

12.11: Banking Assets and Liabilities

Learning Objectives

- Describe a bank's assets and liabilities in a T-account
- Analyze the causes of bankruptcy and recessions

A Bank's Balance Sheet

A **balance sheet** is an accounting tool that lists assets and liabilities. An **asset** is something of value that is owned and can be used to produce something. For example, the cash you own can be used to pay your tuition. A home provides shelter and can be rented out to generate income. A **liability** is a debt or something you owe. Many people borrow money to buy homes. In this case, the home is the asset, but the mortgage (i.e. the loan obtained to purchase the home) is the liability. The **net worth** is the asset value minus how much is owed (the liability). A bank's balance sheet operates in much the same way. A bank's net worth is also referred to as **bank capital**. A bank has assets such as cash held in its vaults and monies that the bank holds at the Federal Reserve bank (called "reserves"), loans that are made to customers, and bonds.

Figure 1 illustrates a hypothetical and simplified balance sheet for the Safe and Secure Bank. Because of the two-column format of the balance sheet, with the T-shape formed by the vertical line down the middle and the horizontal line under "Assets" and "Liabilities," it is sometimes called a **T-account**.

Assets		Liabilities + Net Worth	
Loans	\$5 million	Deposits	\$10 million
U.S. Government Securities (USGS)	\$4 million		
Reserves	\$2 million	Net Worth	\$1 million

Figure 1. A Balance Sheet for the Safe and Secure Bank

The "T" in a T-account separates the assets of a firm, on the left, from its liabilities, on the right. All firms use T-accounts, though most are much more complex. For a bank, the assets are the financial instruments that either the bank is holding (its reserves) or those instruments where other parties owe money to the bank—like loans made by the bank and U.S. government securities, such as U.S. Treasury bonds purchased by the bank. Liabilities are what the bank owes to others. Specifically, the bank owes any deposits made in the bank to those who have made them. The net worth, or equity, of the bank is the total assets minus total liabilities. Net worth is included on the liabilities side to have the T account balance to zero. For a healthy business, net worth will be positive. For a bankrupt firm, net worth will be negative. In either case, on a bank's T-account, assets will always equal liabilities plus net worth.

When bank customers deposit money into a checking account, savings account, or a certificate of deposit, the bank views these deposits as liabilities. After all, the bank owes these deposits to its customers, and are obligated to return the funds when the customers wish to withdraw their money. In the example shown in Figure 1, the Safe and Secure Bank holds \$10 million in deposits.

Loans are the first category of bank assets shown in Figure 1. Say that a family takes out a 30-year mortgage loan to purchase a house, which means that the borrower will repay the loan over the next 30 years. This loan is clearly an asset from the bank's perspective, because the borrower has a legal obligation to make payments to the bank over time. But in practical terms, how can the value of the mortgage loan that is being paid over 30 years be measured in the present? One way of measuring the value of something—whether a loan or anything else—is by estimating what another party in the market is willing to pay for it. Many banks issue home loans, and charge various handling and processing fees for doing so, but then sell the loans to other banks or financial institutions who collect the loan payments. The market where loans are made to borrowers is called the primary **loan market**, while the market in which these loans are bought and sold by financial institutions is the secondary loan market.

One key factor that affects what financial institutions are willing to pay for a loan, when they buy it in the secondary loan market, is the perceived riskiness of the loan: that is, given the characteristics of the borrower, such as income level and whether the local economy is performing strongly, what proportion of loans of this type will be repaid? The greater the risk that a loan will not be repaid, the less that any financial institution will pay to acquire the loan. Another key factor is to compare the interest rate charged on the original loan with the current interest rate in the economy. If the original loan made at some point in the past requires the borrower to pay a low interest rate, but current interest rates are relatively high, then a financial institution will pay less to acquire the loan. In contrast, if the original loan requires the borrower to pay a high interest rate, while current interest rates are relatively low, then a financial institution will pay more to acquire the loan. For the Safe and Secure Bank in this example, the total value of its loans if they were sold to other financial institutions in the secondary market is \$5 million.

The second category of bank asset is **Treasury securities**, which are a common mechanism for borrowing used by the federal government. Treasury securities include short term bills, intermediate term notes and long term bonds. A bank takes some of the money it has received in deposits and uses the money to buy bonds—typically bonds issued by the U.S. government. Government bonds are low-risk because the government is virtually certain to pay off the bond, albeit at a low rate of interest. These bonds are an asset for banks in the same way that loans are an asset: The bank will receive a stream of payments in the future. In our example, the Safe and Secure Bank holds bonds worth a total value of \$4 million.

