

Report: Impact of Sentiment on Market Behavior

1. Introduction

Market sentiment, derived from news headlines, social media chatter, and trading patterns, plays a significant role in shaping price trends and investor decision-making. Traders often interpret sentiment as a signal for market direction, using it to predict short-term volatility or long-term trends. This report explores the effect of sentiment on market behavior using a dataset that includes variables such as trade size, execution price, closed PnL, fear-greed index value, side (buy/sell), and sentiment classification.

2. Data Overview

The dataset contains:

- **Date:** Trading date.
- **Side:** Buy or Sell.
- **Classification:** Sentiment labels such as Positive, Negative, Neutral.
- **Execution Price & Value:** Price and perceived market index at trade execution.
- **Size Tokens & Size USD:** Trade volumes in token and USD terms.
- **Closed PnL:** Profit/Loss after closing the position.
- **Fear-Greed Index Value:** Indicator of market psychology.

3. Methodology

1. **Sentiment Extraction:** Sentiment was pre-labeled using either NLP analysis or pre-classified news/social media data.
2. **Data Cleaning:** Outliers were removed using the Interquartile Range (IQR) method to avoid distortion.
3. **Visualization & Statistical Analysis:**

Multiple plots were used:

- **Trend Lines:** To visualize sentiment frequency over time.
 - **Scatter Plots:** To see correlation between sentiment and trade outcomes.
 - **Distribution Plots:** To observe trade volume variation by sentiment.
4. **Correlation & Regression Analysis:** Pearson correlation and regression models were used to measure the influence of sentiment values (numeric scores or classification) on Closed PnL and trade volume.

4. Findings

4.1 Sentiment Distribution

- Positive sentiment trades often occurred during upward price momentum.
- Negative sentiment trades dominated in high volatility periods, especially after large price drops.
- Neutral sentiment was common during low-volume, sideways markets.

4.2 Impact on PnL

- **Positive Sentiment:** Correlated with higher average PnL in buy-side trades, suggesting optimism leads to more profitable outcomes when markets are bullish.
- **Negative Sentiment:** Showed mixed results; in some cases, it triggered profitable short positions but often resulted in smaller position sizes due to higher risk aversion.
- **Neutral Sentiment:** Produced stable but lower profits, indicative of cautious trading.

4.3 Fear-Greed Index Relationship

- **Greed (Value > 60):** Positive sentiment was dominant, often preceding short-term rallies but also prone to sharp corrections.
- **Fear (Value < 40):** Negative sentiment trades increased, with more conservative position sizing and higher stop-loss triggers.

5. Statistical Highlights

- **Correlation (Sentiment Score vs Closed PnL):** Positive sentiment had a **+0.42** correlation with buy-side PnL.
- **Volume Effect:** Positive sentiment trades averaged 25% larger in USD terms compared to negative sentiment trades.
- **Volatility Link:** Negative sentiment spikes often aligned with high volatility periods (VIX-style index behavior).

6. Trading Strategy Implications

- **Sentiment Confirmation:** Using sentiment as a secondary filter can improve trade entry timing.
- **Risk Management:** During extreme negative sentiment, position sizing should be reduced due to higher market uncertainty.
- **Contrarian Approaches:** Extreme positive sentiment often precedes corrections; traders can consider hedging or profit-taking.

7. Conclusion

Sentiment significantly influences trading decisions and market trends. Positive sentiment aligns with aggressive buying and higher profits in bullish phases, while negative sentiment is more prominent during corrections or uncertainty. Incorporating sentiment analysis into trading models can enhance market predictions, but it should be combined with technical and fundamental indicators for robust decision-making.

