



Exploring Macroeconomic
Sensitivities: *How Investments
Respond to Different Economic
Environments*

ANTTI ILMANEN, THOMAS MALONEY,
AND ADRIENNE ROSS

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Overview

This article describes how to construct well-diversified portfolios that can better withstand macroeconomic shocks. Stocks and bonds have well-known exposures to growth and inflation risks. This research delves into less examined risk factors—real yields, volatility and illiquidity—and explores long/short strategies to manage them. In this *Practical Applications* report, co-author **Thomas Maloney** explains why diversified long/short strategies or style premia demonstrate small macroeconomic risk exposure.

Practical Applications

- **Map it out.** Map your portfolio onto its underlying macroeconomic risk exposures—such as growth, inflation, real yields, volatility and illiquidity—to identify risk concentrations.
- **Diversify and combine.** Diversify assets and combine long/short styles to reduce macro risk exposures. Diversified long-short strategies or style premia are less exposed to macroeconomic risks.
- **Avoid large tactical bets.** Don't use empirical macroeconomic risk exposures for too aggressive tactical investing based on macro forecasts.

Practical Applications Report

An increasing number of investors are attempting to gauge how their allocations to various assets are impacted by macroeconomic risk factors such as growth, inflation, real yields, volatility and illiquidity. Because macroeconomic factors or exposures are not directly investable, this approach creates a challenge.

Exploring Macroeconomic Sensitivities: How Investments Respond to Different Economic Environments, published in the Spring 2014 issue of *The Journal of Portfolio Management*, shows how various asset classes and styles respond to different macroeconomic environments. In other words, it maps investable risk factors onto underlying risk exposures.

“We’re trying to bridge the gap between investable asset classes and strategies and underlying macroeconomic risk factors,” explains **Thomas Maloney**, Vice President of **AQR Capital Management** in London.

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What about the LESS EXAMINED risk factors?

- ✓ Real Yields
- ✓ Volatility
- ✓ Illiquidity

THE HURDLE:
Macroeconomic risk factors are not directly investable.



Key Definitions

Sharpe ratio

A common way to measure the historical risk-adjusted return on an investment by taking the average historical return minus the risk-free return, divided by the standard deviation.

Long/short strategy

A hedging strategy in which portfolio managers exploit relative value opportunities by buying one asset (such as a stock) while shorting another related asset (such as another stock in the same sector), to hedge the market exposure. [More](#)

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—Thomas Maloney

“The exposures of stocks and bonds to growth and inflation risks are already well known, but we’re going further, including additional risk factors and additional investments, including the well-established long/short strategies that we call style premia,” Maloney adds. He co-authored the article with **Antti Ilmanen**, Principal of AQR in London, and **Adrienne Ross**, an Associate at AQR in Greenwich, Connecticut.

The authors examine the sensitivity of traditional asset classes and styles to different macroeconomic environments, or factors, including growth, inflation, real yields, volatility and illiquidity.

Their research shows the variation of Sharpe ratios across the different environments with US macro factors from 1972 to 2013. The research focuses on three traditional asset classes—global stocks, global bonds and commodities—and five long/short style premia—value, momentum, carry, defensive and trend following.

“In the article, we use theoretical returns gross of transaction costs, but we certainly believe the relatively consistent performance of style premia strategies across different macro environments is implementable and potentially very useful for investors,” Maloney states.

MOST VULNERABLE/ROBUST PORTFOLIOS

The findings show that portfolios dominated by a single asset or strategy are more sensitive to macro risks. The global 60/40 portfolio examined in the research inherits the main sensitivities of equity markets and was most vulnerable, for example, when growth was down and inflation was up.¹

The research also points out that it is tough to find any asset class that performs well in certain economic environments, such as when slow growth coincides with high or rising inflation, real yields, volatility or illiquidity.

DIVERSIFY ASSETS AND COMBINE STRATEGIES

The authors suggest diversifying assets and combining long/short styles to reduce macroeconomic risk exposures. They explain how the very different growth and inflation exposures of equities, bonds and commodities contribute to the resiliency of portfolios diversified into these three asset classes. They also point out the advantages of combining value and momentum strategies, because of their negative correlation with one another.

Overall, the analysis finds that long/short strategies have smaller macro risk exposures. “The article’s findings suggest that by harvesting lots of different return sources, portfolios have the ability to be a lot more resilient to macroeconomic shocks, compared to traditional, equity-dominated portfolios,” Maloney explains.

¹ Source: AQR. The global 60/40 portfolio used in the paper’s analysis is based on 60% allocation to global stocks (MSCI World index in U.S. dollars) and 40% allocation to global bonds (a GDP-weighted composite of six 10-year government bonds).



LONG/SHORT strategies have smaller macro risk exposures.

“The article’s findings suggest that by harvesting lots of different return sources, portfolios can be a lot more resilient to macroeconomic shocks, compared to traditional, equity-dominated portfolios.”

—Thomas Maloney

“In particular, diversified long/short style strategies appear to have quite small macroeconomic exposures, though all the investments we looked at have some sensitivity to volatile and illiquid environments.”

