Measuring value creation

Shareholder point of view

- « r » : expected rate of return required by shareholders (comes from the market) :

  $r = R_f$ + Risk premium (CAPM)

- « P_o: present market value of share
- « Div_1 : dividend served in year 1
- « H » : horizon

Note : in an efficient market, NPV=> 0

$$P_0 < \sum_{t=1}^{H} \frac{Div_1}{(1+r)^1} + ... + \frac{Div_H}{(1+r)^H} + \frac{P_H}{(1+r)^H} = +NPV$$

EXAMPLE

Shareholder point of view

		Forcast			
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Dividend		0.50	0.60	1.15	1.24
Value of share	?				120.00
Total Revenues		0.50	0.60	1.15	121.24
Expected Return	**10%**				

$$P_0 = \frac{0.50}{1.10^1} + \frac{0.60}{1.10^2} + \frac{1.15}{1.10^3} + \frac{121.24}{1.10^4} = 84.62$$

If Market P_0 = 80.0, NPV = 4.62 & Return (IRR) = 11.57 %

In an efficient market, Investors will buy this stock because Return > Expected Return ➔ ⇑ price to 84.62 and Return = Expected Return

Other example

Shareholder point of view

R_s : Shareholder return (Rs)

$$R_s = \frac{Div_1 + (P_1 - P_0)}{P_0}$$

r : Required return to equity : $r = R_f + P$ (comes from the market) (CAPM)

- R_f : Return of Long term Treasury Bonds
- P : Risk Premium

If Rs > r => Value creation

But

In an efficient market, r = Rs

Efficient Market

	Year 0	Year 1
Price	?	110.0
Dividend		5.0
Expected Return	15 %	

- $P_0 = (110 + 5) / 1.15 = 100.0$

How do you know that 100 $ is the right price ?

Because **no other price could survive** in **competitive capital market**

If Po = 105

R = (110 – 105 + 5)/105 = 9,52 % instead of 15 %

r<r comparable securities ➔ Shareholders sell their stocks ➔ ⇓ price to 100 $

If P0 = 95

R = (110 – 95 + 5)/95 = 21.05 % instead of 15 %

r > r comparable securities ➔Investors buy stocks ➔ ⇑ price to 100 $

Measuring value

Shareholder point of view

Increase of Equity market value (EMV)

- P_1 : next year share price
  - The stock price is a reflection of the expectations of future cash flow generation
- P_0 : present value of share
- N : number of shares
- $(P_1.N)$ = market value of equity at year 1
- $(P_0.N)$ = present market value of equity

$$(P_1.N) - (P_0.N) = EMV$$

Measuring EMV

Shareholder point of view

	$Year_0$	**$Year_1$**
Market value of LT Debt	1100	1050
Market value of Equity	2024	2244
Market value of the firm	3124	3294

$Year_1$: Increase of EMV = 2244 – 2024 = 220

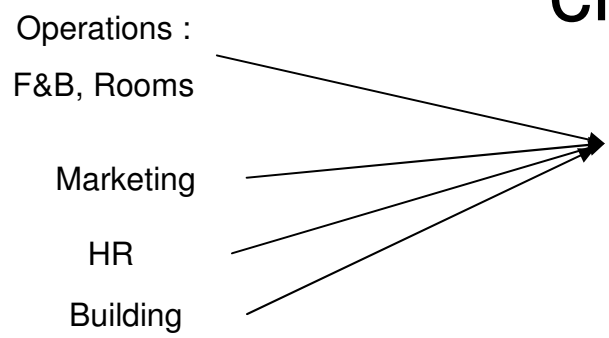
MVA (Market Value Added)

Firm point of view

	Year 0	Year 1
Net fixed Asset (book value)	2605	2700
MVA	**519**	**594**
Market value of asset	**3124**	**3294**
Market value of LT Debt	1100	1050
Market value of Equity	2024	2244
Market value of financing	**3124**	**3294**
Increase in MVA		**75**

Value creation = Market value of equity + Market Value of LT Debt – Net fixed Asset at book value

NPV : a dynamic approach of value creation



Level of cash flow

$$NPV = -FCF_0 + \sum_{t=1}^{N} \frac{FCF_t}{(1+WACC)^t}$$

Strategic decision (allocation of initial tangibles & intangibles resources)

Life cycle

Risk and required return

Measuring value creation for the firm & shareholders

$$NPV = -FCF_0 + \frac{FCF_1}{(1+WACC)^1} + \frac{FCF_2}{(1+WACC)^2} + ... + \frac{FCF_n}{(1+WACC)^n}$$

-FCF$_0$	financial resources allocation (investments in tangible & non tangible assets)
FCF$_1$	free cash flow year 1, and so one
WACC	Weighted Average Cost of Capital
NPV	(PV of FCF) – Financial ressource allocation = NPV

WACC

(Weighted Average Cost of Capital)

- Rf : Risk Free Rate (e.g. T-Bonds, Government bonds)
- β : Beta measures the risk of a single share (calculated or given by analysts)
- R_m : Market Return (e.g. SMI, CAC40, S&P500)
- K_d : Cost of Debt
- T : Tax Rate
- D : LT Debt at market value
- E : Equity at market value
- D / V :proportion of Debt
- E / V :proportion of Equity

$$WACC = [R_f + \beta(R_m - R_f)] \cdot \frac{E}{V} + K_d.(1-T) \cdot \frac{D}{E}$$

CAPM (Capital Asset Pricing Model)

$$CAPM = r = [R_f + \beta(R_m - R_f)]$$

It models the risk expected and expected return trade-off in the capital market for Shareholders

- **Rf** : Risk free rate (e.g. T-Bonds, Government bonds)
- **β** : Beta measures the risk of a single share (calculated or given by analysts)
- $\mathbf{R_m}$: Market return (e.g. SMI, CAC40, S&P500)

