

Payment of Interest on Reserves

By *Stuart E. Weiner*

Commercial banks, savings and loan associations, and other depository institutions are required by law to hold a portion of their assets as reserves against deposit liabilities. These reserve requirements, in conjunction with control over the supply of reserves, effectively place an upper limit on deposit creation and thus help the Federal Reserve control the growth of money and credit.

But reserve requirements also impose a cost on depository institutions and their customers. Because reserves must be held either as vault cash or in reserve balances at Federal Reserve banks, neither of which currently bears interest, depository institutions are forced to forego interest income. Some of these reserves would be held in the absence of reserve requirements but a good portion would not. The interest that is foregone on involuntarily held reserves is in effect a tax that is either borne directly by the

institutions and their shareholders or passed on to customers via lower deposit rates, higher borrowing rates, or reduced services.

Interest foregone on involuntarily held reserves is in effect a tax.

Although U.S. banking history has seen several episodes of payment of interest on reserves, such payment has effectively been prohibited since passage of the Monetary Control Act in 1980. Recently, however, Congress has been considering legislation that would require the Federal Reserve to pay interest on selected reserves.¹ Such proposals have found support from a variety of sources, including the American Bankers Association, the Federal Deposit Insurance Corporation, the Office

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¹ Strictly speaking, under the Monetary Control Act of 1980 the Federal Reserve already is required to pay interest in the event that, under special conditions, it imposes supplemental reserve requirements. Interest on supplemental reserves would be paid at a rate not to exceed the rate earned on the securities portfolio of the Federal Reserve System during the previous quarter.

of the Comptroller of the Currency, the President's Council of Economic Advisors, and the Board of Governors of the Federal Reserve System. Given such broad support and the sweeping momentum of financial and banking deregulation, some movement toward payment of interest on reserves appears likely.

This article examines the implications of paying interest on reserves. The analysis suggests that paying interest on reserves would have a beneficial impact on economic efficiency and equity. However, paying interest on reserves would also introduce complexities and potential problems for monetary policy. Thus, in embarking upon such a path, it would appear prudent to proceed cautiously and slowly.

Banks have in the past earned interest on their reserves.

The article is divided into four main sections. The first section provides an historical survey of payment of interest on reserves from passage of the National Bank Act in 1863 to passage of the Monetary Control Act in 1980. The second section examines the motivation for and details of more recent proposals for paying interest on reserves. The third section discusses the merits of these proposals on equity and efficiency grounds. The fourth section details the complexities that such proposals would create for monetary policy.

History

Reserve requirements have been part of the U.S. banking system for over a century and a half. Today they serve the primary purpose of providing a fulcrum through which monetary policy is conducted. By placing an upper limit on the amount of deposits that the depository system can create, reserve requirements help

the Federal Reserve control the growth of the money supply.²

Under existing law, reserves must be held in noninterest-bearing forms. This has not always been the case, however. Both national banks and state banks have, at one time or another, earned interest on their reserves.

National banks

The distinction between national banks and state banks arose in 1863 with the passage of the National Bank Act. Prior to that time, all banks had been state chartered, all issuing their own notes. A uniform currency did not exist. One of the major drawbacks of the system was the tendency for bank notes to depreciate in value because they were difficult to redeem. Redemption difficulties, in turn, largely stemmed from uncertainty over the soundness of issuing banks in distant locales.

The National Bank Act was designed in part to offset these problems.³ The act established a national currency. Banks that elected to become nationally chartered could issue these national notes; banks that elected to remain

² For a discussion of the role of reserve requirements and recent institutional changes brought about by the Monetary Control Act of 1980 and the Garn-St Germain Act of 1982, see Gordon H. Sellon, Jr., "The Instruments of Monetary Policy," *Economic Review*, Federal Reserve Bank of Kansas City, May 1984, pp. 3-20. For a detailed early history of reserve requirements in the United States, see "The History of Reserve Requirements for Banks in the United States," *Federal Reserve Bulletin*, November 1938, pp. 953-972. Marvin Goodfriend and Monica Hargraves discuss the rationale for reserve requirements through U.S. banking history in "A Historical Assessment of the Rationales and Functions of Reserve Requirements," *Economic Review*, Federal Reserve Bank of Richmond, March/April 1983, pp. 3-21.

³ Another reason for the act's passage was the desire to create a new market for government securities, a market that was needed to finance the Civil War. Under provisions of the act, national bank notes had to be backed by U.S. securities: for every \$90 of notes that a bank issued, it had to deposit \$100 of government bonds with the Comptroller of the Currency.

state chartered could not. The thinking was that most banks would want to become national banks because customers would find the national notes, which were uniformly redeemable, superior to state bank notes, which were not.

The National Bank Act authorized both explicit and implicit payment of interest on reserves. The act established reserve requirements of 25 percent against both national notes and demand deposits. Reserves had to be held in vaults as “lawful money,” that is, as specie (gold or silver) or greenbacks. An exception was made, however, for banks lying outside major cities. Although they faced the same 25 percent requirement, these banks were permitted to hold three-fifths of their reserves as deposits with national banks in major “redemption” cities. Because the receiving (correspondent) banks either paid a deposit rate on these balances or provided compensating services, the outlying banks either earned explicit or implicit interest on this portion of their reserves.

Banking reform continued in ensuing years. In 1864, the National Bank Act was rewritten, lowering reserve requirements for banks in nonredemption cities and increasing the number of redemption cities. In addition, banks in redemption cities other than New York were permitted to hold one-half of their reserves as balances with national banks in New York. Because few banks elected to become nationally chartered, however, legislation was passed in 1865 levying a 10 percent tax on all new state bank notes. This tax effectively prohibited further issuance of state notes and caused a large number of state banks to seek national charters.

