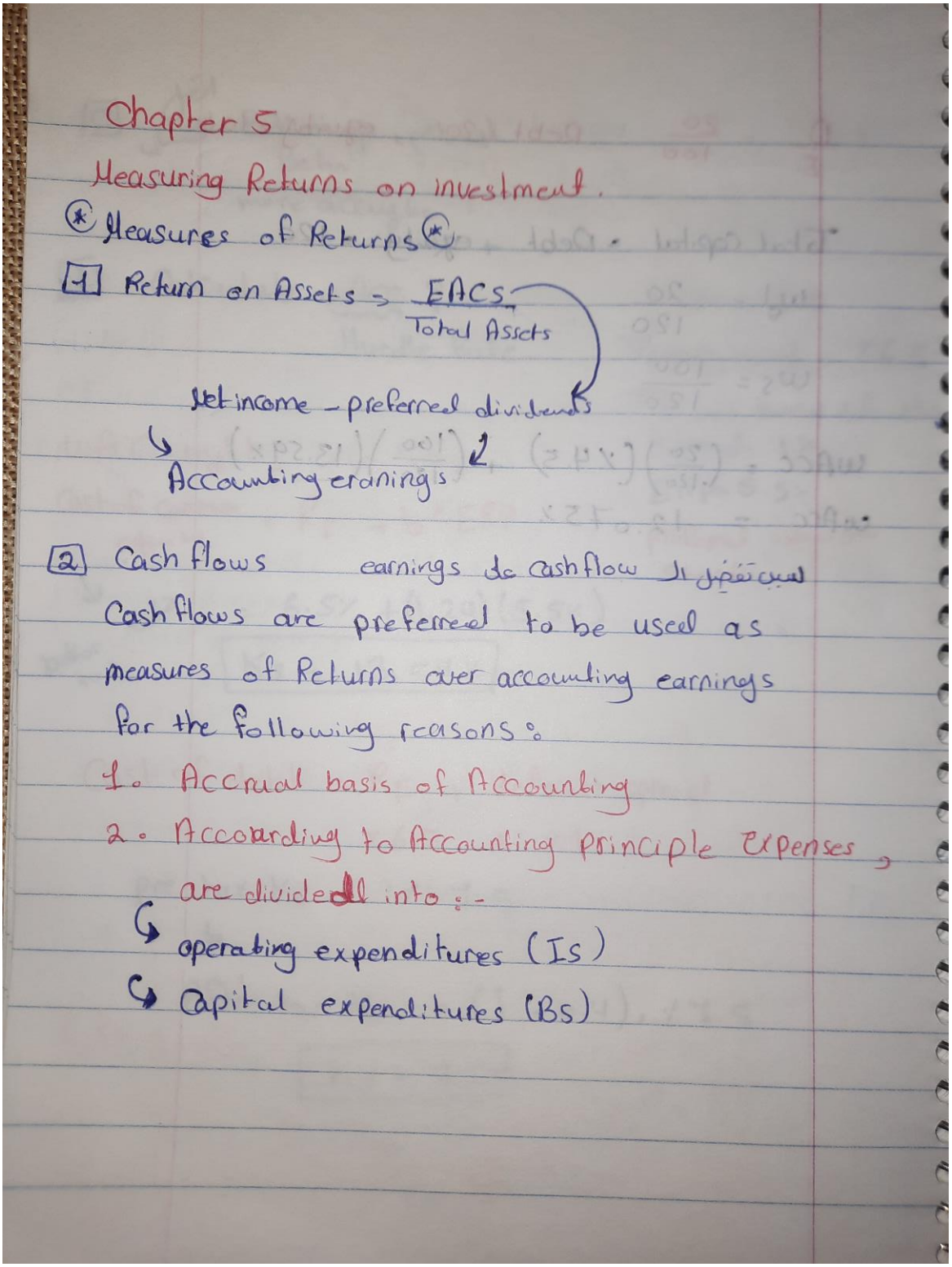
ASIL SHAAR (CORPORATE FINANCE(FINN3300))

CHAPTER 5



Chapter 5

Measuring Returns on investment.

(*) Measures of Returns (*)

[1] Return on Assets = EACs / Total Assets

Net income - preferred dividends

↳ Accounting earnings

[2] Cash flows earnings ≠ Cash flow

Cash flows are preferred to be used as measures of Returns over accounting earnings for the following reasons:

1. Accrual basis of Accounting
2. According to Accounting principle Expenses, are divided into :-
   - ↳ operating expenditures (Is)
   - ↳ Capital expenditures (Bs)

⊛ Investment decisim Rules ⊛

[1] Accounting base investment decision Rules

(we are using accounting earnings as a measure of Returns)

[a] RoC = $\frac{EBIT(1-tax)}{\text{Book value of capital}}$ ← after tax operating incom (NOPAT)

Return on Capital

* RoC > wACC

Accept then the project (investment / Asset)

* RoC < wACC

Reject then the project

إذا كانوا حسابات ما بستفيد انبي من project وبعمل Reject

[b] Return on equity

$RoE = \frac{\text{net income}}{\text{equity}}$

* RoE > cost of equity accept then the project

* RoE < cost of equity Reject then the project

To turn accounting earnings into cash flow:

FCFF = Cash flow available to both Creditors & Stockholders

↓ free cash flow to the firm

FCFF = EBIT(1 - tax) + Depreciation - Capex ± Δ in net working Capital

EBIT(1 - tax) → net operating profit after tax

Capex → Capital expenditures

Δ in net working Capital

→
1. add back depreciation and any non-cash expenses.
2. subtract out Capital expenditure
3. Consider the change in net working capital.

