Macroeconomic Regimes and Asset Returns

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Independent Research Project

Executive Summary

This report examines how U.S. equity performance varies across macroeconomic regimes defined by interest-rate and inflation dynamics. Using historical Federal Reserve data, interest-rate regimes are classified quantitatively based on the direction and magnitude of changes in the federal funds rate, rather than narrative or political timelines.

The analysis finds that equity returns are highest during falling interest-rate regimes and lowest during rising-rate regimes. While these differences are economically meaningful, statistical significance is limited, reflecting the inherent noise and serial dependence characteristics of macroeconomic financial time series.

Overall, the results are consistent with established macro-finance theory and highlight both the usefulness and limitations of regime-based analysis for understanding long-run asset behavior.

1. Introduction

Macroeconomic conditions, particularly interest-rate and inflation dynamics, play a central role in shaping asset returns. Financial theory suggests that changes in monetary policy and inflation expectations influence equity valuations through discount rates, growth expectations, and risk premia.

This study examines whether U.S. equity performance differs across distinct macroeconomic regimes defined by interest-rate direction and inflation conditions. Rather than relying on narrative or political classifications, regimes are defined quantitatively using observable macroeconomic data from the Federal Reserve. By focusing on transparent, data-driven regime definitions, the analysis aims to provide a reproducible framework suitable for applied financial analysis rather than narrative interpretation.

2. Data

Macroeconomic and financial time series were retrieved programmatically from the Federal Reserve Economic Data (FRED) database. Data were aggregated to a monthly

frequency to align macroeconomic indicators with asset returns, using month-end observations where applicable.

The primary variables used in the analysis include the effective federal funds rate, consumer price index, S&P 500 price index, Treasury yields, and short-term interest rates. The resulting dataset spans approximately 36 years of monthly observations, providing coverage across multiple monetary policy cycles.

3. Regime Definitions

Interest-rate regimes were classified based on the 12-month change in the effective federal funds rate. Periods were labeled as rising, falling, or stable depending on whether the 12-month change exceeded a ±0.25 percentage point threshold.

Rate level regimes were defined using historical percentiles of the federal funds rate, while inflation regimes were defined using percentiles of year-over-year CPI growth. These definitions allow for objective classification of macroeconomic environments without imposing subjective narratives.

4. Methodology

Monthly equity returns were computed using log returns of the S&P 500 price index. Regime-based performance was evaluated using summary statistics, including mean returns and volatility, with annualized equivalents reported for interpretability.

Differences in equity returns across regimes were evaluated using two-sample t-tests as a baseline comparison. Given the time-series nature of the data, results are interpreted with caution, emphasizing economic magnitude rather than strict statistical significance.

5. Results

Equity returns exhibited a clear ordering across interest-rate regimes. Average returns were highest during falling-rate environments, moderate during stable-rate periods, and lowest during rising-rate regimes.

Although the estimated return differences were economically meaningful, statistical tests did not reject equality of means at conventional significance levels. This outcome reflects the substantial volatility and serial dependence characteristic of macroeconomic financial data.

Figure 1 illustrates cumulative equity performance with interest-rate regime shading, while Figure 2 shows the distribution of monthly equity returns across regimes.

Figure 1:

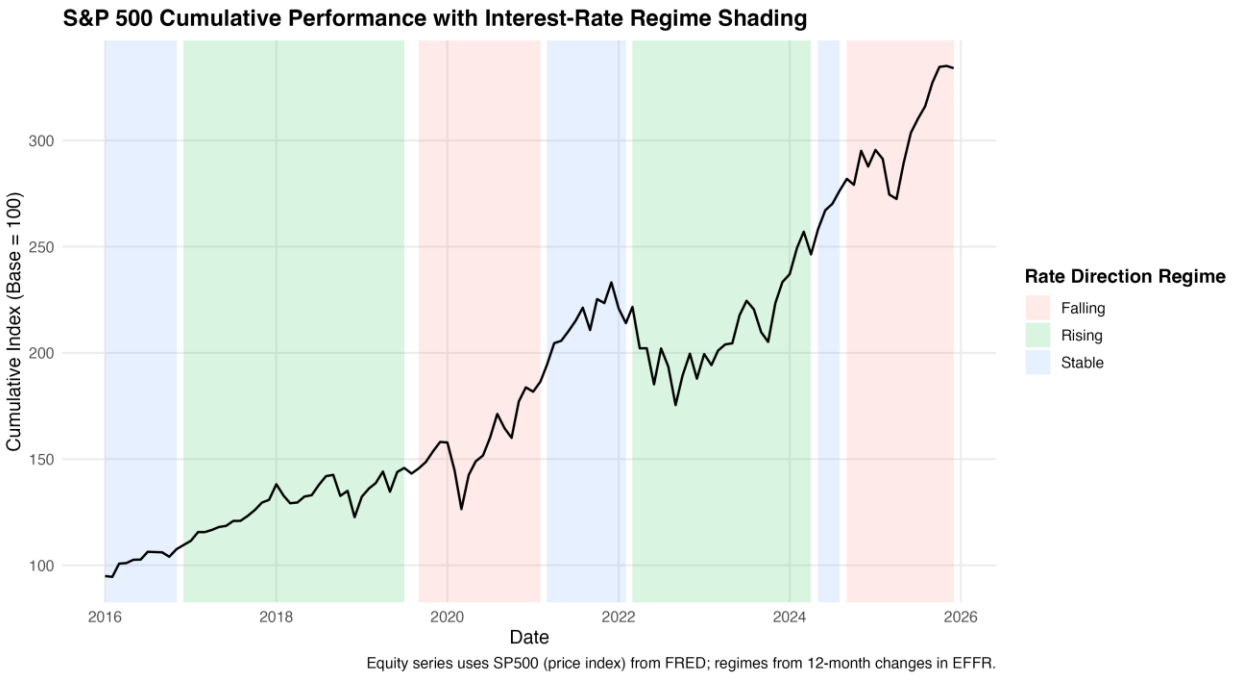
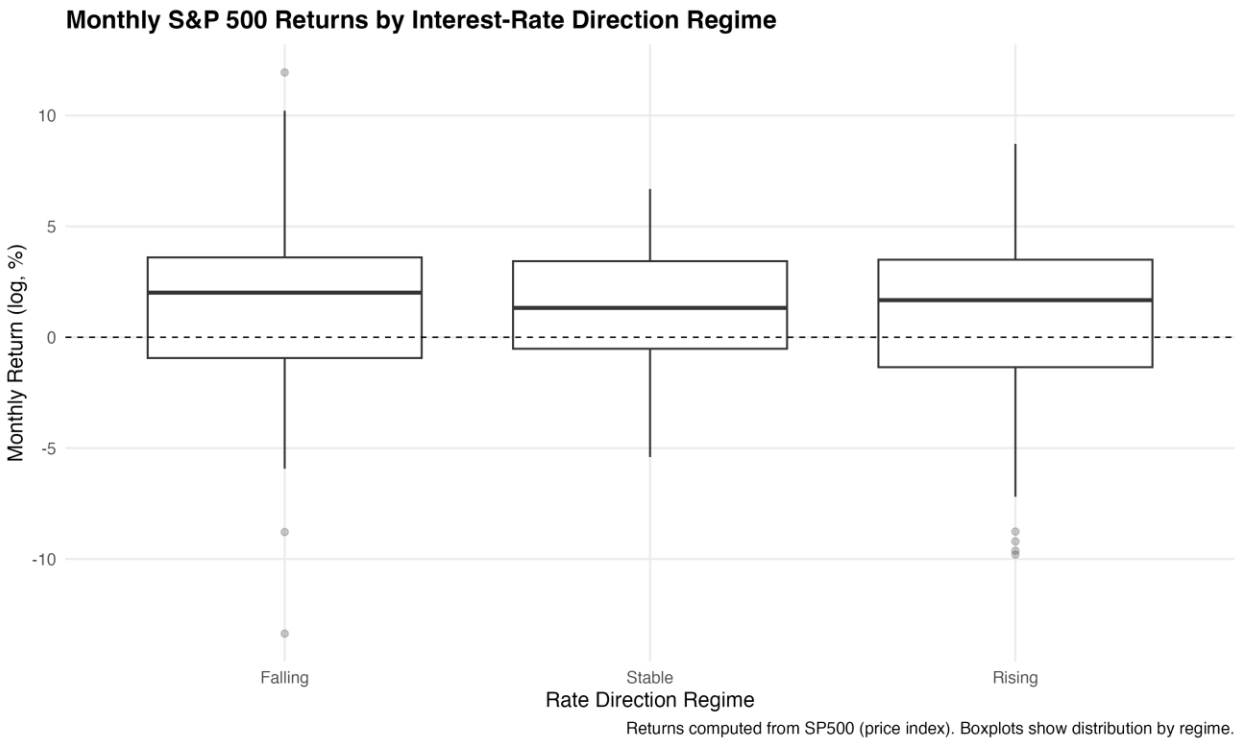


Figure 2:



6. Discussion

The results align with established macro-finance theory, which predicts that declining interest rates support equity valuations through lower discount rates and improved financial conditions. The lack of strong statistical significance is not unexpected and underscores the difficulty of isolating macro regime effects in observational financial data.

Importantly, the magnitude and direction of the estimated effects are consistent with economic intuition, suggesting that regime-based analysis remains a useful framework for understanding long-run asset behavior.

7. Limitations

This analysis is subject to several limitations. The S&P 500 series used is a price index and does not include dividends, which may understate total equity returns. Bond behavior is proxied using changes in Treasury yields rather than total return indices, limiting direct comparability across asset classes.

Additionally, regime definitions necessarily simplify complex monetary and financial conditions and may not capture all relevant dimensions of policy transmission or market structure.

8. Conclusion

This study demonstrates that equity performance varies meaningfully across macroeconomic regimes defined by interest-rate dynamics. While statistical noise limits definitive inference, the findings reinforce the relevance of monetary policy environments for asset allocation and risk assessment.

Future extensions could incorporate alternative asset classes, lagged regime effects, or more sophisticated time-series methods to further explore these relationships.