Corporate Finance & Strategy

Capita Selecta: Corporate Valuation
Lecturer

❖ Drs. Hans Haanappel

- Specialization in Corporate Valuation
- Over 10 years of practical experience in corporate finance
- Email: hans_haanappel@planet.nl
- Visiting hours: on appointment after lectures
- Location: H14-21
Outline Lecture

I. Introduction to Corporate Valuation

II. Corporate Valuation using the DCF-framework

III. Corporate Valuation based on Multiples

IV. Conclusion
I. Introduction to Corporate Valuation

- The corporate valuation process encompasses 5 steps -

**Focus for Today**

<table>
<thead>
<tr>
<th>Understand Industry Dynamics</th>
<th>Understand Competitive Position &amp; Strategy</th>
<th>Analyze Historical Performance</th>
<th>Perform Discounted Cash Flow Valuation</th>
<th>Perform Multiple Valuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Key customer and technological trends</td>
<td>• Key customers&lt;br&gt;• Quality and track record of management&lt;br&gt;• Strength &amp; weakness&lt;br&gt;• Core competences&lt;br&gt;• Strategic options/scenario’s</td>
<td>• How did the firm perform in the past:&lt;br&gt;• Ratio analysis&lt;br&gt;• Economic Value Creation&lt;br&gt;• Stock price performance</td>
<td>• Identify key value drivers&lt;br&gt;• Forecast operating value drivers, Profit &amp; Loss, Balance Sheet and Cash Flow&lt;br&gt;• Determine the WACC&lt;br&gt;• Estimate Residual Value&lt;br&gt;• Estimate enterprise and equity value&lt;br&gt;• Perform Additional Analysis:&lt;br&gt;• Sensitivities&lt;br&gt;• Scenario’s</td>
<td>• Identification of comparable firms&lt;br&gt;• Determination of appropriate valuation multiples&lt;br&gt;• Understanding the drivers behind the multiples</td>
</tr>
</tbody>
</table>

• Number of competitors and level of fragmentation
• Consolidation trends and M&A activity
• Maturity, profitability and growth prospects of the industry
• Entry/exit barriers
• Innovation speed
Understanding Historical Performance
- Ratio Analysis to analyze historical performance (1)-

Revenue analysis
- Understand revenue growth and the underlying drivers per revenue line (volume vs. price)
- Assess dependencies on particular markets/products/distribution channels/clients
- Differentiate between organic growth via acquisitions
- Typical ratios: CAGR, YoY growth in price and volume

COGS analysis
- Analyze per revenue line COGS and gross margin (as % revenues)
- Understand variability in cost of goods sold: fixed cost versus variable costs
- For variable part breakdown in volume and price component if possible
- Typical ratios: GM as % revenues, GM / unit of volume

Other operating costs
- Personnel costs analysis based on personnel costs as % of revenues and underlying drivers (# FTE, revenues per FTE, wages & salaries per FTE and social security charges/pensions as % of wages and salaries)
- Other operating costs e.g.: marketing/sales, distribution, housing, IT costs as a % of revenue, YoY-growth rate and or per unit of volume

Profitability analysis
- Assess normalized pro forma profitability of the business
- EBITDA(R) as % of revenues
- EBITA as % revenues
- Net profit as % of revenues
Understanding Historical Performance

- Ratio Analysis to analyze historical performance (2)-

- Capex Spending
  - Determine capex patterns (incremental vs. lumpy capex spending)
  - Calculate capex as % of revenues and fixed asset turnover
  - Breakdown capex in maintenance capex and capex for growth
  - Assess other movements such as disposals, acquisitions and revaluations

- Working capital analysis
  - Differentiate between operating and non-operating working capital (debt/cash items)
  - Assess trend in operating working capital as % of revenues and the WC drivers
    - inventory days, trade debtor days, trade creditor days, other short term operating assets and liabilities as % of revenues

- Tax analysis
  - Understand bridge from reporting profit before tax and taxable income
  - Identify non tax deductible items and tax credit
  - Analysis of (movements in) deferred tax assets and liabilities
  - Assess average statutory tax rate of taxation in different countries
Understanding Historical Performance
- Ratio Analysis to analyze historical performance (3)-

➡ Define gross debt and excess cash position and evaluate funding structure
  - Leverage: Net total debt and net senior debt / EBITDA(R)
  - Interest cover: Net Cash Interest / EBITDA(R)
  - Debt service capacity: Free Operating Cash Flow / Debt service
  - Solvency: Book Value Equity / Total interest bearing debt
  - Borrowing base

➡ Determine cash flow generation of business
  - Cash conversion ratio: FOCF/EBITDA
  - FOCF versus Debt service
  - Excess and operating cash
  - Short term liquidity ratios (e.g. current and quick ratio)

➡ Assess average number of shares outstanding (basic and fully diluted)
  - Earnings per share (basic and fully diluted)
  - Normalized Earnings per share (basic and fully diluted)
  - Payout ratio and Dividend per share (basic and fully diluted)
Understanding Historical Performance
- Ratio Analysis to analyze historical performance (4)

EBITDA as % revenues 2003 2004 2005 2006 2007 2008 2009
KONINKLIJKE DSM N.V. 12.9% 13.2% 15.3% 15.0% 12.1% 13.8% 7.4%
AKZO NOBEL N.V. 13.3% 15.1% 15.8% 16.1% 12.5% 1.0% 9.6%
BASF SE 14.9% 17.9% 20.1% 18.3% 17.7% 15.0% 13.5%
CLARIANT AG 12.9% 9.4% 8.4% 8.2% 6.9% 5.2% 2.7%
DANISCO AS 19.5% 16.9% 12.3% 15.9% 15.1% 12.1% 12.2%
S.T. DUPONT SA -0.6% -0.2% -57.6% 3.3% 6.8% 12.5% -8.3%
EMS-CHEMIE HOLDING AG 20.8% 27.0% 25.4% 32.0% 26.2% 21.4% 25.9%
KERRY GROUP PLC 10.8% 10.2% 10.8% 9.1% 10.4% 9.0% 9.7%
LANXESS AG -13.8% 3.8% 2.5% 8.2% 6.8% 8.3% 7.5%
LONZA GROUP AG 13.9% 17.8% 19.9% 21.6% 23.8% 27.5% 19.3%
NOVOZYMES A/S 29.6% 27.9% 27.2% 26.9% 27.4% 26.3% 28.3%
RHODIA -8.7% 2.4% 6.2% 11.5% 11.7% 11.4% 9.2%
SOLVAY SA 14.4% 15.0% 12.6% 15.7% 18.2% 12.7% 15.2%

