



Bank Reserves

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The minimum cash reserves that financial institutions must keep in their vaults at any given time. Bank reserves are the minimum cash reserves that financial institutions must keep in their vaults at any given time. The minimum cash reserve requirements for financial institutions in each country are set by the central bank of that country.

How Bank Reserves Work

The Role of Bank Reserves

A minimum level of reserves was once regarded as necessary to ensure that a bank could meet the withdrawal of deposits. However experience has shown that a well-run monetary system can operate successfully with no minimum reserve requirements.

Examples include the UK, Canada, Australia, and Sweden. It is fair to ask then what purpose such requirements actually serve in the US system.

Adequate Reserves Do Not Imply Solvency

Reserves comprise funds on deposit at the Fed plus vault cash. A bank can hold adequate reserves and still be insolvent if its total assets, including loans and securities, do not cover its liabilities. However a bank in good standing can always borrow in the money market or at the Fed to meet its reserve requirements.

The measure of a bank's solvency is its capital, i.e. assets minus liabilities. The Fed imposes a lower limit on a bank's capital relative to its risk-weighted assets to provide a margin against insolvency. That ratio is what ultimately limits a bank's deposit creation through lending.

The Basic Function of Reserves

Even with no minimum reserve requirement, banks would still have to hold enough reserves at the Fed to cover the checks written by their depositors, and enough vault cash to meet the demand for currency. The Fed and other clearing banks typically require payment in reserve money which bears no credit risk, rather than direct transfers between private banks which do bear a credit risk.

How Does a Bank Reserve Work?

Reserve requirements are Federal Reserve rules that require banks and other financial institutions to keep a strict percentage of their deposits on reserve at a [Federal Reserve bank](#). The Federal Reserve determines the appropriate percentage

.As a means of ensuring the safety of nation's financial institutions, the Federal Reserve sets reserve requirements so that banks always have some money on hand to prevent a run (a mass withdrawal of deposits so large that the bank actually runs out of cash, panicking the rest of the depositors). If a bank is unable to meet its reserve requirement, it can borrow from the Federal Reserve to meet the requirement.

Why Does a Bank Reserve Matter?

Bank reserves and reserve requirements are a key component of monetary policy. The Federal Reserve can lower the reserve requirement, for example, in order to enact expansionary [monetary policy](#) and encourage economic growth. The reduction makes banks free to lend more of their deposits to other bank customers and earn interest. These customers in turn deposit the [loan](#) proceeds in their own bank accounts, and the process continues indefinitely. This increase in the supply of available funds lowers the price of those funds (i.e., the lending rate), making [debt](#) cheaper and more enticing to borrowers.

If the Federal Reserve increases the reserve requirement (which leaves less of a bank's deposits available for lending), the reverse happens and the Federal Reserve can slow down the economy

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Reserve Ratio Formula

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Formula to Calculate Reserve Ratio

Reserve Ratio refers to the portion of total deposits that the commercial banks are obligated to

maintain with the central bank in cash reserve, and it will not be available for any commercial lending. The requirement for the reserve ratio is decided by the central bank of the country, such as the Federal Reserve in the case of the United States. The calculation for a bank can be derived by dividing the cash reserve maintained with the central bank by the bank deposits, and it is expressed in percentage.

Reserve Ratio Formula is represented as,

Reserve Ratio = Reserve maintained with Central Bank / Bank Deposits * 100%

Reserve-Ratio-Formula

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Explanation of the Reserve Ratio Formula

The calculation of the reserve ratio can be done by using the following steps:

Determine the reserve amount

Firstly, determine the reserve amount maintained by the bank with the central bank, and it will be easily available in the disclosure published by the bank.

Determine the bank deposits

Next, determine the bank deposits borrowed by the bank. It is also known as the net demand and time liabilities.

