Workshop III: Financial Valuation

Agenda

- What is Valuation
- Different types of valuation
- Relative Valuation
- Review of the Time Value of Money
- Risk and the CAPM
- Discounted Cash Flow Of Ross Stores
What is Valuation

- Valuation- is a method of determining the worth of a security
- Security- Any financial asset that promises future cash flows

<table>
<thead>
<tr>
<th>Stocks</th>
<th>Warrants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds</td>
<td>Hybrid Securities</td>
</tr>
<tr>
<td>Options</td>
<td>Swaps</td>
</tr>
<tr>
<td>Currency</td>
<td></td>
</tr>
<tr>
<td>Futures</td>
<td></td>
</tr>
</tbody>
</table>

Different Types of Valuation

- Relative Valuation
- Discounted Cash Flow
- Options Valuation
Relative Valuation

- Comparable analysis of companies
  - Take a set of companies and see which is the best

- Indicators
  - P/E
  - Sales
  - EBITDA
  - Growth

Relative Valuation Example

<table>
<thead>
<tr>
<th></th>
<th>Dell</th>
<th>HP</th>
<th>IBM</th>
<th>Industry</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Profit Margin</td>
<td>6.2%</td>
<td>2.9%</td>
<td>6.4%</td>
<td>3.7%</td>
<td>2.8%</td>
</tr>
<tr>
<td>ROE</td>
<td>43.3%</td>
<td>5.6%</td>
<td>20.4%</td>
<td>17.0%</td>
<td>5.7%</td>
</tr>
<tr>
<td>ROA</td>
<td>14.4%</td>
<td>2.9%</td>
<td>5.6%</td>
<td>7.1%</td>
<td>1.0%</td>
</tr>
<tr>
<td>P/E</td>
<td>38.4%</td>
<td>26.7%</td>
<td>27.7%</td>
<td>57.4%</td>
<td>44.3%</td>
</tr>
<tr>
<td>P/Book</td>
<td>16.2%</td>
<td>1.7%</td>
<td>5.9%</td>
<td>9.5%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>
Relative Valuation Example

<table>
<thead>
<tr>
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<th>HP</th>
<th>IBM</th>
<th>Industry</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ratio</td>
<td>1.04</td>
<td>1.55</td>
<td>1.26</td>
<td>1.39</td>
<td>1.45</td>
</tr>
<tr>
<td>Leverage Ratio</td>
<td>3.00</td>
<td>1.94</td>
<td>3.65</td>
<td>2.40</td>
<td>5.96</td>
</tr>
<tr>
<td>Interest Coverage</td>
<td>201.2</td>
<td>14.4</td>
<td>59.7</td>
<td>165.7</td>
<td>2.1</td>
</tr>
<tr>
<td>12-Month Revenue Growth</td>
<td>19.1%</td>
<td>44.2%</td>
<td>4.6%</td>
<td>13.4%</td>
<td>7.6%</td>
</tr>
<tr>
<td>12-Month EPS Growth</td>
<td>31.9%</td>
<td>-</td>
<td>11.6%</td>
<td>138.1%</td>
<td>7.6%</td>
</tr>
</tbody>
</table>

Review of the Time Value of Money

- Money received a year from now is worth less today
- Example: Rahat is guaranteed to receive $100,000 a year from now. However, he is impatient and wants the money today! (Interest Rates are at 5%)
  - He makes a deal with his friend Martha who agrees to pay him upfront.
  - Martha pays Rahat $95,238 today
Example Continued

- Martha only pays Rahat $95,238 because Rahat can invest that money risk free and get $100,000 from a guaranteed 5% return on what Martha pays him today
  \[ 95,238 \times (1.05) = 100,000 \]
  \[ 100,000 \div (1.05) = 95,238 \]

