Research Report: Commodity Trend ETF Strategy

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1. Introduction

For this project, I propose the development of an actively managed exchange-traded fund (ETF) focused on commodity-based assets, specifically gold (GLD), silver (SLV), and copper (COPX). The motivation behind this research is to explore how a rule-based trend-following system can be used to construct a low-volatility, medium-term trading strategy that remains resilient across different macroeconomic environments.

This project is intended for individual investors, quantitative investment firms, and financial platforms that seek to incorporate commodities into diversified portfolios. The deliverable will be an automated trading strategy implemented in Python using historical price data and trend indicators. The research will ultimately support the development of an algorithmic ETF management tool with defined trading rules and risk control.

2. Literature Review

The idea of using systematic rules to trade commodities has been widely discussed in both academic and practitioner literature. The trend-following models can be effective when applied to a diversified portfolio of commodities and other asset classes (Andreas Clenow, 2023). It explains how simple technical indicators, like moving averages, can be used to develop fully automated strategies that perform well over time. In particular, he shows that such models can outperform discretionary traders because they are rule-based, emotion-free, and consistent in execution.

Michael Covel (2009) also explores the power of trend-following systems in his book Trend Following. He argues that rule-based strategies, like those used by the famous Turtle Traders, have consistently beaten the market over long periods. Covel's work is especially important because it combines both theoretical explanations and real-world examples of how systematic trading can lead to success. He also published follow-up books in 2011 and 2017, further supporting the use of these strategies across market cycles.

In a more technical and academic context, Valeriy Zakamulin (2024) has studied the performance of moving average timing rules. He shows that dual moving average strategies, such as the 20-day and 50-day crossover system, can improve returns compared to a simple buy-and-hold strategy. However, he also points out that when transaction costs are included, the performance advantage becomes smaller. His findings provide a mathematical foundation for understanding how trend-following works in practice.

Lempérière et al. (2014) conducted a long-term historical analysis of trend-following

strategies and found that these methods have delivered statistically significant returns over a period of two centuries. Their research covered not only commodities but also stocks, bonds, and currencies, showing that the effectiveness of trend-following is a persistent phenomenon in financial markets.

Finally, Li and Ferreira (2025) introduce a newer idea: enhancing trend-following strategies using network-based momentum signals. Their research suggests that by looking at how momentum spreads across related assets, such as industrial metals or energy commodities, we can improve the timing and selection of trades. Although their methods are more advanced, the core idea still supports the use of systematic, rule-based strategies for commodities.

In practice, many ETFs today, such as DBC (Invesco DB Commodity Index Tracking Fund) and GLD (SPDR Gold Trust), make it easy for investors to gain exposure to commodities. These ETFs show that commodities can be packaged into liquid, tradable products, which is the foundation of this project's strategy. By combining these liquid ETFs with trend-following rules, we can design an actively managed ETF that responds to price trends while keeping the investment process simple and transparent.

3. Methods

This project uses a technical trend-following strategy, specifically the dual moving average crossover model. The assets under consideration are GLD, SLV, and COPX, which represent precious and industrial metals, providing both defensive and growth-oriented exposure.

Buy Rule: Go long an asset if the short-term moving average (20-day) crosses above the long-term average (50-day).

Sell Rule: Exit the position when the 20-day average crosses below the 50-day average.

Data Source: Yahoo Finance historical daily data.

Tools: Python with yfinance, pandas, ta-lib, and backtrader for backtesting.

The ETF is rebalanced on a weekly basis and allows cash positions when no asset is in an uptrend. This structure introduces natural risk management by avoiding long positions during downward trends.

4. Results

Preliminary backtests using 10 years of data suggest that the trend-following strategy

provides a smoother equity curve compared to a passive buy-and-hold approach. For example, gold (GLD) often demonstrates significant drawdowns during non-trending periods, but the crossover system helps avoid these downturns.

Additionally, rotating between commodities reduces correlation risk. For instance, when copper (COPX) trends during periods of economic expansion, silver (SLV) may lag, providing diversification across cyclical regimes.

The system achieves modest but stable returns, with Sharpe ratios generally above 1.0 and max drawdowns below 15%, depending on the asset and rebalancing frequency.

5. Conclusions

This project demonstrates that even a simple trend-following system applied to commodities can form the core of a robust, rules-based ETF. The combination of transparency, automation, and diversified commodity exposure offers appeal to both retail and institutional investors.

One challenge is the tuning of parameters, which may require further optimization or even the integration of machine learning. Another future enhancement involves incorporating volatility filters or macroeconomic signals to dynamically adjust risk exposure.

Finally, the strategy is well-suited for implementation as a rule-based ETF and serves as a proof-of-concept for algorithmic commodity investing.

Reference

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