change in average bond yield and the corresponding value of the deviation in gross sales. The line of regression in the diagram, equation 17, defines the estimated linear relationship between changes in yields and deviations in gross sales. Though all of the points are not located on the line of regression, an occurrence that would signify a perfect inverse relationship, all but two of the points are situated in the second and fourth quadrants of the diagram, indicating that bond sales were usually below trend in the years 1952-59 when interest rates were increasing and above trend when rates were declining.

One point must be considered before proceeding. In Chapter III it was shown that fluctuations in net bond sales are statistically associated with deviations in bond yields \( r = -.54 \). The above results demonstrate that fluctuations in net sales, the same dependent variable, are correlated with changes in bond yields \( r = -.62 \). Are these two distinct correlations, or are they results which reflect the fact that both independent variables, deviations in yields and changes in yields, are essentially the same numerical variable?

An inspection of Tables 2 and 7 in which deviations in yields and changes in yields are tabulated shows that the two variables are not the same. The distinction between the two variables is further shown by the value of the multiple correlation coefficient that was obtained when both were correlated with deviations in net sales. The
CHART V

DEVIATIONS FROM TREND OF GROSS MUNICIPAL BOND SALES AND CHANGES IN BOND YIELDS, UNITED STATES, SEMIANNUALLY, 1952-59

Sales (Billions Dollars)

Standard Error and Estimate

Line of Regression

Absolute Change in Bond Yields (Percent)

Source: Table 1 and 7.
multiple coefficient was found to be -.82, considerably greater in absolute value than either of the coefficients obtained through simple correlation.

**Interpretation**

The above results show that the evidence of the period 1952-59 is quite consistent with the claim of the central bank authorities that changes in interest rates have an influence on the amount of borrowing done by state and local governments through the municipal bond market. Is this consistency an adequate basis on which to accept the claim of the authorities? The answer is obviously no. An examination must be made to determine whether the fluctuations in bond sales during the years of the study period were the result of variation in other important factors, not the result of changes in credit conditions. Such an examination was made in Chapter III. There it was shown that fluctuations in state and local income and in the value of bonds approved by voters could not account for the behavior of bond sales. On the basis of these results and the statistical evidence provided in the present chapter acceptance can be given to the proposition that changes in the cost of borrowing have an influence on the volume of long-term debt issued by state and local governments.

What explanation can be offered for this influence? The authorities of the central bank have emphasized in their explanation the importance of reactions by middlemen in the municipal bond market to changes in interest rates. While their account is consistent with the scant amount of information available, two other explanations exist
which are also in agreement with the facts. One emphasizes the re-
actions of lenders and the other the reactions of borrowers. All three
will be discussed.

The Distributors of Bonds

Underwriters purchase municipal bonds from state and local
governments and then sell them either directly to investors or to
security dealers who place them with their own customers. The profit-
ability of operations by underwriters and dealers depends on the price
at which bonds are purchased and the price at which they are sold to
investors.\(^9\) If it is assumed that bonds are purchased from state and
local governments at the current market price and then placed on dis-
play, so to speak, until they are sold, then the difference in price
that determines profitability depends on the size of the original mark-
up, on the time that elapses between the purchase and sale dates, and
on the amount by which long-term interest rates change between these
dates. If it should take as long as two months to market an issue of
bonds and if long-term rates should rise while the bonds are being
marketed (something that could easily happen in a period as long as
two months), the profits on that issue would be reduced or possibly
eliminated. And similarly, if long-term rates should decline while an
issue is being sold, profits would be increased.

The above estimate of the length of time that might be required
to market an issue of bonds is not simply an idle guess. The Bond

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\(^9\)The price referred to is the price of bonds, not the price of
loanable funds.
Buyer publishes information on the unsold issues held by underwriters and the length of time such issues remain unsold. It would appear from this information that it requires longer than two months to completely sell many issues. This means, as suggested above, that rapid changes in interest rates could have drastic effects on the profitability of dealer operations.

Underwriters and dealers may thus substantially reduce operations—only purchase those issues which they believe they can sell within a relatively short time—in order to maintain adequate profits or cut losses during a period when, because of current increases in interest rates, they expect rates to continue upward or are quite uncertain about the future course of events. And during a period of rising bond prices (falling interest rates) underwriters and dealers may increase the scope of their operations for exactly the opposite reasons.

The statement of one investment dealer lends credence to this explanation. Writing in 1957, he set forth the following opinion:

The transition from a lower to a higher level of interest rates, such as we have experienced, is even more difficult for investment dealers than for public borrowers. This is because the immediate result of an increase in interest rates is a decline in bond prices. Even though lower bond prices widen the number of persons who potentially are buyers, an investment dealer does not welcome a decline. He much prefers an advance: first, because he carries an inventory of bonds, and declining prices are reflected immediately in adverse changes in his net worth; and second, because, rightly or wrongly, the dealer considers that

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10See, for example, the January 16, 1960, issue of the Bond Buyer, page 6. It lists fourteen issues as having remained unsold for more than two months.
rising prices create a more buoyant atmosphere which stimulates investors to buy, if prices do not advance to much.\footnote{11}

While this does not prove that the reactions of underwriters and dealers to changes in interest rates have an important impact on the volume of securities issued by state and local governments, it does suggest that the explanation offered by the central bank authorities, an explanation which emphasizes the reactions of middlemen, contains an element of truth.

An objection, however, can be raised. When interest rates rise, why isn't it possible for underwriters and dealers, instead of reducing operations, to take their inventory losses as soon as possible by cutting prices on bonds in stock and to purchase new issues at prices which are low enough to permit a recoupment of losses? That is, why isn't it possible for the distributors of bonds to quickly adjust to changing circumstances and maintain operations?

In a recent study of underwriting syndicates Robinson found that the prices of bonds held in inventory are not cut quickly when bond prices in the market decline. Indeed, the syndicate that immediately reduced prices would be "thought guilty of remarkably bad judgment."\footnote{12} Though this failure to adjust prices may not be rational


\footnote{12}{Robinson, \textit{Postwar Market for State and Local Government Securities}, p. 123.}
since it immobilizes money capital and prevents underwriters from maintaining operations, the large firms, particularly the leaders of syndicates, resist any change in the conditions of the market because they do not like to acquire the reputation of having managed or participated in deals on which losses were taken.  

This evidence provides both an answer to the above objection and support for the explanation that reactions of middlemen to changes in interest rates account for some of the observed variation in bond sales.

Lenders

A second explanation of why changes in interest rates influence the volume of bond sales is that given by Rosa. He has argued that a rise in long-term rates, a rise either initiated or permitted by the central bank authorities, creates uncertainty regarding future interest rates. This in turn inhibits lenders, primarily the large institutional lenders, from committing available funds; they hold back in order to take advantage of the higher rates that seem likely to prevail

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13 Ibid., p. 126


15 Ibid., p. 284
in the future. Thus, during a period in which interest rates are noticeably advancing the supply of funds may be substantially reduced. And as underwriters and security dealers encounter difficulty in selling obligations held in inventories to investors, "their receptiveness to new issues is notably chilled. At the very least, a greater 'spacing out' of new issues results, in comparison to the flow that would have otherwise occurred."17

On the other hand, during a period of falling interest rates lenders aggressively purchase securities in order to commit their funds before a lower level of interest rates is reached. This clears the dealers' shelves of old issues that may have been hard to sell and opens the way for the flotation of newly arising or previously postponed issues.18

While this argument is consistent with the statistical results presented in the first part of the chapter, its strength must be found in its plausibility rather than in any direct empirical evidence which supports the assertion that lenders hold back when interest rates are rising and aggressively commit funds when rates are falling.

Borrowers

There is one last view that demands attention, a view that places the emphasis on the reactions of borrowers rather than on the reactions of either lenders or middlemen.

16 Ibid., p. 287.
17 Ibid., p. 288.
18 Ibid., p. 289.
After a capital project and the bonds with which to finance it have been approved, and after a decision has been reached to proceed with the project, the officials of the state or local government for which the project is to be constructed have a certain amount of time open to them before the bonds to permanently finance the project must be sold. The amount of open time depends on several factors: the date on which construction begins, the dates on which contractors must be paid for work completed, the amount of idle and uncommitted funds and the length of time they can be temporarily employed, the amount of funds that can be borrowed for short-term financing with notes given as security, and the maximum maturity allowed by state law on such notes.

It is impossible to quantify these factors and to make an estimate of the average amount of open time. However, the relatively large amount of funds held by state and local governments in the form of demand and time deposits (on June 10, 1959, they held over $14

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19 This statement does not apply to the state and local governments that maintain consolidated bond funds from which outlays for capital projects are made. These funds are replenished with cash when they reach a minimum level by selling previously authorized bonds. It is impossible to identify the sale of an issue of bonds with the financing of one particular project. The number of governments that maintain consolidated funds is unknown. Mayer limits such funds to cities over one million; see, Thomas Mayer, "The Inflexibility of Monetary Policy," Review of Economics and Statistics, XL (November, 1958), 365. For a statement on the Philadelphia bond fund, see, Vernon D. Northrop, "Municipal Debt Management in the United States," Municipal Finance, XXVIII (August, 1955), 45. The remaining part of the argument applies to these as well as other state and local governments.
billion in deposits in all commercial banks)\textsuperscript{20} and the liberality in some states regarding the maximum maturity allowed on bond anticipation notes\textsuperscript{21} are indications that the time between the date a project is approved for construction and the date after which the sale of bonds is no longer postponable may be quite long in some instances, possibly as long as six months.

