

Alternatives for Debt Management

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Public debt management, in the sense of manipulation of a given stock, has been a policy problem at least since World War II. During this time, dissatisfaction with the handling of the debt has surfaced sporadically. A feeling that the average maturity of the debt should be longer than it was has been pervasive. But no generally accepted philosophy of the public debt management has emerged.

Various objectives have been urged for debt management. An anti-cyclical impact seems an obvious possibility. A balance of payments-oriented debt policy, seeking to lower long- and raise short-term rates, was tried in the form of Operation Twist. Cost minimization regardless of anticyclical considerations has been proposed. Most of the time a policy of tailoring to the needs of the market ("sell what they will buy," a not too distant relative of cost minimization) has been followed.

A variety of theoretical approaches has been given a workout on debt-management problems. The effect of wealth on consumption — contrasting the economist's belief that the public debt is private wealth with the banker's view that the debt is a burden — has been one of them. The theory of portfolio choice has been another. Alternative views concerning the relative weight of money and of liquid assets in the determination of aggregate demand have found application. The theory of the term structure of interest rates has attracted possibly the largest amount of theoretical attention.

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While uncertainty about the proper objectives of debt management has been constant, other aspects of the situation have changed. Table 1 shows alternate measures of the impact of the debt. The volume of the debt, in relation to both GNP and the total volume of public and private debt, has contracted drastically since 1950. Public debt instruments became a relative rarity in many institutional and personal portfolios. In this sense, one might say that, while the problem was not solved, in good part it went away. Interest rates rose, however, so that without accounting for inflation the net interest burden remained almost constant as a fraction of GNP. We have also shown the "real" interest burden in column 5 of Table 1, a measure accounting for the presence of inflation. By this measure, real interest payments were negative in early years, and have remained quite low except for the early 1960s.

A final shift in emphasis has occurred as the Federal Reserve moved toward a new theory of monetary policy, in which the monetary aggregates play a relatively smaller role. Monetary policy aimed at a money supply target was seen to be more vulnerable to the consequences of even keeling during financing periods. On the other hand, failure to even keel poses a greater threat to the success of financings under a money-supply than under an interest-rate target.

Debt management has traditionally focused on the role of the Treasury in determining the structure of the Federal Debt. There is an implicit separation of functions between the Treasury and the Federal Reserve under which the Treasury determines the gross distribution of government liabilities of different maturities while the Fed determines the net distribution. No matter what securities the Treasury chooses to issue, the Fed could, through its open-market operations and regulatory policies, ensure private investors would hold a portfolio of government securities of the Fed's choosing. The responsibility of the Treasury then would be limited to two objectives: to keep the Fed supplied with a sufficient bundle of maturities with which to operate, and in its financing operations to keep out of the way of the Fed. This separation of functions has never been explicitly followed in the United States. The Fed does not, by maturity-switching open-market operations, sterilize the impact of Treasury actions, or even the consequences of the passage of time, upon the maturity structure of publicly held securities. Its preference for dealing in bills and for thus limiting monetary policy to changes in the monetary base, instead of changes in monetary base and asset structure, favors this policy of self-limitation. Close cooperation between Treasury and the Fed, and some regard by the

TABLE 1
ALTERNATIVE MEASURES OF IMPACT OF FEDERAL DEBT
HELD BY PUBLIC

	Net Federal Debt as Percent of:			Net Federal Interest Payments as Percent of GNP	
	Net Federal Debt (1)	GNP (2)	Total Public and Private Debt (3)	Not Accounting for Inflation (4)	Accounting for Inflation (5)
1946	\$229.5	110.1%	57.9%	2.0%	
1950	218.1	76.8	44.9	1.6	-3.1%
1955	232.5	58.4	34.9	1.2	-0.3
1960	243.3	48.3	27.8	1.4	0.1
1965	275.3	40.2	22.1	1.3	0.7
1971	365.7	34.8	18.3	1.3	-0.2

Sources: Column (1) Total Federal Government and agency debt, end of year (*Economic Report of the President, (ERP) 1973, Table C-62*), billions of dollars.

Column (2) Equals Col. (1) divided by Gross National Product (*ERP, 1973, Table C-1*).

Column (3) Equals Col. (1) divided by total public and private debt (*ERP, Table C-62*).

Column (4) Net interest payments (*ERP, 1973, Table C-66 and 1968, Table B-62*) divided by Gross National Product.

Column (5) Accounting for inflation involves multiplying an estimate of the "real" interest rate times column (2). The real interest rate is derived as the difference between the actual rate (derived from columns (2) and (4)) and the average rate of change of the GNP deflator over the past 5 years for first four rates and 6 years for 1971 (*ERP, 1973, Table C-4*).

Treasury for the cyclical implications of its debt actions, can serve as a substitute for an explicit "separation of functions" under which the Treasury would determine only the gross and the Fed the net (publicly held) maturity structure of the debt.

We shall shortly ask whether the maturity structure of the Federal debt makes any difference. If it does, there are almost certainly advantages in centralizing monetary policy in a single authority. The obvious place is the Fed. In case of inadequate coordination, or of conflict of views, as has occurred, decentralization of policy can be costly or even destabilizing.¹ The British system of debt management features some of the techniques here described. Its concomitant in the British framework — far-reaching control by the Treasury over central bank policies — is a possible but certainly not necessary consequence of the technical "separation of functions."

We do not, however, propose any change in existing Treasury-Federal Reserve procedures. We proceed instead on the assumption that the Treasury does determine not only the maturity structure of the gross debt, but in large measure also that of the net debt. If maturity structure matters, then debt management is interwoven with monetary policy and the Treasury has a responsibility in the areas both of anticyclical and structural (long-term) monetary policy.

On the question whether maturity structure matters, the theory of debt management is today confronted with relatively recent empirical findings concerning the effect of that structure, as it relates to government securities, upon the term structure of interest rates. There is considerable evidence that it is very difficult to change the term structure of rates. As Modigliani and Sutch conclude:²

Our findings... suggest that the responsiveness of the rate structure to variations in the age composition of the national debt outstanding was at best weak, even in a period in which the national debt was large, both in absolute and relative size... On the basis of a rather extensive battery of tests based on a variety of measures of age composition, we have been able to uncover persistent and fairly convincing evidence that

¹For a formal analysis of the effects of centralization or decentralization of policy on the outcomes, see R. N. Cooper, "Macroeconomic Policy Adjustments in Interdependent Economies," *Quarterly Journal of Economics*, February 1969. For an analysis of the benefits of risk diversification by employing simultaneously several policy instruments the effects of which are not known with certainty, see William Brainard, "Uncertainty and the Effectiveness of Policy," *American Economic Review, Papers and Proceedings*, May 1967.

²Modigliani and Sutch, "Debt Management and the Term Structure of Interest Rates: An Empirical Analysis of Recent Experience," *Journal of Political Economy*, 1967, pp. 587-589.

at least variations in the supply of debt in the intermediate range, especially in the one-to-five-year range, tended to produce moderate variations in the spread for intermediate maturities, that is, maturities in the corresponding age class. On the other hand, we have been unable to uncover solid or even suggestive evidence that the age composition of the supply affects significantly longer rates as measured by the average long-term rate or the twelve-year rate.