Median 13.3% 15.0% 12.6% 15.7% 12.5% 12.5% 9.7%
Average 10.8% 13.6% 9.1% 15.5% 15.0% 13.5% 11.7%

Capex as % revenues 2003 2004 2005 2006 2007 2008 2009
KONINKLIJKE DSM N.V. 6.7% 4.2% 4.6% 5.0% 4.4% 5.8% 5.0%
AKZO NOBEL N.V. 4.5% 4.3% 4.0% 3.9% 3.5% 3.5% 3.8%
BASF SE 6.2% 5.2% 4.6% 4.6% 4.4% 4.4% 4.9%
CLARIANT AG 3.9% 3.4% 4.3% 4.4% 3.7% 3.3% 2.0%
DANISCO AS 5.3% 4.2% 5.3% 6.0% 6.0% 6.5% 5.0%
S.T. DUPONT SA 4.9% 7.3% 2.9% 2.4% 4.3% 4.0% 3.3%
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KERRY GROUP PLC 2.8% 2.7% 3.4% 2.2% 2.6% 3.3% 2.8%
LANXESS AG 4.9% 4.1% 3.4% 3.7% 4.2% 5.2% 5.4%
LONZA GROUP AG 18.7% 10.9% 9.6% 15.8% 20.8% 21.2% 18.8%
NOVOZYMES A/S 6.8% 4.7% 5.7% 7.2% 9.8% 11.1% 11.9%
RHODIA 4.3% 3.6% 5.0% 5.5% 5.1% 5.1% 4.1%
SOLVAY SA 6.5% 5.5% 6.9% 6.8% 6.7% 8.0% 8.0%

Median 4.9% 4.2% 4.6% 4.6% 4.4% 5.1% 4.9%
Average 6.1% 4.9% 4.9% 5.5% 6.2% 6.6% 6.0%

Inventory days COGS 2003 2004 2005 2006 2007 2008 2009
KONINKLIJKE DSM N.V. 103 75 85 80 78 85 75
AKZO NOBEL N.V. 124 115 112 110 75 69 66
BASF SE 72 72 72 69 61 56 73
CLARIANT AG 124 88 102 105 93 91 69
DANISCO AS 179 194 158 158 173 149 131
S.T. DUPONT SA 120 157 176 179 177 348 227
EMS-CHEMIE HOLDING AG 93 105 78 79 92 81 96
KERRY GROUP PLC 44 47 56 48 49 60 57
LANXESS AG 84 82 74 74 67 79 84
LONZA GROUP AG 115 129 124 117 123 140 119
NOVOZYMES A/S 168 165 167 171 153 163 167
RHODIA 63 60 53 57 51 59 51
SOLVAY SA 82 85 81 79 79 78 69

Median 103 88 85 80 79 81 75
Average 105 106 103 102 98 112 99

Days of sales outstanding 2003 2004 2005 2006 2007 2008 2009
KONINKLIJKE DSM N.V. 100 74 71 74 74 68 65 66
AKZO NOBEL N.V. 72 76 79 74 74 67 67 73
BASF SE 80 74 72 65 62 53 66 73
CLARIANT AG 72 65 79 78 77 62 73 76
DANISCO AS 70 86 71 80 74 76 96 96
S.T. DUPONT SA 111 104 87 69 120 98 75 75
EMS-CHEMIE HOLDING AG 72 75 74 75 69 51 70 70
KERRY GROUP PLC 47 49 46 43 43 42 44 44
LANXESS AG 83 74 65 64 60 57 61 61
LONZA GROUP AG 84 88 90 87 72 80 88 88
NOVOZYMES A/S 89 78 86 82 80 69 77 77
RHODIA 64 67 87 84 70 64 65 65
SOLVAY SA 93 90 97 84 90 89 110 110

Median 80 75 79 75 72 65 70 70
Average 80 77 77 74 74 67 74 74

Source: Thomson Banker One
Understanding Historical Performance
- EVA measures value creation over a period -

**Operations**
- Operating Capital

**Financing**
- Interest Bearing Debt & Equity

NOPAT: operating profits after taxes
ROCB = NOPAT/Operating Capital

Capital Charge: return investors demand on operating capital
(operating capital x WACC)

EVA = NOPAT - Capital Charge
EVA = (ROCB - WACC) Operating Capital
Understanding Historical Performance
- Example of an EVA calculation -

Consider the statistics of the following firms:

<table>
<thead>
<tr>
<th></th>
<th>Firm A</th>
<th>Firm B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>1000Mn</td>
<td>200Mn</td>
</tr>
<tr>
<td>NOPAT</td>
<td>200Mn</td>
<td>30Mn</td>
</tr>
<tr>
<td>Av. Operating Capital</td>
<td>150Mn</td>
<td>300Mn</td>
</tr>
<tr>
<td>WACC</td>
<td>15%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Which firm creates value?
Understanding Historical Performance
- Understanding stock price performance -

Stock price performance Heijmans NV

- IPO
- Negative Outlook B&C market
- Acquisition IBC (500M in revenues)
- Building Fraud

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II. Corporate Valuation Using DCF-Framework

- Value is determined by E (Cash flows) and Cost of Capital -

The economic value of a company is determined by the present value of the expected future free cash flows a firm generates discounted with a cost of capital reflecting the capital structure of the firm.

