E216 : Economics of MONEY AND BANKING

Second grade

First term

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Chapter 10

Banking and the Management of Financial Institutions

Learning outcome

1. How banking is conducted to earn the highest profits possible?
2. How and why banks make loans?
3. How they acquire funds and manage their assets and liabilities (debts)?

1. Bank Balance sheet

- **balance sheet:** is a list of the bank's assets and liabilities that balances,

total assets = total liabilities + capital

bank uses of funds: obtain more assets such a securities and loans

sources of bank funds: e.g., borrowing , issuing deposits

Banks make profits by charging an interest rate on their holdings of securities and loans that is higher than the expenses on their liabilities.

1. Bank Balance sheet

Assets	Liabilities
▪ Reserves(vault cash) deposits + currency ▪ Cash items in process of collection ▪ Deposits at other banks Securities ▪ Loans ▪ Other assets	• Checkable deposits • Nontransaction deposits Savings accounts Time deposits • Borrowings • Bank capital

1. Bank Balance sheet

Liabilities

- the funds obtained from issuing liabilities are used to purchase income-earning assets

1. **Checkable deposits:** are bank accounts that allow the owner of the account to write checks to third parties. (e.g., demand deposits that bank must pay immediately upon the depositor request).

- A checkable deposit is an asset for the depositor and a liability for the bank.
- The lowest-cost source of bank funds
- The bank's costs include: interest payments, costs of servicing these accounts impressive building and conveniently located branches, and advertising

1. Bank Balance sheet

Liabilities

2. Non-transaction deposits: are the primary source of bank funds that Owners cannot write checks on them, but the interest rates are usually higher than those on checkable deposits.

- Two basic types : savings accounts and time deposits

3. Borrowings

- Banks obtain funds by borrowing from the central bank and , other banks, and corporations.
- Borrowings from the central bank are called **discount loans**
- Banks borrow reserves overnight in central bank funds market from other banks and financial institutions to have enough deposits to meet the requirements of the central bank (required reserve ratio)

1. Bank Balance sheet

Liabilities

2. Bank capital: is the bank's net wealth, which equals the difference between total assets and liabilities

- The funds are raised by selling new equity (stock) or from retained earnings. Bank capital is a cushion against a drop in the value of its assets, which could force the bank into insolvency
- **Insolvency** : having liabilities in excess of assets, meaning that the bank can be forced into economic failure.

1. Bank Balance sheet

Assets

1. **Reserves:** are these deposits plus currency that is held by banks

A. required reserves: are held because of **reserve requirements**

- **reserve requirements:** the regulation that for every dollar of checkable deposits at a bank, a certain fraction (10 cents, for example) must be kept as reserves in the central bank. This is called the **required reserve ratio**.

B. excess reserves: Banks hold additional reserves because they are the most liquid of all bank assets and can be used by a bank to meet its obligations when funds are withdrawn

1. Bank Balance sheet

Assets

2. Cash items in process of collection

Suppose that a check written on an account at another bank is deposited in your bank and the funds for this check have not yet been received (collected) from the other bank. The check is classified as a cash item in process of collection, and it is an asset for your bank because it is a claim on another bank for funds that will be paid within a few days.

3.Deposits at other banks:

Many small banks hold deposits in larger banks in exchange for a variety of services (check collection, foreign exchange transactions, and help with securities purchases).

1. Bank Balance sheet

Assets

4. **Securities:** A bank's holdings of securities are an important income-earning asset (shares and bonds).

5. **Loans:** A loan is a liability for the individual or corporation receiving it, but an asset for a bank, because it provides income to the bank.

   - less liquid than other assets as they cannot be turned to cash until the loan matures
   - have a higher probability of default (non payment) than other assets.
   - the bank earns its highest return on loans.

6. **Other assets:** The physical capital (bank buildings, computers, and other equipment) owned by the banks.

2. Basic Banking: Cash deposit

- banks make profits through asset transformation
- ***asset transformation:***

selling liabilities with one set of characteristics (a particular combination of liquidity, risk, size, and return **e.g., saving deposits**) and using the earnings to buy assets with a different set of characteristics **e.g., mortgage loans**.

- transforming assets is like any other production process in a firm.

- If the bank produces appropriate services at low cost and earns large income on its assets, it earns profits; if not, the bank suffers losses

2. Basic Banking: Cash deposit

- You opened a checking account with $100 at a bank, so it will be appeared as a liability in the balance sheet.
- The bank puts $100 into its vault so that the bank's assets rise.
- Since vault is a part of reserves, then he T-account for the bank looks like this:
- Opening of a checking account leads to an increase in the bank's reserves equal to the increase in checkable deposits

First National Bank				First National Bank			
Assets		Liabilities		Assets		Liabilities	
Vault Cash	+$100	Checkable deposits	+$100	Reserves	+$100	Checkable deposits	+$100

2. Basic Banking: Cash deposit

When you got a check of $100 written on another bank

First National Bank	
Assets	**Liabilities**
Cash items in process of collection +$100	**Checkable deposits +$100**

Now, first bank will try to collect the sum by sending the check to the central bank which will transfer $100 of reserves from the second bank to the first bank

