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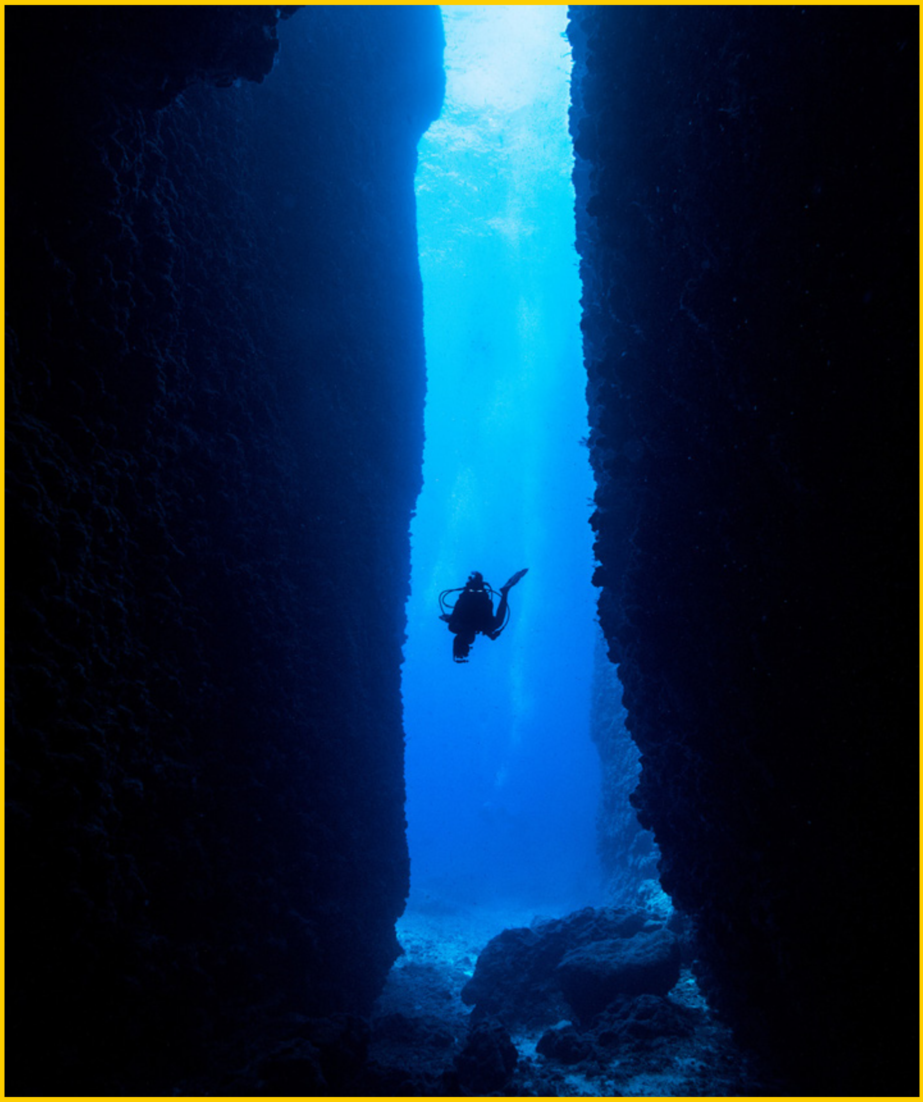
Don't lose your breadth

The key to macro resilience



Summary

- Breadth, the number of independent bets represented in a portfolio, is a fundamental driver of macro performance. At a given level of skill, expanding breadth may enhance risk-adjusted returns and portfolio efficiency.
- Many macro strategies are more concentrated than they appear. Positions across asset classes often reflect a single underlying macro thesis, leaving portfolios exposed when that view proves incorrect.
- This hidden concentration becomes most apparent in periods of stress, when correlations rise and seemingly diversified exposures move together — which may amplify drawdowns.
- By contrast, portfolios that diversify across truly independent drivers of return tend to deliver more consistent outcomes, preserve risk capacity, and participate more effectively in recoveries.
- In this paper, we explore how both systematic and discretionary macro strategies can enhance true breadth through more deliberate risk allocation — across factors, insights, and time — to build stronger portfolios.

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Introduction

In our earlier paper, *Global Macro Matters: The hidden power of smarter macro hedge fund allocations*,[1] we identified two key findings regarding macro hedge funds. First, macro strategies exhibit differentiated characteristics relative to other hedge fund styles, enhancing portfolio-level outcomes within diversified allocations. Second, macro managers who limit drawdowns relative to the risk they take — avoiding "spending" disproportionate risk during negative return periods, tend to maintain a competitive advantage.

