

CORPORATE FINANCE

By Dr. Shushu Liao

My Contact

- Interested in Corporate Finance, Corporate Governance, Financial Stability and Structural modelling in Finance
- My email: Shushu.Liao@the-klu.org
- Office 04.18
- Employment experiences: Germany, New Zealand, and UK
Education experiences: UK (PhD and Master degree) and China (Undergraduate)
- Languages: Mandarin, Cantonese, English

Motivation of Studying Finance

- Career objectives : investment banking or commercial banking, *treasury in a corporation*, equity research analysts, private equity or venture capital, mutual fund or hedge fund, trader
- Non-career purpose: personal financial decision making (ranging from mortgaging a house, paying for insurance premium to investment decisions such as what to invest and when to invest)

Area of Finance

1) Corporate Finance

How to manage the firm to maximize value?

- How much and what type of assets to acquire – investment decision
- How to raise the capital needed to buy assets – financing decision
- How to distribute income to shareholders – dividend decision
- Jobs: Investment banking, Corporate Treasury Finance, Equity research analysts

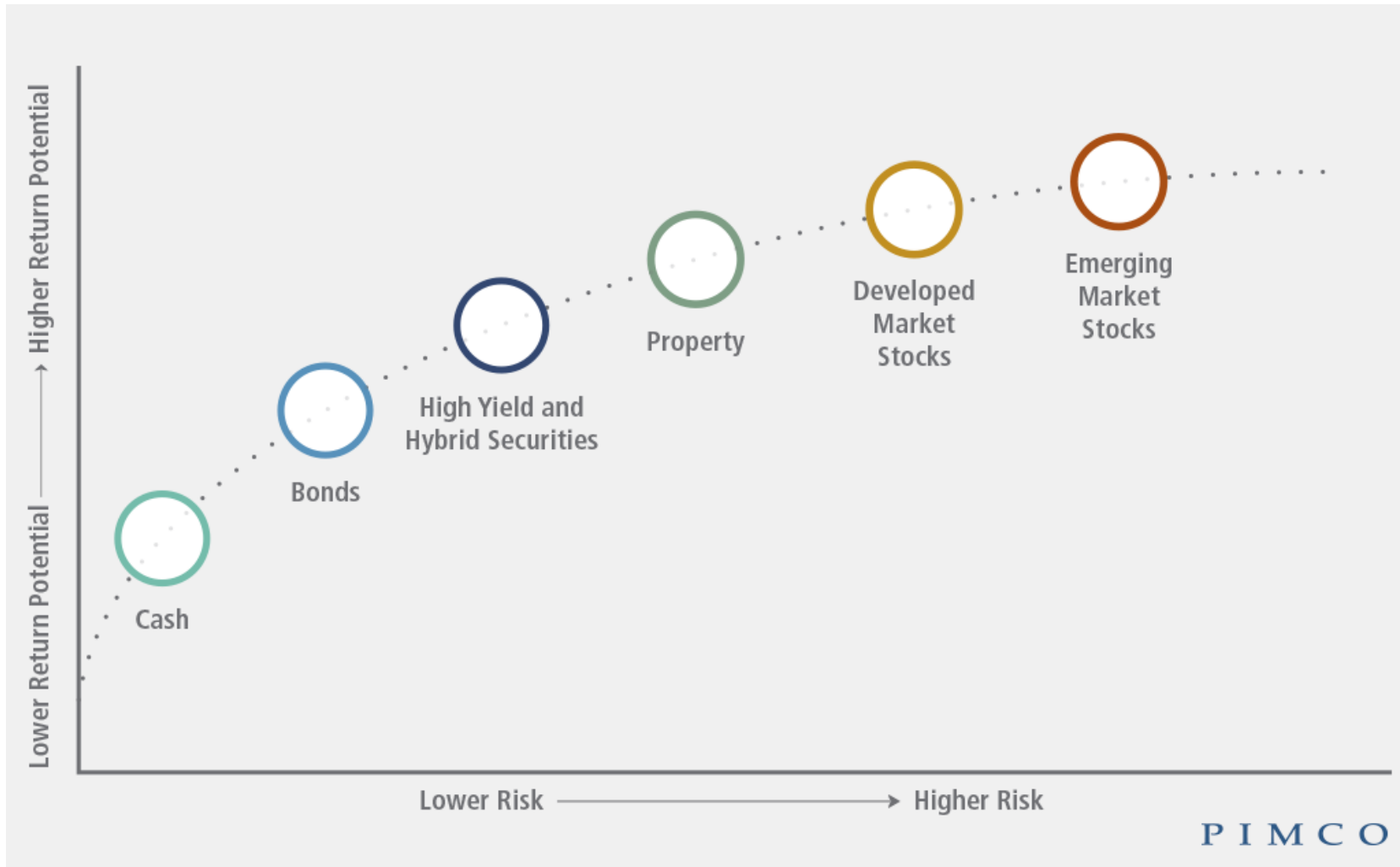
2) Capital Markets and Investments

