

# FEDERAL FUNDS: INSTRUMENT OF FEDERAL RESERVE POLICY

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Federal funds are the heart of the money market in the sense that they are the core of the overnight market for credit in the United States. Moreover, current and expected future interest rates on Federal funds are the basic rates to which all other money market rates are anchored. Understanding the Federal funds market requires, above all, recognizing that its general character has been shaped by Federal Reserve policy. From the beginning, Federal Reserve regulatory rulings have encouraged the market's growth. Equally important, the Federal funds rate has been a key monetary policy instrument. This article explains Federal funds as a credit instrument, the funds rate as an instrument of monetary policy, and the funds market itself as an instrument of regulatory policy.

## **Characteristics of Federal Funds**

Federal funds have three distinguishing features. First, they are short-term borrowings of immediately available money-funds which can be transferred between depository institutions within a single business day. The vast majority, roughly 80 percent, of Federal funds are overnight borrowings. The remainder are longer maturity borrowings known as term Federal funds. Second, Federal funds are liabilities of those depository institutions required to hold reserves with Federal Reserve Banks as defined by the Monetary Control Act of 1980. They are: commercial banks, savings banks, savings and loan associations, and credit unions. Third, historically Federal funds borrowed have been distinguished from other depository institution liabilities because they have been exempt from both reserve requirements

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and interest rate ceilings.<sup>1</sup> Depository institutions are also the most important eligible lenders in the market. The Federal Reserve, however, also allows depository institutions to classify borrowings from Federal agencies and nonbank securities dealers as Federal funds.<sup>2</sup>

The supply and demand for Federal funds arises in large part as a means of efficiently distributing reserves throughout the banking system. On any given day, individual depository institutions may be either above or below their desired reserve position. Reserve accounts bear no interest, so banks have an incentive to lend reserves beyond those required plus any desired excess. Banks in need of reserves borrow them. The borrowing and lending of reserves takes place in the Federal funds market at a competitively determined interest rate known as the Federal funds rate.

The Federal funds market also functions as the core of a more extensive overnight market for credit free of reserve requirements and interest rate controls. Nonbank depositors supply funds to the overnight market through repurchase agreements (RPs) with their banks. The overnight repurchase agreement is a collateralized one-day loan, which requires actual transfer of title on the loan collateral. Under an overnight repurchase agreement, a depositor lends

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<sup>1</sup>This distinction has been blurred since passage of the Depository Institutions Deregulation and Monetary Control Act of 1980. Reserve requirements have been eliminated on some personal time deposits and interest rate controls have been removed on all liabilities except traditional demand deposits. However, interbank deposits are still reservable and explicit interest is still prohibited on interbank demand deposits.

In addition, our definition should be qualified because Repurchase Agreements (RPs) at banks have not had interest rate ceilings or reserve requirements. Strictly speaking, RPs are not Federal funds. Yet as we explain below, their growth and use have had much in common with the Federal funds market. And the point of view of this article is that they are close functional equivalents.

<sup>2</sup>A more complete list of eligible lenders is found in Board of Governors of the Federal Reserve System, **Federal Reserve Bulletin** 56 (January 1970), p. 38.

funds to a bank by purchasing a security, which the bank repurchases the next day at a price agreed to in advance. Overnight RPs account for about 25 percent of overnight borrowings by large commercial banks. Banks use \_\_\_\_\_ to acquire funds free of reserve requirements and interest controls from sources, such as corporations and state and local governments, not eligible to lend Federal funds directly. Total daily average gross RP and Federal funds borrowings by large commercial banks are roughly 200 billion dollars, of which approximately 130 billion dollars are Federal funds. Competition for funds among banks ties the RP rate closely to the Federal funds rate. Normally, the RP rate is around 25 basis points below the Federal funds rate; the lower rate being due to the reduced risk and additional transaction cost of arranging an RP.

### **Methods of Federal Funds Exchange**

Federal funds transactions can be initiated by either the lender or borrower. An institution wishing to sell (loan) Federal funds locates a buyer (borrower) directly through an existing banking relationship or indirectly through a Federal funds broker. Federal funds brokers maintain frequent telephone contact with active funds market participants and match purchase and sale orders in return for a commission. Normally, competition among participants ensures that a single funds rate prevails throughout the market. However, the rate might be tiered, higher for a bank under financial stress. Moreover, banks believed to be particularly poor credit risks may be unable to borrow Federal funds at all.

