Swing Failure Pattern

Effect Study: Precious Metals

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Introduction

Large institutional players wield significant influence over market dynamics. Their massive trades can directly move prices up or down. These institutions often have access to top-tier research and their actions can shape the sentiment of other investors, influencing market trends. However retail traders suspect that institutional players manipulate prices in precious metals such as Silver, forming temporary imbalances in supply and demand in order to create liquidity for their large orders.

Retail traders who don't understand potential price manipulation face serious disavantages. They lack the tools to protect themselves, creating an unfair playing field. Manipulation can mislead them to poor trading decisions and losses. This study seeks to bring clarity to this phenomenon. It examines if the market effect exists in the precious metals market with emphasis on Silver, measures wether there are positive returns associated to the effect. Finally, it assesses if traders can build a profitable strategy around this effect.

Methodology

Dataset

- **Assets**: Silver CFD.
- **Time Period**: The dataset spans from January 2019 to December 2023.
- **Granularrity**: The analysis will be done on daily timeframe prices.
- **Data Source**: The data was gathered through the Ca tal.com API, one of Europe's CFD trading platforms.

Identifying the Effect

Quantitative Criteria:

1. Swing points form within the month. Swing points are days where the current days high is higher, then previous days high and next days high. The inverse is also true when the current days low is lower, then previous days low and next days low.

2. In the subsequent month, price breaks the swing point formed in the previous month. Be it for swing point high or swing point low.

3. In the breakout day, if it's a upward trend when price closes below the previous month swing point high and the high of the breakout day is higher than the previous month swing point high we have a swing failure pattern occured. if it's a down trend when price closes above the previous month swing point low and the low of the breakout day is lower than the previous month swing point low we have a swing failure pattern occured.

Analytical Approach

The study employed a three-pronged approach to investigate the potential impact of the Swing Failure Pattern (SFP) on the Silver returns:

1. **Event Study**: An event study framework as used to isolate the effect of the SFP. Days meeting the SFP criteria were designated "event days". Return distributions were compared to the benchmark distributions which are the "population days" (both event days and non event days). this approach directly addresses wehter the SFP leads to a distinct shift in return patterns compared to the normal conditions.

2. **Distribution Comparison**: Density plots were used to visualize the return distributions of SFP event days and population days. Visual comparison provide a clear picture of potential differences in shape, central tendency and dispersion of returns.

3. **Holding Period**: Cumulative returns were calculated for 5 day holding period following the SFP event days. This analysis reveals wether any abnormal returns associated with the SFP revert over time, providing insights into potential trading strategies based on the phenomena.

Study Limitations

- **Dataset Time Period**: The current analysis focuses on a limited time period. Further investigation is needed to confirm the effect over a larger dataset, specifically from 2008 to 2023.
- **Effect Stability Accross Assets**: Secondary analysis will include other precious metals such as Gold, Platinum, Palladium, Iron ORE, Aluminum, Lead and commodities such Orange Juice, Corn, Cotton, Crude Oil, Natural Gas, Brent Oil, Cocoa, Cofee, Sugar, Wheat, Soybean, Oats, Lumber.
- **Effect Stability Accross Time Sub-Periods**: These include yearly, quarterly and monthly sub-periods to check wether the effect is present on average.
- **Backtesting**: Backtesting on historical data will validade the strategy's potetnial performance under varying market conditions and provide key metrics such as drawdowns, profit factor, sharpe ratio and returns versus buying and holding.
- **Monte Carlo Simulations**: Monte Carlo simulation will injtroduce randomness into randomness to assess the range of possible outcomes and qunatify the risks associated with the strategy.
- **Out of Sample Testing**: Testing on unseen data is crucial to prevent overfitting and to gauge the model's generalization capabilities.
- **Parameter Sensitivity Testing**: Sensitivitytesting will explore how changes in the model parameters impact the returns, ensuring robustness and identifying key areas for optimization.
- **Expand Effect Criteria**: Currently the the effect is quantified by checking if the Swing Failure Pattern is present one month apart the Swing Points.The criteria should be expanded to check if the effect is present 2-5 months apart and their returns on average.

Analysis Results

The data shows that the Swing Failure Pattern occurs frequently in silver markets. The yearly number of occurences peaked in 2023 with equal 10 Swing Failure Highs and Lows. 2019 had th fewest events, with 6 Swing Failure Pattern Highs and Lows. this suggests the pattern is becoming more prevalent over time.