Valuing the firm according to Discounted Cash Flow method comes down to:
- Identifying key value drivers
- Forecasting expected free cash flows
- Estimating the proper WACC
- Selection of the appropriate continuing value methodology
Corporate Valuation Using DCF-Framework
- Key value drivers determine E (Cash Flow) and Cost of Capital -

**Operating value drivers:**
- sales price per client
- discounts per client
- retention rate of clients
- net turnover per FTE
- material cost per unit
- transportation cost per unit
- manufacturing cost per unit
- production cycles
- energy cost per unit
- overhead/manufacturing fte
- salary per fte
- inventory turnover
  - raw materials
  - finished goods
- debtor days
- creditor days
- asset turnover
- tax rate
- investments in intangibles

**Risk and capital structure**
- Business Risk
- Capital Structure
- Tax rate
- Cost of equity
- Cost of debt
- Cost of Capital

**Operating profitability**
- Net turnover
- Gross margin
- Cost of goods sold
- Operating costs
- Operating profit
- Tax rate
- Operating Taxes
- NOPAT

**Asset Utilization**
- Inventory Turnover
- Debtor days
- Creditor days
- Other current assets/liabilities
- Asset turnover
- Investments
  - NWC
  - Investments fixed assets
  - Investments Intangibles
- Free Cash Flow

**ECONOMIC VALUE**
Corporate Valuation Using DCF-Framework
- Definition of Free Cash Flow -

- Free cash flow is defined as the cash flows that the operating assets of a firm generate and that can be distributed to both equity and debt holders.

Revenues
-/- Cost of goods sold
**Gross margin**
-/- Personnel cost
-/- Depreciation & amortization
-/- General and Administrative Exp.

**Earnings before interest and taxes**
-/- Taxes over operating profit

**NOPAT**
+/- Depreciation & amortization
+/- Increase in operating provisions
-/- Investments in operating net working capital
-/- Investments in fixed assets and intangibles

**Free cash flow**

*The free cash is calculated assuming the firm is all equity financed as the financing effects will be in incorporated in the valuation via the WACC.*
The recommended way to forecast free cash flow, is by forecasting value drivers, P&L and Balance Sheet.

Free cash flow can be derived from the forecasted P&L and Balance Sheet.
## Forecasting Free Cash Flow

- Example of Forecast of Value Drivers -

<table>
<thead>
<tr>
<th>Value drivers</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property Development Home &amp; Office</td>
<td>€ 664,000</td>
<td>€ 687,240</td>
<td>€ 711,293</td>
<td>€ 736,189</td>
<td>€ 761,955</td>
<td>€ 788,624</td>
<td>€ 816,226</td>
</tr>
<tr>
<td>Construction Home &amp; Office</td>
<td>€ 846,000</td>
<td>€ 875,610</td>
<td>€ 906,256</td>
<td>€ 937,975</td>
<td>€ 970,804</td>
<td>€ 1,004,783</td>
<td>€ 1,039,950</td>
</tr>
<tr>
<td>Traffic and Transportation</td>
<td>€ 743,000</td>
<td>€ 769,005</td>
<td>€ 795,920</td>
<td>€ 823,777</td>
<td>€ 852,610</td>
<td>€ 882,451</td>
<td>€ 913,337</td>
</tr>
<tr>
<td>Industry and Production</td>
<td>€ 181,000</td>
<td>€ 187,335</td>
<td>€ 193,892</td>
<td>€ 200,678</td>
<td>€ 207,702</td>
<td>€ 214,971</td>
<td>€ 222,495</td>
</tr>
<tr>
<td>Belgium</td>
<td>€ 288,000</td>
<td>€ 298,080</td>
<td>€ 308,513</td>
<td>€ 319,311</td>
<td>€ 330,487</td>
<td>€ 342,054</td>
<td>€ 354,026</td>
</tr>
<tr>
<td>Germany</td>
<td>€ 55,000</td>
<td>€ 56,925</td>
<td>€ 58,917</td>
<td>€ 60,979</td>
<td>€ 63,114</td>
<td>€ 65,323</td>
<td>€ 67,609</td>
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<tr>
<td>United Kingdom</td>
<td>€ 131,000</td>
<td>€ 135,585</td>
<td>€ 140,330</td>
<td>€ 145,242</td>
<td>€ 150,326</td>
<td>€ 155,587</td>
<td>€ 161,032</td>
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<tr>
<td>Intercompanies</td>
<td>-€ 304,325</td>
<td>-€ 314,976</td>
<td>-€ 326,001</td>
<td>-€ 337,411</td>
<td>-€ 349,220</td>
<td>-€ 361,443</td>
<td>-€ 374,093</td>
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<tr>
<td><strong>Total</strong></td>
<td>€ 2,603,675</td>
<td>€ 2,694,804</td>
<td>€ 2,789,122</td>
<td>€ 2,886,741</td>
<td>€ 2,987,777</td>
<td>€ 3,092,349</td>
<td>€ 3,200,581</td>
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<tr>
<td><strong>Growth</strong></td>
<td>7.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Property Development Home &amp; Office</td>
<td>-4.2%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Construction Home &amp; Office</td>
<td>0.8%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Traffic and Transportation</td>
<td>-18.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Industry and Production</td>
<td>-2.2%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Belgium</td>
<td>8.7%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Germany</td>
<td>588%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
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<td>3.5%</td>
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<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td><strong>Intercompanies as % sales</strong></td>
<td>10.5%</td>
<td>10.5%</td>
<td>10.5%</td>
<td>10.5%</td>
<td>10.5%</td>
<td>10.5%</td>
<td>10.5%</td>
</tr>
<tr>
<td><strong>External costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External costs as % revenues</td>
<td>75.62%</td>
<td>75.5%</td>
<td>75.5%</td>
<td>75.5%</td>
<td>75.5%</td>
<td>75.5%</td>
<td>75.5%</td>
</tr>
<tr>
<td><strong>Personal costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues per employee</td>
<td>€ 260</td>
<td>€ 269</td>
<td>€ 278</td>
<td>€ 288</td>
<td>€ 298</td>
<td>€ 309</td>
<td>€ 319</td>
</tr>
<tr>
<td>Wages &amp; salaries per employee</td>
<td>€ 39</td>
<td>€ 40</td>
<td>€ 41</td>
<td>€ 42</td>
<td>€ 43</td>
<td>€ 45</td>
<td>€ 46</td>
</tr>
<tr>
<td>Social charges as % wages &amp; salaries</td>
<td>28%</td>
<td>28%</td>
<td>28%</td>
<td>28%</td>
<td>28%</td>
<td>28%</td>
<td>28%</td>
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</tbody>
</table>
Forecasting Free Cash Flow
- Example of Forecast of Balance Sheet and P&L -

