Using Macro Factor Dashboards for Tactical Asset Allocation

A disciplined way to include macro factors in a broader process.

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KEY INSIGHTS

- Research suggests that macro factors can be significant return drivers. However, little has been published on how to use them to inform investing decisions.
- T. Rowe Price has developed a process that uses dashboards to integrate macro factors into a broader tactical asset allocation process.
- We recommend using macro factors in combination with relative valuations, fundamentals, and other data such as sentiment indicators.

There is a wide body of research that suggests that macro factors—such as interest rates, inflation, credit spreads, and real economic variables such as growth, unemployment, and consumption—can be significant drivers of asset returns.[1] However, little has been published on how to use these factors to inform investment decisions. We show how to build dashboards that integrate macro factors into a tactical asset allocation process.[2]

Our goal is not to design standalone trading strategies based on macro factors. Rather, we view our dashboards as tools for generating trading ideas because they allow us to scour the full data set and highlight potential areas of excess returns.

Despite the academic literature suggesting that macro factors can explain a significant portion of relative portfolio performance, many investors still struggle to use these factors when making tactical allocation decisions over a 6- to 18-month horizon. The sheer amount of macro data may make it difficult to anticipate which variables will drive returns.

Another challenge is that the influence of macro factors on asset class returns may differ depending on initial conditions. A rise in unemployment, for example, may have a different effect on equity returns if it occurs during an expansion or a recession.[3] We believe the same could be said of any macro factor: Depending on the prevailing regime, the potential

[1] See, for example: Chen, N., R. Roll, and S. Ross. "Economic Forces and the Stock Market," *The Journal of Business*, Vol. 59, No. 3 (July 1986), pp. 383–403; and Fama, E. F., and K. R. French. "Business Conditions and Expected Returns on Stocks and Bonds," *Journal of Financial Economics*, Vol. 25 (1985), pp. 23–49.
[2] For a more extended look at our process, see: David Clewell, Chris Faulkner-MacDonagh, David Giroux, Sébastien Page, and Charles Shriver, "Macroeconomic Dashboards for Tactical Asset Allocation," *The Journal of Portfolio Management*, Vol. 44, Issue 2 (December 2017), pp. 50-61.
[3] Boyd, J. H., J. Hu, and R. Jagannathan. "The Stock Market's Reaction to Unemployment News," *Journal of Finance*, Vol. 60, No. 2 (2005), pp. 649–672.

On the Dashboard

(Fig. 1) Macro factors included in T. Rowe Price's tactical allocation process

Macro Factor	Change Type (Level, %)	Factor Start Date
Volatility Index (VIX)	%	Jan. 1990
	Level	
Global Industrial Production ex Construction (Y/Y)	Level	Jan. 1991
Oil Prices (Brent Crude)	%	Jan. 1990
U.S. Dollar Index	%	Jan. 1990
High Yield Credit Spread (Spread-to-Worst)	%	Jan. 1990
	Level	
U.S. Investment Grade (IG) Credit Spread (Option-Adjusted Spread)	%	Jan. 1990
	Level	
U.S. Manufacturing Purchasing Managers' Index	Level	Jan. 1990
Real 10-Year U.S. Treasury Yield[1]	Level	Jan. 1990
Real 2-Year U.S. Treasury Yield[1]	Level	Jan. 1990
U.S. 10-Year vs. U.S. 2-Year Nominal Yield Differential	Level	Jan. 1990
Gold	%	Jan. 1990
U.S. Core Inflation (Y/Y)	Level	Jan. 1990
Euro Core Inflation (Y/Y)	Level	Jan. 1990
Euro Spot	%	Jan. 1990
Yen Spot	%	Jan. 1990
U.S. Unemployment Rate	Level	Jan. 1990
J.P. Morgan Emerging Markets Currency Index	%	Jan. 2000

Source: T. Rowe Price.

[1] We estimate real yields as the nominal Treasury yield less year-over-year core consumer price inflation.

impact on asset returns will differ. Yet, for the most part, previous research does not account for this relationship.

To map macro factors to expected asset returns, we propose the use of dashboards that can be dynamically updated to inform investment decisions on an ongoing basis. Our process focuses on relative returns between pairs of asset classes. We highlight which factors may have a significant impact on trades between these pairs under various scenarios, taking into account current conditions as reflected in the macro factors' current percentile levels.

Figure 1 shows the macro factors included in our dashboards. Figure 2 shows the asset class pair trades that we model as a function of the macro factors. For each pair trade, we partition historical asset returns to match a given scenario and current conditions. Starting from each macro factor's current level, we seek to answer the following question: If an investor has a one-year view on the direction of the factor, what is the corresponding expected one-year return?