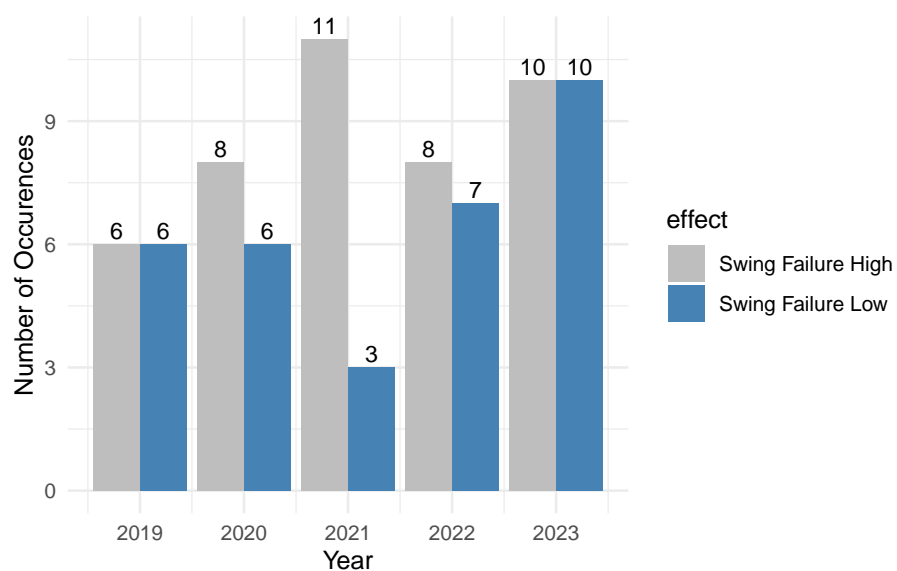Figure 1: Number Of Occurences

The Swing Failure Pattern emerges often in some months than others. February sees most Swing Failure Lows on average at over two per year. September has the highest number of Swing Failure Hihgs at nearly 2 per year on average. these monthly tendencies could aid in forecasting when the pattern may arise.
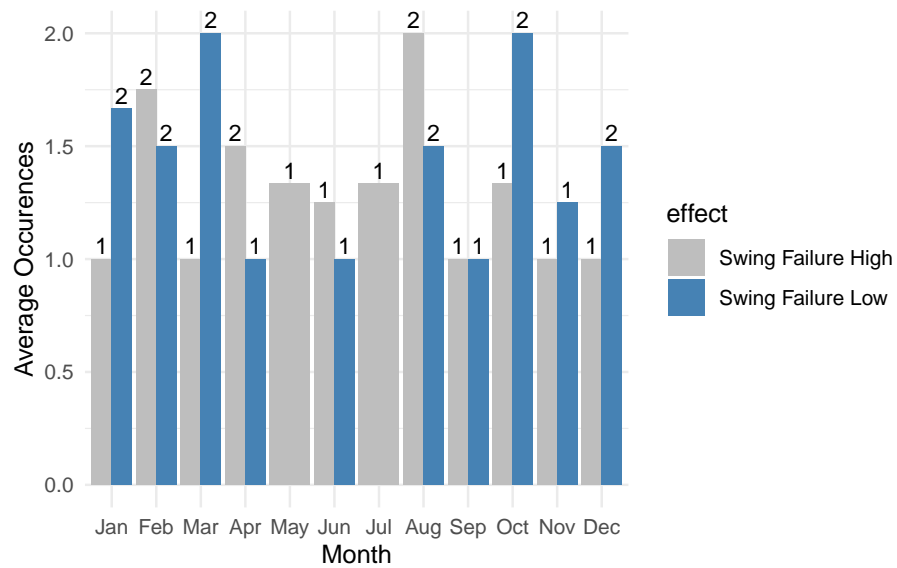

