

E145 Fall 2008
Workshop C
Venture Finance

Presented by Boris Logvinskiy

Agenda

- VCs
- Venture Math
- Public Company Valuation
- Private Company Valuation
- Tips to Remember

Some fundamentals...

- Who are VCs?
- Why would I want to take their money? and what will I have to give up?
- Would they want me to take their money?!?

What is Venture Capital?

INSTITUTIONAL INVESTORS

VENTURE CAPITALISTS

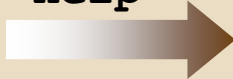
ENTREPRENEURS



Capital



Capital, Time
Help



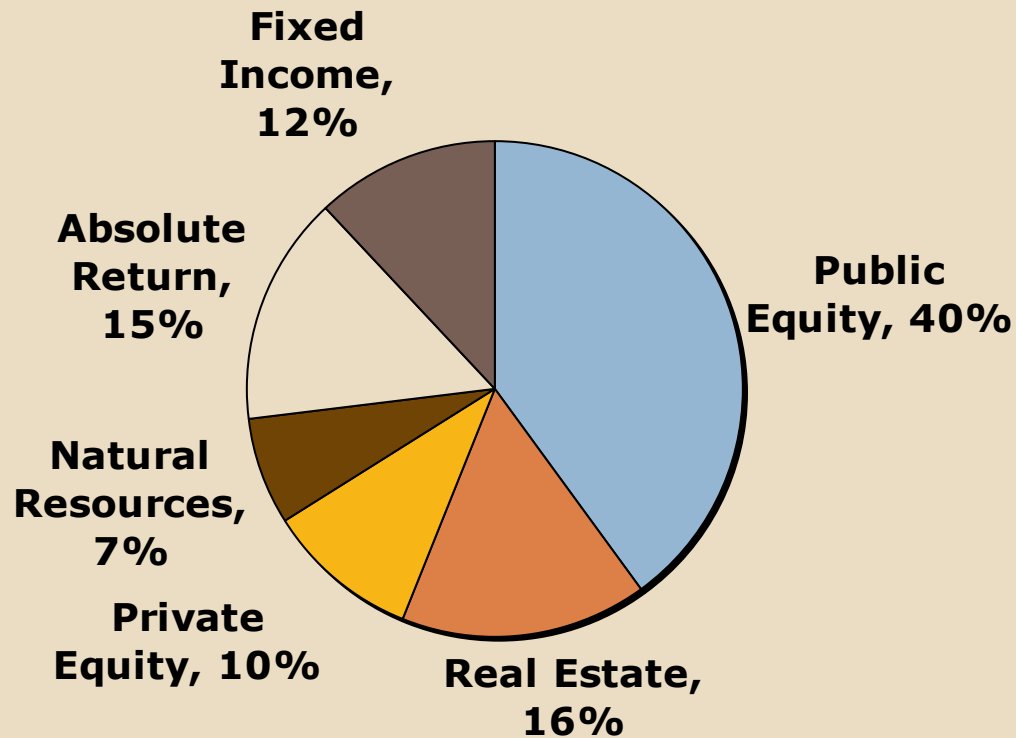
←
"Liquid" Stock

←
Preferred Stock



Typical Asset Allocation for LP

- Asset allocation for Stanford
 - Endowment Size: \$17.2B



How does a VC work?

- Size of VC fund: ~\$500M
 - Institutional 20-40 @ \$10-50M
 - Individuals 50-200 @ \$0.5-5M
- Invests over 3-5 years, return within 10
- On average delivers 30% per year return
- 10 partners, 30-40 companies per fund



What size deal would be interesting?

Which do you like?

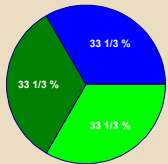
- Suppose you were to invest \$10M
 - Fund 1:
 - 2x return on all 10 \$1M investments

 - Fund 2:
 - Loses all \$1M investments in 8 deals
 - Wins 20x on the remaining 2 \$1M investments

Source: Andy Rachleff

Venture Finance

I

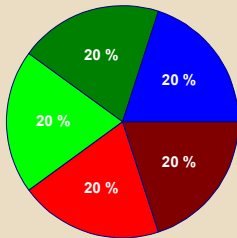


1mm shares for each founder

$\Sigma=3\text{mm}$ shares @ \$0.001 ea.

