LSE EC1B5 Macroeconomics

Handout 10

Credit Market:

Consumption, Saving and Investment

Banks and Financial Intermediation

Banks and financial intermediaries are the organizations that connect savers and borrowers.

There are many different types of financial institutions that channel funds from suppliers (savers) to borrowers (users) of financial capital:

- Asset management companies
- Hedge funds
- Private equity funds
- Venture capital funds
- Shadow banking system

Banks and Financial Intermediation

A balance sheet records the assets and liabilities of a company, like a bank.

An **asset** is something owned by a bank. If an asset is sold, the payment goes to the bank.

A **liability** is something owed to another institution or person. If a liability is sold, the payment comes from the bank.

Citibank’s Balance Sheet, December 2019 (billions of dollars)

Blank	Blank	**Liabilities and stockholders’ equity**	Blank
Reserves	$175	Demand deposits	$1,071
Cash equivalents	$721	Short-term borrowing	$437
Long-term investments	$1,055	Long-term debt	$249
		Total liabilities	$1,757
		Stockholders’ equity	$194
Total assets	$1,951	**Total liabilities + Stockholders’ equity**	$1,951

Assets of a bank:

- **Bank reserves** are vault cash and holdings on deposit at the Federal Reserve Bank.
- **Cash equivalents** are riskless, liquid assets that a bank can immediately access.
- **Long-term investments** are loans to households and firms and the value of the bank’s properties.

Liabilities of a bank:

- **Demand deposits** are funds that depositors can access on demand.
- **Short-term borrowing** consists of loans from other financial institutions that are short in duration.
- **Long-term debt** is debt that is due to be repaid in one year or more.

Liabilities of a bank:

- **Stockholders' equity** is the difference between a bank's total assets and total liabilities. It is equal to the estimated value of a company if priced "correctly" by the stock market.

What Banks Do

Banks perform three interrelated functions as financial intermediaries:

1. Identify profitable lending opportunities.

2. Transform short-term liabilities into long-term investments (maturity transformation).
3. Manage risk through diversification.

What Banks Do

1. Banks identify profitable lending opportunities by:

   a. Attracting a large number of “would be” borrowers.
   b. Identifying the best loan applications.

2. Banks transform short-maturity liabilities, like deposits, into long-term investments, like business and real estate loans.

   This process is called *maturity transformation*.

What Banks Do

Maturity

The time until a debt must be repaid.

Demand deposits and short-term borrowing of banks have a 0-year maturity since depositors can take back their money at any time.

Loans and other long-term assets have a maturity ranging from several years to 30 years.

What Banks Do

3. Banks manage risk by:

    a. Holding a *diversified* portfolio.

    b. Transferring risk to stockholders and ultimately to the U.S. government during a severe financial crisis.

Banks hold a diverse set of assets, including mortgages, consumer loans, business loans, loans to other financial institutions, and government debt.

A diversified portfolio is useful in that assets are unlikely to underperform all at the same time.

What Banks Do

Diversification by itself is insufficient to manage risk because a large fraction of a diverse set of assets can still underperform.

In 2007–2009, 12% of all mortgages entered some form of delinquency (non-payment). As a result, the return on average assets for all U.S. banks became negative.

What Banks Do

Depositors of a bank remain safe because banks transfer risk to stockholders and, ultimately, the U.S. government.

Why?

When the banks’ assets lose value, this translates into a reduction in stockholders’ equity. When shareholders’ equity falls to zero, the bank’s creditors may also face losses. On the other hand, the bank’s depositors will always be repaid if their deposits are in FDIC-insured accounts. This means that the FDIC is ultimately on the hook to cover the depositors.

What Banks Do

Illustrative Balance Sheet (Billions of dollars)

Panel (a) Before Investment Loss (Billions of Dollars)			
Assets		**Liabilities and stockholders' equity**	
Reserves & cash equivalents	1	Demand deposits	9
Long-term investments	10		
		Total liabilities	**9**
		Stockholders' equity	2
Total assets	**11**	**Total liabilities + stockholders' equity**	**11**

What Banks Do

Illustrative Balance Sheet (Billions of dollars)

Panel (b) After $1 Investment Loss (Billions of Dollars)			
Assets		**Liabilities and stockholders' equity**	
Reserves & cash equivalents	1	Demand deposits	9
Long-term investments	10 − 1 = 9		
		Total liabilities	**9**
		Stockholders' equity	2
Total assets	**11 − 1 = 10**	**Total liabilities + stockholders' equity**	**11**

What Banks Do

The previous table shows the case when the bank's long-term investments lose 10% of their value.