The rationale for the ineffectiveness of debt structure in affecting rate structure usually is stated in terms of the "expectations hypothesis." The pure expectations hypothesis about riskless rates can be formulated as follows:

A. The term structure of interest rates is determined solely by expectations of future rates.

There is considerable evidence that the pure expectations hypothesis is not correct, but that a weaker hypothesis — which we shall call "approximate term structure invariance" — is valid:

B. There are systematic deviations of the term structure from that predicted by the pure expectations hypothesis, with long rates generally above short rates. The rate structure, however, is almost invariant with respect to changes in the composition of government debt.

A number of studies of the effect of the composition of government debt on the term structure of interest rates point to these conclusions and are summarized in Table 2. The most impressive point about these results is that there is very little effect of change in the maturity structure on interest rates. The studies are not unanimous in their estimate of the impact of changes on the *direction* of effect. The *size* of the effect varies by a factor of almost three between the findings of Okun and those of Scott. The one fairly consistent finding is that the effect is very limited, as indicated by the hypothesis of approximate term structure invariance. A subjectively weighted average estimate from Table 2 might be that a 1 percent shift from shorts to longs would change the rate differential by 5 basis points. This means that to twist the rate structure by 1 full percentage point would currently require a maturity switching operation of \$50 billion.

Findings of a failure of the term structure of interest rates to react to the maturity structure of the public debt have been puzzling to

TABLE 2
ESTIMATES OF MOVING 1 PERCENT OF FEDERAL DEBT
FROM 1-YEAR TO 20-YEAR BONDS^a

	Change in Short- Term Interest Rate (Basis Points)	Change in Long- Term Interest Rate (Basis Points)	Change in Spread between Long-and Short-Term Interest Rates (Basis Points)
Okun ¹	-2.20	0.83	3.03
Scott ²	-12.77 (2.81) ^b	-4.79 (1.44)	7.98 (2.07)
Modigliani and Sutch ³	---		-.912 (.798)
Hamburger and Silber ⁴	0.0		

^a Let D be total interest-bearing Federal debt. The table shows the estimated effect of an open market operation which simultaneously sells D/100 in bonds with maturity greater than 20 years and buys D/100 in bonds with maturity less than 1 year. The effect of a 1 percent increase in 20-year bonds and a 1 percent decrease in 1-year bonds will be to raise the average maturity of the total debt by .19 years. Scott and Modigliani and Sutch estimate the effects on interest rates of a 1 year increase in the average maturity of the debt. Their estimates have been multiplied by .19 in order to obtain the figures in this table.

^b The standard errors are given in parentheses when the sources present them.

¹ Arthur M. Okun, "Monetary Policy, Debt Management and Interest Rates: A Quantitative Proposal," pp. 142-188 in *Financial Markets and Economic Activity*. Edited by Donald Hester and James Tobin, New Haven, Yale University Press, 1967. Okun's sample period was 1946-I to 1959-III. The value of net interest-bearing debt for 1953-I was \$119 billion. A 1 percent shift on average represents a switch of \$1.2 billion. We have used Okun's equation (8) presented in Tables 1 and 4.

² Robert Haney Scott, "Liquidity and the Term Structure of Interest Rates," *Quarterly Journal of Economics*, 79 (February 1965), pp. 135-145.

³ Modigliani and Sutch, "Debt Management and the Term Structure of Interest Rates: An Empirical Analysis of Recent Experience," *Journal of Political Economy*, 1967, pp. 569-589.

⁴ Michael J. Hamburger and William L. Silber, "Debt Management and Interest Rates: A Re-examination of the Evidence," *The Manchester School*, December 1971, pp. 261-66. The sample period is 1961-I to 1966-II, during which the average debt was \$202 billion. A 1 percent shift from bills to 20-year bonds therefore represents a switch of \$2 billion. We have presented their preferred equation, equation (2).

market practitioners because they so often observe the rate impact of large issues. The difference in observations between practitioners and econometricians seems to be that between a very short-run impact effect and a permanent stock effect. Even though a large issue may depress the market for comparable maturities temporarily, the effect may disappear within a few days or weeks, so that little trace is left on the quarterly or even monthly data usually employed in econometric studies.³ In the short run the impact effect may be largely obliterated by portfolio adjustments of lenders. In the long run, any remaining effects may be removed by adjustments of borrowers in the maturity of their liabilities.

In addition to changes in the term structure of rates, i.e. principally the short-long spread, manipulation of the maturity structure of the public debt may affect the level of rates, quite possibly without altering the structure. Again, the empirical results cited in Table 2 cast doubt on whether there is any durable effect of composition of the debt on the *level* of rates. In principle, a reduction in maturity increases liquidity. An increase in the liquidity of assets reduces the demand for money, causing the existing money supply to become excessive at the existing level of interest rates. A shortening of the public debt therefore might have the same effect on interest rates as an increase in the money supply.

This effect, too, could be neutralized by countervailing shifts in the maturity structure of private debt. Some lenders, as well as borrowers, prefer long-term to short-term debt, and may move into maturity areas vacated by the Treasury. It should be pointed out that the effect of changes in the maturity of private claims and liabilities on the liquidity of lenders and borrowers, respectively, is very unlikely to be symmetrical, i.e., unlikely to be mutually neutralizing. Treasury action could be neutralized likewise, of course, by action of the central bank, especially if the latter uses interest rates rather than the money supply as its principal policy guide.

³Okun reports no flow effect for periods of one quarter, Okun, *op. cit.*, p. 161. Hamburger and Silber, *op. cit.*, present a regression showing a distributed lag on the Treasury bill rate for monthly data, but the effect does not show any rate of change (or flow) effect (p. 263). In fact, their monthly equation shows a distributed lag with all coefficients having the same sign; a rate of change effect implies that current and lagged coefficients have opposite signs. Perhaps there is a flow effect for a week, a day, a second, a nano-second . . .

Objectives of Debt Management

The major issues of debt management revolve around whether debt management should be oriented primarily toward cyclical or structural objectives and, to the extent that structural objectives predominate, what these should be. Historically, anticyclical debt management has received a fair amount of academic support, pointing to an anticyclical lengthening and shortening of the debt. Experience has demonstrated that such a policy is not easy to carry out: the policy involves selling large amounts of long-term debt during periods of expansion and rising rates, a period when such sales are difficult by the Treasury's traditional techniques of selling bonds. As noted above, the Fed does not automatically sterilize Treasury operations. This indicates that the Treasury should continue to have cyclical objectives in mind. Nor should the anticyclical objective be abandoned to the extent where the Treasury, having financed short during a long expansion, would feel free to engage in massive refunding during an ensuing recession. Avoidance of debt operations that gratuitously conflict with monetary policy objectives could be viewed as in line with the principle of "keeping out of the way of the Fed." We shall examine this as one of the possible "structural" objectives, to which we now turn.

