Banking Crisis

Before

After
Part I: Bank Balance Sheet

- Capital (owner’s equity) – what the shareholders get after the rest of liabilities are paid off.
Making Profit

| Leverage = \( \frac{\text{Assets}}{\text{Capital}} \) |
| Net Interest Margin = \( \frac{\text{Interest Earned} - \text{Interest Paid}}{\text{Assets}} \) |
Making Profit: Example 1

- Leverage = 100/20 = 5
- If NIM is 4%, and assets are 100 billion, the profit is 4 billion,
- Profit/Capital rate = 4/20 = 20%,
- Shareholders earn 20% on their investment.
Making Profit: Example 2

- Leverage = \( \frac{100}{10} = 10 \).
- If profit is 4 billion,
- Profit/Capital rate = \( \frac{4}{10} = 40\% \),
- Shareholders earn 40\% on their investment.

![Bank Balance Sheet](chart.png)
Making Loss: Example 1

- Leverage = 100/20 = 5
- If the loss is 4 billion...
Making Loss: Example 1

- Loss/capital rate = 4/20 = 20%,
- Share holders loose 20% of their investment.
Making Loss: Example 2

- Leverage = 100/10 = 10
- If the loss is 4 billion...
Making Loss: Example 2

- Loss/capital rate = 40%,
- Shareholders lose 40% of their investment.
Recap of Part I

- Lower capital relative to total assets increases the leverage.
- With higher leverage and the same net interest margin, the shareholders earn greater relative profit.
- With higher leverage and the same loss, the shareholders lose greater fraction of their investment.
Part II: Bank Run

Suppose that initially the BS is...
Part II: Bank Run

- Now the bank reports a loss of 10 billion.
- Account holders might panic that the bank won’t be able to pay them.
- They attempt to withdraw their money all at the same time.
Part II: Bank Run

- The bank can’t pay them all at the same time because not all assets are liquid (e.g. mortgage loans).
- The bank closes...
Solution to Bank Runs

- FDIC – Federal Deposit Insurance Corporation.
- FDIC provides deposit insurance, which guarantees the safety of deposits in member banks, currently up to $250,000 per depositor per bank.
Excess Reserves

Billions of dollars

Date

Part III: Toxic Assets

- Suppose that initially the BS is...
Part III: Toxic Assets

- As a result of giving many bad loans, it is clear that some will end up in default.
- Toxic assets have uncertain value, and can create potential loss.
- The BS is...
Toxic Assets Become a Loss

- Suppose that 15 billions of the toxic assets become a loss.
- Shareholders still have some equity in the bank.
Toxic Assets Become a Loss

- Suppose that 20 billions of the toxic assets become a loss.
- Shareholders lost all their investment.
Toxic Assets Become a Loss

- Suppose that 40 billions of the toxic assets become a loss.
- Shareholders lost all their investment.
- Bank is balance sheet insolvent: Liabilities > Assets.
Insolvency

- **Cash Flow Insolvency:** Inability to pay current debt. Can occur even if assets = liabilities, when current income flow is less than the current debt obligations.

- **Balance Sheet Insolvency:** Liabilities > Assets. It is possible that the current revenue is enough to cover current debt obligations and the bank is still cash flow solvent.
Insolvency

- Insolvency is not the same as bankruptcy, which is a determination of insolvency made by a court of law with resulting legal orders intended to resolve the insolvency.

- Consequences of insolvency – debt restructuring (allows a company facing cash flow problems, to reduce and renegotiate its delinquent debts in order to improve or restore liquidity and rehabilitate).
Solution 1: Bankruptcy Under Chapter 11 or Chapter 7

- Under ch. 7 the business stops it’s operation, a trustee sells all of its assets, and then distributes the proceeds to its creditors.
Solution 1: Bankruptcy Under Chapter 11 or Chapter 7

- Under ch. 11 the debtor remains in control of its business operations and is subject to the oversight and jurisdiction of the court.
Solution 1: Bankruptcy Under Chapter 11 or Chapter 7

- In either case the creditors will likely get a “haircut”.

[Diagram showing a bank balance sheet with categories for assets, normal assets, toxic assets, haircut, liabilities, and liabilities plus capital.]
Solution 2: TARP, PPIP

- **TARP** - Troubled Asset Relief Program.
- **PPIP** - Public-Private Investment Program.
Solution 2: TARP, PPIP

- The idea is to replace the toxic assets with money from TARP or PPIP.
- Problem: how much to pay for these assets?
Solution 2: TARP, PPIP

- Pay too much – this is a transfer of wealth from taxpayers to shareholders

![Bank Balance Sheet](chart.png)

- TARP or PPIP: 50
- Capital, 20
- Normal Assets: 50
- Liabilities: 80
Solution 2: TARP, PPIP

- Pay too little – the bank will remain insolvent.
Solution 3: Injecting Capital

- Knowing that some of the toxic assets will create a loss, the TARP capital provides a “cushion”.
- If the value of toxic assets decreases by 30, the bank is still BS solvent.
Solution 3: Injecting Capital

- Problems: what percentage of the bank should the government own, and which capital is wiped out in case of losses?
Solution 3: Injecting Capital

- Toxic assets lose 20 billion.
- Original shareholders are wiped out.
Solution 3: Injecting Capital

- Toxic assets lose 20 billion.
- Original shareholders lose 10, and government (tax payers) lose 10.
Summary of Part III

- Not obvious which is the best solution to the toxic assets and possibility of banks’ insolvency is.
- Injecting capital as needed eliminates the need to price those assets.
- Unlimited injections of capital reduces the incentives of bankers to improve, and transfers wealth from taxpayers to shareholders.