

Chapter 1

Introduction to Finance

Road Map

Part A Introduction to finance.

- Financial decisions and financial markets.
- Present value.

Part B Valuation of assets, given discount rates.

Part C Determination of risk-adjusted discount rates.

Part D Introduction to derivatives.

Main Issues

- What Is Finance
- Valuation of Assets
 - Opportunity Cost of Capital
 - Present Value (PV)
- Role of Financial Markets
- Objectives of Financial Manager

1 What is Finance?

- Finance is about the bottom line of business activities.
- Every business is a process of acquiring and disposing assets:
 - Real assets (tangible and intangible).
 - Financial assets.
- Two objectives of business:
 - Grow wealth.
 - Use wealth (assets) to best meet economic needs.
- Financially, a business decision reduces to valuation of assets.
- Valuation is the central issue of finance.

Questions we would like to answer in this course:

1. How financial markets determine asset prices?

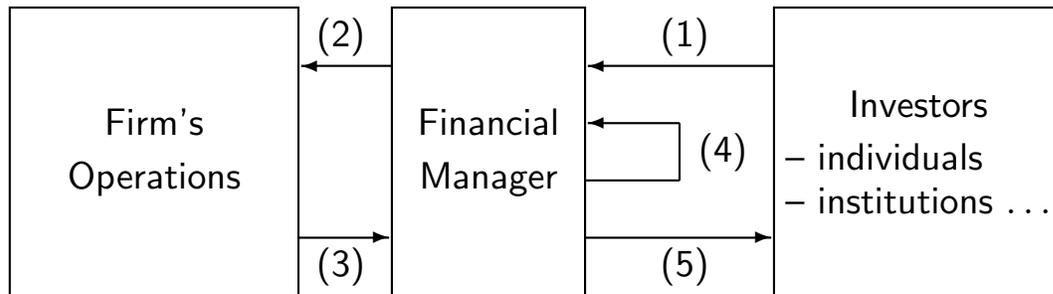
2. How corporations make financial decisions?
 - Investments:
 - What projects to invest in?

 - Financing:
 - How to finance a project?

 - Payout:
 - What to pay back to shareholders?

 - Risk management:
 - What risk to take or to avoid and how?

1.1 Cash Flow of A Firm



(1) Cash raised from investors by selling *financial assets*.

(2) Cash invested in *real assets* (tangible and intangible).

(3) Cash generated by operations.

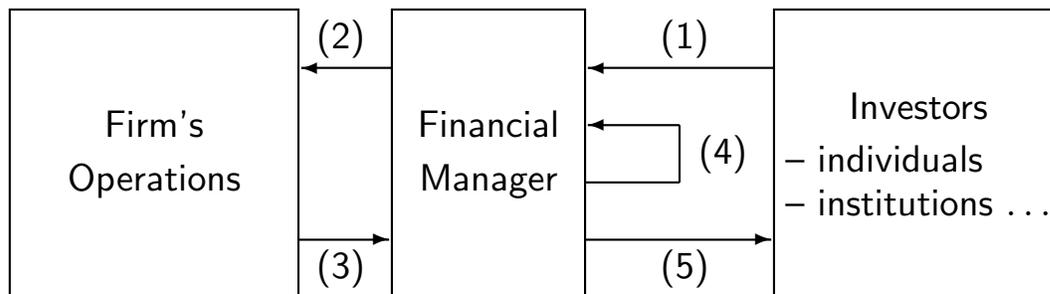
(4) Cash reinvested.

(5) Cash returned to investors.

- mandatory (e.g. loan payments)

- discretionary (e.g. dividends)

1.2 Task of Financial Manager



Action: Manage cash flow (1), (2), (4), (5).

- Investment: (2) \Rightarrow (3).
- Financing and payout: (1), (4), (5).
- Risk management: (1) and (5).

Objective: Create value for shareholders.

To make sound financial decisions, we need to know how to value assets.

- Investment decision:
 - ▶ How real assets are valued.
- Financing and payout:
 - ▶ How corporate securities are valued.
- Risk management:
 - ▶ How financial contracts are valued.

2 Valuation of Assets

Each asset is defined by its cash flow (CF).

Time:	0	1	2	...
Cash out:	CF_0
Cash in:	.	CF_1	CF_2	...
Net cash flow:	$(-)CF_0$	CF_1	CF_2	...

Value of an asset = Value of its cash flow:

2.1 Important Characteristics of A Cash Flow

1. Time: time value of money.

Example. \$1,000 today vs. \$1,000 next year.

