Measuring value creation

Shareholder point of view

- « r » : expected rate of return required by shareholders (comes from the market) :
  \[ r = R_f + \text{Risk premium (CAPM)} \]
- « P_o » : present market value of share
- « Div_1 » : dividend served in year 1
- « H » : horizon

Note : in an efficient market, NPV => 0

\[ P_0 < \sum_{t=1}^{H} \frac{Div_1}{(1 + r)^t} + \ldots + \frac{Div_H}{(1 + r)^H} + \frac{P_H}{(1 + r)^H} = +NPV \]
EXAMPLE

Shareholder point of view

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividend</td>
<td>0.50</td>
<td>0.60</td>
<td>1.15</td>
<td>1.24</td>
<td></td>
</tr>
<tr>
<td>Value of share</td>
<td>?</td>
<td></td>
<td></td>
<td>120.00</td>
<td></td>
</tr>
<tr>
<td>Total Revenues</td>
<td>0.50</td>
<td>0.60</td>
<td>1.15</td>
<td>121.24</td>
<td></td>
</tr>
<tr>
<td>Expected Return</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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 \( \Rightarrow \) \( \Rightarrow \) price to 84.62 and Return = Expected Return
Other example

Shareholder point of view

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

- \( R_s \): Shareholder return (Rs)
- \( r \): 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 \( R_s > r \) => Value creation

But

In an efficient market, \( r = R_s \)
Efficient Market

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>?</td>
<td>110.0</td>
</tr>
<tr>
<td>Dividend</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Expected Return</td>
<td>15 %</td>
<td></td>
</tr>
</tbody>
</table>

*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 P_0 = 105**

R = (110 – 105 + 5)/105 = 9.52 % instead of 15 %

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

**If P_0 = 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

<table>
<thead>
<tr>
<th></th>
<th>Year_0</th>
<th>Year_1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market value of LT Debt</td>
<td>1100</td>
<td>1050</td>
</tr>
<tr>
<td>Market value of Equity</td>
<td>2024</td>
<td>2244</td>
</tr>
<tr>
<td>Market value of the firm</td>
<td>3124</td>
<td>3294</td>
</tr>
</tbody>
</table>

Year_1 : Increase of EMV = 2244 – 2024 = 220
MVA (Market Value Added)

Firm point of view

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net fixed Asset (book value)</td>
<td>2605</td>
<td>2700</td>
</tr>
<tr>
<td><strong>MVA</strong></td>
<td>519</td>
<td>594</td>
</tr>
<tr>
<td>Market value of asset</td>
<td>3124</td>
<td>3294</td>
</tr>
<tr>
<td>Market value of LT Debt</td>
<td>1100</td>
<td>1050</td>
</tr>
<tr>
<td>Market value of Equity</td>
<td>2024</td>
<td>2244</td>
</tr>
<tr>
<td><strong>Market value of financing</strong></td>
<td>3124</td>
<td>3294</td>
</tr>
<tr>
<td>Increase in MVA</td>
<td></td>
<td>75</td>
</tr>
</tbody>
</table>

Value creation = Market value of equity + Market Value of LT Debt – Net fixed Asset at book value
NPV: a dynamic approach of value creation

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

- Operations: F&B, Rooms
- Marketing
- HR
- Building

Level of cash flow

Strategic decision (allocation of initial tangibles & intangibles resources)

Life cycle

Risk and required return
Measuring value creation for the firm & shareholders

\[ NPV = -FCF_0 + \frac{FCF_1}{(1+WACC)^1} + \frac{FCF_2}{(1+WACC)^2} + \ldots + \frac{FCF_n}{(1+WACC)^n} \]

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-FCF₀</td>
<td>financial resources allocation (investments in tangible &amp; non tangible assets)</td>
</tr>
<tr>
<td>FCF₁</td>
<td>free cash flow year 1, and so one</td>
</tr>
<tr>
<td>WACC</td>
<td>Weighted Average Cost of Capital</td>
</tr>
<tr>
<td>NPV</td>
<td>(PV of FCF) – Financial ressource allocation = NPV</td>
</tr>
</tbody>
</table>
WACC