Two methods of Federal funds transfer are commonly used. The first involves transfers conducted between two banks. To execute a transaction, the lending institution authorizes the district Reserve Bank to debit its reserve account and to credit the reserve account of the borrowing institution. Fedwire, the Federal Reserve System's wire transfer network, is employed to complete a transfer.

The second method simply involves reclassifying respondent bank demand deposits at correspondent banks as Federal funds borrowed. Here, the entire transaction takes place on the books of the correspondent. To initiate a Federal funds sale, the respondent bank simply notifies the correspondent of its intentions. The correspondent purchases funds from the respondent by reclassifying the respondent's demand deposits as "Federal funds purchased." The respondent does not have access to its deposited money as long as it is classified as Federal funds on

the books of the correspondent. Upon maturity of the loan, the respondent's demand deposit account is credited for the total value of the loan, plus an interest payment for use of the funds. The interest rate paid to the respondent is usually based on the nationwide effective Federal funds rate for the day. In practice, the correspondent frequently resells the reclassified funds in the Federal funds market itself, earning the Federal funds rate in the process.

### **Types of Federal Funds Instruments**

The most common type of Federal funds instrument is an overnight, unsecured loan between two financial institutions. Overnight loans are, for the most part, booked without a formal, written contract. Banks exchange verbal agreements based on any number of considerations, including how well the corresponding officers know each other and how long the banks have mutually done business. Brokers play an important role evaluating the quality of a loan when no previous arrangement exists. Formal contracting would slow the process and increase transaction costs. The verbal agreement as security is virtually unique to Federal funds.

In some cases Federal funds transactions are explicitly secured. In a secured transaction the purchaser places government securities in a custody account for the seller as collateral to support the loan. The purchaser, however, retains title to the securities. Upon termination of the contract, custody of the securities is returned to the owner. Secured Federal funds transactions are sometimes requested by the lending institution.

Continuing contract Federal funds are overnight Federal funds loans which are automatically renewed unless terminated by either the lender or borrower. This type of arrangement is typically employed by correspondents who purchase overnight Federal funds from a respondent bank. Unless notified by the respondent to the contrary, the correspondent will continually roll the interbank deposit into Federal funds, creating a longer term instrument of open maturity. The interest payments on continuing contract Federal funds loans are computed from a formula based on each day's effective Federal funds rate. When a continuing contract arrangement is made, the transactions costs (primarily brokers fees and funds transfer charges) of doing business are minimized because the entire transaction is completed on the books of the correspondent bank. In fact, additional costs are incurred only when the agreement is terminated by either party.

## Determination of the Federal Funds Rate

To explain the determinants of the Federal funds rate, we present a simple model of the bank reserve market which incorporates the actions of both private banks and the Federal Reserve.<sup>3</sup> In this model, the funds rate is competitively determined as that value which equilibrates the aggregate supply and demand for banking system reserves.

The aggregate demand for bank reserves arises primarily from the public's demand for checkable deposits against which banks hold reserves. The aggregate quantity of checkable deposits demanded by the public falls as money market interest rates rise, raising the opportunity cost of holding checkable deposits. Hence, the derived demand for bank reserves is negatively related to market interest rates. The aggregate demand schedule for bank reserves is shown in Figure 1, where  $f$  is the funds rate and  $R$  is aggregate bank reserves.