Net working capital = current assets - current liabilities

FCFF = EBIT(1 - tax) + Depreciation - Capex ± Δ in net working Capital.

Straight line method:

$$Dep = \frac{Cost - Salvage\ value}{Useful\ life}$$

$$Dep = \frac{500m - 0}{10} = 50m.$$

Book value = Cost − Acc. depreciation.

840
283

FCFE → measures cash flow generated for a project for equity investors in the firm after taxes, debt payment & reinvestment need.

FCFE = Net income + Dep − Capex ± Δin NWC +

Net debts

(New debt issues − debt repayments)

⇒

Cash flow patterns:

① Conventional cash flow pattern as follows:
   ⓐ Cash outflow (initial investment)
   ⓑ Incremental cash flows
   ⓒ Terminal cash flow (cash flow at liquidation)

دفع ثمن الاستثمار، مبالغ مبيعات وفي نهاية المشروع بتوقع اعلى تنظيف قدرش

ع بيجين كاش تلو

② Non-Conventional cashflow pattern as follows: حدوث خطأ حسابات
   ⓐ Cash outflow
   ⓑ Series of cash inflows & outflows.

Cash flow base investment decision rules:

I. payback period: measures the period needed to recover the initial investment

The shorter the better

⇒

Example:

Year	Cash flow
0	($10,000)
1	$4000
2	$2,000
3	$8,000

payback period = ?

$= 1 + 1 + \left(\frac{4000}{8000}\right) = 2.5$ years

Accept 2 اقل من
Reject 2 اكثر من

The manager determine the maximum acceptable payback period.

Decision rule:

If the payback period of the project > maximum acceptable payback period. then reject the project

If the payback period < Maximum acceptable payback period then accept the project

properties of the payback period:

① Easy to calculate

→

② good for conventional cash flow pattern

limitations:

[1] subjective

[2] It does not consider time value of money

[3] It does not consider the cash flows to be received after recovering the inital investment

[2] Net present value:

NPV = the sum of the present value of accepted cashflows

To Calculate the present value we need a discount rate = WACC

Decision rule:

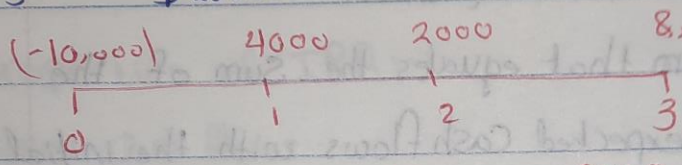
If the NPV of the project > 0 then accept the project

If the NPV of the project < 0 then reject the project

⇒

Example:

Year	Cashflow	WACC = 10%
0	($10,000)	NPV?
1	$4,000	
2	$2000	
3	$8,000	



$$NPV = \frac{-1000}{(1+0.1)^0} + \frac{4000}{(1+0.1)^1} + \frac{2000}{(1+0.1)^2} + \frac{8000}{(1+0.1)^3}$$

$$= 1299\$ > 0 \quad \text{Accept}$$

properties of NPV:

(1) Additive

Value of the firm = the present value of projects in place + NPV of future projects

(2) Cashflow are reinvested at the WACC

(3) NPV Calculations allows for interest rate shift

(4) It consider time value of money

(5) It considers the cash flows to be received after recovering the initial investment.

⇒

limitations:

① The NPV is stated is absolute terms rather than relative terms.

② NPV is biased towards accepting long-term projects.

[3] Internal rate of return (IRR):

The rate of return that equates the sum of the present value of expected cash flows with the initial investment ↓ zero.

Decision rule:

If the IRR of the project > WACC then Accept the project

If the IRR of the project < WACC then Reject the project

Example:

Year	CF
0	($100,000)
1	4000
2	2000
3	8000

⇒

$$\frac{-10,000}{(1+r)^0} + \frac{4000}{(1+r)^1} + \frac{2,000}{(1+r)^2} + \frac{8,000}{(1+r)^3} = 0$$

$$-10000 + \frac{4000}{(1+r)^1} + \frac{2000}{(1+r)^2} + \frac{8,000}{(1+r)^3} = 0$$

$$\frac{4000}{(1+r)^1} + \frac{2,000}{(1+r)^2} + \frac{8,000}{(1+r)^3} = 10,000$$

properties of IRR :-

1. uses cash flows
2. It considers time valve of money.
3. It is a relative measure.

