Uber: Possible, Plausible and Probable

Uber (My narrative)

Possible
- Car ownership market
  - Option value

Plausible
- Suburban car service & rental market
  - Higher growth rate

Probable
- Urban taxi market
  - In Total Market size, Revenues & Earnings
The Runaway Story: When you want a story to be true...

- With a runaway business story, you usually have three ingredients:
  1. Charismatic, likeable Narrator: The narrator of the business story is someone that you want to see succeed, either because you like the narrator or because he/she will be a good role model.
  2. Telling a story about disrupting a much business, where you dislike the status quo: The status quo in the business that the story is disrupting is dissatisfying (to everyone involved).
  3. With a societal benefit as bonus: And if the story holds, society and humanity will benefit.

- Since you want this story to work out, you stop asking questions, because the answers may put the story at risk.
The Impossible: The Runaway Story

The Story

[Image of a woman]

The Checks (?)

<table>
<thead>
<tr>
<th>Board Member</th>
<th>Designation</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henry Kissinger</td>
<td>Former Secretary of State</td>
<td>92</td>
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<tr>
<td>Bill Perry</td>
<td>Former Secretary of Defense</td>
<td>88</td>
</tr>
<tr>
<td>George Schultz</td>
<td>Former Secretary of State</td>
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</tr>
<tr>
<td>Bill Frist</td>
<td>Former Senate Majority Leader</td>
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<td>Sam Nunn</td>
<td>Former Senator</td>
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<tr>
<td>Gary Roughead</td>
<td>Former Navy Admiral</td>
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<td>James Mattis</td>
<td>Former Marine Corps General</td>
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<tr>
<td>Dick Kovocovich</td>
<td>Former CEO of Wells Fargo</td>
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<td>Riley Bechtel</td>
<td>Former CEO of Bechtel</td>
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<tr>
<td>William Foege</td>
<td>Epidemiologist</td>
<td>79</td>
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<tr>
<td>Elizabeth Holmes</td>
<td>Founder &amp; CEO, Theranos</td>
<td>31</td>
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<tr>
<td>Sunny Balwani</td>
<td>President &amp; COO, Theranos</td>
<td>NA</td>
</tr>
</tbody>
</table>

Money

Companies valued at $1 billion or more by venture-capital firms

Theranos valued at $9 billion

125 COMPANIES

Valuations as of October 2015

Select companies from the chart or table for more detail.
When runaway stories melt down..

The Meltdown Story

Untrustworthy Storyteller
A narrator, who through his/her words or actions has become untrustworthy.

Story at war with numbers
The company's narrative conflicts with its own actions and/or with the actual results/numbers reported by the company.

Bad Business Model
The business model has a fundamental flaw that can affect either future profitability or survival, but the management is either in denial about the flaw or opaque in how it plans to deal with it.

Meltdown Story
Investors, lenders and observers question story, unwilling to accept the company's spin on number, pushing pricing down.
## Tesla: Summary 15-year DCF Analysis (DCF valuation as of mid-year 2013)