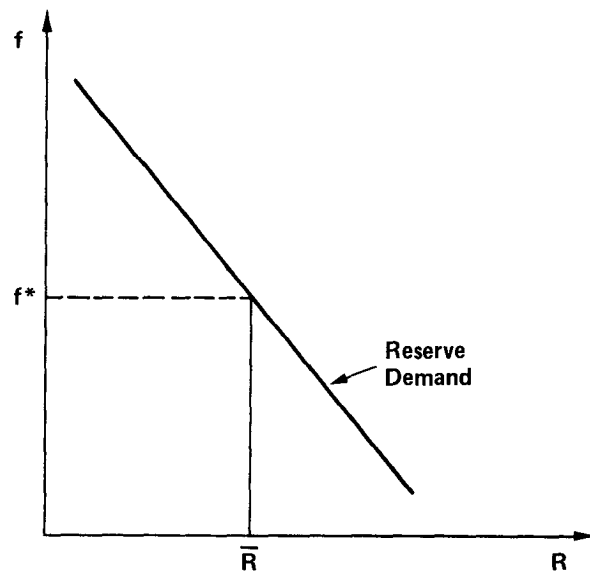
The aggregate stock of reserves available to the banking system is determined by the Federal Reserve. In principle, the Federal Reserve could choose to provide the banking system with a fixed stock of reserves. If the Federal Reserve chose this strategy, a fixed stock of reserves,  $\bar{R}$ , would be provided through Federal Reserve purchases of government securities. The resulting funds rate would be  $f^*$  in Figure 1, or the rate which equilibrates the aggregate supply and demand for bank reserves.

Such a Federal Reserve operating procedure, known as total reserve targeting, is the focus of hypothetical textbook discussions of monetary policy. The hallmark of total reserve targeting is that shifts in the market's demand for reserves are allowed to directly affect the funds rate. In practice, however, the Federal Reserve has never targeted total reserves. Instead, it has adopted operating procedures designed to smooth funds rate movements against unexpected reserve demand shifts.<sup>4</sup> The simplest smoothing procedure is Federal funds rate targeting, which involves selecting a narrow band, often fifty basis points or less, within which the funds rate is allowed to fluctuate. Explicit Federal funds rate targeting was employed by the Federal Reserve during the 1970s.

<sup>3</sup>Goodfriend [1982], pp. 3-16.

<sup>4</sup>Goodfriend [1986], contains a theoretical rational expectations model of interest rate smoothing and discusses its implications for money stock and price level trend-stationarity.

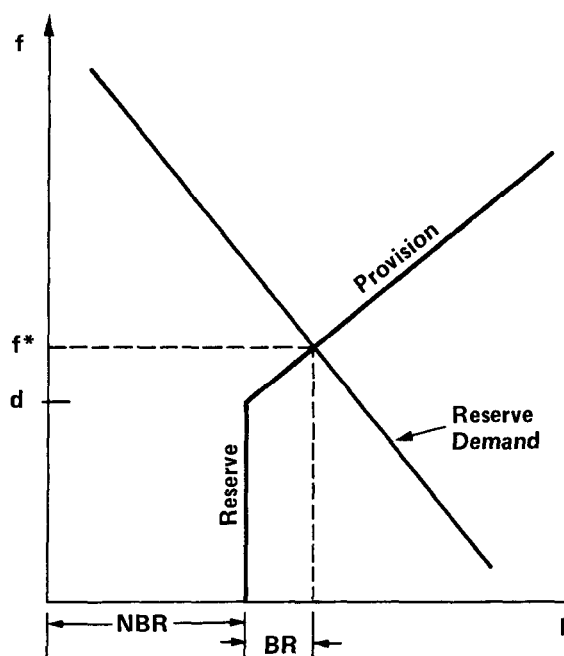
Figure 1



The funds rate can be targeted directly by supplying, through open market purchases of U. S. Treasury securities, whatever aggregate reserves are demanded at the targeted rate. For example, if the Federal Reserve chose to peg the funds rate at  $f^*$  in Figure 1, it would have to accommodate a market demand for reserves of  $\bar{R}$ . In principle, either total reserve or funds rate targeting could yield the ex ante desired funds rate,  $f^*$ , so long as the Federal Reserve had precise knowledge of the position of the reserve demand locus. There is, however, an important difference between these procedures. With a total reserve target, market forces directly influence the funds rate. They have no direct effect under a funds rate target. Instead, they affect the volume of total reserves.

Federal Reserve operating procedures become more complicated when reserves are provided by bank borrowing at the Federal Reserve discount window. Figure 2 shows the relationship between reserve provision and the Federal funds rate when there is discount window borrowing. The locus has a vertical and a nonvertical segment because reserves are provided to the banking system in two forms, as nonborrowed and as borrowed reserves. Nonborrowed reserves (NBR) are supplied by the Federal Reserve through open market purchases, while borrowed reserves (BR) are provided by discount window borrowing.