Figure 2: Average Number Of Occurences

After a Swing Failure High event occurs, the prices tend to steadily decline over the next 5 trading days. The average 5-day cumulative returns after these highs hovers around just 34% suggesting strong mean reversion tendencies.
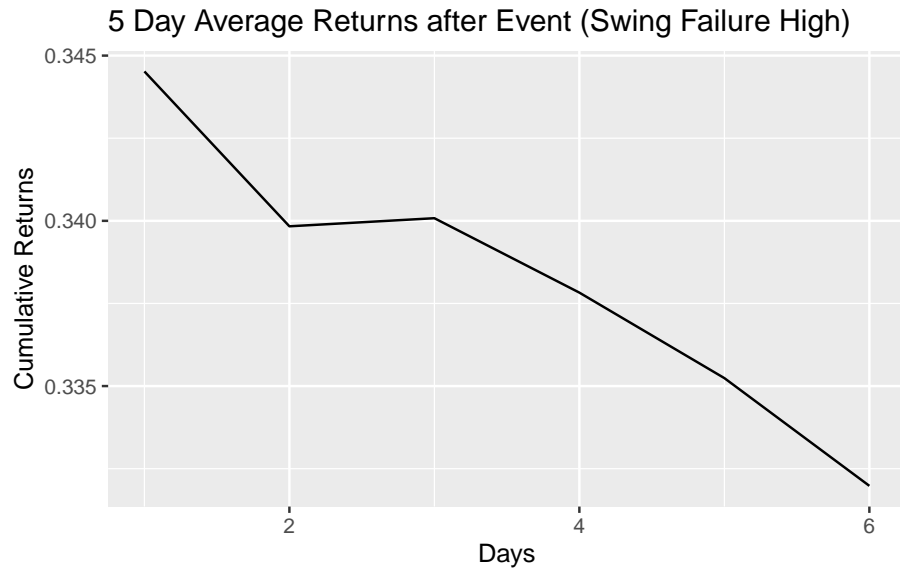

Figure 3: Cumulative Returns Swing Failure High

Conversely, Swing Failure Low events the price tends to rebound higher over the subsequent 5 trading days. The 5-day cumulative return averages only 33% after these lows, again exhibiting mean reversion.
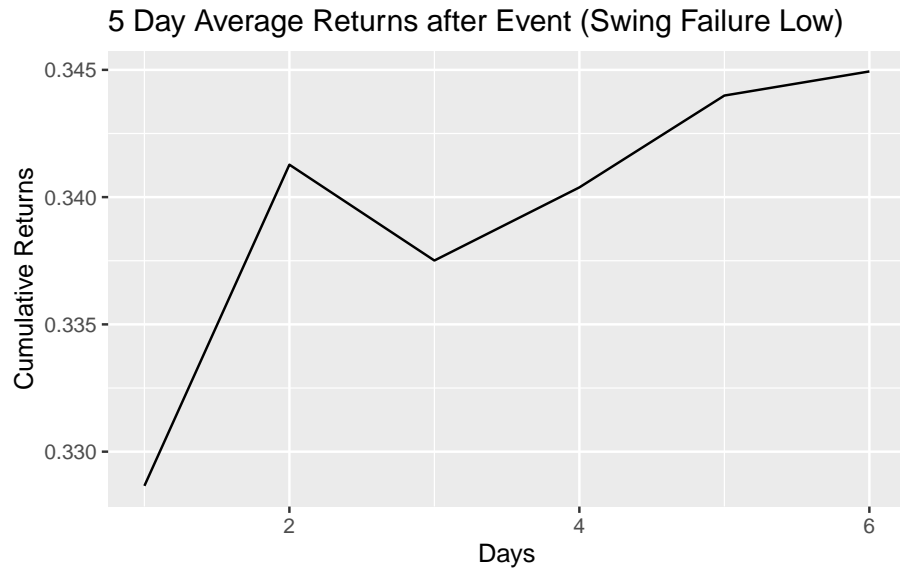

Figure 4: Cumulative Returns Swing Failure Low

The density plot displays the comparison of the distribution of returns between dataset with only days where the event was present or filtered dataset (tomato color) and dataset with the days where the event was present and where the event was not present or the overall population dataset (blue color). The filtered dataset has a sharp peak around 40% returns, indicating most returns are concentrated near this value.

