Capital Asset Pricing Model (CAPM)

* CAPM is a model that describes the relationship between the expected return and risk of securities.
* CAPM indicates that the expected return on a security is equal to the risk-free return plus a risk premium.

ri = rf + Bi (rm – rf)

ri = Expected return on a security

rf = Risk free rate of return

Bi = Beta between the stock and the market

rm = Expected return of the market

Risk Free Asset Return

* A risk-free asset could be a US Government 10-year Treasury bill.
* Investors who are extremely risk averse would prefer to buy the risk-free asset to protect their money and earn a low return.
* If investors are interested in gaining more return, they have to bear more risk compared to the risk-free asset.

Market Portfolio Return

* Market portfolio includes all securities in the market. A good representation of the market portfolio is the S&P 500.
* Market portfolio return is the average return of the overall return of the S&P500.

Beta

* It is a measure of a stock’s risk (volatility of returns) reflected by measuring the fluctuation of its price changes relative to the overall market.

β = 0: No Market Sensitivity

β < 1: Low Market Sensitivity

β = 1: Same as Market (Neutral)

β > 1: High Market Sensitivity

β < 0: Negative Market Sensitivity