This article is a companion to *Money Basics*. It presents a more detailed treatment of fractional reserve banking and its relation to the money supply.

**Reserve Requirements**

All depository institutions -- commercial banks and thrifts -- in the United States are subject to reserve requirements on customer deposits. The required reserve ratio depends on the amount of checkable deposits a bank holds. No reserves are required on the first $9.3 million. Between $9.3 million and $43.9 million, deposits are subject to a 3% reserve. Above $43.9 million they are subject to a 10% reserve. These breakpoints were effective year-end 2007, and are adjusted annually in accordance with money supply growth. No reserves are required against time deposits or savings accounts.

Reserves are figured as the average held over a 14-day period, ending every second Wednesday. On any single day, a bank needs only enough to cover its customer's withdrawals. A bank may hold its reserves in any combination of vault cash and deposits at the Fed. As profit-seeking enterprises, banks try to keep their reserves close to the required minimum, since they earn no interest.

**How Banks Meet Reserve Requirements**

A bank loses reserves whenever it pays out cash or transfers funds by wire for its customers. Customer checks to pay out of town bills funnel back through the Fed and are charged against its reserves. A bank may also lose reserves when it advances loans or buys securities. Conversely a bank gains reserves when it receives new deposits. A bank facing a reserve deficiency has several options. It can try to borrow reserves for one or more days from another bank; sell marketable assets, such as government securities; bid for funds in the money market, such as large CDs or Eurodollars; or as a last resort it can pledge collateral and borrow at the Fed’s discount window.

An active market in reserves acts to redistribute reserves to those banks that need them. However banks cannot create reserves themselves. If the aggregate demand exceeds the existing supply of non-borrowed reserves, the banking system as a whole has no alternative but to borrow more reserves from the Fed.

**Factors Affecting Aggregate Reserves**

There are many factors outside of the Fed’s control that influence the level of non-borrowed reserves. They include changes in currency holdings of the public, changes in the Treasury’s cash balances at the Fed, checking system float, and foreign central bank transactions. The Fed actively compensates for these variations by adding or draining system reserves as needed to avoid large fluctuations in their market price, i.e. the Fed funds rate. Over time, the growing demand for currency is the largest single factor requiring reserve injections.

The Treasury holds working balances at the Fed for making payments on behalf of the government. Drawing down those balances increases aggregate banking system reserves since it results in a transfer of funds to the banking system. In order to minimize variations in total banking system reserves due to its own
spending, the Treasury targets a fixed balance of $5 billion at the Fed by transferring funds as required from its Treasury Tax & Loan accounts at commercial banks. TT&L accounts serve as collection points for receipts from taxes and the sale of securities, and are reserves of the banking system.

Many foreign central banks keep working balances at the Fed to execute their dollar-denominated transactions. Drawing down of those balances increases the reserves of depository institutions receiving payments. Transfers can sometimes result in significant increases or decreases in reserves, requiring offsetting open market operations by the Fed.

**How the Fed Manages Reserves**

The Fed adjusts aggregate banking system reserves through short term transactions with security dealers, primarily repurchase agreements involving Treasury debt. Occasionally the Fed purchases Treasury debt outright, which then becomes a permanent addition to the monetary base. If necessary the Fed could sell Treasury debt from its portfolio, but that seldom happens in a growing economy.

**Size and Composition of the Monetary Base**

As of July 2006, the monetary base created by the Fed totaled $812 billion. Of that total, $767 billion consisted of Federal Reserve notes and coins held by the public. The Fed estimates that more than half of the currency is overseas, mostly owned by foreigners. Federal Reserve notes are prized as a store of value and used as a medium of exchange in those countries where the local currency is not trusted.

The remainder of the monetary base comprises the reserves of depository institutions (commercial banks and thrifts). Those reserves support a multiple of bank money created through the act of lending.

**Linkage Between Reserves and Money Supply**

In practice, reserves bear almost no relation to the size of the money supply. Indeed in the 10-year period from July 1996 to July 2006, while the M2 money aggregate increased by 83%, total banking system reserves decreased by 17%. The explanation for this anomaly is due in part to innovative banking. Through the use of overnight sweep accounts, banks can move substantial amounts of deposits out of the reservable category without affecting customer access to their checkable funds.

While this seems to violate the intent of the Fed’s reserve requirements, it does not materially affect the implementation of monetary policy. Banks must still attend to their reserve ratios, and hold adequate clearing balances at the Fed. That creates an active money market in Fed funds whose price the Fed can control through its open market operations.