- Study of Financial Institutions that supply capital to firms e.g., banks, investment banks, brokers, mutual funds, insurance companies
- Finding the proper value of stock and bonds
- The best way to structure portfolios
- Behavioral Finance where investor psychology is used to for market analysis
- Jobs: Banking, Insurance companies, Portfolio management, Hedge/mutual/pension funds manager

Corporate Finance: How do you Assess Investment Opportunities

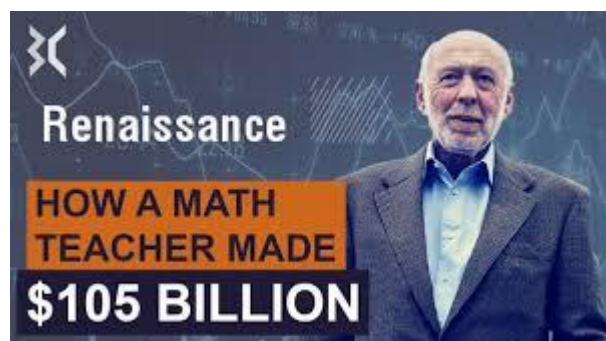
- Win lotteries: Should you take 40 million today, or 5 million for the next 10 years?
- Retirement pot: You are at the age of 50. How much should you save each year so that you can obtain 50,000 dollars every year after you retire at the age of 70 (assume that you live for another 20 years)
- Entrepreneur: You are an entrepreneur with an endowment of 5 billion, your operating budget is 2 billion. How much cost are you allowed to expense in your company (assume the firm lasts forever) assuming that you require 10% rate of return

Capital Market: Understanding Risk and Returns

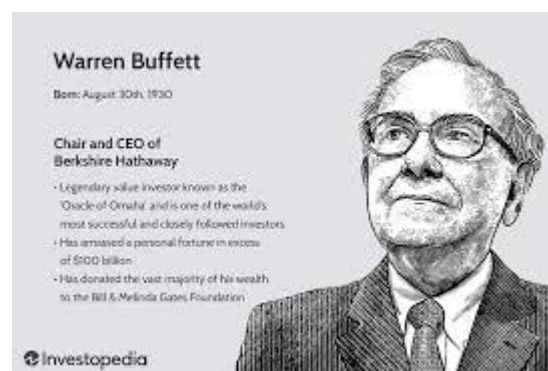


Prerequisite

Mathematics + Accounting = Finance



Jim Simons (founder of renaissance technologies)
net worth estimated to be \$31.4 billion