Martha receives Rahat’s $100,000 a year from today

Other Time Value of Money Equations

- Present Value = Future Value/(1+r)^n
- $100,000 received a year from now is worth $95,238 today
  \[ 100,000 \div (1.05)^1 \]
- $100,000 received two years from now is worth $90,702 today
  \[ 100,000 \div (1.05)^2 \]
- $100,000 received three years from now is worth $86,384 today
  \[ 100,000 \div (1.05)^3 \]
- Total Present Value of Cash Flows = $272,324
Present Value of a Perpetuity

- Perpetuities are financial assets that pay a specific amount of cash forever
- $\text{PV of a perpetuity} = \frac{\text{Payment}}{(\text{Rate} \ - \ \text{Growth})}$

**EXAMPLE**
- E.G. Jared receives $100,000 a year from now and a growing amount thereafter until the end of time. (Rate of investment = 5% Rate of growth = 4%)
- That amount is worth $10,000,000 today
- $\frac{100,000}{(.05 \ - \ .04)}$

Risk and the Time Value of Money

- Risk plays a key role in determining the present value of future cash flows
- Rahat is 90% certain that he will be receiving $100,000 a year from now, but he is impatient and wants to receive money today. (Interest Rates are at 5%)
- However, there is the risk that he would not get the $100,000 a year from today
Example Continued

- Considering the risks, Martha agrees to pay Rahat upfront. However she pays Rahat $86,383 instead of $95,238.
- $100,000/(1.05) = 95,238
- $100,000/(1.07) = 86.383
- Martha requires an additional 2% above the risk free rate of 5% to compel her to give Rahat the money given the risks—this additional 2% is called the risk premium

Risk and Return

- The higher the Risk, the higher the risk premium and rate of return
- Martha required a 7% return given the risks she faced
- The CAPM (Capital Asset Pricing Model) is used to calculate the required rate of return given a certain level of risk
Assume that the previous example was a business transaction and that Rahat owns a publicly traded company called Buy Rahat Food Corp (BRFC)

- Required Rate of Return = Risk Free + Risk Premium*Beta
- Risk Free = Rate of Return on a Risk Free Asset (T-bill)
- Risk Premium = Average Return the stock market exceeds the risk free rate by
- Beta = The expected return on a stock when the market increases by 1%

(FCFE) Discounted Cash Flow

- Measures the firm's expected future cash flows that can be distributed to shareholders as dividends or as money to reinvest in order to provide future capital gains.
- A firm is worth the cash flow its assets can generate
FCFE Ross Stores

Step 1 (Predict Cash flows)

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$174,073</td>
<td>$185,547</td>
<td>$197,779</td>
<td>$210,816</td>
<td>$224,713</td>
<td></td>
</tr>
</tbody>
</table>

Cash Flows Grow at 6% during growth stage (Years 0 to 4) and then 4% every year after.

Step 2 (Determine Risk)

- Risk Free: 4.18%
- Return on S&P 500: 7%
- Beta (Yahoo): .904

\[ 4.18 + .904 \times (7 - 4.198) \]

\[ \text{Cost of Equity} = 6.73\% \]
How to Forecast Cashflows (FCFE)

- Step 1 (Look at Net Income on a company’s Income Statement)
- Net Income does not reflect the amount of cash available for shareholders. Have to account for that with the following equation.

\[
FCFE = \text{Net Income} - \text{Depreciation} - \frac{\text{Change in Current Assets}}{1 + \text{g}} + \frac{\text{Change in Current Liabilities}}{(1 + \text{g})^2} - \frac{\text{Capital Expenditures}}{(1 + \text{g})^3}
\]

\(g\) being the growth rate.
How to Forecast Cash flows (FCFE)

- Step 2 (Forecast NI and FCFE Growth)
- Return on Equity Can be used to predict growth of net income
- Equity = Contributed Capital + Earnings
- When a company earns money, its equity grows and provides a return on its equity
- ROST ROE = 32.96%

How to Forecast Cash flows (FCFE)

- Only a certain percentage of net income is actually Free Cash Flow to Equity
- We are concerned with the growth in FCFE
- Growth in FCFE = Percentage of NI that is FCFE * ROE
- Reinvestment Rate = 20%
- FCFE Growth = 6%