

EC371 Economic Analysis of Asset Prices

The CAPM: a *very brief* summary

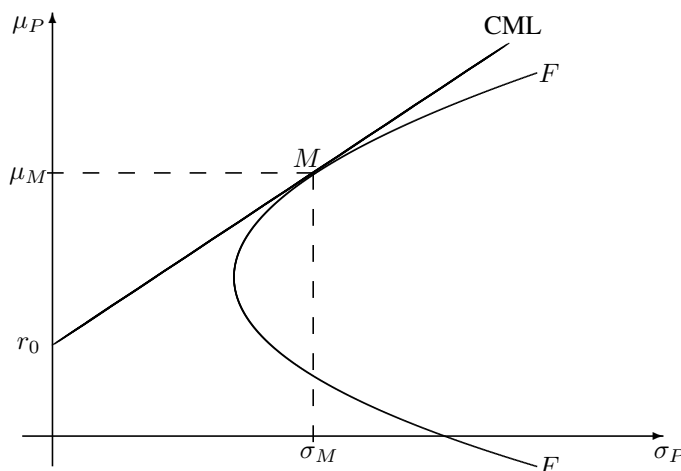


Figure 1: The Capital Market Line, CML.

The CML depicts the locus of efficient portfolios in market equilibrium if all investors share the same beliefs about means and variances. CML passes through r_0 on the vertical axis and is tangent at M to FF , the portfolio frontier for risky assets alone.

Point M identifies the market portfolio, in which the share of each risky asset equals its share in the whole market.

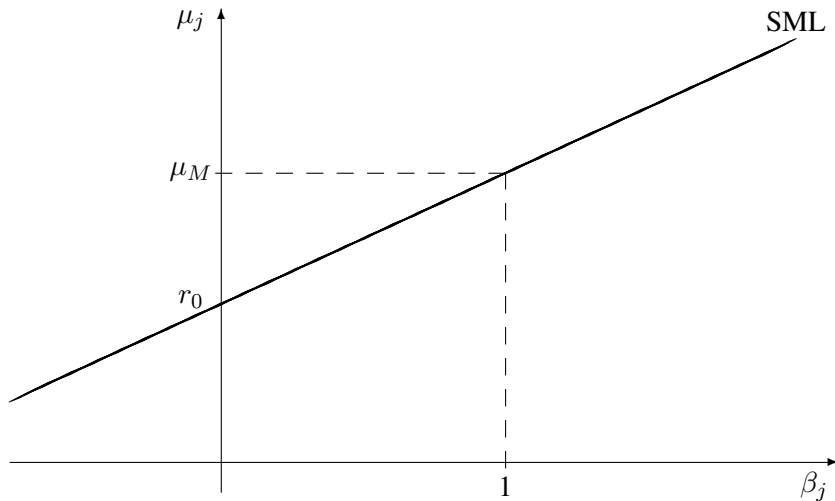


Figure 2: The Security Market Line, SML in the Sharpe-Lintner model

The SML views the CAPM prediction $\mu_j = r_0 + (\mu_M - r_0)\beta_j$ as a linear relationship between μ_j and β_j , where $\beta_j = \sigma_{jM} / \sigma_M^2 = \rho_{jM} \sigma_j / \sigma_M$.

The model predicts that the average rates of return and beta coefficients for all assets, and all portfolios of assets, will be located along the SML.

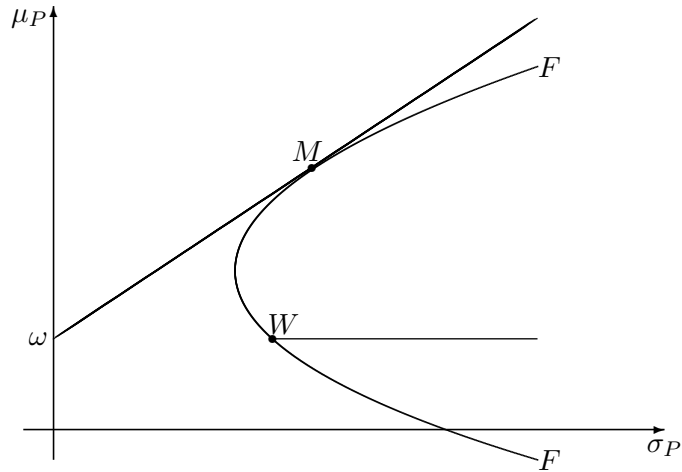


Figure 3: The Zero-Beta Portfolios.

In the absence of a risk-free asset, the market portfolio is located at a point such as M on the frontier FF . [The absence of a risk-free asset does **not** mean that $r_0 = 0$.]

The tangent to FF at M meets the vertical axis at ω . Feasible portfolios (or individual assets) with an expected rate of return equal to ω are located along the horizontal line starting at W . The rate of return on all these portfolios is uncorrelated with the return on the market portfolio. Hence, all their beta-coefficients are zero. *The parameter ω is unobserved but can be estimated statistically.*

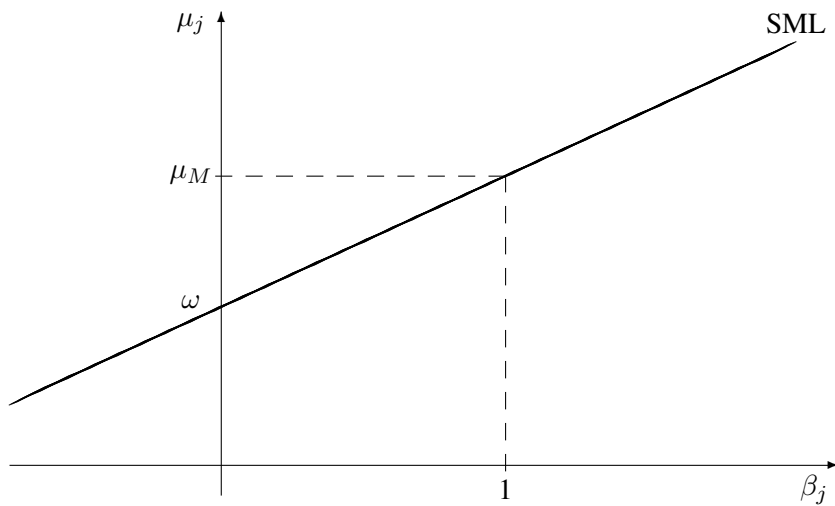


Figure 4: The Security Market Line, SML in the Black CAPM

The SML views the CAPM prediction $\mu_j = \omega + (\mu_M - \omega)\beta_j$ as a linear relationship between μ_j and β_j , where $\beta_j = \sigma_{jM}/\sigma_M^2 = \rho_{jM}\sigma_j/\sigma_M$.

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