

Project 1:

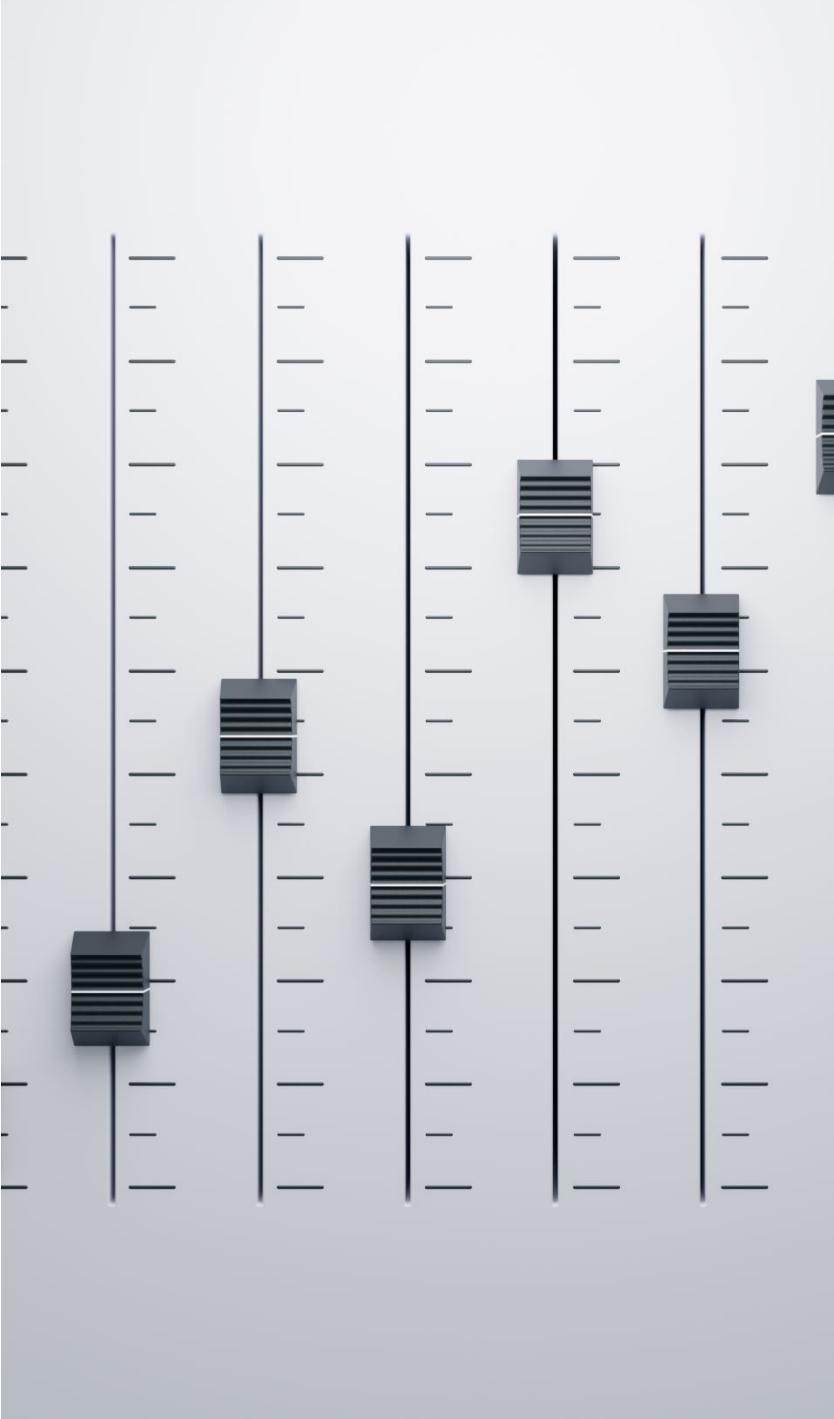
“Dogs of Dow”