Pair Trades

(Fig. 2) Asset classes, benchmarks, and return start dates[1]

Asset Class Call	Benchmarks	Return Start Date
Stocks vs. Bonds	Russell 3000 Index vs. Bloomberg Barclays U.S. Aggregate Index	Jan. 1990
Stocks vs. Global High Yield	Russell 3000 Index vs. Credit Suisse High Yield Index	Jan. 1990
International Equity vs. U.S. Equity	Morgan Stanley Capital International (MSCI) All Country World Index (ACWI) ex-USA vs. Russell 3000 Index	Jan. 1990
Emerging Markets (EM) Equity vs. Developed Markets (DM) Equity	MSCI EM Index vs. MSCI Europe, Australasia, and the Far East (EAFE) Index	Jan. 1990
U.S. Growth vs. U.S. Value	Russell 1000 Growth Index vs. Russell 1000 Value Index	Jan. 1990
DM Growth vs. DM Value	MSCI EAFE Growth Index vs. MSCI EAFE Value Index	Jan. 1990
U.S. Small-Cap vs. U.S. Large-Cap	Russell 2000 Index vs. Russell 1000 Index	Jan. 1990
Int'l. Small-Cap vs. Int'l. Large-Cap	S&P Global Small Cap ex-U.S. Index vs. MSCI ACWI ex-USA Index	Jan. 1997
Real Assets vs. Global Equities	T. Rowe Price Real Assets Blended Benchmark[2] vs. MSCI ACWI Index	Jan. 1990
Global High Yield vs. U.S. IG	Credit Suisse High Yield Index vs. Bloomberg Barclays U.S. Aggregate Index	Jan. 1990
EM USD Debt vs. U.S. IG	J.P. Morgan Emerging Markets Bond Index (EMBI) Global vs. Bloomberg Barclays U.S. Aggregate Index	Jan. 1993
Non-USD Debt vs. U.S. IG	Bloomberg Barclays Global Aggregate ex-U.S. Index vs. Bloomberg Barclays U.S. Aggregate Index	Jan. 1990
EM USD Debt vs. Global High Yield	J.P. Morgan EMBI Global Index vs. Credit Suisse High Yield Index	Jan. 1993
Long Euro/Short USD	EURUSD (Spot)	Jan. 1990
Long USD/Short Yen	USDJPY (Spot)	Jan. 1990
Long Euro/Short Yen	EURJPY (Spot)	Jan. 1990
Long USD/Short DM Currencies	U.S. Dollar Index (DXY; Spot)	Jan. 1990
Long EM Currencies/Short USD	J.P. Morgan Emerging Markets Currency Index (Spot)	Jan. 2000

Source: T. Rowe Price.

[1] Unless specifically identified, asset class returns are computed using total return indexes. All data are sourced at the monthly frequency.

[2] As of December 31, 2019, the T. Rowe Price Real Assets Blended Benchmark was composed of 25% MSCI ACWI Metals & Mining, 20% Wilshire RESI, 20% FTSE EPRA/NAREIT Developed Real Estate Index, 19.5% MSCI ACWI Energy, 10.5% MSCI ACWI Materials, 4% MSCI ACWI IMI Gold, and 1% MSCI ACWI IMI Precious Metals and Minerals. Prior to December 1, 2013, the Real Assets Blended Benchmark was composed of 25% MSCI ACWI Metals & Mining, 20% Wilshire RESI, 20% FTSE EPRA/NAREIT Developed Real Estate Index, 16.25% MSCI ACWI Energy, 8.75% MSCI ACWI Materials, 5% UBS World Infrastructure and Utilities Index, 4% MSCI ACWI IMI Gold, and 1% MSCI ACWI IMI Precious Metals and Minerals.

Historically, stable or improving macro conditions typically have correlated with strong returns for "risk on" trades, such as long large-cap and small-cap stocks, high yield bonds, and emerging markets debt. On the other hand, a rising U.S. unemployment rate generally has been associated with a sell-off in stocks.

Regarding style rotation, growth stocks typically have longer duration than value stocks. Therefore, even though the dividend yield on value stocks historically has been higher than on growth stocks, growth typically has outperformed value when interest rates decline, while value has tended to outperform when rates rise.

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In general, our results are in line with economic intuition as well as previous findings. In our view, the contribution of our dashboards lies not in their academic merit but rather their value to investment practitioners. Our dashboards can help practitioners filter the historical data to try to predict the impact of macro factors on asset returns, using a framework that incorporates current conditions and that investors can easily replicate. Confidence intervals and hit rates help filter the continuous flood of macro data to help investors research potential investment opportunities based on history. Importantly, our dashboards are updated regularly. As initial conditions change, some investment conclusions may change as well. We seek to identify correlations that appear meaningful and leave it to the investor to assess causation.

Also, although the academic literature previously cited suggests that our selected macro factors can be significant return drivers, the confidence intervals for one-year returns in our dashboards are wide, and statistical confidence is relatively low across the board. We believe macro data should be used in combination with relative valuations and other factors. In this way, macro factors can be used to confirm relative valuation signals.

Ultimately, our goal is to add discipline to the analysis of macro factors, and our framework is one piece of the puzzle, focused on idea generation. Portfolio construction then involves combining macro with other factors, adjusting broad market factor exposures, as well as risk-scaling positions between the long and the short legs and across trades.

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