Free Cash Flows (FCF)

FCF is the cash available for shareholders & Long-term Debtholders

EBIT (Earning Before Interest & Tax)
+ Depreciation
- Tax
- Capex (capital expenditure)
+/- change in WCR (Working capital Requirement)
FCF

Example

Market informations	
Rf	3%
Rm	12%
Bêta	0.80
%Debt	60%
%Equity	40%
Kd	4%
Tax	25%

$$WACC = [3\% + 0.80.(12\% - 3\%).40\%] + [(4\%.(100\% - 25\%).60\%] = 5.88\%$$

Value is created for shareholders when :

Management decides to :

- Increase returns for existing assets
- Make incremental investments with rates of return above the cost of capital (IRR > WACC => + NPV)
- Divest assets that do not return their cost of capital
- Return cash to investors in the form of dividends when profitable investments are not available
- Etc

Measuring value creation for shareholders

Myths

- **Growth of occupancy necessarely creates value !**
  - No ! Growth of occupancy without generation of economic profit destroys value
- **Growth of REVPAR creates value !**
  - No ! Growth of REVPAR without generation of economic profit destroys value
- **Growth of (Sales / Seat) creates value !**
  - No ! Growth of (Sales / Seat) without generation of economic profit destroys value
- **And so on.....**

IRR (Internal Rate of Return)

$$FCF_0 = \frac{FCF_1}{(1+IRR)^1} + \frac{FCF_2}{(1+IRR)} \ldots\ldots \frac{FCF_n}{(1+IRR)^n}$$

The IRR is a ***profitability measure*** which depends solely on the amount and timing of the projects FCF

IRR > WACC => value creation

IRR < WACC => value destroyed

Example

	Year 0	Year 1	Year 2	Year 3	Year 4
FCF	-180.00	50.00	60.00	70.00	80.00

WACC	**10.00%**

NPV	**22.27**
IRR	**15.16%**

$$-180{,}0 + \frac{50{,}0}{(1+IRR)^1} + \frac{60{,}0}{(1+IRR^2)} + \frac{70{,}0}{(1+IRR^3)} + \frac{80{,}0}{(1+IRR^4)} = 0$$

IRR > WACC => Value creation (NPV) = **22.27**

EVA (Economic Value Added)

EVA = [ROA - WACC] . ECONOMIC ASSET

- ROA : Return on economic Asset
  V= D+E
- WACC : Weighted Average Cost of Capital
  (minimum rate of return required)

EVA : accounting approach

Market Value of Net Asset:	1'000		
Market Value of Debt:	600	Cost of Debt :	5 %
Market Value of Equity :	400	Required Return :	12 %
Tax rate	30 %		

Calculation of EVA :

• EBIT (Earning before interest & Tax)	100
• - Interest rate 5 % sur 600	30
• EBT (Earning Before Tax)	70
• - Tax 30 %	21
• EAT (Earning After Tax)	49
• - Dividend : 12 % on 400	48
EVA	**1**

EVA : other approach

(ROA – WACC) x Economic Asset = EVA

- ROA = (EBIT – Tax)/Asset = (100 – 30)/1000 = 7 %
- WACC = [12%.0,40] + [5%.(0,60).(1 – T)] = 6,9%
- EVA = 0.1% of 1000 = **1**

$$EVA = [\frac{EBIT - Tax)}{Asset}.100] - [K_e.\frac{E}{V} + (K_d.(1-T).\frac{D}{E}.]$$

$$EVA = [\frac{100 \cdot (1-0.30)}{1000}] - [12\% \cdot 0{,}40 + 5\% \cdot (1-0{,}30) \cdot 0{,}60] \cdot 1000 = 1$$

Company valuation

Based on price earnings (P/E) ratio

- **Equity value = PER . PAT (profit after tax)**
- **Company value = Equity value + LT Debt**
  (Method available for quoted & non quoted company)

Based on market capitalization :

- **Equity value = P . N**
- **Company value = Equity value + LT Debt**

Company valuation (example)

EPS (Earning per Share)	2.36
PER (Price earning ratio)	24.87
PAT (Profit after Tax) (million)	501
N (Number of share) (million)	212.4
P (Price of share)	58.70
Market Value of LT Debt	4'500

Based on price earnings (P/E) ratio

Market Value of Equity (MVE) = PAT x PER = 501 x 24.87 = **12'460**

Market Value of the Company = MVE + LT Debt = **16'960**

Based on market capitalization

Market Value of Equity (MVE) = P x N = 58.70 x 212.4 = **12'468**

Market Value of the Company = MVE + LT Debt = **16'968**

Company (or a new business) valuation (DCF method)

$$Value_{n=0} = \frac{FCF_1}{(1+WACC)^1} + \ldots\ldots \frac{FCF_n}{(1+WACC)^n} + \frac{TV_n}{(1+WACC)^n}$$

$$TV_n = \frac{FCF_{n+1}}{(WACC - g)} = (growing \cdot perpetuity)$$

$$TV_n = \frac{FCF_{n+1}}{WACC} = (cons\tan t \cdot perpetuity)$$

TV (Terminal value) :what you think the business will be worth at the end of the period “n”

Company (or a new business) valuation (DCF method) : example

WACC:10 %	**Year 1**	**Year 2**	**Year 3**	**Year 4** (constant perpetuity)
FCF	100	120	130	130
TV			1'300	
Total FCF	**100**	**120**	**1'430**	

$$TV_{Year3} = \frac{1'30}{0.10} = 1'300$$

$$Value_{n=0} = \frac{100}{(1.10)^1} + \frac{120}{(1.10)^2} + \frac{1'430}{(1.10)^3} = 1'264$$