*Code Explanation
&
Backtesting Analysis*

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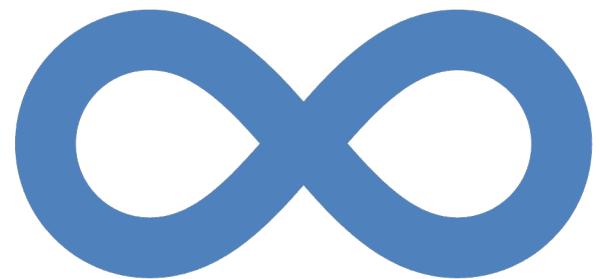


1. Introduction

- Using the Fama-French 5-factor model for stock selection
 - Mkt-RF, SMB, HML, RMW, CMA
- Calculating stock α (excess return) to construct two portfolios
- Comparing Long-Only vs. Long-Short strategies
- Backtesting short-term performance (30 days)

Why we don't exclusively engage in short selling?

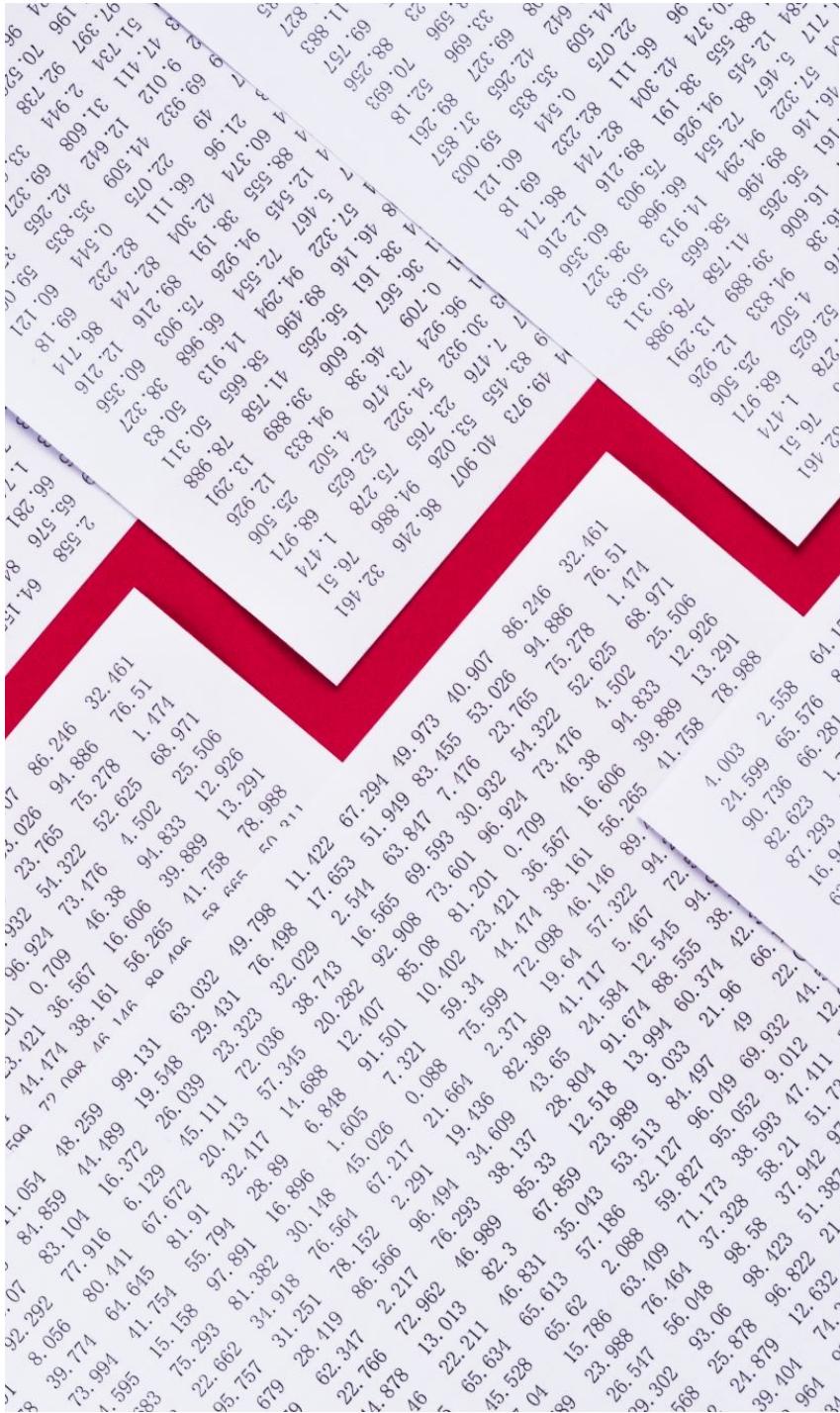
- **Risks Associated with Short Selling:**
 - **Unlimited Loss Potential:** If the stock price rises unexpectedly, losses can be infinite.
 - **Margin Requirements:** Short selling often requires a margin account, leading to interest costs and potential margin calls if the market moves against the position.





