Value Enhancement: Back to Basics

Aswath Damodaran
NACVA Conference
Price Enhancement versus Value Enhancement

Stock price performance of companies that changed their names to include Web-oriented designations like “.com,” from 30 trading days before the name-change announcement to 30 days after. The study looked at stocks of companies that changed their names from January 1998 through March 26, 1999.

New Markets, New Names
In the bull market, adding dot-com to a company name made a stock soar. Lately, those zippy new monkeys are disappearing.

New Name, Higher Price
But the stocks still get a bounce when dot-com goes away. Chart shows returns in the days before and after the name change.
DISCOUNTED CASHFLOW VALUATION

Cashflow to Firm
EBIT (1-t)
- (Cap Ex - Depr)
- Change in WC = FCFF

Expected Growth
Reinvestment Rate
* Return on Capital

Firm is in stable growth:
Grows at constant rate forever

Terminal Value = FCFF_{n+1}/(r-g_n)

Value of Operating Assets
+ Cash & Non-op Assets
= Value of Firm
- Value of Debt
= Value of Equity

Discount at
WACC = Cost of Equity (Equity/(Debt + Equity)) + Cost of Debt (Debt/(Debt+ Equity))

Cost of Equity

Cost of Debt
(Riskfree Rate + Default Spread) (1-t)

Weights
Based on Market Value

Riskfree Rate:
- No default risk
- No reinvestment risk
- In same currency and in same terms (real or nominal as cash flows)

Beta
- Measures market risk

Risk Premium
- Premium for average risk investment

Type of Business
Operating Leverage
Financial Leverage
Base Equity Premium
Country Risk Premium
Titan Cements: Status Quo

Current Cashflow to Firm

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIT(1-t)</td>
<td>€141</td>
</tr>
<tr>
<td>Nt CpX</td>
<td>€419</td>
</tr>
<tr>
<td>Chg WC</td>
<td>€77</td>
</tr>
<tr>
<td>FCFF</td>
<td>€-355</td>
</tr>
<tr>
<td>Reinvestment Rate</td>
<td>35.2%</td>
</tr>
</tbody>
</table>

Expected Growth in EBIT (1-t)

Average Reinvestment Rate = 64.22%

Return on Capital 16.62%

Stable Growth
- g = 4%
- Beta = 1.00
- Country Premium = 0%
- Cost of capital = 8.08%
- ROC = 8.08%
- Tax rate = 30%
- Reinvestment Rate = 49.5%

Terminal Value

\[
\text{Term Value} = \frac{113.79}{0.0808 - 0.04} = 2,780
\]

Cost of Equity

9.71%

Cost of Debt

\[
\text{Cost of Debt} = (5.1\% + 0.35\% + 1.8\%)(1 - 0.2449) = 5.47\%
\]

Weights

- E = 79.9%
- D = 20.1%

Riskfree Rate

Euro riskfree rate = 5.1%

Risk Premium

4.70%

Unlevered Beta for Sectors: 0.82

Firm's D/E Ratio: 25%

Mature risk premium 4%

Country Risk Premium 0.70%

Discount at Cost of Capital (WACC)

\[
\text{Discount at Cost of Capital (WACC)} = 9.71\% (0.799) + 5.47\% (0.201) = 8.85\%
\]

Firm Value

\[
\text{Firm Value} = \frac{2,084}{2,780} + \frac{113}{2,780} - \frac{382}{2,780} = \frac{1,815}{2,780} - \frac{0}{2,780} = 66.4\%
\]

Value/Share

47.64

Aswath Damodaran
Using the DCF framework, there are four basic ways in which the value of a firm can be enhanced:

- The cash flows from existing assets to the firm can be increased, by either
  - increasing after-tax earnings from assets in place or
  - reducing reinvestment needs (net capital expenditures or working capital)
- The expected growth rate in these cash flows can be increased by either
  - Increasing the rate of reinvestment in the firm
  - Improving the return on capital on those reinvestments
- The length of the high growth period can be extended to allow for more years of high growth.
- The cost of capital can be reduced by
  - Reducing the operating risk in investments/assets
  - Changing the financial mix
  - Changing the financing composition
A Basic Proposition