The population dataset is more widely distributed, with peaks around -10% and 15%, suggesting a broader range of returns across the population. the area of overlap between the two distributions occurs roughly between 25% and 50% reutrns, representing the shared range between the filtered dataset and the overall population.
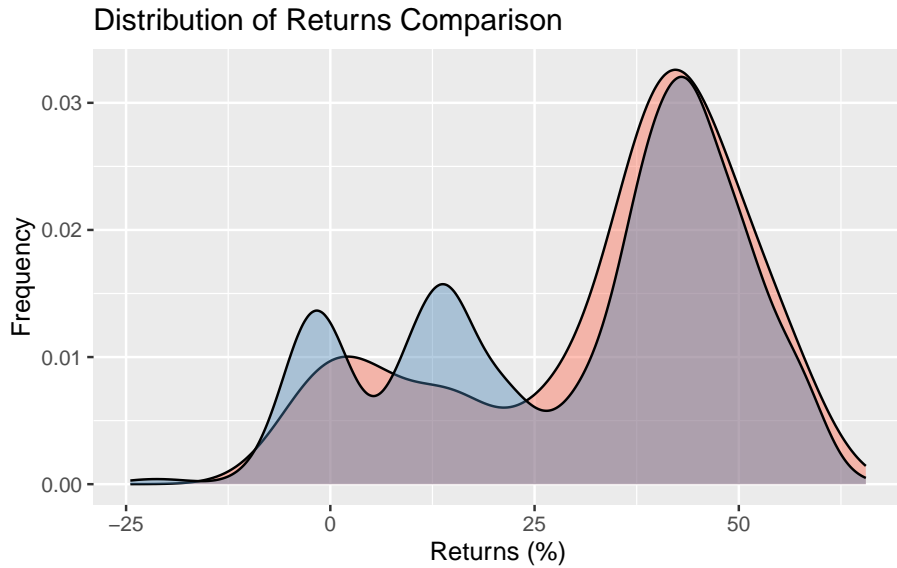

Figure 5: Distribution Of Returns

Strategy Design

- **Liquidity**: The silver market is highly liquid. It's the second most liquid precious metal follwing Gold.
- **Effect Criteria**: The definition provided earlier in this report is used.
- **Strategy Type**: Mean reversion.
- **Direction**: Long and Short.
- **Entry**: upon the identification of a valid SFP, open a short market order the following day if it's a swing point high and open a long market order the following day if it's a swing point low.
- **Holding Period**: 5 days.
- **Exit**: Close the positions after the holding period ends with a market order, or earlier if a predefined trailing stop-loss level is triggered.
- **Stop Loss**: The high or low price of the day where the Swing Failure Pattern occured.
- **Position Sizing**: The position sizing employed will be fixed with the smallest contract size available for the asset.

A trading strategy deveped to capitalize on the Swing Failure Pattern's mean reversion tendencies yields positive cumulative returns over the tested period from 2019-2023. The equity curve climbs relatively smoothly iwth no major drawdowns.
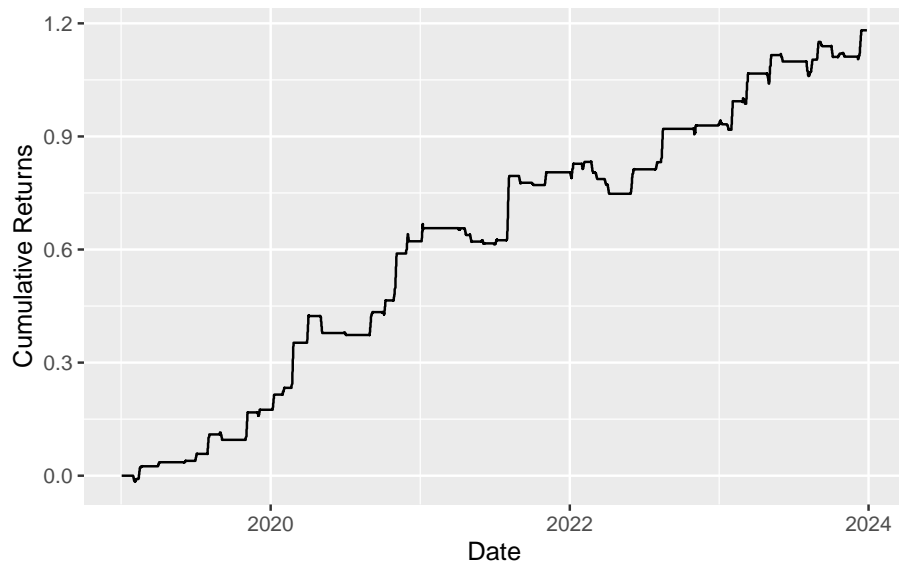

Figure 6: Equity Curve

Conclusion

This study confirms that the market effect Swing Failure Pattern (SFP) exists in the precious metals market. Large institutionalplayers appear to create temporary liquidity imbalances, affecting Silver prices and offering profit opportunities for retail traders. Understanding this market effect empowers retail traders. It provides knowledge to help them reduce risk and develop strategies to profit from the pattern created by large institutional players.

This study focused on Silver, but it's findings suggest teh market effect might extend to other precious metals and commodities. Further research could explore this and refine strategies to maximize profitability. While manipulation can never be fully eliminated, knowledge is a powerful equilizer. This research gives retail traders insightsto navigagte these market dynamics with greater awareness.

References

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