In this case, stockholders' equity is reduced by $1 billion. The bank remains solvent.

What if the bank's long-term investments lose 30% of their value?

What Banks Do

The Bank suffers a 30% reduction in the value of its long-term assets.

Assets	Liabilities
Reserves and cash 1	Demand deposits 9
Long-term invest 10–3 = 7	Total liabilities 9
	Stockholders' equity 2–2 = 0
Total assets 11–3 = 8	**Total liabilities 11–2 = 9**

What Banks Do

Stockholders' equity goes to zero, and the bank is *insolvent*, with assets valued less than liabilities. The Federal Deposit Insurance Corporation (FDIC) and quite often U.S. taxpayers must make up the difference.

What Banks Do

The FDIC will either:

1. Shut down the bank's operations and make payments to depositors up to $250,000.

2. Transfer the bank to new ownership, where all depositors are protected.

What Banks Do

Maturity and risk transformation create risks because the bank's assets are illiquid, and the bank's liabilities are liquid.
The bank is effectively locking up money in its assets that are payable to depositors and other creditors on short notice.

What Banks Do

If there is a concern that a bank may run out of liquid assets, a *bank run* may occur.

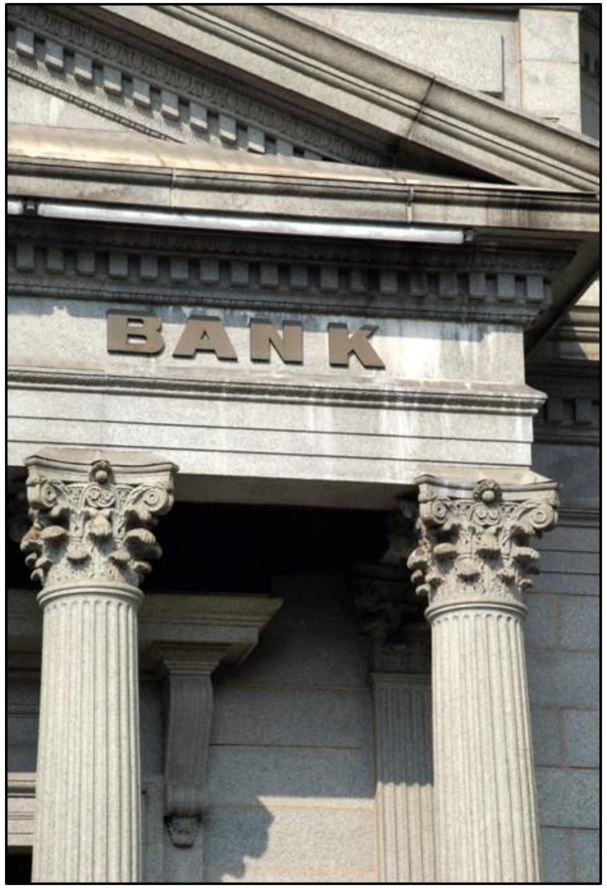
A substantial number of depositors may try to withdraw their deposits at the same time.
This initial panic may lead other depositors to withdraw before the liquid assets are gone.
The bank may be forced to sell its illiquid assets in "fire sales," where it receives lower prices.

Credit Markets

Evidence-Based Economics Example

Question: How often do banks fail?

Data: Historical banking data for 1892 to present from the Federal Reserve and the FDIC.