For an action to affect the value of the firm, it has to

- Affect current cash flows (or)
- Affect future growth (or)
- Affect the length of the high growth period (or)
- Affect the discount rate (cost of capital)

Proposition 1: Actions that do not affect current cash flows, future growth, the length of the high growth period or the discount rate cannot affect value.
Value-Neutral Actions

- Stock splits and stock dividends change the number of units of equity in a firm, but cannot affect firm value since they do not affect cash flows, growth or risk.
- Accounting decisions that affect reported earnings but not cash flows should have no effect on value.
  - Changing inventory valuation methods from FIFO to LIFO or vice versa in financial reports but not for tax purposes
  - Changing the depreciation method used in financial reports (but not the tax books) from accelerated to straight line depreciation
  - Major non-cash restructuring charges that reduce reported earnings but are not tax deductible
  - Using pooling instead of purchase in acquisitions cannot change the value of a target firm.
- Decisions that create new securities on the existing assets of the firm (without altering the financial mix) such as tracking stock cannot create value, though they might affect perceptions and hence the price.
I. Ways of Increasing Cash Flows from Assets in Place

More efficient operations and cost cutting: Higher Margins

Divest assets that have negative EBIT

Reduce tax rate
- moving income to lower tax locales
- transfer pricing
- risk management

Revenues
* Operating Margin
  = EBIT
- Tax Rate * EBIT
  = EBIT (1-t)
+ Depreciation
- Capital Expenditures
- Chg in Working Capital
  = FCFF

Live off past over-investment
Better inventory management and tighter credit policies
II. Value Enhancement through Growth

- Reinvest more in projects
- Increase operating margins
- Do acquisitions
- Increase capital turnover ratio

Reinvestment Rate = Return on Capital

= Expected Growth Rate
III. Building Competitive Advantages: Increase length of the growth period

*Increase length of growth period*

- Build on existing competitive advantages
- Find new competitive advantages

  - Brand name
  - Legal Protection
  - Switching Costs
  - Cost advantages
3.1: The Brand Name Advantage

- Some firms are able to sustain above-normal returns and growth because they have well-recognized brand names that allow them to charge higher prices than their competitors and/or sell more than their competitors.

- Firms that are able to improve their brand name value over time can increase both their growth rate and the period over which they can expect to grow at rates above the stable growth rate, thus increasing value.
## Illustration: Valuing a brand name: Coca Cola

<table>
<thead>
<tr>
<th>Metric</th>
<th>Coca Cola</th>
<th>Generic Cola Company</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AT Operating Margin</strong></td>
<td>18.56%</td>
<td>7.50%</td>
</tr>
<tr>
<td>Sales/BV of Capital</td>
<td>1.67</td>
<td>1.67</td>
</tr>
<tr>
<td>ROC</td>
<td>31.02%</td>
<td>12.53%</td>
</tr>
<tr>
<td>Reinvestment Rate</td>
<td>65.00% (19.35%)</td>
<td>65.00% (47.90%)</td>
</tr>
<tr>
<td>Expected Growth</td>
<td>20.16%</td>
<td>8.15%</td>
</tr>
<tr>
<td>Length</td>
<td>10 years</td>
<td>10 yea</td>
</tr>
<tr>
<td>Cost of Equity</td>
<td>12.33%</td>
<td>12.33%</td>
</tr>
<tr>
<td>E/(D+E)</td>
<td>97.65%</td>
<td>97.65%</td>
</tr>
<tr>
<td>AT Cost of Debt</td>
<td>4.16%</td>
<td>4.16%</td>
</tr>
<tr>
<td>D/(D+E)</td>
<td>2.35%</td>
<td>2.35%</td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>12.13%</td>
<td>12.13%</td>
</tr>
<tr>
<td>Value</td>
<td>$115</td>
<td>$13</td>
</tr>
</tbody>
</table>
3.2: Patents and Legal Protection

- The most complete protection that a firm can have from competitive pressure is to own a patent, copyright or some other kind of legal protection allowing it to be the sole producer for an extended period.

- Note that patents only provide partial protection, since they cannot protect a firm against a competitive product that meets the same need but is not covered by the patent protection.