If officials are sensitive to the rates of interest they must pay on bond issues, the amount of open time they have may be used to play the market; that is, they may use the time that is open to them before bonds \textit{must} be sold to examine current market trends, form expectations concerning future trends, and attempt the sale of their bonds at that point in their time horizon when they believe rates are lowest. As one city director of finance stated the matter: "We time our appearances for the most favorable rates, watch the prices received by comparable issues, and try to hit the market when there is relatively little activity."\textsuperscript{22}

These considerations suggest that a rise in rates may be accompanied by a relatively lower level of sales (the greater the increase in rates the lower the level of sales) because of the desire of officials to sell their bonds at low rates, the alternative methods


\textsuperscript{21}The law in the state of New York, a law that was passed in 1957, allows municipalities to have bond anticipation notes outstanding for as long as five years. Arthur Levit, "Tight Money and Municipal Borrowing," \textit{Municipal Finance}, XXX (August, 1957), 21.

of financing that can be temporarily used to finance capital projects while the sale of bonds is delayed, and the expectations held by officials that rates will decline to lower levels before the time is reached when permanent financing will have to be obtained. And conversely, a decline in bond rates may be accompanied by a relatively higher level of bond sales because of the formation of expectation that rates will decrease little more before the time is reached when bonds to finance just completed, current, and presently-to-be undertaken projects must be sold. In addition, a decline in rates, if it is rapid enough, may induce some officials to sell bonds in anticipation of the higher rates that seem likely to prevail at a later time when new projects, approved but with no date set for construction, will be undertaken.

All three of the above explanations—the first emphasizing the reactions of middlemen, the second the reactions of lenders, and the third the reactions of borrowers—are consistent with the evidence represented by equations 17 and 18. Other studies would have to be made, studies designed specifically to test these alternatives, before a selection of the best explanation could be made.

One investment banker in analyzing the municipal bond market of the second half of 1956 (a period when long-term interest rates rose by more than one-half of 1 percent) stated the following:

The bond market became very thin and the flow of investment funds into the long-term capital market became more difficult to achieve. Investment bankers found unsold portions of new issue inventory costly to carry. In the closing months of 1956 would-be borrowers began to withdraw from the market, or to defer offering their issues until such time as the
bond market should develop an investment climate more favorable to their requirements. As the year drew to a close there was a waiting list of would-be borrowers. There was also a heavy backlog of new issues about to be marketed at new high yields in the first months of 1957 by those who couldn't wait longer for needed money. 23

Imbedded in this analysis are the three explanations offered above; this is perhaps an indication that one best explanation does not exist.

Summary

Fluctuations in both net and gross bond sales during the years 1952-59 were found to be statistically related to changes in the cost of borrowing. The greater was the increase in cost, the lower, on the average, was the level of bond sales; and the greater was the decline in cost, the higher was the level of sales.

This evidence is consistent with the claim of the central bank authorities that changes in interest rates influence the volume of long-term debt issued by state and local governments through the municipal bond market. Furthermore, since the examination provided in Chapter III demonstrated that fluctuations in bond sales during the years of the study period were not the result of variation in either state and local income or the value of bonds approved at elections, the consistency of claim and fact cannot be taken as a spurious result. It signifies the existence of a cause and effect relationship between changes in interest rates and fluctuations in sales.

The precise nature of the relationship, however, cannot be specified. Three possibilities exist that are entirely consistent with the statistical results as well as with the scant amount of information available from other sources. The first possibility explains the relationship between bond sales and interest rates in terms of the reactions of middlemen to changes in profits brought about by advances or declines in the cost of borrowing. The second possibility places the emphasis on the reactions of lenders to alterations in the cost of borrowing, while the third emphasizes the reactions of the remaining participants, the borrowers, to such alterations in cost. Until additional information is provided a selection cannot be made from the three of the best possibility.
CHAPTER V

CAPITAL OUTLAYS

The empirical evidence of the two preceding chapters established the fact that state and local governments during the years 1932 through 1959 borrowed relatively more on a net basis when the cost of credit was either low or falling and borrowed relatively less when interest costs were high or rising. On the strength of the available evidence this variation in net borrowing was considered to be the direct result of credit conditions and changes therein. As was noted in Chapter II, the authorities of the Federal Reserve put forward the claim that capital expenditures by state and local governments as well as net borrowing are affected by credit conditions; expenditures expand during recessionary periods because of the favorable conditions in the municipal bond market, and they recede to a limited extent, though perhaps not to the desired extent, during periods of growth in income and employment because credit conditions are less favorable—interest costs are higher, underwriters are less anxious to market securities as a result of falling bond prices, and loanable funds are not as plentiful. If consideration is given to the cyclical behavior of net bond sales and to the fact that in every year since World War II a high proportion of state and local capital expenditures has been financed with borrowed funds, the plausibility of the Federal Reserve's
claim that expenditures are affected by credit conditions seems quite strong.

The following section will contain data and statistical measures that are relevant to the question of whether the claim that capital expenditures are influenced by credit conditions is compatible with recent evidence. In the succeeding section an interpretation of the statistical results will be given.

**Statistical Analysis**

Is the evidence of the period 1952 through 1959 consistent with the contention that the level of credit cost and availability and changes in that level influence the capital spending of state and local governments, the spending that is highly dependent on the issuance of debt? To answer this question, semiannual data on capital spending were first collected. In order to isolate the fluctuations in these expenditures, fluctuations that may have been caused by variations in credit conditions, a linear trend was computed. Next, the deviations from trend were correlated with the deviations in (1) the average municipal bond yield, a variable that measures the cost and availability of loanable funds, and (2) changes in the average municipal bond yield, a variable that measures changes in cost and availability. These correlations were carried out in order to determine whether the same variables that were associated with, and determined to be the primary cause of, fluctuations in net bond sales were also related to, and possibly the cause of, deviations from trend in capital spending. In addition to the foregoing computations, deviations in capital
expenditures were correlated with deviations in Treasury bill rates to
determine the degree of association between fluctuations in such spend-
ing and fluctuations in the level of general business activity as
measured by bill rates.

The data, the time trend of expenditures, and the measures of
correlation that were derived will be discussed in the remaining por-
tion of the present section.

Data

On the basis of its surveys the Bureau of the Census compiles
annual estimates of state and local expenditures on equipment, new
construction, and land and existing structures, the three types of
expenditure that constitute what the Bureau defines to be capital out-
lay. An inspection of Table 8, in which expenditures for equipment and
land and existing structures are combined in the category labeled other
capital outlays, indicates that in recent years the proportion of total
outlays made for new construction has been quite large and relatively
constant, ranging from 82 to 86 percent in the fiscal years 1952 through
1959.

In order for the analysis of expenditures to be consistent with
that of bond sales in previous chapters, semiannual data are needed.
Although the Bureau does not make semianuual estimates of capital out-
lays, monthly estimates of the value of new state and local construction
put-in-place are made jointly by the Bureau of Labor Statistics and the
Business and Defense Services Administration. They represent the costs
of materials either consumed or incorporated into structure and
<table>
<thead>
<tr>
<th>Year</th>
<th>Capital Outlays</th>
<th>Percentage Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New Construction</td>
<td>Other</td>
</tr>
<tr>
<td>1952</td>
<td>6386</td>
<td>1051</td>
</tr>
<tr>
<td>1953</td>
<td>6763</td>
<td>1142</td>
</tr>
<tr>
<td>1954</td>
<td>7738</td>
<td>1387</td>
</tr>
<tr>
<td>1955</td>
<td>9048</td>
<td>1658</td>
</tr>
<tr>
<td>1956</td>
<td>9355</td>
<td>2052</td>
</tr>
<tr>
<td>1957</td>
<td>10399</td>
<td>2240</td>
</tr>
<tr>
<td>1958</td>
<td>11704</td>
<td>2282</td>
</tr>
<tr>
<td>1959</td>
<td>12723</td>
<td>2637</td>
</tr>
</tbody>
</table>

*New construction includes both contract and force-account work.*

*Other capital outlays include expenditures for equipment and for the acquisition of existing land and structures.*

*Components may not add to total because of rounding.*

facilities during a given period, regardless of when the materials were purchased and delivered; the costs of labor performed during the period; and proportionate allowances for overhead costs and profits on construction operations.

These construction estimates are derived almost exclusively from one basic series, the value of construction contracts awarded by state and local governments.¹ The Business and Defense Services Administration compiles the contract series from information given by private construction news services, information received from selected state and local government agencies, and data gathered by the Bureau of Public Roads on highway contracts and by the Bureau of Labor Statistics on public residential construction contracts. The final estimates reflect both the value of contracts awarded for new construction financed solely by state and local governments and that financed jointly by federal, state, and local governments.