Reserve requirements against national notes were eliminated in 1873.⁴ Reserve requirements against demand deposits were retained, however, so explicit and implicit payment of interest on reserves through correspondent

reserve relationships continued. Indeed, these relationships were extended. In 1887, the Comptroller of the Currency was given the authority to designate additional redemption cities, now called “reserve cities,” and to designate the largest of these as “central reserve cities.” Banks in small cities, so-called “country banks,” could hold reserve balances at banks in reserve cities and central reserve cities. Banks in reserve cities could hold reserve balances at banks in central reserve cities.

Despite all these changes—and to some extent, because of them—the national banking system was still seen by some as less than optimal. One problem was the pyramiding of reserves made possible by the correspondent reserve arrangements. This pyramiding led to volatile swings in credit availability and interest rates. As noted above, country banks could hold a portion of their reserves at banks in reserve cities and central reserve cities. The correspondent banks, in turn, could use these funds to meet their own reserve requirements. When seasonal liquidity demands, primarily agricultural, forced country banks to pull reserves out of their correspondent balances, the correspondent banks suddenly found themselves short of reserves. They were forced to call in loans and otherwise restrict the growth of credit, with the result that interest rates tended to rise. These seasonal availability problems were really a manifestation of a much more fundamental problem, however: there was no central bank and hence no way to direct the overall growth of money and credit.⁵

⁴ The abolishment of reserve requirements against national notes appears linked to a need for currency during the panic of 1873; the abolishment released greenbacks that had been used as note reserves. See “The History of Reserve Requirements...,” pp. 955-956.

⁵ For further discussion of the pyramiding problems during the National Bank Act era, see Thomas Mayer, James S. Duesenberry, and Robert Z. Aliber, *Money, Banking, and the Economy*, W. W. Norton, 1981, pp. 38-39.

Legislators eventually responded by enacting the Federal Reserve Act. Passed in 1913, the act established the Federal Reserve as the nation's central bank. All nationally chartered banks were required by law to become members of the Federal Reserve System, subject to its reserve requirements. State-chartered banks could also become members but were not required to do so.

Explicit and implicit payment of interest on reserves through private correspondent relationships came to an end with passage of the Federal Reserve Act. The act retained the distinction between central reserve cities, reserve cities, and nonreserve cities. It eliminated private correspondent reserve relationships, however, by requiring that all reserves be held at the 12 regional Federal Reserve banks. Henceforth, small banks could still hold balances at correspondents, but these balances could no longer count as reserves.

Although explicit payment of interest on reserves was clearly ruled out, implicit interest continued to be earned through what amounted to a correspondent relationship with the Federal Reserve. As members of the Federal Reserve System, banks were entitled to several free services, including, for example, check clearing. These services can be thought of as correspondent services, partially compensating for Federal Reserve reserve requirements. However, with passage of the Monetary Control Act of 1980 and its associated pricing of Federal Reserve services, even this implicit interest was ultimately eliminated. National banks today earn no interest on their reserves.

State banks

State banks have traveled a different road. Near extinction in 1866 following the effective prohibition of state bank notes, state banks made a comeback in the early 1870s as

demand deposits replaced notes as the principal form of bank liability. Since state banks could offer deposits as easily as national banks, their numbers began to swell.

Throughout the National Bank Act era, state banks were subject only to the reserve requirements of their respective states. This was also true after passage of the Federal Reserve Act, provided such banks elected not to become members of the Federal Reserve System. Those who elected not to join—and a good many did not—usually earned interest on their reserves.

Proposals have been advanced in recent years that would permit the Federal Reserve to pay interest on reserves.

Interest was earned by state banks in two ways. First, similar to arrangements among national banks under the National Bank Act, many states permitted demand deposits at correspondent banks to count as reserves. Up until 1933, these deposits could earn explicit interest; after 1933, they still earned implicit interest. Second, many states also permitted government securities to count as reserves. Reserves held in this form earned explicit interest.

All of these arrangements came to an end in 1980, however, when the Monetary Control Act was passed. The act made all depository institutions, including nonmember banks, savings and loan associations, and credit unions, subject to Federal Reserve reserve requirements. Nonmember banks that previously had been earning implicit interest on reserves through correspondent relationships or explicit interest through security holdings were now required to hold noninterest-bearing reserve assets. And, in light of the accompanying provision calling for the pricing of Federal Reserve services, such banks never had the

opportunity to receive compensatory correspondent benefits from the Federal Reserve. Like national banks, state banks today earn no interest on their reserves.

Recent Proposals

Numerous proposals have been advanced in recent years that would permit the Federal Reserve to pay interest on reserves. Unlike the past, however, when interest-bearing reserves have largely been an incidental development, these proposals have had specific purposes in mind. The proposals can conveniently be divided into pre-MCA (Monetary Control Act) and post-MCA proposals.

