

Seventh Week Of The Year Effect

Effect Study: Mean Reversion on Platinum

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Introduction

Tax harvesting, window dressing and end-of-year bonuses are three distinct financial practices that can influence the prices of financial instruments, particularly towards the end of the year and sometimes spilling over into the first few months of the following year. However investors would be aware of these potential price distortions in the early months of the year and consider them in their investment decisions.

Retail traders who have no conceptual understanding of window dressing, tax harvesting or year-end bonus effects can be tricked by price swings around quarter or year-end. This creates a risk of making poor trading choices based on a possibly inaccurate view of a market's performance. This study seeks to bring clarity to this phenomenon. It examines if the market effect exists in the precious metals market with emphasis on Platinum, measures whether there are positive returns associated to the effect. Finally, it assesses if traders can build a profitable strategy around this effect.

Methodology

Dataset

- **Assets:** Platinum CFD.
- **Time Period:** The dataset are the years 2018, 2019, 2021, 2022, 2023.
- **Granularrrity:** The analysis will be done on daily timeframe prices.
- **Data Source:** The data was gathered through the Capi-tal.com API, one of Europe’s CFD trading platforms.

Identifying the Effect

Quantitative Criteria:

1. On the weekly timeframe at the start of each we get the opening price.
2. Once the the seventh weekly candles forms, check wether it’s above or below the opening price of the year.
3. If the seventh weekly candle is above the yearly open, then it will mean revert back down 40 daily candles. If the seventh weekly candle is below the yearly open, then it will mean revert back up 40 daily candles.

Analytical Approach

The study employed a three-pronged approach to investigate the potential impact of the Mean Reversion on the Platinum returns:

1. **Event Study:** An event study framework as used to isolate the effect. Days meeting the Mean Reversion 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 wether the Mean Reversion 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 Mean Reversion 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 40 day holding period following the Mean Reversion event days. This analysis reveals wether any abnormal returns associated with the Mean Reversion 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, Silver, Palladium, Iron ORE, Aluminum,

Lead and commodities such Orange Juice, Corn, Cotton, Crude Oil, Natural Gas, Brent Oil, Cocoa, Coffee, Sugar, Wheat, Soybean, Oats, Lumber.

- **Effect Stability Across Time Sub-Periods:** These include 5 year and 2 year sub-periods to check whether the effect is present on average.
- **Backtesting:** Backtesting on historical data will validate the strategy's potential 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 introduce randomness into randomness to assess the range of possible outcomes and quantify 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:** Sensitivity testing will explore how changes in the model parameters impact the returns, ensuring robustness and identifying key areas for optimization.

Analysis Results

After a uptrend into a seventh week occurs, the prices tend to steadily decline over the next 40 trading days. The average 40-day cumulative returns show strong mean reversion tendencies after the highs are formed in 10 days.

