

APPENDIX TO CHAPTER 8



The Fed's Balance Sheet and the Monetary Base

Just as any other bank has a balance sheet that lists its assets and liabilities, so does the Fed. We examine each of its categories of assets and liabilities because changes in them are an important way the Fed manipulates the money supply.

Assets

1. *Securities.* These are the Fed's holdings of securities, which consist primarily of Treasury securities but in the past have also included banker's acceptances. The total amount of securities is controlled by open market operations (the Fed's purchase and sale of these securities). As shown in Table 1, "Securities" is by far the largest category of assets in the Fed's balance sheet.
2. *Discount loans.* These are loans the Fed makes to banks. The amount is affected by the Fed's setting the discount rate, the interest rate that the Fed charges banks for these loans.

These first two Fed assets are important because they earn interest. Because the liabilities of the Fed do not pay interest, the Fed makes billions of dollars every year—its assets earn income, and its liabilities cost nothing.

TABLE 1 Consolidated Balance Sheet of the Federal Reserve System (\$ billions, end of 2004)

Assets		Liabilities	
Securities: U.S. government and agency securities and banker's acceptances	719	Federal Reserve notes outstanding	698
Discount loans	1.0	Bank deposits (Reserves)	34
Gold and SDR certificate accounts	13.2	U.S. Treasury deposits	4.9
Coin	0.8	Foreign and other deposits	0.1
Cash items in process of collection	4.0	Deferred-availability cash items	4.1
Other Federal Reserve assets	39.0	Other Federal Reserve liabilities and capital accounts	35.9
Total	777.0	Total	777.0

Source: Federal Reserve Bulletin.

Although it returns most of its earnings to the federal government, the Fed does spend some of it on “worthy causes,” such as supporting economic research.

3. *Gold and SDR certificate accounts.* Special drawing rights (SDRs) are issued to governments by the International Monetary Fund (IMF) to settle international debts and have replaced gold in international financial transactions. When the Treasury acquires gold or SDRs, it issues certificates to the Fed that are claims on the gold or SDRs and is in turn credited with deposit balances at the Fed. The gold and SDR accounts are made up of these certificates issued by the Treasury.
4. *Coin.* This is the smallest item in the balance sheet, consisting of Treasury currency (mostly coins) held by the Fed.
5. *Cash items in process of collection.* These arise from the Fed’s check-clearing process. When a check is given to the Fed for clearing, the Fed will present it to the bank on which it is written and will collect funds by deducting the amount of the check from the bank’s deposits (reserves) with the Fed. Before these funds are collected, the check is a cash item in process of collection and is a Fed asset.
6. *Other Federal Reserve assets.* These include deposits and bonds denominated in foreign currencies as well as physical goods such as computers, office equipment, and buildings owned by the Federal Reserve.

Liabilities

1. *Federal Reserve notes (currency) outstanding.* The Fed issues currency (those green-and-gray pieces of paper in your wallet that say “Federal Reserve note” at the top). The Federal Reserve notes outstanding are the amount of this currency that is in the hands of the public. (Currency held by depository institutions is also a liability of the Fed but is counted as part of the reserves liability.)

Federal Reserve notes are IOUs from the Fed to the bearer and are also liabilities, but unlike most liabilities, they promise to pay back the bearer solely with Federal Reserve notes; that is, they pay off IOUs with other IOUs. Accordingly, if you bring a \$100 bill to the Federal Reserve and demand payment, you will receive two \$50s, five \$20s, ten \$10s, or one hundred \$1 bills.

People are more willing to accept IOUs from the Fed than from you or me because Federal Reserve notes are a recognized medium of exchange; that is, they are accepted as a means of payment and so function as money. Unfortunately, neither you nor I can convince people that our IOUs are worth anything more than the paper they are written on.¹

¹The “Federal Reserve notes outstanding” item on the Fed’s balance sheet refers only to currency in circulation, the amount in the hands of the public. Currency that has been printed by the U.S. Bureau of Engraving and Printing is not automatically a liability of the Fed. For example, consider the importance of having \$1 million of your own IOUs printed up. You give out \$100 worth to other people and keep the other \$999,900 in your pocket. The \$999,900 of IOUs does not make you richer or poorer and does not affect your indebtedness. You care only about the \$100 of liabilities

2. *Reserves.* All banks have an account at the Fed in which they hold deposits. Reserves consist of deposits at the Fed plus currency that is physically held by banks (called *vault cash* because it is stored in bank vaults). *Reserves* are assets for the banks but liabilities for the Fed, because the banks can demand payment on them at any time and the Fed is required to satisfy its obligation by paying Federal Reserve notes. As shown in the chapter, an increase in reserves leads to an increase in the level of deposits and hence in the money supply.

Total reserves can be divided into two categories: reserves that the Fed requires banks to hold (*required reserves*) and any additional reserves the banks choose to hold (*excess reserves*). For example, the Fed might require that for every dollar of deposits at a depository institution, a certain fraction (say, 10 cents) must be held as reserves. This fraction (10%) is called the *required reserve ratio*. Currently, the Fed pays no interest on reserves.