- Licenses and government-sanctioned monopolies also provide protection against competition. They may, however, come with restrictions on excess returns; utilities in the United States, for instance, are monopolies but are regulated when it comes to price increases and returns.
3.3: Switching Costs

- Another potential barrier to entry is the cost associated with switching from one firm’s products to another.
- The greater the switching costs, the more difficult it is for competitors to come in and compete away excess returns.
- Firms that devise ways to increase the cost of switching from their products to competitors’ products, while reducing the costs of switching from competitor products to their own will be able to increase their expected length of growth.
3.4: Cost Advantages

There are a number of ways in which firms can establish a cost advantage over their competitors, and use this cost advantage as a barrier to entry:

- In businesses, where scale can be used to reduce costs, economies of scale can give bigger firms advantages over smaller firms
- Owning or having exclusive rights to a distribution system can provide firms with a cost advantage over its competitors.
- Owning or having the rights to extract a natural resource which is in restricted supply (The undeveloped reserves of an oil or mining company, for instance)

These cost advantages will show up in valuation in one of two ways:

- The firm may charge the same price as its competitors, but have a much higher operating margin.
- The firm may charge lower prices than its competitors and have a much higher capital turnover ratio.
Gauging Barriers to Entry

- Which of the following barriers to entry are most likely to work for Titan Cement?
  - Brand Name
  - Patents and Legal Protection
  - Switching Costs
  - Cost Advantages
- What about for Amazon.com?
  - Brand Name
  - Patents and Legal Protection
  - Switching Costs
  - Cost Advantages
Reducing Cost of Capital

Cost of Equity \( \frac{E}{(D+E)} \) + Pre-tax Cost of Debt \( \frac{D}{(D+E)} \) = Cost of Capital

- Change financing mix
- Match debt to assets, reducing default risk
  - Swaps
  - Derivatives
  - Hybrids
- Make product or service less discretionary to customers
- More effective advertising
- Changing product characteristics
- Reduce operating leverage
- Outsourcing
- Flexible wage contracts & cost structure
Titan: Optimal Capital Structure

<table>
<thead>
<tr>
<th>Debt Ratio</th>
<th>Beta</th>
<th>Cost of Equity</th>
<th>Bond Rating</th>
<th>Interest rate on debt</th>
<th>Tax Rate</th>
<th>Cost of Debt (after-tax)</th>
<th>WACC</th>
<th>Firm Value (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>0.83</td>
<td>9.02%</td>
<td>AAA</td>
<td>5.85%</td>
<td>30.00%</td>
<td>9.02%</td>
<td>9.02%</td>
<td>$1,805</td>
</tr>
<tr>
<td>10%</td>
<td>0.90</td>
<td>9.32%</td>
<td>AAA</td>
<td>5.85%</td>
<td>30.00%</td>
<td>8.80%</td>
<td>8.80%</td>
<td>$1,890</td>
</tr>
<tr>
<td>20%</td>
<td>0.98</td>
<td>9.70%</td>
<td>A</td>
<td>6.90%</td>
<td>30.00%</td>
<td>8.73%</td>
<td>8.73%</td>
<td>$1,920</td>
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<tr>
<td>30%</td>
<td>1.08</td>
<td>10.19%</td>
<td>A-</td>
<td>7.10%</td>
<td>30.00%</td>
<td>8.62%</td>
<td>8.62%</td>
<td>$1,964</td>
</tr>
<tr>
<td>40%</td>
<td>1.22</td>
<td>10.84%</td>
<td>B</td>
<td>11.60%</td>
<td>30.00%</td>
<td>9.75%</td>
<td>9.75%</td>
<td>$1,564</td>
</tr>
<tr>
<td>50%</td>
<td>1.42</td>
<td>11.76%</td>
<td>CCC</td>
<td>15.10%</td>
<td>30.00%</td>
<td>11.16%</td>
<td>11.16%</td>
<td>$1,242</td>
</tr>
<tr>
<td>60%</td>
<td>1.71</td>
<td>13.15%</td>
<td>CC</td>
<td>16.60%</td>
<td>29.55%</td>
<td>12.28%</td>
<td>12.28%</td>
<td>$1,065</td>
</tr>
<tr>
<td>70%</td>
<td>2.28</td>
<td>15.84%</td>
<td>CC</td>
<td>16.60%</td>
<td>25.33%</td>
<td>13.43%</td>
<td>13.43%</td>
<td>$926</td>
</tr>
<tr>
<td>80%</td>
<td>3.48</td>
<td>21.44%</td>
<td>C</td>
<td>17.80%</td>
<td>20.67%</td>
<td>15.58%</td>
<td>15.58%</td>
<td>$740</td>
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<tr>
<td>90%</td>
<td>6.95</td>
<td>37.78%</td>
<td>C</td>
<td>17.80%</td>
<td>18.37%</td>
<td>16.85%</td>
<td>16.85%</td>
<td>$659</td>
</tr>
</tbody>
</table>
Titan Cements: Restructured

Current Cashflow to Firm

- EBIT(1-t): 141
- Nt CpX: 419
- Chg WC: 77
= FCFF: -355
Reinvestment Rate = 352%

Expected Growth in EBIT (1-t)

\[0.6422 \times 0.18 = 0.1511\]
15.11%

Stable Growth
\(g = 4\%\); Beta = 1.00; Country Premium = 0%; Cost of capital = 8.08%; ROC = 8.08%; Tax rate = 30%
Reinvestment Rate = 49.5%

Return on Capital
18%

Terminal Value
\[\frac{166.09}{0.0808 - 0.04} = 4,053\]

Discount at Cost of Capital (WACC)
10.22% (70% E) + 5.62% (30% D) = 8.84%

Firm Value: 2,394
+ Cash: 113
- Debt: 382
= Equity: 2,127
- Options: 0
Value/Share: 55.85

Riskfree Rate
Real riskfree rate = 5.1%

Cost of Equity
10.22%

Cost of Debt
\((5.1\% + 35\% + 2\%) \times (1 - 0.2449) = 5.62\%\)

Weights
\(E = 70\%\ D = 30\%\)

Unlevered Beta for Sectors: 0.80

Beta
1.09

Risk Premium
4.70%

Mature risk premium
4%

Country Risk Premium
0.70%
The Value of Control?

- If the value of a firm run optimally is significantly higher than the value of the firm with the status quo (or incumbent management), you can write the value that you should be willing to pay as:

\[ \text{Value of control} = \text{Value of firm optimally run} - \text{Value of firm with status quo} \]

- **Implications:**
  - The value of control is greatest at poorly run firms.
  - Voting shares in poorly run firms should trade at a premium on non-voting shares if the votes associated with the shares will give you a chance to have a say in a hostile acquisition.
  - When valuing private firms, your estimate of value will vary depending upon whether you gain control of the firm. For example, 49% of a private firm may be worth less than 51% of the same firm.
    - 49% stake = 49% of status quo value
    - 51% stake = 51% of optimal value
Alternative Approaches to Value Enhancement

- Maximize a variable that is correlated with the value of the firm. There are several choices for such a variable. It could be
  - an accounting variable, such as earnings or return on investment
  - a marketing variable, such as market share
  - a cash flow variable, such as cash flow return on investment (CFROI)
  - a risk-adjusted cash flow variable, such as Economic Value Added (EVA)

- The advantages of using these variables are that they
  - Are often simpler and easier to use than DCF value.

- The disadvantage is that the
  - Simplicity comes at a cost; these variables are not perfectly correlated with DCF value.
The Economic Value Added (EVA) is a measure of surplus value created on an investment.

- Define the return on capital (ROC) to be the “true” cash flow return on capital earned on an investment.
- Define the cost of capital as the weighted average of the costs of the different financing instruments used to finance the investment.

\[
EVA = (\text{Return on Capital} - \text{Cost of Capital}) \times \text{Capital Invested in Project}
\]

The CFROI is a measure of the cash flow return made on capital

\[
CFROI = \frac{\text{(Adjusted EBIT (1-t) + Depreciation & Other Non-cash Charges)}}{\text{Capital Invested}}
\]
In Practice: Measuring EVA

- **Capital Invested**: Many firms use the book value of capital invested as their measure of capital invested. To the degree that book value reflects accounting choices made over time, this may not be true. In addition, the book capital may not reflect the value of intangible assets such as research and development.

- **Operating Income**: Operating income has to be cleansed of any expenses which are really capital expenses or financing expenses.

- **Cost of capital**: The cost of capital for EVA purposes should be computed based on market values.

- **Bottom line**: If you estimate return on capital and cost of capital correctly in DCF valuation, you can use those numbers to compute EVA.
Estimating Nestle’s EVA in 1995

■ **Return on Capital**
  - After-tax Operating Income = 5665 Million Sfr \((1 - 0.3351)\) = 3767 Million Sfr
  - Capital in Assets in Place 1994 = BV of Equity + BV of Debt
    = 17774 \((4180+7546)\) = 29,500 Million Sfr
  - Return on Capital = \(\frac{3767}{29,500} = 12.77\%\)

■ **Cost of Capital**
  - Cost of Equity = 4.5% + 0.99 \(\times 5.5\%\) = 10%
  - Cost of Debt = 4.75% \((1-0.3351)\) = 3.16%
  - Debt to Capital Ratio (market value) = \(\frac{11726}{68376}\)
  - Cost of Capital = 10% \(\frac{56650}{68376}\) + 3.16% \(\frac{11726}{68376}\) = 8.85%

■ **Economic Value Added in 1995** = \(\left(0.1277 - 0.0885\right) \times 29,500\) Million Sfr = 1154.50 Million Sfr
## EVA Valuation of Nestle

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Term. Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Capital</td>
<td>12.77%</td>
<td>12.77%</td>
<td>12.77%</td>
<td>12.77%</td>
<td>12.77%</td>
<td>12.77%</td>
<td>12.77%</td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
</tr>
<tr>
<td>EBIT(1-t)</td>
<td>3,766.66Fr</td>
<td>4,066.46Fr</td>
<td>4,390.06Fr</td>
<td>4,739.37Fr</td>
<td>5,116.40Fr</td>
<td>5,523.38Fr</td>
<td>5,689.08Fr</td>
</tr>
<tr>
<td>WACC(Capital)</td>
<td>2,612.06Fr</td>
<td>2,819.97Fr</td>
<td>3,044.38Fr</td>
<td>3,286.61Fr</td>
<td>3,548.07Fr</td>
<td>3,830.29Fr</td>
<td>3,945.20Fr</td>
</tr>
<tr>
<td>EVA</td>
<td>1,154.60Fr</td>
<td>1,246.49Fr</td>
<td>1,345.69Fr</td>
<td>1,452.76Fr</td>
<td>1,568.33Fr</td>
<td>1,693.08Fr</td>
<td>1,743.88Fr</td>
</tr>
<tr>
<td>PV of EVA</td>
<td>1,145.10Fr</td>
<td>1,135.67Fr</td>
<td>1,126.30Fr</td>
<td>1,117.00Fr</td>
<td>1,107.76Fr</td>
<td></td>
<td>PV of 1693.08 Fr growing at 3% a year</td>
</tr>
<tr>
<td>PV of EVA =</td>
<td>25,121.24Fr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PV of 29,787.18Fr</td>
</tr>
<tr>
<td>Value of Assets in Place =</td>
<td>29,500.00Fr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Firm =</td>
<td>54,621.24Fr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Debt =</td>
<td>11,726.00Fr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Equity =</td>
<td>42,895.24Fr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value Per Share =</td>
<td>1,088.16Fr</td>
<td></td>
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</tr>
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</table>
### DCF Valuation of Nestle

<table>
<thead>
<tr>
<th>Year</th>
<th>FCFF</th>
<th>Terminal Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-2,348.00Fr</td>
<td>151,113.54Fr</td>
</tr>
<tr>
<td>1</td>
<td>1,532.02Fr</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1,654.38Fr</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1,786.46Fr</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1,929.03Fr</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>4,225.62Fr</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4,313.46Fr</td>
<td></td>
</tr>
<tr>
<td>2053</td>
<td>51,406.74Fr</td>
<td>54,621.24Fr</td>
</tr>
</tbody>
</table>

- **EBIT (1-t)**
  - 0.00Fr
  - 4,066.46Fr
  - 4,390.06Fr
  - 4,739.37Fr
  - 5,116.40Fr
  - 5,523.38Fr
  - 5,689.08Fr

- **+ Deprec’n**
  - 2,305.00Fr
  - 2,488.02Fr
  - 2,685.58Fr
  - 2,898.83Fr
  - 3,129.00Fr
  - 1,273.99Fr
  - 1,350.42Fr

- **- Cap Ex**
  - 3,898.00Fr
  - 4,207.51Fr
  - 4,541.60Fr
  - 4,902.22Fr
  - 5,291.48Fr
  - 2,154.45Fr
  - 2,283.71Fr

- **- Change in WC**
  - 755.00Fr
  - 814.95Fr
  - 879.66Fr
  - 949.51Fr
  - 1,024.90Fr
  - 417.29Fr
  - 442.33Fr

- **FCFF**
  - -2,348.00Fr
  - 1,532.02Fr
  - 1,654.38Fr
  - 1,786.46Fr
  - 1,929.03Fr
  - 4,225.62Fr
  - 4,313.46Fr

- **PV of FCFF**
  - -2,348.00Fr
  - 1,407.40Fr
  - 1,396.19Fr
  - 1,385.02Fr
  - 1,373.90Fr
  - 51,406.74Fr

- **WACC**
  - 8.85%
  - 8.85%
  - 8.85%
  - 8.85%
  - 8.85%
  - 8.85%
  - 8.85%

- **Value of Firm**
  - 54,621.24Fr

- **Value of Debt**
  - 11,726.00Fr

- **Value of Equity**
  - 42,895.24Fr

- **Value Per Share**
  - 1,088.16Fr
In summary ...

- Both EVA and Discounted Cash Flow Valuation should provide us with the same estimate for the value of a firm.
- In their full forms, the information that is required for both approaches is exactly the same - expected cash flows over time and costs of capital over time.
- A policy of maximizing the present value of economic value added over time should be the equivalent of a policy of maximizing firm value.
Year-by-year EVA Changes

- Firms are often evaluated based upon year-to-year changes in EVA rather than the present value of EVA over time.
- The advantage of this comparison is that it is simple and does not require the making of forecasts about future earnings potential.
- Another advantage is that it can be broken down by any unit - person, division etc., as long as one is willing to assign capital and allocate earnings across these same units.
- While it is simpler than DCF valuation, using year-by-year EVA changes comes at a cost. In particular, it is entirely possible that a firm which focuses on increasing EVA on a year-to-year basis may end up being less valuable.
## Year-to-Year EVA Changes: Nestle

<table>
<thead>
<tr>
<th>Term, Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Capital</td>
<td>12.77%</td>
<td>12.77%</td>
<td>12.77%</td>
<td>12.77%</td>
<td>12.77%</td>
<td>12.77%</td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
</tr>
<tr>
<td>EBIT(1-t)</td>
<td>3,766.66Fr</td>
<td>4,066.46Fr</td>
<td>4,390.06Fr</td>
<td>4,739.37Fr</td>
<td>5,116.40Fr</td>
<td>5,523.38Fr</td>
</tr>
<tr>
<td>WACC(Capital)</td>
<td>2,612.06Fr</td>
<td>2,819.97Fr</td>
<td>3,044.38Fr</td>
<td>3,286.61Fr</td>
<td>3,548.07Fr</td>
<td>3,830.29Fr</td>
</tr>
<tr>
<td>EVA</td>
<td>1,154.60Fr</td>
<td>1,246.49Fr</td>
<td>1,345.69Fr</td>
<td>1,452.76Fr</td>
<td>1,568.33Fr</td>
<td>1,693.08Fr</td>
</tr>
<tr>
<td>PV of EVA</td>
<td>1,145.10Fr</td>
<td>1,135.67Fr</td>
<td>1,126.30Fr</td>
<td>1,117.00Fr</td>
<td>1,107.76Fr</td>
<td></td>
</tr>
</tbody>
</table>

\[ PV \text{ of EVA} = 25,121.24Fr \] \[ PV \text{ of EVA} = 29,787.18Fr \] \[ PV \text{ of 590.67 Fr growing at 3% a year} \]

| Value of Assets in Place | 29,500.00Fr |
| Value of Firm | 54,621.24Fr |
| Value of Debt | 11,726.00Fr |
| Value of Equity | 42,895.24Fr |
| Value per Share | 1088.16Fr |
Discussion Issues

- In the above example, Nestle is expected to increase its EVA from 1154.50 Million Sfr in 1995 to 1246 Million Sfr in 1996.
- Assume that you are the CEO of Nestle and that you are offered a deal. If you deliver an EVA greater than 1246 million Sfr, you will receive a very substantial bonus. Can you think of ways in which you can deliver a higher EVA than expected while making the firm less valuable?
When Increasing EVA on year-to-year basis may result in lower Firm Value

If the increase in EVA on a year-to-year basis has been accomplished at the expense of the EVA of future projects. In this case, the gain from the EVA in the current year may be more than offset by the present value of the loss of EVA from the future periods.

- For example, in the Nestle example above assume that the return on capital on year 1 projects increases to 13.27% (from the existing 12.77%), while the cost of capital on these projects stays at 8.85%. If this increase in value does not affect the EVA on future projects, the value of the firm will increase.
- If, however, this increase in EVA in year 1 is accomplished by reducing the return on capital on future projects to 12.27%, the firm value will actually decrease.
## Firm Value and EVA tradeoffs over time

<table>
<thead>
<tr>
<th>Term. Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Capital</td>
<td>12.77%</td>
<td>13.27%</td>
<td>12.27%</td>
<td>12.27%</td>
<td>12.27%</td>
<td>12.27%</td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
<td>8.85%</td>
</tr>
<tr>
<td>EBIT(1-t)</td>
<td>3,766.66Fr</td>
<td>4,078.24Fr</td>
<td>4,389.21Fr</td>
<td>4,724.88Fr</td>
<td>5,087.20Fr</td>
<td>5,478.29Fr</td>
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<tr>
<td>WACC(Capital)</td>
<td>2,612.06Fr</td>
<td>2,819.97Fr</td>
<td>3,044.38Fr</td>
<td>3,286.61Fr</td>
<td>3,548.07Fr</td>
<td>3,830.29Fr</td>
</tr>
<tr>
<td>EVA</td>
<td>1,154.60Fr</td>
<td>1,258.27Fr</td>
<td>1,344.84Fr</td>
<td>1,438.28Fr</td>
<td>1,539.13Fr</td>
<td>1,648.00Fr</td>
</tr>
<tr>
<td>PV of EVA</td>
<td>1,155.92Fr</td>
<td>1,134.95Fr</td>
<td>1,115.07Fr</td>
<td>1,096.20Fr</td>
<td>1,078.27Fr</td>
<td>28,930.98Fr</td>
</tr>
<tr>
<td>PV of EVA =</td>
<td>24,509.62Fr</td>
<td>PV of 590.67 Fr growing at 3% a year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Assets in Place =</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Firm =</td>
<td>54,009.62Fr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Debt =</td>
<td>11,726.00Fr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Equity =</td>
<td>42,283.62Fr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value Per Share =</td>
<td>1,072.64Fr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EVA and Risk

- When the increase in EVA is accompanied by an increase in the cost of capital, either because of higher operational risk or changes in financial leverage, the firm value may decrease even as EVA increases.
  - For instance, in the example above, assume that the spread stays at 3.91% on all future projects but the cost of capital increases to 9.85% for these projects (from 8.85%). The value of the firm will drop.
### Nestle’s Value at a 9.95 % Cost of Capital

<table>
<thead>
<tr>
<th>Term, Year</th>
<th>0</th>
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<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Capital</td>
<td>12.77%</td>
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<td>13.77%</td>
<td>13.77%</td>
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</tr>
<tr>
<td>Cost of Capital</td>
<td>8.85%</td>
<td>9.85%</td>
<td>9.85%</td>
<td>9.85%</td>
<td>9.85%</td>
<td>9.85%</td>
</tr>
<tr>
<td>EBIT(1-t)</td>
<td>3,766.66Fr</td>
<td>4,089.94Fr</td>
<td>4,438.89Fr</td>
<td>4,815.55Fr</td>
<td>5,222.11Fr</td>
<td>5,660.96Fr</td>
</tr>
<tr>
<td>WACC(Capital)</td>
<td>2,612.06Fr</td>
<td>2,843.45Fr</td>
<td>3,093.20Fr</td>
<td>3,362.79Fr</td>
<td>3,653.78Fr</td>
<td>3,967.88Fr</td>
</tr>
<tr>
<td>EVA</td>
<td>1,154.60Fr</td>
<td>1,246.49Fr</td>
<td>1,345.69Fr</td>
<td>1,452.76Fr</td>
<td>1,568.33Fr</td>
<td>1,693.08Fr</td>
</tr>
<tr>
<td>PV of EVA</td>
<td>1,134.68Fr</td>
<td>1,115.09Fr</td>
<td>1,095.82Fr</td>
<td>1,076.88Fr</td>
<td>1,058.25Fr</td>
<td>21,101.04Fr</td>
</tr>
</tbody>
</table>

\[
\text{PV of EVA} = 18,669.84Fr
\]

\[
\text{PV of EVA} = \text{PV of 590.67 Fr growing at 3\% a year}
\]

<table>
<thead>
<tr>
<th>Value of Assets in Place</th>
<th>29,500.00Fr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of Firm</td>
<td>48,169.84Fr</td>
</tr>
<tr>
<td>Value of Debt</td>
<td>11,726.00Fr</td>
</tr>
<tr>
<td>Value of Equity</td>
<td>36,443.84Fr</td>
</tr>
<tr>
<td>Value Per Share</td>
<td>924.50Fr</td>
</tr>
</tbody>
</table>
EVA: The Risk Effect

Nestle: Value Per Share and Cost of Capital

Value Per Share

Cost of Capital

0.00Fr 200.00Fr 400.00Fr 600.00Fr 800.00Fr 1,000.00Fr 1,200.00Fr 1,400.00Fr
7.85% 8.85% 9.85% 10.85% 11.85% 12.85% 13.85% 14.85%
Advantages of EVA

1. EVA is closely related to NPV. It is closest in spirit to corporate finance theory that argues that the value of the firm will increase if you take positive NPV projects.

2. It avoids the problems associated with approaches that focus on percentage spreads - between ROE and Cost of Equity and ROC and Cost of Capital. These approaches may lead firms with high ROE to turn away good projects to avoid lowering their percentage spreads.

3. It makes top managers responsible for a measure that they have more control over - the return on capital and the cost of capital are affected by their decisions - rather than one that they feel they cannot control as well - the market price per share.

4. It is influenced by all of the decisions that managers have to make within a firm - the investment decisions and dividend decisions affect the return on capital and the financing decision affects the WACC.
When focusing on year-to-year EVA changes has least side effects

1. Most or all of the assets of the firm are already in place; i.e., very little or none of the value of the firm is expected to come from future growth.
   - [This minimizes the risk that increases in current EVA come at the expense of future EVA]

2. The leverage is stable and the cost of capital cannot be altered easily by the investment decisions made by the firm.
   - [This minimizes the risk that the higher EVA is accompanied by an increase in the cost of capital]

3. The firm is in a sector where investors anticipate little or not surplus returns; i.e., firms in this sector are expected to earn their cost of capital.
   - [This minimizes the risk that the increase in EVA is less than what the market expected it to be, leading to a drop in the market price.]
When focusing on year-to-year EVA changes can be dangerous

1. High growth firms, where the bulk of the value can be attributed to future growth.

2. Firms where neither the leverage not the risk profile of the firm is stable, and can be changed by actions taken by the firm.

3. Firms where the current market value has imputed in it expectations of significant surplus value or excess return projects in the future.

Note that all of these problems can be avoided if we restate the objective as maximizing the present value of EVA over time. If we do so, however, some of the perceived advantages of EVA - its simplicity and observability - disappear.