

**Corporate finance:** concerned with financial decisions of corporations (real assets & cash flows & income)

+ Finance dealing: Sources of funds & optimum capital structure

+ Objective: maximise shareholder wealth (manage wealth and risk) & maximise the market value of the existing owner's equity (current share price)

**Corporation:** legal entity (shareholders) + can enter into contracts + Limited liability

	Non-separate legal entity			Separate legal entity	
Forms	Proprietorship	General partnership	Limited partnerships	Proprietary company	Company
Liability	Unlimited	Unlimited	Un/Limited	Limited	Limited
Tax	Personal income tax	Tax sharing advantage	Tax sharing advantage	Company tax rate	Company tax rate
Establishment	Easy to set up	Partnership agreement	Formal agreement	CA 2001	CA 2001
Features	Limited life and limited access to more capital	Two or more owners/agency theory	General partners have unlimited L	Limited by shares	Indefinite life/owned by shareholders

	Corporations	Partnership
Liquidity and marketability	Exchange of shares + common stock listed in ASX	Substantial restrictions on transferability + no trading market
Voting rights	Each shareholder has voting rights	Some voting rights, most general partners have exclusive control
Taxation	Double taxation: corporate tax + personal tax	Personal tax on partners profits (sharing)
Dividend payout	Broad latitude on dividend payout decisions	All profits are distributed (usually no reinvest)
Continuity	Perpetual life	Limited life

**Tax implications** for corporate entities

+ **Classical system:** pay tax on profit and distribute remaining profits to shareholders (personal income tax for shareholders)

+ **S Corporation:** not subject to double taxation (US)

+ **C Corporation:** subject to corporate taxes

## Assets

**Real assets (tangible/intangible):** Assets used for producing goods/services to generate cash flows/income (essentially physical items & value-generating properties & patents, shares)

-> **Investment decision:** Capital expenditure & capital budgeting evaluation (evaluate the desirability)

+ **Capital budgeting:** process of planning and managing a firm's long-term investment

**Financial Assets/Securities:** financial claims to the income/cash flows generated by firm's real assets (non-physical asset derived from contractual claim & liquid assets such as equity, cash, deposits, bonds and stocks)

-> **Financial decision**: capital structure between equity and debt (also net working capital) + raise cash flows -> finance investment (capital budgeting)

-> **Dividend decision**

+ Capital structure: specific mixture of debt and equity use to finance operations

$$V = D + E$$

**Firm value (market capitalisation)**: the present value of firm's expected cash flows = common equity at market value -> capitalisation + debt + minority interest + preferred shares - cash/equivalent

**Reinvestment**: using dividends, interest and any other form of distribution earned in an investment to purchase additional shares rather than receiving the distribution in cash.

### Control

~ **Board of directors**: ultimate decision-making authority in corporations

~ **CEO**: manage the corporation by instituting rules and policies

~ **CFO**: responsible for corporate financial decisions between operation and financial market & policy and planning (Investment + Financing + Cash flow)

**Cost of capital**: rate of return expected to earn on investment

**Hurdle rate**: minimum rate of return on a project or investment required by manager/investor.

**Opportunity cost of capital**: expected return that is forgone by investing in a project rather than in comparable financial securities.

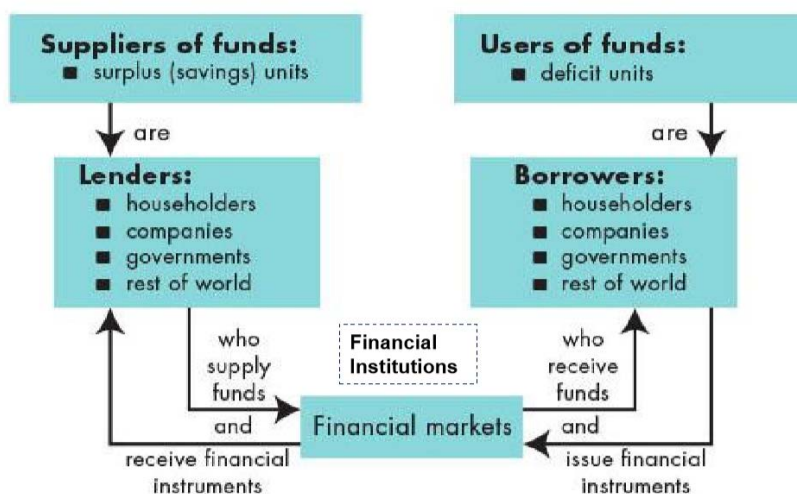
**Agency problem**: conflict of interest between company's managers (agents) and shareholders (principals) due to an issue with incentives and presence of discretion in task completion. (own interest <-> maximise wealth) - controlled by: contractual arrangements/monitoring/incentive schemes/board of directors/takeovers and pressure