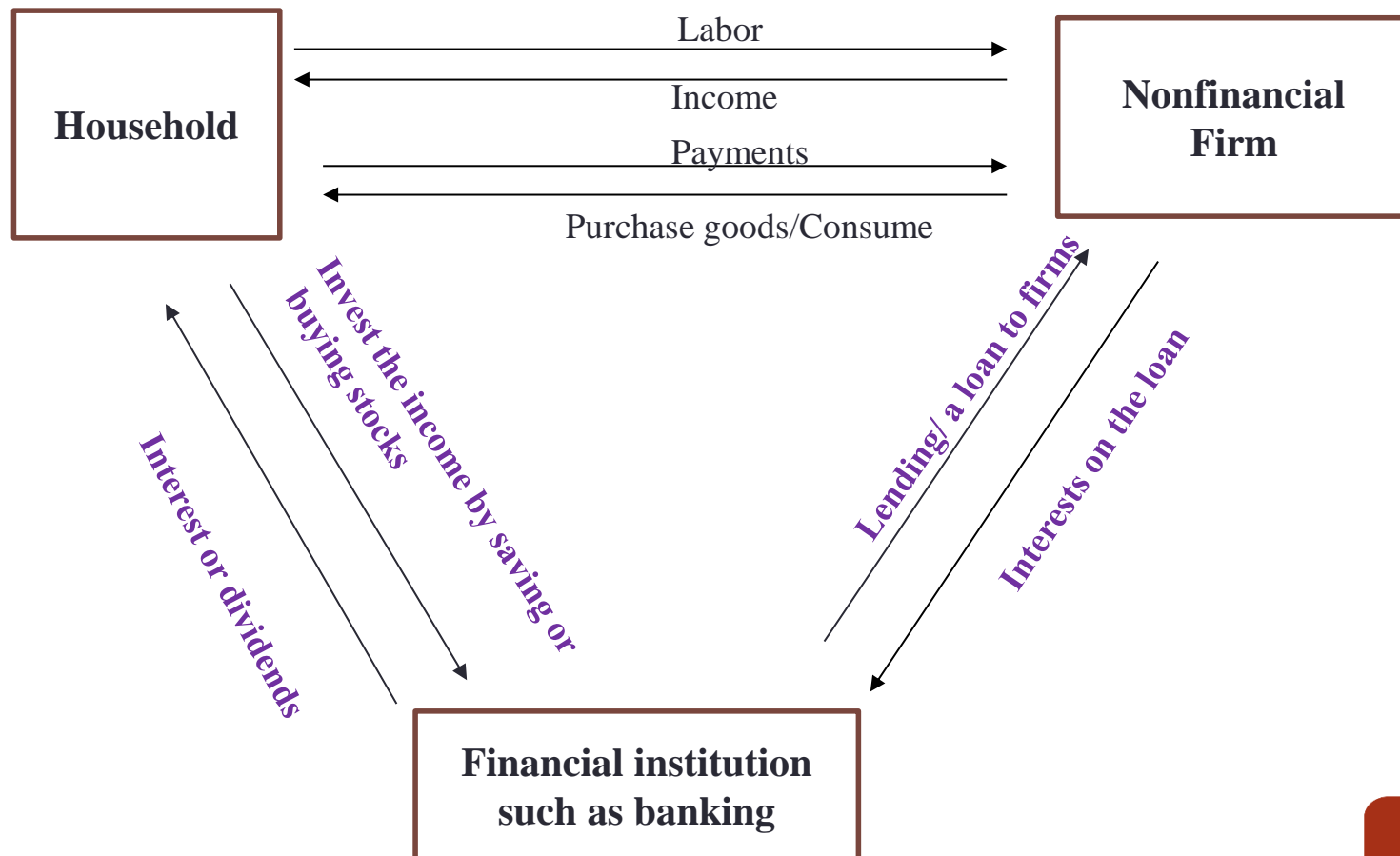


Warren Buffet (Berkshire Hathaway)
net worth estimated to be \$135 billion

Quantitative Finance:
PDE, Brownian motion,
High-frequency algos

Financial valuation:
High school algebra and
arithmetic

The Circular Flow Model of Economy



Glossary related to this course

Examples (but not limited to)

Agency Issues

Stock Liquidity

Compounding

Annuity; Perpetuity

Mortgage

Pension contribution / pot

APR (annual percentage rate) and
EAR (effective annual rate)

Dividend / Interests

Free cash flow

IRR (internal rate of return)

NPV (net present value)

Call option

Please review the [glossary](#) for the class.

Certificates

➤ Chartered Financial Analyst (CFA)

- Offered internationally by CFA institute to investment and financial professionals
- Contain 3 levels of curriculums

➤ Financial Risk Manager (FRM)

- For practitioners in credit, operational, and market risk, emerging markets, corporate, rating agencies, quantitative disciplines, legal and regulatory practices, asset management and insurance.
- FRM certification is awarded after a candidate has passed two rigorous multiple choice exams (FRM Exam Part I and Part II)

➤ Certified Public Accountant (CPA)

- It is authorized by the AICPA (American Institute of Certified Public Accountant). This is specifically designed for accountants and tax consultants.