The final entry under assets is **reserves**, which is money that the bank keeps on hand, and that is not loaned out or invested in bonds—and thus does not lead to interest payments. The Federal Reserve requires that banks keep a certain percentage of depositors' money on "reserve," which

means either in the banks' own vaults or as deposits kept at the Federal Reserve Bank. This is called a reserve requirement. (Later, when you learn more about monetary policy, you will see that the level of these required reserves is one policy tool that governments have to influence bank behavior.) Additionally, banks may also want to keep a certain amount of reserves on hand in excess of what is required. The Safe and Secure Bank is holding \$2 million in reserves.

The net worth of a bank is defined as its total assets minus its total liabilities. For the Safe and Secure Bank shown in Figure 1, net worth is equal to \$1 million; that is, \$11 million in assets minus \$10 million in liabilities. For a financially healthy bank, the net worth will be positive. If a bank has negative net worth and depositors tried to withdraw their money, the bank would not be able to give all depositors their money.

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How Banks Go Bankrupt

A bank that is bankrupt will have a negative net worth, meaning its assets will be worth less than its liabilities. How can this happen? Again, looking at the balance sheet helps to explain.

A well-run bank will assume that a small percentage of borrowers will not repay their loans on time, or at all, and factor these missing payments into its planning. Remember, the calculations of the expenses of banks every year includes a factor for loans that are not repaid, and the value of a bank's loans on its balance sheet assumes a certain level of riskiness because some loans will not be repaid. Even if a bank expects a certain number of loan defaults, it will suffer if the number of loan defaults is much greater than expected, as can happen during a recession. For example, if the Safe and Secure Bank in Figure 1 experienced a wave of unexpected defaults, so that its loans declined in value from \$5 million to \$3 million, then the assets of the Safe and Secure Bank would decline so that the bank had a negative net worth.

WHAT LED TO THE FINANCIAL CRISIS OF 2008–2009?

Many banks make mortgage loans so that people can buy a home, but then do not keep the loans on their books as an asset. Instead, the bank sells the loan. These loans are often “securitized,” which means that they are bundled together into a financial security that is sold to investors. Investors in these mortgage-backed securities receive a rate of return based on the level of payments that people make on all the mortgages that stand behind the security.

Securitization offers certain advantages. If a bank makes most of its loans in a local area, then the bank may be financially vulnerable if the local economy declines, so that many people are unable to make their payments. But if a bank sells its local loans, and then buys a mortgage-backed security based on home loans in many parts of the country, it can avoid being exposed to local financial risks. (In the simple example in the text, banks just own “bonds.” In reality, banks can own a number of financial instruments, as long as these financial investments are safe enough to satisfy the government bank regulators.) From the standpoint of a local homebuyer, securitization offers the benefit that a local bank does not need to have lots of extra funds to make a loan, because the bank is only planning to hold that loan for a short time, before selling the loan so that it can be pooled into a financial security.

But securitization also offers one potentially large disadvantage. If a bank is going to hold a mortgage loan as an asset, the bank has an incentive to scrutinize the borrower carefully to ensure that the loan is likely to be repaid. However, a bank that is going to sell the loan may be less careful in making the loan in the first place. The bank will be more willing to make what are called “subprime loans,” which are loans that have characteristics like low or zero down-payment, little scrutiny of whether the borrower has a reliable income, and sometimes low payments for the first year or two that will be followed by much higher payments after that. Some **subprime loans** made in the mid-2000s were later dubbed NINJA loans: loans made even though the borrower had demonstrated No Income, No Job, nor Assets.

These subprime loans were typically sold and turned into financial securities—but with a twist. The idea was that if losses occurred on these mortgage-backed securities, certain investors would agree to take the first, say, 5% of such losses. Other investors would agree to take, say, the next 5% of losses. By this approach, still other investors would not need to take any losses unless these mortgage-backed financial securities lost 25% or 30% or more of their total value. These complex securities, along with other economic factors, encouraged a large expansion of subprime loans in the mid-2000s.

The economic stage was now set for a banking crisis. Banks thought they were buying only ultra-safe securities, because even though the securities were ultimately backed by risky subprime mortgages, the banks only invested in the part of those securities where they were protected from small or moderate levels of losses. But as housing prices fell after 2007, and the deepening recession made it harder for many people to make their mortgage payments, many banks found that their mortgage-backed financial assets could end up being worth much less than they had expected—and so the banks were staring bankruptcy in the face. In the 2008–2011 period, 318 banks failed in the United States.