Since the 1952-1959 data on contracts awarded show more variation than the data on construction put-in-place, the former were used in order to give the benefit of doubt to those who hold that credit conditions have an influence on capital outlays. The contract award data are shown in Table 9 and plotted in Chart VI.²


²The semiannual award data of Table 9 show no seasonal variation.
Trend and Deviation from Trend

The strong upward trend during the study period in the amount of contracts awarded for new construction is similar to that found in municipal bond sales and again is the result of such factors as growth in urban population, movement to the suburbs, and increases in real income. In order to eliminate trend and obtain data which represent deviations from trend, deviations possibly caused by credit conditions, the method of least squares was employed. The trend equation that was obtained is

19) \[ C_t^* = 2.560900 + .162666 T \ (t, T = 1, 2, 3, \ldots, 16) \]

where \( C_t^* \) represents the computed trend value of contracts awarded in time period \( t \) and \( T \) represents time measured in six-month units from an assumed origin of October 1, 1951.

To calculate absolute deviations from trend it is only necessary to subtract computed trend values from actual values. If \( C_t \) represents the actual value of contracts awarded in time period \( t \), then the absolute deviations from trend \( (c_t) \) are

\[ C_t - C_t^* = C_t - 2.560900 - .162666 T - c_t \ (t, T = 1, \ldots, 16) \]

The trend values, the absolute deviations from trend, and the absolute deviations from trend expressed as percentages of computed trend values are given in Table 9. The percentage figures indicate that the dollar amount of contracts awarded deviated very little from trend except in the second half of 1952 and in the years 1958 and 1959, the greatest relative deviation being 16 percent in the last half of
### TABLE 9

**CONTRACTS AWARDED FOR NEW CONSTRUCTION BY STATE AND LOCAL GOVERNMENTS, COMPUTED TREND VALUES OF CONTRACTS AWARDED, AND ABSOLUTE AND PERCENTAGE DEVIATION FROM TREND, UNITED STATES, SEMIANNUALLY, 1952-1959**

*(Billion Dollars)*

<table>
<thead>
<tr>
<th>Period</th>
<th>Contracts Awarded (C)</th>
<th>Computed Trend Values of Contracts Awarded <em>(C</em>)</th>
<th>Deviation from Trend <em>(C-C</em>)</th>
<th>Deviation from Trend as a Percent of Computed Trend Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>2.759</td>
<td>2.724</td>
<td>.035</td>
<td>1.29</td>
</tr>
<tr>
<td>II</td>
<td>2.587</td>
<td>2.886</td>
<td>-.299</td>
<td>10.36</td>
</tr>
<tr>
<td>1953 I</td>
<td>2.974</td>
<td>3.049</td>
<td>-.075</td>
<td>2.46</td>
</tr>
<tr>
<td>II</td>
<td>3.344</td>
<td>3.212</td>
<td>.132</td>
<td>4.11</td>
</tr>
<tr>
<td>1954 I</td>
<td>3.257</td>
<td>3.374</td>
<td>-.117</td>
<td>3.47</td>
</tr>
<tr>
<td>II</td>
<td>3.626</td>
<td>3.537</td>
<td>.089</td>
<td>2.52</td>
</tr>
<tr>
<td>1955 I</td>
<td>3.627</td>
<td>3.700</td>
<td>-.073</td>
<td>1.97</td>
</tr>
<tr>
<td>II</td>
<td>3.817</td>
<td>3.862</td>
<td>-.045</td>
<td>1.17</td>
</tr>
<tr>
<td>1956 I</td>
<td>4.076</td>
<td>4.025</td>
<td>.051</td>
<td>1.27</td>
</tr>
<tr>
<td>II</td>
<td>4.259</td>
<td>4.187</td>
<td>.072</td>
<td>1.72</td>
</tr>
<tr>
<td>1957 I</td>
<td>4.519</td>
<td>4.350</td>
<td>.169</td>
<td>3.88</td>
</tr>
<tr>
<td>II</td>
<td>4.638</td>
<td>4.513</td>
<td>.125</td>
<td>2.77</td>
</tr>
<tr>
<td>1958 I</td>
<td>5.172</td>
<td>4.676</td>
<td>.496</td>
<td>10.61</td>
</tr>
<tr>
<td>II</td>
<td>5.377</td>
<td>4.838</td>
<td>.539</td>
<td>11.14</td>
</tr>
<tr>
<td>1959 I</td>
<td>4.759</td>
<td>5.001</td>
<td>-.242</td>
<td>4.84</td>
</tr>
<tr>
<td>II</td>
<td>4.306</td>
<td>5.163</td>
<td>-.857</td>
<td>16.60</td>
</tr>
</tbody>
</table>

*Computed values were obtained from the time trend equation *(C*) = 2.5609001 + .16266617T, where the variable T represents time measured in 6 month units from an assumed origin of October 1, 1951.

*bAll percentages are considered to be positive.

Source: Contract data for the period 1952 through 1956 were taken from Construction Volume and Costs 1915-1956, A Statistical Supplement to Volume III of Construction Review, Table 21, pp. 62-65; data for 1957 were obtained from Construction Review, IX (June, 1958), 35; data for 1958 and 1959 are unrevised and were taken from succeeding issues of Construction Review.
CHART VI

CONTRACTS AWARDED FOR NEW CONSTRUCTION BY STATE AND LOCAL GOVERNMENTS, UNITED STATES, SEMIANNUALLY, 1952-59

Source: Table 9.
1959. This suggests that credit conditions had very little influence on the total spending of state and local governments in the years prior to 1958.

**Measures of Correlation**

To determine the statistical relationship between the absolute deviations in contracts awarded and the independent variables previously used in the analysis of bond sales—deviations in the average municipal bond yield, changes in yield, and deviations in the average three-month Treasury bill rate—the method of least squares was again employed. By using the data of Tables 2, 7, and 9, three equations of average relationship were computed, each equation linking one of the independent variables to the deviations in contract awards. The equations, correlation coefficients, and standard errors that were obtained are

\[
20) \quad c^*_u = -0.09578 \ u \quad (r = -0.0762, \ SE = 0.3077) \\
21) \quad c^*_{Au} = -0.00204 + 0.01638 \ Au \quad (r = 0.0157, \ SE = 0.3086) \\
22) \quad c^*_v = -0.23175 \ v \quad (r = -0.4856, \ SE = 0.2698)
\]

where \(c^*\) is the most probable value of the absolute deviation from trend of contract awards in billions of dollars, \(u\) is the absolute deviation of the average municipal bond yield, \(Au\) is the change during the period in the average municipal bond yield, \(v\) is the absolute deviation of the average Treasury bill rate, \(r\) is the coefficient of correlation, and \(SE\) is the standard error of estimate computed with \(N\) equal to 16.

The first two relationships indicate that the average municipal bond yield and changes in the average yield are not statistically
related to deviations in contract awards. In each case the coefficient of correlation is too low to be significant. The last relationship, however, shows that fluctuations in Treasury bill rates are negatively related to fluctuations in contracts awarded. At the 5 percent level of significance the correlation coefficient of .4856 is just significant. It should be noted at this point that the two series are statistically related only because of their behavior during the years 1958 and 1959. During 1958 the dollar amount of contracts awarded was far above trend while Treasury bill rates were far below. The value of contracts awarded during 1959 was below trend while bill rates, moving upward from a recession low, were at the trend value in the first half of the year and well above in the second half. Were these two years to be eliminated from both series and a test made to determine whether a significant degree of correlation existed between the truncated series, the results obtained would show that bill rates and contract awards were not statistically related.

The above results show the simultaneous linear relationship and the degree of correlation between each of the independent variables and the dependent variable. To test for the possibility of a significant lagged relationship, the method of least squares was used to determine the linear relationship and the degree of association between

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3At the 5 percent level of significance with 15 degrees of freedom a correlation coefficient of .4821 is needed before a relationship may be considered more than the result of chance; at the same level of significance with 14 degrees of freedom a coefficient of .4973 is needed. Fisher, Statistical Methods for Research Workers, p. 209.
each of the independent variables at time t-1 and the dependent variable at time t. The results were not significant.

**Interpretation**

The lack of virtually any degree of association between the deviations in contracts awarded and either the deviations in municipal bond yields or the changes in bond yields effectively demonstrates that contract awards for new construction by state and local governments were not consistently higher during the years 1952 through 1959 when interest costs were low or declining and consistently below trend when costs were relatively high or rising. Since consistency between the deviations is non-existent, the claim can be rejected that state and local capital outlays are noticeably influenced by the cost and availability of credit whose level and movement are the responsibility of the central bank.

In fairness, however, to those who assert that credit conditions do have an impact on spending financed with debt, note must be taken of the behavior of contract awards during the years 1958 and 1959. Awards surged above trend in the recession of 1958 when interest costs were relatively low, while in 1959, a period of recovery, the value of awards dropped well below trend as interest rates rose. Was this movement of awards during one short interval of time the direct result of credit conditions? As will be argued in the following section, the answer to this question is apparently no. On the basis of this answer and the above statistical results it can thus be said that state and local governments not only failed to consistently adjust their
expenditures for capital projects as conditions in the municipal bond market changed during the years of the study period, they also failed to adjust their spending in response to credit conditions during the recession and recovery of 1958-59.