First National Bank		Second National Bank	
Assets	**Liabilities**	**Assets**	**Liabilities**
Reserves +$100	**Checkable deposits +$100**	**Reserves -$100**	**Checkable deposits -$100**

2. Basic Banking: Making profit

the First Bank has just received the extra $100 of checkable deposits.
Assume that the required reserve ratio is 10%, it is required reserves have increased by $10

First National Bank			
Assets		Liabilities	
Required reserves	+$10	Checkable deposits	+$100
Excess reserves	+$90		

servicing the extra $100 of checkable deposits is costly as bank must keep records, pay tellers, return cancelled checks, pay interest. To make profits, the bank can issue loans and earn interest

First National Bank			
Assets		Liabilities	
Required reserves	+$10	Checkable deposits	+$100
Loans	+$90		

- The bank borrows short liabilities (checkable deposits) and lends long-term assets with higher interest rates such as loans

3. General Principles of bank management

The bank manager has four primary concerns:

1. **liquidity management:** acquisition of sufficiently liquid assets to meet the bank's obligations to depositors (i.e., to make sure that the bank has enough ready cash to pay its depositors when there are **deposit outflows**

   deposit outflows: when deposits are lost because depositors make withdrawals and demand payment.

2. **asset management:** it must follow an reasonably low level of risk by acquiring assets that have a low rate of default and by diversifying asset holdings

3. **liability management:** to acquire funds at low cost .

4. **capital adequacy management**: the manager must decide the amount of capital the bank should maintain and then acquire the needed capital.

3-1 Liquidity Management

First case: Ample Excess Reserves

- Suppose bank's required reserves are 10%
- If a bank has ample excess reserves, a deposit outflow does not necessitate changes in other parts of its balance sheet
- Here, the bank has excess reserves of $10 M, so if deposit outflow of $10 million occurs, the bank's balance sheet becomes

Before deposit outflow

Assets		Liabilities	
Reserves	$20M	Deposits	$100M
Loans	$80M	Bank Capital	$10M
Securities	$10M		

After deposit outflow

Assets		Liabilities	
Reserves	$10M	Deposits	$90M
Loans	$80M	Bank Capital	$10M
Securities	$10M		

3-1 Liquidity Management

Second case: Shortfall in Reserves

If the bank has no excess reserves

Assets		Liabilities	
Reserves	$10M	Deposits	$100M
Loans	$90M	Bank Capital	$10M
Securities	$10M		

A deposit outflow of $10 million

Assets		Liabilities	
Reserves	$0	Deposits	$90M
Loans	$90M	Bank Capital	$10M
Securities	$10M		

First choice is to borrow from central bank or other banks

Reserves are a legal requirement

deficit must be eliminated

Assets		Liabilities	
Reserves	$9M	Deposits	$90M
Loans	$90M	Borrowing	$9M
Securities	$10M	Bank Capital	$10M

- Cost incurred is the interest rate paid on the borrowed funds (discount rate if borrowed from central bank)

3-1 Liquidity Management

Second case: Shortfall in Reserves

Second choice is to sell some securities

Assets		Liabilities	
Reserves	$9M	Deposits	$90M
Loans	$90M	Bank Capital	$10M
Securities	$1M		

But this will require paying some transaction cost

3-1 Liquidity Management

Second case: Shortfall in Reserves

third choice is to reduce loans by $9m and deposit them in the Central bank

Assets		Liabilities	
Reserves	$9M	Deposits	$90M
Loans	$81M	Bank Capital	$10M
Securities	$10M		

- Reducing loans is the costliest way of acquiring reserves in case of capital outflows.
- The bank can reduce loan by not renewing some loans when they come due but this will cause customers to stop dealing with the bank in the future.
- Or to sell these loans to other banks but other banks may not be willing to buy these loans at their full value as they do not personally know the customers who have taken these loans. Other banks may only agree to purchase loans at a large discount

3-1 Liquidity Management

Excess reserves are insurance against the costs associated with deposit outflows and it enable banks to escape the costs of :

1. Borrowing from other banks and institutions
2. Selling securities
3. Borrowing from the central bank
4. Calling in (not renewing the loans) or selling loans.

Therefore, the higher the costs associated with deposit outflow , the more excess reserve the banks will want to hold.

3-2 Asset Management

•Asset Management Goals:

1. Seek the highest possible returns on loans and securities
2. Reduce risk
3. Have adequate liquidity

Asset Management Tools

1. Find borrowers who will pay high interest rates and have low possibility of defaulting (if potential borrowers are good credit risks who will make interest and principal payments on time (i.e., engage in screening to reduce the adverse election problem).
2. Purchase securities with high returns and low risk
3. Lower risk by diversifying (short-run TB and long-run bonds)
4. manage the liquidity of its assets so that it can satisfy its reserve requirements without bearing huge costs. This means that it will hold liquid securities even if they earn a somewhat lower return than other assets

3-3 Liability Management

- Before the 1960s, banks took their liabilities as fixed and spent their time trying to achieve an optimal mix of assets.
- After that, they began to explore ways in which the liabilities on their balance sheets could provide them with reserves and liquidity. This led to an expansion of overnight loan markets.
- They no longer needed to depend on checkable deposits as the primary source of bank funds

3-4 Capital adequacy Management

Banks have to make decisions about the amount of capital they need to hold for three reasons.

