

財務管理重點整理

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Chapter10 : The basics of Capital Budgeting

一、Importance of Capital Budgeting

- (1)Importance→timing and quality
 - i、 Loss of flexibility
 - ii、 Depend on future sales
 - iii、 Define future strategic direction
- (2)Consequences
 - i、 sufficiently modern
 - ii、 lose market share

二、Generating ideas for Capital Budgeting

- (1)customer suggest→market research→cost evaluation by accountant→profit
- (2)Strategic business plan: for future 5~10 years

三、Project Classifications

- (1)Replacement: maintenance of business
- (2)Replacement: cost reduction
- (3)Expansion of existing products or markets
- (4)Expansion into new products or markets
- (5)Safety and/or enviromental projects
- (6)Other

四、Similarities between Capital Budgeting and Security valuation

Capital Budgeting	Security valuation
Cost of the project	Price paid
Expected CF	Dividend or Interest payment Stock's price or Bond's maturity value
Riskiness of CF estimate	The same
Cost of capital	YTM
Present value	The same
Decision rules	The same

五、Capital Budgeting decision rules

(1)Payback period: The length of time required for $CF_0 = \sum_{i=1}^t CF_i$

- i、 Payback=Year before full recovery + (Uncovered at start of yr/CF during yr)
- ii、 The shorter, the better
- iii、 Mutually exclusive: only one can be accepted
- iv、 Independent: CF not affected by the decision of the other project

(2)Discounted payback period: The length of time required for $CF_0 = \sum_{i=1}^t \frac{CF_i}{(1+k)^i}$

(3)Net present value(NPV): PV of future net CF, discounted at the cost of capital

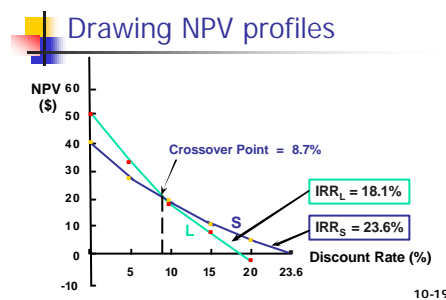
i、 $NPV = \sum_{i=0}^t \frac{CF_i}{(1+k)^i}$

- ii、 NPV>0→take, NPV<0→reject
- iii、 NPV EVA (economic value added): PV of future EVA
- iv、 NPV MVA(market value added): excess of market value over book value

(4)Internal rate of return (IRR): Discount rate that equates the PV of CF to CF₀

i、 $NPV = \sum_{i=0}^t \frac{CF_i}{(1+IRR)^i} = 0$

- ii, Hurdle rate = Discount rate (cost of capital) that the IRR must exceed
 - a. Independent: $IRR_{project} > \text{Hurdle rate} \rightarrow \text{accept}$
 - b. Mutually exclusive: ① Larger IRR ② $IRR_{project} > \text{Hurdle rate}$
- iii, Break-even consideration
 - a.
- iv, Comparison of the NPV vs. IRR
 - a. Reinvestment Rate Assumption
 - 1) NPV method = cost of capital (better assumption \rightarrow so choose NPV)
 - 2) IRR method = IRR
 - b. Multiple IRR: two or more IRR
 - 1) Nonnormal CF
 - c. NPV profile: NPV against cost of capital
 - 1) Intercept \rightarrow undiscounted CF
 - 2) Cross horizontal axis \rightarrow IRR
 - 3) Crossover Point = Fisher's rate = equal NPV, it exists when ① different IRR ② different CF rate (long or short term)



- d. Independent: $IRR > \text{Discount rate} \rightarrow \text{positive NPV} \rightarrow \text{accept NPV} \rightarrow \text{same decision}$
- e. Mutually exclusive
 - 1) $>$ crossover point: same decision (larger IRR \rightarrow larger NPV)
 - 2) $<$ crossover point: conflict decision (larger IRR \rightarrow lesser NPV); but NPV means EVA, NPV is more important than IRR.

(5) Modified internal rate of return (MIRR): Discount rate $PV_{costs} = PV_{terminal \text{ value}}$

$$i, \sum_{i=0}^n \frac{COF_i}{(1+k)^i} = PV_{cost} = \frac{TV}{(1+MIRR)^n} = \frac{\sum_{i=1}^n CIF_i (1+k)^{n-t}}{(1+MIRR)^n}$$

- ii, MIRR over IRR
 - a. reinvestment assumption = cost of capital (nearly true profit)
 - b. no multiple IRR
 - c. Conflict between NPV vs. MIRR
 - 1) Equal size, same life \rightarrow same decision
 - 2) Equal size, different life \rightarrow same decision
 - 3) Different size, same life might conflict (choose NPV)

六、 Conclusions on Capital Budgeting Methods

Methods	Advantages	Disadvantages	Remarks
Payback	risk and liquidity	Cost of capital	Bond like
Discounted payback	small company for long term lock	CF after payback	
NPV	profitability large company	safety margin amount of capital at risk	Most important
IRR	profitability safety margin	reinvestment assumption multiple IRR	Makeup NPV
MIRR	Cost of capital	Different size	Makeup IRR

七、 The post-audit → comparison and explanation of actual vs. expected results

(1) Purposes

- i、 Improve forecasts: eliminate conscious and unconscious bias if they know that their actions are being monitored.
- ii、 Improve operations: putting their reputations on the line. strive to improve operation into line with forecasts.

(2) Complications: uncertainty, beyond the control, mixed in the system, and hard to blame.

八、 Using Capital Budgeting techniques in other contexts

(1) Corporate Merge: AT&T to McCaw Cellular

(2) Sell assets or Downsizing personnel