In the classical theory, the asset can be purchased and sold simultaneously thereby producing a profit at zero risk. This idealization is never met in actual trading situations although cer

0

Arbitrage Pricing Theory (APT) – Adam Hayes

[https://www.investopedia.com/terms/a/apt.asp#:~:text=Updated%20Jun%2025%2C%202019.%20Arbitrage%20pricing%20theory%20%28APT%29,number%20of%20macroeconomic%20variables%20that%20capture%20systematic%20risk](https://www.investopedia.com/terms/a/apt.asp" \l ":~:text=Updated%20Jun%2025%2C%202019.%20Arbitrage%20pricing%20theory%20%28APT%29,number%20of%20macroeconomic%20variables%20that%20capture%20systematic%20risk).

* Arbitrage pricing theory (1976 by American economist, Stephen Ross)
  + Multi-factor asset pricing model
  + Basic idea – an asset’s returns can be predicted using a linear relationship between the asset’s expected return and a number of macroeconomic variables
  + The macroeconomic variables capture or define the systemic risk
  + <R>\_i = <R>\_z + \beta \* (<I> - <R>\_z)
    - <R>\_i – asset’s expected rate of return
    - <R>\_z – risk free rate of return
    - <I> - Risk premium associated with factor i
    - \beta – sensitivity of the asset price to macroeconomic factor n
    - Messed up model – both in concept and embodiment from this website
  + This model is an alternative to the capital asset pricing model (CAPM)
  + CAPM assumes markets are perfectly efficient and only accounts for market risk; APT assumes that markets can and do misprice and accounts for multiple risk/error sources
  + This model is not risk free arbitrage “because investors are assuming that the model is correct and making directional trades- rather than locking in risk-free profits”
  + APT factors are systemic risk that cannot be reduced by diversification
  + APT factors most commonly used
    - GNP
    - Unexpected changes in inflation
    - Corporate bond spread
    - Shifts in the yield curve
    - GDP (lesser)
    - Commodities prices (lesser)
    - Market indices (lesser)
    - Exchange rates (lesser)
  + Example of How Arbitrage Pricing Theory Is Used
    - For example, the following four factors have been identified as explaining a stock's return and its sensitivity to each factor and the risk premium associated with each factor have been calculated:
      * Gross domestic product (GDP) growth: ß = 0.6, RP = 4%
      * Inflation rate: ß = 0.8, RP = 2%
      * Gold prices: ß = -0.7, RP = 5%
      * Standard and Poor's 500 index return: ß = 1.3, RP = 9%
      * The risk-free rate is 3%
    - Using the APT formula, the expected return is calculated as: Expected return = 3% + (0.6 x 4%) + (0.8 x 2%) + (-0.7 x 5%) + (1.3 x 9%) = 15.2%

<https://corporatefinanceinstitute.com/resources/knowledge/finance/arbitrage-pricing-theory-apt/>

* APT aims to pinpoint the fair market price of a security that may be temporarily incorrectly priced
* the APT’s concept of arbitrage is different from the classic meaning of the term; In the APT, arbitrage is not a risk-free operation – but it does offer a high probability of success
* Historical returns on securities are analyzed with linear regression analysis against the macroeconomic factor to estimate beta coefficients for the arbitrage pricing theory formula.
* Example
  + Assume that: You want to apply the arbitrage pricing theory formula for a well-diversified portfolio of equities.
    - The riskless rate of return is 2%.
    - Two similar assets/indices are the S&P 500 and the Dow Jones Industrial Average (DJIA).
    - Two factors are inflation and gross domestic product (GDP).
    - The betas of inflation and GDP on the S&P 500 are 0.5 and 3.3, respectively\*.
    - The betas of inflation and GDP on the DJIA are 1 and 4.5, respectively\*.
    - The S&P 500 expected return is 10%, and the DJIA expected return is 8%\*.

Arbitrage Pricing Theory: It’s Not Just Fancy Math Elvin Mirzayev

<https://www.investopedia.com/articles/active-trading/082415/arbitrage-pricing-theory-its-not-just-fancy-math.asp>

* Inherent to the arbitrage pricing theory is the belief that mispriced securities can represent short-term, risk-free profit opportunities.
* The theory does, however, follow three underlying assumptions:
  + Asset returns are explained by systematic factors.
  + Investors can build a portfolio of assets where specific risk is eliminated through diversification.
  + No arbitrage opportunity exists among well-diversified portfolios. If any arbitrage opportunities do exist, they will be exploited away by investors. (This how the theory got its name.)
* Changes parameters include
  + Changes in inflation
  + Industrial production
  + Risk premiums
  + Interest rates
* Factor sensitivities come from multi-variate regression
* Example – S&P 500 and NASDAQ with 2% risk-free return each and expected return of 7 and 9 respectively

Nice Video

<iframe width="560" height="315" src="https://www.youtube.com/embed/ntKlSsSlumU" frameborder="0" allow="accelerometer; autoplay; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe>

Arbitrage Betting: <https://www.youtube.com/watch?v=TGinzvSDayU>

Retail Arbitrage: <https://www.youtube.com/watch?v=T-u0W7n324Q>