FINS1613 – First Year Semester 1

SECTION 0 – Introduction

Terminology

Ownership: The right to share in a firm's profits

Control: The right to directly manage or elect management of a firm

Personal liability: The responsibility to pay a firm's financial obligations using personal assets when the firm cannot

Limited liability: A limit that the owner can only lose the value of their investment when the firm cannot pay its financial obligations.

A **sole trader** refers to a business owned and controlled by a single person.

- Sole trader is personally liable for firm's debts
- Business ceases existence with death or withdrawal of the sole trader
- Profits taxed at personal level
- Also known as **sole proprietorships**

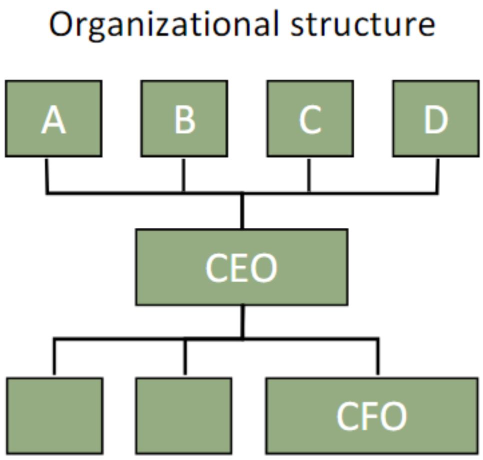
A **partnership** is a business owned by several partners

- General partners: Ownership, control and personal liability
- Limited partners: Ownership, no control and limited liability

Profits are taxed at personal level and the business ceases to exist with the death or withdrawal of a single general partner unless other provisions are made.

	Sole trader	**Partnerships**	**Limited Partnerships**		**Corporation**
Type of Owner	**N/A**	**General**	**General**	**Limited**	**Shareholder**
Number	One	Several	One or more	Several	Many
Control	Yes	Yes	Yes	No	Yes
Liability	Personal	Personal	Personal	Limited	Limited
Taxation	Personal	Personal	Personal	Personal	Corporate and personal (depending on tax system)

Corporation



Top Level: Board of directors

- Each director is elected by the firm's owners
- Hires the Chief Executive Officer
- Monitors firm and sets high level strategy
- Objective is to maximize firm value

Middle Level: Chief Executive Officer (CEO)

- Everyday manager of the firm
- Implements rules and policies set by board of director
- Advised by high level executives
- Objective is to maximize firm value

Chief Financial Officer (CFO)

- Evaluates investment decisions for the firm
- Evaluates financing decisions for the firm
- Objective is to maximize firm value

Key features of a corporation:

- It is its own legal entity, distinct from the owners
- There is a separation between ownership and management

Agency Costs

Definition:

- We assume that employees have their own personal objectives
- These personal objectives may not always agree with the value maximizing objective of the firm's owners
- An agency cost arises when an employee takes an action that serves their own interests instead of maximizing firm value

Examples:

- A CEO may not invest in a profitable, but risky project if they are afraid of getting fired should the project fail
- An employee may outsource his or her own job, netting a healthy profit

Comparisons

Advantages of corporations over partnerships and sole traders

- Limited liability for the owners
- Business continues operation when ownership changes

Disadvantages compared to partnerships and sole traders

- Agency costs between owners and management
- Taxation (in jurisdictions with "classical" tax systems)

SECTION I – Financial Mathematics

Time Value of Money

The time value of money refers to the difference in value between money today and money in the future. Or, the observation that two cash flows at two different points in time have different values. In other words, **a dollar today is worth more than a dollar tomorrow**.

Compounding

Assumption: ***We will always assume that interest is kept in the account.*** *Therefore, the ending value in a given period becomes the starting principal used to compute the interest payment in the subsequent period.*

To calculate the equivalent future value of a cash flow, multiply the cash flow's present value by the interest rate factors associated with the intervening time periods. **This has the effect of earning 'interest on interest.'**

$$V_{t+n} = V_t(1+r)^n$$

Discounting

Compounding is moving a cash flow forward in time, while discounting is moving a cash flow backwards in time. Hence, the only difference to the formula is:

$$V_t = V_{t+n}(1+r)^{-n}$$

Interest Rates

Financial mathematics equations are always stated in terms of periods and interest rates per period. Interest rates are often quoted in terms of an annual percentage rate (APR). APRs must be converted into number of periods and interest rates per period for calculations.

EAR (Effective Annual Rate) is the total amount of interest that will be earned at the end of one year **with compounding**. In other words, EAR is the interest rate based on a hypothetical, single compounding period per year.

Annuities

An annuity is a stream of cash flows arriving at a regular interval over a specified time period.

It is given by:

$$Annuity\ V_t = \frac{C}{r} \times \left[1 - \frac{1}{(1+r)^n}\right]$$

NOTE THAT the annuity value formula gives the total time-t value of all n cash flows beginning at $t+1$.

The annuity factor is given by: