THE MARKET FOR FEDERAL FUNDS*

Seth P. Maerowitz

The market for the most liquid of money market instruments—Federal funds—evolved as borrowers and lenders sought to exploit opportunities through trading in reserve deposit funds. Trading in Federal funds began in the 1920s and involved only a few Federal Reserve member banks located in New York City. Today, the market includes over 14,000 commercial banks and a wide range of nonbank financial institutions.[1] The characteristics of Federal funds as well as the mechanics of their purchase and sale reflect the needs of today's market participants.

What Are Federal Funds?[2] Federal funds are short-term loans of immediately available funds, i.e., funds that can be transferred or withdrawn during one business day. Such immediately available funds include deposits at Federal Reserve Banks and collected liabilities of commercial banks and other depository institutions. Federal funds are exempt from reserve requirements and the vast majority are unsecured. Most Federal funds are "overnight money" —funds lent out on one day and repaid the following morning. Loans of longer maturity, known as term Federal funds are not uncommon, however.

The law requires, for purposes of monetary control, that all depository institutions maintain reserves as prescribed by the Federal Reserve System. Federal Reserve Regulation D delineates specific classes of liabilities which are subject to Federal Reserve requirements. Commercial banks, thrift institutions, U. S. branches and agencies of foreign banks, and Edge Act corporations must hold set percentages of these liabilities in a combination of vault cash and noninterest-earning reserve balances at a Federal Reserve Bank. The opportunity cost of holding reserve balances, which yield no return, provides the incentive to depository institutions to minimize their holdings of excess reserves. The Federal funds market provides the primary avenue for doing so.

Ordinary banking activities give rise to variations in a bank's asset and liability holdings. These changes in the balance sheet result in corresponding fluctuations in a bank's reserve position. Consequently, on any given day some institutions hold reserves above their desired reserve position while others are below their desired position. An institution holding excess reserves can earn interest on its funds by loaning them to others in need of reserves. Such a transaction is considered a Federal funds purchase by the borrowing institution, and a Federal funds sale by the lending institution.

The Mechanics of Federal Funds Transactions Federal funds transactions can be initiated by either a funds lender or a funds borrower. An institution wishing to sell (buy) Federal funds locates a buyer (seller) either directly through an existing banking relationship or indirectly through a Federal funds broker located in New York City. Federal funds brokers maintain frequent telephone contact with active buyers and sellers of Federal funds. Brokers match Federal funds purchase and sale orders in return for a commission on each completed transaction.

At the center of the Federal funds market are financial institutions that maintain reserve accounts at Federal Reserve Banks. These institutions use the Federal Reserve communications system, or Fedwire, to carry out rapid transfer of funds nationwide. The Federal Reserve communications system links all Federal Reserve Banks and branches. Private financial institutions and government agencies are able to gain access to the wire network either through direct (on-line) links to Federal Reserve computers or through telephone or telegraph (off-line) contact with their Federal Reserve Bank.

When transfers are conducted within a Federal Reserve district, the institution transferring funds authorizes the district Federal Reserve Bank to debit its reserve account, and to credit the reserve account of the receiving institution. Interdistrict transactions are only slightly more complicated but are best clarified by an example. Suppose a thrift institution in Richmond (the Fifth Federal Reserve District) wishes to transfer funds to a bank in New York (the Second Federal Reserve District). The thrift initi-

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[1] Thomas D. Simpson, **The Market for Federal Funds and Repurchase Agreements** (Washington: Board of Governors of the Federal Reserve System, 1979), p. 20.

[2] The term "Federal funds" is occasionally used in a broader sense than that described in this article. Sometimes, members of the financial community will consider all funds which are immediately available and not subject to reserve requirements to be Federal funds. Repurchase agreements, included under this broad definition, are excluded from this discussion.

ates the transaction. The Federal Reserve Bank of Richmond debits the account of the thrift and credits the account of the Federal Reserve Bank of New York. Finally, the Federal Reserve Bank of New York debits its own account and credits the reserve account of the receiving commercial bank. This series of accounting entries is carried out instantaneously.

Overnight Federal Funds In a typical Federal funds transaction the lending institution with reserve funds in excess of its reserve requirements authorizes a transfer from its reserve account to the reserve account of the borrowing institution. The following day, the transaction is reversed. The borrower pays back the loan through a transfer of funds from its reserve account to the lender's reserve account for an amount equal to the value of the original loan plus an interest payment. The size of the interest payment is determined by market conditions at the time the loan is initiated.