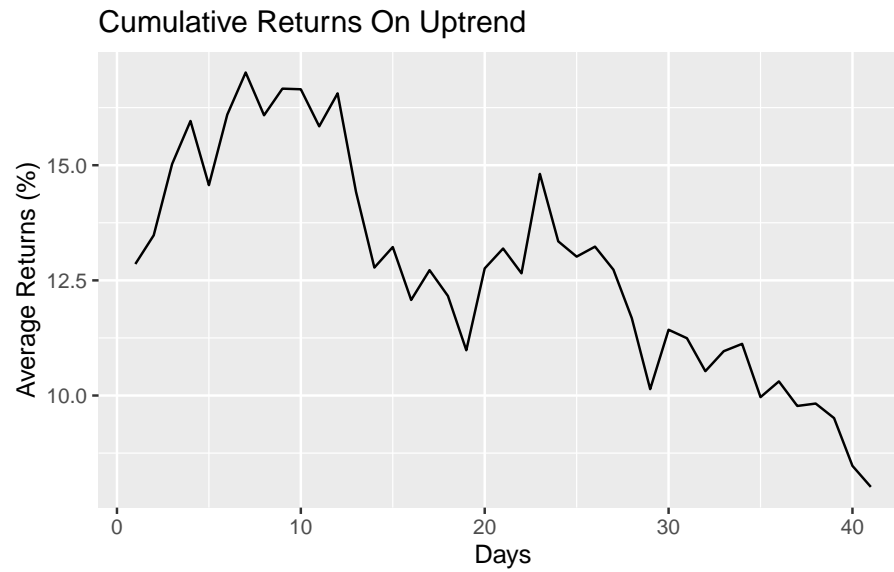


Figure 1: Cumulative Returns Mean Reversion Uptrend

Conversely, on a downtrend into the seventh week the price tends to rebound higher over the subsequent 40 trading days. The 40-day cumulative returns show that mean reversion occurs on average after 5 days.

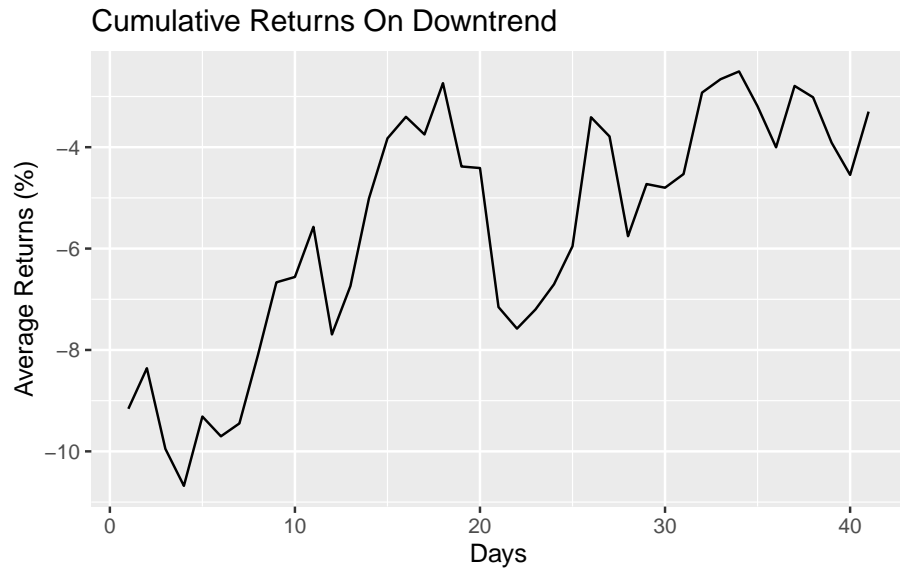


Figure 2: Cumulative Returns Mean Reversion Downtrend

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 5% returns, indicating most returns are concentrated near this value.

The population dataset has the peak around -5%, suggesting a broader range of returns across the population.