	A	B	C
1	Particulars	Value	
2	Cash Reserve Ratio	4%	
3	Bank Deposits	\$2,000,000,000	
4	Reserve to be Maintained	\$80,000,000	
5			

The calculation for a bank

Finally, the calculation for a bank is derived by dividing the cash reserve maintained with the central bank (step 1) by the net demand and time liabilities (step 2) and then multiplying by 100%, as shown below.

Reserve Ratio Formula = Reserve maintained with central bank / Bank deposits * 100%

Examples of Reserve Ratio Formula (with Excel Template)

Let's see some simple to advanced examples to understand them better.

You can download this Cash Reserve Ratio Formula Excel Template here – [Cash Reserve Ratio Formula Excel Template](#)

Example #1

Let us take the example of XYZ Bank Ltd, which has recently registered as a bank with the central

bank. The bank wants to determine the cash reserve requirement

If the current regulated reserve ratio is 4%. The bank has net demand and time liabilities of \$2 billion.

Given, reserve ratio = 4%

Bank deposits = \$2,000,000,000

Therefore, the reserve to be maintained by XYZ Bank Ltd can be calculated using the above formula as,

Example 1.1.png

= 4% * \$2,000,000,000

Reserve to be maintained = \$80,000,000 or \$80 million

Therefore, XYZ Bank Ltd must maintain a cash reserve of \$80 million as per the central bank regulations.

Other Useful Functions

Reserve requirements in conjunction with an averaging period for reserve maintenance can provide a useful buffer against disturbances in the money market. For example, if there were an unexpected fall in a bank's reserves early in the maintenance period, the bank could allow its reserves to fall below the required amount temporarily. Later it could hold an excess sufficient to restore the required average level.

In the long run, reserve requirements can also influence the level of bank lending, deposit rates, and the quantity of credit and deposits. The key questions to be decided are: what level of reserves to require, whether they are remunerated (receive interest), and whether they can be averaged over some specified period .

consumers and businesses to obtain credit. Such a move slows down consumption and investment and prevents the economy from overheating.

. In such cases, they can borrow from other financial institutions with excess reserves at the overnight rate. The overnight rate, or bank rate, is the rate at which financial institutions borrow from one another. The rate is generally close to or equal to the target rate set by the central bank of the country.

Reserve Ratio

The central banks in each country are responsible for setting the reserve ratio. While each country follows a slightly different framework for setting the reserve ratio, the main criterion is the size/amount of deposits. Banks with larger accounts are subject to higher reserve ratio requirements.

Banks are generally grouped into pre-determined categories based on their size and overall importance to the economy. Each category is subject to a different reserve ratio and, therefore, the reserve ratio for a particular bank depends on the classification the bank falls under.

Reserve Requirements and Monetary Policy

Central banks globally use the reserve ratio as a key tool to implement monetary policy and to control the money supply and interest rates. A change in reserve ratio requirements can tell a lot about the monetary policy the central banks plan to implement in the near future.

A lower reserve ratio means that banks hold more capital available for lending. It would imply an increase in the money supply in an economy. When the money supply increases, interest rates fall. Similarly, a higher reserve ratio leads to a decrease in the money supply and an increase in interest rates.

While central banks set target rates, they cannot force banks to implement the rate. However, they can indirectly control the interest rates by modifying reserve requirements and changing the money supply in the economy. In recessionary periods, central banks can revive the economy by reducing the reserve ratio. Doing so will increase the money supply in the economy and decrease interest rates, which will boost spending and investments in the economy.

Similarly, to prevent the economy from overheating during inflationary periods, central banks can increase reserve requirements for banks. It will lead to a decrease in the money supply and an increase in interest rates, which will ultimately slow down investment in the economy.

Bank Reserves and Open Market Operations

Open market operations refer to the phenomenon of central banks buying and selling government securities in the open market. In addition to changing reserve requirements, central banks can also use open market operations to control the money supply and interest rates in the economy.