We attributed this advantage in part to the negatively autocorrelated and contrarian nature of many macro trading styles.[2] In more mean-reverting environments, preserving "dry powder" allows managers to deploy capital when opportunities improve. By contrast, managers who deplete their risk budget during adverse periods are often forced to reduce exposures, limiting their ability to participate in recoveries.

This creates a clear objective: reduce drawdown propensity. However, achieving it in practice is far from straightforward. Macro strategies are inherently more directional and often more concentrated than many other hedge fund approaches. Unlike equity market neutral strategies, which distribute risk across numerous idiosyncratic positions, macro portfolios frequently express views through a smaller number of high-conviction exposures across asset classes and geographies.

In this paper, we examine how macro hedge funds can improve return consistency through greater diversification. We argue that "breadth,"[3] or the number of independent bets taken over a given period, is a critical and often underappreciated driver of macro resilience. Expanding breadth may enhance portfolio robustness, reduce concentration-driven drawdowns, and ultimately may provide a competitive advantage within the macro hedge fund universe.

Macro investing through the Fundamental Law of Active Management

Although originally developed for equity investing, the Fundamental Law of Active Management applies broadly to all active strategies. In simple terms, risk-adjusted performance depends on three elements: forecasting skill, the number of independent opportunities (breadth), and the ability to translate that skill into positions after accounting for constraints:

$$IR = IC \text{ x } \sqrt{\text{Breadth}} \text{ x } TC$$ [4]

Where **IR** is the information ratio (realized excess return per unit of risk),[5] **IC**, the information coefficient, represents the manager's forecasting skill per independent bet, **Breadth** is the number of independent bets taken over a given period, and **TC** is the transfer coefficient, which captures the degree to which skill is translated into portfolio positions after accounting for implementation frictions and constraints (with $TC = 1$ implying no friction).[6]

Different macro hedge fund styles emphasize different components of this relationship. Discretionary managers often aim to maximize **IC** (forecasting skill) through high conviction views rooted in macro regimes. Systematic managers, by contrast, tend to increase **Breadth** by deploying multiple models across asset classes and time horizons. In practice, however, realized breadth is often far lower than it appears.

For discretionary managers, multiple positions may reflect a single underlying macro thesis. A portfolio may span rates, currencies, and equities, but if all positions express the same regime view, effective breadth collapses when that view proves incorrect. What appears diversified at the instrument level may be concentrated at the thesis level.

Systematic strategies face a parallel challenge. While they may deploy numerous signals, these can unintentionally cluster around common factors or directional exposures. In periods of stress, signals that appear distinct in normal environments may converge, producing simultaneous drawdowns. As a result, measured breadth can overstate true independence. The diversification that seemed present ex ante disappears precisely when it is needed most.