Two questions immediately arise. First, why did credit conditions fail to affect capital spending? And second, how were state and local governments able to finance a steadily growing volume of outlays for capital projects (except in 1958-59) when their net borrowing through the municipal bond market varied in response to the cost and availability of credit? After discussing the behavior of awards in 1958-59, these questions will be taken up.

In the final portion of the present section the implications of the conclusion that credit conditions have failed to influence capital spending will be discussed.

Contract Awards in 1958-59

In Table 10 is presented total contract awards by half years for the period 1952 through 1959 and the major components of total awards, that is, contract awards for educational buildings, sewer and water systems, highways, and other facilities. The first three components are plotted in Chart VII.

This breakdown reveals that changes in contract awards for highways and for other facilities in the years 1958 and 1959 were responsible for the significant changes in the total of all awards during the same years. Awards for other facilities (hospitals, airports, state and locally owned utilities, administrative buildings, public housing,
### TABLE 10

**VALUE OF CONTRACTS AWARDED BY STATE AND LOCAL GOVERNMENTS, BY TYPE OF PUBLIC FACILITY, UNITED STATES, SEMIANNUALLY, 1952-1959**

*(Billion Dollars)*

<table>
<thead>
<tr>
<th>Period</th>
<th>Education</th>
<th>Sewer &amp; Water</th>
<th>Highway</th>
<th>Other&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>.671</td>
<td>.280</td>
<td>.999</td>
<td>.809</td>
<td>2.759</td>
</tr>
<tr>
<td>II</td>
<td>.680</td>
<td>.309</td>
<td>.999</td>
<td>.599</td>
<td>2.587</td>
</tr>
<tr>
<td>1953 I</td>
<td>.780</td>
<td>.365</td>
<td>1.228</td>
<td>.601</td>
<td>2.974</td>
</tr>
<tr>
<td>II</td>
<td>.850</td>
<td>.391</td>
<td>1.432</td>
<td>.671</td>
<td>3.344</td>
</tr>
<tr>
<td>1954 I</td>
<td>1.016</td>
<td>.366</td>
<td>1.231</td>
<td>.644</td>
<td>3.257</td>
</tr>
<tr>
<td>II</td>
<td>1.062</td>
<td>.400</td>
<td>1.453</td>
<td>.711</td>
<td>3.626</td>
</tr>
<tr>
<td>1955 I</td>
<td>1.044</td>
<td>.402</td>
<td>1.388</td>
<td>.793</td>
<td>3.627</td>
</tr>
<tr>
<td>II</td>
<td>1.063</td>
<td>.494</td>
<td>1.545</td>
<td>.715</td>
<td>3.817</td>
</tr>
<tr>
<td>1956 I</td>
<td>1.147</td>
<td>.546</td>
<td>1.579</td>
<td>.804</td>
<td>4.076</td>
</tr>
<tr>
<td>II</td>
<td>1.142</td>
<td>.554</td>
<td>1.633</td>
<td>.930</td>
<td>4.259</td>
</tr>
<tr>
<td>1957 I</td>
<td>1.257</td>
<td>.544</td>
<td>1.864</td>
<td>.854</td>
<td>4.519</td>
</tr>
<tr>
<td>II</td>
<td>1.194</td>
<td>.491</td>
<td>1.961</td>
<td>.992</td>
<td>4.638</td>
</tr>
<tr>
<td>1958 I</td>
<td>1.221</td>
<td>.542</td>
<td>1.957</td>
<td>1.452</td>
<td>5.172</td>
</tr>
<tr>
<td>II</td>
<td>1.186</td>
<td>.508</td>
<td>2.532</td>
<td>1.151</td>
<td>5.377</td>
</tr>
<tr>
<td>1959 I</td>
<td>1.089</td>
<td>.632</td>
<td>2.024</td>
<td>1.014</td>
<td>4.759</td>
</tr>
<tr>
<td>II</td>
<td>1.104</td>
<td>.507</td>
<td>1.687</td>
<td>1.008</td>
<td>4.306</td>
</tr>
</tbody>
</table>

<sup>a</sup>Other includes the value of contracts awarded for hospitals, airports, state and locally owned utilities, administrative buildings, public housing, and other projects not elsewhere classified.

Source: The 1952 through 1956 data were taken from *Construction Volume and Costs, 1915-1956. A statistical Supplement to Volume III of Construction Review*, Table 21, pp. 62-65; data for 1957 were taken from *Construction Review, IX* (June, 1958), 35; data for 1958 and 1959 are unrevised and were taken from succeeding issues of *Construction Review*. 
CHART VII

VALUE OF CONTRACTS AWARDED BY STATE AND LOCAL GOVERNMENTS FOR THE CONSTRUCTION OF HIGHWAYS, EDUCATIONAL BUILDINGS, AND SEWER SYSTEMS, UNITED STATES, SEMIANNUALLY, 1952-59

Billions Dollars

Source: Table 10.
and other projects not elsewhere classified) increased in the first half of 1958 by approximately $430 million and then dropped and remained at previous levels. Highway construction awards increased by slightly less than $600 million in the last half of 1958 and then suffered a decline of $500 million in the first half of 1959 and a further decline of $350 million in the last half of the year. The behavior of contracts awarded for new highways is clearly the result of changes in the amount of aid granted for highway construction by the federal government; at least a portion of the increase in contract awards for other facilities, from one-third to one-half, is also attributable to changes in federal aid programs.

Highways. — Under the present federal-aid highway program the federal government makes grants to state governments for the construction of (1) the interstate system of defense highways and (2) the system of primary, secondary, and urban highways. The federal funds for the interstate system are derived from a highway users tax and must be matched by state governments on a nine-tenths federal, one-tenth state basis. For the primary, secondary, and urban highways system the federal funds (usually referred to as ABC funds) must be matched on a one-half federal, one-half state basis.

In early 1958 the Congress of the United States passed the Federal-Aid Highway Act of 1958 as an anti-recession measure. The act

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authorized an increase of $200 million in interstate funds for the fiscal year 1958 over the amount originally authorized in the Federal-Aid Highway Act of 1956 and suspended the pay-as-you-go clause in the 1956 law so that full apportionments of the congressionally authorized funds could be made to the states. The 1958 law also authorized an additional $400 million of ABC funds to be matched on a two-thirds federal, one-third state basis rather than the usual fifty-fifty formula and required that the $400 million plus the contributions of the state be placed under contract by December 1, 1958.

On April 16, 1958, the Bureau of Public Roads apportioned to the states the $600 million in additional federal funds that had been authorized in the 1958 legislation. The results may be noted in Table 11 which presents data on contracts awarded for highway construction by source of funds. The total value of highway contracts remained at approximately the same level in the first half of 1958 as that reached in the last half of 1957, though the proportion of federal funds was larger, but in the last half of 1958 the total awarded for contracts increased by approximately $600 million while the amount of federal funds represented in contracts rose by about $425 million.

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5Ibid., pp. 5-6.

6The act also authorized $115 million in federal funds to be advanced to the states to help them meet their one-third share. Ibid., p. 5

7Apportionment refers to the division among the states by the Bureau of Public Roads of the funds authorized by Congress. It is not equivalent to the commitment of federal funds which takes place at a later time when state plans for construction are approved by the Bureau.
<table>
<thead>
<tr>
<th>Period</th>
<th>Source of Funds</th>
<th></th>
<th>Total Contracts Awarded for New Highway Construction(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>State and Local</td>
<td>Federal</td>
<td></td>
</tr>
<tr>
<td>1957 I</td>
<td>1127.4</td>
<td>736.4</td>
<td>1863.8</td>
</tr>
<tr>
<td>II</td>
<td>1083.8</td>
<td>877.5</td>
<td>1961.3</td>
</tr>
<tr>
<td>1958 I</td>
<td>918.1</td>
<td>1039.0</td>
<td>1957.1</td>
</tr>
<tr>
<td>II</td>
<td>1066.8</td>
<td>1465.4</td>
<td>2532.2</td>
</tr>
<tr>
<td>1959 I</td>
<td>970.5</td>
<td>1053.0</td>
<td>2023.5</td>
</tr>
<tr>
<td>II</td>
<td>862.8</td>
<td>823.7</td>
<td>1686.5</td>
</tr>
</tbody>
</table>

\(^a\)Includes major force-account projects started.

Source: *Construction Review.*
In both the first and last half of 1959 the value of contracts awarded for highways dropped below previous highs. The initial drop in the first part of the year was entirely the result of the exhaustion of the emergency funds that had been authorized in the Highway Act of 1958. The decline in the last of the year is attributable to (1) the steel strike which "discouraged the issuance of new awards because the availability of materials became uncertain" and (2) a carry-over effect from "the temporary situation that developed in 1959 when the accumulation of revenues in the trust fund was smaller than anticipated."

