Chapter 8

Chapter 8

- Risk & Return
  - Returns → Divedence
    → Appreciation of stock price $3 → $3.5

- The company should not give divedence when stes at lost خسارة bec shell automatically face higher costs with no revenues.

- Risk perferences : انواع
1. Risk averse
   ↳ Retional in decisions, what ever Risk they take they want Return for it. ↑ Return ↑ Risk.

2. Risk nutral
   ↳ investors choose the investment with higher return regardless of its Risk, I want this much of Return & he wants to Reach it 3% ضمان from government, individuals...etc

3. Risk seekers "lovers"
   ↳ investors perfers investing with greater risk, even if the expected Return is low.
   ex:- investing in a country that has war. حرب

- Risk is always uncertain, nothing is stable
Risk = uncertainty.

Risk & Return { Single asset / Portfolio

- To Reduce Risk تقليل
  ↳ we should do "Diversification" التنوع

- Returns for single asset

$$= \frac{\text{new } p - \text{old } p}{\text{old } p} = \frac{(P_t - P_{t-1}) + C_t}{P_{t-1}}$$

$C_t \rightarrow$ is Divedence Cash flow.

- when they don't give divedence that means C_t = zero

Examples :-

	Beg	End	Divedence
Apple	411.23	532.17	5.30
walmart	60.33	68.23	1.59

note :-
new is End
old is Beg

$$\text{Returns for apple} = \frac{532.17 - 411.23 + 5.30}{411.23}$$

$$= 30\%$$

$$\text{Returns for walmart} = \frac{68.23 - 60.33 + 1.59}{60.33}$$

$$= 15.7\%$$

1) Rang "Risk" = Pessemestic out come - optimistic out come

	Asset "A"	Asset "B"
Initial investment CF_0	$10.000	10.000
Annual Return		
↳ pessimistic	13%	7%
↳ most likely	15%	15%
↳ optimistic	17%	23%

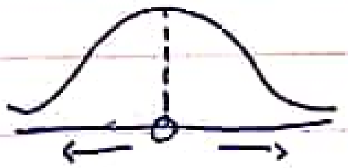
Asset "A":

Rang = opptimestic - Pessimestic
= 17% - 13%
= 4%

Asset "B":

Rang = opptimestic - Pessemestic
= 23% - 7%
= 16%

2) probability Distribution



3) Standard diviation

→

4) Beta → شرح عنا لقدام

3) Standard deviation

- if for a Period

$$\sigma_i = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$$

- if for a probability

$$\sigma_i = \sqrt{\sum (x_i - \bar{x})^2 * \text{probability}}$$

$x_i \rightarrow$ Return Asset
$\bar{x} \rightarrow$ Expected Return

"Step one" $X_i \rightarrow$ Return for single asset.

$$x_i = R_i = \frac{(\text{new} - \text{old}) + CF_t}{\text{old}}$$

"Step two" $\bar{X}_n = \frac{\sum x_i}{n}$ $n \rightarrow$ Period

$$\bar{X}_p = \sum x_i * \text{Probability}$$

$$\bar{R}_p = \sum R_i * \text{Probability}$$

Examples:-

Asset "A"

$\bar{R}_i = \sum R_i * \text{Probability}$

	Return	Probability	expected Return
pessimistic	13%	0.25	13% * 0.25 = 3.25%
most likely	15%	0.50	15% * 0.50 = 7.50%
optimistic	17%	0.25	17% * 0.25 = 4.25%

$\sum = 15\%$

Asset "B"

	Return	Probability	expected Return
Pessimistic	7%	0.25	7% * 0.25 = 1.75%
most likely	15%	0.50	15% * 0.50 = 7.50%
optimistic	23%	0.25	23% * 0.25 = 5.75%

$\sum 15\%$

Both expected Returns are 15% so it doesnt matter in wich asset i invest, "A or B"

$\sigma_A = \sqrt{\sum (X_A - \bar{X})^2 * \text{probability}}$

Note: $X_A \to$ Return
$\bar{X} \to \sum$ expected Ret

X_A	$\bar{X}$	$X_A - \bar{X}$	$(X_A - \bar{X})^2$	Prob	$(X_A - \bar{X})^2 * \text{Prob}$
13%	15%	-2%	4%	0.25	1%
15%	15%	0%	0%	0.50	0%
17%	15%	2%	4%	0.25	1%
					$\sum$ 2%

$= \sqrt{2\%} = \boxed{1.41\%} = \text{Risk.}$

$$\sigma_B = \sqrt{\sum (X_B - \bar{X})^2 * \text{Probability}}$$

X_B	$\bar{X}$	$X_B - \bar{X}$	$(X_B - \bar{X})^2$	Prob	$(X_b - \bar{X})^2$ * Prob
7%	15%	-8%	64%	0.25	16%
15%	15%	0%	0%	0.50	0%
23%	15%	8%	64%	0.25	16%
					$\sum$ 32%

$$\sigma_B = \sqrt{32\%} = \boxed{5.6\%} = \text{Risk}$$

Coffecent of variation $= \frac{\sigma}{\mu} = \frac{5.5\%}{10.47\%} = 0.525 \approx 0.53$

in the question she said if the Risk is 0.75 or less shill take it. the Risk is 0.53 so she will make the decision of investing.

