Problem

Buba Inc., an American company, operates in the technology sector, which is known for its growth potential but also its volatility. You have some money set aside and want to determine the expected return on investing in Buba but must also assess the risk of investing in Buba Inc. compared to the overall market (represented by the T&R 500 index). You do your research and find that the return on the 10-year US bond is one percent and that the return of the T&R index is 7%. You also collected data on the returns of investing in Buba Inc.'s and the T&R index over the last year and calculated that the variance of returns for the T&R index is sixteen percent and that the covariance of Buba Inc.'s returns and the T&R index's returns is eight percent. What is the expected return (%) on investing in Buba Inc.?

Solution

CAPM (Capital Asset Pricing Model): $R_i = R_f + \beta_i(R_m - R_f)$

$$\beta_i = \frac{\text{Covariance of Asset Returns and Market Returns}}{\text{Variance of Market Returns}}$$

Where:

- R_i = Expected return on the investment i
- R_f = Risk-free rate of return (typically the return on government bonds)
- β_i = Beta of the investment (measure of its volatility relative to the overall market)
- R_m = Expected return of the market (usually represented by a broad market index such as S&P 500)

From the problem's description we get that:

- R_f = 1%
- R_m = 7%
- $\text{Covariance of Asset Returns and Market Returns} = 8\%^2$
- $\text{Variance of Market Returns} = 16\%^2$

$$\beta_i = \frac{8\%^2}{16\%^2} = 0.5$$

CAPM (Capital Asset Pricing Model): R_i = 1%+0.5(7%−1%) = **4**%

Answer: 4