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The major purpose of this article is to suggest one interpretation of the avenues through which counter-cyclical changes in the maturity structure of the marketable Federal debt can promote economic stabilization.¹ Admittedly, no consideration is

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¹ In this paper debt management is distinguished as clearly as possible from both monetary policy and fiscal policy. All actions of the Federal government which directly affect the composition and terms of the publicly held Federal debt (debt held outside of the Federal Reserve and U. S. Government trust funds and agency accounts), whether initiated by the Treasury or by the Federal Reserve, are included within this definition.

Under the present institutional arrangements in the United States, debt management includes decisions by the Treasury as to the types of securities sold to finance budget deficits or build up Treasury cash balances and the types of securities retired from the proceeds of budget surpluses or from Treasury cash balances. Debt management also encompasses decisions by the Treasury as to the types of debt instruments issued in refunding operations, and, with advance refundings, the outstanding issues to be refunded. On the other hand, debt management does not include the amount of new securities sold to finance budget deficits or the amount of securities retired with budget surpluses. These activities are considered matters of fiscal policy.

Debt management also includes decisions by the Federal Reserve concerning the types of Federal debt to be purchased or sold in the conduct of open market operations. Activities by the System in the open market can include swapping operations in which the Federal Reserve buys one type of security and sells another, thus having little or no impact on bank reserves or the money supply. On the other hand, decisions concerning the net amount of securities to be bought and sold in the open market are properly considered as an exercise of monetary policy.

given to the real and/or fancied practical difficulties of implementing such a policy which have often been emphasized by Treasury and central bank officials.²

In recent years there has been considerable controversy concerning the proposition that debt management can and should be used counter-cyclically as an instrument of economic stabilization. With only a few exceptions, however, proponents of counter-cyclical debt management have made neither an important issue of it, nor a systematic and vigorous case for it.³ On the

² In part, this omission reflects the view that certain changes in debt management techniques could overcome some of the practical difficulties which pushed the Treasury into pro-cyclical debt management policies in the 1950's. For some interesting suggestions concerning debt management techniques, see Tilford C. Gaines, *Techniques of Treasury Debt Management* (New York: The Free Press of Glencoe, 1962), especially chapter VIII.

³ An early but extreme development of the basic idea underlying the theory of counter-cyclical debt management is found in the work of Henry Simons. See, in particular, Henry Simons, "On Debt Policy," *Journal of Political Economy*, December 1944, reprinted in American Economic Association, *Readings in Fiscal Policy* (Homewood, Ill.: Richard D. Irwin, 1955), pp. 223-232.

For more recent articles which have stressed the use of debt management as a stabilization device, see R. L. Bunting, "A Debt Management Proposal," *Southern Economic Journal*, January 1959, pp. 338-342, and "Rebuilding Debt Structure as a Stabilization Device," *Commercial and Financial Chronicle*, July 1959, pp. 1-7; J. M. Culbertson, "A Positive Debt Management Program," *Review of Economics and Statistics*, May 1959, pp. 89-98; A. G. Hart, "Some Inconsistencies in Debt Management," *Review of Economics and Statistics*, August 1960, pp. 257-258; S. L. McDonald, "Term Structure of Yields, Financial Intermediaries, and Contracyclical Monetary Policy," *Southwestern Social Science Quarterly*, Supplement, September 1959, pp. 49-60; E. R. Rolph, "Debt-Management: Some Theoretical Aspects," *Public Finance*, 1961, pp. 105-120, and "Principles of Debt Management," *American Economic Review*, June 1957, pp. 302-320.

other hand, various economists⁴ and public officials⁵ have rejected counter-cyclical debt management because of alleged theoretical deficiencies and/or practical difficulties of implementation. The theory has, nevertheless, been labeled "traditional" and "orthodox," mostly by its critics.