Readings

[Corporate Finance](#) by Jonathan Berk and Peter DeMarzo.
(Pearson) ISBN-13: 978-1292304151

Principles of Corporate Finance by Richard Brealey and Stewart Myers and Franklin Allen (Mcgraw-hill) ISBN-13: 978-1259144387 (12th edition)

What you expect in the class

For each three-hour session

- 80 to 90 minutes – Lecturing and showing examples
- 15 minutes – Break
- 60 to 70 minutes – Review the *examples* on your own and Practice the *exercise* in groups (we have two break-out rooms: 2.OG Room: 1 + 11)
- 40 minutes – Come back to the lecture room. Walk through solutions and Summarize the session

Tips for self-learning

Go through all examples and exercises (concepts and numerical problems).

Assessment of the course:

Group-based Presentation (20%)

Group-based Project Analysis (20%)

Exams (60%)

➤ Group Presentation (20%)

- What is the best investment tool and for this investment tool, think about 1) what it is and why it is good, 2) what is its revenue, 3) what are its risks and, 4) optionally who is the target investor?
- Course Teaching Assistant (Andrei Voitovich: Andrei.Voitovich@klu.org) will coordinate this session.
- We will come back to the details later!

Group-based assignment – project analysis

➤ Project analysis with Excel (20%)

- Valuation of a project using capital budgeting techniques
- The deadline of assignment is scheduled on **17.10.2024.**

For the project, you need to record the contribution of your group members, for example

Name	Contribution
Mary	100%
Jane	90%

Exam

- End-of-quarter exam (60%) with a A4 double-sided help note (this only applies to the first-attempt)
 - For second or third attempt, the exam is fully closed-book.
 - You can have a look at the past exam on Moodle.
- Extra bonus:
 - A mid-quarter open-book test on 11.10.2024
 - Teaching assistant will check your exercise book (you are supposed to work on the exercise until the session of Capital budgeting decision) on 11.10.2024
 - It adds 0-3 points to the exam

Lecture plan

Date	Hours	Content
Mon, 09.09.2024	3:00	Introduction of the course and Goal of a firm
Thu, 12.09.2024	2:00	Preparation of pre-course presentation By Teaching assistant
Mon, 16.09.2024	4:00	Pre-course Presentation By Teaching assistant
Thu, 19.09.2024	3:00	Time value of money I – single cash flows
Mon, 23.09.2024	3:00	Time value of money II – multiple cash flows
Thu, 26.09.2024	3:00	Interest rate
Mon, 30.09.2024	3:00	Investment decision criteria I
Fri, 04.10.2024 (day after Unity day)	4:30	Investment decision criteria II + Capital budgeting decision I
Mon, 07.10.2024	3:00	Capital budgeting decision II Students have moderate amount of time to work on project.
Fri, 11.10.2024	3:00	Stock returns I + Mini Test (by Teaching assistant) A mid-quarter open-book test In the end, Teaching assistant will check both you answers to the mid-quarter test and your exercise book (you are supposed to finish the exercise until the session of Capital budgeting decision)
Mon, 14.10.2024	4:30 12:45 – 17:30	Stock returns II + Financial options
Thu, 17.10.2024	1:30 8:30 - 10:00	Q&A (no lectures, come only if you have questions)

You will have time to work on all questions on the Exercise book in the class.

Group-based Presentation (20%)

➤ Group Presentation (20%)

- What is the best investment tool in XX? (whatever time periods or location of your choice, for example, in 2023, during Covid, during oil crises, or in general)
- For this tool, think about 1) what it is and why it is good, 2) what is its revenue, 3) what are its risks and, 4) optionally who is the target investor?

Presentation:

Example of investing stocks on Starbucks (SBUX)

- Definition: buying shares of SBUX
- Revenues for investors: periodic dividends payments (Starbucks usually pay 50% of its earnings as dividends) and price increase when they decided to sell
- Risk of investing: Risk of investing SBUX is low since the balance sheet of SBUX is sound, but still higher than investing in US government bonds.
- Target investors: Investors with low- to medium- risk appetites and investors that have basic accounting knowledge

Other example

Other Examples could be: Bank Savings, Stock Index, Bonds, Gold/Silver, Real Estate Property, Cryptos, EU ETS (emission trading system), other financial derivatives such as options, futures, swaps.

Schedules of the Presentation

Preparation of Presentation is scheduled in the 2nd lecture (a 2-hour lecture) on 12.09.2024.

