

Lecture 2: Financial Intermediation

ECON 43370: Financial Crises

Prof. Eric Sims

University of Notre Dame

Fall 2026

Financial Intermediation

Financial intermediation is the process through which financial institutions channel funds from savers to borrowers

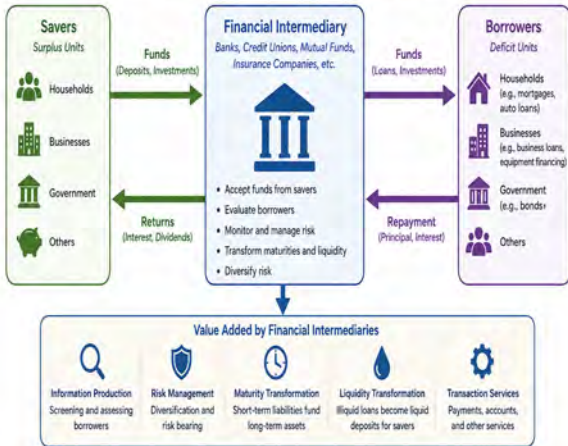
Intermediation is a form of indirect finance (rather than direct)

Why is financial intermediation prevalent?

- Economies of scale
- Diversification
- Insurance
- Informational asymmetries
- Maturity/liquidity transformation

The Basics of Financial Intermediation

Financial intermediaries channel funds from savers to borrowers and add value by reducing costs and managing risks.



Financial intermediation makes the financial system more efficient and supports economic growth.

Economies of Scale

Investment projects are often very large (e.g., constructing a new office building costs several million dollars)

Most savers have relatively small amounts to save (e.g., several thousand dollars)

Efficient to pool lots of small savings to fund large investment projects

Intermediaries can do that pooling

Diversification

Direct, concentrated finance is risky

- If you invest \$1 in a company, and that company fails, you could lose the entire \$1

Indirect finance offers diversification

- You invest \$1 with an intermediary, who invests in many companies. Some might fail, but it's unlikely all will. Provides you with diversification

Insurance

Individuals are subject to low-probability but extremely costly events (e.g., early death, incapacitating illness, etc.)

Self-insurance (building up a “nest egg”) is very costly and slow

While idiosyncratic risk exists at individual level, for the most part, there is little of this type of risk at the aggregate level

- e.g., an actuary can have a pretty good idea of what fraction of the population will die in a given year

By pooling resources, intermediaries can offer a product (insurance) that requires periodic, small, and regular inflows (premiums) but pays out in a state-contingent fashion

Information Asymmetries

Asymmetric information: situation in which parties to a transaction are not equally informed about things relevant to the transaction

- e.g., the seller of a used car knows more about its type ("peach" or "lemon") than a potential buyer does (adverse selection)
- e.g., a lender cannot perfectly monitor how a borrower actually uses the funds (e.g., taking on too much risk) (moral hazard)

May cause beneficial transactions to not be consummated

Intermediaries can become experts in screening (adverse selection) and monitoring (moral hazard) borrowers

Maturity/Liquidity Transformation

Most investment projects (e.g., buildings) are long-term and illiquid (i.e., difficult to turn into cash on short notice)

Savers might have unexpected spending needs. They therefore desire products that are short-term and liquid

By pooling lots of resources, intermediaries can simultaneously invest in long-term, illiquid projects while providing savers access to short-term, liquid savings vehicles

This is really important and valuable. It's also what exposes the system to crises / runs

Bank

We will (loosely) use the word “bank” to describe any levered financial institution that:

- Finances itself with short-term, liquid debt
- Invests in longer-term, less liquid assets

“Borrow short, lend long”

From a regulatory perspective, what we usually mean by a “bank” is a commercial bank: has a charter, issues deposits, and is regulated in the kinds of assets it can hold

Bank-like Financial Institutions

There are many bank-like financial institutions

These borrow short, lend long, and create liquidity

But they are less regulated: “shadow banking system”

- Finance company (Ford Motor Credit Company)
 - Special purpose vehicle: purchases loans made by finance company and securitizes them
- Broker-dealer / investment bank (Goldman Sachs)
- Money market fund (Fidelity Government Money Market Fund)
- Mortgage firm (Rocket Mortgage)

T-ACCOUNT: HYPOTHETICAL COMMERCIAL BANK BALANCE SHEET

(All amounts in millions of USD)

ASSETS		LIABILITIES & EQUITY	
	Reserves \$20		Deposits \$170
	Loans \$150		Other Borrowing \$10
	Securities \$30		Bank Equity (Capital) \$20
TOTAL ASSETS	\$200	TOTAL LIABILITIES & EQUITY	\$200