THE HISTORICAL BACKGROUND

These designations are open to some question from an historical point of view. The most widely held theory of debt management prior to the Second World War might be labeled the "classical" theory. Neither prevailing economic theory nor existing financial conditions were such as to suggest governmental manipulation of the structure of the public debt in the interest of economic stabilization. The very existence of a public debt was viewed with considerable alarm. Most discussions of public debt revolved around finding methods of reducing its size

⁴ See, for example, Warren L. Smith, *Debt Management in the United States*, Study Paper No. 19 for the Joint Economic Committee (Washington, D. C.: U. S. Government Printing Office, 1960), especially chapter IV; David I. Fand, "The Problem of Public Debt Management," *Southwestern Social Science Quarterly*, March 1961, pp. 393-406; B. U. Ratchford, "Managing the Public Debt," *The Annals of the American Academy of Political and Social Science*, November 1959, pp. 101-108; Herbert Stein, "Managing the Federal Debt," *The Journal of Law and Economics*, October 1958, pp. 97-104; and Henry C. Wallich, "Public Debt Management and Economic Stabilization Policy," *United States Monetary Policy* (Durham, N. C.: Second Duke Assembly, 1959), pp. 31-51.

⁵ See, for example, *Remarks by Under Secretary of the Treasury Baird, May 9, 1958*, at the 38th Annual Conference of the National Association of Mutual Savings Banks, published in *United States Treasury Department, Annual Report of the Secretary of the Treasury, 1958* (Washington, D. C.: U. S. Government Printing Office, 1959), pp. 275-279; Secretary of the Treasury Anderson, "Financial Policies for Sustainable Growth," *Journal of Finance*, May 1960, especially pp. 133-139; and the testimony by Secretary Anderson and Chairman Martin of the Board of Governors in *United States Congress, Joint Economic Committee, Employment, Growth, and Price Levels, Hearings, Part 6C, 86th Congress, 1st Session* (Washington, D. C.: U. S. Government Printing Office, 1959), pp. 1721-1729 and 1796-1800, respectively.

or otherwise insulating the economy from its influence;⁶ the widely accepted theory of debt management necessarily followed from this preoccupation.

Reduced to its simplest proportions, the dominant classical theory required the funding of all public debt into long-term issues, as opposed to reliance upon a floating, or short-term debt. Short-term debt, it was held, left the government at the mercy of impatient lenders, who had the power, if they demanded payment in sufficient volume, to bankrupt the Treasury. Long-term debt could be more easily co-ordinated with the more important aspect of orderly debt retirement, while protecting the authorities from such dire consequences. Furthermore, short-term debt was more likely to be absorbed by commercial banks, and this was considered inflationary.

The classical case for a long-term debt is relevant to the financial conditions of the nineteenth century,⁷ and perhaps even later. There was no strong central bank upon which the Treasury could rely in case of difficulty. The debt was often handled by a small group of financial houses; it was not generally distributed over a wide range of investors; it was not always considered a highly desirable outlet for investment funds. To some extent, these financial conditions improved during and immediately following the First World War; however, the antipathy toward public debt was still considerable.

Clearly, the unprecedented requirements of debt finance in World War II left little scope for the development of a theory of counter-cyclical management of the marketable debt as a tool of stabilization policy.

⁶ For a brief, but good, discussion of the common body of doctrine concerning the "burden" of a public debt and of the changes which took place in the doctrine as a result of changing economic conditions, see Jesse Burkhead, "The Balanced Budget," *Quarterly Journal of Economics*, May, 1954, reprinted in *American Economic Association, Readings in Fiscal Policy*, especially pp. 3-17.

⁷ For a similar emphasis, see Richard A. Musgrave, *The Theory of Public Finance* (New York: McGraw-Hill, 1959), p. 599-600.

Neither was the immediate post-war environment conducive to such an approach. In the immediate post-war period, both debt management and monetary policy were shackled by a variety of fears: that the government debt might not be willingly held by investors; that debt markets were so susceptible to destabilizing speculative fluctuations that even moderately small increases in interest rates could not be permitted. It was maintained in some quarters that the stability of interest rates was inherently desirable as a promotor of public "confidence." A much debated issue was whether the government securities market should or could be isolated from changes in credit conditions, either by the imposition of secondary security reserves or by converting the marketable debt into nonmarketable securities. Even those who discounted the dangers of the large government debt normally did not go much beyond discussing the disastrous consequences of continuous market support of security prices by the central bank.⁸