1. Adequate Money Supply

In the early postwar days, when the public debt was large relative to private debt and when private short-term instruments were not plentiful, a debt structure conducive to providing and maintaining an adequate money supply and adequate liquidity had attraction. This would have meant: (a) enough medium-term securities which banks could hold without undue risk but also without experiencing excessive liquidity, to make the money supply adequate; (b) enough short-term debt to meet bank and nonbank demand for highly liquid instruments; and (c) all the rest of the debt in savings bonds or long-term marketable bonds. This criterion has little meaning at a time when the money supply is overwhelmingly based on private debt and when the investments that banks buy typically are tax-exempt.

2. *Maximum Protection Against the Political Risks of Short-Term Debt*

The traditional central bank view is that short-term public debt is dangerous. Political pressure can compel central banks to monetize such debt in order to forestall a rise in interest costs on an important part of total debt. American experience shows that political pressures to monetize long-term debt can be even stronger – see the rate-structure pegging episode of the late 1940s.

3. *Minimum Cost to the Treasury*

This would probably mean a debt in all short-term securities, unless the consequent increase in this type of paper should cause short-term rates to rise above long-term rates. It would not mean a debt all in interest-free currency, since the Federal Reserve would have to compensate such excess creation of bank reserves and thereby give up assets whose income otherwise would go to the Treasury. An “all shorts” public debt posture has many uncomfortable aspects and risks beyond the traditional danger of excessive monetization by the central bank.

At a more theoretical level, the concept of “debt monetization” carries a somewhat different, although currently not operational, connotation. In line with the view that payment of interest on demand deposits would lead to larger holdings of money and hence to greater liquidity and greater welfare without an increase in inflationary pressure, it should be noted that such a policy would move toward “monetization” of the debt by narrowing the rate spread between bonds and money and so making money more like bonds. Likewise, it has been argued that under certain conditions the true cost of public expenditures can be measured better by the interest cost of borrowing they require than by their capital cost, while for certain redistributive measures more “bang for a buck” can be attained if the buck is borrowed at a low interest rate.

4. *Optimal Public Debt from the Viewpoint of the Private Sector: Public Debt as Financial Intermediation*

The negative implications of concentration on short-term debt lose some of their sting when it is remembered that the choice is not simply whether the Treasury should finance short or long. To a certain extent the choice is whether the Treasury (i.e., the public

sector) should finance long and the private sector short, or vice versa. If it is granted that the supply of long-term funds is not infinitely elastic, then long-term government financing either cuts off some private financing or drives it into the short-term area. Quite aside from the Treasury's possible desire to keep down interest costs by financing short, the private sector has an interest in keeping the public debt relatively short-term. We shall give a few instances of this interest of the private sector in a short-term public debt, and then present a more formal argument to make the same basic point and arrive at a more general statement about optimal debt management in terms of public debt as financial intermediation.

In an economy in which the long-term rate normally is above the short, long-term money is the scarcer and more valuable article. Debtors, on balance, regard the disadvantages of short-term debt as weighty enough to justify paying a premium for long-term money. If the government can make do equally well with either kind of debt, it obviously ought to avoid borrowing the premium type and so contributing to its scarcity.

Private borrowers, furthermore, confront both market and credit risk. Market risk relates to the possibility that the market may be unfavorable at the time of borrowing or refunding, credit risk to the possibility that the borrower's credit standing may deteriorate. The Federal Government confronts only market risk. Both borrowers can spread their risks if they have a choice of borrowing both long and short. The Federal Government can broaden this option for the private borrower if it stays out of the long-term market and allows the private borrower a better chance to select the kind of maturity that his risk situation makes preferable.

For lenders, finally, short-term assets are advantageous as indicated by their normal willingness to accept a lower interest rate on liquid instruments. If the government, without incurring compensating costs, can create liquidity, it should do so.

One approach to the optimal debt structure is to consider the government debt as a form of changing the structure of total private holdings. Consider an economy where liquid wealth is held by households and capital is held by firms. An analysis of portfolios would indicate that households prefer short assets, while firms prefer long liabilities. We assume for simplicity that for a flat-term structure individuals keep all assets in short securities and firms issue all liabilities long. Figure 1 shows the ratio of long assets to total assets of households as HH as a function of the rate differential; similarly the (negative) liabilities of firms are shown as FF. In terms of theory, we

can say that short securities are the “preferred habitat” of households while long securities are the “preferred habitat” of firms. They must compromise, of course, and the outcome comes at λ^* with the long rate at a premium δ^* above the short rate.

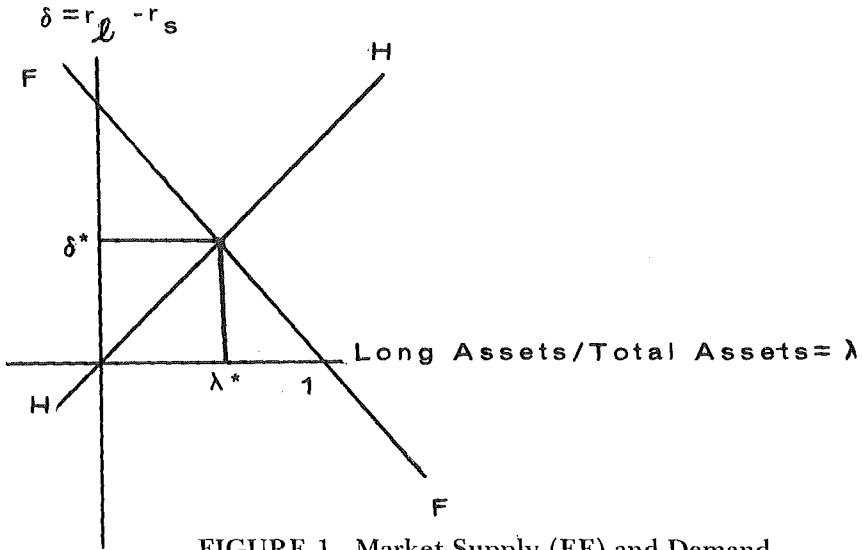


FIGURE 1. Market Supply (FF) and Demand (HH) Functions for Long Term Assets

We assume that risk differentials are sufficiently great so that speculators do not close the rate differential δ^* , but that these risks are not social risks. If this is the case the government can make both households and firms better off by engaging in “intermediation,” e.g., issuing short debt and buying an equal amount of long debt. This process should proceed until the term structure is flat. If the government is a debtor, this argues for issuing only short debt until the term structure is flat. Assuming HH and FF are homogeneous in total wealth, issuance of short debt amounts to changing the supply function from FF to $F'F'$ in Figure 2.⁴

⁴At a point δ in Figure 2 the FF curve shifts to the left by the fraction $\mu = D^f / (D^f + D^g)$, where D^f and D^g are total liabilities of firms and government, respectively.