Typical commercial bank:

- takes deposits from customers
- holds reserves for liquidity
- makes loans to households and businesses

Assets = Liabilities + Equity

\$200 = \$180 + \$20

T-ACCOUNT: HYPOTHETICAL NON-DEPOSITORY FINANCIAL INSTITUTION

(All amounts in millions of USD)

ASSETS			LIABILITIES & EQUITY		
	Cash & Short-Term Assets	\$15		Repo Borrowing	\$70
	Securities	\$85		Commercial Paper	\$40
	Loans / Other Investments	\$50		Long-Term Debt	\$20
TOTAL ASSETS		\$150	TOTAL LIABILITIES & EQUITY		\$150

Typical non-depository institution:

- does not take deposits
- relies on market-based funding
- often finances securities and loans with short-term borrowing

$$\begin{aligned}
 \text{Assets} &= \text{Liabilities} + \text{Equity} \\
 \$150 &= \$130 + \$20
 \end{aligned}$$

The Business of Banking

Banks (and bank-like institutions) manage their balance sheets to try to earn a profit

Want your assets to have higher returns than the interest expense of liabilities

“3-6-3” Rule

Commercial Bank

In previous example, suppose commercial bank earns 6 percent on loans and securities (nothing on reserves) and pays 3 percent for deposits and borrowings

Ignoring other operating costs, fees, and/or taxes, profit equals net interest income

$$\text{Profit} = 0.06 \times (150 + 30) - 0.03 \times (170 + 10) = 5.4$$

Leverage and Returns

Return on Assets (ROA): $\frac{\text{profit}}{\text{assets}}$ (2.7 percent)

Return on Equity (ROE): $\frac{\text{profit}}{\text{equity}}$ (27 percent)

Leverage (equity multiplier): $\frac{\text{assets}}{\text{equity}}$: 10

$$\text{ROE} = \text{leverage} \times \text{ROA}$$

T-ACCOUNT: HYPOTHETICAL COMMERCIAL BANK BALANCE SHEET

(All amounts in millions of USD)

ASSETS		LIABILITIES & EQUITY	
	Reserves \$20		Deposits \$220
	Loans \$200		Other Borrowing \$10
	Securities \$30		Bank Equity (Capital) \$20
TOTAL ASSETS \$250		TOTAL LIABILITIES & EQUITY \$250	

Typical commercial bank:

- takes deposits from customers
- holds reserves for liquidity
- expands balance sheet by making loans and creating deposits

Assets = Liabilities + Equity

\$250 = \$230 + \$20

Returns with More Leverage

$$\text{Profit} = 0.06 \times (200 + 30) - 0.03 \times (220 + 10) = 6.9$$

Return on Assets (ROA): $\frac{\text{profit}}{\text{assets}}$ (2.76 percent)

Return on Equity (ROE): $\frac{\text{profit}}{\text{equity}}$ (34.5 percent)

Leverage (equity multiplier): $\frac{\text{assets}}{\text{equity}}$: 12.5

Leverage magnifies both gains and losses

Credit and Liquidity Risk

In managing its balance sheet, a bank (or bank-like financial institution) must manage:

1. Credit risk: assets may underperform (say, due to default)
2. Liquidity risk: liabilities may dry up (e.g., withdrawals), forcing the bank to come up with cash

Capital and Liquidity

As a precaution against credit risk, capital is king (equity)

- The better capitalized (less levered), the more an institution can withstand asset under-performance before becoming insolvent
- The less likely insolvency is, the better borrowing terms an institution can get

Liquid assets (e.g., reserves) are the precaution against liquidity risk

- The more liquidity, the less likely a withdrawal is to force you to sell assets at a potential loss

Downside: more capital and more liquid assets typically lower return on equity (holding all else fixed)

Credit Risk, Capital, and Insolvency

T-ACCOUNT: HYPOTHETICAL COMMERCIAL BANK BALANCE SHEET

(All amounts in millions of USD)

BEFORE WRITE-OFF

ASSETS		LIABILITIES & EQUITY	
	Reserves \$20		Deposits \$170
	Loans \$150		Other Borrowing \$10
	Securities \$30		Bank Equity (Capital) \$20
TOTAL ASSETS \$200		TOTAL LIABILITIES & EQUITY \$200	

\$30 in loans go into default and are written off.
(Loan asset is reduced by \$30. Equity absorbs the loss.)