Credit Markets

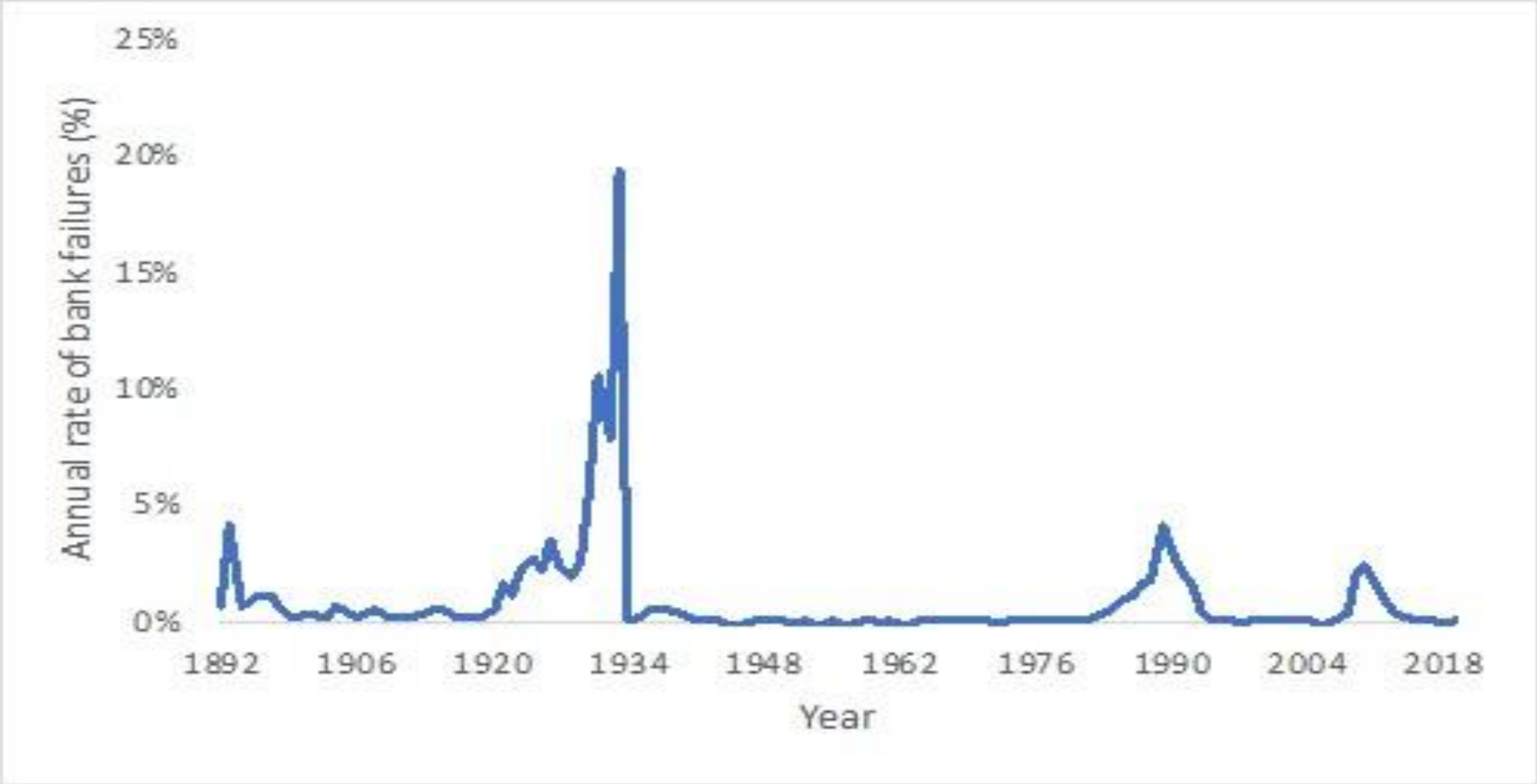
There have been four waves of bank failures in the United States.
The first wave was the 1919–1928 decade, when 6,000 banks, mainly rural, failed.
The second wave was the 1929–1939 decade (the Great Depression), when 9,000 banks failed.

Credit Markets

The third wave was the 1986–1995 saving and loan crisis, when 3,000 banks, mainly small, failed.
The fourth wave was the 2007–2009 financial crisis, when several (nonbank) financial institutions, like Lehman Brothers, collapsed.

Credit Markets

Annual Rate of Bank Failures in the United States (1892–2019)



Credit Markets

Evidence-Based Economics Example

Question: How often do banks fail?

Answer: Although there have been long periods of calm, four waves of banks failures have occurred, resulting in around 20,000 total failures.

Caveat: Counting bank failures may be misleading in that the failure of one large bank like Lehman Brothers may be more destructive than the failure of hundreds of small banks.

Credit Markets

The collapse of Lehman Brothers has led to the regulation of systemically important financial institutions (SIFIs) that are considered “too big to fail.”

1. A SIFI now must submit a “living will,” explaining how it would sell off its assets.
2. A SIFI is required to take on less risk and hold more stockholders’ equity.
3. A SIFI is required to pass a “stress test”, showing how they will deal with a severe recession.