

LESSON FOUR: QUANTITATIVE TRADING ANALYSIS

Quantitative analysis involves using mathematical, statistical, logical, and artificial intelligence techniques to analyze data, understand patterns, and make informed decisions. Let's delve into the details.

Definition

Quantitative analysis collects, evaluates, and assesses data to understand past, present, and future behavior. A quantitative analyst will study an asset's past data for as long as two years, which can require downloading and modeling millions of data points.

It converts the data into analytical values that can be systematically studied. Analysts have found that within an asset's historical data, they can find inefficiencies and other anomalies that, when understood, can lead to profitable trades that other traders cannot see. When these opportunities are found, they are used to formulate trading rules called algorithmic strategies. These allow trading computers to recognize these anomalies when they occur again.

What are the qualifications of a Quantitative Trader?

Most Quantitative traders come from a background in advanced mathematics. Other closely related educational backgrounds include physics, philosophy, astronomy, artificial intelligence, programming, and computer data analysis. These highly educated, deep, focused professionals understand number theory and extensive data analysis.

Quantitative analysis is the opposite of fundamental analysis. That is because, in many ways, the quantitative analyst needs to understand the many nuances of the company being analyzed. While a fundamental analyst must understand why a company does certain things, the quantitative analyst only looks to see if there are inefficiencies and anomalies in the company's past actions. They do not need to know much about why they occur, just that they do in some deeply hidden cycle.

A significant benefit of quantitative analysis is that the many recent discoveries in mathematics and artificial intelligence fold perfectly into the quantitative approach to analysis. In fact, with machine learning now becoming a heavily studied subject among mathematicians, the advancing benefits of quantitative analysis are increasing almost daily.

The Process

Data Collection

Quants gather extensive financial or economic data because this analysis method needs more data. The data should go back as far as is practical to obtain, at least a few years. The data is broad in range because when looking for anomalies and relationships leading to inefficiencies, they often need to know from which direction the inputs will come. Therefore, quantitative analysts want everything they can get, including price actions, volumes, mathematical values of interim data, and anything else they can conjure up.

It is common for a quantitative analyst to take in many terabytes of data daily and do millions of calculations on that data. This is one of many reasons quants need the fastest computers with vast digital storage.

Backtesting is the Key

The most crucial activity of quantitative traders is the ability to perform extensive backtesting. Backtesting is taking a potential strategy (a potential anomaly or inefficiency) and testing it by going back many years in the asset's historical data. Then, acting as if the time is back, attempt to trade with the strategy and continue that process in every instance of the candlestick chart advancing until today. Yes, this means many thousands of attempted trades. Then, the tabulated results were used to see if the strategy identified an inefficiency or anomaly that could be exploited to make a profitable trade.

Backtesting is a rigorous and tedious process. Depending on the condition and speed of the backtesting software, it can take hours to weeks. The strategy is considered for use only after achieving repeatable results from the backtests. Then, because these strategies are commonly only suitable for certain market conditions, the backtesting must be regularly performed to update the strategy's parameters.

Decision to Use a Strategy

Because quantitative analysis is so objective and driven only by data, the decision to use a particular strategy is simplified. The strategy either works or it doesn't. Also, quantitative traders will likely have many different strategies active at any one time. It is essential to note that these strategies are unique to a specific stock or asset. That is to say, the plan that works on Nvidia is not the same one used on Meta. Each one has a difference because their historical data is unique.

The Trade Idea

When all this analysis is completed, and the quant has a list of stock symbols with an associated strategy, they must be linked together for a successful trade. This linkage is called a Trade Idea. The components of a Trade Idea are the asset symbol (stock, cryptocurrency, Forex pair, etc.), strategy name, and detailed trading parameters.

Ultimately, quantitative analysis empowers the trader by transforming data into actionable information, making it a powerful tool for trading profitably.

The information presented has given you a background for the types of trading you can do in today's markets. Next, we will discuss the information you must use to trade with any analysis. These are the common traits you must master to be a successful trader.