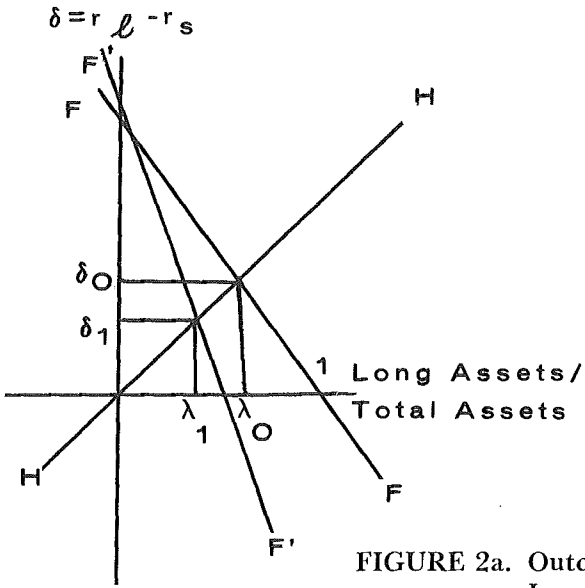


FIGURE 2a. Outcome when Government Issues Short Debt Only

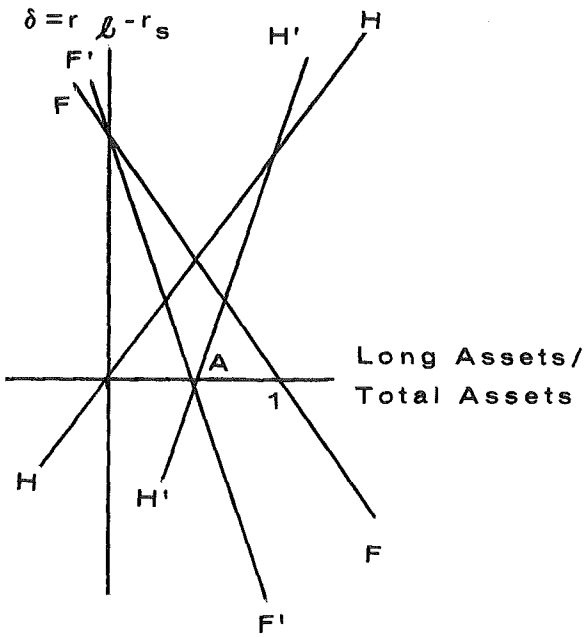


FIGURE 2b. Outcome when Government Issues Short Debt and Buys Private Long Debt

This policy lowers interest-rate differentials from δ_0 to δ_1 and lowers the fraction of debt in long securities from λ_0 to λ_1 . Why is it that in this scheme there might be a small effect of debt composition on the rate differential? Either the HH line, or else the FF line, is very flat. In the former case, the government succeeds in changing the composition of private debt, but the rate effect is small; in the second case, firms undo public debt management with their own debt policy.

It is easily seen that simply issuing short securities will not erase the yield differential if the HH line goes through the origin. To erase the differential the government can buy long debt, say in secondary mortgage markets. In this case, the HH curve moves to the right as to H'H' in Figure 2b. The policy shown in Figure 2b actually performs a sufficient amount of buying long and selling short so that the term structure is completely flat. There will be a unique combination of such short sales and long purchases which will (a) provide a flat yield curve and (b) assure that the entire net debt is held. We will call this policy the *debt management technique which flattens the term structure of interest rates*, or the flattening policy.

It is easy to see that the monetary authorities have enough instruments to flatten the term structure. In the general case there are n demand and supply functions for the n assets, each function being homogeneous in the n rates of interest. There are n instruments since government debt has n maturities. Under normal conditions the targets can all be met, subject to the proviso that full achievement of such an objective may involve the Treasury in substantial short-term borrowing and long-term lending.

What is the rationale for a policy of flattening the rate structure? The basic reason is that over the long run a rate structure which is anything but flat reflects the presence of inefficiencies. Just as money will not be held as an asset without transactions costs, so the observed stable ascending rate structure seems to us to be consistent with a pattern of preferred habitats and risk aversion as shown in Figure 1. By flattening the rate structure the government finances the debt in such a way as to remove the inefficiencies associated with risks.

It should be noted that the flattening of the rate structure does not necessarily increase the welfare of all participants. The short-term borrower and the long-term lender who have below average aversion to risk or who were operating in their preferred maturity range lose the risk premium from which they were benefiting in their respective ways. But on balance the reduction of a private risk that is

not also a social one is bound to raise aggregate welfare. It is true also that there are private intermediaries, one of whose functions it is to convert short-term into long-term money, making a profit by "riding the yield curve." This activity is itself not a riskless one, however, as the recent experience of the thrift institutions has shown, and in any event has on average not been carried to the point of producing a flat-term structure. There is room, therefore, for some structural influence emanating from the public debt in the direction of a flatter yield structure. Financial intermediation, involving lending as well as borrowing, is part of the current activities of the public sector, but our analysis is concerned not with Federal lending agency operations and their possible expansion, but with the principles underlying the influence of debt management upon the term structure of interest rates.

How does a policy of debt management aiming to flatten out the yield structure relate to other policy objectives of debt management? It should be seen only as an absolute goal when no other goals are in competition with optimal debt management. It appears to us to be very similar to the objective of minimizing the cost of debt. On the other hand, it should be viewed as a *very long-run policy* and one around which stabilization objectives can move. Thus we would not view a policy of Twist such as that used in 1962 as inconsistent with this objective as long as Twist was clearly seen to be a cyclical policy and not as a substitute for expansionary domestic policies and a higher foreign exchange rate. Moreover, a policy of faster (or slower) growth could be achieved by a greater (or lesser) monetization of debt.

5. Providing Adequate Gross Debt for Cyclical Debt Management

We have presented a set of reasons, based on structural grounds, that favor a Federal debt financed largely with short-term interest bearing securities. Two major reservations need to be stated concerning such a policy. One is the familiar set of objections to governmental short-term financing: given that the Federal debt is almost certainly permanent, a heavy concentration on short-term issues appears "unsound" in the light of the canons of traditional private finance; it carries a heavier market risk than long-term debt because the stream of interest payments is more variable; it is vulnerable to political and other pressures that could lead to inflationary debt financing. We have stated earlier some considerations that reduce the weight of these objections.

The second reservation relates to the fact that a predominately short-term debt precludes the possibility of twisting the term structure of rates. The Fed cannot substitute short for long debt in the market if there is no public long debt in the market. We assume here that the present institutional framework will be preserved, which prevents the Fed from dealing in private securities in the open market. Many economists have argued that in certain conditions the yield curve should be twisted; in 1962, for example, a quarter-hearted attempt was made to lengthen the debt in order to promote investment while attracting short-term capital from abroad. Especially in a world without perfect markets, such situations (or even in mid-1974 the reverse!) may well arise again. A case can therefore be made for either: (i) having a sufficient quantity of gross long debt so that the monetary authorities can buy and sell long debt; or (ii) changing the existing framework to allow the monetary authorities to operate in securities other than those of the Treasury.

One question involves the magnitudes of debt of different maturities necessary for the Fed to engage in meaningful monetary policy of this kind. The studies summarized in Table 2 place the change in the ratio of short debt to total debt required to twist the term structure by 100 basis points around 20 percent of marketable interest-bearing Federal debt, i.e. about \$50 billion. This is roughly equal to the total of marketable Treasury securities outstanding with maturities exceeding five years.

