# The Quantitative Economics of Venture Capital 

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## CAPM in discount form

$$
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$$

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m=\frac{1}{1+r_{f}}\left(1+\frac{\bar{r}^{2}}{\sigma^{2}}-\frac{\bar{r}}{\sigma^{2}} r\right)
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\beta_{v}=\frac{E\left(M_{k}\right) E\left(R_{v, k}\right)-1-\alpha}{E\left(M_{k}\right) E\left(R_{k}\right)-1}
\end{gathered}
$$

## DATA

|  | Number |
| :--- | ---: |
| Companies | 19,434 |
| Companies omitted because of no exit event | 6,385 |
| Exits used in analysis | 13,049 |
| IPO | 1,936 |
| Acquisition | 4,832 |
| Ceased operations with no value | 6,281 |
| Companies assigned zero exit value | 3,186 |

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- Overall weighted average $\alpha: 32$ percent


## $\beta$

| Measure | Description | Value |
| :--- | :--- | :---: |
| $\alpha=\mathrm{E}\left(M R_{v}\right)-1$ | Pure excess return to venture, over holding period | 0.32 |
| $\mathrm{E}(M)$ | Discount averaged over dollars invested | 1.26 |
| $\mathrm{E}(R)$ | Return ratio for the stock market for the timing <br> and amount invested in venture | 1.22 |
| $\mathrm{E}\left(R_{v}\right)$ | Total dollars paid out by venture divided by total <br> dollars invested | 1.66 |
| $\beta_{v}$ | Venture's beta | 1.46 |

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- Nominal cost of capital $=12.9$ percent