### Adjusted balance sheet (in 000)

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intangible fixed assets</td>
<td>€ 156,310</td>
<td>€ 155,243</td>
<td>€ 153,801</td>
<td>€ 151,984</td>
<td>€ 149,792</td>
<td>€ 147,225</td>
<td>€ 144,283</td>
</tr>
<tr>
<td>Tangible fixed assets</td>
<td>€ 178,187</td>
<td>€ 191,881</td>
<td>€ 204,936</td>
<td>€ 217,496</td>
<td>€ 229,689</td>
<td>€ 241,621</td>
<td>€ 253,386</td>
</tr>
<tr>
<td>Operating working capital</td>
<td>€ 505,568</td>
<td>€ 523,013</td>
<td>€ 541,318</td>
<td>€ 560,264</td>
<td>€ 579,873</td>
<td>€ 600,169</td>
<td>€ 621,175</td>
</tr>
<tr>
<td>Operating capital</td>
<td>€ 840,065</td>
<td>€ 870,137</td>
<td>€ 900,055</td>
<td>€ 929,745</td>
<td>€ 959,354</td>
<td>€ 989,015</td>
<td>€ 1,018,844</td>
</tr>
<tr>
<td>Financial fixed assets</td>
<td>€ 77,659</td>
<td>€ 77,659</td>
<td>€ 77,659</td>
<td>€ 77,659</td>
<td>€ 77,659</td>
<td>€ 77,659</td>
<td>€ 77,659</td>
</tr>
<tr>
<td>Liquid assets</td>
<td>€ 20,962</td>
<td>€ 33,614</td>
<td>€ 55,621</td>
<td>€ 82,363</td>
<td>€ 112,133</td>
<td>€ 144,998</td>
<td>€ 181,039</td>
</tr>
<tr>
<td>Invested capital</td>
<td>€ 938,886</td>
<td>€ 981,410</td>
<td>€ 1,033,334</td>
<td>€ 1,089,767</td>
<td>€ 1,149,146</td>
<td>€ 1,211,671</td>
<td>€ 1,277,542</td>
</tr>
</tbody>
</table>

### Group equity

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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<td>€ 77,659</td>
</tr>
<tr>
<td>Liquid assets</td>
<td>€ 20,962</td>
<td>€ 33,614</td>
<td>€ 55,621</td>
<td>€ 82,363</td>
<td>€ 112,133</td>
<td>€ 144,998</td>
<td>€ 181,039</td>
</tr>
<tr>
<td>Invested capital</td>
<td>€ 938,886</td>
<td>€ 981,410</td>
<td>€ 1,033,334</td>
<td>€ 1,089,767</td>
<td>€ 1,149,146</td>
<td>€ 1,211,671</td>
<td>€ 1,277,542</td>
</tr>
</tbody>
</table>

### Profit & loss account (in 000)

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>€ 2,603,675</td>
<td>€ 2,694,804</td>
<td>€ 2,789,122</td>
<td>€ 2,886,741</td>
<td>€ 2,987,777</td>
<td>€ 3,092,349</td>
<td>€ 3,200,581</td>
</tr>
<tr>
<td>Operating costs</td>
<td>€ 1,968,802</td>
<td>€ 2,034,577</td>
<td>€ 2,105,787</td>
<td>€ 2,179,489</td>
<td>€ 2,255,772</td>
<td>€ 2,334,724</td>
<td>€ 2,416,439</td>
</tr>
<tr>
<td>Wages and salaries</td>
<td>€ 386,811</td>
<td>€ 398,415</td>
<td>€ 410,368</td>
<td>€ 422,679</td>
<td>€ 435,359</td>
<td>€ 448,420</td>
<td>€ 461,873</td>
</tr>
<tr>
<td>Social security costs</td>
<td>€ 107,227</td>
<td>€ 110,444</td>
<td>€ 113,757</td>
<td>€ 117,170</td>
<td>€ 120,685</td>
<td>€ 124,305</td>
<td>€ 128,035</td>
</tr>
<tr>
<td>Depreciation of tangible fixed assets</td>
<td>€ 26,567</td>
<td>€ 26,728</td>
<td>€ 28,782</td>
<td>€ 30,740</td>
<td>€ 32,624</td>
<td>€ 34,453</td>
<td>€ 36,243</td>
</tr>
<tr>
<td>Amortization of intangible fixed assets</td>
<td>€ 8,192</td>
<td>€ 8,567</td>
<td>€ 8,942</td>
<td>€ 9,317</td>
<td>€ 9,692</td>
<td>€ 10,867</td>
<td>€ 10,442</td>
</tr>
<tr>
<td>Fines</td>
<td>€ 14,800</td>
<td>€ 10,000</td>
<td>€ 5,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Operating costs</td>
<td>€ 2,512,399</td>
<td>€ 2,588,731</td>
<td>€ 2,672,636</td>
<td>€ 2,759,395</td>
<td>€ 2,854,132</td>
<td>€ 2,951,969</td>
<td>€ 3,053,031</td>
</tr>
</tbody>
</table>

