T H R E E

Monetary Stresses and Reserve Management

As background for understanding the monetary policy implementation process, this chapter, first offers a brief description of the institutional setting under which depository institutions hold and manage their reserves. It then reviews a variety of influences on supply and demand conditions for reserves. The review emphasizes the role of market factors in absorbing and supplying reserves and its implications for open market operations.

Depository Institutions' Reserve Positions

All depository institutions in the United States, as in many other countries, are subject to reserve requirements on their customers' deposits. Commercial banks and thrift institutions—mutual savings banks, savings and loan associations and credit unions—whose checkable deposits exceed a certain size are required to maintain cash reserves equal to a specified fraction of those deposits (Figure 3-1). As of end-1995, commercial banks held about 86 percent of checkable deposits, and thrift institutions the remaining 14 percent.

The bulk of the commercial bank share of checkable deposits is accounted for by member banks of the Federal Reserve System. About 4,000 commercial banks were members of the System at the end of 1995. These included just over 2,900 federally chartered national banks—which are required to be members—and about 1,050 state-chartered banks. Approximately 6,000 state-chartered banks were not members at end-1995. But they and all other depository institutions have access to the Federal Reserve System's lending facilities on equal terms with members, just as they are subject to reserve requirements.

Reserve requirements are structured to bear less heavily on smaller depository institutions. At all depository institutions, checkable deposits up to certain levels—adjusted annually to reflect growth in the banking system—either are exempted or carry relatively low requirements.

Depository institutions hold required reserves either as cash in their own vaults or as deposits at their District Federal Reserve Bank. To provide banks and thrifts with flexibility in meeting their requirements, the

Federal Reserve allows them to hold an average amount of reserves over two-week reserve maintenance periods ending on alternate Wednesdays, rather than a specific amount on each day. Large banks apply all of their vault cash toward meeting requirements, since their required reserves exceed their vault cash. But many small banks and thrift institutions hold more vault cash than their required reserves because they need more cash to meet customer demands than they do to meet reserve requirements.

Figure 3-1

Required Reserves on Checking Deposits in 1996*

Dollar Amount of Deposits	Reserve Ratio**	Other Provisions
Up to $4.3 million	0 percent	Depository institutions hold an average amount of reserves over a two-week maintenance period; they are allowed to carry forward for one maintenance period any excess or deficiency of up to four percent of their requirements; reserve deficiencies beyond the carry-forward amount are assessed a penalty equal to two percentage points above the discount rate.
$4.3 million to $52 million	3 percent	
Above $52 million	10 percent	

* Time deposits and other bank liabilities are not subject to reserve requirements at present.

** Fraction of deposits held as required reserves.

In contrast, over 3,000 depository institutions in early 1996 had less vault cash than their required reserves, obliging them to hold balances at Reserve Banks. These so-called bound institutions accounted for roughly three-quarters of total checkable deposits.

Coping With Reserve Pressures

In managing their reserve positions, depository institutions attempt to balance two opposing considerations. As profit-seeking enterprises, they try to keep their reserves, which produce no income, close to the required minimum. Yet they also must avoid reserve deficiencies, which carry a penalty charge on the deficiency at a rate that is 2 percentage points above the discount rate. In addition, if a depository institution frequently fails to meet requirements, its senior management is given a warning that continued failure would put the institution under scrutiny. To clear their ongoing financial transactions through the Federal Reserve and to maintain a cushion of funds in order to avoid penalty charges, many depository institutions arrange with their Reserve Banks to maintain supplementary accounts for required clearing balances. These additional balances effectively earn interest in the form of credits that can be used to pay for Federal Reserve services, such as check-clearing and wire transfers of funds and securities.

Managing the reserve position of a depository institution is a difficult job. The institution's reserve position is affected by virtually all of its transactions—whether carried out for its customers or on its own account. A bank or thrift institution, for example, loses reserves when it pays out cash or transfers funds by wire on behalf of its customers. Customer checks to pay out-of-town bills funnel back through its Federal Reserve Bank and are charged against its reserve or clearing account; customer checks to pay in-town bills also drain reserves, on a net basis, as accounts among banks are settled. A bank may also lose reserves when it advances loans or buys securities. On the other hand, a bank gains reserves from deposits of customer checks and currency, sales of securities and numerous other transactions. At the end of each day, after the close of wire transfers of funds and securities, a bank's reserve position reflects the net of reserve losses and gains resulting from all of its transactions.