Given the realities of the market, anticyclical operations in long-term securities of such orders of magnitude are not promising. Over the years, as total wealth rises, the Federal debt is likely to constitute a continuously diminishing proportion of it. The chances of a meaningful impact on the rate structure via open-market operations in long-term debt will further diminish. It might be asked, therefore, whether the hope of achieving such effects should be allowed to dominate debt structure policy.

6. Minimum Interference with the Fed

“Keeping out of the way of the Fed” is another of the possible objectives of debt management. In other words, instead of seeking to achieve positive effects, the goal would be to avoid negative effects resulting from interference with monetary policy. This goal at one time would have loomed so large as to be impossible to achieve. Shortly after World War II, all thinking about monetary policy was dominated by concern over its effect on the debt. During the pegging period, cooperation between the Treasury and the Fed paralyzed monetary policy.

Today, three forms of interference are readily apparent. One is the constraint that at times has resulted from the need to finance large budget deficits in a rapidly expanding economy, when capital markets were already strained by private demands. This is basically a fiscal policy problem — the budget probably should not be in such heavy deficit at these times. When it is, the result almost certainly will be a heavy concentration on short-term debt. Large-scale long-term financing would drive up long-term rates excessively. Even a strict interpretation of the expectations theory would not deny this — heavy long-term financing would probably change expectations. Only short-term debt can be sold in sufficient volume without great rate increases — provided the Federal Reserve gives the banks the reserves with which to buy these issues, thereby improperly accelerating the growth of the money supply.

A second form of interference with monetary policy can result from a heavy volume of short-term debt outstanding from an earlier period. An effort to keep the monetary aggregates growing stably under conditions of expansion will raise short-term interest rates and make the interest cost of the debt very burdensome. It will also put upward pressure on rates charged by banks for short- and medium-term credit. The answer to this problem is that of orthodox debt management: avoid short-term debt by keeping the debt funded. The pros and cons of this advice are familiar. It does not appear that this form of interference with monetary policy should be decisive for the choice of debt management policies.

The practice of even-keeling the market during Treasury financings is a third form of interference. A variety of views seems to exist among market technicians about the variables and techniques involved in even-keeling, about the duration and rigor of individual episodes, and even about the need to protect Treasury financings by this form of market stabilization. We conclude that there is a significant possibility, which frequently materializes, that even-keeling may interfere with monetary policy particularly under a policy regime aiming at stable growth of the monetary aggregates.

Fortunately, techniques are available to offset the adverse effects of even-keeling upon monetary policy, assuming the practice cannot be dispensed with altogether. The orthodox counsel again would be to reduce the number of financings by lengthening the debt. But even-keeling could be eliminated altogether if 1) the debt were all in bills, assuming auctions to require no even-keel, or 2) all short and long financings were shifted to an auction basis, or 3) all issues were made sufficiently small, perhaps by reopening of old issues, to make

their pricing and sale no more difficult than that of corporate issues. The Treasury already has experimented with 2), through a "Dutch Auction" of a bond, which will be reported on in another paper at this conference. Of these techniques, the Dutch Auction may well be the best, since it does not prejudice the form of Treasury issues as would the other two. It is evident, then, that the conclusions of this paper pointing in the direction of a predominately short-term debt can be made consistent with a debt policy whose principal objective is to keep out of the way of the Fed.

7. *Purchasing-Power Bond*

No discussion of debt management is complete that does not pay its respects to the merits of a purchasing-power bond. This time honored subject has been endowed with powerful actuality by our high rate of inflation. We shall ignore the familiar pros and cons debated in the past — the need to give the small saver a positive real interest rate, the danger of seeming to "throw in the towel" in the fight against inflation, and so forth, and only note briefly two points that appear to have been neglected in the debate.

In a risk-averse market, investors will be prepared to pay a premium for the elimination of the inflation risk. Thus, the rate at which such a bond could be sold might turn out to be lower than the real rate. The latter has been variously computed as falling in the range of 3-4 percent. It might be worthwhile finding out whether this is so, perhaps by having a government agency, rather than the Treasury, put out such an experimental issue.

Second, the Treasury would be deceiving itself if it were to ignore the fact that it is already putting out securities that are near substitutes for purchasing-power securities. The coupons of all issues currently sold obviously contain an inflation premium. This however, is an inefficient and costly method of inflation-proofing a security. The premium contained in the coupon is taxable. Hence it must be high enough to attract, as marginal investors, taxable buyers for whom the post-tax premium still constitutes adequate protection. For tax-exempt buyers, that premium is excessive. The situation is the reverse of that prevailing in the market for tax-exempts, where middle-bracket buyers have to be attracted to sell enough bonds, giving high-bracket buyers an unnecessarily high return. A purchasing-power bond, providing for a tax-exempt inflation adjustment, would avoid this extra cost.

We have no expectation that the Treasury will issue a purchasing-power bond, any more than that it will hereafter voluntarily finance all of its debt short-term. But it may be useful to the Treasury to have to rethink from time to time the reasons why it will not.

DISCUSSION

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If the function of an opening paper at a Conference is to raise more questions than it attempts to answer, in order to give a wide scope for subsequent discussion, then this paper fills that role admirably. I have rarely read a paper that managed to start up so many interesting hares, such as the Fed-Treasury relationship, the "real" burden of the debt, purchasing-power bonds, even though many were hardly pursued after the first sighting. In particular, the fact that I shall pass in pained silence by one of these hares, the authors' reference to 'far-reaching' Treasury control over Bank of England policies, should not be taken to represent agreement with that comment.

The authors do, however, expand and develop their analysis of two main issues, the first on the question whether changes in the maturity composition of the debt affect the rate structure and the second on whether there is some long-term optimal structure for the debt. In addition, there is a secondary theme, which surfaces at various points, which considers the rationale and arguments for the traditional Central Bank desire to fund — that is, to establish and maintain a long average maturity in its outstanding debt.

It is, indeed, proper to begin, as the authors do, with the question whether the composition of the debt affects the rate structure. For if it does not do so, the implication would seem to be that shifts in the composition of the debt, at least over the range that has been observed, do not matter; in particular that they do *not* affect the welfare of the private sector, which forms the authors' second main topic.

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The standard theoretical conditions in which the rate structure will be insensitive to the composition of the debt are well known in the literature. These are that there shall be enough, adequately financed, market operators to control the determination of market prices,¹ who are both risk neutral and have uniform expectations. Frankly, I find these conditions totally unrealistic. Moreover it should be noted that, if risk neutrality was prevalent, there could be no basis for the existence of a liquidity premium. But if behavioural conditions are such as to lead to the establishment of liquidity premia, because essentially of risk aversion, then it must follow that these premia will be a function of shifts in the composition of the debt, since it will take rising premia to shift additional risk-averse investors out of their preferred habitats. I noted with some interest that the authors were careful not to equate the observed systematic deviations from the predictions of the pure expectations hypothesis (in their hypothesis B) with liquidity premia. For it would be illogical for such liquidity premia *not* to be a function of the debt composition. But if they are not liquidity premia, could the authors tell us what causes these systematic deviations?