The primary motivation behind the pre-MCA proposals was to improve monetary control. Throughout most of the postwar period, Federal Reserve membership declined. A major reason for the decline was the relatively high cost of membership. Because nonmember banks could frequently hold interest-earning assets as reserves while member banks could not, Federal Reserve membership imposed a real burden. As a result, a number of existing members decided to leave the Federal Reserve System and a growing number of newly chartered banks decided not to become members in the first place. By the mid-1970s, the membership decline had become so precipitous that the Federal Reserve urged payment of interest on reserves as a way to offset the cost of membership, hoping to prevent further defections.⁶

A declining membership posed monetary control problems for the Federal Reserve because more and more transactions (M1) deposits were escaping Federal Reserve

reserve requirements, subject instead to state reserve requirements. Since reserve requirements differed from state to state, and between the states and the Federal Reserve, a given level of reserves was capable of supporting a vast array of deposit levels, depending on where these deposits ultimately settled. That is, the ratio of deposits to member reserves, the so-called money multiplier, became more and more difficult to predict. Volatility in the multiplier was a problem because it made selection of the level of reserves appropriate for achieving a given monetary target more difficult. Moreover, as funds flowed from member to nonmember banks, the multiplier became larger. A larger multiplier was a problem because it meant that a given shock to the level of reserves would cause a greater change in the money supply, augmenting the potential errors in monetary targeting.⁷

Hoping to stem the flow of funds out of the Federal Reserve System, and thereby improve monetary control, specific proposals to pay interest on reserves were introduced in Congress on behalf of the Federal Reserve in 1977 and 1978.⁸ These proposals received considerable support, but they were ultimately voted down. The major opposition to the bills stemmed from a concern over how such a

⁷ J. A. Cacy and Scott Winningham make these points in "Reserve Requirements Under the Depository Institutions Deregulation and Monetary Control Act of 1980," *Issues in Monetary Policy: II*, Federal Reserve Bank of Kansas City, 1982, pp. 72-75.

⁸ Testimony relating to the 1977 legislation is contained in *NOW Accounts, Federal Reserve Membership and Related Issues*, Hearings before the Committee on Banking, Housing, and Urban Affairs, U. S. Senate, U.S. Government Printing Office, 1977. Testimony relating to the 1978 legislation is contained in *Monetary Control and the Membership Problem*, Hearings before the Committee on Banking, Finance, and Urban Affairs, U.S. House of Representatives, U.S. Government Printing Office, 1978. For a discussion of the proposed legislation, see Goodfriend and Hargraves, "A Historical Assessment. . . ."

⁶ Bryon Higgins documents the membership decline in "Reducing Reserve Requirements as a Solution to the Membership Problem," Federal Reserve Bank of Kansas City Research Working Paper 77-02, October 1977, pp. 2-5.

move would affect Treasury revenues. As discussed in the following section, payment of interest on reserves by the Federal Reserve would lower Treasury revenues.

The push for payment of interest on monetary control grounds was aborted in 1980 when the Monetary Control Act was passed. By establishing universal reserve requirements, the act effectively removed the relative burden of Federal Reserve membership. Henceforth, all depository institutions, both members and nonmembers, were subject to Federal Reserve reserve requirements.

The issue of interest-bearing reserves has not gone away, however. In the years since passage of the Monetary Control Act, proposals to pay interest on reserves have again surfaced in Congress. The primary motivation behind these post-MCA proposals has not been monetary control, however, but deregulation.

Paying interest on reserves would have a beneficial impact on economic efficiency and equity.

Two new accounts, the money market deposit account (MMDA) and the Super NOW account, have provided the impetus for these proposals. Depository institutions were authorized to offer these accounts beginning in December 1982 and January 1983, respectively. The accounts were designed to compete with money market mutual funds (MMMF's) offered by nondepository institutions. Unlike MMMF's, however, Super NOW accounts and nonpersonal MMDA's are reservable. Because noninterest-bearing reserve requirements in effect represent a tax, yields on these accounts have tended to be lower than they otherwise would be, placing these accounts at a competitive disadvantage.

To make these accounts "directly equivalent and competitive with money market mutual funds," Representative Barnard and Senator Heinz introduced legislation in 1982, and again in 1983 and 1984, that would authorize the Federal Reserve to pay a market-related rate of interest on reserves held against nonpersonal MMDA's and Super NOW accounts.⁹ Interest would be paid at the rate earned on the Federal Reserve's security portfolio. Only required reserves held in reserve balances at Federal Reserve banks would be entitled to such payment.

The Barnard-Heinz proposal appears to have support from a variety of sources. There is some support, in fact, for the eventual payment of interest on all reserves, including those held against demand deposits. The possible ramifications of paying interest on reserves are explored in the next two sections.

Efficiency and Equity Issues

Paying interest on reserves would have a beneficial impact on economic efficiency and equity. Because such payments would remove the implicit "reserve tax" that is presently imposed on depository institutions, the institutions would be in a better position to compete with nondepository institutions. This heightened competition would serve to more efficiently channel financial resources to their most productive use. At the same time, overall equity would be enhanced because the reserve tax would be shifted to society at large.

⁹ The bills were originally introduced in December 1982 (H.R. 7341, S. 3059) and were reintroduced in January 1983 (H.R. 1013) and August 1983 (S. 1750). The bills differ only in the timing of the interest payments: under the Barnard (House) bill, interest would be paid quarterly at the rate earned on the System's Treasury portfolio during the previous quarter; under the Heinz (Senate) bill, interest would be paid monthly at the rate earned on the System's portfolio during that month.

Noninterest-bearing reserves as a tax

Noninterest-bearing reserves involuntarily held represent a tax on depository institutions and their customers. Depository institutions can be thought of as holding two types of reserves: voluntary reserves and involuntary reserves. Voluntary reserves are cash assets held to facilitate day-to-day operations. Involuntary reserves are those additional cash assets that must be held in order to meet reserve requirements. When a depository institution is forced to hold more cash assets than it otherwise would, that is, forced to hold involuntary reserves, it must forego earnings on those assets. The institution may simply absorb these lost earnings. Alternatively, it may attempt to recoup them by paying lower rates on its deposits, charging higher rates on its loans, or offering its customers fewer services at higher costs. Regardless of how successful institutions are in passing along this reserve tax, the implicit revenues ultimately find their way to the U.S. Treasury.