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A depository institution facing a reserve deficiency has several options. It can try to borrow reserves for one or more days from another depository institution. It can sell liquid, or readily marketable assets, such as Government securities, pulling in funds from the buyer's bank. It can bid for funds in the money market, such as large certificates of deposits (CDs) or Eurodollars. Using Government securities or other acceptable collateral, a depository institution also can—as a last resort—borrow from its District Reserve Bank at the prevailing discount rate to compensate for unforeseen reserve losses.

The Open Market Desk and Reserve Supply

While an individual institution can meet its reserve shortages by purchasing or borrowing reserves from other banks or thrift institutions, depository institutions cannot expand aggregate reserves (except by borrowing at the discount window); they can merely pass around the existing reserves. Reserve shortages or surpluses of depository institutions are reflected in the overall reserve supply and demand in the federal funds market. When depository institutions, collectively, seek more reserves than are available in the market, they bid up the federal funds rate. As the funds rate rises, more banks and thrift institutions are induced to borrow at the discount window, bringing reserve supply back into line with reserve demand. Thus, within a given reserve maintenance period, the banking system as a whole has no practical alternative to borrowing more reserves from the Federal Reserve if aggregate reserve demand exceeds the total supply of nonborrowed reserves.

Open market operations allow the Open Market Desk at the Federal Reserve Bank of New York to adjust the volume of nonborrowed reserves in the system before depository institutions turn to borrowing from the discount window. Open market operations involve the buying and selling of Government securities in the open, or secondary, market by the Federal Reserve—a purchase adds to nonborrowed reserves, while a sale reduces them (see Chapter 5 for details). In this way, the Federal Reserve can offset swings in reserves caused by changes in the public's demand for cash and numerous other factors, sheltering the funds rate from the effects of potential reserve changes. Alternately, the Federal Reserve can choose not to offset, or even to reinforce, movements in nonborrowed reserves, inducing changes in the funds rate.

By managing the supply of nonborrowed reserves in relation to the demand for them, the Federal Reserve can adjust the cost and availability of reserves to induce changes in the federal funds rate. When the Open Market Desk adds more reserves than depository institutions collectively demand, the funds rate declines. Over time, higher reserves and a lower federal funds rate stimulate the expansion of money and credit in the economy, other things remaining the same. Conversely, when the Desk holds back on reserves relative to demand, the funds rate rises and the growth of money and credit tends to go down.

While open market operations allow the Federal Reserve to exert control over the supply of nonborrowed reserves, many factors outside the Federal Reserve's control influence that supply. Among the most important such factors are changes in currency holdings of the public, the Treasury's cash balances at the Federal Reserve, short-term credit to banks resulting from the Federal Reserve's national check clearing arrangements and foreign central bank transactions. As discussed in Chapter 5, the Federal Reserve forecasts daily these and other factors affecting reserves to assess the need for open market operations. Here, we briefly sketch the general implications of these factors for reserve movements and open market operations.

Currency in Circulation

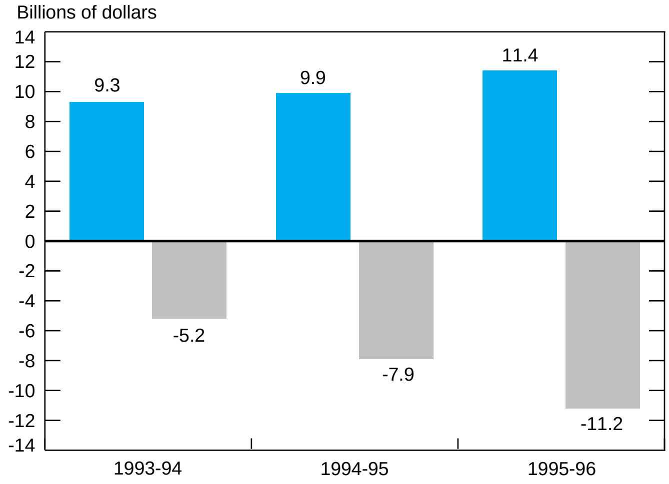
Depository institutions obtain currency from the Federal Reserve Banks to replenish actual or anticipated cash withdrawals by customers, and they pay for it through debits of their reserve accounts at the Fed. Over time, currency demand is the largest single factor requiring reserve injections, because it has a strong growth trend which reflects, primarily, the growth trend of the economy. However, currency movements display significant short-run variations. Such variations may result from many sources, including cyclical developments in the economy or changes in foreign demand for U.S. currency, which usually expands in times of political and economic uncertainty abroad. Indeed, in recent years, foreign demand for U.S. dollars, especially from highinflation economies of Eastern Europe and other regions, has contributed significantly to the growth of U.S. currency in circulation.