<table>
<thead>
<tr>
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<tr>
<td><strong>Unit Volume</strong></td>
<td>24,298</td>
<td>36,883</td>
<td>64,684</td>
<td>86,713</td>
<td>149,896</td>
<td>214,841</td>
<td>291,861</td>
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<td>466,559</td>
<td>550,398</td>
<td>643,850</td>
<td>726,656</td>
<td>820,645</td>
<td>922,481</td>
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<td><strong>% Growth</strong></td>
<td>52%</td>
<td>79%</td>
<td>34%</td>
<td>73%</td>
<td>43%</td>
<td>30%</td>
<td>21%</td>
<td>18%</td>
<td>17%</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
<td>12%</td>
<td>12%</td>
<td>10%</td>
<td>10%</td>
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<tr>
<td><strong>Automotive Revenue Per Unit ($)</strong></td>
<td>93,403</td>
<td>85,342</td>
<td>83,432</td>
<td>78,932</td>
<td>65,465</td>
<td>58,258</td>
<td>56,407</td>
<td>55,555</td>
<td>55,991</td>
<td>56,565</td>
<td>56,969</td>
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<td>58,138</td>
<td>58,605</td>
<td>59,004</td>
<td>59,554</td>
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<tr>
<td><strong>% Growth</strong></td>
<td>-9%</td>
<td>-2%</td>
<td>-5%</td>
<td>-17%</td>
<td>-11%</td>
<td>-3%</td>
<td>-2%</td>
<td>-1%</td>
<td>1%</td>
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<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
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<tr>
<td><strong>Automotive Sales</strong></td>
<td>2,462</td>
<td>3,321</td>
<td>5,613</td>
<td>7,051</td>
<td>10,025</td>
<td>12,720</td>
<td>16,685</td>
<td>21,585</td>
<td>26,347</td>
<td>31,357</td>
<td>36,687</td>
<td>42,022</td>
<td>47,949</td>
<td>54,283</td>
<td>61,221</td>
<td>67,980</td>
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<td><strong>Development Service Sales</strong></td>
<td>16</td>
<td>40</td>
<td>42</td>
<td>44</td>
<td>46</td>
<td>49</td>
<td>54</td>
<td>56</td>
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<td>61</td>
<td>62</td>
<td>63</td>
<td>64</td>
<td>65</td>
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<td><strong>Total Sales</strong></td>
<td>2,478</td>
<td>3,361</td>
<td>5,655</td>
<td>7,095</td>
<td>10,072</td>
<td>12,768</td>
<td>16,736</td>
<td>21,640</td>
<td>26,403</td>
<td>31,416</td>
<td>36,959</td>
<td>42,087</td>
<td>47,017</td>
<td>54,355</td>
<td>61,296</td>
<td>68,059</td>
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<tr>
<td><strong>% Growth</strong></td>
<td>36%</td>
<td>68%</td>
<td>25%</td>
<td>42%</td>
<td>27%</td>
<td>31%</td>
<td>25%</td>
<td>22%</td>
<td>19%</td>
<td>18%</td>
<td>15%</td>
<td>14%</td>
<td>13%</td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
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<tr>
<td><strong>EBITDA</strong></td>
<td>148</td>
<td>417</td>
<td>920</td>
<td>1,042</td>
<td>1,596</td>
<td>2,150</td>
<td>3,138</td>
<td>4,066</td>
<td>4,857</td>
<td>5,723</td>
<td>6,328</td>
<td>7,192</td>
<td>8,144</td>
<td>9,668</td>
<td>10,874</td>
<td>12,099</td>
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<tr>
<td><strong>% Margin</strong></td>
<td>6.0%</td>
<td>12.4%</td>
<td>16.3%</td>
<td>14.7%</td>
<td>15.7%</td>
<td>16.8%</td>
<td>18.7%</td>
<td>16.8%</td>
<td>16.8%</td>
<td>16.2%</td>
<td>17.1%</td>
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<td>17.0%</td>
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<td><strong>D&amp;A</strong></td>
<td>103</td>
<td>158</td>
<td>172</td>
<td>203</td>
<td>301</td>
<td>353</td>
<td>389</td>
<td>537</td>
<td>606</td>
<td>696</td>
<td>811</td>
<td>938</td>
<td>1,088</td>
<td>1,260</td>
<td>1,451</td>
<td>1,661</td>
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<tr>
<td><strong>% of Capex</strong></td>
<td>41%</td>
<td>79%</td>
<td>59%</td>
<td>65%</td>
<td>62%</td>
<td>69%</td>
<td>78%</td>
<td>86%</td>
<td>79%</td>
<td>77%</td>
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<td>76%</td>
<td>76%</td>
<td>76%</td>
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<tr>
<td><strong>EBIT</strong></td>
<td>45</td>
<td>259</td>
<td>746</td>
<td>839</td>
<td>1,285</td>
<td>1,796</td>
<td>2,749</td>
<td>3,529</td>
<td>4,252</td>
<td>5,027</td>
<td>5,517</td>
<td>6,244</td>
<td>7,056</td>
<td>8,429</td>
<td>9,423</td>
<td>10,439</td>
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<tr>
<td><strong>% Margin</strong></td>
<td>1.8%</td>
<td>7.7%</td>
<td>13.3%</td>
<td>11.8%</td>
<td>12.0%</td>
<td>14.1%</td>
<td>16.5%</td>
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<td>16.1%</td>
<td>16.0%</td>
<td>14.9%</td>
<td>14.8%</td>
<td>14.7%</td>
<td>15.5%</td>
<td>15.5%</td>
<td>15.3%</td>
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<tr>
<td><strong>Net Interest Income (Expense)</strong></td>
<td>(27)</td>
<td>(1)</td>
<td>9</td>
<td>33</td>
<td>47</td>
<td>90</td>
<td>108</td>
<td>155</td>
<td>199</td>
<td>278</td>
<td>358</td>
<td>445</td>
<td>542</td>
<td>651</td>
<td>784</td>
<td>934</td>
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<tr>
<td><strong>Other Income</strong></td>
<td>28</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Pretax Income</strong></td>
<td>46</td>
<td>258</td>
<td>758</td>
<td>872</td>
<td>1,332</td>
<td>1,886</td>
<td>2,857</td>
<td>3,884</td>
<td>4,451</td>
<td>5,305</td>
<td>5,875</td>
<td>6,688</td>
<td>7,598</td>
<td>9,080</td>
<td>10,207</td>
<td>11,373</td>
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<tr>
<td><strong>Income Taxes</strong></td>
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<td>2</td>
<td>14</td>
<td>34</td>
<td>86</td>
<td>292</td>
<td>492</td>
<td>861</td>
<td>1,013</td>
<td>1,134</td>
<td>1,317</td>
<td>1,470</td>
<td>1,761</td>
<td>2,028</td>
<td>2,323</td>
<td>2,620</td>
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<tr>
<td><strong>Effective Rate</strong></td>
<td>6%</td>
<td>1%</td>
<td>2%</td>
<td>4%</td>
<td>6%</td>
<td>14%</td>
<td>16%</td>
<td>17%</td>
<td>18%</td>
<td>19%</td>
<td>19%</td>
<td>19%</td>
<td>19%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Net Income</strong></td>
<td>44</td>
<td>256</td>
<td>744</td>
<td>839</td>
<td>1,246</td>
<td>1,624</td>
<td>2,398</td>
<td>3,043</td>
<td>3,433</td>
<td>4,303</td>
<td>4,741</td>
<td>5,372</td>
<td>6,128</td>
<td>7,319</td>
<td>8,179</td>
<td>9,050</td>
</tr>
</tbody>
</table>