* Note $\sigma \rightarrow$ is Risk

Examples
if Return "A"

	Return	Risk
A	15%	1.41%
B	20%	5.6%

Coffecent variance "A" $= \frac{\sigma}{R} = \frac{1.41\%}{15\%} = 0.094$

وحدة القياس بعل اعشار

Coffecent variance "B" $= \frac{\sigma}{R} = \frac{5.6\%}{20\%} = 0.28$

Example :

Year	Beg P	End P	Dividends
2013	\$ 35	\$36.5	\$ 3.50
2014	\$ 36.5	\$ 34.5	\$ 3.50
2015	\$ 34.5	\$ 35	\$ 4

$$Return_1 = \frac{(36.5 - 35) + 3.50}{35} = 14.3\%$$

$$Return_2 = \frac{(34.5 - 36.5) + 3.50}{36.5} = 4\%$$

$$Return_3 = \frac{(35 - 34.5) + 4}{34.5} = 13\%$$

$\sum R = \bar{X}$

$14.3 + 4 + 13$

$= 10.43\%$

$X =$ Single R

Year	X	$\bar{X}$	$X-\bar{X}$	$(X-\bar{X})^2$
2013	14.3%	10.43%	3.9%	15.21%
2014	4%	10.43%	-6.43%	41.3%
2015	13%	10.43%	2.57%	6.6%

$\sum = 63.11\%$

$n-1 = 3-1 = 2$ Since it's period

$$\sqrt{\frac{\sum(X-\bar{X})^2}{n-1}} = \sqrt{\frac{63.11\%}{2}} = 5.62\%$$

Portfolio → Return
↳ Risk

$R_{portfolio} = \Sigma (w_i * R_i)$
- w_i → weighted proportion
- R_i → Return of each single asset.

Examples:-
100 Shares from walmart → \$55 /per share = \$ 5,500
100 Shares from Cisco system → \$25 /per share = \$ 2,500

$w_i \quad \frac{5,500}{8000} = 68.75\%$ Total portfolio = 8000

$w_i \quad \frac{2,500}{8000} = 31.25\%$

Page 374 - given in question "0.50"

Year	Asset x_1	Asset y_2	R portfolio		Expected R
2014	8%	16%	(0.50 * 8%) + (0.50 * 16%)	=	12%
2015	10%	14%	(0.50 * 10%) + (0.50 * 14%)	=	12%
2016	12%	12%	(0.50 * 12%) + (0.50 * 12%)	=	12%
2018	14%	10%	(0.50 * 14%) + (0.50 * 10%)	=	12%
2018	16%	8%	(0.50 * 16%) + (0.50 * 8%)	=	12%

$$\bar{R}_P = \frac{\Sigma R_i}{n} = \frac{12\% + 12\% + 12\% + 12\% + 12\%}{5} = \frac{60\%}{5} = \% 12$$

$$\sigma_P = \sqrt{\frac{\Sigma (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{(12\% - 12\%)^2 + \dots \text{5 times}}{5-1}} = \sqrt{\frac{0\%}{4}} = 0\%$$

Year	R_y	R_x	$R_{portfolio\ xy}$	
2014	8%	8%	$(0.50 * 8\%) + (0.50 * 8\%)$	$= 8\%$
2015	10%	10%	$(0.50 * 10\%) + (0.50 * 10\%)$	$= 10\%$
2016	12%	12%	$(0.50 * 12\%) + (0.50 * 12\%)$	$= 12\%$
2017	14%	14%	$(0.50 * 14\%) + (0.50 * 14\%)$	$= 14\%$
2018	16%	16%	$(0.50 * 16\%) + (0.50 * 16\%)$	$= 16\%$

$$\bar{R}_p = \frac{8\% + 10\% + 12\% + 14\% + 16\%}{5} = 12\%$$

$$\sigma_{rp} = \sqrt{\frac{(8-12)^2 + (10-12)^2 + (12-12)^2 + (14-12)^2 + (16-12)^2}{5-1}}$$

$$\sigma_{rp} = \sqrt{10\%} = 3.1622 \approx 3.2\%$$

→ Correlation
- Positive Correlation → Same direction
- Negative Correlation → opposite direction