There is some evidence of a more "positive" approach to debt management since the Treasury-Federal Reserve Accord of March, 1951. While it may be presumed that many economists today would subscribe to a policy of counter-cyclical management of the marketable public debt, there exists,

⁸ For a brief survey of the vast literature and major ideas concerning debt management during the war and immediate post-war period, the following articles are particularly helpful: Henry C. Wallich, "Debt Management as an Instrument of Economic Policy," *American Economic Review*, June 1946, pp. 292-310; R. V. Roosa, "Integrating Debt Management and Open Market Operations," *American Economic Review, Papers and Proceedings*, May 1952, pp. 214-235; and Melvin D. Brockie, "Debt Management and Economic Stabilization," *Quarterly Journal of Economics*, November 1954, pp. 613-628. Numerous approaches to debt policy are discussed and evaluated in these three articles. It is significant that virtually no mention is made of counter-cyclical debt management, if that term is defined to include only changes in the maturity structure of the publicly held government debt and to exclude uses of public debt to accomplish either fiscal or monetary policy.

nevertheless, surprisingly little in the way of formal analysis of the underlying theoretical foundation of such a position. The theory is seldom made explicit. In fact, one of the leading critics of counter-cyclical debt management has charged that the supporting argument based on the liquidity effects of debt management "seems to have a somewhat mystical quality to it."⁹ Thus, it is important to present the theory in a more explicit form than is customary.

A FIRST APPROXIMATION

Throughout the paper we will assume that both the money supply and the amount of Federal debt held by the public are constant, unless otherwise stated. For simplicity, assume two kinds of public debt—short-term and long-term.

As a first approximation only, the theory may be presented in the following way. Lengthening the maturity structure of the publicly held marketable debt will reduce private expenditures; shortening the maturity structure will stimulate private expenditures. Short-term debt is a better substitute for money than is long-term debt, i.e., its relative liquidity is greater. Therefore, a substitution of long-term for short-term debt has a net deflationary impact. The former holders of short-term debt, if induced to accept the long-term debt, find themselves in a less liquid position than before. They wish to increase their ownership of cash in order to satisfy the same liquidity needs. Thus, private expenditures are reduced. If, more realistically, the short-term debt is retired from the holdings of Group A, and the long-term debt is added to the holdings of Group B, the results, nevertheless, are much the same. Group A members who give up relatively liquid short-term securities in exchange for money are made only slightly more liquid. Group B members who give up money in exchange for long-term securities are made much less liquid. Since the

⁹ Smith, *op. cit.*, p. 100.

increase in the liquidity of Group A is less than the decrease in the liquidity of Group B, the resulting increase in income-generating expenditures by the former group will be less than the decrease in income-generating expenditures by the latter group.

The net result of debt lengthening operations in the aggregate is an increase in the amount of money balances the public wishes to hold. (Of course, a shortening of debt maturities will have the opposite effects. And we can visualize the whole spectrum of government securities wherein degrees of liquidity correspond closely to dates of maturity.)

Restating the above analysis, consider the demand function for money, $L = L(i, Y, D)$, where L is the amount of money balances demanded, i is "the" interest rate, Y is national income, and D is the average maturity of the publicly held marketable Federal debt. The quantity of money balances demanded is a decreasing function of i (the Keynesian speculative demand function) and an increasing function of Y and D . Higher values for D , for example, result in increases in the amounts of money balances the public wishes to hold at any level of i and Y . Given a money stock fixed by the central bank, an increase in D increases the equilibrium rate of interest and reduces the level of private expenditures on consumption and investment goods.

If we momentarily relax the assumption of a constant money supply, the importance of an "appropriate" debt management policy can be pointed up in the following way. Assume that the central bank is pursuing a restrictive policy with the money supply expanding less rapidly than the normal growth rate of the money stock, or even declining. On the other hand, debt management policy is not co-ordinated with monetary policy and is pro-cyclical—in other words, D is decreased in this case. Precisely because of debt management, the amount of money balances demanded is reduced, *ceteris paribus*, as a partial offset to

the restrictive monetary policy. Restrictive monetary policy is partially offset by increases in velocity.