Figure 2



The distance between the vertical segment of the reserve provision locus and the vertical axis is determined by the volume of nonborrowed reserves. The reserve provision locus is vertical up to the point where the funds rate ( $f$ ) equals the discount rate ( $d$ ) because when the funds rate is below the discount rate, banks have no incentive to borrow at the discount window. Conversely, when the funds rate is above the discount rate borrowers obtain a net saving on the explicit interest cost of reserves. This net saving consists of the differential ( $f-d$ ) between the funds rate and the discount rate. In administering the discount window the Federal Reserve imposes a noninterest cost of borrowing which rises with volume. In practice, higher borrowing increases the likelihood of triggering costly Federal Reserve consultations with bank officials, Banks tend to borrow up to the point where the marginal expected non-interest cost of borrowing just offsets the net interest saving. Consequently, borrowing tends to be greater the larger the spread between the funds rate and the discount rate. Hence, the reserve provision locus is positively sloped for funds rates above the discount rate.

Discount window borrowing plays a role in determining the funds rate whenever the Federal Reserve restricts the supply of nonborrowed reserves so that the funds rate exceeds the discount rate. In that case, the banking system's demand for reserves is

partially satisfied by borrowing at the discount window. If the Federal Reserve chooses to keep nonborrowed reserves fixed in response to an unexpected shift in either reserve demand or the demand for discount window borrowing, then the procedure is called nonborrowed reserve targeting. Nonborrowed reserve targeting is a kind of cross between funds rate and total reserve targeting in the sense that the reserve provision locus is diagonal, rather than horizontal or vertical, thereby partially smoothing the funds rate against aggregate reserve demand shifts. The Federal Reserve employed nonborrowed reserve targeting between October 1979 and the fall of 1982.

By contrast, the Federal Reserve may choose to respond to a shift in reserve demand or the demand for discount window borrowing by adjusting the provision of nonborrowed reserves to keep aggregate discount window borrowing unchanged. The latter procedure, known as borrowed reserve targeting, is closely related to funds rate targeting. This is because, for a given level of the discount rate, targeting borrowed reserves determines the funds rate except for unpredictable instability due to shifts in the demand for discount window borrowing. Borrowed reserve targeting has been the predominant operating procedure since late 1982. An analytically similar procedure, known as free reserve targeting, was employed throughout the 1920s and in the 1950s and '60s.<sup>5</sup>

As can be seen in Figure 2, Federal Reserve discount rate policy plays an important role in determining the funds rate when  $f$  is greater than  $d$  under either nonborrowed or borrowed reserve targeting. As is easily verified diagrammatically, with a borrowed reserve target a discount rate adjustment changes the funds rate one-for-one. The effect is smaller with nonborrowed reserve targeting. Keep in mind, however, that the discount rate would be irrelevant for determination of the funds rate if the Federal Reserve were to supply a stock of nonborrowed reserves sufficiently large so that the funds rate fell below the discount rate, and banks had no incentive to borrow at the discount window. It is also irrelevant when the Federal Reserve targets the funds rate directly. Discount rate adjustments have played an important role since October 1979 in both the nonborrowed and borrowed reserve targeting periods, as they did in the 1920s, '50s and '60s under free

<sup>5</sup>Free reserves are defined as excess reserves minus borrowed reserves, or equivalently nonborrowed reserves minus required reserves. Net borrowed reserves are negative free reserves.

reserve targeting. In contrast, discount rate adjustments had no direct impact on the funds rate when the funds rate itself was targeted during the 1970s. In that period, however, the announcement effect associated with discount rate changes sometimes signaled Federal Reserve intentions to change the funds rate target in the future.