Numerous institutions that buy and sell Federal funds do not maintain accounts at the Federal Reserve. Instead, these institutions buy and sell funds through a correspondent bank. Correspondent banks will often agree to purchase on a continuing basis all Federal funds that a respondent has available to sell. Typically, the respondent institution holds a demand deposit account with the correspondent. To initiate a Federal funds sale, the respondent bank simply notifies the correspondent by telephone of its intentions. The correspondent purchases funds from the respondent by reclassifying the respondent's liability from a demand deposit to Federal funds purchased. Upon maturity of the contract, 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 rate paid to respondents on Federal funds is usually based on the nationwide effective Federal funds rate for the day.

Alternatives to Overnight Federal Funds The different needs of participants in the Fed funds market and the wide range of financial environments in which they operate have resulted in the development of alternatives to overnight Federal funds. These alternatives include term and continuing contract Federal funds. According to the results of a 1977 survey, approximately 7.5 percent of all Federal funds transactions have maturities longer than overnight.[3] Banks contract for term Federal funds when they foresee their borrowing needs lasting for several days and/or believe that the cost of overnight Federal funds may rise in the immediate future. Like overnight Fed funds, term Fed funds are not subject to reserve requirements. For this reason, term Fed funds are often preferred to other purchased liabilities of comparable maturity. The majority of term Federal funds sold have maturities of 90 days or less but term Federal funds of much longer maturity are purchased occasionally.

Federal funds sold through a correspondent banking relationship are sometimes transacted under a continuing contract. Continuing contract Federal funds are overnight Federal funds that are automatically renewed unless terminated by either funds lender or borrower. In a typical continuing contract arrangement, a correspondent will purchase overnight Federal funds from a respondent institution. Unless notified by the respondent, the correspondent will continually roll over overnight Federal funds, creating a longer term instrument of open maturity. The interest payments on continuing contract Federal funds are computed from a formula based on each day's Federal funds quotations. The specific formula used varies from contract to contract.

Secured and Unsecured Federal Funds Most Federal funds transactions are unsecured, i.e., the lender does not receive collateral to insure him against the risk of default by the borrower. In some cases, however, Federal funds transactions are 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 retains title to the securities, however.[4] Upon completion of the Federal funds contract, custody of the securities is returned to the owner. Secured Federal funds transactions are sometimes requested by the lending institution, or encouraged by state regulations requiring collateralization of Federal funds sales.

The History and Evolution of Market Structure The Federal funds market of the 1920s developed out of the common interests of a few Federal Reserve member banks operating in New York City that often found themselves with temporary shortages or surpluses of reserves. Before the emergence of the Federal funds market, banks having a deficiency of reserves had to borrow from the discount window,

[3] Board of Governors, **Repurchase Agreements and Other Nonreservable Borrowings in Immediately Available Funds.** Report giving results of a 1977 survey, 1978, p. 4.

[4] The crucial difference between a secured Federal funds transaction and a repurchase agreement is that in a Federal funds transaction title to the security is not transferred. RPs are available to a wider range of market participants than Federal funds.

while banks with a surplus of reserves had no profitable use for their excess reserve deposits. A market in reserve deposits was formed that benefited both deficient reserve and surplus reserve institutions. Banks that borrowed in the new market found Federal funds to be an inexpensive substitute for the discount window, while banks that lent funds were pleased to receive a liquid earning asset to replace their nonearning excess reserve balances.

By 1929, the daily trading volume in Federal funds had expanded to over $250 million, but with the stock market crash of October 1929 and the economic contraction that followed, the Federal funds market disintegrated.[5] The contraction and the large number of bank and industrial failures that accompanied it led to great uncertainty about the safety of most earning assets except U. S. Government securities. It resulted in a market preference for cash, reflected in the large increase in excess reserve balances maintained by commercial banks in the period. The disinterest in Federal funds trading by potential lenders was matched by the diminished needs of potential borrowers. Weak loan demand and large gold inflows throughout most of the early and midthirties left few institutions in need of borrowings to meet their reserve requirements.

The market revived briefly in 1941 in response to financial pressures resulting from World War II.[6] The revival was short-lived, however; Federal Reserve pegging of Treasury bill prices from 1942 to 1951 rendered the funds market superfluous. With the price of Treasury bills fixed, banks made adjustments in their reserve balances through trading Treasury bills free of market risk. The funds market remained dormant until securities prices were unpegged by the Treasury-Federal Reserve Accord of 1951. Since trading in Treasury bills was now subject to the risk of securities price fluctuations, Federal funds trading became the preferred mode of reserve adjustment. Furthermore, the higher market rates of interest prevailing after the Treasury-Federal Reserve Accord increased the opportunity cost of holding sterile balances, making more frequent reserve adjustments desirable. Consequently, the volume of aggregate trading in Federal funds grew sharply.