*(Weighted Average Cost of Capital)*

- $R_f$ : Risk Free Rate (e.g. T-Bonds, Government bonds)
- $\beta$ : 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

\[
WACC = \left[ R_f + \beta (R_m - R_f) \right] \cdot \frac{E}{V} + K_d \cdot (1 - T) \cdot \frac{D}{E}
\]
CAPM (Capital Asset Pricing Model)

\[ \text{CAPM} = r = [R_f + \beta(R_m - R_f)] \]

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)
- **Rm**: Market return (e.g. SMI, CAC40, S&P500)
Free Cash Flows (FCF)

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

<table>
<thead>
<tr>
<th>EBIT (Earning Before Interest &amp; Tax)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Depreciation</td>
</tr>
<tr>
<td>- Tax</td>
</tr>
<tr>
<td>- Capex (capital expenditure)</td>
</tr>
<tr>
<td>+/- change in WCR (Working capital Requirement)</td>
</tr>
<tr>
<td>FCF</td>
</tr>
</tbody>
</table>
Example

<table>
<thead>
<tr>
<th>Market informations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rf</td>
<td>3%</td>
</tr>
<tr>
<td>Rm</td>
<td>12%</td>
</tr>
<tr>
<td>Bêta</td>
<td>0.80</td>
</tr>
<tr>
<td>%Debt</td>
<td>60%</td>
</tr>
<tr>
<td>%Equity</td>
<td>40%</td>
</tr>
<tr>
<td>Kd</td>
<td>4%</td>
</tr>
<tr>
<td>Tax</td>
<td>25%</td>
</tr>
</tbody>
</table>

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

\[
FCF_0 = \frac{FCF_1}{(1 + IRR)^1} + \frac{FCF_2}{(1 + IRR)^2} \ldots \frac{FCF_n}{(1 + IRR)^n}
\]

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

\[
IRR > WACC \Rightarrow \text{value creation}
\]

\[
IRR < WACC \Rightarrow \text{value destroyed}
\]
Example

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCF</td>
<td>-180.00</td>
<td>50.00</td>
<td>60.00</td>
<td>70.00</td>
<td>80.00</td>
</tr>
</tbody>
</table>

WACC 10.00%

NPV 22.27

IRR 15.16%

\[-180.00 + \frac{50.00}{(1+IRR)^1} + \frac{60.00}{(1+IRR)^2} + \frac{70.00}{(1+IRR)^3} + \frac{80.00}{(1+IRR)^4} = 0\]

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

\[(\text{ROA} - \text{WACC}) \times \text{Economic Asset} = \text{EVA}\]

- \(\text{ROA} = \frac{(\text{EBIT} - \text{Tax})}{\text{Asset}} = \frac{(100 - 30)}{1000} = 7\%\)
- \(\text{WACC} = [12\%.0,40] + [5\%.(0,60).(1 - T)] = 6,9\%\)
- \(\text{EVA} = 0.1\% \text{ of } 1000 = 1\)

\[
\text{EVA} = \left[\frac{\text{EBIT} - \text{Tax}}{\text{Asset}}\right] \times 100 - \left[K_e \frac{E}{V} + (K_d \cdot (1 - T) \cdot \frac{D}{E})\right]
\]

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

<table>
<thead>
<tr>
<th>EPS (Earning per Share)</th>
<th>2.36</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER (Price earning ratio)</td>
<td>24.87</td>
</tr>
<tr>
<td>PAT (Profit after Tax) (million)</td>
<td>501</td>
</tr>
<tr>
<td>N (Number of share) (million)</td>
<td>212.4</td>
</tr>
<tr>
<td>P (Price of share)</td>
<td>58.70</td>
</tr>
<tr>
<td>Market Value of LT Debt</td>
<td>4’500</td>
</tr>
</tbody>
</table>

**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)

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

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

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

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

<table>
<thead>
<tr>
<th>WACC:10 %</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4 (constant perpetuity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCF</td>
<td>100</td>
<td>120</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>TV</td>
<td></td>
<td></td>
<td>1'300</td>
<td></td>
</tr>
<tr>
<td>Total FCF</td>
<td>100</td>
<td>120</td>
<td>1'430</td>
<td></td>
</tr>
</tbody>
</table>

\[ TV_{Year3} = \frac{1'300}{0.10} = 1'300 \]

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