Polynomial Ventures

Tech Company Valuation as a Function of Size

By Steve Valentor

Larger companies are valued at higher multiples than their smaller counterparts. Intuitively, size shouldn't have quite the effect that it does. Think of owning a company as an asset that pays recurring dividends. A company that generates $1 million in annual dividends should be valued at one tenth of a company that pays $10 million.

In a random sample of recent large public technology company acquisitions in Crunchbase, the average P/E ratio of the acquired company was 44.8, with average Enterprise Values (EV) of $29.9 billion.

Large Cap	**Small Cap**
$30 Billion	$30 Million
P/E = 44.8	P/E = 18.45
NI = 11.9%	NI = 4.1%

To find similar data on small companies, I had to dig deep into the Wilshire 5000 list. Indeed, many of the companies near the bottom of the list in terms of enterprise value cannot even report a P/E ratio because they have no profit. Eventually I found that on average, small profitable technology companies with an average EV of $31.7 million, have an average P/E ratio of 18.45.

These results are consistent with the findings of Eugene Fama and Kenneth French at the University of Chicago. They observed that the Capital Asset Pricing Model (CAPM), using only market Beta to predict valuation, didn't accurately predict pricing for small companies. They found that small companies were predictably undervalued compared to their larger counterparts. A new term called SMB (Small Minus Big) was added to the CAPM to account for this. SMB implies non-linear, lower valuation for smaller companies and is captured in the Fama-French Three-Factor Model. The other factor is High Minus Low (HML) Book to Market Ratio, which I'll discuss in a future article.

For math geeks (like me), I'll include the CAPM along with the additional terms.

CAPM: $\mathbf{r_e = R_f + \beta\,(R_m - R_f) + \alpha}$

Fama-French 3-Factor Model: $\mathbf{r_e = R_f + \beta\,(R_m - R_f) + b_s(SMB) + b_v(HML) + \alpha}$

This is the reason that most 401K plans offer Small Cap alternatives in the choices for investors. Smaller companies have more growth potential, but carry higher risk. This is often called risk-adjusted-return.

Investors might simply end their analysis at the P/E ratio. It reveals the cost of the asset and its return. By looking deeper into the financial statements, we can start to see a critically important pattern emerge. Smaller companies have lower net profits as a percentage of revenue. In our random sample, net income for the larger companies was 11.9% of revenue compared to only 4.1% for our smaller companies.

Companies become more efficient and more profitable as they grow. Larger size certainly reduces risk for the shareholders.

A clever investment thesis might include buying small companies at a depressed multiple of earnings, growing them, then selling them at a much higher multiple. To accomplish this in a fixed timeframe, you have to get a lot of things right. You would have to know why the exactly larger companies have higher margins.

A very common reason is that smaller companies do not have efficient systems for all of their operational areas - or lack that infrastructure altogether. As small companies grow, added employees add experience and perspective to the management team, processes are added and mature. Efficiency improves which leads to increased profitability.

Another major factor in valuation can be found in the effect that the immediate liquidity has on the prices of publicly traded securities. This one is more difficult to assess in terms of valuation.

If an IPO is overpriced, some pre-IPO shareholders might do very well as intrepid investors clamor to acquire shares. The most savvy investors will watch to see what the pre-IPO shareholders are doing. If the insiders are buying shares, then the savvy investor will conclude that new issue is underpriced and will buy.

Some notable IPOs include LinkedIn rising from $45 to $122, Airbnb increased from $68 to $146, and Alibaba soared from $68 to $93 on their first day of trading.

These increases imply that the shift to public liquidity can nearly double the value of a great tech company.

Finally, there is the challenge of migrating a great idea, developed by some clever entrepreneurs, into a viable company which can achieve an IPO. There is definitely an art to guiding engineers and technologists though the process of commercialization. Having done it a number of times, I can confidently state that it is neither for the faint of heart nor the uninitiated. But the best leaders can always find a way.

These four conditions may set the stage for great results with technology investments:

- The portfolio company is small and early its life cycle
- Credible potential to reach $100 million in revenue (IPO)
- Deficiencies in infrastructure can be easily identified
- The management team is trustworthy and coachable

Steve Valentor is a 30-year technology industry veteran who has worked in computer engineering, semiconductor R&D and software development for companies ranging from startups to the Fortune 200. He has held positions from entry level engineer to senior technical management, CEO and board chair. Currently the managing partner of Polynomial Ventures and an adjunct professor at DePaul University, Valentor holds an M.B.A. in finance and a bachelor's degree in math, both from the University of Illinois at Chicago.

Polynomial Ventures invests in early stage technology companies outside of Silicon Valley and Boston. The Chicago-based firm is an emerging, registered investment adviser (RIA) operating an evergreen fund.