You will form in groups and start to discuss and prepare the slides, (Break-out rooms are open for us) or you can share your perspectives (or even slides) with your peer groups.

Presentation is scheduled in the 3rd lecture (a 4-hour lecture) on 16.09.2024.

The procedure goes as:

1) *The presentation*: it should last no longer than 25 minutes.

2) *Feedback/Reflection form filled by Audiences (15 mins)*:

At the end of the presentation, audiences need to spend 10 mins fill in a feedback form (write down what you have learnt from the presentation or any feedback) and teacher will select one group to hear their feedback/questions.

You can download the feedback form from Moodle (Session 2). Audiences need to upload the feedback/reflection form to Moodle (Session 2 Assignment, deadline is 18.09.2024) or hand in the print-outs to TA.

Feedback Form of Corporate Finance Presentation

Your Group Number:

Presentation Title:

<p>Define Learning:</p> <p>What are the main objectives of the presentation?</p> <p>What have you learnt from the presentation?</p>	
<p>General Suggestion:</p> <p>What do you suggest for the presentation to do better?</p>	

You can either fill them in manually, or type them in tablet, or write on a print-out
 Your grades will depend on both the presentation and the feedback form

GOALS AND GOVERNANCE OF A FIRM

Reading: Berk/DeMarzo Chapter 1

Objectives

- List and define the four major types of firms; describe major characteristics of each type.
- Understand the agency issues facing corporations
- Define stock liquidity and bid/ask quote

Four types of firms

- Sole Proprietorship
- Partnership
- Limited Liability Company
- Corporation (joint stock company (AG))

Sole Proprietorship

- Business is owned and run by one person.
- Typically has few, if any, employees.
- Advantage
 - Easy to create
- Disadvantages
 - No separation between the firm and the owner
 - Unlimited personal liability
 - Limited life

Partnership (1/2)

- Similar to a sole proprietorship, but with more than one owner
- All partners are personally liable for all of the firm's debts. A lender can require any partner to repay all of the firm's outstanding debts.
- The partnership ends with the death or withdrawal of any single partner.

Partnership (2/2)

- Limited Partnership has two types of owners.
 - **General Partners**
 - Unlimited liability in the business structure
 - Typically run the firm on a day-to-day basis
 - Private Equity *Firm*
 - **Limited Partners (KG in Germany)**
 - Have limited liability and cannot lose more than their initial investment
 - Have no management authority and cannot legally be involved in the managerial decision making for the business
 - Investors who have invested in the Private Equity *Fund*

Limited Liability Companies

- Private Limited Liability Companies (known as LLC in US and GmbH in Germany)
 - All partners have limited liability, but they can also run the business.
 - Relatively new business form in the US.
 - The most widely used business form in Germany, it is suited to small and medium-sized businesses
 - In Germany, The *KG* has a natural person as the general partner who has unlimited liability in the business structure. But, for the *GmbH & Co. KG*, the general partner is not a natural person but rather a limited liability company. This GmbH is liable only with its corporate assets.

[top-500-german-family-businesses-the-economy-most-dependent-on-family-enterprises/](#)

Corporations

- Stock corporations are known as AG in Germany
 - All partners have limited liability, a legal entity separate from its owners
 - Has the legal powers an individual has, such as the ability to enter into contracts, own assets, and borrow money
 - The corporation is solely responsible for its own obligations. Its owners are not liable for any obligation the corporation enters into.
 - Ownership is represented by shares of stock. Owner of stock/equity is called
 - Shareholder
 - Stockholder
 - Equity Holder
 - There is no limit to the number of shareholders and, thus, the amount of funds a company can raise by selling stock.
 - Owner is entitled to dividend payments.
- Tax Implications
 - Double Taxation (corporate tax and dividend tax)

Alternative Example (1 of 2)

➤ Problem

- You are a shareholder in a C corporation that has income before taxes of \$4 million.
- Once the firm has paid taxes, it will distribute the rest of its earnings to its shareholders as a dividend. There are 1 million shares outstanding.
- Assume the corporate tax rate is 34%, and the personal tax rate on dividend income is 20%.
- As a shareholder with 100 shares, how much will you receive after all taxes are paid?