1. bank capital helps prevents *bank failure*, a situation in which the bank cannot satisfy its obligations to pay its depositors and other creditors and so goes out of business.
2. the amount of capital affects returns for the owners (equity holders) of the bank.

3. minimum amount of bank capital (bank capital requirements) is required by regulatory authorities.

3-4 Capital adequacy Management

Preventing Bank Failure

High Bank Capital				Low Bank Capital			
Assets		Liabilities		Assets		Liabilities	
Reserves	$10M	Deposits	$90M	Reserves	$10M	Deposits	$96M
Loans	$90M	Bank Capital	$10M	Loans	$90M	Bank Capital	$4M

High Bank Capital				Low Bank Capital			
Assets		Liabilities		Assets		Liabilities	
Reserves	$10M	Deposits	$90M	Reserves	$10M	Deposits	$96M
Loans	$85M	Bank Capital	$5M	Loans	$85M	Bank Capital	-$1M

3-4 Capital adequacy Management

Returns to Equity Holders

Return on Assets: net profit after taxes per dollar of assets

$$ROA = \frac{\text{net profit after taxes}}{\text{assets}}$$

Return on Equity: net profit after taxes per dollar of equity capital

$$ROE = \frac{\text{net profit after taxes}}{\text{equity capital}}$$

Relationship between ROA and ROE is expressed by the

Equity Multiplier: the amount of assets per dollar of equity capital

$$EM = \frac{\text{Assets}}{\text{Equity Capital}}$$

$$\frac{\text{net profit after taxes}}{\text{equity capital}} = \frac{\text{net profit after taxes}}{\text{assets}} \times \frac{\text{assets}}{\text{equity capital}}$$

$$ROE = ROA \times EM$$

3-4 Capital adequacy Management

Safety

- Benefits the owners of a bank by making their investment safe
- Costly to owners of a bank because the higher the bank capital, the lower the return on equity
- Choice depends on the state of the economy and levels of confidence

Managing credit risk

- banks and must make successful loans that are paid back in full
- (and so subject the institution to little credit risk) in order to earn high profits.
- **To understand the principles that financial inst**itutions have to follow to reduce credit risk and make successful loans:

1. **Adverse selection** in loan markets occurs because bad credit risks (those most likely to default on their loans) are the ones who usually line up for loans.

- those who are most likely to produce an *adverse* outcome are the most likely to be *selected.*
- Borrowers with very risky investment projects have much to gain if their projects are successful, and so they are the most eager to obtain loans. Clearly, however, they are the least desirable borrowers because of the great possibility that they will be unable to pay back their loans.

Managing credit risk

2. Moral hazard exists in loan markets because borrowers may have incentives to engage in activities that are undesirable from the lender's point of view.

In such situations, it is more likely that the lender will be subjected to the *hazard* of default. Once borrowers have obtained a loan, they are more likely to invest in high-risk investment projects—projects that pay high returns to the borrowers if successful. The high risk, however, makes it less likely that they will be able to pay the loan back.

- To be profitable, financial institutions must overcome the adverse selection and moral hazard problems . The attempts of financial institutions to solve these problems help explain a number of principles for managing credit risk:

1. Screening and Monitoring 2. Long-term customer relationships

3. Loan commitments 4. Collateral and compensating balances

5. Credit rationing

Managing credit risk

- **Screening and Monitoring**

- Asymmetric information is present in loan markets because lenders have less information about the investment opportunities and activities of borrowers than borrowers do. This situation leads to two information-producing activities by banks and other financial institutions—screening and monitoring

Screening: lenders screen out the bad credit risks from the good ones so that loans are profitable to them.

- To achieve effective screening, lenders must collect reliable information from prospective borrowers.

Managing credit risk

- Effective screening and information collection together form an important principle of credit risk management.
- When you ask for a loan, the lender will ask you many questions concerning your salary, your bank accounts and other assets uses, marital status and number of children. this information will be used to evaluate how good a credit risk you are by calculating your **"credit score,"** a statistical measure derived from your answers that predicts whether you are likely to have trouble making your loan payments.
- When a firm ask for a loan, the collected information will be related to profits and losses (income) and assets and liabilities.

Managing credit risk

Specialization in Lending: bank specializes in lending to local firms or to firms in particular industries, such as energy.

- This means that the bank is not diversifying its portfolio of loans and thus is exposing itself to more risk. However, such specialization makes it easier for the bank to collect information about local firms and determine their creditworthiness than to collect comparable information on firms that are far away.
- Also, concentrating its lending on firms in specific industries, the bank becomes more knowledgeable about these industries and is therefore better able to predict which firms will be able to make timely payments on their debt

Monitoring and Enforcement of Restrictive Covenants (legal agreement):

lender should write requirements (restrictive covenants) into loan contracts that restrict borrowers from engaging in risky activities to reduce moral hazard