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The Federal Reserve's Balance Sheet and Quantitative Easing

The Federal Reserve (Fed) has a balance sheet whose size and composition is a product of its monetary policy and lender-of-last-resort decisions. As discussed below, the Fed has responded to crises by increasing its balance sheet, which is now 10 times larger than it was before the 2008 financial crisis. As part of its efforts to tighten monetary policy, the Fed began to reduce the size of its balance sheet in June 2022. For background, see CRS In Focus IF10054, *Introduction to Financial Services: The Federal Reserve*, by Marc Labonte; and CRS In Focus IF11751, *Introduction to U.S. Economy: Monetary Policy*, by Marc Labonte.

Balance Sheet Primer

The Fed's balance sheet can be described in standard accounting terms. Its assets are equal in value to its liabilities and capital, as shown in **Table 1**. Its net income (i.e., the difference between income and expenses) is comparable to a private company's profits.

Table 1. Simplified Federal Reserve Balance Sheet
June 15, 2022, Trillions of $

Assets		Liabilities and Capital	
Treasury Securities	$5.8	Currency	$2.2
MBS	$2.7	Bank Reserves	$3.2
Loans/Emergency Facilities	<$0.1	TGA	$0.8
Repos	$0	Reverse Repos	$2.4
Liquidity Swaps	<$0.1	Other	$0.3
Other	$0.3	**Total Liabilities**	**$8.9**
		Paid-In Capital	<$0.1
		Surplus	<$0.1
Total	**$8.9**	**Total**	**$8.9**

Source: CRS calculations based on Federal Reserve data.
Note: Total for emergency facilities include Treasury investments.

Assets

Most assets on the Fed's balance sheet are financial securities. The Fed is permitted by law to buy or sell a narrow range of securities and must do so on the open market (referred to as **open market operations**). In practice, it purchases mainly **Treasury securities** and **mortgage-backed securities (MBS)** that are guaranteed by a federal agency or a government-sponsored enterprise (GSE). The open market requirement means that the Fed transacts with **primary dealers**, a group of large broker-dealers active in Treasury markets, and cannot purchase Treasury securities directly from the U.S. Treasury.

When the Fed purchases securities from primary dealers, it increases bank reserves (discussed below), increasing the overall liquidity of the financial system. The Fed can also provide primary dealers and foreign central banks with temporary liquidity through repurchase agreements (**repos**). In a repo, the Fed temporarily purchases a Treasury security or MBS with an agreement to reverse the sale in the near future. (For more information, see CRS In Focus IF11383, *Repurchase Agreements (Repos): A Primer*, by Marc Labonte.) In 2021, the Fed committed to making repo lending permanently available on demand by creating its **Standing Repurchase Agreement Facility**.

In crises, the Fed lends to banks through its **discount window** and creates emergency programs to stabilize financial markets. Through these programs, it makes or acquires loans and acquires private securities that are also assets on its balance sheet. These assets swell during crises and then shrink relatively quickly as financial conditions normalize. The Fed also lends dollars to foreign central banks in crises through **foreign currency swaps**.

Liabilities

Just as the Fed increases market liquidity through repos, it can reduce liquidity through **reverse repos**, in which the Fed temporarily sells securities to market participants and foreign central banks in exchange for cash. In 2014, the Fed institutionalized reverse repos by creating the **Overnight Reverse Repurchase Agreement Facility**. The Fed pays market participants an interest rate on reverse repos, which helps the Fed maintain its monetary policy rate targets.

Banks hold reserves in accounts at the Fed to make and receive payments from other banks. These **bank reserves** are liabilities to the Fed. Similar to reverse repos, the Fed pays banks **interest on reserves** that helps the Fed maintain its interest rate targets. Mechanically, when the Fed purchases a security or makes a loan, it finances it by creating new bank reserves. As a result, the asset and liability sides of the balance sheet increase by an identical amount so that assets always equal liabilities plus capital.

The U.S. Treasury also holds its cash balances at the Fed in the **Treasury General Account (TGA)**. When the Treasury receives revenue, its balance increases, and when it makes payments, its balance decreases. The Fed issues paper **currency**, officially called Federal Reserve notes and commonly called cash. A Federal Reserve note is an IOU from the Fed to its bearer that pays no interest. As such, it is a liability on the Fed's balance sheet.

Capital

The Fed's capital is equal in value to the difference between its assets and liabilities. It takes two forms. First, private

banks that are members of the Fed must purchase stock in the Fed, called **paid-in capital**. Membership is required for nationally chartered banks and optional for state-chartered banks. Unlike common stock in a private company, this stock does not confer ownership control and pays a **dividend** set by statute. However, it does provide the banks with seats on the boards of the 12 Fed regional banks. The dividend is a fixed 6% for banks with under $10 billion in assets and the lesser of 6% or the prevailing 10-year Treasury yield for banks with over $10 billion.