### Plus
- After-tax Interest Expense (Income)
- Depreciation of PP&E
- Other

### Less
- Change in Working Capital
- % of Change in Sales
- Capital Expenditures
- % of Sales
- Other

### Unlevered Free Cash Flow
- 78
- 229
- 750
- 863
- 1,186
- 1,702
- 2,343
- 2,884
- 3,314
- 4,113
- 4,472
- 4,959
- 5,456
- 6,597
- 7,315
- 8,005

EBITDA: 12,099
Sales: 68,059
Net Debt (Cash): (280)
Tesla Diluted Shares: 142

Discount Rate High: 13.0%
Discount Rate Low: 9.0%
FY Month of Valuation: 1.0 (Beginning of this Month)
Month of FY End: 12.0 (End of this Month)
Step 4: Connect your narrative to key drivers of value

The Uber narrative (June 2014)

Uber is an urban car service company, competing against taxis & limos in urban areas, but it may expand demand for car service. The global taxi/limo business is $100 billion in 2013, growing at 6% a year.

Total Market

\[ \times \]

Market Share

\[ = \]

Revenues (Sales)

- Operating Expenses

\[ = \]

Operating Income

- Taxes

\[ = \]

After-tax Operating Income

- Reinvestment

\[ = \]

After-tax Cash Flow

Adjusted for time value & risk

Adjusted for operating risk with a discount rate and for failure with a probability of failure.

