

Developing a Capital Asset Pricing Model

By BNET Editorial

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CAPM describes the relationship between risk and expected return for an individual portfolio or security. Its underlying theory has prompted lively discussion about what “risk” actually means, asserting that only “systematic” (non-diversified) risk brings real reward to investors. Systematic risk is unavoidable, market-oriented risk that cannot be averaged out through diversification, but which is mitigated through a balanced portfolio that includes safer investments.

CAPM has therefore been described as “a theory of equilibrium,” in which the higher returns expected of stronger markets are set against possible heavy losses in weaker ones. Without this equilibrium, high-risk stock would never attract investors.

What to Do

CAPM is expressed as a formula, illustrating the principle that the expected return of a security or portfolio is equal to the rate on a safe asset, plus a risk premium. This expected return should meet or exceed a theoretical required return—if it does not, the investment poses too great a risk. The formula is:

risk-free rate + (market return – risk-free rate) x beta value = expected return

Where:

- the *risk-free rate* is a rate quoted for a risk-free asset (for example, cash). In practice the rate quoted is that of 90-day U.S. Treasury Bills, which carry virtually no risk.
- the *market return* is the expected return in this particular market, which is usually sourced from an index like the Hang Seng, or S&P.
- the *beta value* measures the volatility of a portfolio or security, compared with the market as a whole (which always has a beta of 1)—for example, the New York Stock Exchange. So if beta is more than 1, the investment is more volatile than the market in general; if less than 1, less volatile. A beta of exactly 1 suggests that the investment will follow general market trends.

Example:

An investor is considering a portfolio of securities which has a beta value of 1.9—more volatile than the overall stock market. Suppose the risk-free rate at the moment is 3.5%, and the expected return on the Hang Seng index is 10% over the next twelve months. To mitigate the higher risk, the investor will want a higher rate of return than 10%. In this case, the formula is:

$3.5 + (10 - 3.5) \times 1.9 = 15.85\%$ expected return

So the minimum return that the investor should expect is 15.85%. If the portfolio is unlikely to produce this level of return, it's likely to be too risky.

What You Need to Know

- Bear in mind that CAPM is not a particularly sophisticated formula. If two investments have the same beta value, CAPM gives them equal weight—analysts have been quick to point out that this could be a risky assumption.
- It's not without reason that beta is defined as a measure of volatility—or risk—rather than a measure of expected return. CAPM certainly gives no guarantee of any high expected return associated with a high beta value.
- Beta is based on past market data—and the future may look very different. For this reason, beta values are usually drawn from several years' data, and advisors may counsel that the CAPM formula is best suited to long-term investors.
- When markets experience a downturn, high beta shares tend to be among the casualties.

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Web Sites:

Xrefer.com: www.xrefer.com

Contingencyanalysis.com: www.contingencyanalysis.com