Chapter 4

Overview of Cost of Equity Capital Models

There are many methods for calculating the equity cost of capital. Chapter 3 discusses the buildup method for estimating the equity cost of capital. Other popular methods of calculation include the capital asset pricing model (CAPM), the discounted cash flow (DCF) method, arbitrage pricing theory (APT), and the Fama-French three factor model.

The Capital Asset Pricing Model

The capital asset pricing model (CAPM) is a simple and elegant model that describes the expected (future) rate of return on any security or portfolio of securities. It is among the most widely used techniques to estimate the cost of equity. The CAPM resulted from the efforts of three recipients of the Nobel Memorial Prize in Economic Science: Harry M. Markowitz, James Tobin, and William F. Sharpe. The Nobel committee cited the contributions to the CAPM of Tobin and Markowitz when awarding the prizes to both men. Sharpe's work on the model was the primary reason for which he won the Nobel Prize.

Systematic Risk

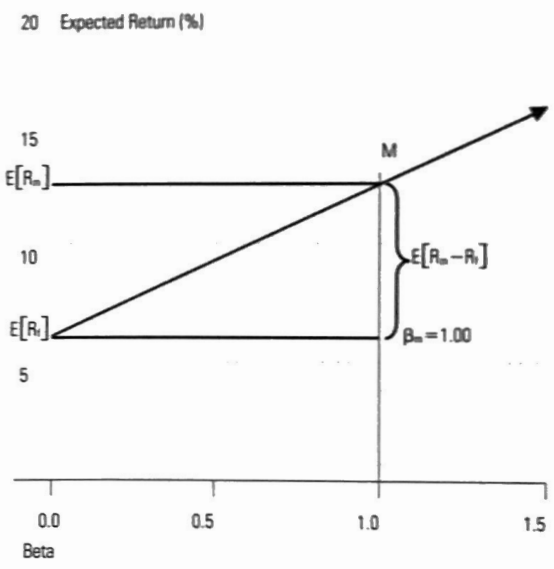
The principal insight of the CAPM is that the expected return on an asset is related to its risk; that is, risk-taking is rewarded. The model assumes that there is a riskless rate of return that can be earned on a hypothetical investment with returns that do not vary. A risky investment (one with returns that vary from one period to the next) will provide the investor with a reward in the form of a risk premium—an expected return higher than the riskless rate. For a particular risky investment, the CAPM indicates that the size of the risk premium is proportionate, in a linear fashion, to the amount of systematic risk taken.

The CAPM breaks up the total risk (the variability of returns) of an investment into two parts: systematic risk and unsystematic risk. Systematic risk is unavoidable and pervades (to a greater or lesser degree) every asset in the real economy and every claim (such as a stock) on those assets. Systematic risk generally springs from external, macroeconomic factors that affect all companies in a particular fashion, albeit with different magnitudes. The CAPM concludes that taking systematic risk is rewarded with a risk premium. The size of the risk premium is proportionate to the degree of co-movement of the security or portfolio (called beta) with the market portfolio consisting of all risky assets.

In contrast, unsystematic risk is that portion of total risk that can be avoided through diversification. The CAPM concludes that unsystematic risk is not rewarded with a risk premium. For example, the possibility that a firm will lose market share to a competitor is a source of unsystematic risk for its stock (see Chapter 6 for additional information on beta and systematic risk).

The security market line represents the relationship between expected return and systematic risk. This linear relationship forms the security market line, which is depicted in Graph 4-1.

Graph 4-1: The Security Market Line



The riskless asset forms the y-intercept of the security market line and represents the expected return on the asset with no systematic risk (beta equal to zero). The market portfolio by definition has a beta of one. Drawing a line that passes through the riskless asset and the market portfolio forms the security market line. Theoretically, to be fairly priced, every stock or portfolio of stocks should fall on the line.[1]