→ Correlation Cofficent
- Perfectly Positively Correlation → +1
- Perfectly Negatively Correlation → -1
  - ↳ unCorrelation = Zero
  - There's Risk ↲

Example 8

Year	R_{bop}	R_{paltel}	R_{padico}	$R_{bop,paltel}$	$R_{paltel,padico}$
1	4%	5%	6%	19%	5.3%
2	6%	7.4%	4%	6.6%	6.1%
3	7%	4%	2%	5.2%	3.4%
4	10%	6%	1%	7.6%	4.5%

P_1 → Bop "bank of palestine" 40%
↳ Paltel 60%

P_2 → Paltel → 70%
↳ padico → 30%

$\bar{R}_1 = 9.6\%$ $\bar{R}_2 = 4.825\%$

$$\sigma_1 = \sqrt{\frac{(19\%-9.6\%)^2+(6.6\%-9.6\%)^2+(5.2\%-9.6\%)^2+(7.6\%-9.6\%)}{4-1}}$$

$$\sigma_1 = \sqrt{\frac{88.36+9+19.36+4}{3}} = 6.34\%$$

$$\sigma_2 = \sqrt{\frac{(5.3\%-4.825\%)^2+(6.1\%-4.825\%)^2+(3.4\%-4.825\%)^2+(4.5\%-4.825\%)}{4-1}}$$

$$= \sqrt{\frac{0.225+1.62+2.03+0.105}{3}} = \sqrt{\frac{3.98}{3}} = 1.15\%$$

$-CV_1 = \frac{\sigma}{\bar{r}} = \frac{6.34\%}{9.6\%} = 0.66$ $-CV_2 = \frac{\sigma}{\bar{R}} = \frac{1.15\%}{4.825\%} = 0.238$

Second portfolio is the best choice because it has lower σ & CV.
So → lower Risk.

Risk & Return

- CAPM → Capital asset pricing method.

R_s = Return of the asset "stock"

$R_s = R_f + Beta * (R_m - R_f)$

Note : $(R_m - R_f)$ is called → market Risk premium.

- R_s → Return of the asset
- R_f → Risk free → treasury bills. treasury bond → بصدرها الحكومة
  → Government bond.
- R_m → The market index → Al-Quds index

- Beta → Risk

Total Risk = Diversifiable risk + Nondiversifiable Risk
= Nonsystematic risk + Systematic Risk
= Specific Risk + market Risk

* Beta only measures the Nondiversifiable Risk

Beta بتراوح بين 2 , -2 قيمة Beta

-2 → Return عكس the market

+2 → Return same direction of the market

Beta for the market = 1

B = 1.5 → if the market increase by 1 , it will go up by 1.5

B = -1.5 → if the market increase by 1 , it will go down by 1.5

Examples

	Beta	Total investment	weighted
Amazon	0.82	50,000	25%
E-bay	0.87	40,000	20%
Intel	0.99	20,000	10%
Microsoft	1.18	60,000	30%
Yahoo	0.89	30,000	15%
		Σ 200,000	

Beta Portfolio $= \Sigma (w_i * \text{Beta}_i)$

$= 0.965$

weighted $= \bullet\ \frac{50,000}{200,000} = 25\%$ $\bullet\ \frac{20,000}{200,000} = 10\%$

$\bullet\ \frac{40,000}{200,000} = 20\%$ $\bullet\ \frac{60,000}{200,000} = 30\%$

$\bullet\ \frac{30,000}{200,000} = 15\%$

Example Portfolio V Portfolio W Page 365

Asset	Proportion	Beta	Proportion	Beta
1	0.10	1.65	0.10	0.80
2	0.30	1.00	0.10	1.00
3	0.20	1.30	0.20	0.65
4	0.20	1.10	0.10	0.75
5	0.20	1.25	0.50	1.05

Example 3.

