Valuation

Nick Palmer
Outline for Today

• The Misconceptions of Valuation
• What is Value?
• How is it created?
• How do we measure it?
Misconceptions on Valuation

• Myth 1: A valuation is an objective search for “true” value
  – All valuations are biased. The only questions are how much and in which direction.
  – The direction and magnitude of the bias in your valuation is directly proportional to who pays you and how much you are paid.

• Myth 2.: A good valuation provides a precise estimate of value
  – There are no precise valuations

• Myth 3: . The more quantitative a model, the better the valuation
  – One’s understanding of a valuation model is inversely proportional to the number of inputs required for the model.
  – Simpler valuation models do much better than complex ones.
  – THE MOST IMPORTANT THING IS YOUR ASSUMPTIONS
What is Valuation

- Valuation is not a number, it is a story
- The only way to accurately value a company is to know everything about it from how it generates revenue, what its cost structure looks like, and even how it pays its employees
Intrinsic Value

• “Price is what you pay, value is what you get.” – Warren Buffett

• “On the short run, the market is like a voting machine, but in the long run, the market is like a weighing machine--assessing the substance of a company.” – Benjamin Graham
How Firms can Increase Their Value

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
The Basics

• 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.
A key assumption in all discounted cash flow models is the period of high growth, and the pattern of growth during that period. In general, we can make one of three assumptions:

- There is no high growth, in which case the firm is already in stable growth.
- There will be high growth for a period, at the end of which the growth rate will drop to the stable growth rate (2-stage).
- There will be high growth for a period, at the end of which the growth rate will decline gradually to a stable growth rate (3-stage).
Determinants of Growth Patterns

• Size of the firm
  – Success usually makes a firm larger. As firms become larger, it becomes much more difficult for them to maintain high growth rates

• Current growth rate
  – While past growth is not always a reliable indicator of future growth, there is a correlation between current growth and future growth. Thus, a firm growing at 30% currently probably has higher growth and a longer expected growth period than one growing 10% a year now.

• Barriers to entry and differential advantages
  – Ultimately, high growth comes from high project returns, which, in turn, comes from barriers to entry and differential advantages.
  – The question of how long growth will last and how high it will be can therefore be framed as a question about what the barriers to entry are, how long they will stay up and how strong they will remain.

• The reinvestment rate of the firm should reflect the expected growth rate and the firm’s return on capital
  – Reinvestment Rate = Expected Growth Rate / Return on Capital
Types of Valuation

• Discounted Cash Flow
• Comparable Valuation
• Precedent Transaction
• Liquidation
• Contingent Claims
• Some of the Parts
DCF

Value of Firm = \sum_{t=1}^{n} \frac{CF \text{ to Firm}_t}{(1 + WACC)_t}
FCF

- FCF represents the **cash** that a company is able to generate after spending the money required to maintain or expand its asset base.
- Basically, it is what can be used to repay debt and return capital to shareholders.
- \[
    \text{FCFF} = \text{NOPAT} + D\&A + SBC - \Delta NWC - \text{CapEx}
\]
- \[
    \text{FCFE} = \text{Net Income} + D\&A + SBC - \Delta NWC - \text{CapEx}
\]
Discount Rate

Preferably, a bottom-up beta, based upon other firms in the business, and firm's own financial leverage.

Cost of Equity = Riskfree Rate + Beta * (Risk Premium)

- Has to be in the same currency as cash flows, and defined in same terms (real or nominal) as the cash flows.

Historical Premium:
1. Mature Equity Market Premium: Average premium earned by stocks over T.Bonds in U.S.
2. Country risk premium = Country Default Spread* (αEquity/αCountry bond)

Implied Premium: Based on how equity market is priced today and a simple valuation model.

Cost of borrowing should be based upon:
(1) synthetic or actual bond rating
(2) default spread
Cost of Borrowing = Riskfree rate + Default spread

Marginal tax rate, reflecting tax benefits of debt.

Cost of Capital = Cost of Equity (Equity/(Debt + Equity)) + Cost of Borrowing (1-t) (Debt/(Debt + Equity))

Cost of equity based upon bottom-up beta.