total earnings: 4m

After corporate tax (34%): $4m \times (1 - 34\%) = 2.64m$

After individual dividend tax (20%): $2.64m \times (1 - 20\%) = 2.112m$

Ownership: 100 / 1m

You will receive: $2.112 \times 100 / 1m = 211.2$

$\Rightarrow 4m \times (1 - 34\%) \times (1 - 20\%) \times 100 / 1m$

Alternative Example (2 of 2)

➤ Solution

- First, the corporation must pay its taxes. It earned \$4 million but must pay $34\% \times \$4 \text{ million} = \1.36 million in corporate taxes.
- That leaves \$2.64 million to distribute to shareholders. Collectively, shareholders will have to pay $20\% \times \$2.64 \text{ million} = \$528,000$ in taxes on the dividends. This leaves $\$2.64 \text{ million} - \$528,000 = \$2,112,000$ after all taxes are paid.
- As the owner of 100 shares, you will have \$211.20 after both corporate and personal taxes are paid.



What's the company form of these brands?

Corporation (AG)

Private Limited (GmbH)
or GmbH & Co. KG

Limited Partner (KG)

Sole Proprietorship

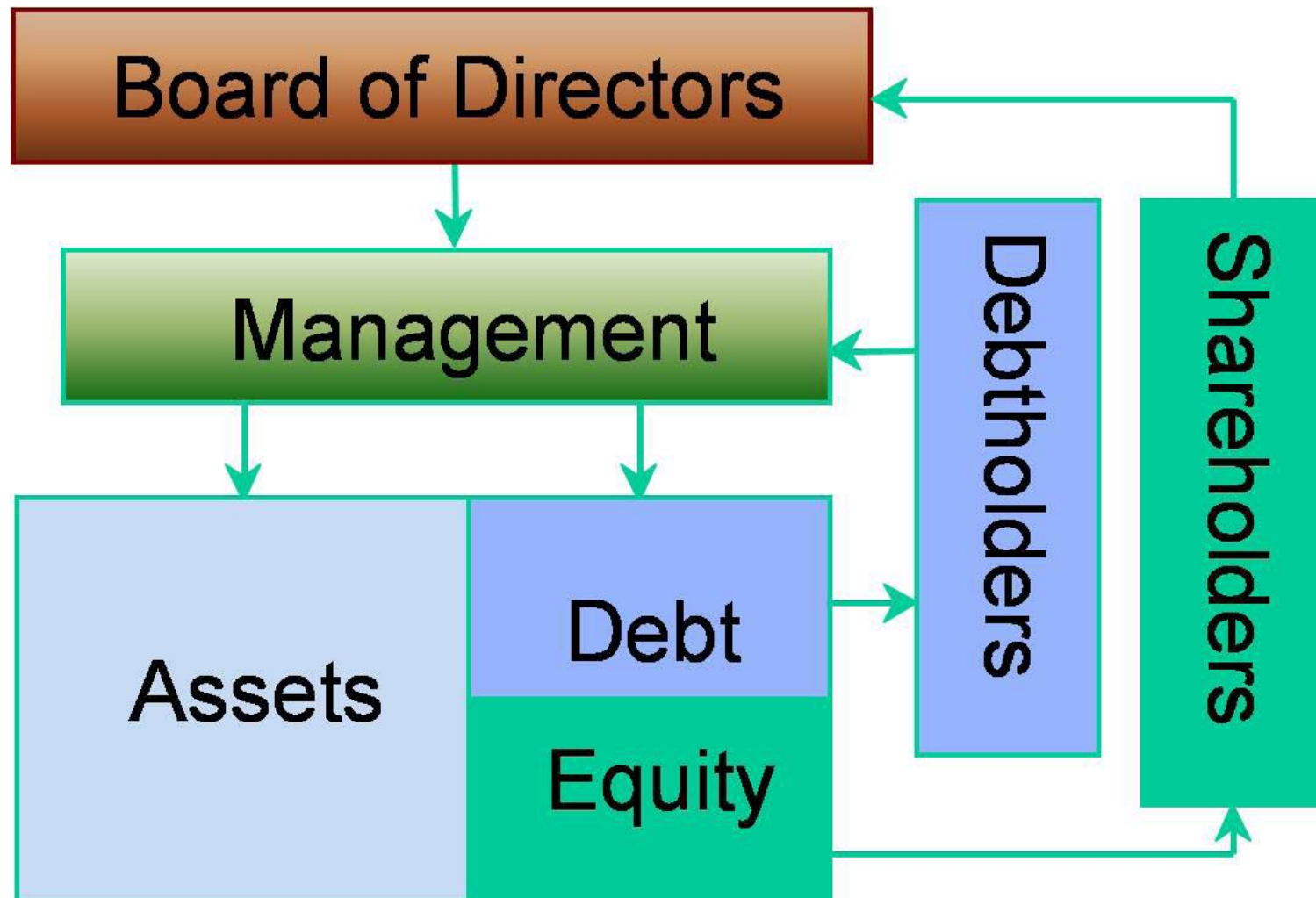
DAX Germany Index Series

The DAX is a stock market index consisting of the 40 major German blue-chip companies trading on the Frankfurt Stock Exchange.

DAX is the equivalent of the UK FTSE 100 and the US Dow Jones Industrial Average, and because of its small company selection it does not necessarily represent the vitality of the German economy as a whole.

- The DAX30 become the DAX40 by 20 September 2021. The new index weighting will provide a broader representation of the German economy.