### EBIT

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIT</td>
<td>€ 91,276</td>
<td>€ 106,073</td>
<td>€ 116,486</td>
<td>€ 127,346</td>
<td>€ 133,645</td>
<td>€ 140,380</td>
<td>€ 147,550</td>
</tr>
<tr>
<td>Financial income</td>
<td>€ 8,227</td>
<td>€ 8,182</td>
<td>€ 8,615</td>
<td>€ 9,225</td>
<td>€ 9,931</td>
<td>€ 10,714</td>
<td>€ 11,575</td>
</tr>
<tr>
<td>Financial expenses</td>
<td>€ 20,016</td>
<td>€ 22,289</td>
<td>€ 23,293</td>
<td>€ 24,496</td>
<td>€ 25,752</td>
<td>€ 27,065</td>
<td>€ 28,435</td>
</tr>
<tr>
<td>EBT</td>
<td>€ 79,487</td>
<td>€ 91,966</td>
<td>€ 101,808</td>
<td>€ 112,074</td>
<td>€ 117,824</td>
<td>€ 124,029</td>
<td>€ 130,690</td>
</tr>
<tr>
<td>Taxes</td>
<td>€ 25,666</td>
<td>€ 26,921</td>
<td>€ 29,802</td>
<td>€ 32,807</td>
<td>€ 34,490</td>
<td>€ 36,307</td>
<td>€ 38,257</td>
</tr>
<tr>
<td>Other results</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
</tr>
<tr>
<td>Net profit</td>
<td>€ 59,980</td>
<td>€ 71,204</td>
<td>€ 78,165</td>
<td>€ 85,426</td>
<td>€ 89,493</td>
<td>€ 93,882</td>
<td>€ 98,593</td>
</tr>
</tbody>
</table>
# Forecasting Free Cash Flow
- Deriving E(FCF) from Balance Sheet and P&L -

<table>
<thead>
<tr>
<th>Cash flow statement (in 000)</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITA</td>
<td>€ 99,468</td>
<td>€ 114,640</td>
<td>€ 125,428</td>
<td>€ 136,663</td>
<td>€ 143,337</td>
<td>€ 150,447</td>
<td>€ 157,992</td>
</tr>
<tr>
<td>- Taxes over EBITA</td>
<td>€ 29,117</td>
<td>€ 33,558</td>
<td>€ 36,716</td>
<td>€ 40,005</td>
<td>€ 41,959</td>
<td>€ 44,040</td>
<td>€ 46,249</td>
</tr>
<tr>
<td>NOPLAT</td>
<td>€ 70,351</td>
<td>€ 81,082</td>
<td>€ 88,712</td>
<td>€ 96,658</td>
<td>€ 101,378</td>
<td>€ 106,407</td>
<td>€ 111,744</td>
</tr>
<tr>
<td>+ Depreciation tangible assets</td>
<td>€ 26,567</td>
<td>€ 26,728</td>
<td>€ 28,782</td>
<td>€ 30,740</td>
<td>€ 32,624</td>
<td>€ 34,453</td>
<td>€ 36,243</td>
</tr>
<tr>
<td>- Investment intangibles</td>
<td>€ 27,777</td>
<td>€ 7,500</td>
<td>€ 7,500</td>
<td>€ 7,500</td>
<td>€ 7,500</td>
<td>€ 7,500</td>
<td>€ 7,500</td>
</tr>
<tr>
<td>- Investment tangibles</td>
<td>€ 33,598</td>
<td>€ 40,422</td>
<td>€ 41,837</td>
<td>€ 43,301</td>
<td>€ 44,817</td>
<td>€ 46,385</td>
<td>€ 48,009</td>
</tr>
<tr>
<td>- Investment operating working capital</td>
<td>€ 24,888</td>
<td>€ 17,445</td>
<td>€ 18,305</td>
<td>€ 18,946</td>
<td>€ 19,609</td>
<td>€ 20,296</td>
<td>€ 21,006</td>
</tr>
<tr>
<td>+ Change in provisions</td>
<td>€ 5,736</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
</tr>
<tr>
<td>FREE CASH FLOW</td>
<td>€ 16,391</td>
<td>€ 42,443</td>
<td>€ 49,852</td>
<td>€ 57,651</td>
<td>€ 62,077</td>
<td>€ 66,679</td>
<td>€ 71,472</td>
</tr>
<tr>
<td>+ Financial income</td>
<td>€ 8,227</td>
<td>€ 8,182</td>
<td>€ 8,615</td>
<td>€ 9,225</td>
<td>€ 9,931</td>
<td>€ 10,714</td>
<td>€ 11,575</td>
</tr>
<tr>
<td>- Financial expenses</td>
<td>€ 20,016</td>
<td>€ 22,289</td>
<td>€ 23,293</td>
<td>€ 24,496</td>
<td>€ 25,752</td>
<td>€ 27,065</td>
<td>€ 28,435</td>
</tr>
<tr>
<td>+ Other results</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
<td>€ 6,159</td>
</tr>
<tr>
<td>- Change in financial fixed assets</td>
<td>€ 16,877</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
</tr>
<tr>
<td>+ Change in interest bearing debt</td>
<td>€ 32,682</td>
<td>€ 13,884</td>
<td>€ 19,605</td>
<td>€ 20,482</td>
<td>€ 21,396</td>
<td>€ 22,347</td>
<td>€ 23,338</td>
</tr>
<tr>
<td>+ Change in dividends payable</td>
<td>€ 2,208</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
</tr>
<tr>
<td>- Dividends</td>
<td>€ 37,807</td>
<td>€ 42,365</td>
<td>€ 45,845</td>
<td>€ 49,476</td>
<td>€ 51,509</td>
<td>€ 53,704</td>
<td>€ 56,059</td>
</tr>
<tr>
<td>+ Change in equity</td>
<td>€ 4,040</td>
<td>€ 0</td>
<td>€ 0</td>
<td>€ -</td>
<td>€ -</td>
<td>€ 0</td>
<td>€ 0</td>
</tr>
<tr>
<td>+ Tax correction</td>
<td>€ 3,451</td>
<td>€ 6,637</td>
<td>€ 6,914</td>
<td>€ 7,198</td>
<td>€ 7,468</td>
<td>€ 7,733</td>
<td>€ 7,992</td>
</tr>
<tr>
<td>Change in cash</td>
<td>€ -9,622</td>
<td>€ 12,652</td>
<td>€ 22,007</td>
<td>€ 26,743</td>
<td>€ 29,770</td>
<td>€ 32,864</td>
<td>€ 36,042</td>
</tr>
<tr>
<td>Check</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
<td>€ -</td>
</tr>
</tbody>
</table>