AFTER WRITE-OFF

ASSETS		LIABILITIES & EQUITY	
	Reserves \$20		Deposits \$170
	Loans \$120 (Was \$150)		Other Borrowing \$10
	Securities \$30		Bank Equity (Capital) \$-10 (Was \$20)
TOTAL ASSETS \$170		TOTAL LIABILITIES & EQUITY \$170	

The loan write-off reduces assets by \$30.
Equity (capital) is reduced by \$30.

Liquidity Risk → Fire Sales → Insolvency

In a systemic liquidity crisis, it can be difficult to distinguish a solvent but illiquid institution from an insolvent institution

Facing liquidity pressures (i.e., a “run on the bank”), institutions try to sell assets (“fire sales”)

To do this quickly, especially when everyone else is doing the same, requires selling at depressed prices

This leads to losses and might wipe out equity and lead to insolvency

Liquidity Risk

T-ACCOUNT: HYPOTHETICAL COMMERCIAL BANK BALANCE SHEET

(All amounts in millions of USD)

BEFORE WITHDRAWAL

ASSETS		LIABILITIES & EQUITY	
	Reserves \$20		Deposits \$170
	Loans \$150		Other Borrowing \$10
	Securities \$30		Bank Equity (Capital) \$20
TOTAL ASSETS \$200		TOTAL LIABILITIES & EQUITY \$200	

\$70 withdrawal must be paid out in cash.

Bank uses \$20 of reserves

Bank sells \$30 of securities at full value

Bank still needs \$20 more cash, so it sells \$40 of loans

Loans can only be liquidated at 50 cents on the dollar

Selling \$40 of loans generates only \$20 cash

The \$20 loss reduces equity.

AFTER WITHDRAWAL

ASSETS		LIABILITIES & EQUITY	
	Reserves \$0 (Was \$20)		Deposits \$100 (Was \$170)
	Loans \$110 (Sold \$40 face value)		Other Borrowing \$10
	Securities \$0 (Was \$30)		Bank Equity (Capital) \$0 (Was \$20; loss of \$20)
TOTAL ASSETS \$110		TOTAL LIABILITIES & EQUITY \$110	

Withdrawal funding: \$20 reserves + \$30 securities sale + \$20 cash from loan sale = \$70

Because \$40 of loans had to be sold to raise \$20 cash, equity falls by \$20.

Liquidity Risk: “Shadow” Bank

T-ACCOUNT: HYPOTHETICAL SHADOW BANK BALANCE SHEET

(All amounts in millions of USD)

BEFORE NON-ROLLOVER

ASSETS		LIABILITIES & EQUITY	
	Cash & Cash Equivalents \$20		Repo \$170
	Securities \$160		Other Borrowing \$10
	Other Assets \$20		Shadow Bank Equity (Capital) \$20
TOTAL ASSETS \$200		TOTAL LIABILITIES & EQUITY \$200	

\$70 of repo is not rolled over and must be repaid in cash.

- Shadow bank uses \$20 of cash & cash equivalents.
- Shadow bank still needs \$50 more cash, so it sells securities.
- In stressed markets, securities sell at 80 cents on the dollar.
- Selling \$62.5 of securities generates only \$50 cash.
- The \$12.5 fire-sale loss reduces equity.

AFTER NON-ROLLOVER

ASSETS		LIABILITIES & EQUITY	
	Cash & Cash Equivalents \$0 (Was \$20)		Repo \$100 (Was \$170)
	Securities \$97.5 (Sold \$62.5 face value)		Other Borrowing \$10
	Other Assets \$20 (Unchanged)		Shadow Bank Equity (Capital) \$7.5 (Was \$20; loss of \$12.5)
TOTAL ASSETS \$117.5		TOTAL LIABILITIES & EQUITY \$117.5	

Funding of repo repayment: \$20 cash + \$50 cash from securities sale = \$70
Because \$62.5 of securities had to be sold to raise \$50 cash, equity falls by \$12.5.

Bank Runs



Runs

Bank runs are situations in which depositors, en masse, want their “money” out

But the “money” isn’t there – deposits are claims on a bank, not bags of currency stored in a vault

If this is happening systemically, scramble for cash leads to fire sales, which exacerbates the situation

Financial crises are really about “runs,” whether on deposits (Great Depression) or other short-term debt instruments (Repo, commercial paper, etc. in Great Recession)

Policies to Prevent/Mitigate Runs

Liquidity and capital requirements

Supervision and regulation

Lender of last resort

- Local clearinghouses prior to Fed
- Fed after 1914

Deposit insurance