Under an informal agreement dating back to the Federal Reserve's earliest years, the Federal Reserve every year turns over its surplus earnings to the Treasury.¹⁰ By not paying interest on involuntary reserves, the Federal Reserve's earnings are higher than they otherwise would be and, as a result, Treasury revenues are higher than they otherwise would be. If the Federal Reserve paid interest on these reserves, the reserve tax would be reduced or eliminated and Treasury revenues would decline.¹¹

¹⁰ Federal Reserve-Treasury transfers are documented in Goodfriend and Hargraves, "A Historical Assessment. . ." p. 13.

¹¹ The reserve tax would be eliminated only if the Federal Reserve paid exactly the market rate. If it paid instead a market-related rate related in either a proportional or constant spread way, the reserve tax would be reduced but not eliminated.

The reserve tax is not insignificant. In 1983, for example, depository institutions held on average \$38.8 billion in required reserves of which \$16.8 billion was held in vault cash and \$22.0 billion was held in reserve balances at Federal Reserve banks. Assuming the institutions would have elected to hold this vault cash voluntarily, \$22.0 billion represented involuntary reserves. Had the institutions been able to invest these funds in 3-month Treasury bills, they would have earned \$2.0 billion in interest. Had they elected instead to hold a more diversified security portfolio, similar to the Federal Reserve's, they would have earned \$2.2 billion.¹² However measured, the reserve tax is clearly of some magnitude. And, as argued below, it is also a source of inefficiency and inequity.

Efficiency and equity

Noninterest-bearing involuntary reserves are difficult to defend on efficiency grounds. Because of the reserve tax, yields on reservable deposits offered by depository institutions tend to be lower than yields on similar, but nonreservable, instruments offered by nondepository institutions. The yield differential, in turn, makes it more difficult for depository institutions to compete with nondepository institutions. As a result, funds may flow out of the depository system into the nondepository system.

The potential outflow of funds represents an inefficient allocation of financial resources because it is based on artificial prices. The reserve tax can be thought of as a selective excise tax on the deposits offered by depository institutions. Like any other excise tax, it

¹² These estimates overstate somewhat the true magnitude of the reserve tax since depository institutions and/or depositors would pay taxes on these interest earnings.

has the effect of artificially raising the "price" of these deposits (by raising the opportunity cost of holding them) and distorting economic decisions. Because of the artificially high prices, the price system directs financial resources away from what might have been their most productive uses. Paying a market-related rate of interest on involuntary reserves would restore the allocative efficiency of the price system by narrowing, or even eliminating, yield differences among essentially similar competing instruments.¹³

If interest were paid on reserves, the reserve tax would be shifted to the public at large.

Consider, for example, Super NOW accounts, which are reservable transactions accounts offered by depository institutions, and MMMF's, which are nonreservable transactions accounts offered by nondepository institutions. If interest were paid on the involuntary reserves held against Super NOW accounts, their yields would likely rise. As a result, funds that might otherwise have been attracted to MMMF's would now be attracted to Super NOW's. The artificial spread between nonreservable deposit rates and reservable deposit rates would be reduced, permitting the price system to operate more efficiently.

A key question, of course, is how much of the spread would in fact be reduced? If interest were paid on reserves, how much would be passed on to depositors? Although a definitive answer is not possible, it does seem reasonable to believe that competition among deposi-

tory institutions, as well as between depository institutions and nondepository institutions, would force at least some reduction in the spread.¹⁴

Noninterest-bearing involuntary reserves are also difficult to defend on equity grounds. With such reserves earning no interest, depository institutions and their customers are taxed while nondepository institutions and their customers are not. Yet the two groups are essentially similar. A guiding tenet of U.S. tax policy has always been to tax equals equally. Paying interest on reserves would remove the unequal tax, negating any associated inequity.

If interest were paid on reserves, the reserve tax would be shifted to the public at large. Because Treasury revenues would be lower, the federal deficit would be higher. If the Treasury elected to meet the shortfall by raising taxes, all taxpayers, not just depository institution shareholders, deposit holders, and borrowers, would pay. If the Treasury elected instead to simply let the deficit increase, all individuals affected by the larger deficit (through its possible impact on interest rates or inflation), not just depository institution shareholders, deposit holders, and borrowers, would pay. Either way, the previously narrow reserve tax would be more broadly felt.

Prior justification

In an earlier era, before passage of the Monetary Control Act of 1980 and the Garn-St Germain Act of 1982, there may have appeared to have been some justification for not paying interest on involuntary reserves.

¹³ Harry G. Johnson provides a general discussion of efficiency considerations in "Problems of Efficiency in Monetary Management," *Journal of Political Economy*, September/October 1968, pp. 972-981.

¹⁴ According to standard microtheory, the reserve tax (and hence the proceeds of its removal) is completely passed on to depositors if the banking industry is competitive and subject to constant costs; it is shared by depositors and the banks if the banking industry is monopolistic or oligopolistic, or if the industry is subject to rising costs. See Johnson, "Problems of Efficiency . . ." p. 977.

Even then, though, the rationale appeared weak.

As noted earlier, the Monetary Control Act instituted explicit pricing of Federal Reserve services. Prior to that, Federal Reserve member banks received free services, such as check clearing and collection, automatic clearinghouse services, and wire transfers. It was sometimes argued that noninterest-bearing reserves could be viewed as payment for these services. This argument had limited appeal, however, because figures indicated that the interest earnings foregone by the member banks considerably exceeded the Federal Reserve's cost of providing these services.¹⁵ The point was further made that even if the figures had more closely matched, such a payment mechanism was inherently inefficient. Because Federal Reserve services were not explicitly priced, banks had an incentive to overutilize them, resulting in a waste of Federal Reserve resources.

