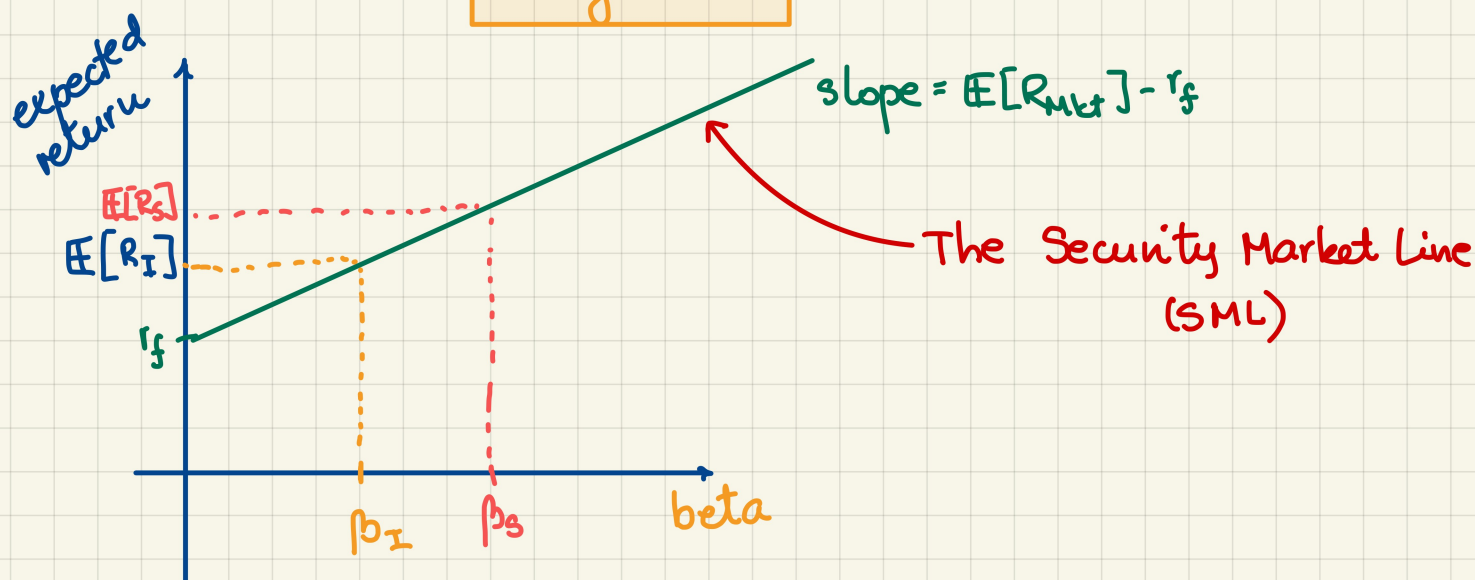


M339W: April 18th, 2022.

The Equity Cost of Capital.

In CAPM, for all I :

$$\underline{E[R_I] - r_f} = \underbrace{\tilde{r}_f}_{\text{intercept}} + \underbrace{\beta_I}_{\text{"independent argument"}} \underbrace{(\underbrace{E[R_{Mkt}] - r_f}_{\text{slope}})}_{\text{independent from } i}$$



Actually:

$$\underline{E[R_I] = r_f + \beta_I (E[R_{Mkt}] - r_f)} + \alpha_I$$

the Security Market Line

the distance from the SML, i.e., the stock's alpha

- 13) The following table shows the beta and expected return for each of five stocks.

Stock (i)	β_i	$E(R_i)$
1	1.2	0.124
2	1.0	0.110
3	0.7	0.103
4	0.4	0.068
5	0.1	0.047

All of these stocks except one lie on the Security Market Line.

Calculate the alpha of the stock that does NOT lie on the Security Market Line.

- A) -0.026
 B) -0.014
 C) 0.000
 D) 0.014
 E) 0.026

• There is no obvious efficient way to attack this problem.

⇒ Let's start by assuming that the first two stocks are both on the SML.

$$E[R_1] = r_f + \beta_1 (E[R_{Mkt}] - r_f)$$

$$E[R_2] = r_f + \beta_2 (E[R_{Mkt}] - r_f)$$

We use the given info and we get:

$$\left. \begin{array}{l} 0.124 = r_f + 1.2 (E[R_{Mkt}] - r_f) \\ 0.11 = r_f + 1 (E[R_{Mkt}] - r_f) \end{array} \right\} -$$

$$0.014 = 0.2 (E[R_{Mkt}] - r_f)$$

$$E[R_{Mkt}] - r_f = \frac{0.014}{0.2} = 0.07$$

$$r_f = 0.11 - 0.07 = 0.04$$

The above intercept of 0.04 and slope of 0.07 are just candidates for the actual parameters of the SML.

So, we have to verify if stocks 3, 4, or 5 lie on this line.

- Focus on Stock #3.

$$0.103 \stackrel{?}{=} 0.04 + 0.7(0.07) = 0.04 + 0.049 = 0.089$$

- Focus on Stock #4.

$$0.068 \stackrel{?}{=} 0.04 + 0.4(0.07) = 0.04 + 0.028 = 0.068$$



$\Rightarrow$ Stocks #1, #2, and #4 are on the same line
 $\Rightarrow$ they are on the SML.

$\Rightarrow$ Stock #3 is not on the SML

$$\Rightarrow 0.103 - 0.089 = 0.014 = \alpha_3 \quad \square$$

The Behavior of Individual Investors.

Recall: In the assumptions of CAPM, all the investors hold efficient portfolios.

Consequence: The market portfolio is efficient and all investors hold "it" as the risky portion of their investment.

- Familiarity Bias: Investing in companies whose brand they're familiar with, e.g., their employer.
- Relative Wealth Concerns: Caring about the relative performance of your portfolio when compared to your peers' portfolios.
- Overconfidence Bias: Less informed and less skilled investors have a tendency to overestimate their knowledge and skill. They trade frequently and spend on transaction costs.

↓
They will not create a systematic trading bias, i.e., they will not push the individual stock prices away from their fundamental value.

Systematic Trading Biases.

- Disposition Effect: Hanging onto losers and selling the winners.
- Herd Behavior: The tendency to imitate others on a **global** scale.

↓
They can push stock prices away from their fundamental value.