Normally, seasonal swings in the public's currency holdings are the dominant source of short-run currency variations. Some of these swings represent intramonthly patterns reflecting such routine transactions as payments of salaries and social security benefits. Others result from the effects of somewhat longer seasonal cycles on business activity during the year. For example, currency in circulation rises substantially during the winter holiday shopping season, from early November to year-end, and much of this bulge reverses in the following month (Figure 3-2).

Most short-term variations in currency movements are reasonably predictable, since they follow recurrent seasonal patterns (Figure 3-3). The Federal Reserve, through its open market operations, attempts to offset recurrent contractions and expansions in reserves associated with seasonal swings in currency. If the Federal Reserve did not do so, depository institutions as a group would be obliged to adjust their reserve positions by lowering or raising their investments and short-term loans. Such actions would cause significant fluctuations in the federal funds rate and other short rates, and could lead to serious market disturbances. Indeed, one of the original reasons for creating the Federal Reserve System was to avoid the undesirable effects of seasonal

Figure 3-2

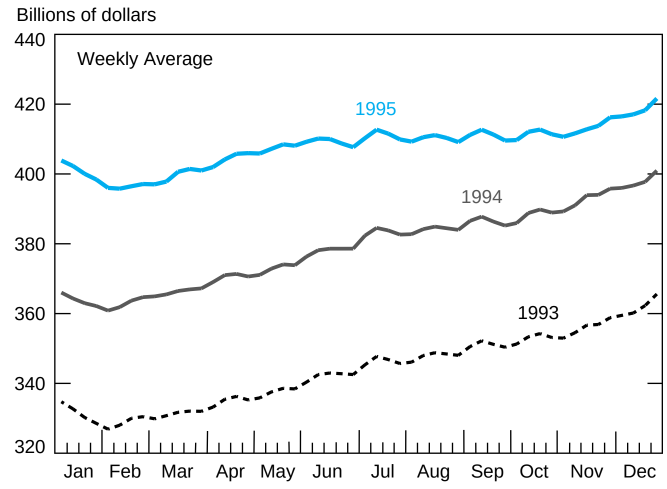
Changes in Currency Demand: Winter Holiday Shopping Season*



* For each period, the first bar represents the cummulative increase over the seven-week period from mid-November to the beginning of January, while the second bar reports the cummulative decrease over the four-week period from early January to end-January.

Figure 3-3

Currency in Circulation



swings in the public's currency holdings. Before the establishment of the Federal Reserve in 1913, financial strains from seasonal increases in currency demands were quite common and became so severe on a few occasions that they touched off financial panics, causing bankruptcies and recessions in business activity.

Treasury Balances

The U.S. Treasury maintains its working balances at the Federal Reserve for making and receiving payments; increases in these balances absorb reserves since they involve the transfer of funds from the public and depository institutions to the Federal Reserve, while decreases in these balances supply reserves to banks and thrifts. The Treasury attempts to keep its balances reasonably stable, generally around $5 billion, so as not to complicate the Fed's job of managing reserves. It places additional cash in Treasury tax and loan note option (TT&L) accounts at depository institutions that have agreed to accept them; these accounts serve as collection points for tax receipts. Each depository institution limits the amount of TT&L account balances because it must pay interest on those balances and must hold collateral against them. When balances exceed the limit, the excess is transferred to the Federal Reserve.

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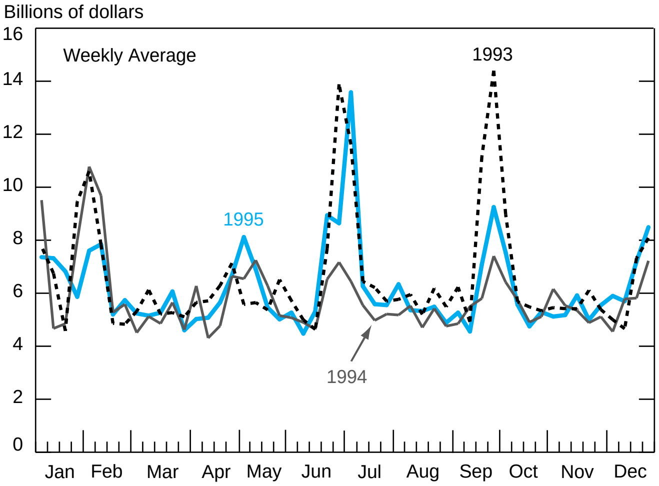
The Treasury can transfer funds into or out of the TT&L accounts on a daily basis to keep its Federal Reserve balances close to the target level. It can make a "call" before 11 a.m. on the larger depository institutions to transfer funds to the Fed on the same day, or the following day. It can make a "direct investment" to move funds from the Fed to the TT&L accounts.