Improvements in banking technology and the growth of correspondent banking during the sixties brought about important changes in the nature of Federal funds trading. Large correspondent banks intentionally began to run down their reserve positions, substituting Federal funds as a new source of loanable funds. Smaller regional banks specializing in retail banking, with a large inflow of deposits but few lending opportunities, sold Federal funds to the larger institutions. Banking relationships developed such that large correspondents stood ready to purchase all the funds that their smaller respondent banks had available to sell.

In this environment, the Federal funds market took on a broader role, beyond that of reserve adjustment borrowing. Large banks began to depend on Federal funds as a semi-permanent source of nondeposit funds while smaller respondents recognized Fed funds to be a profitable, liquid investment. In 1963, the Comptroller of the Currency eliminated capital adequacy restrictions on Federal funds purchases and sales, and in 1964, the Federal Reserve Board ruled that member banks could purchase Federal funds from nonmember respondents. These two rulings increased the supply of Federal funds to the purchasing banks, further augmenting market growth.

The Federal Funds Rate and the Discount Rate

The Federal Reserve limits most borrowing at the discount window to banks facing temporary shortages of reserves. Prior to the mid-1960s, the Federal funds rate rarely rose above the discount rate. Federal funds were viewed primarily as a substitute for discount window borrowing. Since banks only used the discount window occasionally, they were generally not constrained by Federal Reserve discount window policies. Temporary borrowing needs were easily met at the discount window leaving little incentive to purchase funds at a rate exceeding the discount rate.

By late 1964 the practice of liabilities management had become widespread. In this environment incentives existed for banks practicing liabilities management to borrow from the discount window on a continuing basis. Discount window administration policies, however, remained oriented towards providing funds to banks facing temporary reserve deficiencies, thus preventing banks from using the window as a continual source of funds. Since access to the discount window was limited, banks in need of additional funds were willing to pay a premium above the discount rate for Federal funds. In late 1964, the Federal funds rate rose above the discount rate reflecting a demand for overnight funds exceeding the supply available at the discount window.

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[5] Marcos T. Jones, Charles M. Lucas, and Thom B. Thurston, "Federal Funds and Repurchase Agreements," Federal Reserve Bank of New York, **Quarterly Review** 2 (Summer 1977): 39.

[6] Parker B. Willis, **The Federal Funds Market, Its Origin and Development** (Boston: Federal Reserve Bank of Boston, 1970), p. 15.

During the "credit crunch" of 1966 regional banking institutions without well developed networks of funds suppliers often found Federal funds difficult to obtain.[7] Problems of funds availability soon subsided, however, and the funds market continued to grow rapidly throughout the late 1960s. Banks willing to purchase Federal funds at the market rate found them to be expensive, but readily available. The Federal funds rate rose rapidly towards the end of the 1960s and reached a peak of 9.2 percent in August of 1969. Many banks were squeezed in the short run by the rapid increase in the cost of funds. Over the long run, however, they adjusted by developing flexible asset management and loan pricing policies in order to deal more effectively with variation in the cost of nondeposit funds.

In 1970, approximately 60 percent of all member banks were active buyers or sellers of Federal funds.[8] Despite questions of funds price and availability, the Federal funds market had grown dramatically throughout the sixties. In 1960 daily average gross interbank Federal funds purchases of 46 money market banks were $1.1 billion.[9] By 1970 daily average purchases of this group had soared to $8.3 billion.[10] The rapid growth in Federal funds trading throughout this period reflected the expanded role of the Federal funds market as a source of purchased liabilities, as well as its value as a tool of member bank reserve adjustment.

The Market in Recent Years[11] The Federal funds market of the 1970s was characterized by further growth spurred on by regulatory change. Prior to 1970 borrowings from nonbank financial institutions were subject to reserve requirements, and consequently, nonbanks were not active in the Federal funds market. In 1970 an amendment to Regulation D exempted borrowings from savings and loan associations, mutual savings banks, and U. S. Government agencies from reserve requirements. Following the 1970 ruling, the nonbank institutions assumed a role in the Federal funds market very similar to that of small commercial banks. Savings and loan associations and mutual savings banks found sales of Federal funds to be a profitable and liquid alternative to purchases of Treasury securities. In recent years, nonbank depository institutions supplied 35 percent of the Federal funds purchased by the 45 large weekly reporting banks.[12]

The funds market of the 1970s continued to reflect the patterns of growth which had developed in earlier years. During periods of high short-term interest rates, the Federal funds market expanded as small financial institutions sought to economize on their cash and reserve balances while large banks practicing liabilities management demanded Federal funds to meet the needs of their loan customers. In times of low short-term interest rates and slack loan demand, growth in the Federal funds market was less rapid. The Federal funds market, however, was not subject to large declines in trading volume, as were other markets for purchased liabilities such as large certificates of deposit.[13]