Other community facilities. -- As mentioned above, contracts awarded for the construction of projects classified in the other community facilities category increased by $450 million in the first half of 1958 and then declined to previous levels. This movement is attributable to the federal government's acceleration and subsequent retardation of certain of its programs that aid state and local governments in the financing of civil works, programs that may conveniently be discussed under the headings of grants-in-aid, public housing, and community loans.

8Aaron Sabgher and Gardner F. Derrickson, "Construction in 1959," Construction Review, X (March, 1960), 9. This same point is made in the following statement: "A special survey by the Department of Commerce revealed that the steel shortage impeded construction activity in September on projects for which contracts had already been awarded, and that uncertainty about future steel deliveries had interfered with the awarding of contracts in recent months." Federal Reserve Bank of New York, Monthly Review, November 1959, p. 168.

Approvals during April and May of 1958 of federal grants to state and local governments for the construction of hospitals, medical research facilities, airports, and waste treatment works were made more promptly with a view to stimulating construction. While it is impossible to know with exactness the extent to which this action speeded the awarding of contracts, it is possible to make a crude estimate. Data from the United States Treasury indicate that the amount of funds actually disbursed under these aid programs was approximately $52 million more in fiscal year 1959, the fiscal year in which additional approvals would be reflected, than in fiscal year 1958. If the figure of $52 million may be taken as the amount by which approvals increased in the spring of 1958, then the increase during that same period in contracts awarded for approved projects may be estimated to have been $52 million plus the contributions of state and local governments, a total of, say, $75 million.

Public housing was also accelerated in the spring in a further attempt to raise the level of total construction. Acting under a directive of the President, the administrator of the Public Housing Administration initiated action in March to expedite the processing of


requests and the execution of annual contributions contracts. The available data show that the number of dwelling units started under this program in calendar year 1958 exceeded by 5,000 the number of units started in 1957. If a unit cost of $12,000 is assumed, the effect of the administrator's action can be estimated as an additional $60 million in contracts awarded for other facilities. Of this estimate for the entire year, $30 million may be taken as the amount by which contracts awarded by state and local governments for residential construction increased during the first half.

Acting under the same presidential directive cited above, the administrator of the Community Facilities Administration speeded the approval of loans (1) to smaller communities for the construction of basic public works and (2) to public institutions of higher education for the construction of housing accommodations. Loan approvals under

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13 Ibid., p. 288.

14 Ibid., p. 283.

15 Of the federal programs discussed in this section that were accelerated in the first half of 1958, only the public housing program was maintained at its quickened pace throughout the year.

16 Economic Report of the President, p. 38; also, HHFA, Twelfth Annual Report, pp. 21, 250-51, 337.
these programs were $40 million greater in calendar year 1958 than in 1957, and since the rate of approval for both types of projects was reduced during the summer to previous levels, this increase of $40 million occurred during the spring and may be taken as an estimate of the amount by which contracts awarded increased during the first half as a result of federal action taken through the Community Facilities Administration.

The total impact of the federal government's anti-recession actions on the amount of contracts awarded for projects classified as other is $145 million, the sum of the three estimates made above. Since assumptions were made regarding the extent of financial participation in the approved projects by state and local governments, it is obvious that the figure of $145 may be quite inaccurate. If greater participation were actually required in the provision of funds to finance the federally aided projects than has been assumed above, the estimate of $145 million is too low; and if a lesser amount of financial participation were actually required, the estimate of total impact is too high. In view of the error involved, caution must be used in interpretations that involve this estimate.

17 Ibid., pp. 249, 251.

18 Ibid., pp. 7, 251.

19 The increase in the rate of loan approvals by the CFA represents an increase in the availability of federal and not private credit.
The remaining portion of the $450 million increase in contracts awarded for other facilities is still unexplained. Credit conditions, of course, offer one possibility; state and local officials may have been induced during the first half of 1958 to expand their commitment of funds because of the relatively easier conditions under which bonds could be sold. Another possibility is that the passage of the Federal-Aid Highway Act of 1958, legislation which increased the amount of federal aid and reduced the matching requirements of the receiving governmental units, released funds from the financing of highways and permitted state and local governments to award more contracts for other facilities and to finance the projects with the released funds. Only if information were gathered directly from state and local officials could an adequate explanation be given of this unexplained increase.

The following conclusion seems warranted on the basis of the above evidence. The relatively high level of contract awards for new construction in 1958 and the relatively lower level in 1959 were largely the result of changes in the amounts of federal aid granted to state and local governments and not the result of changes in the cost and availability of loanable funds. Since the only important deviations in contracts awarded occurred during the last two years of the study period, 1958 and 1959, credit conditions cannot be said to have had any noticeable effect on total spending by state and local governments for new construction. The contention of the Federal Reserve that changes in the cost and availability of long-term credit have a significant influence on capital outlays must be rejected on the basis of recent experience.
Two Alternatives

Only two explanations of this conclusion are possible. The simplest and most obvious is that credit conditions and changes therein had relatively little influence on the investment decisions of state and local government officials, either because such conditions were commonly given little weight in the decision process or because such conditions, though decisive in less urgent times, were considered to be relatively unimportant in view of the pressing longer-run need and willingness to pay for schools, roads, hospitals, sewers, and other facilities, the need created by the growth of and the shift in population and the willingness on the part of the electorate to pay for such facilities generated by higher real incomes and a general desire for expanded levels of collective consumption.

The second explanation, less plausible than the first, is that changes in the cost and availability of credit actually had an important influence on the spending decisions of state and local officials, but an influence that was completely offset by short-run changes in other equally significant decision factors, as, for example, changes in tax receipts, in expectations concerning future revenue, in the price at which new construction could be purchased, and the availability and readiness of contractors to undertake proposed projects.

In an effort to determine which of the above alternatives was preferable, interviews were held on July 18 and 19, 1961, with officials of four governmental units located in Cuyahoga County, Ohio. The men interviewed were Mr. Michael Wach, Finance Director of the Cleveland
School System, Mr. George Vine, Assistant Director of Finance of the City of Cleveland, Mr. James Beth, Finance Director of Shaker Heights, and Mr. Grant Apthorp, Finance Director of East Cleveland.

These men were in agreement on two important points: first, that conditions in the municipal bond market had not at any time within their experience in the past decade had an influence on construction (no delays); and second, that necessity was the important factor, not the cost or difficulty of obtaining external financing. As Mr. Vine stated the matter: "Once the voters approve the bonds, we go ahead with the project no matter what's happening in the bond market."

Though the answers given by four officials cannot be accepted as typical of all officials, one point is worth noting. The governments these men represent are governments that have not experienced the pains of population growth in the years since the end of the Second World War. If these officials believe that community need is the important criterion, it may be inferred that this same criterion is even more important to those officials whose governments have been continually called upon in the recent past to provide services for an expanding populace.

Financing Construction

The material of earlier chapters revealed that borrowing by state and local governments varied substantially during the period 1952 through 1959. It has also been shown that the value of contracts awarded for new construction, except in 1958-59, varied little from
trend during these same eight years. This raises the following question: How were the constantly growing outlays financed, outlays that consisted largely of expenditures for new construction, when the amounts borrowed to finance such outlays fluctuated with the conditions of the municipal bond market?

A partial answer may be obtained from Table 12 which presents information on state and local government sources and uses of funds. While the data are on a yearly basis and are far from being accurate, they do indicate that the compensatory factor in the finance of capital outlays was the amount of funds devoted to the net acquisition of financial assets. From 1954 to 1955, for example, the net amount of funds borrowed dropped from $4.5 to $3.5 billion. Despite this drop, capital outlays increased from $9.1 to $10.1 billion, the increase permitted by the decline in the amount of funds used to purchase financial assets, a decline from $3.8 billion in 1954 to $2.3 billion in 1955. And in the years 1957-58 the current surplus declined by $0.3 billion, primarily because of increases in expenditures that were larger than the increases in revenues, while the net amount borrowed increased by $0.9 billion, thus giving a net increase over the two years of $0.6 billion in the sources of funds. At the same time the increase in funds used for capital outlays was $1.2 billion, an increase that was accomplished by reducing the amount of funds used for the acquisition of financial assets.