**The Federal Reserve, the Federal Funds Rate, and Money Market Rates**

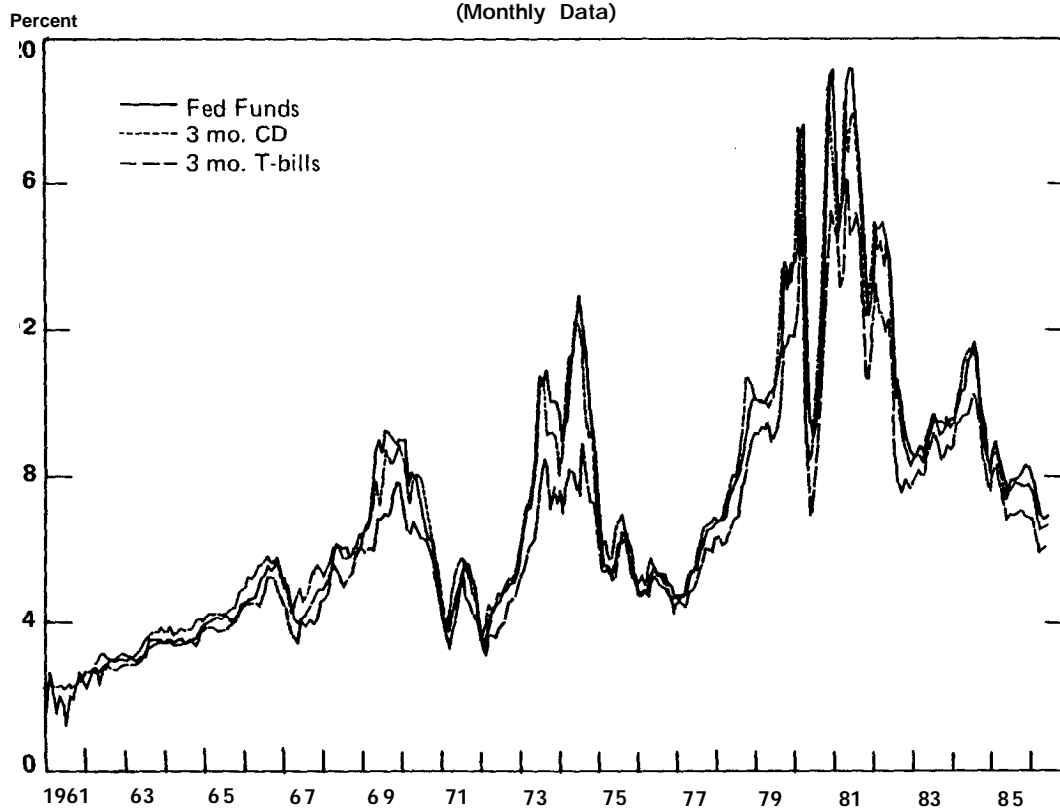
The Federal Reserve’s operating procedures in the reserve market have varied greatly over the years. As we have seen, however, the Federal Reserve has always exercised a dominant influence on the determination of the Federal funds rate through setting the terms upon which it makes nonborrowed and borrowed reserves available to the banking system.

The funds rate is the base rate to which other money market rates are anchored. Market participants determine money market rates according to their view of current and expected future Federal

funds rates. In practice, because Federal Reserve monetary policy smooths funds rate movements, such views depend heavily on anticipated Federal Reserve policy intentions. As an example, consider bank certificates of deposit (CDs), which are generally arranged for a few months. CD rates, adjusted for reserve requirements, are roughly aligned with an average of expected future funds rates over the term of the CD. Banks can raise funds either through CDs or Federal funds and therefore choose whichever option is expected to be cheaper. Likewise, corporations considering a Treasury bill purchase have the option of lending their funds daily over the term of the bill at the overnight repurchase rate, which is closely tied to the Federal funds rate. As shown in Chart 1, arbitrage such as described above among alternative money market instruments generally keeps their yields in line, abstracting from differences due to interest rate spreads resulting from transaction costs and risk differentials.

Such considerations on the part of market participants make current and expected future Federal

Chart 1  
**SHORT-TERM INTEREST RATES**  
(Monthly Data)



Source: *Federal Reserve Bulletin*.

Reserve policy toward the Federal funds rate the key determinant of money market rates in general. Having made this point, we must realize that it provides only a partial explanation of money market rates. A full explanation requires an understanding of Federal Reserve monetary policy. In particular, economy-wide variables such as unemployment and inflation do ultimately play an important role in the evolution of the funds rate through their effect on the Federal Reserve's monetary policy actions over time.

### **History of the Federal Funds Market**

The birth of widespread trading in Federal funds is roughly pinpointed by a New *York Herald Tribune* article appearing in April 1928.<sup>6</sup> That article described the growing importance of Federal funds trading in the money market, reporting a typical daily volume of \$100 million.<sup>7</sup> The primary purpose of the article was to announce the inclusion of the Federal funds rate in the Tribune's daily table of money market conditions.