Another possible justification for not paying interest on reserves centered on deposit rate ceilings. Only recently, with the passage of the Monetary Control Act and the Garn-St Germain Act, have certain deposits been permitted to pay market rates of interest; prior to that, ceilings had been set by law. It could be argued that, because banks' costs of funds were artificially low in periods of rising interest rates while at the same time these banks were able to invest these funds at market rates, noninterest-bearing reserves served to hold down artificially high profits, presumably redistributing them (via lower economy-wide taxes) to consumers at large. Although this argument may have appeared to have some merit, it no doubt overstated the extent to

which ceilings held down the cost of acquiring funds. Banks competed for deposits in other ways, among them, by offering free services, free gifts, and special borrowing privileges. And, more importantly, to the extent that the ceilings were effective in limiting true deposit yields, banks probably had some difficulty attracting funds, which would have tended to depress their profitability.

Treasury revenue losses

Whatever its possible merits or demerits in an earlier time, payment of interest on involuntary reserves today would appear consistent with overall equity and efficiency. But what would be the expense to the U.S. Treasury of moving to an interest-bearing regime?

What would be the expense to the U.S. Treasury if the Federal Reserve paid interest on reserves?

As already noted, the Federal Reserve turns over a sizable portion of its earnings to the Treasury. In 1983, for example, Federal Reserve payments to the Treasury totaled \$14.2 billion, representing 2.2 percent of total federal government receipts.¹⁶ If the Federal Reserve paid a market-related rate of interest on involuntary reserves, the amount of transferred earnings would of course decline. The net decline in Treasury revenues would not be as large as the gross interest outlay, though, because bank profits, shareholder dividends, and depositor interest income would all rise, generating some offsetting tax revenues. Still, the net loss to the Treasury could be signifi-

¹⁵ See, for example, Ira Kaminow, "Why Not Pay Interest on Member Bank Reserves?" *Business Review*, Federal Reserve Bank of Philadelphia, January 1975, p. 5.

¹⁶ Figures are taken from *1983 Annual Report of the Board of Governors of the Federal Reserve and Survey of Current Business*.

cant. But it is worth emphasizing again that that *loss* would be a manifestation of the efficiency and equity *gains* brought on by the removal of the reserve excise tax.

It has been estimated that paying interest on reserves in accordance with the proposed Barnard-Heinz legislation—that is, paying a market-related rate of interest on the reserve balances held against nonpersonal MMDA's and Super NOW accounts—would at present produce an annual net Treasury revenue loss of \$160 million. By 1988, at which time all regular NOW accounts will have become ceiling-free Super NOW accounts and all Monetary Control Act reserve requirements will have been fully phased in, the annual net revenue loss would be in the vicinity of \$1.0 to \$1.3 billion. If a market-related rate of interest were paid on the reserve balances of all reservable deposits, including demand deposits, the revenue loss today would be about \$1.2 billion; by 1988 it would likely be \$2.2 billion.¹⁷

Monetary Policy Issues

Just as paying interest on reserves would have important implications for economic efficiency and equity, so would it have implications for monetary policy. Unlike its impact on efficiency and equity, however, its impact on monetary policy would not be unambiguously favorable. Paying interest on reserves would introduce complexities and potential problems for monetary policy because it could complicate the ability to hit monetary targets, could result in undesirable interest rate volatil-

ity, and could even call into question the overall usefulness of monetary targeting as a policy strategy.¹⁸

Paying interest on a limited basis: The Barnard and Heinz bills

Short-run considerations. The Barnard and Heinz bills recently before Congress would authorize the Federal Reserve to pay a market-related rate of interest on reserve balances held against nonpersonal MMDA's and Super NOW accounts. Because such payment would effectively remove the reserve tax on nonpersonal MMDA's and Super NOW accounts, yields on these accounts would probably rise.¹⁹

¹⁸ It is assumed throughout this section that the Federal Reserve has chosen the narrow money stock M1 as an intermediate target, believing that there is a predictable relationship between M1 and the ultimate goal variables, inflation and real income growth. As numerous authors have noted, adoption of a monetary aggregate as an intermediate target implies that policymakers believe that most disturbances to the economy are income disturbances, not portfolio disturbances. See, for example, William Poole, "Optimal Choice of a Monetary Policy Instrument in a Simple Stochastic Macro Model," *Quarterly Journal of Economics*, 84, May 1970, pp. 197-216. It is also assumed that, as in the Barnard and Heinz bills, interest is paid only on required reserves held in reserve balances at Federal Reserve banks, the intent being to approximate involuntary holdings. There are other ways to pay interest on reserves, of course. One way, an approach taken by many states prior to the Monetary Control Act, would be to allow depository institutions to count as reserves interest-bearing securities purchased on the open market. The problem with this arrangement is that, although reserves would still provide an upper limit on total deposit expansion, the Federal Reserve would lose control over this upper limit because it would lose control over the total amount of reserves in the system (assuming no non-security reserves had to be held). The alternative approach, maintaining the present reserve structure but paying explicit interest on those reserves, would avoid this problem.

¹⁷ Estimates of the Treasury revenue impact of payment of interest on certain reserves have been provided to the Congress by the Board of Governors of the Federal Reserve System on various occasions. Estimates cited in the text are updates of estimates provided Representative Fauntroy in a letter from Chairman Volcker dated November 8, 1983.

¹⁹ Again (see note 11), strictly speaking, such payment would remove the reserve tax only if the Federal Reserve paid exactly the market rate. The Heinz bill, with its contemporaneous payment, probably comes closer to doing this than the Barnard bill, with its lagged payment. Still, as discussed later in the article, determination of "the" market rate is a difficult issue, not at all straightforward.