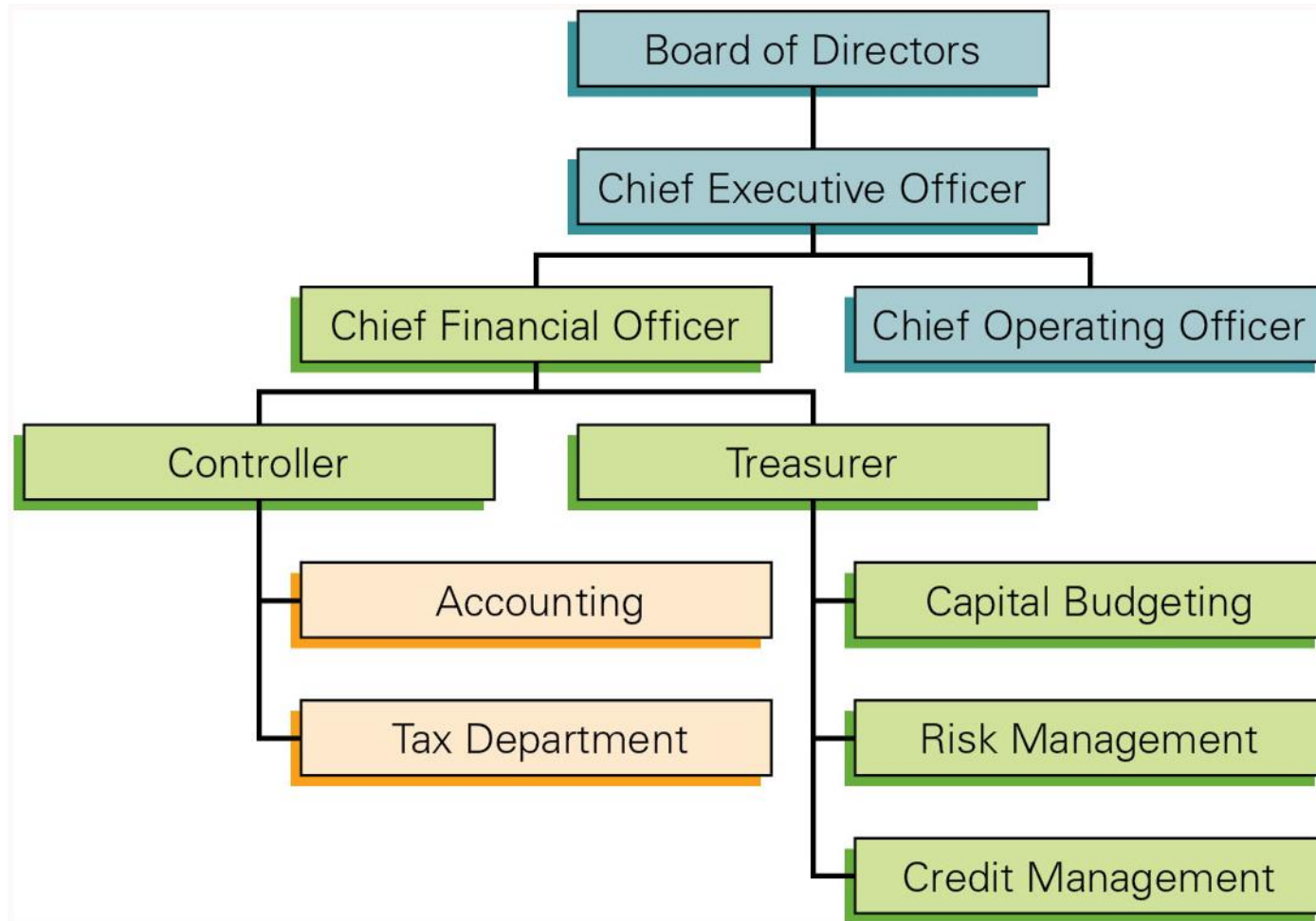
Ownership and control



Separation of ownership and control

- Corporate Management Team
 - In a corporation, ownership and direct control are typically separate.
 - Board of Directors
 - Elected by shareholders
 - Have ultimate decision-making authority
 - Chief Executive Officer (CEO)
 - Board typically delegates day-to-day decision making to CEO.

Organizational Chart of a Typical Corporation



Goal of the firm

- Someone (Principle) hires another (the agent) to represent his or her interest
- Shareholders will agree that they are better off if management makes decisions that maximizes the value of their shares.
- The management *should* act in the best interests of the stockholders
- However, managers (agent) may act in their own interest rather than in the best interest of the shareholders (principle) – e.g., managers are concerned with their personal wealth, job security, perks and lifestyle, and can be myopic.

Potential Solutions to Agency Issues

- To tie management's compensation to stock performance
- Hostile takeover
 - Shareholders can express their dissatisfaction of managers' poor decisions by selling their shares (“Wall Street Rule” of “**voting with their feet**”)— This selling pressure will drive the stock price down.
 - Low stock prices may entice a Corporate Raider to buy enough stock so they have enough control to replace current management.
 - Musk Twitter takeover:
https://www.youtube.com/watch?v=a7UcT_QlJ0s&ab_channel=HowItHappened
- Direct intervention (votes)

Germany's economy has watched some of its largest companies **vote with their feet** and dollars since its manufacturing industry entered recession more than two years ago. Now, Volkswagen and Intel are poised to add more pain to the country's coffers in what looks increasingly like a doom loop for the embattled country.