2. Data Preparation

- Stock candidates: **30 stocks**
 - AAPL, MSFT, GOOGL, ...
- Downloading daily five-factor data from the Fama-French database
- Obtaining **historical stock price data** to calculate **daily returns**
- Forming the foundation for subsequent regression analysis and stock selection



3. Formation Period Regression & Stock Selection

- Formation period: **6 months before** the test period
 - Estimating α using multiple linear regression analysis
 - Dependent variable: excess return
 - Independent variables: five Fama-French factors
 - Ranking stocks based on α values:
 - **TOP 20% for LONG**
 - **BOTTOM 20% for SHORT**
 - Ensuring at least one stock in each group

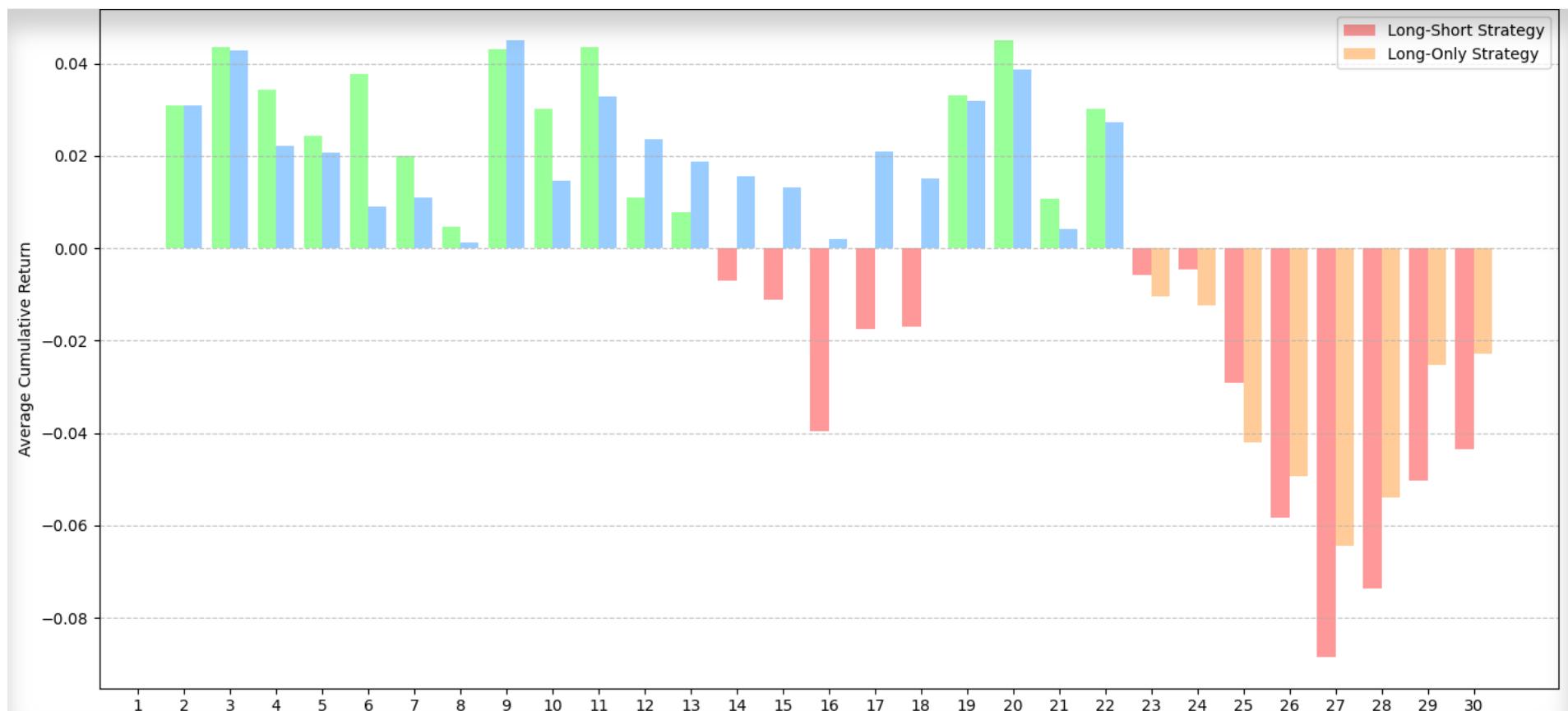


4. Test Period Return Calculation