Beta = 1.5

R_F = 7%

Rm = 11%

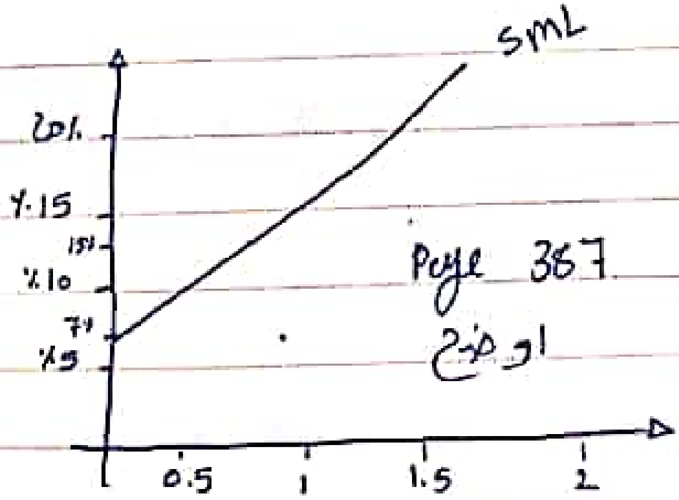
R_z = ??

$R_z = R_F + \text{Beta}\,(R_m - R_F)$

$= 7\% + 1.5\,(11\% - 7\%)$

$= 13\%$

R_z = 13%



security market line

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Δ Risk Free =

"Actual" Nominal Rate = Real Rate + Expected inflation

Example page ~~88~~. Problems Solution.

$\boxed{P8-4}$

A) $Range_A$ = optimistic − Pessimistic
= 24% − 16%
= 8%

$Range_B$ = 30% − 10%
= 20%

B) project A is less Risky because the range is lower
$Range_A < Range_B$

C) Project A. Since it's less Risky

D) No Remains the Same.

$\boxed{P8-7}$

A) $-CV_A = \frac{\sigma}{\bar{r}} = \frac{7\%}{20\%} = 0.35.$

$-CV_B = \frac{\sigma}{\bar{r}} = \frac{9.5\%}{20\%} = 0.475$

$-CV_C = \frac{\sigma}{\bar{r}} = \frac{6\%}{19\%} = 0.316$

$-C_D = \frac{\sigma}{\bar{r}} = \frac{5.5\%}{16\%} = 0.344$

B) Alternative C because it has less Coefficient of variation.

P8-9 CV below 0.9

A) $R_{12} = \frac{(21.55 - 14.36) + 0}{14.36} = 50\%$

$R_{13} = \frac{(64.78 - 21.55) + 0}{21.55} = 200\%$

$R_{14} = \frac{(72.38 - 64.78) + 0}{64.78} = 11.73\%$

$R_{15} = \frac{(91.8 - 72.38) + 0}{72.38} = 26.8\%$

B)

Year	Return	Probability	R * P
2012	50%	0.25	12.5%
2013	200%	0.25	50%
2014	11.73%	0.25	2.93%
2015	26.8%	0.25	6.7%
			$\Sigma = 72.13\%$ → expected Return

C) $\bar{R} = \sqrt{\frac{\Sigma(X_i - \bar{X})^2 * Prob}{n-1}}$

$\bar{R} = \frac{50\% + 200\% + 11.73\% + 26.8\%}{4} = 72.13\%$

	$R_i - \bar{R}$	$(R_i - \bar{R})^2$
2012	22.06%	0.49
2013	1.284%	1.635
2014	-6%	0.365
2015	-45.3%	0.2

$$\sigma = \sqrt{\frac{6.49 + 1.635 + 0.365 + 0.2}{4-1}} = \sqrt{\frac{2.69}{3}} = 0.95$$

D) $CV = \frac{\sigma}{\bar{R}} = \frac{0.95}{0.7213} = 1.3$

E) Coefficient of variation is greater than 0.9 So it is risky.

P 8-21

A)

Asset	B	(b) 10% ↑	(A) 10% ↓ → هابط
W	0.9	0.09 ↑	-0.09 ↓
X	-0.6	-0.06 ↓	0.06 ↑
Y	1.8	0.18 ↑	-0.18 ↓
Z	2.3	0.23 ↑	-0.23 ↓

C) I would prefer asset (X) because it is moving opposite the market. So the return will increase.

D) I would prefer asset (Z) because it will be increased the most.

Chapter 6 — Interest Rates & bond Valuation

- Debt security "obligation"

1 → Money market security — اداة الدين Debt sec
" Short term security"

less than one year

* Treasury bills "T. bills" → Risk ↓
  issuer is the government
* Negotiable Certificate of Deposit → Risk ↑
  issuer is Deposit or institutions
* Commercial paper
  issuer: high quality corporations
  risk: its an unsecurity promissory.