3. *U.S. Treasury deposits.* The Treasury keeps deposits at the Fed, against which it writes all its checks.
4. *Foreign and other deposits.* These include the deposits with the Fed owned by foreign governments, foreign central banks, international agencies (such as the World Bank and the United Nations), and U.S. government agencies (such as the FDIC and Federal Home Loan banks).
5. *Deferred-availability cash items.* Like cash items in process of collection, these also arise from the Fed's check-clearing process. When a check is submitted for clearing, the Fed does not immediately credit the bank that submitted the check. Instead, it promises to credit the bank within a certain prearranged time limit, which never exceeds two days. These promises are the deferred-availability items and are a liability of the Fed.
6. *Other Federal Reserve liabilities and capital accounts.* This item includes all the remaining Federal Reserve liabilities not included elsewhere on the balance sheet. For example, stock in the Federal Reserve System purchased by member banks is included here.

Monetary Base

The first two liabilities on the balance sheet, Federal Reserve notes (currency) outstanding and reserves, are often referred to as the *monetary liabilities* of the Fed. When we add to these liabilities the U.S. Treasury's monetary liabilities (Treasury currency in circulation, primarily coins), we get a construct called the *monetary base*. The monetary base is an important part of the money supply, because increases in it will lead to a multiple increase in the money supply (everything else being constant). This is why the monetary base is also called

from the \$100 of circulated IOUs. The same reasoning applies for the Fed in regard to its Federal Reserve notes.

For similar reasons, the currency component of the money supply, no matter how it is defined, includes only currency in circulation. It does not include any additional currency that is not yet in the hands of the public. The fact that currency has been printed but is not circulating means that it is not anyone's asset or liability and thus cannot affect anyone's behavior. Therefore, it makes sense not to include it in the money supply.

high-powered money. Recognizing that Treasury currency and Federal Reserve currency can be lumped together into the category *currency in circulation*, denoted by C , the monetary base equals the sum of currency in circulation plus reserves R . The monetary base MB is expressed as follows:²

$$\begin{aligned} MB &= (\text{Federal Reserve notes} + \text{Treasury currency} - \text{coin}) + \text{reserves} \\ &= C + R \end{aligned}$$

The items on the right-hand side of this equation indicate how the base is used and are called the *uses of the base*. Unfortunately, this equation does not tell us the factors that determine the base (the *sources of the base*), but the Federal Reserve balance sheet in Table 1 comes to the rescue, because like all balance sheets, it has the property that the total assets on the left-hand side must equal the total liabilities on the right-hand side. Because the “Federal Reserve notes” and “reserves” items in the uses of the base are Federal Reserve liabilities, the “assets equals liabilities” property of the Fed balance sheet enables us to solve for these items in terms of the Fed balance sheet items that are included in the sources of the base: Specifically, Federal Reserve notes and reserves equal the sum of all the Fed assets minus all the other Fed liabilities:

$$\begin{aligned} \text{Federal Reserve notes} + \text{reserves} &= \text{Securities} + \text{discount loans} + \text{gold and SDRs} \\ &+ \text{coin} + \text{cash items in process of collection} + \text{other Federal Reserve assets} - \\ &\text{Treasury deposits} - \text{foreign and other deposits} - \text{deferred-availability cash} \\ &\text{items} - \text{other Federal Reserve liabilities and capital} \end{aligned}$$

The two balance sheet items related to check clearing can be collected into one term called *float*, defined as “Cash items in process of collection” minus “Deferred-availability cash items.” Substituting all the right-hand-side items in the equation for “Federal Reserve notes + reserves” in the uses-of-the-base equation, we obtain the following expression describing the sources of the monetary base:

$$\begin{aligned} MB &= \text{Securities} + \text{discount loans} + \text{gold and SDRs} + \text{float} + \text{other} \\ &\text{Federal Reserve assets} + \text{treasury currency} - \text{Treasury deposits} - \quad (1) \\ &\text{foreign and other deposits} - \text{other Federal Reserve liabilities and capital} \end{aligned}$$

Accounting logic has led us to a useful equation that clearly identifies the nine factors affecting the monetary base listed in Table 2. As Equation 1 and Table 2 depict, increase in the first six factors increase the monetary base, and increases in the last three reduce the monetary base.

²In the member bank reserves data that the Fed publishes every week, Treasury currency outstanding is defined to include Treasury currency that is held at the Treasury (called “Treasury cash holdings”). What we have defined as “Treasury currency” is actually equal to “Treasury currency outstanding” minus “Treasury cash holdings.”

TABLE 2 SUMMARY *Factors Affecting the Monetary Base*

Factor	Value (\$ billions, end of 2004)	Change in Factor	Change in Monetary Base
Factors That Increase the Monetary Base			
1. Securities: U.S. government and agency securities and banker's acceptances	719.0	↑	↑
2. Discount loans	1.0	↑	↑
3. Gold and SDR certificate accounts	13.2	↑	↑
4. Float	4.0	↑	↑
5. Other Federal Reserve assets	39.0	↑	↑
6. Treasury currency	44.2	↑	↑
Subtotal 1	<u>820.4</u>		
Factors That Decrease the Monetary Base			
7. Treasury deposits with the Fed	4.9	↑	↓
8. Foreign and other deposits with the Fed	34.0	↑	↓
9. Other Federal Reserve liabilities and capital accounts	35.9	↑	↓
Subtotal 2	<u>74.8</u>		
Monetary Base			
Subtotal 1 – Subtotal 2	<u>745.6</u>		

Source: *Federal Reserve Bulletin*.