Then having shown that the econometric evidence clearly suggests that the composition of the debt hardly seems to matter at all, and indeed having been rather snooty about the misguided and myopic market operators, who thought it did, the authors in the second half of their paper ignore their own conclusions with a magnificent insouciance to develop a theory of the welfare implications of debt composition, whose significance depends entirely on that risk aversion, those preferred habitats, which they had virtually dismissed earlier. Would the authors like to reveal which half of their paper they actually believe?

But I am being unfair. There is a real problem. Most of us believe that market operators are characterized by risk aversion, in which case theory suggests that debt composition should influence the rate structure. Yet econometric tests do not show much evidence of this. One possible reason that has been suggested for these findings is that adequate data of substitute private debt are not available in the United States.² If, of course, private sector borrowers are prepared

¹See, for example, R. S. Masera, *The Term Structure of Interest Rates*, Chapter 1, "A Brief Survey of the Literature on the Term Structure," (Oxford University Press: Oxford, 1972).

²B. G. Malkiel, *The Term Structure of Interest Rates*, (Princeton University Press: Princeton, New Jersey, 1966), pp. 221-3.

to shift the maturity of their new issues very flexibly in response to very small opportunities to lower the mean yield on their debt, then they are acting as the adequately financed risk-neutral speculators. I think that the argument is instead that inability to observe accurately the maturity shifts, determined by other unstated reasons, in the proportionately very large totals of private debt may have biased downward the econometric estimates of response to public sector debt shifts. I doubt, however, whether this will be found to be an important explanation of this puzzle: for in the United Kingdom, where the issue and stock of Central Government debt far outweighs that of private sector debt³ and where the market for the latter is institutionally limited to new issues of a restricted maturity range,⁴ my own statistical research⁵ has equally failed to turn up any evidence of the effect of composition on the term structure.

The Optimal Debt Structure

Having looked this conflict, between the belief that most of us share that the composition of the debt should matter and the econometric evidence that it hardly does, squarely in the face, let us pass on to the authors' second main theme, the optimal structure of the debt, accepting the postulate that risk aversion can lead to the emergence of rate differentials in the term structure. The key sentence in this section to my mind is as follows, "We assume that risk differentials are sufficiently great so that speculators do not close the rate differential, but that these risks are not social risks". Now what exactly is a "social risk"? My own view is that it is not the nature of the risks themselves, but of the behavioural response to risky circum-

³Nominal value, £ mn. U.K. Debt quoted on London Stock Exchanges.

	<u>Outstanding Stock</u>		<u>New Issues (gross cash raised)</u>		
	Central Government	Company Sector	Central Government	Company Sector	
March 1965	16,648	2,500*	1968	681	304
March 1970	21,569	5,502	1969	766	425
			1970	11,635	

*Estimated

⁴The great majority of company-sector quoted debt is issued with an initial maturity of between 25 and 30 years.

⁵Still in preparation.

stances, that differentiates public and private sector intermediation. Why do not private intermediaries borrow short and lend long, until rate differentials are closed?

One answer is that, with a given subjective probability distribution of returns, the dangers of insolvency and illiquidity make the intermediary unprepared to accept the required risk-return trade-off, especially with declining marginal utilities of income and/or penalties arising from bankruptcy. But the public sector is never illiquid; it can always print more money. It may be technically insolvent — and from the experience of the British nationalised industries usually is — but it can not be bankrupt. It is not affected by risk, in the sense of the variance of expected returns, in the same way as the private sector. In this respect it has a comparative advantage in risk bearing. What interests me is just how far do you want to follow the ramifications of this argument? For surely the logical conclusion of the authors' theme here should not be limited to the composition of their own debt. As is mooted by the authors, when they advocate the authorities buying long *private sector* debt in exchange for short *public sector* debt, this train of thought leads on to the argument that the public sector is better placed in this request than the private sector to undertake most intermediation services, and, perhaps, a whole range of other activities involving risk bearing.

Let me repeat this interesting argument; the comparative advantage of the public sector in risk bearing gives theoretical grounds for a massive extension of nationalization into the provision of financial services. I suppose that in some ways the growth of Federal credit assistance and insurance serves to offset risk without entailing an even larger extension of direct public ownership.

Finally I would like to suggest that the authors have largely failed to capture the motivation leading central banks, certainly my own, to want to fund the debt. The authors twice suggest that this is because market risk may raise the interest costs of the debt. But as they show in their opening table, the interest payments on the debt are too small, as a proportion of GDP, to make even relatively large fluctuations in it of serious consequence.⁶ Political constraints on interest-rate movements, which certainly occur, do not now arise from fiscal cost considerations but when rate movements, anywhere in the spectrum, appear to threaten the flow of funds into some

⁶This is also true in the United Kingdom; net Central Government interest payments, (after taking account of interest received from loans made to local government bodies, etc.), fell from 2.9 percent of GDP in 1960/61 to 0.7 percent in 1970/71.

sensitive area or cause a publicly visible jump in rates in such sensitive areas. The recent rumpus in the United Kingdom over the possibility of Building Society mortgage rates going to 10 percent is an excellent example of this syndrome.

If the desire to fund is not based, at least in the United Kingdom, on cost considerations, what is its rationale? It is instead, in my view, based on the desire to be in control of liquidity, in the driver's seat. For example, in the bill market in the United Kingdom the authorities always issue a few more bills than they predict that the market will have the money to take up in the coming week. The short-term market is thus normally held taut, allowing the authorities to relieve that tension at their own discretion. Now if we move on to the gilt-edged market, the present flow of maturities onto the market, in conditions where the present average maturity of debt stands at 13½ years, is now on average running at around £1,700 million per annum. The present volume of currency outstanding, plus bankers' balances at the Bank of England, amounts to some £5,000 million (end-December 1972). Thus the present flow of maturities each year would, by itself, raise the monetary base by 33 percent unless refinanced. If you halved the average maturity, you would in turn, by and large, double the flow of maturities to be financed each year. Far from holding the market taut, it gives a central banker a feeling of rushing around with a mop trying to sop up floods of liquidity. This is not a comfortable posture. Instead of us feeling that we are in charge, able to relieve the market on our own terms, we are left with the feeling that our ability to control either monetary aggregates, or interest rates, or a preferred trade-off between these objectives is weakened and made far less predictable by an overhang of short-term debt. Now I do not want to press this argument too hard; for my own part I find it debatable to say the least. Nevertheless I think it true that Bank of England preferences for funding are based on arguments of this ilk, and not on concern with variations in the interest cost of the debt.

DISCUSSION

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Those who work closely with the economy have long viewed academic economics with some suspicion, if not disdain. Recently, a number of eminent economists have lent support to the qualms of these realists by arguing that in its pursuit of formal elegance and methodological refinement economics has lost touch with the realities of the economy it nominally seeks to explain.¹ If this view is merited, Nordhaus and Wallich are placed in a somewhat awkward position when they undertake to provide for our discussion here some fruits of economic theory applied to debt management. They provide, as I see it, two such pieces of fruit. One is the proposition that it is socially inefficient for short-term interest rates to be lower than long-term rates, and debt management ought to be used to level out the yield curve. The second is a set of estimates of the effects of debt management in shifting the yield curve, which are interpreted as relevant to the question, "Does debt management matter?"