Value=\$3k

II



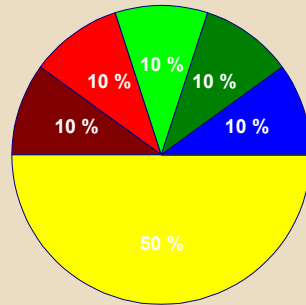
1mm shares each for CEO & employees

$\Sigma= 5\text{mm}$ shares @ \$0.01 each

Value=\$50k

III

Time

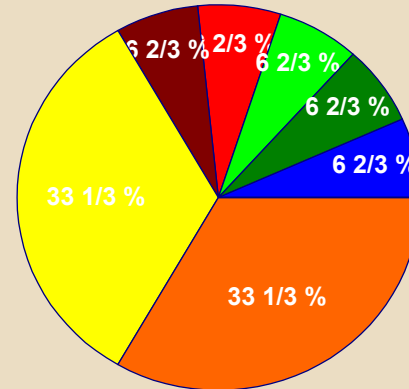


5mm shares for first VC firm

$\Sigma=10\text{mm}$ shares @ \$1.00

Value=\$10mm

IV

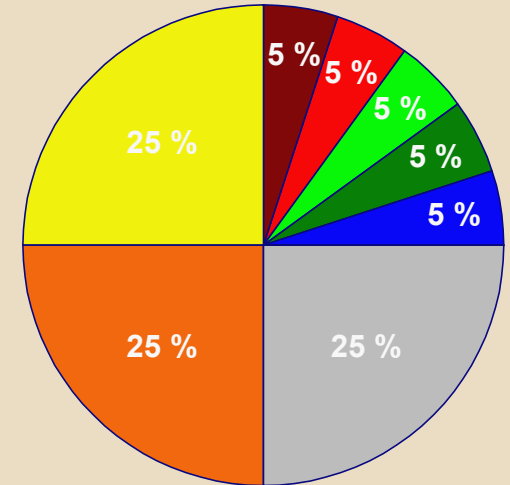


+5mm shares for second round VCs

$\Sigma=15\text{mm}$ shares @ \$5

Value=\$75mm

V



+5mm shares for sale to public in IPO

$\Sigma = 20\text{mm}$ shares @ \$15.00

Value=\$300mm

Real Life Example: Chemdex

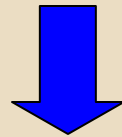
- How much money do the founders need?
- How long until significant revenue?
- How long until profitability?
- What's the going rate for 1st round deals?

- **Valuation is an art, not a science.**

*Chemdex is now called NexPrise (NXPS)

Chemdex in 1997: Series A

1. How much does the company need to raise?



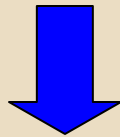
| Round | Pre-money Valuation | Amount Raised | Post-money Valuation | % of Company Sold | Share Price* | Total Shares* |
|----------|---------------------|---------------|----------------------|-------------------|--------------|---------------|
| Series A | | \$1.9 | | | | |

Series A

2. Negotiate a pre-money valuation

post \$ = pre \$ + amount raised = \$2.7 M + \$1.9 M

% of company sold = amount raised / post \$ valuation = \$1.9 M / \$4.6 M



| Round | Pre-money Valuation | Amount Raised | Post-money Valuation | % of Company Sold | Share Price* | Total Shares* |
|----------|---------------------|---------------|----------------------|-------------------|--------------|---------------|
| Series A | \$2.7 | \$1.9 | | | | |

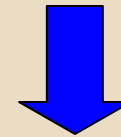
How much do the founders own at this point?

Series A

3. Determine share price and total number of shares

In Round A, share price is set so total shares = 5-10 million

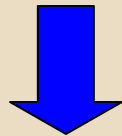
Total Shares = post \$ / share price = \$4.6 M / \$0.54 = 8.5 M shares



| Round | Pre-money Valuation | Amount Raised | Post-money Valuation | % of Company Sold | Share Price* | Total Shares* |
|----------|---------------------|---------------|----------------------|-------------------|--------------|---------------|
| Series A | \$2.7 | \$1.9 | \$4.6 | 41% | | |

Series B

1. How much does the company need to raise?



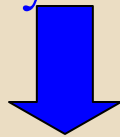
| Round | Pre-money Valuation | Amount Raised | Post-money Valuation | % of Company Sold | Share Price* | Total Shares* |
|----------|---------------------|---------------|----------------------|-------------------|--------------|---------------|
| Series A | \$2.7 | \$1.9 | \$4.6 | 41% | \$0.54 | 8.5 |
| Series B | | \$13 | | | | |