SOME UNSETTLED ISSUES

The explanation afforded by this first approximation to the theory of counter-cyclical debt management seems reasonable, *a priori*, but it is vulnerable on the grounds that it is not sufficiently explicit. The analysis should be extended in two related directions: (1) the significance of financial institutions is not clear; and (2) the effect of debt management operations on the structure of interest rates and the relationship between various interest rate structures and total private expenditures have not been considered. The second point is extremely important. An analysis of changes in the structure of interest rates is crucial in order to arrive at an affirmative answer to the question, "Can debt management do anything that monetary policy cannot?"¹⁰ With respect to the preceding example of pro-cyclical debt management, the critics might argue that it would be relatively easy for monetary policy to accomplish the desired result simply through applying a little *more* restraint than would be necessary otherwise.

FINANCIAL INSTITUTIONS

Financial institutions are the major non-government holders of the marketable Federal debt. Thus, we would expect the immediate impact of debt management operations to be felt by financial institutions, who are, it must be emphasized, lenders rather than spenders. Consider debt lengthening operations. Debt lengthening operations reduce the liquidity position of financial institutions who now hold longer-term, less liquid Treasury issues. As financial institutions are concerned with the liquidity of their portfolios, these institutions are induced to move leftward along the (highly

¹⁰ Stein, *op. cit.*, p. 99.

simplified) liquidity spectrum—money → short-term government securities → long-term government securities → private loans and securities.¹¹ The analysis is essentially unchanged if we think of financial institutions A and B, each of which has rather specific asset preferences. Any general movement of financial institutions in the direction of more liquid assets reduces the ability of private individuals, business firms, etc., to borrow funds. Thus, indirectly, their ability to spend on goods and services is reduced.

It would appear that to the extent commercial banks increase their holdings of excess reserves, the volume of demand deposits would be reduced. However, the latter conclusion ignores an offsetting force which results from the differential impact of debt lengthening operations on the structure, as contrasted with the general level, of interest rates. Thus, it is necessary to consider the relationships among debt management, the term structure of interest rates, and aggregate expenditures.

THEORIES OF THE STRUCTURE OF INTEREST RATES

At the risk of considerable oversimplification, there are two major approaches to a theory of the interest rate structure. The first is the "expectational" approach which views long-term rates as the average of expected future short-term rates.¹² Assuming

¹¹ Admittedly, this ranking of assets by degrees of liquidity is oversimplified. Clearly, exceptions exist in that certain private loans and securities—for example, prime commercial paper and prime bankers' acceptances—are more liquid than are long-term government securities. However, for any given term to maturity, private loans and securities are less liquid than are Treasury issues. In general, it appears reasonable to suppose that on the average the liquidity of long-term government securities is greater than that of private loans and securities in the portfolios of financial institutions.

¹² The "expectational" approach was developed by J. R. Hicks, *Value and Capital* (London: Clarendon Press, 1939), and Friedrich A. Lutz, "The Structure of Interest Rates," *Quarterly*

for simplicity that no uncertainty exists concerning the level of future short-term rates and that all investors agree what these rates will be, interest on a long-term debt is readily computable. If short-term rates are expected (with certainty) to rise, a lender will not purchase a long-term security unless the yield is sufficient to compensate him for the foregone series of yields he would derive from successively investing in short-term securities over the period of the long-term investment. Because of the operation of arbitrage in a market of this type, i.e., where investors are prepared to move funds between the maturity sectors on a carefully calculated basis, long-term rates will exceed short-term rates if short-term rates are expected to rise. If short-term rates are expected to fall, long-term rates will be lower than short-term rates. Even when the simplifying assumptions are abandoned, it is maintained that expectations shape the interest rate structure although a high degree of precision is lacking. For example, if interest rates are expected to rise in the future, lenders will tend to shorten their portfolios; borrowers will tend to make the reverse shift.

There is nothing in the "expectational" approach, however, which assumes any intrinsic preferences of lenders or borrowers for various maturities. There is considerable evidence, however, that strong preferences do exist. A major reason for intrinsic preferences involves the liquidity concept. Lenders and borrowers are concerned with the liquidity of their balance sheets. In general, lenders have an intrinsic preference for short-term assets while borrowers prefer long-term liabilities. Thus, the more liquid securities normally bear lower rates of return.