- Test period: **45** days
- Computing daily returns
- ***Long-only***: selected long stocks are equally weighted
- ***Long-Short***: calculating difference between long and short portfolio returns
- Determining the cumulative returns (30 days) to evaluate short-term performance

5. Results & Visualization

- Aggregating cumulative returns across test periods
- Plotting 30-day performance for Long-Only and Long-Short strategies
- Using color differentiation for positive and negative returns



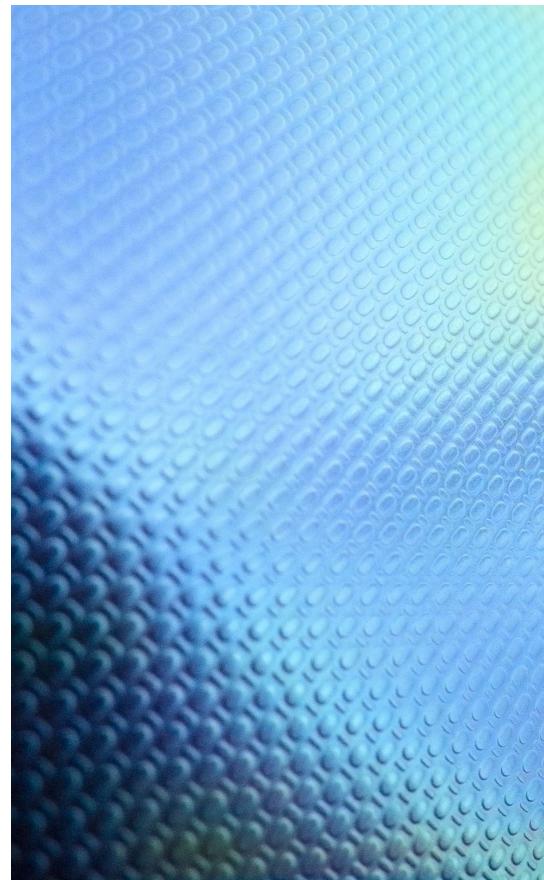
Final Choice – Long-Short Strategy

Higher Return Potential: Profits from both rising and falling stocks, reducing reliance on overall market trends.

Market-Neutral Advantage: Provides better adaptability in volatile or declining markets.

