

Trade Policy Sensitive Portfolio

Summary: Escalating trade policy uncertainty has once again become a key driver of volatility in global markets, with the 2025 trade war now involving tariffs on nearly all U.S. trading partners. A similar situation was observed from 2018 to 2020 during the U.S.–China trade war, a period that is now available for analysis. In this project, we aim to identify trade-related factors that go beyond standard macroeconomic variables, quantify how sector sensitivities evolve—particularly in response to tariff shocks—and construct and backtest a portfolio that minimizes exposure to trade policy risk while maintaining a diversified allocation. By drawing on insights from past and present trade disruptions, we seek to design a more resilient portfolio strategy for navigating periods of elevated trade uncertainty.

Objective:

- Quantify how sensitive different sectors are to trade policy uncertainty
- Construct a dynamically weighted portfolio that responds to changing policies
- Compare performance to a traditional portfolio (the S&P 500) across key metrics

Data: Sector-level return data will be sourced from the Kenneth French 49 industry portfolios, which provide dividend-adjusted returns suitable for cross-sectional analysis. For trade policy risk, we will use the Trade Policy Uncertainty Index (TPU) from Matteo Iacoviello and the Economic Policy Uncertainty Index (EPU). Additionally, we will incorporate macroeconomic and financial uncertainty indexes from Sydney Ludvigson's research, which offer a more structured representation of latent macro risk. To proxy for inflation expectations, we will use the 1-year zero-coupon Treasury rate, which is sensitive to short-term economic outlooks and expected policy shifts. Data processing and transformation will be conducted in R using the tidyverse and quantmod packages for efficient retrieval, formatting, and cleaning.

Methodology: We apply a multi-factor regression framework to estimate each sector's exposure to trade-related and macroeconomic uncertainty factors, using both traditional rolling window techniques and exponentially weighted filtering methods to capture time-varying betas. To account for trade-induced inflation expectations, we include short-term Treasury bill rates as an additional factor. Factor returns include the Trade Policy Uncertainty Index, Sydney Ludvigson's macro and financial uncertainty indexes, and market returns. Once sector sensitivities are estimated, we construct a dynamically reweighted portfolio that minimizes exposure to trade policy risk. The portfolio is rebalanced periodically and back-tested against a benchmark (e.g., S&P 500) to evaluate performance in terms of cumulative return, Sharpe ratio, and drawdown. To support interactive exploration, we will also develop an R Shiny app that allows users to visualize sector sensitivities and compare the performance of static versus dynamic portfolios under varying levels of trade uncertainty.

References:

EPU & TPU: <https://www.policyuncertainty.com/> & <https://www.matteoiacoviello.com/tpu.htm>
Trump Trade War Timeline: <https://www.piie.com/>
Uncertainty index: <https://www.sydneyludvigson.com/macro-and-financial-uncertainty-indexes>
Treasury rates: <https://fred.stlouisfed.org/series/THREEFY1>
Sector returns : https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html