2. Risk: risk premium.

Example. \$1,000 for sure vs. \$0 and \$2,000 with equal odds.

Time and uncertainty are two key elements in finance.

2.2 Approaches to Asset Valuation

1. Valuation by “matching”:

(a) The financial market contains a rich set of traded assets.

(b) Given a CF, find a traded asset with equivalent CF:

- Timing.

- Risk.

(c) Value of CF equals the market price of the traded asset.

Assets with same payoffs have same prices.

2. Valuation by analysis of demand/supply (equilibrium).

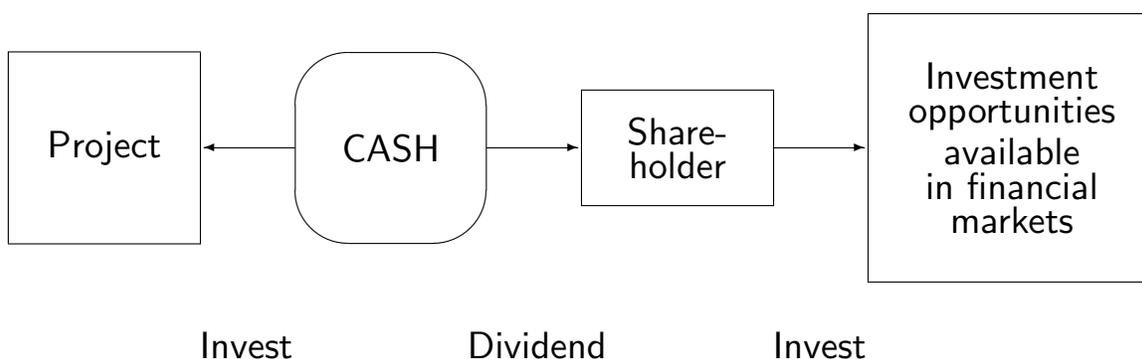
2.3 Opportunity Cost of Capital

An investment is an acquisition of an asset:

- Pay cash today.
- Receive cash flow in the future.

Capital investment trade-off:

1. A firm can always give cash back to shareholders.
2. A shareholder can invest in financial markets.



Definition: *Opportunity cost of capital* is the expected rate of return offered by *equivalent* investments in financial markets.

2.4 Present Value

Example 1. How much is a sure cash flow of \$1,100 in one year worth now?

Safe assets in financial markets offer 5% annual return.

A potential buyer of the sure CF also expects 5% return. Let the price be X . Then

$$X(1 + 0.05) = 1,100.$$

Thus,

$$X = \frac{1,100}{1.05} = \$1,048$$

which is the CF's *present value*, i.e., its current market value.

Observation: Present value must properly adjust for time.

Example 2. How much is a risky cash flow in one year with a forecasted value of \$1,100 worth now?

Assets of similar risk in financial markets offer 20% return.

A potential buyer of the risky CF also expects 20% return. Let the price be X . Then

$$X(1 + 0.20) = 1,100.$$

Thus, the present value of the risky CF is

$$X = \frac{1,100}{1.20} = \$917.$$

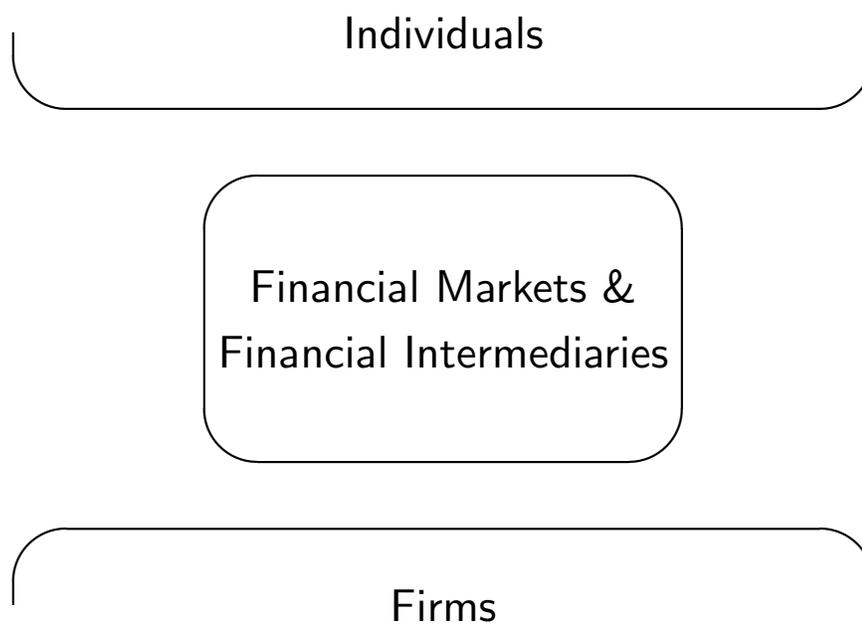
Observation: Present value must properly adjust for risk.