2 → Capital market securities
" long term "
* Bonds
  - Treasury bond
    issuer: government
  - municipal البلديات bond
    issuer: local government
  - corporate bond
    issuer: corporations

principal ($)
intrest (%)
maturity (n)

- Intrest Rate
- Coupon Rate
- Discount Rate
- Yield to maturity

علهن نفس الحكي

⇒ Nominal intrest Rate = Real intrest Rate + expected inflation

Example :

ABC bond

principal "face value" = $1000
intrest = 6%
maturity = 3 years

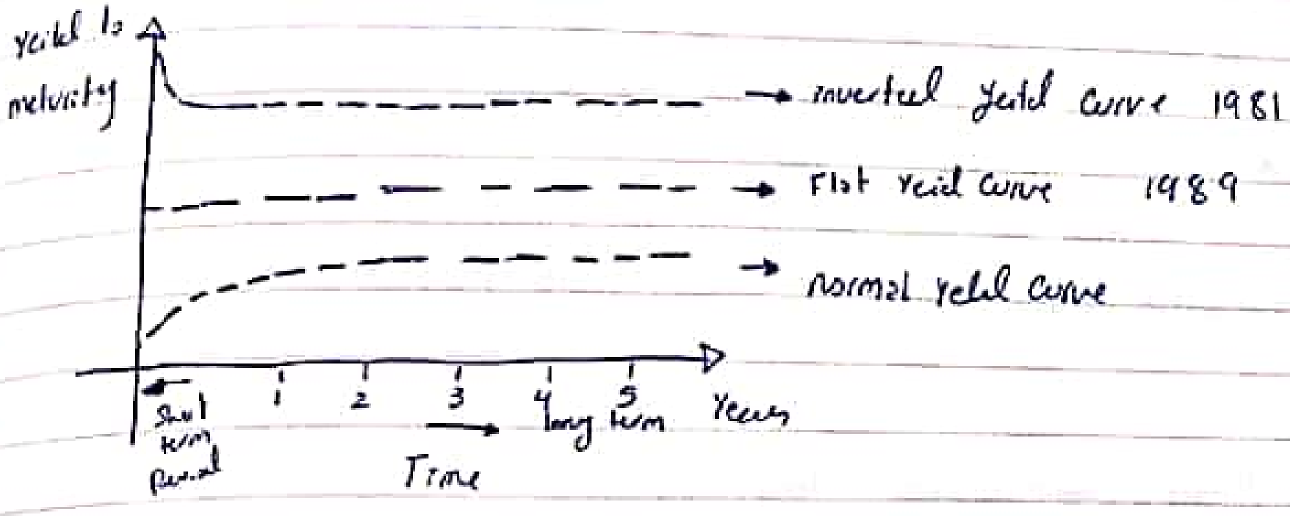
This is for the ones with Risk free Treasury bounds & treasury bills

Nominal intrest rate = Real intrest Rate + expected inflation
4% = 2% + 2%

Nominal intrest rate = Real intrest + expected inflation + Risk Premium
6% = 2% + 2% + 2%

2

→ Term structure of the intrest Rate.



- inverted → Yeild curve ?
  intrest in short term > intrest in long term / downward

- normal → intrest in short term < intrest in long term / upward

- flat → intrest in short term = intrest in long term

* why to have normal yield curve
  - Expectation Theory.
  - Liquidity Perfrence Theory.
  - Market Segmentation Theory.

* Expectation Theory
  1 Lo investor think about Returns
  intrest Rate in future will increase what do i do now?
  I invest in the Short term now until thy intrest Rate increase

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~~cost~~ Thinks about cost

2- if im an issuer :

I invest in the long term right away

* liquidity preference theory

كويس بقدر الاحمل احل ال security واحولها لكاش

بزيد ال Risk عليه

* Market segmentation theory

- insurance
- pension

→ long term

- Banking industry → short term security

في قطاعات بتفكر فيهن بس long term وفي قطاعات بس short term.

* Default Risk "Credit"
هو احتمالية يكون الـ Creditor غير قابل لارجاع المال $ و الـ intrest
issuer to give back the $ & intrest.

* maturity Risk :-
احتمالية التعرض لـ Risk في فترة الاستحقاق

* Contractual provision Risk :-
يحطوا شروط لل issuer. issuer تتحمله احترشي

1 - Cost of Debt < cost of equity

- Corporate bond
  * Principal "face value"
  * Coupon intrest Rate
  * Maturity

- Standard debt provisions.
  ↳ Restrictive covenants

Revenues
- Cost of goods sold → Common stock holders [3]

Gross Profit
- operating Expenses

EBIT
- Intrest Expense → Tax deductible [1]
Bond holders اول ناس بدفعولهم ال

EBT
- Tax

Earnings after tax
- Preffered Div → Preffered stock holders. [2]

Earnings aveilable for Common stock.