As the Tribune described it, Federal funds transactions involved the exchange of a check drawn on the clearing house account of the borrowing bank for a check drawn on the reserve account of the lending bank. The reserve check cleared immediately upon presentation at the Reserve Bank, while the clearinghouse check took at least one day to clear. The practice thereby yielded a self-reversing, overnight loan of funds at a Reserve Bank; hence the name, Federal funds. By 1930, the means of trading Federal funds had expanded to include book-entry and wire transfer methods.<sup>8</sup>

The emergence of Federal funds trading constituted a financial innovation allowing banks to minimize transactions costs associated with overnight loans. By their very nature, Federal funds could be lent by member banks only, since only member banks held reserves at Reserve Banks. The beneficiaries on the borrowing side were also member banks, which could receive funds immediately through their Reserve Bank accounts. Federal funds offered member banks a means of avoiding reserve requirements on interbank deposits if they could be classified as "money borrowed" rather than deposits.

In September 1928 the Federal Reserve Board ruled that Federal funds should be classified as non-reservable money borrowed.<sup>9</sup> A further decision in 1930 found that Federal funds created by book-entry and wire transfer methods should also be nonreservable. These decisions provided the initial regulatory underpinnings for the Federal funds market of today. In both the 1925 and 1930 rulings, the Board indicated that it viewed Federal funds as a substitute for member bank borrowing at the Federal Reserve discount window. It argued that because discount window borrowing was not reservable, Federal funds borrowing should not be either. This view seemed appropriate because the mechanics of a Federal funds transaction restricted participation in the Federal funds market to member banks alone.

The Federal Reserve Board's decision to make Federal funds nonreservable is best understood as a means of encouraging the Federal funds market as an alternative to the two conventional means of reserve adjustment then in use: the discount window and the call loan market. Following World War I, aggregate Federal Reserve discount window borrowing generally exceeded member bank reserves. There was relatively little Federal Reserve discouragement of continuous borrowing at the window. Member banks could adjust their reserve positions directly with the Federal Reserve by running discount window borrowing up or down. In addition, banks had a highly effective means of reserve adjustment in the call loan market. Since the middle of the nineteenth century, banks had made a significant fraction of their loans to stockbrokers, secured by stock or bond collateral on a continuing contract, overnight basis.<sup>10</sup> A bank could obtain reserves on demand by calling in its broker loans, and it could readily lend excess reserves by increasing its supply of call loans. The call loan market was the functional equivalent of the Federal funds market for reserve adjustment purposes.

By 1928, however, the Federal Reserve had begun discouraging both the discount window and the call loan market as a means of reserve adjustment. Since 1922, substantial open market purchases had reduced borrowed reserves to less than one-third of total reserves.<sup>11</sup> Moreover, in an apparent effort to further

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<sup>6</sup> *New York Herald Tribune* [1928].

<sup>7</sup> Willis [1970], p. 12, contains evidence of market activity as far back as 1922.

<sup>8</sup> Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin* 16 (February 1930), p. 81.

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<sup>9</sup> Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin* 14 (September 1928), p. 656.

<sup>10</sup> See chapters 7 and 13 in Myers [1931].

<sup>11</sup> Board of Governors of the Federal Reserve System, *Banking and Monetary Statistics, 1914-1941*, pp. 368-96.

reduce the highly visible subsidy that member banks appeared to receive at the window, the Federal Reserve began actively discouraging continuous discount borrowing by individual banks<sup>12</sup> Both policy actions tended to make discount window borrowing less effective for routine reserve adjustment purposes. This was particularly true for banks with undesired reserves, because with borrowing usually low or zero, they could not dispose of reserves by running down borrowings from the discount window. In addition, the Federal Reserve came to see the call loan market as an inappropriate means of financing security speculation during the stock market boom of the late 1920s. It went so far as to bring "direct pressure" on individual banks to restrict call loans.<sup>13</sup>

Apart from providing a substitute for the discount window and call loans, Federal funds helped to offset the increased cost of membership due to the more restrictive discount policy and the discouragement of call lending. Membership in the Federal Reserve System is voluntary, and throughout most of its history the Federal Reserve has been concerned about membership attrition. One of the significant costs of membership was the requirement that banks hold more non-interest-bearing reserves than nonmember banks had to hold. In making Federal funds nonreservable, the Federal Reserve reduced a cost of membership by providing member banks a means of more effectively competing for overnight interbank deposits.