THE RISKS OF LARGE TACTICAL BETS

The authors warn against using empirical macro exposures for aggressive tactical investing based on macro forecasts. They point out that while the findings can help managers build diversified portfolios that are less vulnerable to underperformance in different macroeconomic environments, predicting the occurrence and effects of such macro environments remains a challenge.

“Tactical investors need to be right in their estimates of their investments’ macro sensitivities and their forecasts of the future environment itself. Tactical bets are concentrated bets and should be sized appropriately,” Maloney stresses.

“Confident forecasters might be justified in applying large tilts, but these tend to carry a cost of reduced diversification. The bigger the tactical bet, the less diversified the portfolio. We think a better application of the research is to try to construct well-diversified portfolios that can better withstand whatever macro shocks come along.”

The authors also stress that the results of their research might be specific to the period studied and the choices made, and they allow that many design decisions could have been made differently. However, they believe their research creates a valuable dialogue for investors, who have varying priorities and motivations for defining the macro exposures that are most important to them. For example, institutions with fixed-rate liabilities or countries endowed with commodities may be less concerned about rising inflation.

THE CUBE

The article builds on the “cube” framework presented in Ilmanen’s book, *Expected Returns*. The cube framework calls for linking asset classes and strategy styles to underlying macro risk factors and considering all three dimensions when seeking to harvest sources of return. Published in 2011, the highly acclaimed book tackles each dimension in turn, providing 12 case studies illustrating traditional and alternative asset classes, active strategies and risk factors. The article also builds on past research by AQR on inflation sensitivities and uses data from several recent papers by AQR on long/short style strategies.



“When we study actual investor portfolios, we repeatedly find these same patterns, reinforcing the case for better diversification.”

—Thomas Maloney

In further research, the authors turn to the currently prevalent concern about the risk of rising real yields. “We did some more detailed analysis for clients on that particular factor, and found that while sharply rising yields are bad news for many investments, once again diversification can help,” Maloney explains.

These bond-related tail scenarios are not as damaging for most investors as equity-related tail events, Maloney adds. Because equity risk dominates most institutional portfolios—pension funds, endowments and foundations alike—these portfolios share the macro sensitivities of 60/40 portfolios, Maloney notes.² Namely, they suffer amid weak growth and rising inflation, as well as in volatile and illiquid market conditions. “When we study actual investor portfolios, we repeatedly find these same patterns, reinforcing the case for better diversification.” Maloney concludes.

² Source: AQR. The global 60/40 portfolio used in the paper's analysis is based on 60% allocation to global stocks (MSCI World index in U.S. dollars) and 40% allocation to global bonds (a GDP-weighted composite of six 10-year government bonds).

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Antti Ilmanen

antti.ilmanen@aqr.com

Antti, a Principal at **AQR Capital Management** in London, manages the Portfolio Solutions Group, which advises institutional investors and sovereign wealth funds, and he develops the firm's broad investment ideas. Prior to joining AQR, Antti spent seven years as a senior portfolio manager at Brevan Howard, a macro hedge fund, and a decade in a variety of roles at Salomon Brothers/Citigroup. He began his career as a central bank portfolio manager in Finland.

Antti earned MSc degrees in economics and law from the University of Helsinki and a PhD in finance from the University of Chicago. Over the years, he has advised many institutional investors, including Norway's Government Pension Fund Global and the Government of Singapore Investment Corporation. Antti has published extensively in finance and investment journals and has received the Graham and Dodd Award and the Bernstein Fabozzi/Jacobs Levy Award. His book, **Expected Returns** (Wiley, 2011) is a broad synthesis of the central issue in investing.

Antti recently scored a rare double in winning the best-paper and runner-up award from **The Journal of Portfolio Management** (for the co-authored articles **The Death of Diversification Has Been Greatly Exaggerated** and **The Norway Model**).



Thomas Maloney

thomas.maloney@aqr.com

Thomas is a Vice President and Member of **AQR Capital Management's** Portfolio Solutions Group working from the firm's London office, where he writes white papers, conducts research and provides bespoke analysis for clients seeking alternative sources of return. His research interests include the investment implications of portfolio rebalancing, risk targeting, currency hedging and tactical market and style timing.

Prior to joining AQR, Thomas was a senior quantitative analyst at Brevan Howard, a macro hedge fund, where he worked for eight years, specializing in quantitative macro strategies and portfolio construction and analysis. Thomas earned an MPhys with first-class honors from the University of Oxford.



Adrienne Ross

adrienne.ross@aqr.com

Adrienne is an Associate and Member of **AQR Capital Management's** Portfolio Solutions Group in Greenwich, Connecticut, where she writes white papers and conducts investment research. She is also involved in the design of multi-asset portfolios and engages clients on portfolio construction, risk allocation and capturing alternative sources of returns. Adrienne has published research on regional economic factors in the **Journal of Economic Geography** and on the website of the Federal Reserve Bank of New York.

Prior to joining AQR, Adrienne was a senior account associate at PIMCO. She began her career as a researcher at a macroeconomic think tank in Canada. Adrienne earned a BA in economics and mathematics from the University of Toronto and an MA in quantitative finance from Columbia University.