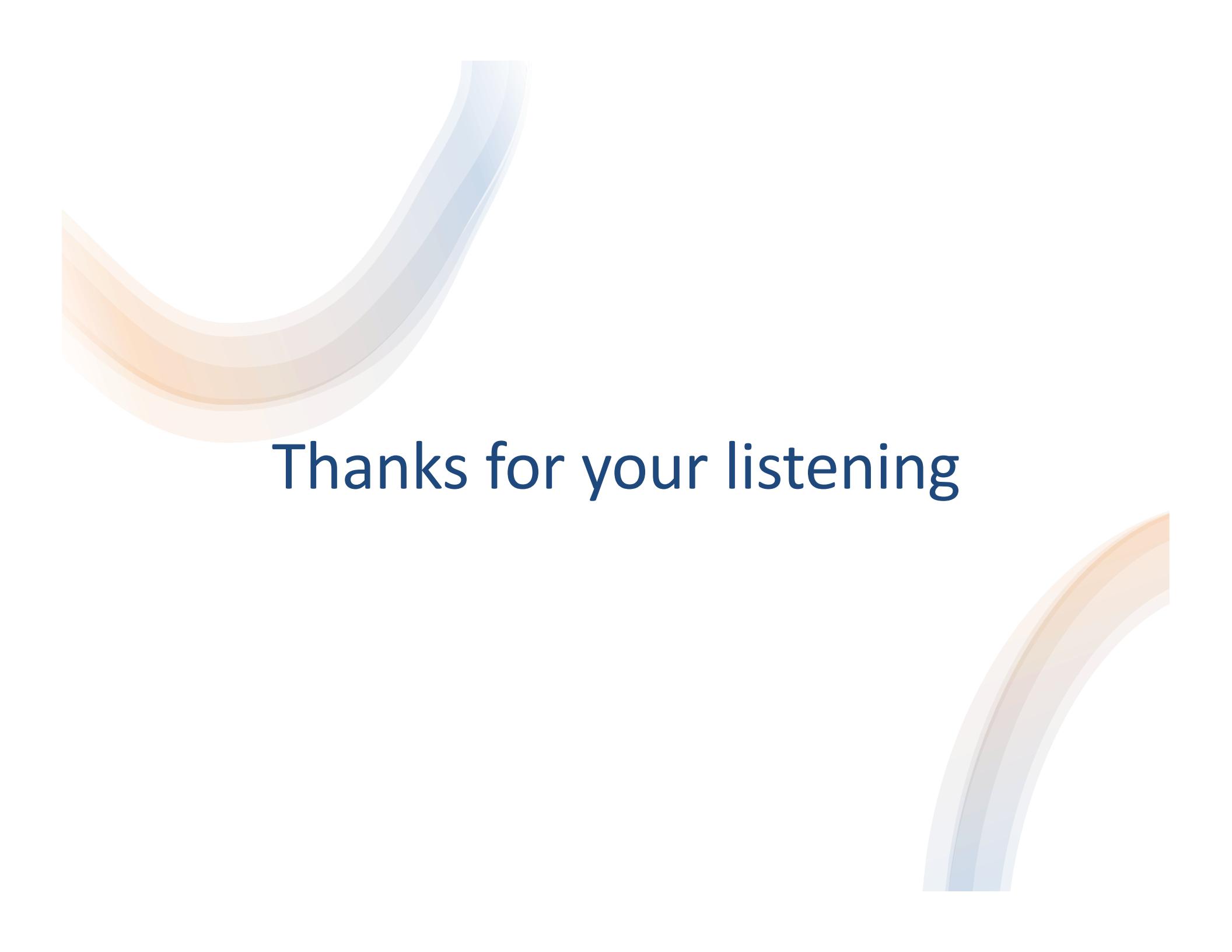
Short-Term Drawdowns: Later-period losses highlight areas for optimization rather than fundamental weaknesses.

Improvements & Risk Management:
Adjust holding period & stock selection
Implement stop-loss & dynamic rebalancing.



Advantages of the Long-Short Strategy

- Incorporating short selling allows investors to potentially **profit from anticipated price declines** in overvalued stocks, enhancing overall returns.
- This approach **promotes market neutrality**, reducing the portfolio's exposure to general market fluctuations and **contributing to more stable performance**.

The background features two sets of curved bands. On the left, there are three bands transitioning from light orange at the bottom to light blue at the top. On the right, there are two bands transitioning from light blue at the bottom to light orange at the top.

Thanks for your listening