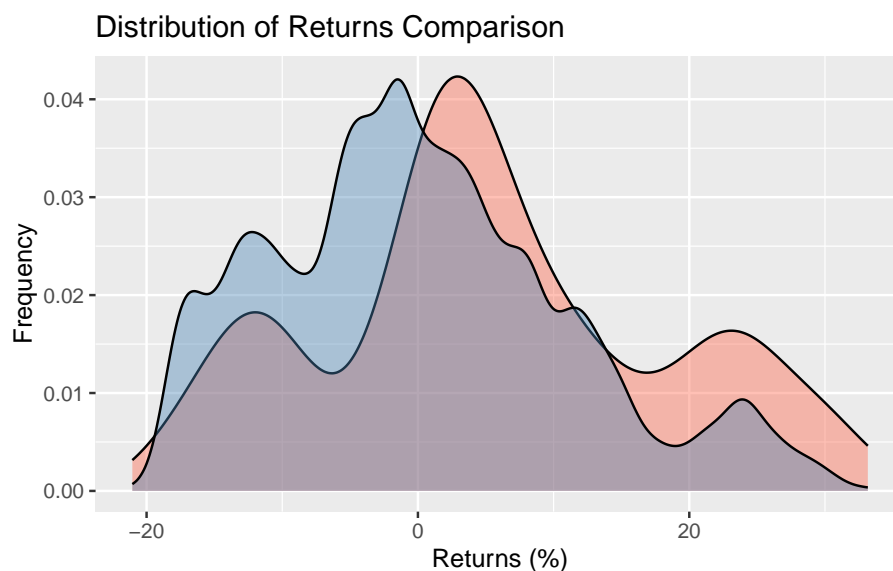


Figure 3: Distribution Of Returns

Strategy Design

- **Liquidity:** The platinum market is relatively liquid.
- **Effect Criteria:** The definition provided earlier in this report is used.
- **Strategy Type:** Mean reversion.
- **Direction:** Long and Short.
- **Entry:** Open a short or long on the seventh week of year after the direction was successfully identified.
- **Holding Period:** 40 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:** No stop loss.
- **Position Sizing:** The position sizing employed will be fixed with the smallest contract size available for the asset.
- **Frequency:** Once a year, between January and March.

A trading strategy developed to capitalize on the January Seasonality results in positive cumulative returns over the tested period of 2018, 2019, 2021, 2022 and 2023. The equity curve climbs relatively smoothly with no major drawdowns.

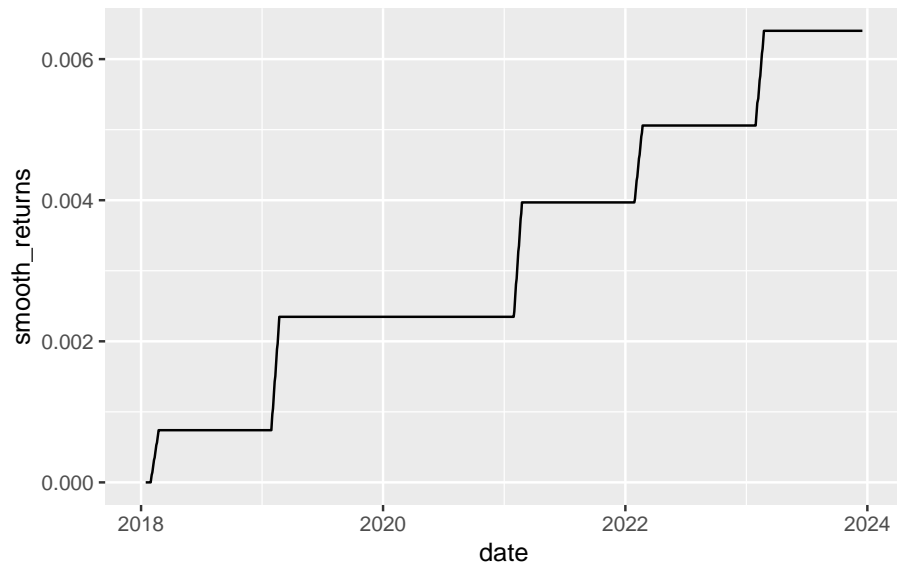


Figure 4: Equity Curve

Conclusion

This study confirms that the market effect exists in the Platinum market. There are mean reversion tendencies that occur around the seventh week of the year possibly caused by window dressing, tax harvesting and end of year bonuses.

Understanding this market effect empowers retail traders. It provides knowledge to help them make informed decisions and develop strategies to profit from the pattern created by institutional players.

This study focused on Platinum but the market effect might extend to other precious metals and commodities. Further research could explore this and refine strategies to maximize profitability.

It's important to note that while these effects can carry over into the new year, their influence tends to diminish as more time passes. Other factors such as the corporate earnings reports, economic data releases and overall market sentiment tend to become more influential in shaping stock prices as the year progresses.

References

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