**Agency costs**: value lost from agency problems (not maximise value of equity)/cost of mitigating agency problems (constrain and monitor)/separation of ownership and control

+ Direct: corporate expenditure (benefit managers) & Monitoring control

+ Indirect: Lost opportunity  $\Rightarrow$  lose benefit of not taking risk

### Financial markets and flow of funds relationship



### Issues in cash flow estimation

**Incremental cash flows**: additional cash flow receives on a project (Free cash flow: incremental effect of a project on available cash)

⇒ Incremental = Cash inflow – Cash outflow

~ Initial outlay: Equipment + Development cost + NWC

~ On-going cash flows: Incremental revenue/cost + Taxes + Change in NWC

~ Terminal cash flows: Salvage

### Affected cash flows

- **Timing of cash flows:** exact timing of cash flows can affect valuation (Inflation and real value)
- **Incremental cash flows:** cash flows are included if project accept - future decision
- **Taxes and tax effect:** divisional structure to avoid tax
  - + **Corporate income tax** (place on company profit):  $\text{Cash flows} \times (1-t)$
  - + **Disposal or salvage value of assets** (taken into after tax): tax payable when sold more than book value –  $t \times \text{gain on sale}$  & tax savings when sold less than book value –  $t \times \text{loss on sale}$
  - + **Depreciation tax savings** (shield) ⇒ decrease tax payable (accelerated depreciation rate because time-value of money effect/tax reduction → increase net present value) – **time risk premium**

### Not affected:

- **Financing charges:** cash outflows are not included in the cash flows (would cause double counted: include in discount rate) – investment and financing decisions are separated:
- **Sunk costs:** incurred in the past and not affected by acceptance
- **Allocated costs:** overhead costs allocated by management divisions (do not vary therefore ignore)

**NWC** = Current Assets – Current Liabilities = Cash + Inventory + Receivables – Payables

+ Increase in NWC: cash outflow

### Incremental cash flows:

+ **C** =  $(R - OC - D)(1 - t) + D = (R - OC)(1 - t) + t \cdot D$  – Capital expenditure – NWC change

+ **NPV** =  $[(R - OC)(1 - t) + t \cdot D] / (1+k)^t + SV_N / (1+k)^N - I$

~ Nominal cash flows: use nominal discount rate

~ Real cash flows: real discount rate

### Other factors influenced:

+ Incidental effects or externalities: cash flow relates to implementation of project

+ Opportunity cost: NPV of alternative

**Weighted average cost of capital:** required rate of return used by a firm to evaluate its investment opportunities (discount rate: **project of similar risk to the firm**)

+ depends on market value of alternatives & market costs & qualitative factors (tax, inflation adjustment)

+ estimate the current value and cost of financial components

Financial components: **Debt + Ordinary shares + Preference shares**

- Debt: market value of coupon paying bonds to measure required return on debt
- Ordinary shares
- Preference shares (fixed dividends):  $P = D/k$

Cost of capital: rate of return investor expects for providing capital to company

+ observable market rates & effective annual rates (market yield → cost of debt)

**Cost of Equity** = Risk-Free Rate of Return + Beta × (Market Rate of Return - Risk-Free Rate of Return)

+ Risk-free rate: government bond rate & Market expected risk premium (slope of CAPM)

+ Expected market return:  $k = D/P + g$  (dividend yield + dividend growth rate)

+ **Market premium**: difference between expected return on a market portfolio and the risk-free rate

$WACC = k_d(D/V) + k_e(E/V) + k_p(P/V)$  &  $V = D + E + P =$  Enterprise value

+  $K_e > K_p > K_d > (1-t)K_d$  (higher the risk, higher the return)

+ after tax cost of debt:  $k' = (1-t)k$  (interest on tax is deductible, not dividend)