Yields on nonpersonal MMDA's would probably rise only marginally, however, since nonpersonal MMDA's are presently subject to a reserve requirement of only 3 percent. And what little change did take place would probably have little effect on M1. M1 might decline slightly as a portion of the funds stored in corporate demand deposits (a component of M1) moved into the more attractive nonpersonal MMDA's (a component of M2 but not of M1). Still, short-run distortions to M1 would likely be minimal, with a minimal impact on the controllability of M1.

Paying interest on reserves would introduce complexities and potential problems for monetary policy.

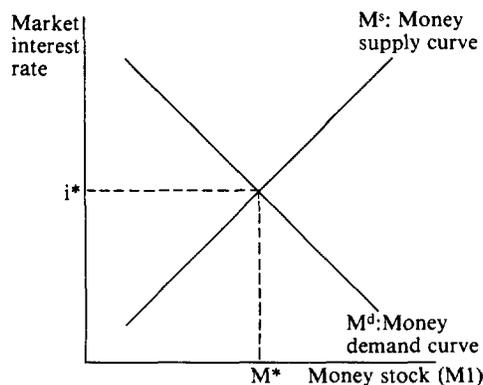
Yields on Super NOW accounts, in contrast, would probably register greater gains, since Super NOW's are presently reservable at 12 percent. And these gains could cause transitional problems for monetary control. As yields on Super NOW accounts (a component of M1) approached yields on nonreservable personal MMDA's and MMMF's (non-M1 accounts), there could be a substantial shift of funds from the latter into the former. The resulting acceleration in M1 growth would temporarily complicate monetary policy by altering the relationship between M1 and the goal variables, inflation and real income. These difficulties would persist only over the short run, however, because eventually policy-makers would identify the new relationship between M1 and the goal variables.

Long-run considerations. The long-run effects on monetary policy of the Barnard and Heinz bills are potentially more far-reaching but difficult to gauge. As in the short run, the nonpersonal MMDA provision of the bills

would have little impact. The Super NOW provision, in contrast, could have a marked impact. Money demand relationships could be altered, with implications for monetary control and interest rate volatility.

To examine the issues involved, it is useful to adopt a simple money demand-money supply framework like that depicted in Figure 1.

FIGURE 1



Market interest rates are measured on the vertical axis and M1 money stock levels are measured on the horizontal axis. M^* is the equilibrium money stock, assumed to be the Federal Reserve's M1 target deemed consistent with sustainable real growth and low inflation. The equilibrium interest rate is denoted by i^* .

In this framework, money can deviate from its target level M^* either because of shifts in the money supply curve or because of shifts in the money demand curve. The money supply curve can shift, for example, as a result of changes in banks' desired holdings of excess reserves or discount window borrowings. Similarly, the money demand curve can shift either because of a change in the transactions demand for money due, say, to higher or lower income growth or to a change in the demand for money versus other assets in the public's investment portfolio.

From a monetary policy standpoint, it is important to distinguish between these two types of money demand shifts. In the case of an income or transactions disturbance, the Federal Reserve would want to offset the effect of the disturbance on money growth. Thus, if money growth exceeded target, the Federal Reserve would tighten policy to return money to target. In contrast, if a shift in money demand resulted from a portfolio disturbance, the Federal Reserve would not want to return money to target; indeed, it would abandon close monetary control. Adherence to monetary targeting in the presence of portfolio disturbances could cause unnecessary fluctuations in income and prices.²⁰

Paying interest on Super NOW reserves in accordance with the Barnard and Heinz bills could affect the likelihood and magnitude of portfolio disturbances. On the one hand, it could cause *fewer* such disturbances, making it easier for the Federal Reserve to interpret movements away from the desired money stock, M^* . Because such payment would remove the reserve tax on Super NOW's, narrowing or even eliminating the artificial spread between yields on Super NOW's (a component of M1) and yields on alternative nonreservable instruments outside M1, there would be less incentive for such alternative instruments to arise. Consequently, there would be fewer unexpected movements of funds out of M1, that is, fewer unexpected shifts in the money demand curve.²¹ Devia-

²⁰ In the case of a portfolio disturbance, the Federal Reserve would want to change its money stock target in order to return to the original interest rate level.

²¹ The argument that reserve requirements induce alternative nonreservable instruments, and thus impede monetary control, has been advanced by a number of authors. See, for example, Stuart I. Greenbaum, "Legal Reserve Requirements: A Case Study in Bank Regulation," *Journal of Bank Research*, Spring 1983, pp. 59-69.

tions from the desired money stock, M^* , could more confidently be attributed to income disturbances or money supply disturbances, and offsetting open market operations could more confidently be undertaken.

On the other hand, paying interest on Super NOW reserves could cause *more* portfolio disturbances in money demand, making it more difficult for the Federal Reserve to interpret movements from M^* . Because yields on Super NOW accounts would tend to rise, a larger proportion of funds in M1 would become savings funds or investment funds as opposed to pure transactions funds. Since investors might be expected to move these funds rapidly in and out of M1 as investment opportunities changed throughout the economy, one might expect to see more shifts in the money demand curve.²² This added instability in the money demand curve would make deviations from M^* more difficult to interpret.

Regardless of whether payment of interest on Super NOW reserves increased or decreased the number of shifts in the money demand curve, it very likely would make the money demand curve steeper.²³ This, too, would have implications for monetary control, as well as for interest rate volatility.

By removing the reserve tax, paying interest on Super NOW reserves would permit Super NOW yields to move more closely with mar-

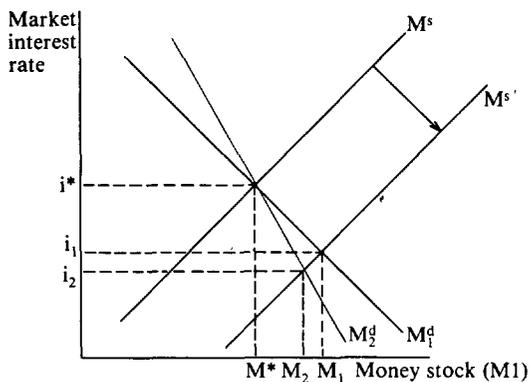
²² Richard G. Davis makes this point in "Monetary Targeting in a Zero Balance World," in *Interest Rate Deregulation and Monetary Policy*, Federal Reserve Bank of San Francisco, 1982, p. 28. Donald Kohn has expressed similar thoughts, paraphrased by David E. Lindsey in "Comment on How Regulations Affect Monetary Control," *Journal of Money, Credit, and Banking*, November 1982, Part 2, p. 791.

²³ The negative slope of the money demand curve reflects the response of households' and firms' demand for money to changes in the opportunity cost of holding money. Opportunity cost is usually measured as the difference between the rate of return on other financial assets (proxied here by the market interest rate) and the rate of return on money. As the opportunity cost of holding money increases, the demand for money decreases.

ket interest rates. This, in turn, would cause the demand for Super NOW accounts to become less interest sensitive because the opportunity cost of holding Super NOW accounts would now not rise as much when market interest rates rose. Less interest sensitivity in the demand for Super NOW's would translate into less interest sensitivity for M1 as a whole. As a result, the demand curve for M1 would become steeper, so that a given increase in market interest rates would be associated with a smaller decline in the amount of money that people would want to hold.

With a steeper money demand curve, a given shift in the money supply curve would cause a smaller deviation from M^* . Thus, in this situation, monetary control would be improved. This point is illustrated in Figure 2.

FIGURE 2

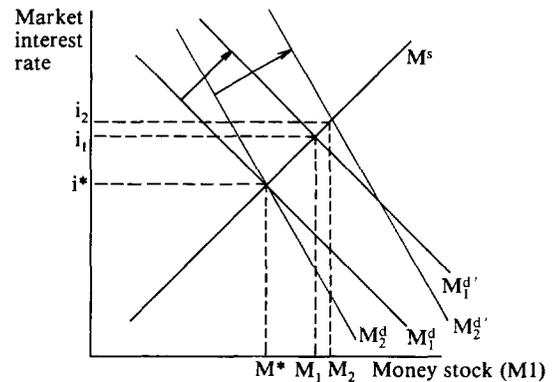


M_1^d is assumed to be the money demand curve prior to payment of interest on Super NOW reserves, while M_2^d is assumed to be the money demand curve after such payment. Suppose the money supply curve, M^s , shifts to the right as a result, say, of depository institutions unexpectedly deciding to hold fewer excess reserves or unexpectedly deciding to increase their borrowings at the discount window. With the old money demand curve, the

new equilibrium money stock would be M_1 . With the new money demand curve, the new equilibrium money stock would be M_2 . Thus, the less interest-sensitive money demand curve would cause smaller deviations from M^* , improving monetary control.

Monetary control would be worsened, however, for shifts in the money demand curve. This point is illustrated in Figure 3. As before,

FIGURE 3



M_1^d is assumed to be the money demand curve prior to payment of interest on Super NOW reserves and M_2^d is assumed to be the money demand curve after such payment. A rightward shift in the old money demand curve generates the new equilibrium money stock M_1 , while an identical shift in the new money demand curve generates M_2 , which is further away from M^* than M_1 . Thus, the less interest-sensitive money demand curve causes greater deviations from M^* , worsening monetary control.²⁴

While the monetary control implications of paying interest on reserves are ambiguous, the

²⁴ If the money demand shift in question was due to a portfolio disturbance, the larger deviation from M^* would really be a moot point. As noted earlier (note 20), in the case of a portfolio shift, the Federal Reserve would want to change its money stock target in order to get back to the original interest rate.

interest rate implications are clear. Payment of interest on reserves would increase the degree of interest rate volatility for both money demand and money supply disturbances. As indicated in Figure 2, a rightward shift in the money supply curve, M^s , no longer generates the new equilibrium interest rate i_1 , but the lower rate i_2 . Similarly, in Figure 3, a rightward shift in the old money demand curve M_1^d generates the new equilibrium rate i_1 , but an identical shift in the new money curve M_2^d generates the higher rate i_2 . In both cases, the less interest-sensitive money demand curve causes greater deviations from i^* , increasing interest rate volatility.²⁵

Paying interest on a universal basis

All of the potential advantages and disadvantages of paying interest on Super NOW reserves would intensify in 1986 when, under mandate of the Monetary Control Act, all regular NOW accounts will effectively become Super NOW accounts. Super NOW accounts will overnight represent a much higher percentage of the funds in M1. Accordingly, controllability of M1 and volatility of interest rates would become that much more sensitive to the Barnard-Heinz provisions.

The remaining deposit components of M1, namely, demand deposits and non-NOW other checkables, would remain unaffected, however, still subject to rate ceilings or prohibitions on explicit interest and still subject to noninterest-bearing reserve requirements.

²⁵ The discussion in the text has focused on the potential effects of payment of interest on reserves on the money demand curve. Presumably, paying interest on reserves could also have an effect on the money supply curve, either by altering the stability of excess reserves or borrowings behavior or by altering their interest sensitivity. More so than potential money demand effects, however, potential money supply effects are difficult to determine.

What would happen if at some point these restrictions were removed as well? That is, what would be the implications of moving beyond the Barnard-Heinz world and into a world where interest were paid on the reserves behind *all* deposits?

Not surprisingly, matters would become even more complicated. Several key issues would come to the fore, among them the selection of a specific payment rule, the determination of an appropriate benchmark market rate, and the accurate measurement of involuntary reserves.