The Federal Funds Market and Monetary Policy The Federal Reserve exerts control over the money supply primarily influencing the level of nonborrowed reserves available to the banking system. The Federal funds rate reflects the cost of interbank borrowing, in essence the price of nonborrowed reserve deposit funds. If the supply of nonborrowed reserves is reduced, the immediate effect will be an increase in the Federal funds rate; conversely, an increase in the supply of nonborrowed reserves will bring about a fall in the funds rate. Following a rise in the funds rate, banks will slow the growth of their loan portfolios and/or increase the rates charged on new loans to reflect the higher cost of nondeposit funds. Hence,

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[7] S. M. Duckworth, **Problems in Liability Management: Case Studies of Attitudes at Seven Banks** (Boston: Federal Reserve Bank of Boston, 1974), pp. 20-22. This discussion is drawn from interviews of bankers in the First Federal Reserve District.

[8] Willis, **The Federal Funds Market,** p. 52.

[9] **Federal Reserve Bulletin** (August 1964), table, "Basic Reserve Position, and Federal Funds and Related Transactions of 46 Major Reserve City Banks", p. 954; same table in various issues of 1970, 1971.

[10] **Ibid.**

[11] The analysis of the Federal funds market of the 1970s and '80s is complicated by the development of the repurchase agreement. Repurchase agreements gained rapid acceptance by bankers as a near perfect substitute for Federal funds. Data on Federal funds sales and purchases were, and continue to be, reported in aggregate with data on repurchase agreements. According to studies by the Federal Reserve Board of Federal funds and RPs supplied to 45 large member banks, Federal funds accounted for 89.4 percent of gross nonreservable borrowings of immediately available funds from depository institutions and U. S. Government agencies on December 7, 1977. Since Federal funds have remained the predominant money market instrument for borrowing immediately available funds among banking institutions, an analysis of the Federal funds market in the '70s can still be made on the basis of the available data.

[12] Board of Governors, **Repurchase Agreements and Other Nonreservable Borrowings,** p. 4. A data series consisting of 46 large banks was begun by the Federal Reserve System in 1964. In March 1980, the sample group was expanded to include 121 large member banks. The figure is based upon a special survey of the original 46 bank group, conducted on December 7, 1977.

[13] CDs were subject to a rapid runoff in 1975 and 1977. (See Summers [15]).

the Federal funds market acts as an integral part of the transmission process for monetary policy.

Throughout the 1970s, the Federal Reserve used the Federal funds rate as its principle operating target of monetary policy. When money growth was above the desired growth path, the Federal funds rate target was raised. The Open Market Desk was directed to sell government securities and drain reserves from the banking system until the desired funds rate target was met. If more rapid monetary growth was desired, the funds rate target was lowered, and reserves were added to the banking system. Funds traders formed their expectations of the funds rate based on what they believed the Federal Reserve's target rate to be; under usual procedures, whenever the funds rate rose 1/8 to 3/16 percentage points above its target level, the Federal Reserve provided reserves through the purchase of government securities (via overnight RPs), and whenever the rate dropped 1/8 to 3/16 points below target, the Federal Reserve absorbed reserves through the sale of securities. Market participants soon came to depend on such signals of Federal Reserve intentions, which provided important information for forecasting Federal funds rate movements.

The inflation of recent years and the tendency of the Federal Reserve to overshoot its money supply targets raised serious questions about the efficacy of the Federal funds rate as an operating target for monetary policy. On October 6, 1979, a major policy shift was announced. The Federal Reserve would now focus more attention on nonborrowed reserves and less attention on day-to-day fluctuations in the Federal funds rate.

The impact of the new policy on the market was immediate and dramatic. Variation in the funds rate increased from a daily trading band of approximately 2 percentage points during the month preceding October 6th to a daily trading band of approximately 5 percentage points during the month following October 6th.[14] Despite greater variation in the funds rate, trading volume continues to be strong, reflecting the importance of Federal funds as a short-term money market instrument.

Conclusion The Federal funds market of today is the evolutionary result of changes in general economic conditions, Federal and state regulations, and financial innovation. From its beginnings as a market limited to the purchase and sale of excess reserve deposits among member banks, the Federal funds market has undergone tremendous expansion. Active liabilities management practices of the past two decades created new demand for Federal funds, and less restrictive regulations brought the funds market to a new group of financial institutions. Today, Federal funds are an important purchased liability for large banks, a profitable liquid investment for a wide range of market participants, and a valuable reserve adjustment tool.

[14] Federal Reserve Bank of New York, "Composite Closing Quotations for U. S. Government Securities," September 4, 1979 - November 9, 1979.

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