Security Market Line

The security market line is an equation that captures the relationship between an investment's systematic risk (known as beta) and its return. It was derived within and is one of the main components of the Capital Asset Pricing Model (CAPM). The equation for the security market line is given by

$$SML: Required\ Return = [\ r_f + \ \beta_p(\bar{r}_m - r_f)]$$
$$r_f = Risk\ Free\ Rate$$
$$\beta_p = Beta\ of\ the\ Portfolio$$
$$\bar{r}_m = Expected\ Return\ of\ the\ Market$$

The security market line is usually displayed in graphic form with beta on the horizontal axis, and required return on the vertical axis.

Like many things in finance, it looks more complicated than it really is. At any point in time, most of the variables in the equation above are constant. And the security market line can be represented with an upward sloping line with the slope of the line being the market risk premium $(\bar{r}_m - r_f)$.

The main implication of the security market line is that in a normal market, an investment's required return is positively and linearly related to its systematic risk (beta).