Consider first the selection of a specific payment rule. Depending on what type of rule was employed, the money demand curve could become highly interest inelastic, posing major difficulties for monetary targeting. For example, some authors have argued that if interest were paid at a rate that was always a given level (a constant spread) below the market rate, under certain conditions the wedge between market rates and the rate paid on money would become completely insensitive to changes in market rates. As a result, the demand for money would become completely interest inelastic.²⁶

A completely inelastic money demand function would pose major problems for monetary control. In such a world, the demand for money could be influenced only through changes in income, not through changes in interest rates. Controlling the money supply through changes in income would make little sense, however, given that money was intended to be an intermediate target for income. That is, policymakers would find

²⁶ See David E. Lindsey, "The Implications of Removing the Demand Deposit Rate Prohibition for Monetary Control and the Conduct of Monetary Policy," Special Studies Paper No. 104, Division of Research and Statistics, Federal Reserve Board, February 10, 1978, especially pp. 11-12, and Richard G. Davis, "Monetary Targeting....," pp. 33-40.

themselves in the incongruous position of trying to control income by controlling the money stock, which in turn could only be controlled by income. Monetary targeting would cease to be a useful policy strategy.

Other payment rules could be devised that would leave some interest sensitivity in money demand. But this worst case scenario does illustrate vividly the stakes involved in moving beyond the Barnard-Heinz bills.^{27,28}

A second issue that would take on added importance in a world of universal payment of interest on reserves would be the determination of an appropriate benchmark market interest rate. Assuming that a market-related payment rule were chosen, one would still be left with the question, which market rate should the rate paid on reserves be tied to? Depending on what market rate was used, depository institutions might have an incentive to alter their behavior, complicating monetary policy.

Suppose, for example, that “the” market rate was taken to be the rate earned on the Federal Reserve’s security portfolio and that the rule was to pay exactly this rate. Since the Federal Reserve’s portfolio typically contains

some long-term bonds, depository institutions might be expected to bid aggressively for reserves when short-term rates were falling relative to long-term rates. That is, they might take actions to acquire more reservable deposits because the interest being paid on the reserves backing these deposits would be more attractive relative to alternative short-term assets.²⁹ The opposite reaction might be expected when short-term rates were rising. Similar complications could arise with respect to the timing of “the” market rate. Paying a lagged market rate on reserves, for example, could induce aggressive bidding for reserves when interest rates were falling. When rates were rising, on the other hand, institutions would have less incentive to hold reserves. As an interest-bearing asset, reserve holdings would be more sensitive to market forces, potentially causing more disruptive shifts in the money supply curve.

A third issue that would come to the fore would be the accurate measurement of involuntary reserves. To remove the reserve tax, interest should be paid only on involuntary reserves. Inadvertent payment of interest on voluntary reserves would have the effect of subsidizing depository institutions and their customers; instead of having competitive parity with nondepository institutions, depository institutions would have an advantage. But accurate measurement of involuntary reserves is not straightforward. For example, are all reserve balances at Federal Reserve banks involuntary reserves, as implicitly assumed in the Barnard-Heinz bills and elsewhere in this article? Or would depository institutions elect to hold some of these balances anyway, in

²⁷ The worst case scenario also implicitly assumes away currency holdings. As a nonreservable component of M1, currency would be unaffected by payment of interest on reserves and would thus remain sensitive to changes in market interest rates. The demand for M1 as a whole, then, would retain at least some interest sensitivity. Whether the magnitude of this responsiveness would be sufficient to warrant continued adherence to monetary targeting, however, is questionable.

²⁸ The payment rule issue was largely sidestepped in our discussion of the monetary control implications of the Barnard-Heinz bills because of the limited nature of those proposals. The bills would affect only one component of M1, namely, Super NOW accounts; regardless of how interest was paid on Super NOW reserves, the demand for all other components of M1 would remain interest sensitive, and hence, the demand for M1 as a whole would retain some measure of interest sensitivity. The magnitude of this overall sensitivity, of course, would depend in part on how much sensitivity remained in Super NOW demand, which in turn, would depend on the particular payment rule employed.

²⁹ Robert Laurent and Larry Mote make a similar point in “Some Neglected Problems in Paying Interest on Reserves” (unpublished Federal Reserve Bank of Chicago manuscript), noting that paying too high a rate on reserves would result in depository institutions being subsidized.

part, perhaps to clear checks? Conversely, does all vault cash necessarily represent voluntary reserves? Such questions would need to be answered if the reserve tax were to be accurately offset.

Summary

Some movement toward payment of interest on reserves appears likely in the years ahead. Although this would not be the first time that such interest was paid in the United States, it would represent a significant departure from conditions today. At present, no depository institution is permitted to hold interest-bearing reserves.

Interest-bearing reserves would enhance overall efficiency and equity. Because the reserve tax that is presently imposed on depository institutions and their customers would effectively be lifted, depository institutions would be better able to compete with nondepository institutions. This heightened competition would presumably lead to a more efficient allocation of financial resources. At the same

time, overall equity would be enhanced as the once-narrow reserve tax was shifted to the population at large.

Interest-bearing reserves would also have an effect on monetary policy. Payment of interest on the limited basis proposed in recent bills (in which interest would be paid only on the reserves held against Super NOW accounts and nonpersonal MMDA's) would very likely introduce short-run transitional problems for

It would appear prudent to proceed cautiously and slowly in moving toward payment of interest on reserves.

monetary control. The potential long-run effects of these bills are more far reaching, but their net impact is difficult to predict. Moving beyond these bills and paying interest on all reserves would complicate matters even more. Given the complexities and potential problems implied for monetary policy, it would appear prudent to proceed cautiously and slowly in moving toward payment of interest on reserves.