+ after tax  $WACC = k_d(1-t)(D/V) + k_e(E/V)$

Accept the project when  $WACC < IRR$

+ **Limitations of WACC**: cannot be used when the project would alter the operational (business risk) of the firm and the financial risk by altering its capital structure

**Observed (realized) return of a security/portfolio**: changes by cash flows divided by initial investment

+ **Discrete return**:  $R = (P_1 + D - P_0)/P_0$  (Dividend yield + Capital gain rate) – more volatile than continuous return

**Arithmetic average**: returns earned from a single, one period investment

+  $r = (R_1 + R_2 + \dots + R_n)^{1/n} - 1$

**Geometric average**: returns earned per period over entire time horizon

+  $[(1+R_1)(1+R_2)\dots(1+R_n)]^{1/n} - 1$

Differences between 2 ratio declines as the volatility of return declines

**Expected return (observed risk)**: measured by the variability in its realised returns around the average return.  $E(r) = p_1R_1 + p_2R_2 + \dots + p_nR_n$

+ Variance (SD): measure of dispersion around the expected return – greater the dispersion, higher the risk and uncertainty (the variance increases the magnitude of the deviations from mean – spread out distribution of returns)

$Var(r) = \sigma^2 = \rho_1[R_1 - E(r)]^2 + \rho_2[R_2 - E(r)]^2 + \dots + \rho_n[R_n - E(r)]^2$

+ Risk and return vary: time horizon is a key determinant of the realised return and variability (high risk does not mean high return)

- **Risk averse**: require higher return and lower risk (minimise risk and maximise expected return – direction of increasing utility & diversification of portfolios reduce the unsystematic risk)
- **Risk neutral**: return variability (risk) is irrelevant
- **Risk seeking**: higher the risk is better

Invested in two securities:

Weighted average return:  $E(r) = w_1E(r_1) + w_2E(r_2)$  [ $w_1 + w_2 = 1$ ]

Weighted average of portfolio variance:

$Var(r_p) = \sigma^2 = w_1^2\sigma_1^2 + w_2^2\sigma_2^2 + 2w_1w_2\sigma_{12}$  ( $2w_1w_2\sigma_1\sigma_2\rho_{12}$ )

Covariance of returns: measures level of co-movement between security returns:

$\sigma_{12} = p_1[r_{11} - E(r_1)][r_{21} - E(r_2)] + \dots + p_n[r_{1n} - E(r_1)][r_{2n} - E(r_2)]$

Correlation coefficient: standardized measure of co-movement between two securities

$\rho_{12} = \sigma_{12}/\sigma_1\sigma_2$  [ $-1 \leq \rho_{12} \leq 1$ ] ->  $\sigma_{12} = \sigma_1\sigma_2\rho_{12}$

+  $\rho = 1$  (perfect positive correlation) &  $\rho = -1$  (perfect negative correlation) – lower the correlation, the higher the diversification benefit (no gain when  $\rho = 1$ )

+  $\rho_{12} = 1$  ->  $\sigma = [(w_1\sigma_1 + w_2\sigma_2)^2]^{1/2}$  (risk-return trade-off in two security portfolios depend on the level of correlation between returns -> lower risk for low correlation)

+  $\rho_{12} = -1$  ->  $\sigma = \{[w_1\sigma_1 - (1 - w_1)\sigma_2]^2\}^{1/2}$  (maximum gains from diversification)

+  $\sigma_p = 0$  (minimum variance portfolio):  $W_1 = \sigma_2/(\sigma_1 + \sigma_2)$  &  $W_2 = \sigma_1/(\sigma_1 + \sigma_2)$

+  $-1 < \rho < 1$  (some diversification benefits always exist)

When  $\sigma_p = 0$ :  $w_1 = [\sigma^2 - \rho_{12}\sigma_1\sigma_2]/[\sigma_1^2 + \sigma_2^2 - 2\rho_{12}\sigma_1\sigma_2]$

When  $\rho_{12} = 0$ :  $w_1 = \sigma_2^2/(\sigma_1^2 + \sigma_2^2)$  &  $w_2 = \sigma_1^2/(\sigma_1^2 + \sigma_2^2)$

**Portfolio leveraging:** investor borrow funds at the risk-free rate of return and invests all the available funds in a risky security.

+ **Short selling:** borrowing shares, selling them now with a contractual promise to buy back later at a lower price (risky borrowing to leverage a portfolio – increase portfolio risk, unstable)