The second major approach to a theory of the interest rate structure accords considerable weight to the existence and importance

Journal of Economics, November 1940, pp. 36-63. See the discussion by Musgrave, *op. cit.*, pp. 591-598.

J. M. Culbertson has developed such an analysis in which liquidity is of central importance.¹³ Culbertson argues that the general coincidence of rate movements largely reflects the simultaneous impact in various markets of changes in general credit conditions, but only to a limited extent the substitutability between short-term and long-term debt on the part of borrowers and lenders. Both lenders and borrowers are reluctant to switch markets to any sizeable extent, even when relative yield differentials become attractive, because of the necessity of maintaining liquidity positions. The greater liquidity of short-term debt induces many lenders to hold short-term issues, while others are compelled by legal means or by tradition to do the same. In an uncertain world, borrowers are seldom in a position to seek minimum costs but must be concerned with the adequacy of their liquidity positions, and this restricts their ability to borrow short-term. Changes in the relative proportions of long-term debt and short-term debt outstanding are largely associated with shifts in the importance among activities characteristically financed by different types of credit rather than by changes in the maturity of debt used to finance given activities.¹⁴

Many additional impediments exist which reduce the mobility of funds between debt markets and tend to partially isolate various sub-markets. While expectations cannot be ignored, the extent of speculative activity of large institutional participants is limited

¹³ J. M. Culbertson, "The Term Structure of Interest Rates," *Quarterly Journal of Economics*, November 1957, pp. 485-517.

¹⁴ By similar reasoning, one could argue that a changing maturity structure of the marketable Federal debt is reflected largely, if not entirely, in a changing ownership structure. For example, a secular reduction in the maturity structure of the debt will correspond to smaller holdings of Federal debt by life insurance companies and mutual savings banks and larger holdings by corporations as these lenders have highly specialized asset preferences.

by the extent of resources available for this purpose. While many institutional lenders, as well as borrowers, often have a small percentage of their funds with which to "gamble," the great bulk of funds is lodged in securities suited to liquidity needs and justified by past experience.

THE STRUCTURE OF INTEREST RATES AND AGGREGATE EXPENDITURES

Our thesis suggests that debt management can assume a positive role to the extent that the liquidity approach to the structure of interest rates is valid. Intelligent debt management policy can promote an "appropriate" behavior of the term structure of interest rates through alterations in the maturity structure of Treasury debt.¹⁵

Warren L. Smith contends, however, that the effectiveness of counter-cyclical debt management is reduced to the extent that (Treasury) debt management has a differential impact on the structure of interest rates. Debt lengthening operations exert upward pressure on long-term rates and downward pressure on short-term rates. On the other hand, a decreasing maturity structure has the effect of narrowing the yield spread between short- and long-term securities. Thus, in either case, some investment expenditures are discouraged, others are encouraged.¹⁶

However, as Smith recognizes, there is a strong *a priori* case for at least some net

¹⁵ Based on the experience of recent years, however, several economists have suggested that debt management cannot bring about significant modifications in the rate structure. See, for example, James R. Schlesinger, "The Sequel to Bills Only," *Review of Economics and Statistics*, May 1962, pp. 184-189, and Lorie Tarshis, "Money and Credit," *American Economic Review*, June 1962, especially pp. 475-477. Admittedly, attempts by the authorities in 1961 and 1962 to reduce long-term rates were not as successful as many had hoped. In evaluating "success," however, one must consider both the impact of advance refundings on long-term rates as well as the probable shape of the yield curve in the event of alternative types of debt management policies.

¹⁶ Smith, *op. cit.*, pp. 91-99.

effect in the right direction. Consider debt lengthening operations. The kinds of real investment financed by funds raised in the long-term sector are of a longer-term nature than investment projects financed by funds raised in the short-term market. The ability of investors to switch between markets is limited by the nature of the project to be financed. Thus, the issue involves to a considerable extent the relative interest elasticities of long-term versus short-term investment. If investors utilize a profit maximization criterion and compare the present value of the expected future returns from the project with the cost of the project, it would appear that the interest elasticity of long-term investment would be considerably greater because of the time factor. A given change in the rate of discount used will have a much larger effect on the present value of long-term than of short-term investment.

