Concepts	Description
Capital Budgeting	
Capital budgeting process	Process of identifying and evaluating capital projects (projects where CF to firm will be received over a period longer than a year)
Categories of capital budgeting projects	1. Replacement projects to maintain the business : - no need for detailed analysis - issue : should the existing operations continue ; and should the existing processes be maintained 2. Replacement projects for cost reduction : - Whether obsolete usable equipment should be replaced - Fairly detailed analysis is required 3. Expansion projects : - To expand a business - Require explicit forecast of future demand→ involve complex decision-making process 4. New product / market development : - Complex decision-making process, with detailed analysis, due to high level of uncertainty 5. Mandatory projects : - Required by gov. agency / insurance company - involve safety-related / envi concerns - generate minimum revenue, but accompany new revenue-generating projects undertaken by the company 6. Other projects
5 Principles of capital budgeting	1. Decision based in CF, not accounting income - Sunk cost : not include - Exernalities (effect of the project acceptance on firm's other CF) : include 2. CF are based on opportunities costs - Opportunities cost : include 3. Timing of CF is important 4. CF analysed on after-tax basis 5. Financing cost are reflected in project's required rate of return
Expansion project - Method to calculate yearly CF	**1. Initial investment outlay :** up-front costs of the project Initial investment outlay = Fix cost investment (FCInv) + Net Working Capital investment (NWCInv) (*) NWCInv must be included, because additional inventories are required to generate additional sales ;↑ sales → ↑ AR ; ↑ Inventory → ↑ AP NWCInv = ΔNon-cash current assets - ΔNon-debt current liabilities = ΔNWC NWCInv > 0 → require additiona financing → cash outflow to fund net investment in current assets (and vice versa) End of project → no need for additional WC → cash inflow (outflow) equal to initial NWC **2. After-tax operating CF :** Incremental CF over capital asset' economic life CF = (S - C - D) × (1 - T) +D = (S - C) × (1 - T) + T × D S = Sales C = Cash operating costs D = Depreciation expense T = Marginal tax rate (*) Depreciation : non-cash operating expense, but reduce the tax paid by firm **3. Terminal year after-tax non-operating CF (TNOCF)** TNOCF = Sal + NWCInv - T × (Sal - B) Sal = Salvage value of FA B = Book value of FA
Replacement project - Method to calculate yearly CF	Replacement project analysis : whether to replace an existing asset with a newer / better one **1. Initial outlay :** reflect the sale of old asset $Initial\ outlay = FCInv + NWCInv - Sal_0 + T \times (Sal_0 - B_0)$ **2. After-tax operating CF :** calculate incremental operating CF $\Delta CF = (\Delta S - \Delta C) \times (1 - T) + \Delta D \times T$ **3. Terminal year after-tax non-operating CF (TNOCF)** $TNOCF = (Sal_{t\ New} - Sal_{t\ Old}) + NWCInv - T \times [(Sal_{t\ New} - B_{t\ New}) - (Sal_{t\ Old} - B_{t\ Old})]$
Effect of inflation on capital budgeting analysis	**1. Analysing nominal / real CF :** should match type of CF with the discount rate (Nominal CF - Nominal discount ratee ; Real CF - Real discount rate) **2. Changes in inflation affect project profitability** : Inflation higher than expected→ ↓ future CF → ↓ project's value **3. Inflation reduce tax saving from depreciation** **4. Inflation decrease the payment value to bondholders** **5. Inflation affect sales and cost differently :** due to price of output goods change differently to prices of inputs→ after-tax Cf may be better or worse
Mutually exclusive projects with different lives	2 approaches : **1. Least common multiple of lives approach** **2. Equivalent annual annuity (EAA) approach** (compare annual payment)
Capital rationing	Capital rationing : allocaion of fixed amount of capital among a set of available projects→ maximise shareholder wealth. Choose combination of projects it can afford to have the greatest total NPV Hard capital rationing : fund alocated to managers cannot be increased Soft capital rationing : allow to ncrease allocated capital budget if can justify that additional funds will create shareholder value
Sensitivity analysis	Sensitivity analysis : changing an independent input variables to see the change in dependent variable - Start with base case scenario - Change 1 variable by a fixed % point above and below the base case - Noting the effect of this change on the project NPV
Scenario analysis	Scenario analysis : risk analysis technique, that consider both the sensitivity of key output variable (NPV) to changes in key input variables - Allow for changes in multiple input variables at once - Create Worst case, Best case and Base case

Valuing a target company - Comparable transactions	Step 1 : Identify a set of takeover transactions - involve firms in same industry, similar capital structure as the target Step 2 : Calculate various relative value measures based on completed deal prices for sample transactions Step 3 : Calculate mean/median/range for chosen relative value measures; apply those measure to the target company			