Weights should be market value weights.
Problems with the DCF and how to address them

• Terminal Growth Rate
  – Use multiple stages
  – Use an exit multiple

• The Discount Rate
  – Use bottom up beta
  – Don’t use WACC
Comparable Valuation

• Comparable valuation is all about comparing your firm to its peers to see if it is reasonably valued by the market
It is all about your comp group

• Similar revenue drivers
• Similar geography
• Similar size
### Comparables Table

<table>
<thead>
<tr>
<th>Company</th>
<th>Ticker</th>
<th>Market Cap (B)</th>
<th>P/E</th>
<th>EV/EBITDA</th>
<th>P/Cashflow</th>
<th>RoA</th>
<th>RoE</th>
<th>Op Margin</th>
<th>Debt-EBITDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dollar General Corp.</td>
<td>DG</td>
<td>19.76</td>
<td>16.27</td>
<td>9.4</td>
<td>11.83</td>
<td>10.69%</td>
<td>22.63%</td>
<td>9.25%</td>
<td>1.24</td>
</tr>
<tr>
<td>Dollar Tree, Inc.</td>
<td>DLTR</td>
<td>16.55</td>
<td>19.18</td>
<td>10.52</td>
<td>10.95</td>
<td>5.39%</td>
<td>16.81%</td>
<td>8.24%</td>
<td>2.68</td>
</tr>
<tr>
<td>Ollie’s Discount</td>
<td>OLLI</td>
<td>2.69</td>
<td>40.19</td>
<td>21.41</td>
<td>35.91</td>
<td>6.75%</td>
<td>10.61%</td>
<td>11.74%</td>
<td>1.07</td>
</tr>
<tr>
<td>Big Lots, Inc.</td>
<td>BIG</td>
<td>2.13</td>
<td>13.16</td>
<td>6.06</td>
<td>7.08</td>
<td>10.33%</td>
<td>26.01%</td>
<td>5.04%</td>
<td>0.30</td>
</tr>
<tr>
<td>Dollarama, Inc.</td>
<td>DLMAF</td>
<td>10.73</td>
<td>31.94</td>
<td>20.17</td>
<td>24.45</td>
<td>24.87%</td>
<td>241.54%</td>
<td>21.96%</td>
<td>1.92</td>
</tr>
<tr>
<td>Wal-Mart Stores, Inc.</td>
<td>WMT</td>
<td>228.13</td>
<td>17.16</td>
<td>8.39</td>
<td>7.45</td>
<td>6.82%</td>
<td>18.27%</td>
<td>4.54%</td>
<td>1.44</td>
</tr>
<tr>
<td>Costco Wholesale Corp</td>
<td>COST</td>
<td>70.14</td>
<td>27.72</td>
<td>15.03</td>
<td>16.82</td>
<td>7.30%</td>
<td>23.72%</td>
<td>3.12%</td>
<td>0.77</td>
</tr>
<tr>
<td><strong>AVERAGE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Types of Multiples

• The numerator has to match up with the denominator
  – Flows to equity holders are under equity or price
  – Flows to all investors are under enterprise value
Common Multiples

• **Equity Value Multiples**
  – P/E, P/B

• **Enterprise Value Multiples**
  – EV/Sales, EV/EBIT, EV/EBITDA, EV/EBITA
### Example

#### P/E

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2018 Net Income</td>
<td>1,525</td>
</tr>
<tr>
<td>P/E Multiple</td>
<td>16.5</td>
</tr>
<tr>
<td>Shares Outstanding</td>
<td>272,000,000</td>
</tr>
<tr>
<td>Implied Equity Value</td>
<td>25,155</td>
</tr>
<tr>
<td>Current Share Price</td>
<td>79.93</td>
</tr>
<tr>
<td>Implied Share Price</td>
<td>92.48</td>
</tr>
<tr>
<td>Upside/Downside</td>
<td>15.7%</td>
</tr>
</tbody>
</table>