I should like to suggest that these pieces of fruit ought to bear a label, indicating that they may be injurious to our health. The

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¹In his presidential address to the Econometric Society, Frank Hahn uttered the unthinkable: "To discuss and analyze how the economy works it may be necessary to go and look." "Some Adjustment Problems," *Econometrica*, 38 (January 1970), 1-17. Other important statements of basic dissatisfaction with the methodology of recent economics are these: Nicholas Georgescu-Roegen, *The Entropy Law and the Economic Process* (Cambridge, Mass.: Harvard University Press, 1971). Kenneth E. Boulding, "Economics as a Moral Science," *American Economic Review*, 59 (March 1969), 1-12. Wassily Leontief, "Theoretical Assumptions and Nonobserved Facts," *American Economic Review*, 61 (March 1971), 1-7. G. L. S. Chackle, *Epistemics and Economics* (Cambridge, England: Cambridge University Press, 1972).

reasons for this are not the fault of Nordhaus and Wallich, but derive from those very methodological shortcomings of present-day economics about which we have recently received so many warnings.

Let us then take a look at our first piece of fruit. In recent years, a large literature in economics journals has arisen from the argument advanced by Friedman and Samuelson² that it is inefficient for people not to be satiated with money to hold, since additional money can be created by the government at zero social cost. Therefore, the argument runs, it would increase human happiness if interest were permitted to be paid on demand deposits, and perhaps also if stronger measures were taken to assure that the yield from holding money is no lower than that from holding investment assets. The Nordhaus-Wallich argument that short-term rates should not be lower than long-term rates involves the same line of argument.

There are, to my mind, a great many things wrong with the optimum-quantity-of-money doctrine. The one most central to our discussion is this: For people to be holding money beyond what they need for current transactions *does involve a social cost*. Under this condition, a piece of inflationary news could lead to a rapid and large increase in spending, as people used their redundant cash to finance additional expenditures, and velocity of circulation rose abruptly. Had people been holding only minimal cash balances, they would have had to finance additional spending by liquidating debt or by borrowing, and the general effort to do so would increase interest rates, reduce asset prices, and limit the inflationary upsurge.

Similarly, in the absence of an incentive to economize cash balances, those with income beyond their current spending plans would simply let cash pile up rather than putting the funds into the credit markets. When the nonspenders put unneeded funds into the credit markets, these tend to reduce interest rates and to finance someone else's spending. The financial system thus plays the role of integrating spending and saving decisions. This has the effect of dampening variation in velocity and limiting economic instability. The differential between the yield from holding debt and the zero yield from holding money provides the inducement that is required if the financial system is to perform this integrative function.

I suspect that this is the way many of you here see the role of credit markets and the financial system. When, for example, Henry Kaufman in his paper raises the question: "Who will be rationed out?"

²Milton Friedman, "The Optimum Quantity of Money," in his *The Optimum Quantity of Money and Other Essays* (Chicago: Aldine, 1969), 1-50.

of the credit market, he suggests the view that the financial system *does* ration out the ability of people to spend at any particular time, and that the volume of financing that emerges from the credit markets is defined by the volume of funds flowing into it.

But this, incidentally, is not the conception of the economy that is embodied in the prevailing economic theory or economic models. A basic point of the Keynesian revolution was that the market economy included no mechanism to integrate the decisions of savers and investors. If one person spends more, this has no tendency to cause anyone else to spend less. This is not true if the financial system functions in the way just described. Moreover, macro-economic models have not closed the financing loop and represented spending as constrained by a limited total flow of sources of financing. However, in this respect the model by Bosworth and Duesenberry seems to me an important breakthrough, indeed, an innovation of greater theoretical importance than its authors indicate. But if you take the view that the financial system works in a coherent way, and that people get rationed out of the credit markets, you are at odds with the economic theory that has prevailed, and you must not expect it to bear your kind of fruit.

So in the interpretation I am suggesting, satiating people with money to hold does involve a social cost. It basically undercuts the operation of the financial system, and makes the economy more unstable. Why is this point not noticed in the literature on the optimum quantity of money? Because this literature is formulated with reference to a hypothetical situation of equilibrium. It does not deal with the processes by which short-run variation in total spending is limited by restrictions on the availability of finance.

Let us extend this interpretation to the authors' argument that people should not economize the liquidity of their asset holdings, because the government could create additional liquidity at zero social cost. There is, we see, a social cost of additional public holdings of liquid assets, which precisely parallels the social cost of redundant cash balances and zero incentive to economize cash. It undercuts the complex logic of the financial system, and makes the economy more unstable and less controllable. This is not taken into account in the authors' interpretation because, like the optimum-quantity-of-money argument, it is posed only in terms of equilibrium analysis.

Because of the proposal's being made in an equilibrium framework, it is not clear to me what it really would involve in practice. Is the yield curve to be kept flat *all the time*? This surely would be a radical program. It is well known that interest rates generally rise

during periods of bullishness and decline during periods of economic slack, and that in these adjustments short-term rates swing over a wider range than long-term rates, rising above long-term rates during boom periods and falling below them during periods of slack. To try through debt management actions to override this characteristic behavior of credit markets would be a drastic action, the full implications of which could hardly be foreseen. What would be involved is debt management actions responding to short-run changes in economic conditions — but actions proposed not on the basis of an analysis of their effects on economic stability, but in terms of an argument relating to utility analysis within an equilibrium framework. This does not seem at all a satisfactory way of approaching the matter.

Or is the proposal that the rate structure should be flat not in each period, but *on the average over some interval of time*? If so, over what interval of time? If for a period of years short rates averaged below longs because of prevalence of economic slack and generally low rates, should they then be raised above them in order to make the average come out right? Once again, this would not be consistent with the use of debt management to avoid economic instability.

My own reaction is that this line of argument is unacceptable from its very foundations, and that the criterion of a flat-rate structure as a goal for debt management should be rejected.

The other piece of fruit I see Nordhaus and Wallich as picking for us from the tree of economics is the finding that debt management has “very little effect” on the structure of interest rates, “findings of a failure of the term structure of interest rates to react to the maturity of the public debt.”

If taken literally, this finding would seem to imply that we can stop worrying about debt management, just tell the Treasury to do what it likes — so long as it goes easy on our tax dollars. But many of you may find it hard to believe that this finding can be taken seriously. It seems to imply, for one thing, that the government can take as much money as it wants out of the long-term market without even raising the long-term rate — not to mention causing a bond-market panic. Does anyone believe that?

But can such elaborate statistical studies come up with findings that are not true? There is no longer any doubt as to that. So many econometric studies have come up with so many inconsistent findings that, as a matter of logical necessity, most of them must not be true. Just why it is that the findings of regression analysis are so sensitive to details of the way the study is set up, and why it is that the relations measured by such studies are generally not causal

relations — this makes a long story that I would not try to tell here. But on the point that matters to us here, do these regression analyses provide a valid measure of the effects on economic conditions of a debt-management operation of such scale as we might want to consider under the conditions under which we might want to conduct it? My own view is that these coefficients throw no light at all on the matter. When the rationale and methodology of such studies is considered closely, it becomes clear that they should not be represented as offering a valid answer to such a question.

