# An Introduction to Arbitrage Trading Strategies

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## Introduction

Arbitrage trading strategies are a class of trading strategies that involve buying and selling financial instruments to take advantage of price discrepancies. The goal of arbitrage trading is to make a profit from the differences in prices between securities or markets, without taking on significant directional risk. Arbitrage trading strategies typically rely on quantitative analysis and mathematical models to identify mispricing and execute trades quickly before the market adjusts. In this article, we will introduce five popular arbitrage trading strategies and provide a simple example and reference materials for each strategy.

**Keywords**: Arbitrage, Trading Strategies, Mispricing, Volatility, Structured Products, Capital Structure, Stocks, Equity, Credit Derivatives, Bonds, Options

## Arbitrage Trading Strategies

- ➢ Volatility Arbitrage Neutral
- ➢ Volatility Arbitrage Long Biased
- ➢ Structured Product Arbitrage
- ➢ Capital Structure Arbitrage
- ➢ Credit Arbitrage

## 1.     Volatility Arbitrage Neutral

Volatility arbitrage neutral is a trading strategy that involves simultaneously buying and selling securities to take advantage of pricing discrepancies caused by changes in volatility. The goal is to profit from the differences in prices between the securities while keeping the overall portfolio market-neutral by maintaining a balanced exposure to the market. The strategy aims to exploit mispricing due to market inefficiencies rather than betting on the direction of the market.

**Example 1**: A trader buys a call option on a stock that is expected to have high volatility in the future and simultaneously buys a put option on the same stock. This strategy is called a straddle or strangle and is designed to take advantage of the expected increase in the stock's volatility without taking on significant directional risk in the price action of the underlying asset.

**Example 2:** A trader buys a long-dated At-the-Money (ATM) call option and sells a short-dated ATM call option on the same stock. This strategy is called a diagonal call spread and is based on the idea that implied volatility tends to be higher for options with longer expiration dates than for options with shorter expiration dates.

By taking opposing positions on the same underlying asset with different expiration dates, the trader can profit from the difference in implied volatility between the two options, whilst remaining market neutral as both options have the same intrinsic value.

**References – Volatility Arbitrage**

"Volatility Arbitrage" by Bruno Dupire (1992)

"Equity Volatility Arbitrage" by David K. Whitcomb (2002)

## 2. Volatility Arbitrage Long Biased

Volatility arbitrage long biased is a trading strategy that is similar to the above strategy but with a directional bias towards the long side. The trader may take a long position in securities with high volatility and a short position in securities with low volatility, with the aim of profiting from the expected increase in the volatility of the long position. The strategy may involve using options to hedge against downside risk.

**Example:** A trader buys a call option on a stock that is expected to have high volatility in the future and simultaneously buys a put option on a different stock that is expected to have low volatility. The trader maintains a long bias by having a larger position in the call option. This strategy is called a ratio call spread.

**References – Volatility Arbitrage Long Biased**

"Volatility Trading Strategies, with Applications to Equity and FX Markets" by Gareth Peters and Pavel Shevchenko (2010)

"A Portfolio Optimization Approach to Long-Short Equity Volatility Arbitrage" by Jiali Fang and Shuxing Yin (2018)

## 3. Structured Product Arbitrage

Structured product arbitrage is a trading strategy that involves exploiting pricing inefficiencies in structured products such as collateralized debt obligations (CDOs), asset-backed securities

(ABS), and mortgage-backed securities (MBS). The trader seeks to profit from the differences in pricing between the underlying assets and the structured product that contains them.

**Example**: A trader buys an ABS that is backed by auto loans with high credit ratings but is trading at a discount due to market inefficiencies. The trader also shorts an MBS that contains auto loans with low credit ratings that are overvalued due to market inefficiencies. The trader seeks to profit from the pricing discrepancies between the two securities as the security prices return to normal levels.

**References – Structured Product Arbitrage**

"Arbitrage Opportunities in Structured Securities" by M. Shahid Embrahim, Haluk Unal, and Saul Antolin-Diaz (2011)

"Structural Arbitrage: A Structural Approach to Pair Trading in Stock Index Futures" by Manish Kumar (2013)

4.      **Capital Structure Arbitrage**

Capital structure arbitrage is a strategy in which an investor seeks to take advantage of the pricing inefficiencies between different securities within a company's capital structure. This strategy typically involves buying or selling two or more securities that are related to each other, such as a company's stock, bonds, and preferred stock, in order to profit from the relative mispricing of these securities.

**Example:** If a company's stock is undervalued relative to its bonds or preferred stock, an investor could buy the stock and sell the bonds or preferred stock. This would allow the

investor to profit from the difference in prices, as the stock price is likely to rise relative to the other securities.

To determine if bonds are undervalued relative to the stock, you need to compare the yields of the bonds and the expected returns of the stock. Typically, when bonds are undervalued relative to the stock, it means that the yield on the bonds is higher than the expected returns from holding the stock.

To determine if a stock is overvalued relative to a bond, you need to compare the valuation of the stock and the yield of the bond. We could compare the price-to-earnings (P/E) ratio of the stock to the yield-to-maturity (YTM) of the bond: The P/E ratio is calculated by dividing the stock price by the earnings per share (EPS), while the YTM is the expected return of the bond if held until maturity. A high P/E ratio relative to the YTM may suggest that the stock is overvalued relative to the bond.

**References – Capital Structure Arbitrage**

"Capital Structure Arbitrage: An Empirical Study" by Michael S. Weisbach and Li Jin (2006)

"Capital Structure Arbitrage and Equity Market Efficiency" by Robert L. McDonald and Anna Paulson (2006)

## 5. Credit Arbitrage

Credit arbitrage is a trading strategy that involves exploiting pricing discrepancies between securities that have different credit ratings or risk levels. The trader seeks to profit from the differences in pricing between the securities while taking on a calculated amount of risk. The

strategy may involve analysing credit spreads, default probabilities, and other credit-related factors to identify mispricing and arbitrage opportunities.

**Example:** A trader buys credit default swaps (CDS) on a company where credit default risk is increasing, perhaps the company is issuing further debt securities and increasing its leverage. Simultaneously the trader shorts CDS on a company that is expected to perform well, where credit risk is decreasing. The trader seeks to profit from the differences in pricing between the CDS while taking on a calculated amount of risk.

**References – Credit Arbitrage**

"Credit Arbitrage and Equity Prices" by Marco Avellaneda and Sasha Stoikov (2008)

"The Limits of Arbitrage: Evidence from Leveraged Buyouts" by Ulrike Malmendier and Geoffrey Tate (2007)

**Conclusion**

In conclusion, arbitrage trading strategies involve buying and selling financial instruments in different markets to take advantage of price discrepancies. The goal is to make a profit from the differences in prices between securities or markets, without taking on significant directional risk. The strategies typically rely on quantitative analysis and mathematical models to identify mispricing or arbitrage opportunities and execute trades quickly before the market adjusts. The five popular arbitrage trading strategies introduced in this article are volatility arbitrage neutral, volatility arbitrage long biased, structured product arbitrage, capital structure arbitrage, and credit arbitrage. Each strategy has its own unique characteristics and examples, but they all share the goal of profiting from pricing discrepancies while remaining market neutral and / or managing risk to price movements in the underlying securities.