Volkswagen, the jewel in Germany's industrial crown, is turning sour on its native home, which it sees as compounding its struggle to expand its profit margins.

Stock Liquidity

➤ Liquidity

- The ability to easily sell an asset for **close to** the price at which you can currently buy it
- Buy and sell in large volume without substantially affecting the asset's price

➤ Whether liquidity can mitigate agency issues?

- On the one hand, shareholders can vote with their feet in a liquid stock market
- On the other hand, making profit from improved governance with liquid stock market

Bid Price Versus Ask Price

Bid Price Versus Ask Price (Bid-Ask Spread) as a measure of Liquidity

- A bid is the price at which a **dealer** (you as a **trader**) will buy (sell) the security.
- An ask is the price at which a dealer (you as a trader) will sell (buy) the security.
- Dealers bid (buy) at one price and ask (sell) at a slightly higher price, making their profit from the spread between the prices, whereas the spread is considered the transaction cost for a trader.
- The bid-ask spread may be quite large for securities that are traded infrequently, in small volumes

Example – Bid/Ask Quote

Previous Close	561.56
Open	561.21
Bid	556.22 x 800
Ask	556.29 x 1200
Day's Range	555.04 - 561.64

Data drawn from Yahoo Finance:
for “SPY” (SP500 ETF) online on 08.29.2024

Previous Close	6.65	
Open	6.62	
Bid	5.25 x 3000	Sell (trader)
Ask	6.97 x 900	buy (trader)
Day's Range	6.51 - 6.71	
52 Week Range	4.80 - 9.45	

Data drawn from Yahoo Finance:
for “MCW” (Mister Car Wash) online on 08.29.2024

(as a trader) buy at the ask (556.29) and sell at the bid (556.22)
(as a dealer) buy at 556.22 and sell at 556.29

(as a trader) buy at 6.97 and sell at 5.25
bid-ask spread is a cost
(as a dealer) buy at 5.25 and sell at 6.97
bid-ask spread is a revenue

Break-out discussions and write down your thoughts on
One Note

[Corporate Finance 2024](#)

Discuss: It's widely believed that stock markets can
monitor managers. Why?