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## 1 FINAL

### 1.1 CHAPTER 1

- Time Value of Money
- Cash Flow Diagrams
  - Draw a CF diagram

### 1.2 CHAPTER 2

- Recognition and conversion of cash flows
- Shifted Series

### 1.3 CHAPTER 3

### 1.4 CHAPTER 4 & 5

#### 1.4.1 TYPE of Alternatives

single Project If PW/AW/FW at MARR  $\geq 0$ , **ACCEPT**

#### 1.4.2 Some Definitions (VERY IMPORTANT)

- Capitalized worth

$$(CW) - CW = \frac{AW}{i} \quad (1)$$

- COST (CC)-
- Present worth of  $\infty$  lives

### 1.5 CHAPTER 6: Rates of Return (going to have to read)

- **Internal Rate of Return** (IRR) is not always unique.
- **External Rate of Return** (ERR) is always always unique.

These two are not ranking methods. ??? What does that mean

When analyzing several alternatives, and incremental approach is applied

Conclusions from PW/AW/FW/B/C GIVE The SAME result.

#### 1.5.1 INcremental IRR/ERR Analysis

These are the steps required to do an IRR/ERR Analysis

1. Order the alternatives (two alternatives) by the initial investment
2. Develop the incremental cash flow series. Draw an incremental cash flow diagram, if needed.

??? what is an incremental cash flow diagram

1. Find the Incremental rate of return for this series, term it  $\Delta i^*$
2. Select the better one
  - If  $\Delta i_{B-A}^* < \text{MARR}$  then select A
  - If  $\Delta i_{B-A}^* \geq \text{MARR}$  then select B

## 1.6 CHAPTER 8: Depreciation

### 1.6.1 Concepts

- Depreciation in not cashflow
- it is Deducted from teh taxable income
- Decreases tax magnitud (Ch.9)

### 1.6.2 Depreciation Methods

- Straight Line SL (THE SAME AMOUNT EVERY YEAR)
- DECLING BALANCE (DB): accelerated write-off

$$MACRS - - - - P = \frac{2}{n} \quad (2)$$

### 1.6.3 Summary of Depreciation Method Relations

Method	SL	DB	MACRS
Depreciation rate p	$\frac{1}{n}$ (3)	1/n, 1.5/n, 1/n, 1.5/n, 2/n	Varies per Varies per year
Annual depreciation d <sub>t</sub>	(P-F)p= (P - F) / n	(B <sub>t-1</sub> )p= \=P(1-p) <sup>t-1</sup> p	P <sub>t</sub> *P
Book value B <sub>t</sub>	B <sub>t-1</sub> -d <sub>t</sub>	B <sub>t-1</sub> -d <sub>t</sub> = P(1 - p) <sup>t</sup>	B <sub>t-1</sub> -d <sub>t</sub>

- **SL:** BV dcreases by a constant amount annually.
- **DB:** BV dcreases by a constant percentage annually.
- **MACRS:** BV dcreases by a various percentage annually.

### 1.6.4 WORK OUT EXAMPLES

TODO

## 1.7 CHAPTER 9

### 1.7.1 Corporate Income Tax Rates

- VIEW TABLE 9.1
- Effective Tax Rate (or averaged tax rate)
  - The income tax divided by the taxable income.
- Incremental Tax Rate
  - The incremental income tax divided by the incremental investment.
- Marginal Tax Rate
  - The tax rate that will apply to the last dollar included in taxable income.

#### EXAMPLES

### 1.7.2 BTCF and ATCF Analysis

- Before Tax Cash Flow — BTCF:
  - ALL the cash flows except **taxes** and **loan** payment
- After Tax Cash Flow — ATCF:  $+ATCF = BTCF - \text{Tax} - \text{Loan Payment}$

Loan Payment = Principal Payment + Interest Payment

Tax = Taxable Income \* (tax-rate)

Taxable Income = BTCF - Depreciation - Loan Interest Payment

## 1.8 CHAPTER 11: Break Even Analysis

### 1.8.1 Break-Even Analysis

- Break-Even Analysis
  - A method ?????
- Break-Even Value
  - The value of a parameter at which the measure of economic worth equates to zero ????
- EXAMPLE

### **1.8.2 Sensitivity Analysis**

- A method used to determine the impact on the measure of economic worth when values of **one or more parameters** vary over specified ranges.

### **1.8.3 Break-Even Analysis**

- incorporates explicitly random variation in one or more parameters
- Then finds a risk measure (PW/AW/FW)
- Or/and, finds the probability of economic worth to be greater than 0 (or  $IRR/ERR > MARR$ )