#### EV/EBITDA

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2018 EBITDA</td>
<td>2,964</td>
</tr>
<tr>
<td>EV/EBITDA Multiple</td>
<td>9.5</td>
</tr>
<tr>
<td>Shares Outstanding</td>
<td>272,000,000</td>
</tr>
<tr>
<td>Implied Enterprise Value</td>
<td>28,156</td>
</tr>
<tr>
<td>Plus: Cash</td>
<td>1,213</td>
</tr>
<tr>
<td>Less: Debt</td>
<td>3,212</td>
</tr>
<tr>
<td>Implied Equity Value</td>
<td>26,158</td>
</tr>
<tr>
<td>Current Share Price</td>
<td>79.93</td>
</tr>
<tr>
<td>Implied Share Price</td>
<td>96.17</td>
</tr>
<tr>
<td>Upside/Downside</td>
<td>20.3%</td>
</tr>
</tbody>
</table>

#### Return Sensitivity - P/E Valuation

<table>
<thead>
<tr>
<th>P/E</th>
<th>1,200</th>
<th>1,400</th>
<th>1,600</th>
<th>1,800</th>
<th>2,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.5</td>
<td>63.97</td>
<td>74.63</td>
<td>85.29</td>
<td>95.96</td>
<td>106.62</td>
</tr>
<tr>
<td>15.5</td>
<td>68.38</td>
<td>79.78</td>
<td>91.18</td>
<td>102.57</td>
<td>113.97</td>
</tr>
<tr>
<td>16.5</td>
<td>72.79</td>
<td>84.93</td>
<td>97.06</td>
<td>109.19</td>
<td>121.32</td>
</tr>
<tr>
<td>17.5</td>
<td>77.21</td>
<td>90.07</td>
<td>102.94</td>
<td>115.81</td>
<td>128.68</td>
</tr>
<tr>
<td>19</td>
<td>81.62</td>
<td>95.22</td>
<td>108.82</td>
<td>122.43</td>
<td>136.03</td>
</tr>
</tbody>
</table>

#### Return Sensitivity - EV/EBITDA Valuation

<table>
<thead>
<tr>
<th>EV/EBITDA</th>
<th>2,600</th>
<th>2,800</th>
<th>3,000</th>
<th>3,200</th>
<th>3,400</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5</td>
<td>64.34</td>
<td>69.86</td>
<td>75.37</td>
<td>80.89</td>
<td>86.40</td>
</tr>
<tr>
<td>8.5</td>
<td>73.90</td>
<td>80.15</td>
<td>86.40</td>
<td>92.65</td>
<td>98.90</td>
</tr>
<tr>
<td>9.5</td>
<td>83.46</td>
<td>90.45</td>
<td>97.43</td>
<td>104.42</td>
<td>111.40</td>
</tr>
<tr>
<td>10.5</td>
<td>93.02</td>
<td>100.74</td>
<td>108.46</td>
<td>116.18</td>
<td>123.90</td>
</tr>
<tr>
<td>11.5</td>
<td>102.58</td>
<td>111.04</td>
<td>119.49</td>
<td>127.95</td>
<td>136.40</td>
</tr>
</tbody>
</table>

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Unusual Multiples

• Technology (Internet): EV / Unique Visitors, EV / Page Views
• Retail / Airlines: EV / EBITDAR (Earnings Before Interest, Taxes, Depreciation, Amortization & Rent)
• Energy: P / MCFE, P / MCFE / D (MCFE = 1 Million Cubic Foot Equivalent, MCFE/D = MCFE per Day), P / NAV (Share Price / Net Asset Value)
• Real Estate Investment Trusts (REITs): Price / FFO, Price / AFFO (Funds From Operations, Adjusted Funds From Operations)
How do multiple interact?

• Look to the board
Sum of the Parts

• This is used when a firm is composed of many different types of business
  – Each part of the business provides different value
  – Each part has a different comp group
  – Each part might need to be valued in a different way
### Example

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revenue</td>
</tr>
<tr>
<td><strong>Cable Segment</strong></td>
<td>50,048</td>
</tr>
<tr>
<td><strong>NBCUniversal Segment</strong></td>
<td>27,899</td>
</tr>
<tr>
<td><strong>Theme Parks</strong></td>
<td>5,553</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>83,500</td>
</tr>
<tr>
<td><strong>Central Cost</strong></td>
<td>1,205</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82,295</td>
</tr>
</tbody>
</table>

Less: Debt

61,046

Plus: Existing Cash

6,269

**Equity Value**

211,950

Shares Outstanding

4,782

Value Per Share

$44.32
Questions?