FIN 423
IPOs Lower the Cost of Capital for the Firm

1. Risk reduction

2. Increase Liquidity

Cost of Capital for Private Firm: Risk Reduction

Assume:

- Equity is held by entrepreneur
- Entrepreneur’s portfolio is not diversified
- Then the risk of returns to private equity is the variance of returns, not the beta, because the “residual risk” $\sigma^2(e_i)$ can’t be diversified away

$$\sigma^2(R_i) = \beta_i^2 \sigma^2(R_m) + \sigma^2(e_i)$$
### Cost of Capital for Private Firm: Risk Reduction

**Suppose:**

\[ \beta_i = 1 \]

\[ \sigma^2(R_m) = 0.0018 \]

[monthly standard deviation of return to market portfolio = 4.24%]

Coefficient of determination from market model = 25% = \( \beta_i^2 \frac{\sigma^2(R_m)}{\sigma^2(R_i)} \)

Then \( \sigma^2(R_i) = 0.0072 \) and \( \sigma^2(e_i) = 0.0054 \)

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### Cost of Capital for Private Firm: Risk Reduction

What level of beta, \( \beta^* \), would be implied by systematic or non-diversifiable risk equal to 0.0072?

\[ \beta_i^* \sigma^2(R_m) = \beta_i^* \cdot 0.0018 = 0.0072 \]

\[ \Rightarrow \beta_i^* = 4 \Rightarrow \beta_i = 2 \]

So, the risk (as measured by \( \beta_i^* \)) of the private firm in this example is twice as high as if this stock were held by the “marginal investor” as part of a well-diversified portfolio.
Cost of Capital for Private Firm: Risk Reduction

If you use the CAPM and assume:

\[ R_f = .03 \text{ and } E(R_m) = .09 \]

Then the cost of capital for this private firm would be:

\[ E(R_i) = R_f + \beta_i [E(R_m) - R_f] \]

\[ = .03 + 2 \times (.09 - .03) = .15 \]

But after it is publicly traded and the marginal investor can diversify the firm-specific risk, the cost of capital falls to:

\[ E(R_i) = .03 + \beta_i \times (.09 - .03) = .09, \text{ since } \beta_i = 1 \]

Cost of Capital for Private Firm: Increased Liquidity

Amihud-Mendelson (JFE, 1986) show that transaction costs (illiquidity) raise the cost of capital

Basic idea: investors look at the net returns, so that given risk, a stock with higher transactions costs must have a higher gross return to compensate for the higher transactions costs

\[ \Rightarrow \text{To get a higher expected gross return you must have a lower price} \]