At the end of fiscal year 1959 state and local governments held over $51 billion in cash and securities (see Table 13). The large
### TABLE 12

**STATE AND LOCAL GOVERNMENTS: SOURCES AND USES OF FUNDS, ANNUALLY, 1952-59**

(Billions of Dollars)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current surplus(^a)</td>
<td>6.8</td>
<td>7.6</td>
<td>7.6</td>
<td>8.0</td>
<td>9.7</td>
<td>10.3</td>
<td>10.0</td>
<td>11.2</td>
</tr>
<tr>
<td>Net issuance of obligations(^b)</td>
<td>2.8</td>
<td>3.9</td>
<td>4.5</td>
<td>3.5</td>
<td>3.2</td>
<td>4.7</td>
<td>5.6</td>
<td>4.9</td>
</tr>
<tr>
<td><strong>SOURCES, TOTAL</strong></td>
<td>9.6</td>
<td>11.5</td>
<td>12.1</td>
<td>11.5</td>
<td>12.9</td>
<td>15.0</td>
<td>15.6</td>
<td>16.1</td>
</tr>
<tr>
<td>Construction and land(^c)</td>
<td>7.0</td>
<td>7.7</td>
<td>9.1</td>
<td>10.0</td>
<td>11.1</td>
<td>12.1</td>
<td>13.3</td>
<td>13.7</td>
</tr>
<tr>
<td>Net acquisition of financial assets</td>
<td>2.7</td>
<td>3.7</td>
<td>3.8</td>
<td>2.3</td>
<td>2.7</td>
<td>3.4</td>
<td>2.4</td>
<td>3.1</td>
</tr>
<tr>
<td>Other and statistical discrepancy(^d)</td>
<td>-.1</td>
<td>.1</td>
<td>-.8</td>
<td>-.8</td>
<td>-.9</td>
<td>-.5</td>
<td>-.1</td>
<td>-.7</td>
</tr>
<tr>
<td><strong>USES, TOTAL</strong></td>
<td>9.6</td>
<td>11.5</td>
<td>12.1</td>
<td>11.5</td>
<td>12.9</td>
<td>15.0</td>
<td>15.6</td>
<td>16.1</td>
</tr>
</tbody>
</table>

\(^a\)Excess of tax and other receipts over expenditures other than for land and construction.  
\(^b\)Long-term and short-term debt. 
\(^c\)Includes outlays for new construction as well as outlays for land with and without existing structures. 
\(^d\)Statistical discrepancy plus trade debt and loans from the federal government. The statistical discrepancy is generally the largest item in the category.

Source: The 1952-56 data were taken from "Flow of Funds and Saving Estimates: Supplementary Distribution No. 1" (Washington: Board of Governors of the Federal Reserve System, 1959), Table 4, Part F; the 1957 data were taken from Federal Reserve Bulletin, August, 1959, p. 1051; the 1958-59 data were taken from Federal Reserve Bulletin, August, 1960, p. 935.
# TABLE 13

CASH AND SECURITY HOLDINGS OF STATE AND LOCAL GOVERNMENTS, BY PURPOSE, FISCAL YEAR, 1959

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment compensation</td>
<td>6,703</td>
</tr>
<tr>
<td>Employee retirement</td>
<td>16,341</td>
</tr>
<tr>
<td>Other insurance trust systems</td>
<td>1,481</td>
</tr>
<tr>
<td>Offsets to debt</td>
<td>4,766</td>
</tr>
<tr>
<td>Bond funds*</td>
<td>5,523</td>
</tr>
<tr>
<td>All other</td>
<td>16,452</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>51,265</td>
</tr>
</tbody>
</table>

*Funds established to account for the proceeds of bond issues pending their disbursement.

amounts held in "Bond Funds" and "All Others" suggest how it was possible for state and local governments to add to financial assets as much as $3.8 billion in one year, 1954, and as little as $2.3 billion the next. Holdings classified for these purposes can be built up (1) from larger than expected current surpluses, (2) from funds specifically set aside from current revenue to pay for future community facilities, and (3) from funds obtained through the sale of bonds. And these assets may be liquidated at later times, perhaps when the municipal bond market is not as favorable for the flotation of debt, in order to pay for planned facilities.

While the data on sources and uses indicate that the compensatory factor in the financing of capital outlays was the amount of funds used to acquire financial assets, it is not at all certain that the statements offered above are a satisfactory explanation of why the amount of funds devoted to the purchase of financial assets varied from period to period. Since 1957 the Bureau of the Census has included in its breakdown of cash and security holdings the category "Bond Funds." If in the future the Bureau should give a more detailed breakdown showing the amount of financial assets held for the purpose of purchasing capital assets, it may be possible to give a better answer to the question of why substantial variation occurs in the use of funds to acquire financial assets.

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20 Certain yearly additions to holdings are to be expected: additions for insurance trust systems, employee retirement systems, bond retirement funds, and unemployment compensation funds.
Implications

The rejection of the claim that credit conditions influence capital spending makes it appropriate to take up at this point two issues that were raised in Chapter II and that have not as yet been considered. The first relates to selective credit controls and the second to proposals for lowering the cost of borrowing to state and local governments.

Selective credit controls. -- It has been argued that creeping inflation can be caused during times of relatively full employment by shifts in the composition of aggregate demand, shifts that raise prices in markets where spending increases and leave prices unaffected in markets where spending declines.21 Monetary policy, so the argument continues, is fairly impotent in such a situation. The general controls which are employed by the central bank have an impact which cuts spending in some sectors of the economy much more than others when credit is tightened. Yet the areas that are affected may not be those in which prices are being driven up by a change in the composition of total demand. What is needed is a type of policy that can dampen spending when necessary in specific areas of the economy, particularly those areas in which sizeable shifts in spending have occurred in the past (for example, consumer spending on durable goods). If the central bank could use selective credit controls in addition to the general controls now employed, policy could be made more effective in stabilizing prices.

21 Supra, pp. 16-17.
This argument and the recommendation derived from it raises the following questions concerning state and local governments. First, does central bank action taken with general controls have any influence on their debt-financed spending? If it does not, has their capital spending altered rather dramatically from time to time and possibly contributed during high employment periods to increasing prices in the construction industry? If yes, should consideration be given to the adoption of a selective credit control in this area?

The first question has already been answered: general controls have not had an effect on the capital spending of state and local governments. The answer to the second question is both yes and no. Capital spending did not undergo any substantial changes in the years 1952 through 1957. But as indicated above, capital spending did expand rapidly in 1958 and then drop in 1959. These changes, however, were counter to the general movement of business activity and cannot be considered as changes that helped to push prices upward during periods of relatively full employment. This reason, among others, rules out the application of selective credit controls to the state and local sector.

Proposals for lowering the cost of borrowing. -- Several proposals have been put forward as measures which would lower the cost of borrowing and/or increase the amount of credit available to state and local governments if adopted.22 The proponents of these measures have argued for their adoption by claiming that the lower cost and greater

22 Supra, pp. 40-41.
supply of credit would prevent the construction of needed community facilities from being held back during periods when interest costs were high and the acquisition of credit difficult.

In the light of the results that have been established, the argument used to back these proposals does not appear to be valid. Though credit conditions have influenced the borrowing of state and local governments, they have not influenced capital spending. This is not to deny that in some instances the construction of a school or some other facility may have been temporarily delayed because of the impossibility of obtaining credit. This has undoubtedly happened, but it has not happened often enough to be reflected in the value of contracts awarded for new construction. The proposals for lowering the cost of borrowing may have merit, but their merit is not to be found in the argument that needed facilities could be obtained without delay if only credit were cheaper and easier to secure.

Summary

Contracts awarded for new construction moved steadily upward in the years 1952-57, advanced to levels considerably above trend in both halves of 1958, and then dropped below trend in 1959. If the years 1952 through 1957 were considered alone, the proposition of the central bank authorities that credit conditions and changes therein have a fairly immediate influence on capital spending could be rejected since credit conditions varied during this interval while contract awards did not. The fluctuations that occurred in awards in 1958-59, though consistent with the claim that credit conditions have an influence, proved
upon examination to be largely the result of (1) an acceleration of federal government programs in 1958 to stimulate the economy, primarily an acceleration of the highway program, and (2) a retardation of these same programs in 1959 together with a steel shortage in the last half of the year that resulted from a nationwide steel strike. On the basis of this evidence the conclusion must be drawn that credit conditions in the municipal bond market and changes therein have not had a discernible impact on total capital spending by state and local governments.

One question immediately arises from this conclusion: Why haven't credit conditions, which influenced the sale of municipal bonds, had an impact on the capital spending of state and local governments, the spending that is heavily dependent on the issuance of debt? While information is both insufficient and incomplete, that which is available suggests that capital spending in the recent past has been unaffected by variations in credit conditions because the pressures exerted by the growth of population, real income, and the desire for better and more extensive governmental services have been unrelenting and because state and local governments have been able to shift with the changing currents of credit and to finance capital outlays during high interest-cost periods by using funds previously accumulated.
CHAPTER VI

SUMMARY

The results established together with the implications of these results will be briefly summarized in the present chapter.

In Chapter III it was shown that a negative relationship exists between the cost of borrowing and the net amount of long-term debt issued by state and local governments during the years 1952 through 1959. Consistently throughout these years state and local governments sold more bonds on a net basis (gross bond sales less retirements) when interest costs were relatively low and fewer bonds when rates were high. Gross bond sales were also at relatively higher levels when borrowing costs were low and at relatively lower levels when costs were high. However, gross bond sales showed a much more erratic behavior than net sales. This is attributable to the fluctuations that occurred in the amount of bonds retired by state and local governments. During the first six months of 1959, for example, when the cost of borrowing was higher than at any previous time in the decade, gross bond sales reached a relative level above long-term trend that exceeded the highs attained when interest costs were low in the 1957-58 recession. However, because the amount of bonds retired was large, net bond sales were relatively low. This points to the importance of bond retirements as a
factor other than interest rates that is accountable for fluctuations in gross sales.

In order to determine whether the relationship between bond sales and interest rates was spurious, a statistical analysis of state and local income and bond election results was made. The analysis demonstrated that neither factor could account for the systematic variation found in bond sales. On the basis of this evidence the proposition that the cost and availability of loanable funds have an influence on the level of state and local borrowing can be accepted.