How then can we get some feel for what kind of debt management program we need in order to avoid economic instability? Perhaps we must fall back on trying informally to draw some lessons from past experience with the kinds of actions and events we have in mind, under the kinds of circumstances that are relevant. What actual cases can we point to in which the economy might have done much better with a different debt-management policy?

I should be very happy to benefit from the expertise of the members of this group by having their answers to this question. From what I know of the matter, two cases of unfortunate debt-management actions seem to stand out. One is the overly enthusiastic debt lengthening of the spring of 1953 — along with the overly enthusiastic talk about the overly enthusiastic debt lengthening. This caused a minor panic in the bond market and seems to have been a major cause of the recession of 1953-54.

A less obvious but more instructive and more important case is that of the early 1930s. Debt management did not cause this debacle, but a factor contributing to it was perverse liquidity developments, which a suitable debt-management policy might have prevented. After 1929 there was an unusual extinction of liquid assets because of the drying up of call loans and commercial paper, and because of the loss of time deposits and savings accounts from failures of banks and other financial institutions. The scarcity of liquid assets sent yields on them close to zero. Long-term interest rates showed no corresponding decline. It was 1934 before they finally edged below their levels of 1927-1928, when short-term rates had been up at a more normal level.

Debt management contributed to this situation. The Treasury was financing its large deficits mainly in the intermediate and long markets, and was refunding with new long-term issues a large volume of maturing World War I bonds.³

³For a more detailed expression of this interpretation, see Culbertson, "The Term Structure of Interest Rates," *Quarterly Journal of Economics*, 71 (November 1957), 485-517.

These conditions contributed to the self-feeding economic contraction of 1929-1933 in several ways:

1. The high long-term rates (and remarkably high *real* interest rates, given the rate of price-level decline) discouraged marginal investment expenditures.

2. The rise in long-term rates during the liquidity panics, and declines in bond prices, contributed to insolvency and failures of banks, which reduced the money supply and led to other bank failures.

3. The drop in short-term rates reduced incentives to the economization of money holdings, and contributed to the decline in velocity of circulation.

4. The unavailability of secondary-reserve assets led banks to hold excess reserves in their place.

5. This state of affairs was not interpreted by the Federal Reserve as reflecting a shortage of liquid assets. Rather, the excess reserves were interpreted to indicate that reserves were already redundant, or "excessive" in a literal sense, and that to provide more reserves would be harmful. Similarly, the low short-term rates were interpreted as indicating that bank credit was already redundant. Thus the conditions that actually reflected a shortage of liquid assets were interpreted rather as reflecting an excessive volume of bank reserves. This interpretation was one of the factors that underlay Federal Reserve inaction as banking panic followed banking panic and the money supply declined by one-fourth.⁴

How much better might this story have come out with a suitable debt-management program, which would have shifted government debt from the long-term to the short-term market, in this case in large volumes? That is very difficult to say, for debt management did not operate in isolation — as it never does — but in interaction with other factors. In this case, a crucial consideration is that a different debt management and structure of interest rates might have led to different Federal Reserve actions, and a much more favorable interaction process conceivably could have developed.

This episode illustrates two points that are important for our consideration of future debt management:

First, what is important is not only — perhaps not mainly — the contribution of debt management during ordinary times when rather

⁴The significance of this interpretation is brought out in Lester V. Chandler, "Impacts of Theory on Policy: The Early Years of the Federal Reserve," in David P. Eastburn, ed., *Men, Money, and Policy: Essays in Honor of Karl R. Bopp* (Philadelphia: Federal Reserve Bank of Philadelphia, 1970), 41-53. See also Clay J. Anderson, *A Half-Century of Federal Reserve Policymaking, 1914-1964* (Philadelphia: Federal Reserve Bank of Philadelphia, 1965).

ordinary debt management actions are being followed, but its role in unusual situations. Perhaps special attention should be given to the conduct of debt management in the face of seriously aberrant liquidity conditions.

Second, debt management is not to be interpreted in isolation, but rather as an element in the economy's liquidity system — the only element that is subject to quantitative control. Reasonable guides for debt management policy would assign it responsibility to offset untoward developments in other aspects of the economy's liquidity system.

Before we leave the topic of "lessons from experience," let me briefly make one other point. "Operation Twist" of 1961-62, so far as I can figure out, is rather like the emperor's clothes that everyone saw, even though they were not there. The Federal Reserve bought some intermediate governments, but the Treasury at that time was lengthening the debt, while the usual situation in the postwar period was one of debt shortening. The debt held by the public thus, in my understanding, was on balance being lengthened somewhat, in contrast to the pronounced shortening that had occurred in 1955-60. Nothing really happened, thus, that could have been *expected* to push short rates up and long rates down. Operation twist was an operation in rhetoric, not in actual debt management.⁵ But of course government policy actions aimed largely at their public-relations effects were not a new invention of this time, and I believe there may even have been some of them recently.

To what proposal for debt management does this interpretation bring us? I would treat debt management as an aspect of a broader government liquidity policy, and would characterize my program in these five points:⁶

1. The behavior of liquid assets created by others is as important as debt management itself. Laws and regulations should be designed to guard against erratic or procyclical variation in the supply of/or demand for liquid assets. In this connection, the uncontrolled creation of debt by Federal agencies and the erratic behavior of time deposits because of government regulations are objectionable.

⁵On this, see Culbertson, *Macroeconomic Theory and Stabilization Policy* (New York: McGraw-Hill, 1968), 520-522.

⁶For a more detailed discussion involving most of these points, see Culbertson, "A Positive Debt Management Program," *Review of Economics and Statistics*, 61 (May 1959), 89-98.

2. In relation to the structure of government debt held by the public on the average over a period of time, it is useful to preserve an active market in government bonds as well as intermediate and short maturities in order to retain for debt management the capacity to shift in either direction should this be called for by circumstances. This consideration severely limits the government's ability to use debt management to bring about any particular average rate structure, and I should not in any case recommend such an effort.

3. In its relation to short-run variations in total demand, I should like to see debt management regularized, with modest continuous offerings of long-term securities. I think that large offerings of long-terms bunched during economic contractions or periods of economic slack are not worth the risk they involve of damaging the overall performance with anticyclical variation in debt management, particularly in a case in which, say, long-term interest rates fail to show their usual rise during an economic expansion or their usual decline during a period of deficient total demand.

4. Perhaps most important, I think we need to have, at least in our minds, a standby program for potentially vigorous action against aberrant liquidity conditions in the event — which is perhaps unlikely — that they do arise. I think this responsibility should be imposed on the administration and the Treasury Department. In any period of economic contraction or economic slack in which short-term rates drop unusually low while long-term rates remain high, the possibility should be considered that this reflects aberrant changes in the supply of or demand for liquid assets. Corrective action could involve also changes in laws and regulations, but the standby resort would be variation in the maturity structure of government securities to offset other factors and correct the damaging imbalance in the structure of financial assets.

5. Finally, since only the Treasury has the power to take actions that might need to be taken with debt management, it seems to me that the whole responsibility should be placed on the Treasury and the administration. Thus the Federal Reserve should not muddy the waters by token interventions into the debt structure.