Trustee → Bond Holder طرف ثالث بين الشركة وال
بحفظ حقوق الطرفين

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* Cost of bond of the issuer

1. Maturity → لما تزيد الفترة ← راح بيصير تغيرات اكثر وبزيد الخطر عليه

2. Impact of offering size
حجم المطلوب الي بقدر اقترضها "او خذها"

3. Impact of issuers Risk
بعتمد عى وضع المطلوب للعميل ← كل ما كان الوضع احسن كل ما يقل الـ Risk

4. Impact of cost of money
الـ Interest Rate الي بحتاجا بدفعها عى القرض

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* خصائص القرض الي ممكن يحملها

[1.] Conversion feature
↳ امكانية تحويل الـ bonds ← stocks
ownership | تحويل من obligation ← Equity
تحويل من Creditors ← owners
? pay Dividends Rather than interest ✓
تحويل من Debt ← Equity

[2] Call feature
↳ ارجع لسنداتي لي في السوق
↳ خصائصها
1. Call price
↳ المعاري الي بدفعو عشان ارجع الـ Bond
2. Call premium → الفرق بين الـ Parvalue و Call Price
حالياً مدفوعة للمستثمرين (استرجاع السند).

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* Current yield = $\frac{\text{Annual interest payment}}{\text{current price}}$

"investor"
- Yield to maturity = cost of Debt "issuer"

- Call yield

* Example:
Face value = \$ 1000 } → Annual interest payment
Coupon interest = 8%
Current price = \$ 970
- Current yield

Current yield = $\frac{(\text{Face value} * \text{Coupon interest})}{\text{Current price}}$

$= \frac{(\$1000 * 0.08)}{\$970} = 8.25\%$

* Types of bonds :-
  - un secured bonds
  - secured bonds

- un secured bonds
  - Debentures → مدعومة بسمعة الشركة
  - Subordinated debentures → بيفضل حامل الدين بعدما يندفع للأوائل بالأهمية
  - Income bonds → حسب دخل الشركة

- Secured bond
  - mortgage bond → مرهونة بأرض أو مبنى إذا ما اندفعت بنبيع الأرض عشان نرجع
  - Collateral trust bond → بتكون مرتبطة في سند ثاني
  - Equipment trust Certificates → مرهونة في Equipment

Bonds
- Zero Coupon bond → مش فيه Risk
- Junk bond → اعلى Risk عليه
- Floating Rate bond → حسب سعر الفائدة في السوق

* High yield bond = junk bond.

* Eurobond → بصدر في عملتي انا دين عالروح
* الا اذا في قوانين تمنع ذلك
* Foreign bond → بصدر في عملات الدولة اللي انا رايح عليها

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* Bond Valuation &
Discounted → Present value.
Discounted of Future Cash flow

خاطيء/ افعوات

present value enuity →
present value single amount → future is single amount

Bond
* principal" face value $1000
* Coupon interest Rate %4
* Maturity 4 Years

* Bond price "Bond value" = Σ (PVIFA)$_{k,n}$ + Par value (PVIF)$_{k,n}$

I → Coupon ~~interest~~ payment = (Coupon interest * Face value)
Par value
(PVIFA) → Present value interest factor of enuity
K → Yield to maturity
n → Period "maturity"
Par Value → Face value, principal
(PVIF) → Present value interest factor ⇒ $PV = \frac{FV}{(1+k)^n}$

mixed + stream (PVA) = $\frac{\Sigma FV}{(1+k)^n}$

او

when we have same payment = $PMT\left[\frac{1}{k} - \frac{1}{k(k+1)^n}\right]$

3 Exemples
ok
نص
اعطيات

① Exemple:

Par Value = \$ 1000

Coupon interest = 10%

maturity = 10 years

Yield to maturity = 10%

$$(PVA) = PmT\left[\frac{1}{K} - \frac{1}{K(1+K)^n}\right]$$

$$= 100\left[\frac{1}{10\%} - \frac{1}{10(1+0.10)^{10}}\right] = 614.46$$

$$\text{Par value} = \frac{Fv}{(1+k)^n} = \frac{1000}{(1.1)^{10}} = 385.5$$

Bond Price = 385.5 + 614.46

= 999.9 ≈ \$ 1000

② Exemple:

Coupon interest = 10%

Yield of maturity = 12%

$$\Sigma(PVIFA) = Pmt\left[\frac{1}{k} - \frac{1}{K(1+k^n)}\right]$$

$$= 100\left[\frac{1}{0.12} - \frac{1}{(0.12+1)^{10}}\right] = 565$$

$$\text{Par value} = \frac{Fv}{(1+k)^n} = \frac{1000}{(1.12)^{10}} = 322$$

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Bond Price = 565 + 322

= \$887 Discount

[3] Coupon intrest = 10%

Yield to maturity = 8%

$$PV = Pmt \left[\frac{1}{k} - \frac{1}{k(1+k)^n} \right]$$

$$= 100 \left[\frac{1}{0.08} - \frac{1}{0.08(1+0.08)^{10}} \right] = 671$$

$$PVIF = \frac{1000}{(1+0.08)^{10}} = \$463.2$$

Bond price = 671 + 463.2

= 1134.2 → Premium.