But as Smith emphasizes, it appears that this argument should be modified in view of the much greater risks connected with long-term investment. One method of allowing for risk would be to discount future returns at a rate that contains a sizeable allowance for risk. Thus, the "pure" rate of interest, as measured by government security yields, may become relatively insignificant if the risk premium reaches levels as high as 15 or 20 per cent. Thus, the effect of uncertainty is likely to blunt the effect of interest rate changes even on long-term investment projects.

However, it is possible to argue on other grounds that the differential impact on the interest rate structure of counter-cyclical debt management operations may well assist in achieving desirable stabilization objectives. In fact, a tentative case for debt management as a tool of stabilization policy can be drawn precisely *because* of its effect on the structure of interest rates.¹⁷

¹⁷ A similar case has been made by S. L. McDonald, *op. cit.*, pp. 49-60. However, McDonald draws to a large extent upon the effect of changing

In the literature concerning the relationship between the demand for money—or more broadly, liquidity—and the level of interest rates, we frequently come across two theories which at first blush appear to lead us to opposite conclusions. According to what could be termed the "Roosa effect," or the "availability doctrine," the demand for liquidity is an increasing function of interest rates on government securities.¹⁸ Increased interest rates are reflected in decreased capital values of outstanding securities, thus reducing the liquidity of lenders' portfolios. According to what we might term the "Keynes effect,"¹⁹ the demand for liquidity is a decreasing function of interest rates, as higher rates increase the "opportunity cost" of holding money balances. However, there is a plausible explanation for this apparent contradiction which deserves careful empirical study.

The "Keynes effect" and the "Roosa effect" focus on different choices. In Keynesian liquidity preference analysis, the public's choice is between money and government securities; the "Roosa effect" focuses attention upon the choice between government securities and private loans. Both theories suggest an increased willingness to hold government securities at higher rates of interest! In the Keynesian theory there is a shift out of money. In the Roosa doctrine there is a shift, primarily by financial institutions, out of private loans. Each

expectations on real investment. Expectational forces are considered particularly important for long-term as opposed to short-term investment projects. He suggests that at high "critical" long-term rates, when the market judges rates are abnormally high and likely to be reversed in the near future, the long-term investment demand schedule becomes relatively elastic. At low "critical" long-term rates, when the market judges rates as abnormally low, the schedule may again become quite elastic.

¹⁸ See, for example, R. V. Roosa, "Interest Rates and the Central Bank," *Money, Trade, and Economic Growth* (New York: Macmillan Company, 1951), pp. 270-295.

¹⁹ Our "Keynes effect" is not precisely the "Keynes effect" of wage-price flexibility in reducing the equilibrium rate of interest.

theory analyzes a different problem on the basis of different assumptions.²⁰

It seems reasonable to expand both the "Keynes" and "Roosa effects" in the following ways. Let us revert to our simplified liquidity spectrum—money → short-term government securities → long-term government securities → private loans and securities. Assume a restrictive monetary policy which pushes up interest rates. Approaching the problem in the Keynesian manner, i.e., in terms of "opportunity cost," an increase in interest rates will induce a rightward movement along the liquidity spectrum, the intensity of which diminishes the less liquid the money substitutes become. Those who reduce money balances will be more inclined to substitute only slightly less liquid assets. The typical corporate investor, for example, often reduces his holdings of money balances as interest rates rise by moving into short-term Treasury bills, whereas he is not generally interested either in long-term government issues or in private obligations (except, perhaps, the most liquid ones). Thus, short-term rates are often

²⁰ We have taken the liberty of restricting the "Roosa effect" very narrowly to liquidity effects, or what might be termed "value-of-portfolio" effects. However, according to Roosa's argument, monetary policy—and, we can add, debt management—influences the behavior of lenders and borrowers through several additional channels. Perhaps the most prominent of these channels is the "locked-in effect." We have purposely omitted this aspect of the analysis although, of course, the "Roosa effect" is strengthened to the extent that financial institutions become "locked-in" owing to a reluctance to sell securities at a book loss.