The difference in (expected) return between risky and safe assets is the *risk premium*.

The present value of an CF equals its expected value discounted at the opportunity cost of capital.

3 Role of Financial Markets

3.1 Financial Markets at Center of Universe



- *Financial Markets* - where financial assets are traded
 - Money markets: Short-term debt securities
 - Short-term government debt (T-bills, ...)
 - Short-term bank and corporate debt (CDs, CPs, ...)
 - Capital markets: Long-term securities
 - Government debt (T-notes and T-bonds)
 - Corporate debt
 - Stocks, ...
 - Derivatives: Securities with payoffs tied to other prices
 - Forwards and futures
 - Options, ...

- *Financial Intermediaries* - Own mostly financial assets
 - Banks
 - Insurance companies
 - S&Ls
 - Mutual funds, ...

- *Corporations* - Own mostly real assets

- *Individuals* - Own both real and financial assets.

3.2 Functions of Financial Markets

1. Allocating resources:

- Across time.

Example – Borrow money to buy a home.

- Across different states of economy.

Example – Invest in stocks/bonds.

2. Communicating information.

- Market prices reflect available information.

Assumptions on financial markets – A “perfect” financial market:

- A rich set of securities traded.
- Free access.
- Competitive trading process.
- No frictions.

4 Objectives of Financial Manager

1. Factors affecting a firm's *financial* objective:
 - Timing?
 - Risk?
 - Accounting?
 - “Long-run” value?
 - ...
2. Maximizing current market value is the only plausible financial objective.
3. Current market value incorporates present value of all current and future cash flows, adjusted for timing and risk.
4. Market value rule is independent of shareholders' differences.

Manager objective: Maximize *current market value* of the firm.

Example. 50MD is a small company traded on NASDAQ. Three members of the founding family, Granny, Father and Son, jointly own a controlling interest. You, as the CEO of 50MD, are evaluating two new business plans, A and B, and conclude:

- Both have positive net PVs (NPV) but only one can be taken.
- A pays off in three years and B starts to payoff after ten years.
- B is much riskier than A.
- B has a higher NPV.

You recommend B over A, but all three shareholders object:

1. Granny: “Kid, you missed one thing: I am 85 now and probably could not wait to see any payoff if we take B.”
2. Father: “I just got the membership at my favorite golf club and am set to enjoy. I am not prepared to give that all up.”
3. Son: “I have talked to my buddy, who is a reputable analyst of the industry. He says that although your forecast about B is in agreement with the market consensus, the market is over heated about this line of business and in his view B is a loser.”

What would you say to them?

The Case for Value Maximization:

1. Shareholders' financial objectives:
 - (a) Increase of total wealth
 - (b) Right allocation of wealth over time
 - (c) Right allocation of wealth over future contingencies.
2. Shareholders can do (b) and (c) on their own, through financial markets.
3. Financial manager can help only with (a), by increasing firm's market value (i.e., shareholders' total wealth).

Conclusions:

1. Managers should maximize firm's current market value.
2. Shareholder differences can be settled in financial markets by trading on their own account.
3. Perfect financial markets allow separation of ownership and management.

Practical Issues:

- Agency problems
 - Management may put their own interest first.
- Other stakeholders
 - Different stakeholders may have conflicting interests.
- Imperfections in financial markets.

5 Summary

Key Points:

1. Objective of managers: maximize firm's current market value.
2. Evaluating a business boils down to valuation of its assets.
3. An asset is defined by its cash flow (CF).
4. Two important characteristics of CF: timing and risk.
5. Value of assets (CFs) are determined by financial markets.
6. Cost of capital: Expected return on equivalent investments in financial markets.
7. Present value: Value of a CF is its expected value discounted at the opportunity cost of capital, which adjusts for both time and risk.

Key Assumptions:

1. "Perfect" financial markets.
2. No agency problems and conflicts among stackholders.

6 Homework

Readings:

- BKM, Chapters 1, 2, 3.
- BMA, Chapters 1, 2.