What is the reason that taxes in the free cash flow calculation are based on EBITA and not derived from the taxes from the P&L?
Estimation of the WACC
- Definition of the WACC -

The weighted average cost of capital is the composite forward looking after tax cost of capital of the firm.

\[
WACC = k_e \cdot L_e + k_d \cdot (1-Tc) \cdot L_d + k_{HS} \cdot L_{hs}
\]

Where:

- \( k_d \) = cost of debt
- \( k_e \) = cost of equity
- \( k_{HS} \) = cost of hybrid security
- \( Tc \) = marginal tax rate
- \( L_d \) = target debt % in total firm value
- \( L_e \) = target equity % in total firm value
- \( L_{hs} \) = target hybrid securities % in total firm value
Residual Value Estimation
- Methodologies to estimate residual value (1) -

- The estimation of the residual value methodology is critical in DCF valuation as it significantly affects firm value (>50% of value)

- There are several methodologies for estimating residual value:
  - Based on a perpetuity method (e.g. a constant growing FCF)
  - Based on the liquidation/replacement value
  - Based on some exit multiple

- Note that the residual value is at the end of the planning period so you have to discount it back

- Be careful when estimating the residual value for cyclical businesses
# Residual Value Estimation
- Methodologies to estimate residual value (2) -

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Formula</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| Aggressive growth     | \[
\frac{\text{NOPAT}}{\text{WACC}-\text{E}(g)}
\] | - The company generates a return on new investments which is approaching infinity  
- Unrealistic and not to be used |
| Value Driver model    | \[
\frac{\text{NOPAT}(1-\text{E}(g)/\text{ROCB})}{\text{WACC}-\text{E}(g)}
\] | - The company generates a return on new investments higher than the WACC  
- Only to be used if the company is expected to maintain strong competitive advantage (e.g. Coca Cola, General Electric) |
| Converge Model        | \[
\frac{\text{NOPAT}}{\text{WACC}}
\] | - The company generates a return on new investments equal to the WACC  
- To be used in competitive industries which move to a competitive equilibrium (e.g. most firms) |

**Notes:**
- Value driver model generates the same results as the FCF/[WACC-E(g)] however using the value driver model the assumptions underlying ROCB after the planning period and “normalized net investments” are made explicit.
- Multistage models can be applied when growth after planning period isn’t constant (see Arzac)
- There is debate about the converge model whether to incorporate inflation (see Arzac).
Residual Value Estimation
- Methodologies to estimate residual value (3) -
Residual Value Estimation
- Methodologies to estimate residual value (4) -

❖ Estimation of the growth rate after the planning period should be based on the following formula:

› $E(g) = \text{ROCB} \times \text{Reinvestment ratio}$

› Reinvestment ratio = Net Investments/NOPAT

› Net Investments = Investment in Net Working Capital + Total Capex - Depreciation

❖ Check: inflation + real growth of industry
II. Corporate Valuation Using DCF-Framework

- Value is determined by E (Cash flows) and Cost of Capital -

The economic value of a company is determined by the present value of the expected future free cash flows a firm generates discounted with a cost of capital reflecting the capital structure of the firm.

Valuing the firm according to Discounted Cash Flow method comes down to:
- Identifying key value drivers
- Forecasting expected free cash flows
- Estimating the proper WACC
- Selection of the appropriate continuing value methodology
DCF-Valuation
- Estimating enterprise value and deriving equity value -

Enterprise value is the present value of free cash flows generated by the operating assets of the firm.

Adjustments to get to value of common equity because the cash flow implications of these assets and liabilities are not reflected in the E(FCF).
DCF-Valuation
- Perform scenario analysis on value -

Base Case
- Moderate organic revenue growth (3.5%)
- Maintaining current operating margin

High Growth
- Higher growth by small acquisitions (5%)
- Maintaining current operating profit

Margin improvement
- Moderate organic revenue growth (3.5%)
- Program to increase productivity employees

Low Case
- Prolonged downturn in B&C market with low revenue growth (2%)
- Maintaining current operating margin
There are alternative DCF-model available to value a firm, for example:

- Discounting the FCF to equity with the Cost of Equity (to be used when valuing financial institutions)
- Discounting Dividends with the Cost of Equity (not used in practice a lot)

There should be consistency with the discount rate and the cash flow definition:

- Cash Flows to the firm vs cash flows to equity holders
- Real cash flows versus nominal cash flows
- Pretax cash flows versus after tax cash flows
- Dollar cash flows versus Euro cash flows

=> In practice one tends to use local currency nominal cash flows to the firm
III.

