Valuation - “VC Method”
Valuation

:: Valuation in “Public Equity”

\[ V_0 = \sum_{t=1}^{\infty} \frac{E[\tilde{c}_t]}{(1 + E[\tilde{r}])^t} \]

:: Valuation in “Private Equity”

\[ V_0 = \sum_{t=1}^{\infty} \frac{E[\tilde{c}_t]}{(1 + E[\tilde{r}])^t} \]
Valuation - What is new - VC/PE

:: Because VC / PE intermediary
   :: Rapid evaluation of potential deals is important

:: VC fund look at 100 proposals for 1 investment

:: The VC is not interested in “valuing” every opportunity; only screening to determine if more investigation worthwhile

:: “The VC Method” is a like “rule of thumb”
Quick Resolution of Uncertainty

:: Where is [the biggest amount of] the uncertainty?

<table>
<thead>
<tr>
<th>0</th>
<th>3 to 7 years</th>
<th>T</th>
<th>3 to 10 years</th>
<th>S</th>
<th>In perpetuity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Venture Period</td>
<td></td>
<td>Rapid-Growth Period</td>
<td>Stable-Growth Period</td>
<td></td>
</tr>
</tbody>
</table>

\[ -K \quad \uparrow \quad V_T \]
2. Scenario-Based Valuation - options and exit

:: In (after) the growth phase, what do you do if the scenario, $x$, happens to be one of low or negative cash flows?

:: Think of a FB-like company

:: What drives scenario $x$?

<table>
<thead>
<tr>
<th></th>
<th>VENTURE</th>
<th>1 ...</th>
<th>4</th>
<th>5 ...</th>
<th>...</th>
<th>10</th>
<th>11 ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COGS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOPAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation [add back]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Capital (change)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free Cash Flows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. VC Method

You have in front of you 100 business plans that read like ABRY/Legendary .... (20+ pages each). Your VC fund might invest in two or three of them. What do you do?
3. VC Method

- VC Method
  - Quick assessment of what “success” might look like (exit value)
  - Will that success happen
    - with high enough probability
    - Soon enough
  - How much additional capital needed to attain success
3. VC Method

:: VC Method

:: Quick assessment of what “success” might look like (exit value)

:: Will that success happen
  :: with high enough probability

:: Soon enough

:: How much additional capital needed to attain success

:: Not a “value”; just a quick “yes” or “no” decision (for more investigation)
3. VC Method

:: VC Method

:: $K =$ Requested Capital

:: $V_{VCM} =$ “Value” for VC

$$V_{VCM} = \frac{\text{%Equity}_{vc} \times V_{\text{Exit at } T} \times \text{prob success} \times \text{retention}}{(1 + r_{vc})^T}$$

:: Yes if:

$$V_{VCM} > K$$
\[ E(N) = p \cdot V_T \]

Tree diagram:
- \( p \) (Prob Success)
- \( 1 - p \)
- \( V_T \) (Success)
- \( 0 \) (Not)
3. VC Method

\[ V_{VCM} = \frac{%\text{Equity}_{vc} \times V_{(Exit \ at \ T)} \times \text{prob success} \times \text{retention}}{(1 + r_{vc})^T} \]

:: \( V_{(Exit \ at \ T)} = \text{Value at Exit} \)

:: This is a “conditional” valuation; conditional on a successful exit

:: Usually done with comparables

:: Note this is “successful” so comparing to “successful” companies is sensible

:: How big is the upside?
3. VC Method

\[ V_{VCM} = \frac{\text{%Equity}_{vc} \times V_{(Exit \ at \ T)} \times \text{prob success} \times \text{retention}}{(1 + r_{vc})^T} \]

:: prob success = Probability of success
:: (Assuming zero value if not successful; binary outcome)
:: Judgement

:: Often the “plug” in the VC method; For this to be a good investment, I have to think this company has a 50% chance of success.

\[ V_{VCM} \geq K \]
3. VC Method

\[ V_{VCM} = \frac{\text{%Equity}_{vc} \times V_{\text{Exit at } T} \times \text{prob success} \times \text{retention}}{(1 + r_{vc})^T} \]

:: retention = Retention or dilution adjustment
:: Most VC funding is staged
:: The initial ownership percentage will go down as subsequent rounds of capital are raised
:: The VC can maintain the current ownership percentage by participating in subsequent rounds
   :: But note that requires more investment (capital)
:: Factoring in the “dilution” focuses the decision on just this “round”
3. VC Method

\[ V_{VCM} = \frac{\%\text{Equity}_{\text{vc}} \times V_{(\text{Exit at } T)} \times \text{prob success} \times \text{retention}}{(1 + r_{vc})^T} \]

:: retension = Retention or dilution adjustment

:: From Data, retention rates:

:: Series A (first round): 50%

:: Series B: 60%

:: Series C: 67%

:: Series D: 70%
3. VC Method

\[ V_{VCM} = \frac{\%\text{Equity}_{vc} \times V_{(Exit \ at \ T)} \times \text{prob success} \times \text{retention}}{(1 + r_{vc})^T} \]

:: \( r_{vc} = \) Risk adjusted discount rate
   :: This is the usual CAPM risk adjusted discount rate

:: Standard seems to be to use 15%
3. VC Method

\[ V_{VCM} = \frac{\%\text{Equity}_{vc} \times V(\text{Exit at } T) \times \text{prob success} \times \text{retention}}{(1 + r_{vc})^T} \]

:: The \( V_{VCM} \) is often summarized by two components

:: \( R = \) The “Target Rate of Return” (percent per year)

:: \( M = \) The “money multiple” (How many “x” on $1 investment is needed)

\[ \frac{\text{prob success}}{(1 + r_{vc})^T} = \frac{1}{M} = \frac{1}{(1 + R)^T} \]

↑  ↑ “IRR”
3. VC Method

\[
\frac{\text{prob success}}{(1 + r_{vc})^T} = \frac{1}{M} = \frac{1}{(1 + R)^T}
\]

<table>
<thead>
<tr>
<th>Target Rate of Return &quot;R&quot;</th>
<th>((\text{prob})/(1+E_r)^T = (1+R)^T)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Probability of &quot;success&quot;</td>
</tr>
<tr>
<td></td>
<td>Years to Exit</td>
</tr>
<tr>
<td>VC E[r] expected rate of return</td>
<td>15%</td>
</tr>
<tr>
<td>1</td>
<td>1050%</td>
</tr>
<tr>
<td>2</td>
<td>264%</td>
</tr>
<tr>
<td>3</td>
<td>148%</td>
</tr>
<tr>
<td>4</td>
<td>105%</td>
</tr>
<tr>
<td>5</td>
<td>82%</td>
</tr>
<tr>
<td>6</td>
<td>69%</td>
</tr>
<tr>
<td>7</td>
<td>60%</td>
</tr>
<tr>
<td>8</td>
<td>53%</td>
</tr>
<tr>
<td>9</td>
<td>49%</td>
</tr>
<tr>
<td>10</td>
<td>45%</td>
</tr>
</tbody>
</table>
3. VC Method

\[
\frac{\text{prob success}}{(1 + r_{vc})^T} = \frac{1}{M} = \frac{1}{(1 + R)^T}
\]

<table>
<thead>
<tr>
<th>Years to Exit</th>
<th>10%</th>
<th>20.0%</th>
<th>30.0%</th>
<th>40.0%</th>
<th>50.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11.5</td>
<td>5.8</td>
<td>3.8</td>
<td>2.9</td>
<td>2.3</td>
</tr>
<tr>
<td>2</td>
<td>13.2</td>
<td>6.6</td>
<td>4.4</td>
<td>3.3</td>
<td>2.6</td>
</tr>
<tr>
<td>3</td>
<td>15.2</td>
<td>7.6</td>
<td>5.1</td>
<td>3.8</td>
<td>3.0</td>
</tr>
<tr>
<td>4</td>
<td>17.5</td>
<td>8.7</td>
<td>5.8</td>
<td>4.4</td>
<td>3.5</td>
</tr>
<tr>
<td>5</td>
<td>20.1</td>
<td>10.1</td>
<td>6.7</td>
<td>5.0</td>
<td>4.0</td>
</tr>
<tr>
<td>6</td>
<td>23.1</td>
<td>11.6</td>
<td>7.7</td>
<td>5.8</td>
<td>4.6</td>
</tr>
<tr>
<td>7</td>
<td>26.6</td>
<td>13.3</td>
<td>8.9</td>
<td>6.7</td>
<td>5.3</td>
</tr>
<tr>
<td>8</td>
<td>30.6</td>
<td>15.3</td>
<td>10.2</td>
<td>7.6</td>
<td>6.1</td>
</tr>
<tr>
<td>9</td>
<td>35.2</td>
<td>17.6</td>
<td>11.7</td>
<td>8.8</td>
<td>7.0</td>
</tr>
<tr>
<td>10</td>
<td>40.5</td>
<td>20.2</td>
<td>13.5</td>
<td>10.1</td>
<td>8.1</td>
</tr>
</tbody>
</table>

Money Multiple "M" = (prob)/(1+E_r)^T = 1/M

Probability of "success"
3. VC Method - Cautions

:: The VC method is very similar to “multiples” valuations
   :: Helpful as a check or a screen

:: Be careful not to “double discount” or be overly conservative in applying VC Method

:: Multiples approaches are backward looking
   :: Google, Amazon, Uber, Facebook,... many of these successes are transformative

:: [Insert David Tepper non-PG quote about multiples here]