Banking legislation in the 1930s further enhanced the attractiveness of Federal funds by enabling banks to continue to pay market interest on overnight interbank balances even after the Banking Act of 1933 prohibited explicit interest on demand deposits. This benefit was to prove particularly important in the high interest rate environment of the 1960s and '70s. In order to prevent excessive use of stock market credit, the Securities and Exchange Act of 1934 authorized the Federal Reserve Board to set margin requirements for both brokers and banks, and others if necessary, on loans collateralized by listed stocks and bonds. Relatively high margin requirements, coupled with other restrictions, brought about a permanent decline in the call loan market.<sup>14</sup>

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<sup>12</sup> **Fifteenth Annual Report of the Federal Reserve Board Covering Operations for the Year 1928** (Washington: Government Printing Office, 1929), pp. 7-10.

<sup>13</sup> See the discussion in Friedman and Schwartz [1963], pp. 254-66.

<sup>14</sup> The historical margin requirement series is reported in Board of Governors of the Federal Reserve System, **Banking and Monetary Statistics**.

Extremely low interest rates in the 1930s greatly reduced the interest opportunity cost of holding excess reserves. Consequently, banks held a large volume of excess reserves during this period and Federal funds trading virtually disappeared. Federal Reserve pegging of Treasury bill rates between 1942 and 1947 rendered the funds market superfluous for reserve adjustment purposes. Under this policy the Federal Reserve freely converted Treasury securities into reserves at a fixed price. Therefore, banks could use their inventory of Treasury bills for reserve adjustment purposes just as they had used their discount window borrowings in the early 1920s. The Federal Reserve abandoned its Treasury bill price peg in 1947 and Federal funds trading gradually re-emerged as the most efficient means of reserve adjustment. Furthermore, higher market interest rates prevailing in the 1950s increased the opportunity cost of holding excess reserves, making more frequent reserve adjustment: desirable. Consequently, the volume of trading in Federal funds grew sharply, with daily average gross purchases of large reserve city banks reaching about \$800 million by the end of 1959.<sup>15</sup>

In the 1960s, the Federal funds market began to take on a broader role beyond that of reserve adjustment borrowing. Banks made more extensive use of Federal funds as a means of avoiding the reserve requirement tax and the interest prohibition on demand deposits, both of which became more burdensome as inflation and interest rates rose throughout the period. Although the Federal Reserve was responsible for enforcing both of these legislative restrictions, it had to be concerned throughout this period with offsetting the increased burden of membership in the System, and its actions during the period reflected this concern.<sup>16</sup>

The Board's first significant ruling with regard to the Federal funds market in this period was made in 1964 when it decided that a respondent bank, whether member or not, could request a correspondent member bank to simply reclassify a deposit as Federal funds, instead of having to transfer Federal funds through a Reserve Bank account.<sup>17</sup> This ruling probably had its major effect on smaller respondent

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<sup>15</sup> Board of Governors of the Federal Reserve System, **Federal Reserve Bulletin** 50 (August 1964), p. 954.

<sup>16</sup> Goodfriend and Hargraves [1983] document in detail how the membership problem dominated reserve requirement reform throughout this period.

<sup>17</sup> Board of Governors of the Federal Reserve System, **Federal Reserve Bulletin** 50 (August 1964), pp. 1000-1001.

banks, who had previously found use of Federal funds too costly for the size of their transactions. Allowing banks to simply reclassify their correspondent balances as Federal funds enabled smaller institutions to benefit from Federal funds, as large banks had already been doing. Moreover, it allowed Federal Reserve member correspondent banks to compete more effectively for interbank funds, thereby reducing a disincentive to membership. In 1986, for example, aggregate interbank reservable deposits at large commercial banks are only 25 to 30 percent of aggregate Federal funds borrowings.

