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Derivatives 101

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Derivatives Strategies - "Arbitrage"

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Executive Summary

- Futures trading strategy designed to reap a risk free profit through the difference in prices between futures and spot price is known as arbitrage.
- Our fifth issue gives an in-depth explanation of arbitrage as a strategy that can be used to make a profit from a security's price change.
- Arbitrage using futures is one of the three most important functions of futures trading.
- There are three main types of market participants in the futures market and they are; Hedgers, Speculators and Arbitrageurs. We discussed the first two in our previous issues on **"Derivatives 101"**
- This report begins with a brief definition of arbitrage, necessary conditions for trading and impact of arbitrage on market pricing.
- Finally, we discuss some advantages and disadvantages of arbitrage.

What is arbitrage?

- Arbitrage is the **simultaneous purchase and sale of an asset to profit from an imbalance in the price.**
- It is a trade that profits by exploiting the price differences of identical or similar financial instruments on different markets or in different forms. Arbitrage exists as a result of market inefficiencies and would therefore not exist if all markets were perfectly efficient.
- The simplest form of arbitrage is purchasing an asset in the market where the price is lower and simultaneously selling the asset in the market where the asset's price is higher.
- Arbitrageurs can take advantage of this differential in the futures market by buying stock in the cash market and simultaneously selling a contract for the same number of shares on the futures market if the market is bullish on the stock.
- The difference between the cash and futures price for the stock is called the **arbitrage profit.**

Who are arbitrageurs?

- Arbitrage is a widely used trading strategy, and probably one of the oldest trading strategies to exist. Traders who engage in the strategy are called **arbitrageurs**.
- The concept is closely related to the market efficiency theory. The theory states that for markets to be perfectly efficient, there must be no arbitrage opportunities all equivalent assets should converge to the same price. The convergence of the prices in different markets measures **market efficiency**.
- Both the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory explain that arbitrage opportunities occur due to the mispricing of assets. If the opportunities are fully explored, the prices of equivalent assets should converge.

Necessary Trading Conditions

Arbitrage may occur if the following conditions are met:

- **Asset price imbalance**: This is the primary condition of arbitrage. The price imbalance can take various forms:
  1. In different markets, the same asset is traded at different prices. (The law of one price)
  2. Assets with similar cash flows are traded at different prices in the same market.
  3. An asset with a known future price currently traded at a price different from the expected value of the future cash flows.

Impact of Arbitrage on Marketing Pricing

- The law of one price and the lack of arbitrage opportunities is only upheld when there are market participants actively seeking out such opportunities. In order for arbitrage opportunities to be eliminated, traders must **closely follow and compare prices**.
- Although abnormal returns can be earned in a variety of ways, arbitrage profits are definitely examples of abnormal returns and violate the principle of market efficiency.
- We typically assume that arbitrage opportunities cannot exist for any great length of time and that one investor cannot consistently capture them. Thus, **prices must conform to a model that assumes no arbitrage**.

Advantages of Arbitrage

- The biggest benefit of arbitrage trading is that the risk element is next to nil. An arbitrageur is able to make a **riskless profit**.
- Arbitrage helps in keeping the price of securities across the markets more or less same and therefore it help in better **price discovery** of an asset and also put an end to price variances in securities across various markets.
- It helps in making the **financial markets more efficient** because imagine if there were no arbitrageurs than stocks would have kept trading at different prices in different markets leading to speculation by few individuals which would have damaged the real investors' confidence in stock market.

Disadvantages of Arbitrage

- Many individuals only into take into account the price aspect and they ignore the **transactions costs and taxes** associated with buying and selling of asset which in turn results in wrong estimation of profits and may even lead to loss if price difference is not much.
- In real life there are **not many** arbitrage opportunities and even if there are then in order to make profit put of such situations you need to **take positions quickly** and also lack of expertise to make such transactions which only few people possess.
- One requires **lot of money** in order to do arbitrage, you need to have a substantial amount of money in order to do a profitable arbitrage.

Example Arbitrage

Consider the following example of arbitrage.

- Assume Safaricom currently trades at KES.28, while the three-month futures contract is priced at KES.30. In this case, the trader or arbitrageur would buy the stock (or open a long position in it) at KES.28, and simultaneously sell the three-month futures contract (i.e. initiate a short position in it) at KES.30. The trader would then hold or carry the asset until the expiration date of the futures contract and deliver the asset against the contract, thereby ensuring an arbitrage or riskless profit of KES.2.
- Arbitrageurs will typically engage in this trades until the prices in the market converge and the arbitrage opportunity ceases to exist.

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