

Machine Learning Approach to Predictive Analysis of the Invesco TQQ ETF

In this research I seek to uncover the possibility of leveraging advanced predictive machine learning model(s) which are capable of forecasting price movements of the Invesco TQQQ ETF. This model will seek to determine whether to long (buy) or short (sell) the ETF product based on a specified period, whether that is daily, weekly, or monthly, that will be determined upon research. This approach will use price action, purchase volume, moving average, and macroeconomic metrics, or other macroeconomic ETF products, into a comprehensive data science and machine learning framework. The assumption is that this approach will outperform more traditional analysis methods and offer a more quantitative and predictive approach to outperformance in the market.

We assume that patterns and trends in the historical market data can aid in the gain of insight into future price movements. We may use a multitude of data sources to obtain the necessary information that may be needed to create meaningful model. We may find great correlations between price movements and the historical indicators that are chosen to predict these price movements. Extreme geopolitical events may not be considered in this approach and could lead to significant underperformance of the model. These events may sway the historical data and cause retraining of the model to infer errors on future predictions.

Traditional approaches to predicting market movements encompass the analysis of company fundamental financial data and/or technical analysis of historical market movements. Fundamental considered organizations financial statements, company performance in terms of profits and cash flows, and macroeconomic conditions. Technical analysis leans more of a focus on price movements, trading volumes, moving averages, charting patterns, and other market indicators that are derived as calculations that have a fundamental inclusion of these previously mentioned technical metrics. These methods emphasize the inclusion of human decision making and can lead to errors due to bias and limitations to the digestion of all the information available to and individual to make an informed decision.

This approach of applying machine learning into the analysis of the TQQQ ETF, and considering of other macro market trends, can possibly lead to a more efficient approach to technical analysis and may incorporate a statistically backed application of investment decisions. As this approach may lead to a sophisticated tool to aid in the investment process, it may be imperative to continuously evaluate the performance of the model and reconsider some of the assumptions due to the many factors that impact the market which we may not be able to consider.