Because of the difficulties in predicting the timing and size of the myriad receipts and expenditures of the federal Government, daily estimates of Treasury balances at the Fed are subject to sizable errors. It is not unusual for the balance to be $1 billion or so higher or lower than expected. Most of the time such errors have only a modest effect on the average level of reserves over the two-week maintenance period, since the Treasury can take action the next day to bring the balance back to the desired level.

However, a more serious reserve management problem arises when Treasury tax receipts are particularly heavy—for example, following some of the major tax dates in January, April, June and September (Figure 3-4). In this case, Treasury balances accumulate in excess of the combined aggregate limits on the TT&L accounts set by depository institutions, lifting balances at the Federal Reserve and draining reserves from the

Figure 3-4

Treasury Balances at the Fed



banking system. At times, the excess in Treasury balances may last for up to two weeks before they drop below the aggregate capacity of the TT&L accounts. Accordingly, on those occasions, the Open Market Desk has to offset reserve drains by injecting large amounts of reserves.

Federal Reserve Float

Households and businesses make a significant portion of their payments by writing checks on their accounts at depository institutions. The Federal Reserve's national check clearing system facilitates the movement of these checks around the country. The Reserve Banks credit a bank's reserve account at the Fed for checks deposited—presented for collection—by the bank and debit its account for checks drawn on it and presented by other banks. When a presenting bank's reserve account is credited before a corresponding debit is made to the account of the bank on which the check is drawn, two banks have credit simultaneously for the same reserves, creating reserve float. This float arises because Reserve Banks credit checks presented for collection, under a preset schedule, to a bank's reserve account within a maximum of two business days, while it sometimes takes more than two days to process those checks and collect funds from the banks on which they are drawn.

Since 1983, the Fed has actively discouraged float by charging the banks explicitly for the float they receive. As a result, float has declined dramatically in recent years. Float also has become more predictable because of increased information flows about delivery and processing of checks. Most of the time, therefore, changes in float are not a significant consideration for open market operations.

Still, however, float can vary widely on a weekly or even monthly basis (Figure 3-5), and occasionally, it shows large increases when normal check delivery is interrupted, for example, due to bad weather. On these occasions, the Open Market Desk may be obliged to engage in significant operations to offset the effects of large swings in float on the supply of nonborrowed reserves.

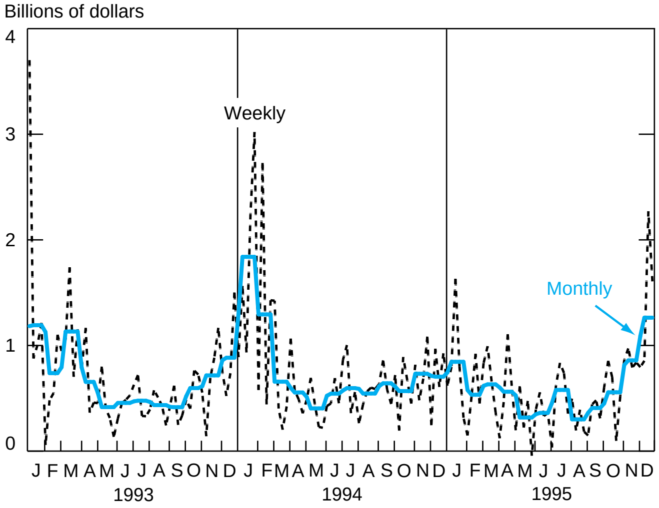
Foreign Central Bank Transactions

Many foreign central banks and official international institutions maintain working and short-term investment balances at the Federal Reserve to execute their dollar-denominated transactions. Drawing down of these balances increases the reserves of depository institutions receiving payments. Moving funds from depository institutions into these balances drains reserves of the banking system. At times, unexpected transfers into and out of foreign central bank accounts can result in significant increases or decreases in reserves, requiring sizable offsetting open market operations.

