Corporate Finance: Theory and Practice (25557) Notes

Lecture 1: Introduction To Corporate Projects, Investments & Major Theories

Corporate finance is about how corporations make financial decisions (money, markets and people). Also known as business finance or financial management.

Investment decision (capital budgeting) – assets
- Cash flows, discount rate, Risk and Return, NPV, Real options
- Capital budget – list of projects business want to undertake

Financing decision (capital structure) – equity and debt
- Financial markets, optimal financing policy, Cost of capital (WACC), dividend and share buybacks, information signaling

Net Present Value (NPV)
What real assets, tangible and intangible, should the firm purchase (investment decision) to produce goods/services to generate future cash returns?
- Identify investment opportunity or project
- Evaluate whether project is worth more than capital required to undertake it (capital budgeting or capital expenditure CAPEX decision)
  - If project has positive NPV \( \rightarrow \) Accept and consider funding
    - Implies rate of return on investment is higher than opportunity cost of capital \( \rightarrow \) Wealth creation
- NPV of any financial security in an efficient market is ZERO

Financing Decision (debt v equity) – How should the firm pay for those investments?
- To obtain money, firm sells claims on real assets (e.g. gold or property) and on cash flow the assets will generate \( \rightarrow \) financial assets or securities
  - Note: bank loan is not a security \( \rightarrow \) not sold or traded in financial markets
- Financial decisions involve the evaluation of risky cash flows over time
  - Money has time value ($ worth today is worth more than $ tomorrow) \( \rightarrow \) Future cash flows need to be discounted to their PV for proper comparison

Portfolio Theory
Concerned with the measurement of risk \( \rightarrow \) suggests investors should diversify portfolio investments to reduce risk
- Risk is measured by standard deviation (for single assets) or beta (for portfolios)

Capital Asset Pricing Theory
Risk and return relationship \( \rightarrow \) higher risk = higher expected return on project
- Capital Asset Pricing Model (CAPM) or Security Market Line provides simple linear relationship between expected return and beta

Efficient Market Theory
Security prices accurately reflect available info and respond rapidly to new info as soon as it becomes available.
- Efficient market theory implies competition in capital markets is tough and security prices reflect intrinsic value of assets
Corporations are legally distinct from their owners and pay their own taxes.

- Provide limited liability – shareholders cannot be held personally responsible for firms debts
- Owners of a corporation are not usually the managers
- Shareholders vote to elect a board of directors (executive and non-executive) that appoints top mgmt
- Goals of a corporation
  - Board is supposed to ensure managers act in shareholders best interest
  - Manager who invests only in assets with +NPV (NPV rule) will increase market value of firm and current price of shares

SEPERATION OF OWNERSHIP AND CONTROL.

Advantages:
- Allows share ownership to change without interfering with business operation
- Allows firm to hire & fire professional managers \(\rightarrow\) without consent of shareholders

Disadvantages:
- Managers and shareholders objectives may differ
- Potential conflict of interest is termed a principal agent problem

Agency costs – any loss of firm value that results from conflict of interest \(\rightarrow\) misalignment of goals

- Incurred when:
  - Managers don’t attempt to maximise firm value
  - Shareholders incur costs to monitor managers \(\rightarrow\) constrain their actions and align interest with shareholders
- Can arise when firm gets into financial distress and interest of shareholders are in conflict with those of debt holders

Agency Theory

Possible conflicts of interest among stakeholders (managers, shareholders, employees, govt, debt holders) and how companies attempt to overcome such conflicts. Agency problems are mitigated by good systems of corporate governance:

- Legal and regulatory requirements – e.g. financial statements
- Compensation plans – acting as an incentive e.g. stock options
- Board of directors – holding managers to task
- Monitoring – by security analysts and banks
- Takeovers – market mechanism of control
- Shareholder pressure – e.g. becoming directors or selling out

Capital Structure Theory

2 types of financing decisions to raise capital:
1. Issue of debt and equity capital
2. Retention of profits vs. dividend decisions

Modigliani and Miller’s capital structure theory provides starting point for analysing impact of financing decisions on firm value.