Loan Defaults

The risk of an unexpectedly high level of loan defaults can be especially difficult for banks because a bank's liabilities, namely the deposits of its customers, can be withdrawn quickly, but many of the bank's assets like loans and bonds will only be repaid over years or even decades. This **asset-liability time mismatch**—a bank's liabilities can be withdrawn in the short term while its assets are repaid in the long term—can cause

severe problems for a bank. For example, imagine a bank that has loaned a substantial amount of money at a certain interest rate, but then sees interest rates rise substantially. The bank can find itself in a precarious situation. If it does not raise the interest rate it pays to depositors, then deposits will flow to other institutions that offer the higher interest rates that are now prevailing. However, if the bank raises the interest rates that it pays to depositors, it may end up in a situation where it is paying a higher interest rate to depositors than it is collecting from those past loans that were made at lower interest rates. Clearly, the bank cannot survive in the long term if it is paying out more in interest to depositors than it is receiving from borrowers.

How can banks protect themselves against an unexpectedly high rate of loan defaults and against the risk of an asset-liability time mismatch? One strategy is for a bank to **diversify** its loans, which means lending to a variety of customers. For example, suppose a bank specialized in lending to a niche market—say, making a high proportion of its loans to construction companies that build offices in one downtown area. If that one area suffers an unexpected economic downturn, the bank will suffer large losses. However, if a bank loans both to consumers who are buying homes and cars and also to a wide range of firms in many industries and geographic areas, the bank is less exposed to risk. When a bank diversifies its loans, those categories of borrowers who have an unexpectedly large number of defaults will tend to be balanced out, according to random chance, by other borrowers who have an unexpectedly low number of defaults. Thus, diversification of loans can help banks to keep a positive net worth. However, if a widespread recession occurs that touches many industries and geographic areas, diversification will not help.

Along with diversifying their loans, banks have several other strategies to reduce the risk of an unexpectedly large number of loan defaults. For example, banks can sell some of the loans they make in the secondary loan market, as described earlier, and instead hold a greater share of assets in the form of government bonds or reserves. Nevertheless, in a lengthy recession, most banks will see their net worth decline because a higher share of loans will not be repaid in tough economic times.

Money and Banks—Benefits and Dangers

Money and banks are marvelous social inventions that help a modern economy to function. Compared with the alternative of barter, money makes market exchanges vastly easier in goods, labor, and financial markets. Banking makes money still more effective in facilitating exchanges in goods and labor markets. Moreover, the process of banks making loans in financial capital markets is intimately tied to the creation of money.

However, the extraordinary economic gains that are possible through money and banking also suggest some possible corresponding dangers. If banks are not working well, it sets off a decline in convenience and safety of transactions throughout the economy. If the banks are under financial stress, because of a widespread decline in the value of their assets, loans may become far less available, which can deal a crushing blow to sectors of the economy that depend on borrowed money like business investment, home construction, and car manufacturing. The 2008–2009 Great Recession illustrated this pattern.

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Glossary

[glossary-page][glossary-term]asset: [/glossary-term]

[glossary-definition]item of value that a firm or an individual owns[/glossary-definition][glossary-term]asset–liability time mismatch:[/glossary-term]

[glossary-definition]customers can withdraw a bank’s liabilities in the short term while customers repay its assets in the long term[/glossary-definition][glossary-term]balance sheet:[/glossary-term]

[glossary-definition]an accounting tool that lists assets and liabilities[/glossary-definition][glossary-term]bank capital:[/glossary-term]

[glossary-definition]a bank’s net worth[/glossary-definition][glossary-term]diversify:[/glossary-term][glossary-definition]making loans or investments with a variety of firms, to reduce the risk of being adversely affected by events at one or a few firms[/glossary-definition][glossary-term]liability:[/glossary-term]

[glossary-definition]any amount or debt that a firm or an individual owes[/glossary-definition][glossary-term]net worth:[/glossary-term]

[glossary-definition]the excess of the asset value over and above the amount of the liability; total assets minus total liabilities[/glossary-definition][glossary-term]reserves:[/glossary-term]

[glossary-definition]funds that a bank keeps on hand and that it does not loan out or invest in bonds[/glossary-definition][glossary-term]T-account:[/glossary-term]
[glossary-definition]a balance sheet with a two-column format, with the T-shape formed by the vertical line down the middle and the horizontal line under the column headings for “Assets” and “Liabilities”[/glossary-definition][glossary-term]Treasury securities:[/glossary-term]
[glossary-definition]government debt obligations in which the government sells short term bills, intermediate term notes and long term bonds to raise money[/glossary-definition][glossary-page]

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