Series B

2. Negotiate a pre-money valuation

post \$ = pre \$ + amount raised = \$11 M + \$13 M

% of company sold = amount raised / post \$ valuation = \$13 M / \$24 M

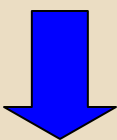


| Round | Pre-money Valuation | Amount Raised | Post-money Valuation | % of Company Sold | Share Price* | Total Shares* |
|----------|---------------------|---------------|----------------------|-------------------|--------------|---------------|
| Series A | \$2.7 | \$1.9 | \$4.6 | 41% | \$0.54 | 8.5 |
| Series B | \$11 | \$13 | | | | |

Series B

3. Determine new share price

$$\begin{aligned} \text{Share price} &= (\text{pre-money valuation}) / (\text{total pre-money shares}) \\ &= \$11\text{M} / 8.5 \text{ M} \end{aligned}$$

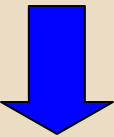


| Round | Pre-money Valuation | Amount Raised | Post-money Valuation | % of Company Sold | Share Price* | Total Shares* |
|----------|---------------------|---------------|----------------------|-------------------|--------------|---------------|
| Series A | \$2.7 | \$1.9 | \$4.6 | 41% | \$0.54 | 8.5 |
| Series B | \$11 | \$13 | \$24 | 54% | | |

Series B

4. Determine total number of shares

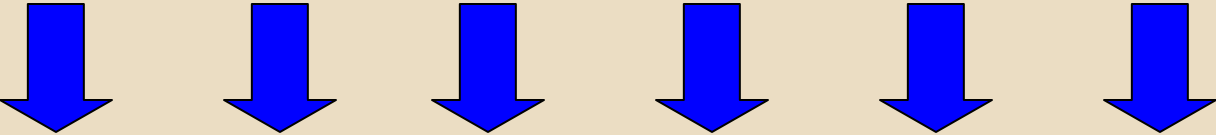
$$\begin{aligned} \text{Total Shares} &= \text{pre \$ shares} + \text{amount raised} / \text{share price} \\ &= 8.5 \text{ M} + \$13 \text{ M} / \$1.29 \end{aligned}$$



| Round | Pre-money Valuation | Amount Raised | Post-money Valuation | % of Company Sold | Share Price* | Total Shares* |
|----------|---------------------|---------------|----------------------|-------------------|--------------|---------------|
| Series A | \$2.7 | \$1.9 | \$4.6 | 41% | \$0.54 | 8.5 |
| Series B | \$11 | \$13 | \$24 | 54% | \$1.29 | |

Series C

1. Decide how much you need to raise
2. Negotiate a valuation
3. Determine new share price
4. Calculate total number of shares



| Round | Pre-money Valuation | Amount Raised | Post-money Valuation | % of Company Sold | Share Price* | Total Shares* |
|----------|---------------------|---------------|----------------------|-------------------|--------------|---------------|
| Series A | \$2.7 | \$1.9 | \$4.6 | 41% | \$0.54 | 8.5 |
| Series B | \$11 | \$13 | \$24 | 54% | \$1.29 | 18.6 |
| Series C | \$100 | \$30 | \$130 | 23% | \$5.38 | 24.2 |

Chemdex Financing

| Date | Round | Pre-money Valuation | Amount Raised | Post-money Valuation | % of Company Sold | Share Price | Total Shares |
|------|----------|---------------------|---------------|----------------------|-------------------|-------------|--------------|
| 9/97 | Series A | \$2.7 | \$1.9 | \$4.6 | 41% | \$0.54 | 8.5 |
| 5/98 | Series B | \$11 | \$13 | \$24 | 54% | \$1.29 | 18.6 |
| 3/99 | Series C | \$100 | \$30 | \$130 | 23% | \$5.38 | 24.2 |
| 7/99 | IPO * | \$358 | \$113 | \$471 | 24% | \$14.82 | 31.8 |

* based on data from Hoover's Online valuations and share numbers in millions

Calculating Dilution

Percentage owned = owned shares / total shares

Founders' shares = 59% of 8.5M = 5.02M shares

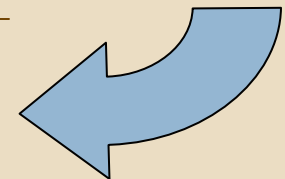
Series B Dilution: $5.02\text{M} / 18.6\text{M} = 27\%$

Series C Dilution: $5.02\text{M} / 24.2\text{M} = 21\%$

IPO Dilution: $5.02\text{M} / 31.8\text{M} = 16\%$

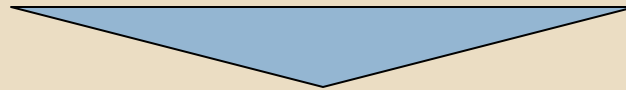
| | Series A | Series B | Series C | IPO |
|--------------------------|----------|----------|----------|-------|
| Founders & employee pool | 59% | 27% | 21% | 16% |
| Post-\$ Valuation | \$4.6 | \$24 | \$130 | \$471 |

Could Chemdex founders get to this size on their own?



What besides cash do they offer?

- Expertise
- Contacts (their and the firm's rolodex)
- Reputation



Your due diligence of the VC firms you interact with should be at least as in depth as their due diligence of you

Valuing Public Companies



Ratios & Valuing Public Companies

Today

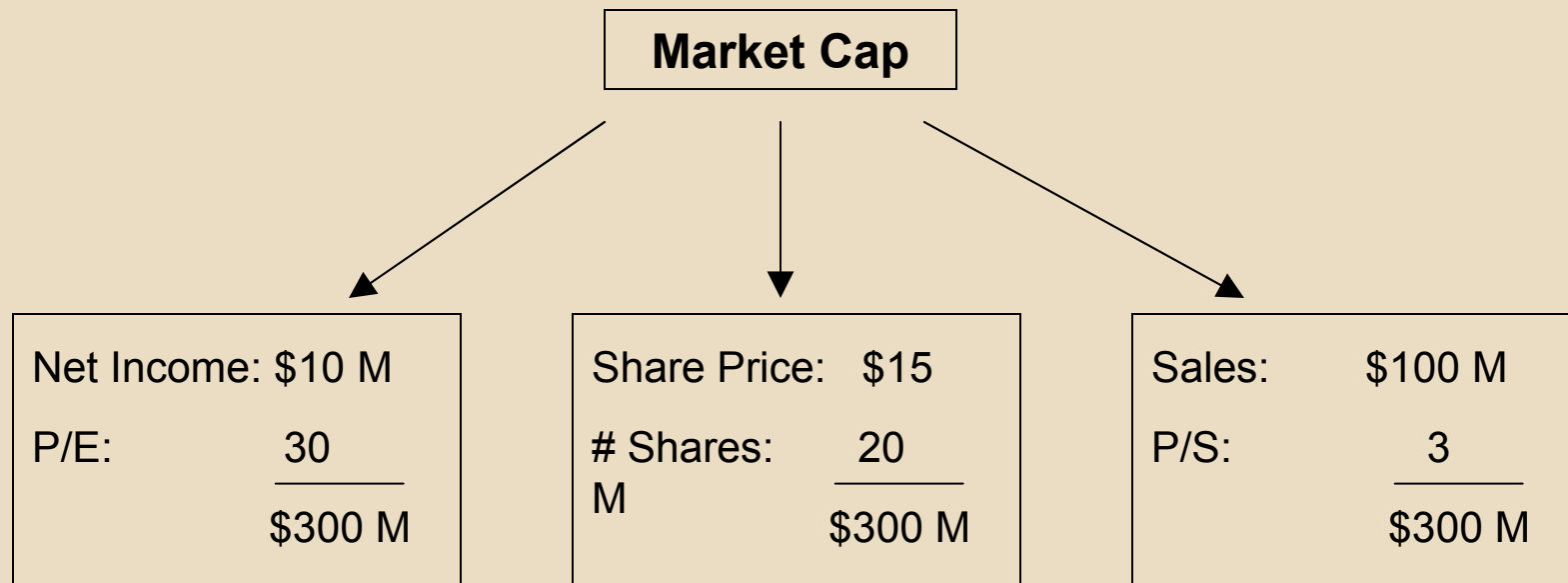
- **Market Cap** = # shares outstanding x Share price
 - Answers “What does the market think the company is worth?”
 - Examples
 - GOOG with 306M outstanding shares @ \$359.36 / share = \$113B market cap
 - YHOO with 1.39B outstanding shares @ \$12.82 / share = \$17.7B market cap

Ratios & Valuing Public Companies

Today

- **Ratios**
 - **EPS** = Earnings per share
 - An indicator of value created for shareholders
 - **P/E** = Market Cap / Annual Earnings = Stock Price / EPS
 - How much does \$1 of earnings cost an investor?
- Similar companies facing similar risks should have similar ratios (Comparables / Comps)
- **“Enterprise Value”**- Market Cap + Debt