The other form of capital is the Fed's **surplus**. It comes from retained earnings and is currently capped by statute at $6.825 billion. Through a series of recent acts, Congress first capped the surplus and then reduced the cap as a "pay for" (budgetary offset) for unrelated legislation.

Net Income and Remittances

The Fed earns income on its loans, repos, and securities, which, along with fees it charges, are used to finance its expenses. Its expenses include operating expenses and the interest paid on bank reserves and repos. The difference between income and expenses is called net income. Net income is used exclusively to (1) pay statutorily required dividends to shareholders; (2) increase the surplus when it is below its statutory cap; and (3) send back to the Treasury (called **remittances**), where they are added to the federal government's general revenues.

Since 1935, the Fed has remitted revenue to Treasury annually. Since 2008, its net income and remittances have increased significantly. It is possible that the Fed could have negative net income if its expenses exceeded its income in the future. Although this has not happened to date, it could happen if the interest rate it pays on bank reserves and reverse repos became higher than the yield on the securities it held. If the Fed's net income became negative, it would temporarily stop remitting funds to the Treasury. But unlike a private company, under the Fed's accounting conventions it would not reduce its capital, become insolvent, or require a capital infusion to maintain solvency. Instead, it would register the losses as a deferred asset. Unlike a private company, the Fed cannot be compelled by its creditors to declare bankruptcy. Nevertheless, there might be political implications—notably for its independence—if the Fed experienced losses.

Quantitative Easing and Tightening

Before the 2008 financial crisis, the Fed's balance sheet grew modestly over time. During that crisis, the Fed created a number of emergency lending programs that caused its balance sheet to balloon (see **Table 2**). In addition, the Fed wanted to provide more monetary stimulus after reducing interest rates to zero. For the first time, it made monthly **large-scale asset purchases**, popularly called **quantitative easing (QE)**, at a preannounced rate that also caused the balance sheet to increase rapidly. The Fed purchased Treasury securities and debt and MBS issued by government agencies and GSEs. The increase in assets was matched by an increase in liabilities—mainly bank reserves, which were kept at the minimum level needed to meet reserve requirements before the financial crisis but afterwards topped $1 trillion. Since the crisis, the Fed has conducted monetary policy under an **ample reserves framework**, where it creates sufficient reserves that banks' demand for reserves do not influence market interest rates. In the long run, the Fed decides how many securities to hold based on the size of reserves needed under this framework.

QE occurred in three rounds between 2009 and 2014, as the recovery from the financial crisis was initially weak. These rounds varied in their size and duration. From 2014 to 2018, the Fed kept the size of its balance sheet steady by **rolling over** maturing assets (i.e., reinvesting the principal from assets that had matured). Beginning in 2018, the Fed gradually reduced its balance sheet by allowing maturing assets instead to **roll off** the balance sheet up to a fixed amount (i.e., no longer reinvesting principal).

Table 2. Federal Reserve Balance Sheet Trends
Trillions of Dollars, 2008-2022

Event (Dates)	End Size	Change
Financial Crisis (9/08-12/08)	$2.2	+$1.3
QE1 (3/09-5/10)	$2.3	+$0.4
QE2 (11/10-7/11)	$2.9	+$0.6
QE3 (10/12-10/14)	$4.5	+$1.7
Roll Off (9/17-8/19)	$3.8	-$0.7
Repo Turmoil (9/19-2/20)	$4.2	+$0.4
COVID-19 (3/20-5/22)	$8.9	+$4.8

Source: CRS calculations based on Federal Reserve data.

In 2019, repo market volatility convinced the Fed that more bank reserves were needed to operate its ample reserves framework, so it began making repos and purchasing assets, and the balance sheet increased again. When the COVID-19 pandemic began, the pace of repo lending and asset purchases increased and emergency facilities were introduced, causing faster balance sheet growth. In November 2021, responding to high inflation, the Fed announced that it would **taper** off its asset purchases (i.e., purchase fewer assets per month). In March 2022, it ended asset purchases, at which point the balance sheet had more than doubled from its pre-pandemic size. In June 2022, it began to shrink its balance sheet, popularly called **quantitative tightening**, by allowing initially up to $30 billion of Treasury securities and $17.5 billion of MBS to roll off the balance sheet each month for the foreseeable future. The balance sheet is not expected to return to its pre-pandemic size, however.

The goals of QE were to reduce long-term interest rates and provide additional liquidity to the financial system. QE reduced long-term interest rates by driving down yields on the securities the Fed was purchasing, which led to lower interest rates throughout the economy. The reduction in yields on MBS translated to lower mortgage rates, stimulating housing demand. QE increased liquidity by increasing bank reserves.

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