→ Yield to maturity = Coupon intrest

Bp "Bond Price" = par value "face value"

→ Yield to maturity > Coupon intrest

Bp "bond price" = Discount

Bond price < Fv

→ Yield to maturity < Coupon intrest

Bp "bond price" = Premium

Face Value فوق ال

Bond Price > Fv

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السعر ب الوقت اذا اقل من investment تاعي بشتري
اذا اعلى ما بشتري.

Ble
Problems
P6-3

A) $\frac{100}{25} = 4$ shirts

B) $PV = \frac{FV}{(1+K)^n} = 100 = \frac{FV}{(1+0.09)^1} = \$109 = FV$

C) $PV = \frac{FV}{(1+K)^n} = 25 = \frac{FV}{(1+0.05)^1} = FV = \$26.25$

D) At the end of the year we have

$\frac{109}{26.25} = 4.15$

Percentage $= \frac{4.15-4}{4} = 0.038$

3.8% more shirts

E) Real Rate + inflation Rate = Nominal Rate

Real + 5% = 9%

Real = 4%

Pb - 8

A) Rate of Return = Real rate + inflation rate

4% = Real rate + 2%

2% = Real rate

B)

Security	Real Rate	+ inflation Rate	+ Risk Premium	= Nominal
A	2%	6%	4%	= 12%
B	2%	5.5%	5%	= 12.5%
C	2%	5%	2%	= 9%
D	2%	4.8%	3%	= 9.8%
E	2%	6%	6%	= 14%

C) Because the inability security have different maturity.

Chapter 7

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Stock valuation

Stock → Equity → common stock / preffered stock
"ownership"

- Difference between Equity & Debt

Equity → "ownership", Return → "Dividends, Appreciation of stock price", no maturity, Claim on interest & Asset, Tax treatment

Debt → "obligation", Return → "coupon pmT", maturity, Claim on income & Assets, Tax treatment.

* Common stock & Preffered stock

- Common stock

1. privately owned
   ↳ owned by private investors. not publicly traded.

2. publicly owned (stock)
   ↳ owned by public investors, publicly traded.
   stock اي بده يملك مثل ذكل الناس ويشتروا

3. closely owned (stock)
   ↳ individual or small group of investors, privatly owned.

4. widly owned (stock)
   ↳ many unrelated individuals or institutional investors.

* Preemptive Rights :
لما يعملوا اصدار اسهم جديدة الاولوية واكو الهم حق يشتروها
هم اي حاملي الاسهم الحالية.

* Dilution of ownership :
Earnings per share , Dividends فيقل الـ ownership بزيد عدد الاسهم وعدد

* انواع اسهم الشركة بتطرحهم

1. Authorized Shares :- المصرح به
↳ Shares of common stock that r am allowed to issue.

2. Outstanding Shares :-
↳ Issued shares of common stock held by investors.
it includes both private & public investors.

3. Treasury stock :-
↳ Issued shares of common stock held by the firm
Repurchased shares by the firm.

4. Issued shares :-
↳ Shares of common stock that are put into circulation
the sum of outstanding shares & Treasury stock.

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* Preffered Stock

1. No voting Rights

2. Dividends
   - % of Par value
   - Amount $1 / share.

3. Cumulation
   - Cumulative prefered stock.
   - Non cumulative preffered stock.

4. other features
   - Callable
     ↳ Retire shares in a specific period with a specific Price.

   - Conversion
     change each share into a stated number of shares of common stock.

- Issuance
  - Direct قدرت تصدر اسهم في الاكتتاب العام
    ABC company $\xrightarrow{\text{stocks}}$ Investors
    $\xleftarrow{\text{money}}$
    ↳ Could be individuals or institutions.

- Indirect → تكون في وسيط بإصدار الاسهم

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→ Investment banking firm الشركة بتروح لـ

ABC company $\xrightarrow{\text{stocks}}$ Investment banking firm $\xrightarrow{\text{ABC Stocks}}$ Investors

ABC company $\xleftarrow{\text{Money}}$ Investment banking firm $\xleftarrow{\text{Money}}$ Investors

الاتفاقية اسمها
underwriting agreement.

