Startup Financial Engineering

Tutorial

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Outline

- Public Markets vs Private Markets
- Valuation Methodologies
- Staging Financing in Tranches
- Equity vs Debt
- Preferred Stock vs Common Stock
# Public vs Private Markets

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Public Market</th>
<th>Private Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of buyers and sellers</td>
<td>Millions</td>
<td>Tens</td>
</tr>
<tr>
<td>Information available</td>
<td>Large amount of publicly available information</td>
<td>Relatively small amount of privately held information</td>
</tr>
<tr>
<td>Investor characteristics</td>
<td>Small number of very sophisticated investors; large number of relatively unsophisticated investors</td>
<td>Small number of very sophisticated investors</td>
</tr>
<tr>
<td>Investment Valuation</td>
<td>Highly efficient and systematic</td>
<td>Highly inefficient and subjective</td>
</tr>
</tbody>
</table>
Private Equity/Debt Markets by Stage of Investment

- Friends and family/angel investors
- Venture capital
- Expansion capital
- Working capital
- Mezzanine
- Buyout
- Secondary markets
- Cross over funds

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### Historical Prolog—Asset Classes

- **Markowitz (1952)**
  - Diversify across asset classes
  - Achieve Lower Risk but Lower Reward

- **Illustrative Asset Classes**
  - Public equities
  - Bonds
  - Foreign exchange currencies
  - Real estate
  - Commodities
  - Energy
  - Private equities
  - Derived Asset Classes (Derivatives)
Historical Prolog Continued

- 1965-2000
  - Angel investors—returns unknown
  - Early stage venture capital—60%+ IRR
  - S&P 500-15% CAGR
  - All other private equity returns in between venture and S&P 500
  - Roughly 50 out of 700+ early stage funds returned 50%+ of returns for all funds: 1965-1995
  - Explosion to 1500 venture funds in 1995-2000

- 2000-2008
  - Angel investors-returns unknown
  - Early stage venture capital-0% IRR
  - S&P 500-15% CAGR
  - Late stage private equity/buyouts 50%+ IRR
Alternative Investment Choices

Historical 20 year returns for Other Investments
Source: Venture Economics HFRI Equity Hedge index

- Seed Funds: 22.4%
- All Venture: 18.7%
- Hedge Funds: 18.7%
- Buyouts: 16.5%
- S&P 500: 14.0%
- NASDAQ: 13.3%
Benchmark VC Returns

Source: Venture Economics, Boston Globe, Signal Lake Analysis

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Long Return Superior Returns for Early Stage Funds

Average Annualized 5 Year VC Return

- Early Stage: +124%
- Late Stage: +38%

Average Annualized 10 Year VC Return

- Early Stage: +36%
- Late Stage: +22%

Average Annualized 20 Year VC Return

- Early Stage: +29%
- Late Stage: +20%

Source: Venture Economics 10/16/01
Share of GDP: Rising over the long term

Telephone and Communications Sectors Share of GDP

- Communications (Telephone, Telegraph, Radio, TV) as % of GDP
- Telephone and telegraph as % of GDP
Fueled By Increasing GDP Per Capita

Telecommunications Revenues as % of GDP (PPP), 1999
### Telecom As Asset Class

- **Demand for telecom grows at 8.5%**
  - Not bad, but not mid-double digits
  - Of course, new areas will grow much faster

- **Demand for telecom capital equipment grows at 14.8%**
  - Overall, this is much higher than for most industries
  - However, 15% growth versus 50% growth is consistent with observed 90% public equity decline
  - Next-generation areas will grow much faster (50%)

- **Internet based services growing at 25%+**
  - Advertising based revenue models—free is the right price point
  - Proprietary content priced on perceived value

- **If so, there’s still opportunity for superior returns**
Valuation Methodologies

- Public and private market norms
  - Any thing out of norm is a flag to a potential investor
- Discounted cash flows/net present value
  - Cash flows in each year, discounted to present
  - Terminal value: 90% of total net present value
- Ratios
  - Market cap/revenue: 2X-10X
  - Market cap/EBITDA: 3X-20X
- Private market valuation norms
- Public market surrogates
Staged Financing

- **Key metric**
  - Total capital required to reach positive cash flow, on a risk adjusted basis
  - Positive cash flow businesses can raise money on far more favorable terms than negative cash flow businesses!
- **Seed or friends/family**
  - Angel/seed funding and/or venture capital
- **Series A: launch product/service**
  - Smallest amount of monies
  - Lowest price/share-> greatest dilution
- **Series B**
  - Expansion capital: staff for marketing, sales, support
- **Series C**
  - Working capital: components, infrastructure, staffing
- **Series D**
  - Mezzanine financing: within one year of exit, pump up balance sheet
- **Exit**
  - Merger/acquisition
  - Initial Public Offering
  - Shut down/bankruptcy
Equity vs Debt

- **Debt:** principal and interest be repaid
  - Requires an income stream to repay!
  - Bridges to a subsequent financing event
  - Interest/dividend on preferred stock
  - Typically senior to equity: control!

- **Equity is sunk cost**
  - Control
  - Fiduciary oversight and responsibility
Preferred vs Common Equity

- Preferred Equity: Typical Preferences
  - Liquidation preference: 1X, 2X et al, paid off before common stock
  - Dividends
  - Participating preferred: converts to common and then participates in returns
  - Conversion to common

- Common Equity
  - Chance to be independently wealthy