VALUE OF OPERATING ASSETS

Cash

Uber has cash & capital, but there is a chance of failure. 10% probability of failure.

Uber will have competitive advantages against traditional car companies & against newcomers in this business, but no global networking benefits. Target market share is 10%

Uber will maintain its current model of keeping 20% of car service payments, even in the face of competition, because of its first mover advantages. It will maintain its current low-infrastructure cost model, allowing it to earn high margins. Target pre-tax operating margin is 40%.

Uber has a low capital intensity model, since it does not own cars or other infrastructure, allowing it to maintain a high sales to capital ratio for the sector (5.00)

The company is young and still trying to establish a business model, leading to a high cost of capital (12%) up front. As it grows, it will become safer and its cost of capital will drop to 8%.
Step 4: Value the company (Uber)

**Uber: Intrinsic valuation - June 8, 2014 (in US $)**

- **Global taxi market is $100 billion currently, expected to grow 6% a year for next ten years.**

- **Uber will keep 20% of the gross cab receipts as its revenues.**

- **Uber will pay a tax rate of 30% on its income, increasing to 40% over the next 10 years.**

- **Uber will generate $5 in incremental revenues for every dollar of incremental capital.**

**Uber's market share of this market will increase to 10% over the next 10 years.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Overall Market</th>
<th>Share of Market (gross)</th>
<th>Revenues as percent of gross</th>
<th>Annual Revenue</th>
<th>Operating Margin</th>
<th>Operating Income</th>
<th>Effective Tax Rate</th>
<th>After-Tax Operating Income</th>
<th>Sales/Capital Ratio</th>
<th>Reinvestment</th>
<th>Free Cash Flow to the Firm</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>$106,000</td>
<td>3.63%</td>
<td>20.00%</td>
<td>$769</td>
<td>7.00%</td>
<td>$54</td>
<td>31.6%</td>
<td>$37</td>
<td>5.00</td>
<td>$94</td>
<td>-$57</td>
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<tr>
<td>2</td>
<td>$112,860</td>
<td>5.22%</td>
<td>20.00%</td>
<td>$1,173</td>
<td>10.67%</td>
<td>$125</td>
<td>32%</td>
<td>$85</td>
<td>5.00</td>
<td>$81</td>
<td>$4</td>
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<td>3</td>
<td>$129,102</td>
<td>6.41%</td>
<td>20.00%</td>
<td>$1,528</td>
<td>14.33%</td>
<td>$219</td>
<td>33%</td>
<td>$147</td>
<td>5.00</td>
<td>$71</td>
<td>$76</td>
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<tr>
<td>4</td>
<td>$138,248</td>
<td>7.31%</td>
<td>20.00%</td>
<td>$1,846</td>
<td>18.00%</td>
<td>$332</td>
<td>34%</td>
<td>$219</td>
<td>5.00</td>
<td>$56</td>
<td>$156</td>
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<td>5</td>
<td>$133,823</td>
<td>7.98%</td>
<td>20.00%</td>
<td>$2,137</td>
<td>21.67%</td>
<td>$463</td>
<td>35%</td>
<td>$301</td>
<td>5.00</td>
<td>$58</td>
<td>$243</td>
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<td>6</td>
<td>$141,852</td>
<td>8.49%</td>
<td>20.00%</td>
<td>$2,408</td>
<td>25.33%</td>
<td>$610</td>
<td>36%</td>
<td>$390</td>
<td>5.00</td>
<td>$54</td>
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<td>7</td>
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<td>20.00%</td>
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<td>8</td>
<td>$159,838</td>
<td>9.15%</td>
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<td>9</td>
<td>$168,948</td>
<td>9.36%</td>
<td>20.00%</td>
<td>$3,163</td>
<td>36.33%</td>
<td>$1,149</td>
<td>39%</td>
<td>$701</td>
<td>5.00</td>
<td>$49</td>
<td>$793</td>
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<tr>
<td>10</td>
<td>$179,085</td>
<td>10.00%</td>
<td>20.00%</td>
<td>$3,582</td>
<td>40.00%</td>
<td>$1,433</td>
<td>40%</td>
<td>$860</td>
<td>5.00</td>
<td>$84</td>
<td>$1,260</td>
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</tbody>
</table>