بتساعد الشركة ع الـ IPO
↳ Initial public offering

→ Zero growth model

$$P_s = \frac{D_1}{R_s}$$

Example: $P_s = \frac{\$3}{0.15} = \$20$

P_s → Price of the stock
→ Dividends
→ Required rate of Return.

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* Constant - Growth model

Year	Dividends per share
2014	\$ 1.40
2014	\$ 1.29
2013	\$ 1.20
2012	\$ 1.12
2011	\$ 1.05
2010	\$ 1

$$* P_0 = \frac{D_1}{R_s - g}$$

P_0 → Price of the stock

D_1 → Dividends of the next year

$D_1 = D_0 (1+g)^n$

D_0 → Dividends of the current year

g → Growth of dividends

R_s → Required Rate of Return

g → growth of dividends.

Stock

$$D_{2015} = D_{2010} (1+g)^5$$

$$\frac{\$1.40}{1} = \frac{\$1}{\$1} (1+g)^5$$

$$\$1.40 = (1+g)^5$$

$$G = 7\%$$

$$P_0 = \frac{D_1}{R_s - g}$$

$$P_0 = \frac{\$1.40 (1 + 0.07)}{0.15 - 0.07}$$

P_0 = \$ 18.75 / shares.

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Variable growth model.

Exa

Step one.

t	End of year	D_{2015}	$(1+g)^n$	D_t
1	2016	\$1.50	$(1+0.10)^1$	$= \$1.65$
2	2017	\$1.50	$(1+0.10)^2$	$= \$1.82$
3	2018	\$1.50	$(1+0.10)^3$	$= \$2$

$D_{2015} = \$1.50$ / share
$g_1 = 10\%$ (2016, 2017, 2018)
End of 2018
$g_2 = 5\%$
$R_S = 15\%$
$P_0 = P_{2015}$??

$$PV = \frac{FV}{(1+R_S)^n}$$

$\div (1+R_S)^n$		Present value of dividends / PV dividends
$\div (1+0.15)^1$	$= \$1.150$	\$ 1.43
$\div (1+0.15)^2$	$= \$1.323$	\$ 1.37
$\div (1+0.15)^3$	$= \$1.521$	\$ 1.32

$\Sigma\ \boxed{4.12}$

Step 2

$D_{2019} = D_{2018}(1+g)^n$
$= \$2\ (1+0.05)^1$
$= \$\ 2.10$

Future → growth Rate
Discounting process → Required Rate of Return 'PV'

$$P_{2018} = \frac{D_{2019}}{R_S - g} = \frac{D_{2019}}{0.15 - 0.5}$$

$$P_{2018} = \frac{\$2.10}{0.10} = \$21$$

$$P_{2015} = \frac{P_{2018}}{(1+0.15)^n} = \frac{\$21}{(1+0.15)^3} = \$13.81 + \$4.12 = \$17.93$$

→ Free Cash flow valuation model

Year t	FCF_t	$(1+0.09)^t$	PV FCF_t
2016	\$400.000	÷ $(1+0.09)^1$	\$ 366.972
2017	\$450.000	÷ $(1+0.09)^2$	\$ 378.745
2018	\$520.000	÷ $(1+0.09)^3$	\$ 401.530
2019	\$560.000	÷ $(1+0.09)^4$	\$ 396.718
2020	\$600.000 + 10.300.000	÷ $(1+0.09)^5$	\$ 7.084.252

Step#3

= 10.900.000

VC ≤ \$8.628.232

→ $G_{2020-\infty}$: 3% . Required Rate of Return . 9%

→ Market value of all Debt = 3.100.000

→ Market value of preferred stock : 800.000

→ # of shares CS = 300000

→ Vs = VC − VD − VP

Common stock   Cash flow   Debt   Current preff

معطيات

Step #1

$$FCF_{2020-\infty} = \frac{FCF_{2020}(1+0.03)^1}{0.09-0.03} =$$

$$= \frac{600000\,(1+0.03)^1}{0.09-0.03} = \$\,10.300.000$$

Step #2

$FCF_{2020-\infty}$ = \$600.000 + \$10.300.000

= \$10.900.000

Step4#

Vs = Vc − Vd − Vp

Vs = \$ 8.628232 − 3.100.000 − 800.000

Vs : \$ 4.728.232

Vs / share

$$= \frac{\$4.728.232}{300.000}$$

= \$ 15.76

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→

Book value per share = $\frac{6,000,000 - 4,600,000}{100,000}$

= \$10 per share

→

Liquidation value per share = $\frac{\$5,250,000 - \$4,500,000}{100,000}$

= \$7.5

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