Multiple Valuation
- Principles about Valuation Multiples -

❖ The valuation of an asset that is based on the prices currently being paid for assets that are comparable:
  › Similar risk profile
  › Similar leverage
  › Similar growth expectations
  › Similar size

❖ Classifications of multiples:
  › Trading Multiples
  › Transaction Multiples
  › Industry specific Multiples
  › Historical Multiples
  › Trailing Multiples
  › Forward looking Multiples
  Based on current market capitalization
  Based on pricing in M&A
  Specific for the industry
  Current price related to historical results
  Current price related to last 12 months results
  Current price related to analyst expectations
Multiple Valuation
- Different Types of Multiples -

- Earnings Multiples
  - Relates value to profitability
  - Examples: PE, EV/EBITDA(R), EV/EBITDA, and EV/EBIT
  - EV/EBIT(DAR) multiples are more robust and less distorted by accounting conventions

- Sales Multiples
  - Relates value to sales
  - Examples: P/Sales and EV/Sales
  - Caveat: does not take into account profitability
  - Often applied for valuing firms with negative earnings (e.g.: internet)

- Market to Book Multiples
  - Relates value to book value
  - Examples: Price to Book and EV/Operating Capital
  - Caveats: does not take into account return on equity and assets and tends to be distorted for accounting conventions
  - Often applied for valuing financial institutions

- Industry Specific Multiples
  - Relates value to some industry metric
  - Examples: Value per subscriber, unique visitor, and value per m² for retailers
  - Caveat: does often not take into account profitability and is related to sales multiples
Multiple Valuation
- Examples of Trading Multiples -

<table>
<thead>
<tr>
<th>Name of company</th>
<th>Enterprise Value / Sales</th>
<th>Enterprise Value / EBITDA</th>
<th>Enterprise Value / EBITA</th>
</tr>
</thead>
<tbody>
<tr>
<td>METRO AG</td>
<td>0.3x</td>
<td>0.3x</td>
<td>0.2x</td>
</tr>
<tr>
<td>JUMBO SA</td>
<td>1.6x</td>
<td>1.4x</td>
<td>1.2x</td>
</tr>
<tr>
<td>MARKS AND SPENCER</td>
<td>0.7x</td>
<td>0.7x</td>
<td>0.7x</td>
</tr>
<tr>
<td>VALORA HOLDING LIMITED</td>
<td>0.2x</td>
<td>0.2x</td>
<td>0.2x</td>
</tr>
<tr>
<td>GIFI</td>
<td>0.6x</td>
<td>0.5x</td>
<td>0.5x</td>
</tr>
<tr>
<td>KINGFISHER PLC</td>
<td>0.5x</td>
<td>0.4x</td>
<td>0.4x</td>
</tr>
<tr>
<td>BIG LOTS, INC.</td>
<td>0.3x</td>
<td>0.3x</td>
<td>0.3x</td>
</tr>
<tr>
<td>FAMILY DOLLAR STORES, INC.</td>
<td>0.5x</td>
<td>0.5x</td>
<td>0.5x</td>
</tr>
<tr>
<td>KOHL’S CORPORATION</td>
<td>0.8x</td>
<td>0.8x</td>
<td>0.8x</td>
</tr>
<tr>
<td>SEARS HOLDINGS</td>
<td>0.2x</td>
<td>0.2x</td>
<td>0.2x</td>
</tr>
<tr>
<td>TARGET CORPORATION</td>
<td>0.7x</td>
<td>0.7x</td>
<td>0.7x</td>
</tr>
</tbody>
</table>

Median peer group
- Median 0.5x | 0.5x | 0.5x | 0.5x | 5.0x | 5.0x | 5.5x | 5.3x | 6.6x | 7.8x | 7.7x | 7.5x |
- Average 0.6x | 0.5x | 0.5x | 0.5x | 5.1x | 5.5x | 5.7x | 5.2x | 6.9x | 7.6x | 7.5x | 7.0x |

Normalized pro forma financial
- 2,711 | 2,684 | 2,724 | 2,847 | 340 | 311 | 312 | 331 | 268 | 235 | 235 | 253 |

Enterprise value
- 1,396 | 1,332 | 1,300 | 1,324 | 1,699 | 1,549 | 1,727 | 1,758 | 1,769 | 1,835 | 1,806 | 1,905 |

Net debt + other adjustments

Equity value
- 846 | 782 | 750 | 774 | 1,149 | 999 | 1,177 | 1,208 | 1,219 | 1,285 | 1,256 | 1,355 |

Note: Enterprise value = Market Capitalization Equity + preferred Equity + Net Debt
## Multiple Valuation
- Examples of Transaction Multiples -

