LECTURE NOTES ON MACROECONOMIC PRINCIPLES

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Liquidity and Solvency Problems in a Fractional Reserve Banking System

A Simplified Bank Balance Sheet

Suppose that the First National Bank opens.

It owners buy $10 in newly-issued stock/equity, and the bank uses these funds to buy bank buildings, office equipment, and various "other assets."

First National Bank

Assets	**Liabilities**
Other assets $10	Shareholder's equity $10

Suppose then the bank accepts $100 in deposits, holds $10 in reserves, and lends the remaining $90 out.

First National Bank

Assets	**Liabilities**
Reserves $10 Loans $90 Other assets $10	Deposits $100 Shareholder's equity $10

Example 1: A Liquidity Crisis

Now suppose that the First National Bank experiences an unexpected $50 deposit outflow.

It only has $10 in its vault to honor withdrawal requests, and it can't reduce its loans on short notice.

This bank is "illiquid" but still "solvent." It has assets that it could use to satisfy its depositors, but it can't convert those assets to currency quickly enough.

What can it do?

- Borrow reserves from another bank in the federal funds market.
- As a "last resort," borrow money from the Fed.

If it still wants to hold $5 in reserves, it needs to borrow $45.

First National Bank

Assets	Liabilities
Reserves $5	Deposits $50
Loans $90	Borrowing $45
Other assets $10	Shareholder's equity $10

Why might the First National Bank experience this deposit outflow?

Maybe there is a bank run: depositors, realizing that there is not enough cash in the bank's vault, could all rush to withdrawal their savings, since without the Fed's discount window the bank might not be able to honor more than $10 in withdrawal requests.

Today, the Federal Deposit Insurance Corporation (FDIC) insures most bank deposits.

So the Fed's discount window and FDIC insurance work together to prevent banking panics.

The key features of the banking system that allow for this instability in the first place are:

- Fractional reserve banking.
- Deposits (liabilities) that are payable on demand, and are therefore like very short-term debt.
- Assets that need to be held for the long term.

One element of the recent financial crisis is that many nonbank financial companies were funding themselves with very short-term debt but holding long-term assets. They were behaving like banks but did not have access to the Fed's discount window or FDIC insurance.

As one reaction to the crisis, the Fed has extended credit to nonbank financial institutions, FDIC insurance has been extended to money market mutual funds, and other federal government guarantees have been made to make other short-term debt more secure.

Example 2: A Solvency Crisis

Now let's go back to the beginning:

First National Bank

Assets	Liabilities
Reserves $10	Deposits $100
Loans $90	Shareholder's equity $10
Other assets $10	

Suppose now that $50 of the bank's loans go bad: the borrowers go bankrupt and can't repay.

Now the bank must write off the value of those loans:

First National Bank

Assets	Liabilities
Reserves $10	Deposits $100
Loans $40	Shareholder’s equity -$40
Other assets $10	

Even if the bank sells off some of its other assets, it cannot repay what it, in turn, owns to its depositors. Shareholder’s equity is wiped out and, technically, the bank is “insolvent” or bankrupt.

What can be done now?

The government can pay off the depositors from the FDIC insurance fund and recoup at least some of the costs by selling the insolvent bank’s assets to another bank. Essentially, this is how the savings and loan crisis of the early 1990s was resolved.

Or it could use taxpayer funds to “recapitalize” the bank, more like what is happening now.

For example: as part of this arrangement, the government might pay the bank $50 for the bad (worthless) loans, and at the same time wipe out the original owner’s equity stake:

First National Bank

Assets	Liabilities
Reserves $60	Deposits $100
Loans $40	Private shareholder’s equity $0
Other assets $10	Government’s equity $10

The bank could then go ahead and make $50 in new loans:

First National Bank

Assets	Liabilities
Reserves $10	Deposits $100
Loans $90	Private shareholder’s equity $0
Other assets $10	Government’s equity $10

The bank’s balance sheet now looks the same as it did before the crisis, but now it is owned by the government.