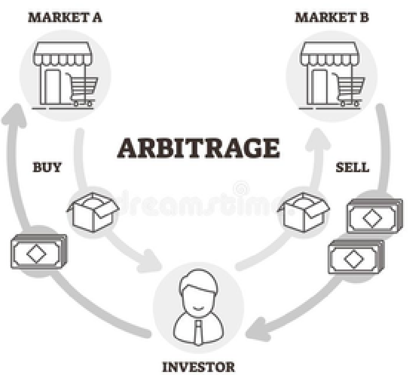
## WHAT IS ARBITRAGE?

Arbitrage is the simultaneous purchase and sale of the same asset in different markets in order to profit from tiny differences in the asset's listed price. It exploits short-lived variations in the price of identical or similar financial instruments in different markets or in different forms.

Various different kinds of Arbitrage Strategies are in use depending on the kind of markets, time period, nature of assets that are involved.

### Different types of arbitrage strategies

1. Statistical Arbitrage
2. Market Arbitrage
3. Risk Arbitrage
4. Volatility arbitrage
5. Index Arbitrage
6. Spread Trading
7. Cash & Carry Arbitrage
8. Reverse Cash-and-Carry Arbitrage




## STATISTICAL ARBITRAGE:

This is a profit situation arising from pricing inefficiencies between securities. Investors identify the arbitrage situation through mathematical modelling techniques. Statistical arbitrage is not without risk; it depends heavily on the ability of market prices to return to a historical or predicted normal.

## MARKET ARBITRAGE:

This refers to purchasing and selling the same security at the same time in different markets to take advantage of a price difference between the two separate markets. An arbitrageur would short sell the higher priced stock and buy the lower priced one. The profit is the spread between the two assets.

## RISK ARBITRAGE:

This is a broad definition for three types of arbitrage that contain an element of risk. In theory true arbitrage is riskless, however, the world in which we operate offers very few of these opportunities. Despite these forms of arbitrage being somewhat risky, they are still relatively low-risk trading strategies which money managers (mainly hedge fund managers) and retail investors alike can employ.

Merger and acquisition arbitrage - The simultaneous purchase of stock in a company being acquired and the sale (or short sale) of stock in the acquiring company. Liquidation arbitrage - The exploitation of a difference between a company's current value and its estimated liquidation value. Pairs trading - The exploitation of a difference between two very similar companies in the same industry that have historically been highly correlated. When the two company's values diverge to a historically high level you can take an offsetting position in each (e.g. go long in one and short the other) because, as history has shown, they will inevitable come to be similarly valued.

## VOLATILITY ARBITRAGE:

This is a type of statistical arbitrage that is implemented by trading a delta neutral portfolio of an option and its underlying. The objective is to take advantage of differences between the implied volatility of the option, and a forecast of future realized volatility of the option's underlying. In volatility arbitrage, volatility is used as the unit of relative measure rather than price - that is, traders attempt to buy volatility when it is low and sell volatility when it is high. So long as the trading is done delta-neutral, buying an option is a bet that the underlier's future realized volatility will be high, while selling an option is a bet that future realized volatility will be low. Because of put call parity, it doesn't matter if the options traded are calls or puts. Being long in a delta neutral call results in the same returns as being long in a delta neutral put.

## INDEX ARBITRAGE:

This is a strategy designed to profit from temporary discrepancies between the prices of the stocks comprising an index and the price of a futures contract on that index. By buying either the stocks or the futures contract and selling the other, an investor can sometimes



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exploit market inefficiency for a profit. Like all arbitrage opportunities, index arbitrage opportunities disappear rapidly once the opportunity becomes well-known and many investors act on it. Index arbitrage can involve large transaction costs because of the need to simultaneously buy and sell many different stocks and futures, and so only large money managers are usually able to profit from index arbitrage.

## SPREAD TRADING:

A futures spread (or spread) is a long-short futures position that provides exposure to a spread or difference in two prices.

Buying a Spread: When actual spread between two futures contracts of the same asset widens, it is desirable to buy the near month contract since it is underpriced and sell the far month contract since it is overpriced. This strategy is called "buying a spread".

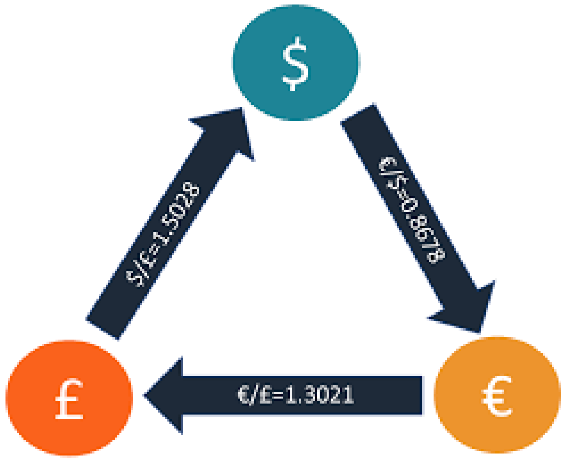
Selling a Spread: When actual spread between two futures contracts of the same asset narrows, it is desirable to sell the near month contract because it is overpriced and buy the far month contract because it is underpriced. This strategy is called "selling a spread". In either case of buying or selling a spread, the trader can square off his /her position when the spread corrects and the contracts are traded at their fair spread.

Spreads can be intracommodity(or calendar spread) with same underlying but with different maturities, or intercommodity with different underlying typically having same maturity or on different exchanges using futures on the same underlying.

Exchanges generally have less strict margin requirements for futures spreads because through spread trading, speculators face reduced risk compared to trading outright futures. This happens because the long and short futures that comprise a spread are usually correlated and tend to hedge one another.

## CASH & CARRY ARBITRAGE:

Cash & carry arbitrage between spot and futures refers to a basis trade involving a long cash position exactly offset by a short futures position. The holder of the position believes that the futures contract is expensive (futures price of the asset is more than the spot price of the asset plus cost of carrying the asset to the futures expiry date). He shorts the future, borrows at money market rates to finance a long position in the underlying, and either delivers the asset into the futures contract or waits for a




narrowing of the basis and closes out the positions in which case he effectively collects the yield on a synthetic money market instrument. It is also called buying the basis. This arbitrage and its opposite, reverse cash-and-carry, ensure an efficient relationship between cash and derivatives markets.

Cash & carry arbitrage between two futures contracts refers to buying the near month futures contract with borrowed funds with the intention of taking delivery and selling the far month futures contract with the intention of giving delivery. The above opportunity arises when futures price of the far month contract is more than the near month futures price plus cost of carrying the asset from the near month to the far month expiry date.

## REVERSE CASH-AND-CARRY ARBITRAGE:

This refers to the creation of a low-risk or neutral position by simultaneously selling assets and buying the corresponding futures contract. Reverse Cash-and-Carry Arbitrage opportunity between spot and futures prices arises when the futures price of the asset is less than the spot price of the asset plus the cost of carrying the asset to the futures expiry date. Similarly Reverse Cash-and-Carry Arbitrage opportunity between two futures contracts arises when the far month futures price is less than the near month futures price plus the cost of carrying the asset from the near month to the far month expiry date.