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# **Capital Asset Pricing Model (CAPM) vs. Arbitrage Pricing Theory (APT)**



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# Capital Asset Pricing Model (CAPM) vs. Arbitrage Pricing Theory (APT)

$$\frac{E(R_i) - R_f}{\beta_{im}} = E(R_m) - R_f$$

**Capital Asset Pricing Model (CAPM)**

$$E(r_j) = r_f + b_{j1}RP_1 + b_{j2}RP_2 + \cdots + b_{jn}RP_n$$

**Arbitrage Pricing Theory (APT)**

*"The APT is derived from the premises that asset returns follow a linear returns generating process, and that in well-functioning financial markets, there will be no arbitrage opportunities. On the basis of these assumptions, one can show that there is an equilibrium linear relationship between the returns on risky assets and a small set of economy-wide common factors. While several macroeconomic variables do have some relationship with different risky assets, the APT postulates that the pricing of risky assets depends only on the set of variables whose influence is felt significantly by all risky assets together. This set of variables is known as the common factors of the APT." (Otuteye)*

Investing in stocks is tricky. Betting on your perception of the public's perception of a how a company will successfully fulfill their perception of a market need is not easy. The Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT) have emerged as two models that have tried to scientifically measure the potential for assets to generate a return or a loss. They are similar in that they attempt to measure an asset's propensity to follow the overall market however APT attempts to divide market risk into smaller component risk. Regardless, it is very difficult to predict which companies are strategically positioned well into the future in the right growing markets from a product, market-share, distribution, and corporate culture standpoint. It is even harder if not impossible to predict what the investor public's reaction would be to such a success if you were to correctly envision it.

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The capital asset pricing model (CAPM) states that the return on a stock depends on whether the stock's price follows prices in the market as a whole. CAPM is useful because it is a statistical representation of past risk. In my opinion, even though past performance is no guarantee for future success there is a higher probability that a consistent past performer will continue to do well over a new untested entry in the market.

Arbitrage pricing theory (APT) holds that the expected return of a financial asset is largely based on its "beta". Beta is the measure of the relationship between company related factors which influence financial performance and the overall market in which the latter competes. Typically a company which has a beta of one will reflect the market whereas a beta score of 0.75 means that a company will move up or down to the extent of 75 per cent of the corresponding market movement.

*" Since the common factors of the APT are not identified in the model they have to be empirically determined. As well, it can be shown that the empirical specification of the APT need is not unique.(f.7) In other words, no one set of economic factors constitutes "the factors" of the APT." (Otuteye)*

If I had researched what I thought would be a large stable company that would progressively expand over the next 10-20 years maybe I would use CAPM to validate past shareholder value performance data but nothing more.

Arbitrage Pricing Theory can be useful if one is investing in a company and wanted to measure the historical share price sensitivity to huge market fluctuations typical during the onset of bull and bear markets. Based on an investor's long-term and short-term goals different investment strategies could be planned using APT as an exhibit. For example, if a company had a beta of one thereby likely to follow the market an investor anticipating a recession would hold off purchasing that stock if their goal was to invest their money for no longer than a few years and vice versa.

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