Figure 3-5

Weekly and Monthly Average Float, 1993-1995

(Including As-Of Adjustments)



Deposit Flows and Reserve Demand

Open market operations are required, not only to offset seasonal and other short-lived influences on the supply of nonborrowed reserves, but also to deal with changes in depository institutions' demand for reserves. Specifically, in managing the supply of nonborrowed reserves, the Open Market Desk must make adjustments for changes in the demand for those reserves so as to create money market conditions that are consistent with the desired monetary policy objectives. Open market operations, therefore, have both defensive and dynamic aspects.

Depository institutions' demand for reserves has two components: required reserves and excess reserves above requirements. Since banks and thrifts attempt to keep their reserves—which yield no income—close to the required minimum, aggregate excess reserves in the system are quite small. In 1995, for example, excess reserves averaged only about $1 billion, less than 2 percent of total reserves.

Required reserves are based on checkable deposits, which serve as the principal means of payment for transactions in the economy. Over time, the public's demand for checkable deposits is related to the growth of the economy and developments in other modes of payments—such as cash, direct debit of accounts and electronic transfers—that may encourage or discourage the use of checks for making payments. But, in the short run, the demand for checkable deposits can be highly variable, leading to large increases or decreases in required reserves.

Short-run variability of checkable deposits results in part from the influence of cyclical and other short-term developments in business activity; these developments go hand-in-hand with short-run changes in interest rates and affect credit flows and the holdings of various income-producing assets—such as bonds, stocks and time/saving deposits—relative to currency and demand deposits that yield no income. But it also reflects a variety of recurring influences, including tax payment cycles, regular payroll disbursements and seasonal movements in demands for credit and deposits. For example, businesses and households normally keep checkable deposits at minimum levels because such deposits pay low interest rates, if any at all. However, they shift out of higher-yielding short-term investments into checkable deposits when tax, payroll or other significant payments are due. Around major tax payment dates, for instance, checkable deposits at banks and thrifts increase substantially, enabling businesses and households to make their tax payments to the U.S. Treasury. Required reserves increase correspondingly on a temporary basis, and decline a few days later when the funds are transferred to the TT&L balances, which are not subject to reserve requirements.

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Bank Decisions and Monetary Policy

Seasonal adjustments and related procedures can be applied to sort out recurrent patterns of deposit movements. But whether short-term monetary developments are consistent with the Federal Reserve's expectations and policy goals also will depend on how the underlying deposit flows and the corresponding reserve demands evolve in response to ongoing economic and financial trends in the economy. The actual behavior of deposits and credit in the economy reflects the interaction of depository institutions, their customers—businesses and households—and the Federal Reserve. The lending and funding decisions of banks and thrifts are influenced by current and prospective customer demands, the outlook for the economy and perceptions about monetary policy. Within this context, lenders must assess the loan demand they are likely to face and possible growth of their own deposits.

For example, if a bank is facing rising loan demand at a time when the outlook for economic growth is strong, it may expect the Federal Reserve to tighten monetary policy, putting upward pressures on interest rates. In that case, if the bank's own deposit growth is insufficient to meet its loan demand, it may fund loan demand by issuing domestic CDs or by borrowing in the Eurodollar market at prevailing interest rates, rather than risk having to roll over overnight borrowings at higher rates. On the other hand, if the bank expects its own deposit growth to outrun its loan demand, it may attempt to lend more to creditworthy customers, while buying additional securities. A turn in the outlook toward a sluggish economy would accelerate such activities.

Bank decisions affect money and credit conditions, as do developments in numerous other financial and nonfinancial indicators. The Federal Open Market Committee (FOMC), as described in the next chapter, considers all these indicators in determining the course of monetary policy and in assessing the need for changes in it. The Domestic Open Market Desk at the Federal Reserve Bank of New York, which is responsible for implementing the FOMC's decisions on a day-to-day basis, focuses on achieving and maintaining the FOMC's desired degree of reserve pressure and the associated federal funds rate (see Chapter 5 for details). The Manager of the Desk and Federal Reserve staffs in New York and at the Board of Governors in Washington, D.C., track reserve supply and demand conditions at banks and thrift institutions, movements of various short and long interest rates and deposit flows into and out of M1 and broader monetary aggregates. They also watch closely the responses of financial and foreign exchange markets to developments in monetary policy, inflation expectations and the economy more generally. All this information helps in assessing whether money and financial conditions in the economy are developing in line with those contemplated by the FOMC.