Metrics in Action



A Sampling of Public Companies

| Company | Stock Price | Market Cap (\$B) | EPS (\$/Share) | P/E |
|----------------|--------------------|-----------------------------|---------------------------|------------|
| GE | \$19.65 | \$206.00 | 2.1 | 9.35 |
| Microsoft | \$22.80 | \$202.00 | 1.9 | 12.03 |
| Walmart | \$56.76 | \$223.00 | 3.35 | 16.98 |
| Google | \$358.00 | \$112.00 | 16.07 | 22.31 |
| Cisco | \$17.65 | \$101.00 | 1.31 | 13.26 |
| Coca Cola | \$43.88 | \$401.00 | 0.64 | 68.25 |
| Ebay | \$15.03 | \$19.19 | 1.46 | 10.32 |
| Apple | \$108.22 | \$96.13 | 5.36 | 20.19 |
| Sony | \$23.44 | \$23.52 | 2.76 | 8.51 |
| Disney | \$24.33 | \$45.65 | 2.31 | 10.53 |
| Yahoo! | \$12.73 | \$17.64 | 0.65 | 19.6 |
| Gap | \$12.50 | \$8.89 | 1.31 | 9.52 |
| Sun | \$4.87 | \$3.60 | -1.85 | N/A |
| Palm | \$3.88 | \$0.43 | -1.42 | N/A |

Note: Updated Nov. 3, 2008

Metrics Calculation

Public Company Info:

(must be filed with SEC)

| | |
|---------------------|---------|
| Sales: | \$100 M |
| Net Income: | \$10 M |
| Shares Outstanding: | 20 M |
| Stock Price: | \$15 |

We can calculate:

| | |
|-------------|--|
| EPS: | |
| P/E: | |
| P/S: | |
| Market Cap: | |

Metrics Calculation

Public Company Info:

(must be filed with SEC)

| | |
|---------------------|---------|
| Sales: | \$100 M |
| Net Income: | \$10 M |
| Shares Outstanding: | 20 M |
| Stock Price: | \$15 |

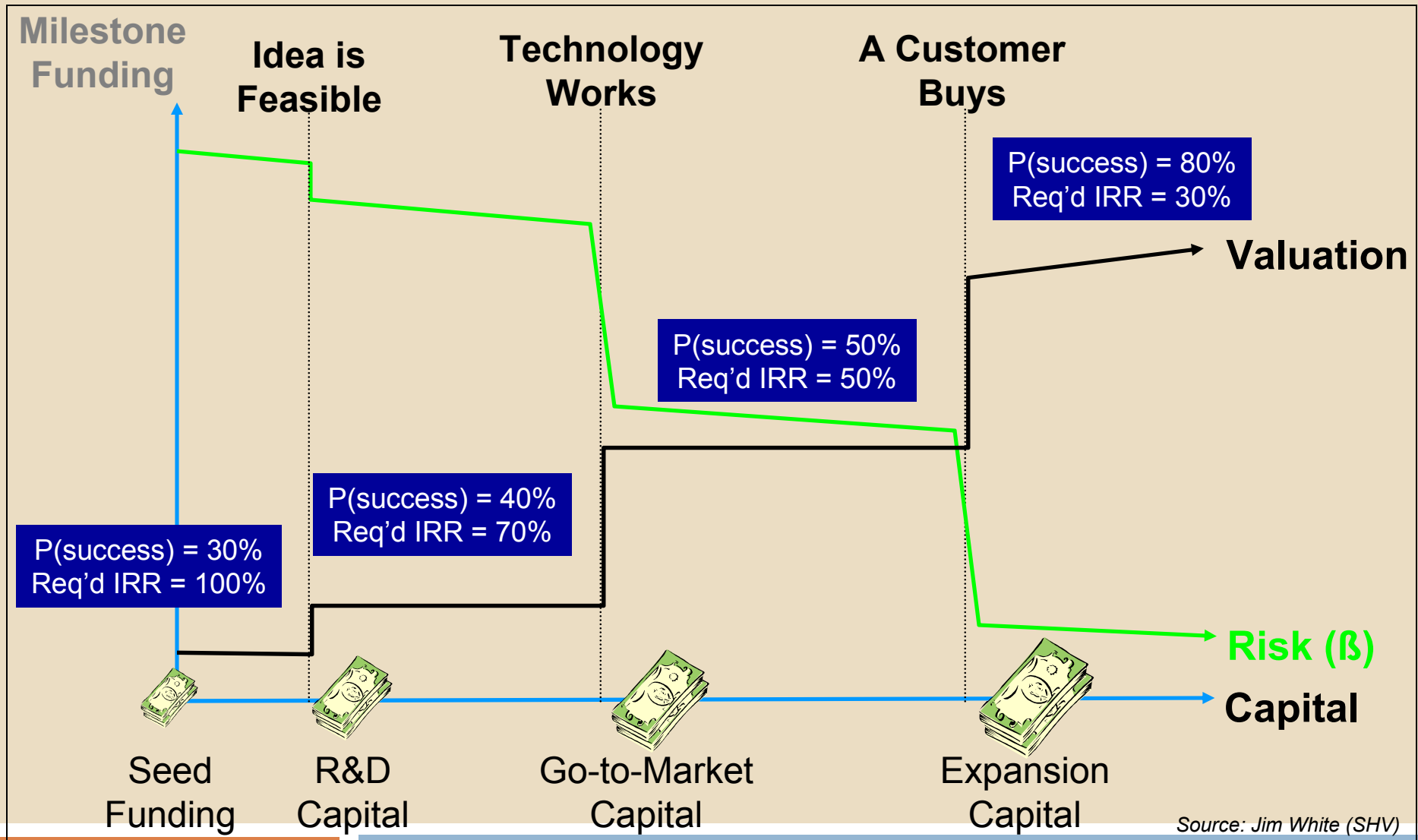
We can calculate:

| | | |
|-------------|----|------|
| EPS: | \$ | 0.50 |
| P/E: | | 30 |
| P/S: | | 3 |
| Market Cap: | \$ | 300 |

Valuing Startups



VC Discount Rates and Risk Reduction



VC Milestone Staged Timeline

| | Seed | "A" | "B" | "C/D" | IPO/ M&A |
|------------------|----------------------|-----------------------------|------------------------------------|--------------------------------------|-------------------|
| Size | ~\$1m | \$3-8m | \$10-20m | ~\$20m | ~\$50m |
| Source | Angel | VC | VC | Mezz | IB |
| Runway | 6-12 months | 12-18 months | 18-24 months | 2+yrs | |
| # Empl. | <10 | ~30 | ~50 | ~100 | >100 |
| Milestone | Clear plan & Team | Beta product & customers | Sales, mkt size, competition | Strategic, financial execution | Growth, profit |



“Venture Capital” Method

Valuing Cash, Time and Risk

This method defines one simple valuation approach:

1. Forecast Future Results (Financial Statements)
2. Determine likely value at that point (P/E Ratio)
3. Determine Dilution (Capital, Stock Options)
4. Determine share of pie demanded given required rates of return
5. Convert future values to present to derive share prices, ownership percentages

Source: Prof. Doug Mackenzie (KPCB)

Example – Raising a Round Financing

1. Forecast Future Results (Financial Statements)
 - Net Income of \$10M in Year 5
2. Determine likely value at that point (P/E Ratio)
 - Industry P/E Ratio = 30
 - What is the value of the company?
 - \$300M
3. Determine Dilution (Capital, Stock Options)
 - See Chemdex example (identify capital needs and shares required for management and employees)

Raising Funding – Cont'd

4. Determine share of pie demanded given required rates of return
 - Series A – Need 70% IRR, Investing \$5M
 - How much does the investment need to be worth 5 years from now?
 - \$71M
5. Convert future values to present to derive share prices, ownership percentages
 - $\$71/300 = 23\%$
 - What would the post-money valuation have to be?
 - \$21M

Tips to Remember



VC Funding is Not the Only Solution

- Strategic Partners
 - Angels
 - VCs
- } <5%
- Banks
 - Mortgage
 - Friends & Family

Size of the Fund Matters

- AVG VC Fund ~ \$500M
- “Good VC” Returns 3x = \$1.5Bn
- Assuming average ownership of 25%, total exits have to be \$6Bn
- Over 20 portfolio companies, that’s \$300M per company
- Same math for micro-cap (\$35M fund, 3x return, 10% ownership) - each exit has to be around \$50M

Read Those Terms

- Term sheets are great, unless things don't go your way
 - ▣ Liquidation Preference – Return VCs require before you can get a piece of the pie.

| | | | |
|------------|-------|-------|-------|
| Multiple | 1.5x | 2x | 3x |
| Investment | 10 | 10 | 10 |
| \$Return | \$15M | \$20M | \$30M |

Read Those Terms Cont'd

- Vesting – How long before you can redeem all stock options?
- Anti-Dilution
- Board of Directors

Lastly

- It ain't the angle of the slice - it's the size of the PIE...unless the pie is smaller than you hoped.