Banks in the 1960s also had increasing incentive to give their nonbank depositors access to nonreservable, market interest-paying overnight loans. Nonbanks had always been prohibited from participating in the Federal funds market. But during the 1960s widespread use of overnight repurchase agreements (RPs) by banks became popular as a means of allowing their nonbank depositors to earn an overnight rate only slightly below the Federal funds rate. As mentioned earlier, the lower rate is due to the reduced risk and additional transaction cost of arranging an RP. RPs do not allow nonbanks to lend Federal funds proper. Because RPs allow nonbanks to approximately earn the Federal funds rate, however, the RP market together with the Federal funds market constitutes a unified overnight loan market.

Obviously, nonbank depositors did not need access to a relatively unregulated overnight rate for reserve adjustment purposes. But the need to facilitate reserve adjustment had been the rationale for waiving reserve requirements and interest rate controls on Federal funds. Nevertheless, the Federal Reserve chose not to make RPs at banks subject to reserve requirements or interest rate controls, probably because doing so would have worsened the competitive position of member banks relative to nonmembers and increased membership attrition.

It was necessary, however, to face up to two consequences of allowing widespread use of RPs at banks. First, RPs were not covered by deposit insurance. Second, shifts from deposits to RPs reduced the reserve requirement tax base and consequently cost the U. S. Treasury tax revenue. A 1969 Federal Reserve rule restricting eligible bank RP collateral to direct obligations of the United States or its agencies, e.g., Treasury bills, responded to those concerns. In principal, requiring RPs to be collateralized with

liabilities of the United States made them free of default risk.<sup>18</sup> In addition, restricting bank RP paper exclusively to U. S. liabilities may have enhanced the demand for U. S. debt, offsetting somewhat the loss of reserve requirement tax revenue.

A 1970 Board ruling formally clarified eligibility for participation on the lending side of the Federal funds market. Eligibility was restricted to commercial banks whether member or nonmember, savings banks, savings and loan associations, and others.<sup>19</sup> In effect, the ruling explicitly segmented the overnight bank loan market into two classes of institutions, those that could lend Federal funds, and those that were required to pay somewhat more substantial transactions costs, through RPs, to earn a rate on overnight loans free of reserve requirements and interest rate controls. Because RPs were uneconomical in smaller volumes, smaller firms and households were unable to obtain nonreservable market yields on overnight money until the emergence of money market mutual funds in the late 1970s.

## Conclusion

It is interesting to note how far the Federal funds market has come from its beginnings in the 1920s. Initially, the regulatory rationale for making Federal funds nonreservable was to provide member banks with a substitute for the discount window and call loans for reserve adjustment purposes. Participation in the Federal funds market was limited to member banks, i.e., banks holding required reserves at Reserve Banks. By the 1970s, however, that initial participation principle was effectively overturned. Nonbanks were not allowed to participate directly in the Federal funds market, but they were allowed to earn approximately the Federal funds rate through RPs at banks. Reserve adjustment obviously no longer provided a rationale for sanctioning access to an overnight loan rate free of reserve requirements and interest rate controls. Rather, the granting of such access is better explained as a means by which, in order to minimize membership attrition, the Fed-

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<sup>18</sup>Even if collateralized by U. S. government securities, as a legal matter RPs might also be subject to custodial risk due to incompletely specified contracts. See Ring-smuth [1985].

<sup>19</sup>See footnote 2.



eral Reserve allowed member banks and their customers to avoid the reserve requirement tax and interest rate prohibition on overnight loans.

The Federal funds market today is in many ways a functional equivalent of the call loan market of the 1920s and earlier. The most notable differences are that the nonbank portion of the market is now a net lender rather than a net borrower, and the collateral

used is exclusively debt of the United States government and its agencies rather than private stocks and bonds. Like the old call loan market, the Federal funds market of today facilitates the distribution of reserves among banks, and has much wider participation and a more general role as the core of an overnight credit market unencumbered by reserve requirements and legal restrictions on interest rates.

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## INSTRUMENTS OF THE MONEY MARKET

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The Federal Reserve Bank of Richmond is pleased to announce the publication of the sixth edition of *Instruments of the Money Market*. This completely new edition contains articles on the following subjects: Federal funds, the discount window, large certificates of deposit, Eurodollars, repurchase and reverse repurchase agreements, Treasury bills, short-term municipal securities, commercial paper, bankers acceptances, the federally sponsored credit agencies, money market mutual funds and other short-term investment pools, short-term interest rate futures, and options on short-term interest rate futures.

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