limitations :

1. It is baised towards smaller projects.
2. Cash flows are reinvested at the IRR
3. IRR sometimes cannot be calculated (Multiple IRR, no IRR)

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Q6 tax rate 40%

(a)

year	0	1	2	3	4
Revenues		$10,000	$11,000	$12,000	$13,000
- COGS		4,000	4,400	4,800	5,200
- Dep		4,000	3,000	2,000	1,000
EBIT		$2,000	$3,600	$5,200	6,800
EBIT(1-0.4)		1,200	2,160	3,120	4,080
+ Dep		4000	3000	2000	1000
-Capex	(15,000)		(2000)		
+ Book value Salvage					$7,000
± D in NWC	(1000)	(100)	(100)	(100)	1,300
FCFF	(16,000)	$5,100	$3,060	$5,020	$13,380

Year	
0	(15,000)
2	(2,000)

working Capital = 10% of revenues.

FCFF?

$$FCFF = EBIT(1 - tax) + Dep - Capex \pm \Delta in\ NWC$$

Book value = Cost − A.d

$$17000 - (4000 + 3,000 + 2,000 + 1,000)$$

$$= 7,000\ \$$$

Salvage value ⇒ what the company expected to recive in exchange for the assets at the end of the useful life.

year	working Capital
1	10% * 10,000 = 1000
2	10% * 11,000 = 1100
3	10% * 12,000 = 1,200
4	10% * 13,000 = 1,300

working Capital at the end of project received back.

⇒

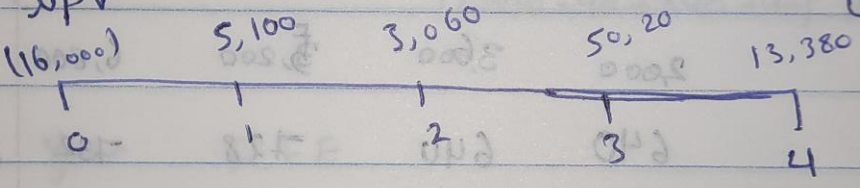
(b)

Year	CF
0	(16,000)
1	$5,100
2	$3,060
3	$5,020
4	13,380

Payback period $= 1 + 1 + 1 + \frac{2820}{13,380} = 3.21$ years

(c) NPV

WACC = 12%.



$$NPV = \frac{(16,000)}{(1+.12)^0} + \frac{5,100}{(1+0.12)^1} + \frac{3,060}{(1+0.12)^2} + \frac{5020}{(1+0.12)^3} + \frac{13,380}{(1+0.12)^4}$$

NPV = $3,069.35 > 0 Accept the project.

7 40% of the capital be financed with debt

→ interest rate = 10%

→ balloon payment at the end of the project

Year	0	1	2	3	4
Revenue		10,000	11,000	12,000	13,000
-CoGS		4,000	4,400	4,800	5,200
- Dep		4,000	3,000	2,000	1,000
EBIT		2,000	3,600	5,200	6,800
- interest		640	640	728	732
EBT		1360	2956	4,472	6,068
EBT (1-0.4)		816	1,774	2,683	3,641
+ Dep		4,000	3,000	2,000	1,000
-Capex	(15,000)		(2000)		
+ Book value salavage					7,000
ΔNWC	(1000)	(100)	(100)	(100)	1,300
+ debt issued	6,400	40	840	40	
- debt paid					7320
	(9,600)	$4,756	$3,514	$4,623	$5,621

FCFE = Net incom + Dep - Capex ± Δin NWC +
Net debt (new debt issued - debt repayment

Year	debt	interest
0	40% * 16,000 = 6400	0
1	40% * 100 = 40	(6400 * 10%) = 640
2	40% * 2100 = 840	(6400 + 40) * 10% = 644
3	40% * 100 = 40	(6400 + 40 + 840) * 10% = 728
4		(6400 + 40 + 840 + 40) * 10% = 732

(b)

Year	FCFE
0	(9,600)
1	4756
2	3,514
3	4,623
4	5,621

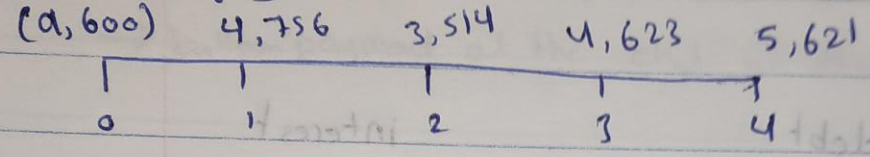
payback period = $1 + 1 + \frac{1,330}{4,623}$

= 2.28 period

⇒

(c) NPV

Cost of equity = 16%



$$NPV = \frac{(9,600)}{(1.16)^0} + \frac{4,756}{(1.16)^1} + \frac{3,514}{(1.16)^2} + \frac{4,623}{(1.16)^3} + \frac{5,621}{(1.16)^4}$$

$$= 3177.6 > 0$$ Accept the project.