Other arguments have been advanced in conjunction with the Roosa doctrine. It is contended that increases in (long-term) interest rates lead to more rigorous standards being applied by lenders for judging the basic credit worthiness of borrowers and for determining the size of credit lines that may be extended. Stiffer credit standards mean that lenders shift the composition of their portfolios in the direction of increased safety. Thus, they shift from riskier private loans and securities to less risky government securities. For a comprehensive treatment of all of the aspects of the Roosa doctrine, see Assar Lindbeck, *The 'New' Theory of Credit Control in the United States* (Stockholm: Almqvist and Wiksell, 1959).

important with respect to the desired level of money balances.

Approaching the problem from the other end, i.e., in terms of the liquidity position of financial institutions which are important lenders to the public, an increase in interest rates induces a leftward movement along the liquidity spectrum. The typical portfolio manager becomes dissatisfied with the reduction in liquidity at the lower market value of the portfolio. As market yields are higher, a substitution of relatively liquid, low yielding assets for less liquid, higher yielding assets is necessary to achieve an equilibrium position.

The magnitude of the leftward movement depends upon the extent to which the portfolio managers' evaluation of yield and liquidity is affected by the movement in interest rates. The movement is relatively great if the evaluation of liquidity relative to yield increases substantially. This type of preference pattern reflects a strong desire to protect liquidity positions. We might expect commercial banks to behave in this manner because of the extreme short-term nature of their liabilities. Other types of financial institutions may reflect this pattern to lesser degrees. Furthermore, the intensity of the leftward movement should diminish, the more interest is sacrificed. It is unlikely, for example, for a commercial bank to shift out of private loans in order to build up non-interest bearing excess reserves.

More important, the impact of the "Roosa effect" is clearly related to the particular interest rates that are increased. Increases in long-term interest rates substantially reduce the capital values of the relevant securities. Upward movements in short-term rates, however, do not affect capital values appreciably nor reduce institutional liquidity significantly. Therefore, for the "Roosa effect," long-term interest rates appear to be more relevant than are short-term rates.

The case for counter-cyclical debt manage-

ment is strengthened if this analysis is substantially correct. For example, during periods of restrictive monetary policy, all interest rates generally move in an upward direction because of some interdependence of financial markets. However, the structure of rates may be significant in determining the extent to which velocity increases offset the restrictive efforts of the central bank. This thesis suggests that central bank policy is more successful the *smaller* the rise in short-term rates *relative* to the rise in long-term rates. Counter-cyclical debt management exerts such an impact on the rate structure. The "Roosa effect" is strengthened and the "Keynes effect" is weakened. A desirable liquidity policy reduces the flexibility of short-term rate movements and enhances the flexibility of the normally sluggish movements in long-term rates of interest.

The analysis is symmetrical for anti-recessionary policy. An appropriate debt management policy tends to reduce long-term rates rapidly, thus promoting maximum portfolio liquidity and loan expansion.

At the same time, brakes are placed on the normally rapid decline in short-term rates of interest, thus reducing to some degree the tendency of individuals and corporate investors to increase the amount of money balances they wish to hold.²¹

Thus, debt management may offer a unique tool of stabilization policy. Despite protestations as to the difficulties of implementation, a policy of counter-cyclical debt management may have an important role in a successful liquidity policy.

²¹ This analysis has been applied to a closed economy. International balance of payments difficulties have been neglected. During recent years the central bank has operated to some extent in the long-term securities market with the intention of reducing long-term rates, while attempting to put upward pressure on short-term rates. This policy was originally characterized as "operation nudge." Furthermore, Treasury debt operations have resulted in substantial increases in Federal debt maturing within one year. These measures were taken largely to stop the gold outflow, while at the same time maintaining easy monetary conditions for domestic recovery and more rapid growth. See, for example, R. V. Roosa, "Reconciling Internal and External Financial Policies," *Journal of Finance*, March 1962, pp. 1-16.