**Stable Growth (after year 10)**
- Expected growth rate = 2.50%
- Cost of capital = 8%
- Return on capital = 25%
- Reinvestment Rate = 2.5%/25% = 10%

**Terminal Value**

\[
\text{Terminal Value} = \frac{793(0.08-0.025)}{(0.08-0.025)} = \$14,418
\]

**Discount back the cash flows (including terminal value) at the cumulated cost of capital.**

- Cost of capital for first 5 years = 12%
- Cost of capital declines from 12% to 8% from years 6 to 10.

**Value of operating assets = $6,595**

- Adjust for probability of failure (10%)
- Expected value = $6,595 x (9) = $5,895

Based on the investment of $1.2 billion made by investors, the imputed value for Uber's operating assets, in June 2014, was $17 billion.
Step 5: Keep the feedback loop

1. **Not just car service company:** Uber is a car company, not just a car service company, and there may be a day when consumers will subscribe to a Uber service, rather than own their own cars. It could also expand into logistics, i.e., moving and transportation businesses.

2. **Not just urban:** Uber can create new demands for car service in parts of the country where taxis are not used (suburbia, small towns).

3. **Global networking benefits:** By linking with technology and credit card companies, Uber can have global networking benefits.
Valuing Bill Gurley’s Uber narrative

<table>
<thead>
<tr>
<th></th>
<th>Uber (Gurley)</th>
<th>Uber (Gurley Mod)</th>
<th>Uber (Damodaran)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Narrative</strong></td>
<td>Uber will expand the car service market substantially, bringing in mass transit users &amp; non-users from the suburbs into the market, and use its networking advantage to gain a dominant market share, while maintaining its revenue slice at 20%.</td>
<td>Uber will expand the car service market substantially, bringing in mass transit users &amp; non-users from the suburbs into the market, and use its networking advantage to gain a dominant market share, while cutting prices and margins (to 10%).</td>
<td>Uber will expand the car service market moderately, primarily in urban environments, and use its competitive advantages to get a significant but not dominant market share and maintain its revenue slice at 20%.</td>
</tr>
<tr>
<td><strong>Total Market</strong></td>
<td>$300 billion, growing at 3% a year</td>
<td>$300 billion, growing at 3% a year</td>
<td>$100 billion, growing at 6% a year</td>
</tr>
<tr>
<td><strong>Market Share</strong></td>
<td>40%</td>
<td>40%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Uber’s revenue slice</strong></td>
<td>20%</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Value for Uber</strong></td>
<td>$53.4 billion + Option value of entering car ownership market ($10 billion+)</td>
<td>$28.7 billion + Option value of entering car ownership market ($6 billion+)</td>
<td>$5.9 billion + Option value of entering car ownership market ($2-3 billion)</td>
</tr>
<tr>
<td>Total Market</td>
<td>Growth Effect</td>
<td>Network Effect</td>
<td>Competitive Advantages</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------</td>
<td>-------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>A2. All car service</td>
<td>B3. Increase market by 50%</td>
<td>C3. Strong local network effects</td>
<td>D3. Semi-strong</td>
</tr>
<tr>
<td>A4. Mobility Services</td>
<td>B1. None</td>
<td>C1. No network effects</td>
<td>D1. None</td>
</tr>
<tr>
<td>A3. Logistics</td>
<td>B1. None</td>
<td>C1. No network effects</td>
<td>D1. None</td>
</tr>
<tr>
<td>A2. All car service</td>
<td>B1. None</td>
<td>C1. No network effects</td>
<td>D1. None</td>
</tr>
</tbody>
</table>
Step 6: Be ready to modify narrative as events unfold