If central banks are aiming for an expansionary monetary policy, they can buy government treasuries from financial institutions on the open market. It leads to an inflow of cash for financial institutions, which allows them to increase lending. As the money supply in the economy grows, interest rates fall and consumers and businesses can obtain more credit to make purchases and investments.

Similarly, central banks can carry out a contractionary monetary policy by selling government treasuries on the open market. It pulls out money from the economy. As the money supply in the economy declines, banks charge higher interest rates on loans, making it difficult for consumers and businesses to obtain credit. Such a move slows down consumption and investment and prevents the economy from overheating.

Special Considerations

The required bank reserve follows a formula set by Federal Reserve Board regulations. The formula is based on the total amount deposited in the bank's net transaction accounts.

The figure includes demand deposits, automatic transfer accounts, and share draft accounts. Net transactions are calculated as the total amount in transaction accounts minus funds due from other banks, and minus cash that is in the process of being collected.

The required reserve ratio can also be used by a central bank as a tool to implement monetary policies. Through this ratio, a central bank can influence the amount of money available for borrowing.

Liquidity Coverage Ratio (LCR)

In addition to bank reserve requirements set by the Federal Reserve, banks must also follow liquidity requirements set by the Basel Accords. The Basel Accords are a series of banking regulations established by representatives from major global financial centers.

After the collapse of the U.S. investment bank Lehman Brothers in 2008, the Basel Accords were strengthened in an agreement known as Basel III. This required banks to maintain an appropriate liquidity coverage ratio (LCR). The LCR requires banks and other financial institutions to hold enough cash and liquid assets to cover fund outflows for 30 days.³

In the event of a financial crisis, the LCR is designed to help banks from having to borrow money from the central bank. The LCR is intended to ensure banks have enough capital on hand to ride out any short-term capital disruptions. It's important to note that even when the Federal Reserve decreases bank reserve minimums, banks must still meet LCR requirements to ensure they have enough cash on hand to meet their short-term obligations.

Required bank reserves are determined by the Federal Reserve for each bank based on its net transactions. Impact of the '08 Crisis

Until the financial crisis of 2008-2009, banks earned no interest for the cash reserves they held. That changed on Oct. 1, 2008. As part of the Emergency Economic Stabilization Act of 2008, the Federal Reserve began paying banks interest on their reserves.⁴ At the same time, the Fed cut interest rates in order to boost demand for loans and get the economy moving again.

The result defied the conventional wisdom that banks would rather lend money out than keep it in the vault. The banks took the cash injected by the Federal Reserve and kept it as excess reserves rather than lending it out. They preferred to earn a small but risk-free interest rate to lending it out for a slightly higher but riskier return.

For this reason, the total amount of excess reserves spiked after 2008 despite an unchanged required reserve ratio.

How Much Money Do Banks Need to Keep in Reserve?

The reserve amount has historically ranged from zero to 10%.

Banks maintain cash reserves as a provision to pay the depositors who might come to withdraw money from the bank on any given day.

Are Bank Reserves Assets or Liabilities?

A bank's reserves are considered part of its assets and are listed as such in its accounts and its annual reports.

How Are Bank Reserves Calculated?

A bank's reserves are calculated by multiplying its total deposits by the reserve ratio.

Where Do Banks Keep Their Reserves?

Some of it is stashed in a vault at the bank. Reserves also may be kept in the bank's account at one of the 12 regional Federal Reserve Banks. Some small banks keep part of their reserves at larger banks and tap into them at need.

This flow of cash between vaults peaks at certain times, like during holiday seasons when consumers take out extra cash. Once the demand subsides, the banks ship off some of their excess cash to the nearest Federal Reserve Bank.⁵

Conclusion

That changed with the creation of the Federal Reserve System, and among the changes was a requirement that banks hold a minimum amount of cash in reserve to meet demand. Since, the reserve minimum has been zero, suggesting that the Federal Reserve is comfortable with the level of cash kept voluntarily by the nation's banks combined with the 30-day liquidity coverage ratio required by the Basel Accords.