Information asymmetry – managers, shareholders and lenders may all have different info about value of real or financial assets

- Managers typically have more info about true prospects of firm
- Financial managers need to recognise asymmetries and finds ways to reassure investors
**Signaling Theory**
Managers may use capital structure and dividend decisions to *signal their view of firm’s prospects*

- Increase in dividend → signal expectation of improved earnings
- Becomes more difficult to resolve conflicts and agency problems when managers have more info than shareholders/debt holders → INFORMATION ASYMMETRY → hard to measure/manage performance

**Option Theory**
Firms regularly use *derivative securities* such as options and futures to reduce risk

- Value of these derivatives depend on value of some other assets
- Many capital investments include embedded option to *expand or bail out in the future* → REAL OPTIONS in capital budgeting decisions
- Option theory such as binomial tree model or Black-Scholes-Merton formula can be used to value these financial derivatives and real options

**Lecture 2: Estimating the Cash Flows and the NPV of a Project**
Wise investment decisions are based on the NPV rule → accept when positive.
Cash flow is just the difference between dollars received and dollars paid out
- Different to accounting profits which include income and expenses not yet received or paid as well as depreciation charges which are not cash flows

The value of a project depends on all the *incremental (additional) cash flows* after-tax that follow from project acceptance
- Important to include all incidental effects on remainder of firm’s business such as existing product sales
- Recognise after-sales cash flows to come later such as downstream activities on service and spare parts

**Working capital requirements**
- Firms generally use sales and COGS to estimate cash flow:
  - Cash inflow = Sales - Increase in accounts receivable \( \text{AP} \)
  - Cash outflow = COGS + Increase in inventory \( \text{INV} \) - Increase in accounts payable \( \text{AP} \)
  - Net cash flow = cash inflow - cash outflow
  - \([\text{Sales} - \text{COGS}] - [\text{AR} + \text{INV} - \text{AP}]\)
- The amount of \([\text{AR} + \text{INV} - \text{AP}]\) is the additional investment in net working capital (often referred to simply as *working capital*).

- Increase in working capital → OUTFLOW
- WC likely to increase in early/middle years of project
- When project comes to end – all investments in WC over life are recovered and treated as cash INFLOW

**Include Opportunity Cost**
- Opp cost of a resource is the cash it could generate for the company if the project were rejected and the resource was sold or put to some other productive use
- Should judge projects on basis of *“with or without”*, “not before vs after”
  - Inc cost = Difference b/w cash flows with and without investment

**Sunk costs, allocated overhead costs, inflation and salvage value**
- Ignore past and irreversible sunk costs
- Ignore accountants allocation of existing overheads
• INCLUDE only extra overhead expenses generated by a project
• Remember salvage value (net of any taxes) when project comes to an end
• Treat inflation consistently by discounting nominal cash flows at nominal rate of return (observed in the market) and real cash flows at real rate $r_{\text{nominal}} = (1 + r_{\text{real}})(1 + \text{inflation rate}) - 1$

Separate investment and financing decisions:
• Analyse project as if it were all equity-financed $\rightarrow$ treating all cash flow as coming from and going to shareholders
• If project partly financed by debt $\rightarrow$ neither subtract debt proceeds from investment cost, nor recognise interest and principal payments on debt as cash outflow
• Financing costs are recognised in discount rate instead
  o Discount rate determined by financing decisions

Depreciation
• Non-cash allowable deduction against profit
• Provides annual tax shield $\rightarrow$ Tax Shield = (Depreciation $\times$ Tax Rate)
• Since non-cash expense $\rightarrow$ added back to profit after-tax to arrive at net cash flow
• Increased (incremental) depreciation = new depreciation – old depreciation

Tax effect on sale of machine = tax rate $\times$ (Book value – Sale Price)
• If Sale price < BV $\rightarrow$ CASH INFLOW $\rightarrow$ entitled to tax entitlement from govt

Investment Timing
Sometimes you have the ability to defer an investment and select a start date that is more ideal to make the investment decision $\rightarrow$ project might become more valuable if undertaken in the future (e.g. defer harvesting of trees as size of CF may increase overtime)
• Maximise NPV of investment if harvest as soon as rate of increase in value drops below cost of capital

Equivalent annual cash flows (EAC)
Involves transforming investment today into an equivalent stream of future cash flows
• $PV = \text{Annuity payment} \times \text{annuity factor} \Rightarrow PV = PMT \left[ \frac{1-(1+i)^{-n}}{i} \right]$
• This annuity is called an equivalent annual cash flow (EAC) $\Rightarrow$ annual cash flow sufficient to recover a capital investment, including the cost of capital, over the investments economic life
• $EAC = \frac{PV \text{ of Cash Flows}}{\text{Annuity Factor}}$

Long vs. short live equipment
• Rule is to compare assets on their EAC $\rightarrow$ total cash per year from buying and operating the asset

Deciding to replace an existing machine
• Optimal timing of replacement can be decided by comparing NPV's achieved over infinite period of replacement (PERPETUITY) with new machines

EAC and inflation
• When using EAC's for comparison of costs per period $\rightarrow$ DO THE CALCULATIONS IN REAL TERMS