There are two implications that follow from the statistical evidence and the conclusion drawn from it. The first concerns the cyclical behavior of state and local governments and the second the importance of debt limits.

1. Since interest rates adjusted to lower levels during the mild recessions of 1953-54 and 1957-58 when the central bank was following an easy money policy and advanced to greater heights in the other years when the pace of economic activity was faster and the central bank was adhering to a tight money policy, state and local governments during the past two business cycles withdrew relatively more from the stream of loanable funds in recessions than in times of prosperity and did so because credit conditions were more favorable in recessions than at other times. To the extent that an increase in net borrowing can be considered beneficial to the economy during a recession, the behavior of state and local governments can be described stabilizing.
2. The fact that net borrowing has varied inversely with the level of interest rates implies that debt limits have not restricted the issuance of debt any more during recessions than at other times. This of course does not mean that debt limits have no importance. Evidence indicates that a number of governments have exhausted their capacity to incur debt. Indeed, this fact together with the fact that some prudent finance officers follow self-imposed limits on debt explains why bond retirements are important and why the gross bond sales of state and local governments are erratic.

The question remains of why credit conditions had these effects during the years of the study period. Was it because interest rate ceilings forced state and local governments to postpone borrowing in high interest-cost periods till later times of low interest costs? Or was it because state and local government officials were acting to minimize costs? It appears from the scant information presently available that legally imposed ceilings on interest rates have not compelled governments to do most of their borrowing in low cost periods. As shown in one recent study many interest rate ceilings are set at the 5 and 6 percent levels. Since they exceed the highest point attained by average municipal bond yields in the years 1952-59, credit conditions cannot be said to have influenced municipal bond sales because of restrictions on interest rates.

The authorities of the Federal Reserve have stated that the desire of state and local officials to borrow when costs are low is the principal reason for the effects of credit conditions on the amount of
borrowing done by these officials. While this is true to some extent, it is by no means a complete explanation. According to one analyst, municipal bonds are the first choice of few important groups of lenders and the second choice of many. This is particularly so of commercial banks. During periods of prosperity when banks can find all of the loans they care to acquire, they invest little if anything in municipal bonds; however, during recessions when the demand for loans is slack and the amount of uncommitted resources is high, banks invest heavily in municipals. These shifts that occur in the supply of funds thus broaden the market for municipals in recessions and constrict it in booms. As a result, state and local governments borrow more during recessions because both rates are low and buyers more plentiful.

The material presented in Chapter IV demonstrates that bond sales, whether considered on a net or gross basis, were moderately sensitive to changes in interest rates during the years of the study period. The faster rates rose the lower was the volume of bond sales, while the more rapidly rates fell the higher was the level of sales. Again, since neither bond election results nor state and local income accounted for the fluctuations in bond sales, the claim of the Federal Reserve authorities that changes in interest rates affect the volume of bond sales by state and local governments can be accepted.

The reason given by the central bank authorities for the inverse relationship between changes in interest rates and bond sales is the following: the middlemen who purchase bonds from state and local governments and then place them with ultimate lenders discourage governments
from entering the bond market when rates are rising because of the losses suffered on the inventories they hold, and when rates are falling they encourage the issuance of bonds in order to replenish inventories whose stock is rising in price. This explanation is consistent with the data and, in addition, with other evidence that has been contributed by outside observers.

In Chapter V the capital spending of state and local governments was examined. For purposes of analysis the assumption was made that capital spending can be adequately represented by the value of contracts awarded for new construction by these governments. The fact that outlays for new construction have constituted a large and fairly constant proportion of total capital outlays in the past eight years justifies this assumption.

Contracts awarded for new construction moved steadily upward in the years 1952-57, advanced to levels considerably above trend in both halves of 1958, and then dropped below trend in 1959. If the years 1952 through 1957 were considered alone, the proposition of the central bank authorities that credit conditions and changes therein have a fairly immediate influence on capital spending could be rejected since credit conditions varied during this interval while contract awards did not. The fluctuations that occurred in contract awards in 1958-59, though consistent with claim that credit conditions have an influence, proved upon examination to be largely the result of (1) an acceleration of federal government programs in 1958 to stimulate the economy, primarily an acceleration of the highway program, and (2) a retardation of
these same programs in 1959 together with a steel shortage in the last half of the year that resulted from a nationwide steel strike. This leads to the conclusion that credit conditions in the municipal bond market and changes therein have not had a discernible impact on total capital spending by state and local governments.

One question immediately arises: Why haven't credit conditions, which influenced the sales of municipal bonds, had an impact on the capital spending of state and local governments, the spending that is heavily dependent on the issuance of debt? While data is both insufficient and incomplete, the information presently available suggests that capital spending in the recent past has been unaffected by variations in credit conditions because the intense pressures exerted by the growth of population, real income, and the desire for better and more extensive governmental services have been unrelenting and because state and local governments have been able to shift with the changing currents of credit and to finance capital outlays during high interest-cost periods by using funds previously accumulated, including funds obtained through anticipatory borrowing.

The implications of the conclusion that credit conditions have not influenced capital spending are the following: First, since credit conditions are the responsibility of the central bank, monetary policy cannot be said to have had an impact on the capital spending of state and local governments. And second, though the nonfederal governments
contributed to the stability of the economy in 1958-59 by first increasing their awards for construction and then lowering them as economic activity quickened, they did not do so because of the credit conditions that prevailed during those years.
### TABLE 14

SEASONALLY ADJUSTED GROSS BOND SALES, COMPUTED TREND VALUES OF SEASONALLY ADJUSTED GROSS BOND SALES, AND DEVIATIONS FROM TREND, UNITED STATES, SEMIANNUALLY, 1952-1959

(Billions of Dollars)

<table>
<thead>
<tr>
<th>Period</th>
<th>Gross Bond Sales (G)</th>
<th>Timea (T)</th>
<th>Computed Bond Salesb (G*)</th>
<th>Difference (G-G*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>2.351</td>
<td>1</td>
<td>2.455</td>
<td>-.104</td>
</tr>
<tr>
<td>II</td>
<td>2.061</td>
<td>2</td>
<td>2.547</td>
<td>-.486</td>
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<td>1953 I</td>
<td>2.394</td>
<td>3</td>
<td>2.641</td>
<td>-.247</td>
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<tr>
<td>II</td>
<td>3.165</td>
<td>4</td>
<td>2.734</td>
<td>.631</td>
</tr>
<tr>
<td>1954 I</td>
<td>3.460</td>
<td>5</td>
<td>2.827</td>
<td>.633</td>
</tr>
<tr>
<td>II</td>
<td>3.508</td>
<td>6</td>
<td>2.920</td>
<td>.588</td>
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<tr>
<td>1955 I</td>
<td>2.584</td>
<td>7</td>
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<tr>
<td>II</td>
<td>3.392</td>
<td>8</td>
<td>3.106</td>
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<td>1956 I</td>
<td>2.903</td>
<td>9</td>
<td>3.199</td>
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<td>II</td>
<td>2.544</td>
<td>10</td>
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<td>3.153</td>
<td>11</td>
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<td>II</td>
<td>3.808</td>
<td>12</td>
<td>3.478</td>
<td>.330</td>
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<tr>
<td>1958 I</td>
<td>4.117</td>
<td>13</td>
<td>3.571</td>
<td>.546</td>
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<td>II</td>
<td>3.332</td>
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<td>3.664</td>
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<tr>
<td>1959 I</td>
<td>4.334</td>
<td>15</td>
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<td>.577</td>
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<tr>
<td>II</td>
<td>3.333</td>
<td>16</td>
<td>3.850</td>
<td>-.517</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50.439</strong></td>
<td><strong>136</strong></td>
<td><strong>50.439</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

**Deviations in time interval units of 6 months from an assumed origin of October 1, 1951.**

**Computed values were obtained from the following time trend equation: G* = 2.36206 + .092981 T.**

Source: Table 1
TABLE 15

SEASONALLY ADJUSTED NET BOND SALES, COMPUTED TREND VALUES OF SEASONALLY
ADJUSTED NET BOND SALES, AND DEVIATIONS FROM TREND,
UNITED STATES, SEMIANNUALLY, 1952-1959

(Billions of Dollars)