Compare between DCF / Comparable company / Comparable transaction analysis		DCF	Comparable company	Comparable transaction
	Advantages	- Easy to model any changes in target's CF due to synergy or change in cost structure - Estimate of company value based on forecast of future fundamental condition rather than current data - Easy to customise	- Data of comparable companies is easy to access - Assumption that similar assets have similar values is fundamentally sound - Estimates of value are directly from the market, rather than assumptions/estimates about the future	- No need to estimate separate takeover premium - Derived directly from recent completed deals, rather than assumptions/estimates about the future - Reduce the risk of lawsuit from target's shareholders against target's managers and BOD for mispricing the deal
	Disadvantages	- Difficult to apply when CF are negative - Estimates of CF and earnings are highly subject to error - Discount rate changes over time, and have large impact on valuation estimate - Majority of target's estimated value is terminal value, which is highly sensitive to estimates used for constant growth and discount rate → estimation error is a major concern	- Assume market's valuation of comparable companies is accurate - Only provide estimate of fair stock price. Takeover price must be determined separately - Hard to take into account the effect of synergy or change in capital structure - Historical data used to estimate takeover premium may not be timely → not reflect current condition in M&A market	- Assume value of past transactions is accurate. If past transactions are overpriced / underpriced → carry over to the estimated value of the target - May not be enough of comparable transactions to develop a reliable set of data to calculate the estimated target value - Hard to take into account the effect of synergy or change in capital structure
Post merger value of acquirer	$V_{A+T} = V_A + V_T + Synergy - Cash\ paid\ to\ target$ In which : $V_{A+T} = post\ merger\ value\ of\ combined\ company\ (Acquirer + Target)$ $V_A = Pre\ merger\ value\ of\ acquirer$ $V_T = Pre\ merger\ value\ of\ target$			
Gain of the Target	$Gain_T = Takeover\ premium = P_T - V_T$ In which: $P_T = Price\ paid\ to\ target$ $V_T = Value\ of\ target$			
Gain of the Acquirer	$Gain_A = Synergy - Takeover\ premium = Synergy - (P_T - V_T)$			
Cash Payment vs. Stock payment	1. Cash offer : profit of target's shareholders is capped @ takeover premium 2. Stock offer : Profit of target's shareholders is determined by value of combined firm's stock $P_T = N \times PPS_{A+T}$ In which : $P_T = Price\ paid\ to\ Target$ $N = number\ of\ new\ shares\ the\ target\ receives$ $PPS_{A+T} = post\ merger\ price\ per\ share\ - combined\ firm$			
Post merger studies	1. Short term performance studies : - Targets gains ≈ 30% - Acquirer losses ≈ 1% - 3% - Reason 1: High premium received by Target, due to Acquirer suffer from *Winner's curse* - Reason 2: Managerial hubris - overestimate the synergy and expected benefits of the merger 2. Longer term performance studies : - Acquirer ted to underperform their peers - Avg. return of acquirer 3 years after a merger ≈ -4% - Over 60% acquirer lagging their peer group - Reason : due to failure to capture promised synergies			
Characteristics of M&A transactions that create value	1. Strong buyer : Acquirer shows strong performance (i.e.: earnings ; stock price growth) in the prior 3 years 2. Low takeover premium 3. Few bidders → Greater acquirer's future returns 4. Favorable market reaction			
Divestitures / Equity carve-out / Spin-offs / Split-offs / Liquidations	1. Divestitures : A company selling / liquidating / spinning off a division or subsidiary, mostly to outside buyer 2. Equity carve-out : Create a new, independent legal, with separate management team, by giving an equity interest in a sub to outside shareholders (issued in a public offering). 3. Spin-offs : Create a new, independent legal, with separate management team, by distributing sub's shares to the parent's shareholders proportionately→ Same shareholders with the Parent company 4. Split-offs : Allow shareholders to receive a new shares of a division of the Parent, in exchange for a portion of their shares in the parent company 5. Liquidations : Break up the firm and sell its assets separately. Mostly associated with bankcruptcy			
Common reasons for restructuring	1. Division no longer fits into management's LT strategy : unable to make profit / no fit with the LT direction of the company 2. Lack of profitability : Division's return < Firm's cost of capital - Reason 1 : management made a bad decision to enter the division at the first place - Reason 2 : Division's profitability declines over time due to rising costs / or change in customers' preference 3. Individual parts are worth more than the whole (reverse synergy) 4. Infusion of cash : Parent company experiences financing difficulty→ selling a division to raise cash and reduce debt			