Public Project Summary

Backtesting "Remek! Momentum" Pullback Strategy on U.S. Commodity and Treasury Futures

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Contents

Project Scope

Within the capstone project as a graduate candidate, I have helped *Remek! Trading Systems* plans to find the optimal settings that would improve the chances of an entirely automated pullback strategy-based product's success. To achieve this, I have used computer software (NinjaTrader8) to implement a series of backtests on U.S. futures contracts, focusing specifically on four instruments: Gold Futures; Crude Oil Futures; U.S. Treasury Bond futures; 10-Year U.S. Treasury Note futures. Making use of multiple ideas and variations of a pullback strategy, I aimed to find an edge, if any.

It is worth mentioning that several limitations had put constraints on the project and the reliability of the findings. First, the strategy was tested only on four instruments that fall into two types of futures contracts: commodities and treasury futures. Not only the number of instruments is limited, but also the instrument type is restrained to only futures contracts. Hence, if an edge is identified, it would be premature to apply the findings on other asset classes, such as equities or currencies. However, the focus of the project was on the robustness of the methodology, the success of which can ensure that it is optimized further for other futures contracts or asset classes.

Pullback trade

A pullback is a minor temporary movement against a price in a trend. Pullback trades are trend continuation, with-trend trades that try to catch these movements. An important prerequisite for entering a pullback trade is that the market must be upward or downward trending, hence creating a necessity to define a trend. Trade entry is buying against the support level near the bottom or selling short against the resistance level near the top of the pullback. Given the nature of the pullback trades, its characteristics and common issues, there are a variety of setups that traders use with pullback trades, such as complex pullbacks or by using the momentum of a lower timeframe breakout.

The findings of the current project will be used by the project sponsor company *Remek! Trading Systems* to improve the current products or develop a market-ready, automated, pullback strategy-based product.

Summary of the work

The modifications of the strategy that were adjusted to achieve the goals of the project can be divided into three categories, which are different from each other in terms of risk appetite, stop loss and profit target rules, trade entry and trade exit signal logics, and other variables. As mentioned, I have applied these strategies to only a few instruments, which included Gold Futures, Crude Oil Futures, and two Treasury futures. At the same time, these were adjusted for timeframe and lookback period to help find the best performing parameters.

The first type of strategy is a simplified version of a pullback strategy with a risk-to-reward ratio of 1, meaning that the profit target and stop-loss are placed in equal distances from the initial market entry. The second strategy version is slightly more sophisticated. It aims to make the maximum out of winning trades by allowing such trades to continue running, without exiting the trade prematurely. Although naturally, such a strategy presumes lower trade accuracy, it comes with the benefits of larger average winning trades. Running this strategy may require more patience and risk tolerance, but usually pays off when the system can successfully catch the best pullback signals. The third strategy is similar to the first described strategy but comes with the difference of an added signal counter rule. The signal counter rule aims to limit the number of entries per defined trend, with the goal of capturing the first or first several best pullback signals only.

After all above-mentioned strategies were run with the four instruments settings, the results were exported to spreadsheets and analyzed further. Data visualization, among other tools, was used to arrive at meaningful conclusions and insights.

Key outcomes

While no particular strategy variation proved to be reliably better than any other one, the product in its current state yields consistently positive expectancies for both commodity futures in a 15-minute timeframe setting. Crude Oil futures, in particular, perform much better with higher timeframe charts and longer lookback periods. Finally, the introduction of signal counters tends to smoothen the equity curve.

However, several limitations restrict the reliability of the findings. Both findings and limitations outlined in the previous sections entail in-depth testing and strategy optimization. Further analyses and adjustments will shed light on the product's feasibility in the financial markets.

Benefits to the client

Throughout the project, I have carried out intensive backtesting with 4 instruments and different pullback strategy variations. As a result, I have gathered a lot of data and coupled the data with my findings. The output should serve as an important input for *Remek! Trading Systems*. Both data and findings can be effectively used to improve the current products or develop new products, while saving time and effort.

Learning experience

Almost 3 months of constant work and communication ensured consistent and highly efficient learning process. Led by the project sponsor at Remek! Trading Systems, the process was very smooth with all problems and requests being handled after mutual agreements. I believe that working with a real client on the development of a real market product improved my consulting and communication skills. In general, the consultancy-oriented work as a final graduate project proved to be a practical and valuable experience.

The project was also an important addition to the knowledge gained in technical trading and automated trading systems courses. With a heavy focus on the trading process, pullback strategy optimization, and complex trading software use, the project allowed getting deeper insights into the essentials of technical trading. Regular, individual meetings with an experienced professional in the technically motivated trading field complemented the learning process with practical elements.