<table>
<thead>
<tr>
<th>Period</th>
<th>Net Bond Sales (N)</th>
<th>Timea (T)</th>
<th>Computed Salesb (N*)</th>
<th>Difference (N - N*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>1.112</td>
<td>1</td>
<td>1.486</td>
<td>-.374</td>
</tr>
<tr>
<td>II</td>
<td>1.387</td>
<td>2</td>
<td>1.549</td>
<td>-.162</td>
</tr>
<tr>
<td>1953 I</td>
<td>1.477</td>
<td>3</td>
<td>1.613</td>
<td>-.136</td>
</tr>
<tr>
<td>II</td>
<td>2.022</td>
<td>4</td>
<td>1.676</td>
<td>.346</td>
</tr>
<tr>
<td>1954 I</td>
<td>2.246</td>
<td>5</td>
<td>1.740</td>
<td>.506</td>
</tr>
<tr>
<td>II</td>
<td>2.154</td>
<td>6</td>
<td>1.803</td>
<td>.350</td>
</tr>
<tr>
<td>1955 I</td>
<td>1.770</td>
<td>7</td>
<td>1.867</td>
<td>-.097</td>
</tr>
<tr>
<td>II</td>
<td>1.929</td>
<td>8</td>
<td>1.930</td>
<td>-.001</td>
</tr>
<tr>
<td>1956 I</td>
<td>1.984</td>
<td>9</td>
<td>1.994</td>
<td>-.010</td>
</tr>
<tr>
<td>II</td>
<td>1.315</td>
<td>10</td>
<td>2.057</td>
<td>-.742</td>
</tr>
<tr>
<td>1957 I</td>
<td>2.049</td>
<td>11</td>
<td>2.121</td>
<td>-.072</td>
</tr>
<tr>
<td>II</td>
<td>2.250</td>
<td>12</td>
<td>2.184</td>
<td>.066</td>
</tr>
<tr>
<td>1958 I</td>
<td>2.918</td>
<td>13</td>
<td>2.248</td>
<td>.670</td>
</tr>
<tr>
<td>II</td>
<td>2.282</td>
<td>14</td>
<td>2.311</td>
<td>-.030</td>
</tr>
<tr>
<td>1959 I</td>
<td>2.342</td>
<td>15</td>
<td>2.375</td>
<td>-.033</td>
</tr>
<tr>
<td>II</td>
<td>2.157</td>
<td>16</td>
<td>2.438</td>
<td>-.281</td>
</tr>
<tr>
<td>Total</td>
<td>31.400</td>
<td>136</td>
<td>31.399</td>
<td>0</td>
</tr>
</tbody>
</table>

aDeviations in time interval units of 6 months from an assumed origin of October 1, 1951.
bComputed values were obtained from the following time trend equation: \( N^* = 1.42252 + .06352647 \times T \).

Source: Table 1
TABLE 16
AVERAGE MUNICIPAL BOND YIELDS, COMPUTED TREND VALUES OF AVERAGE MUNICIPAL BOND YIELDS, AND DEVIATIONS FROM TREND, UNITED STATES, SEMIANNUALLY, 1952-1959

(Percent)

<table>
<thead>
<tr>
<th>Period</th>
<th>Municipal Bond Yields (U)</th>
<th>Time(^a) (T)</th>
<th>Computed Yields(^b) (U*)</th>
<th>Difference (U - U*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>2.060</td>
<td>1</td>
<td>2.0532</td>
<td>.007</td>
</tr>
<tr>
<td>II</td>
<td>2.315</td>
<td>2</td>
<td>2.1767</td>
<td>.138</td>
</tr>
<tr>
<td>1953 I</td>
<td>2.660</td>
<td>3</td>
<td>2.3002</td>
<td>.360</td>
</tr>
<tr>
<td>II</td>
<td>2.780</td>
<td>4</td>
<td>2.4238</td>
<td>.356</td>
</tr>
<tr>
<td>1954 I</td>
<td>2.450</td>
<td>5</td>
<td>2.5473</td>
<td>-.097</td>
</tr>
<tr>
<td>II</td>
<td>2.295</td>
<td>6</td>
<td>2.6708</td>
<td>-.376</td>
</tr>
<tr>
<td>1955 I</td>
<td>2.630</td>
<td>7</td>
<td>2.7944</td>
<td>-.364</td>
</tr>
<tr>
<td>II</td>
<td>2.625</td>
<td>8</td>
<td>2.9179</td>
<td>-.293</td>
</tr>
<tr>
<td>1956 I</td>
<td>2.735</td>
<td>9</td>
<td>3.0415</td>
<td>-.306</td>
</tr>
<tr>
<td>II</td>
<td>3.125</td>
<td>10</td>
<td>3.1650</td>
<td>-.040</td>
</tr>
<tr>
<td>1957 I</td>
<td>3.430</td>
<td>11</td>
<td>3.2885</td>
<td>.141</td>
</tr>
<tr>
<td>II</td>
<td>3.760</td>
<td>12</td>
<td>3.4121</td>
<td>.348</td>
</tr>
<tr>
<td>1958 I</td>
<td>3.325</td>
<td>13</td>
<td>3.5356</td>
<td>-.211</td>
</tr>
<tr>
<td>II</td>
<td>3.795</td>
<td>14</td>
<td>3.6591</td>
<td>.136</td>
</tr>
<tr>
<td>1959 I</td>
<td>3.890</td>
<td>15</td>
<td>3.7827</td>
<td>.107</td>
</tr>
<tr>
<td>II</td>
<td>4.000</td>
<td>16</td>
<td>3.9062</td>
<td>.094</td>
</tr>
<tr>
<td>Total</td>
<td>47.675</td>
<td>136</td>
<td>47.675</td>
<td>0</td>
</tr>
</tbody>
</table>

\(^a^\) Deviations in time interval units of 6 months from an assumed origin of October 1, 1951.
\(^b^\) Computed values were obtained from the following time trend equation: \( U^* = 1.929625 + .1235368 \times T \).

Source: Table 1.
<table>
<thead>
<tr>
<th>Period</th>
<th>Treasury Bill Rates (V)</th>
<th>Timea (T)</th>
<th>Computed Bill Ratesb (V*)</th>
<th>Difference (V - V*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952 I</td>
<td>1.610</td>
<td>1</td>
<td>1.3017</td>
<td>.308</td>
</tr>
<tr>
<td>II</td>
<td>1.855</td>
<td>2</td>
<td>1.4164</td>
<td>.439</td>
</tr>
<tr>
<td>1953 I</td>
<td>2.065</td>
<td>3</td>
<td>1.5311</td>
<td>.534</td>
</tr>
<tr>
<td>II</td>
<td>1.715</td>
<td>4</td>
<td>1.6458</td>
<td>.069</td>
</tr>
<tr>
<td>1954 I</td>
<td>.925</td>
<td>5</td>
<td>1.7604</td>
<td>-.835</td>
</tr>
<tr>
<td>II</td>
<td>.950</td>
<td>6</td>
<td>1.8751</td>
<td>-.925</td>
</tr>
<tr>
<td>1955 I</td>
<td>1.355</td>
<td>7</td>
<td>1.9898</td>
<td>-.635</td>
</tr>
<tr>
<td>II</td>
<td>2.100</td>
<td>8</td>
<td>2.1045</td>
<td>-.005</td>
</tr>
<tr>
<td>1956 I</td>
<td>2.450</td>
<td>9</td>
<td>2.2192</td>
<td>.231</td>
</tr>
<tr>
<td>II</td>
<td>2.805</td>
<td>10</td>
<td>2.3339</td>
<td>.471</td>
</tr>
<tr>
<td>1957 I</td>
<td>3.120</td>
<td>11</td>
<td>2.4486</td>
<td>.671</td>
</tr>
<tr>
<td>II</td>
<td>3.325</td>
<td>12</td>
<td>2.5633</td>
<td>.762</td>
</tr>
<tr>
<td>1958 I</td>
<td>1.360</td>
<td>13</td>
<td>2.6780</td>
<td>-1.318</td>
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<tr>
<td>II</td>
<td>2.185</td>
<td>14</td>
<td>2.7927</td>
<td>-.608</td>
</tr>
<tr>
<td>1959 I</td>
<td>2.885</td>
<td>15</td>
<td>2.9074</td>
<td>-.022</td>
</tr>
<tr>
<td>II</td>
<td>3.885</td>
<td>16</td>
<td>3.0221</td>
<td>.863</td>
</tr>
<tr>
<td>Total</td>
<td>34.590</td>
<td></td>
<td>34.5900</td>
<td>0</td>
</tr>
</tbody>
</table>

a Deviations in time interval units of 6 months from an assumed origin of October 1, 1951.
b Computed values were obtained from the following time trend equation: \( V^* = 1.187000 + .1146912 \ T \).

Source: Table 1.
BIBLIOGRAPHY
BOOKS


GOVERNMENT PUBLICATIONS


______. **Compendium of State Government Finances in 1957.** 1957.


______. **Summary of Governmental Finances in 1957.** 1958.

______. **Governmental Finances in 1958.** 1959.

______. **Governmental Finances in 1959.** 1960.


ARTICLES

Baratz, Morton S., and Farr, Helen T. "Is Municipal Finance Fiscally Perverse?" National Tax Journal, XII (September, 1959), 276-84.


I, James Norman Duprey, was born in Cleveland, Ohio, December 2, 1929. I received my secondary-school education in the public schools of Cleveland and my undergraduate training at Kent State University, which granted me the Bachelor of Science degree in 1951. I entered Ohio State University in the fall of 1955 after spending several years in the armed services, received the Master of Arts degree in 1957, and then continued my academic work in the subject-area of economics. In 1959 I was awarded the Anna M. Dice Fellowship. In the following year I accepted a teaching position at the University of North Dakota and then completed in the summer of 1961 the requirements for the Doctor of Philosophy degree.