<table>
<thead>
<tr>
<th>Narrative Break/End</th>
<th>Narrative Shift</th>
<th>Narrative Change (Expansion or Contraction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Events, external (legal, political or economic) or internal (management, competitive, default), that can cause the narrative to break or end.</td>
<td>Improvement or deterioration in initial business model, changing market size, market share and/or profitability.</td>
<td>Unexpected entry/success in a new market or unexpected exit/failure in an existing market.</td>
</tr>
<tr>
<td>Your valuation estimates (cash flows, risk, growth &amp; value) are no longer operative</td>
<td>Your valuation estimates will have to be modified to reflect the new data about the company.</td>
<td>Valuation estimates have to be redone with new overall market potential and characteristics.</td>
</tr>
<tr>
<td>Estimate a probability that it will occur &amp; consequences</td>
<td>Monte Carlo simulations or scenario analysis</td>
<td>Real Options</td>
</tr>
</tbody>
</table>
Let the games begin... Time to value companies..

Let’s have some fun!
The equity risk premiums that I have used in the valuations that follow reflect my thinking (and how it has evolved) on the issue.

- **Pre-1998 valuations**: In the valuations prior to 1998, I use a risk premium of 5.5% for mature markets (close to both the historical and the implied premiums then).

- **Between 1998 and Sept 2008**: In the valuations between 1998 and September 2008, I used a risk premium of 4% for mature markets, reflecting my belief that risk premiums in mature markets do not change much and revert back to historical norms (at least for implied premiums).

- **Valuations done in 2009**: After the 2008 crisis and the jump in equity risk premiums to 6.43% in January 2008, I have used a higher equity risk premium (5-6%) for the next 5 years and will assume a reversion back to historical norms (4%) only after year 5.

- **After 2009**: In 2010, I reverted back to a mature market premium of 4.5%, reflecting the drop in equity risk premiums during 2009. In 2011, I used 5%, reflecting again the change in implied premium over the year. In 2012 and 2013, stayed with 6%, reverted to 5% in 2014 and will be using 5.75% in 2015.
The Valuation Set up

- With each company that I value in this next section, I will try to start with a story about the company and use that story to construct a valuation.

- With each valuation, rather than focus on all of the details (which will follow the blueprint already laid out), I will focus on a specific component of the valuation that is unique or different.
Training Wheels On?

Stocks that look like Bonds, Things Change and Market Valuations

Aswath Damodaran
**Training Wheels valuation:**

**Con Ed in August 2008**

**Value per share today:**

\[
\text{Value per share today} = \frac{\text{Expected Dividends per share next year}}{\text{Cost of equity} - \text{Growth rate}}
\]

\[
= \frac{2.32 (1.021)}{0.077 - 0.021} = 42.30
\]

**Growth rate forever = 2.1%**

**Cost of Equity = 4.1% + 0.8 (4.5%) = 7.70%**

**Test 1:** Is the firm paying dividends like a stable growth firm?

- Dividend payout ratio is 73%
- In trailing 12 months, through June 2008
- Earnings per share = $3.17
- Dividends per share = $2.32

**Test 2:** Is the stable growth rate consistent with fundamentals?

- Retention Ratio = 27%
- ROE = Cost of equity = 7.7%
- Expected growth = 2.1%

**On August 12, 2008**

Con Ed was trading at $40.76.

**Test 3:** Is the firm’s risk and cost of equity consistent with a stable growth firm?

- Beta of 0.80 is at lower end of the range of stable company betas: 0.8 - 1.2

**Why a stable growth dividend discount model?**

1. **Why stable growth:** Company is a regulated utility, restricted from investing in new growth markets. Growth is constrained by the fact that the population (and power needs) of its customers in New York are growing at very low rates.
   - Growth rate forever = 2%
2. **Why equity:** Company’s debt ratio has been stable at about 70% equity, 30% debt for decades.
3. **Why dividends:** Company has paid out about 97% of its FCFE as dividends over the last five years.
A breakeven growth rate to get to market price...

Con Ed: Value versus Growth Rate

Break even point: Value = Price