<table>
<thead>
<tr>
<th>Date</th>
<th>Target Company</th>
<th>Bidder Company</th>
<th>EV</th>
<th>Sales</th>
<th>EBITDA</th>
<th>EBITA</th>
</tr>
</thead>
<tbody>
<tr>
<td>30/06/2008</td>
<td>The Carphone Warehouse</td>
<td>Best Buy Co., Inc.</td>
<td>2,762</td>
<td>0.7x</td>
<td>7.9x</td>
<td>11.0x</td>
</tr>
<tr>
<td>06/07/2007</td>
<td>Hema BV</td>
<td>Lion Capital LLP</td>
<td>1,100</td>
<td>0.8x</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>08/11/2006</td>
<td>House of Fraser plc</td>
<td>Highland Acquisitions Limited</td>
<td>662</td>
<td>0.6x</td>
<td>7.4x</td>
<td>12.7x</td>
</tr>
<tr>
<td>31/03/2007</td>
<td>France Printemps</td>
<td>Borletti Group; RREEF</td>
<td>1,075</td>
<td>0.5x</td>
<td>NA</td>
<td>NM</td>
</tr>
<tr>
<td>10/10/2006</td>
<td>Home Retail Group plc</td>
<td>GUS - Great Universal Stores plc</td>
<td>4,910</td>
<td>0.6x</td>
<td>7.1x</td>
<td>9.9x</td>
</tr>
<tr>
<td>24/01/2006</td>
<td>Carrefour SA (3.39% stake)</td>
<td>BNP Paribas SA</td>
<td>33,488</td>
<td>0.4x</td>
<td>7.2x</td>
<td>10.5x</td>
</tr>
<tr>
<td>21/03/2005</td>
<td>Marionnaud Parfumeries SA</td>
<td>A.S.Watson &amp; Co Ltd</td>
<td>894</td>
<td>0.8x</td>
<td>7.7x</td>
<td>10.3x</td>
</tr>
<tr>
<td>26/11/2004</td>
<td>Picard Surfinges</td>
<td>BC Partners Ltd</td>
<td>1,308</td>
<td>0.8x</td>
<td>8.0x</td>
<td>13.1x</td>
</tr>
<tr>
<td>02/11/2004</td>
<td>DFS Furniture Company</td>
<td>Full Circle Future Limited</td>
<td>675</td>
<td>0.9x</td>
<td>6.9x</td>
<td>8.0x</td>
</tr>
<tr>
<td>21/06/2004</td>
<td>Royal Vendex KBB NV</td>
<td>VDXK Acquisition BV</td>
<td>2,249</td>
<td>0.5x</td>
<td>6.9x</td>
<td>12.0x</td>
</tr>
<tr>
<td>04/12/2003</td>
<td>Debenhams Plc</td>
<td>Baroness Retail Limited</td>
<td>2,606</td>
<td>1.0x</td>
<td>7.1x</td>
<td>10.4x</td>
</tr>
<tr>
<td>29/07/2003</td>
<td>Selfridges plc</td>
<td>Wittlington Investments Limited</td>
<td>875</td>
<td>1.4x</td>
<td>10.5x</td>
<td>14.4x</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td></td>
<td>0.8x</td>
<td>7.7x</td>
<td>11.2x</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td></td>
<td></td>
<td></td>
<td>0.7x</td>
<td>7.3x</td>
<td>10.8x</td>
</tr>
</tbody>
</table>

**Company statistics LTM performance**

<table>
<thead>
<tr>
<th>Enterprise value</th>
<th>1,983</th>
<th>2,377</th>
<th>2,712</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net debt + other adjustments</td>
<td>550</td>
<td>550</td>
<td>550</td>
</tr>
<tr>
<td><strong>Equity Value</strong></td>
<td>1,433</td>
<td>1,827</td>
<td>2,162</td>
</tr>
</tbody>
</table>
A US based Telco wants to sell its wireless tower network in order to free up capital to pay the other debt holders. The current calculation multiples of comparable firms are:

- EBIT: USD 18Mn
- EBITDA: USD 25Mn
- EARNINGS: USD 5Mn
- DEBT LEVEL: USD 200Mn
- TOWERS: 2500

What is your estimate of the enterprise and equity value of the tower business?
Understanding the fundamentals behind multiples can provide an explanation why multiples differ across firms within the same industry of similar size.

**For example PE Ratio**

- \[ PE = \text{Price} / \text{Earnings} \]  \hspace{1cm} (1)
- \[ \text{Price} = \text{Dividends} / [ \text{ke} - \text{E}(g) ] \]  \hspace{1cm} (2)

Substitution (2) in (1) yields:

- \[ PE = \{\text{Dividends} / [ \text{ke} - \text{E}(g) ]\} / \text{Earnings} \]  \hspace{1cm} (3)

That can be rewritten to:

- \[ PE = \text{Payout ratio} / [ \text{ke} - \text{E}(g) ] \]  \hspace{1cm} (4)
Multiple Valuation
- Normalization of Multiples (1) -

- To make a good comparison between multiples of firms within the same industry one has to normalize the multiples for differences in their fundamentals. Examples of normalizations used in practice:

- **Examples of normalizations used in Practice:**
  - PEG-ratio: normalizing PE for differences in growth
  - MBT/ROE-ratio: normalizing MTB for differences in return
  - EV to S/Operating margin: normalizing EV/S for differences in profitability

Which firms are expensive???
Multiple Valuation - Normalization of Multiples (2) - 

- However note that these rough adjustments can be misleading, e.g. PEG ratio:
  - PE = Payout ratio / [ ke –E(g) ]
  - PEG = PE/E(g) = {Payout ratio / [ ke –E(g) ]}/E(g)

- Firm A and B have both ke = 10% and payout ratio of 50%
- Firm A has an E(g) of 6% and Firm B has an E(g) of 8%

- PEA = 12.5 and PEGA= 12.5/6 = 2.08
- PEB = 25.0 and PEGB= 25.0/8 = 3.13

- If the stocks are trading on their fundamental PE, one should be indifferent
- between the two firms however one tend to favor firm A according to the PEG ratio.

- What would be the right normalization factor ????????
Multiple Valuation
- Regression Analysis on Multiples -

- An Alternative normalization method is to regress multiple against the variable you want to normalize the multiple for.

- E.g., the MTB for the banking industry:

\[ MTB = A + b \times ROE = 0.56 + 16.04 \times ROE \]

- Suppose a bank has an ROE of 15% and a book value of equity of around USD 200 million. What would be the equity value of the bank?

- Problem is that the regressions are often very noisy (low R2)
Multiple Valuation
- Final remarks multiple valuation -

- Multiple valuations may be distorted by accounting standards and are therefore hard to compare on an international basis

- Size effects should be incorporated in the multiple valuation as earnings of large caps are valued higher than earnings of small firms

- Multiples provide a useful complement to DCF and a check on the assumptions made in projected cash flows. They provide a quick & dirty estimate of value
Concluding Remarks

- The valuation of a firm should be based on a variety of approaches and results in a value range
  - Values based DCF scenario’s
  - Values based on multiples

- But the ultimate valuation judgment should not only be based on calculus but also qualitative aspects such as:
  - Quality of management
  - Strategy of the firm
  - Competitive position of the firm
  - Industry attractiveness
  - Innovation speed