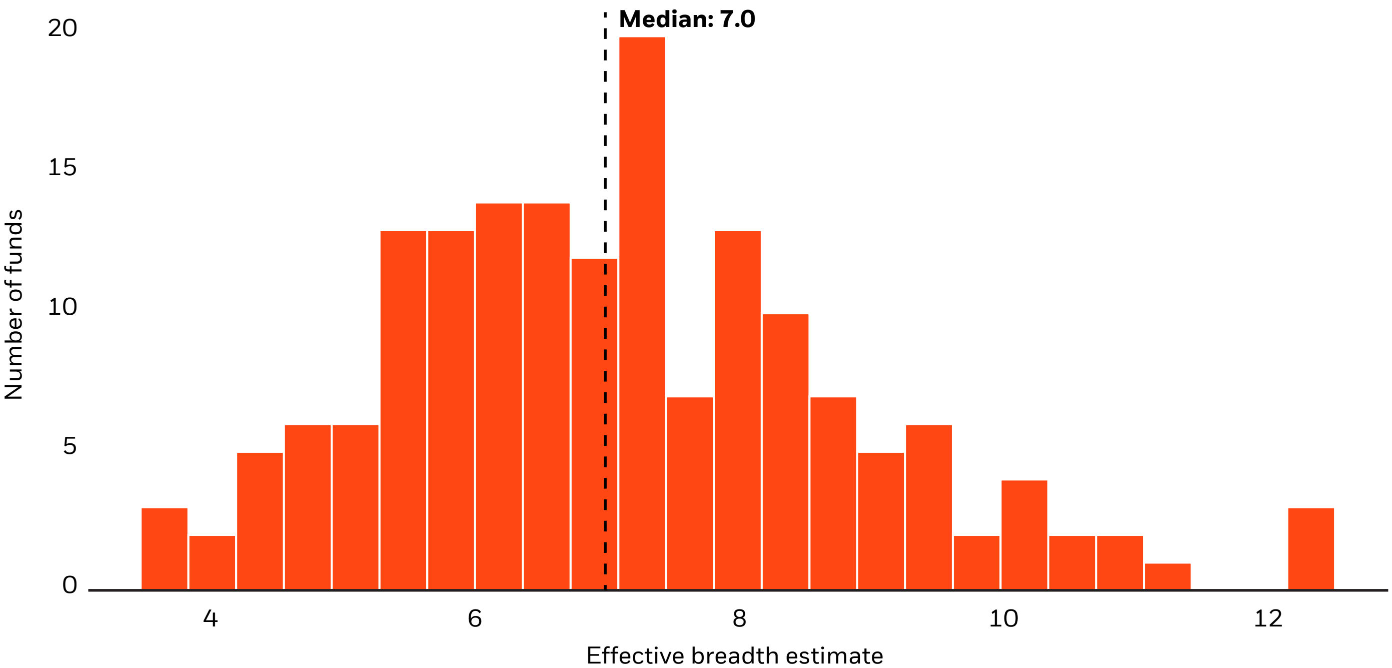
1 BlackRock. "Global Macro Matters: The hidden power of smarter macro hedge fund allocations." **2** We demonstrated this finding by analyzing individual funds across the HFRI macro hedge fund universe: funds with lower drawdowns tend to exhibit greater right skew, higher information ratios, and stronger information ratios during post-drawdown recoveries. **3** This term was first popularized in the book "Active Portfolio Management" by Richard Grinold and Ronald Kahn, where the 'fundamental law of active management' was first introduced – the framework that we rely on in this paper. **4** Grinold, Richard C., and Ronald N. Kahn. Active Portfolio Management: A Quantitative Approach for Producing Superior Returns and Controlling Risk. 2nd ed. New York: McGraw-Hill, 2000. **5** A fund information ratio can be thought of as being equivalent to a Sharpe ratio when a cash benchmark is subtracted from the return in the numerator. **6** A very common constraint that would lead to a reduction in TC would be a no-shorting constraint in some benchmark-relative long-only funds, where the portfolio can only underweight positions relative to their size within the underlying benchmark.

Estimating effective breadth in practice

To assess this in practice, we estimate the effective breadth of the funds in the HFRI Macro Hedge Fund index using a return-based approach. By decomposing returns into contributions from a broad set of underlying strategies, we can infer the concentration/diversification of each fund's risk allocation.[7]

The results suggest that effective breadth across macro funds is generally low. Even with a diverse opportunity set, many funds concentrate risk across a limited number of underlying drivers, reinforcing the gap between apparent and true diversification. As Figure 1 illustrates, macro hedge fund breadth tends to be quite low on average, with the upper end sitting at about 12 on average, a median of only about 7, and some funds realize average breadth of only 3.[8]

Figure 1: Distribution of average effective breadth across macro hedge funds



Source: HFRI, BlackRock; as of March 31, 2026.

7 While there may be various way to do this, being limited to only returns reduces the number of possible techniques. We use the following procedure, which we believe is a reasonable approach to provide a description of the range of effective breadth across the macro fund universe. For each HFRI Macro constituent fund, we estimate the fraction of return variance attributable to each of 67 systematic asset allocation strategies (spanning carry, momentum, value, seasonal, and defensive strategies across developed and emerging market FX, equities, bonds, swaps, credit, and commodities). Using rolling 36-month windows, we run a forward stepwise regression: at each step, we regress the current residual fund return on every remaining (unused) factor individually, select the factor with the highest univariate R^2, record its beta, and residualize the fund return to the factor. The variance explained by the k-th factor selected is computed as $\frac{Var(Y_{\{k-1\}}) - Var(Y_k)}{Var(Y)}$, where Y is the original fund return series in the window, $Y\{k-1\}$ is the residual entering step k, and Y_k is the residual after removing the k-th factor's contribution; these shares sum to the total R^2 of the full decomposition and provide an ordering-aware measure of each factor's marginal explanatory power, as well as the relative share of risk explained by each factor. Using this decompositions of percent contribution of active risk (PCAR) spent on each factor, we can understand the level of diversification across insights of each fund. Using the concept of the "Herfindahl-Hirschman Index (HHI)", which measures the level of concentration in a portfolio, we compute the inverse using following equation to convert PCAR estimates by explanatory strategy to an estimated level of effective breadth inherent within each portfolio: $Effective\ Breadth = \frac{1}{\sum strategy PCAR^2 strategy}$. We look at averages over 3-year rolling periods to reduce the impact of any particular time period in our analysis. **8** Notably a traditional 60/40 portfolio typically has effective breadth of only 1.2 as the equity exposure drives the vast majority of the portfolio's variance.

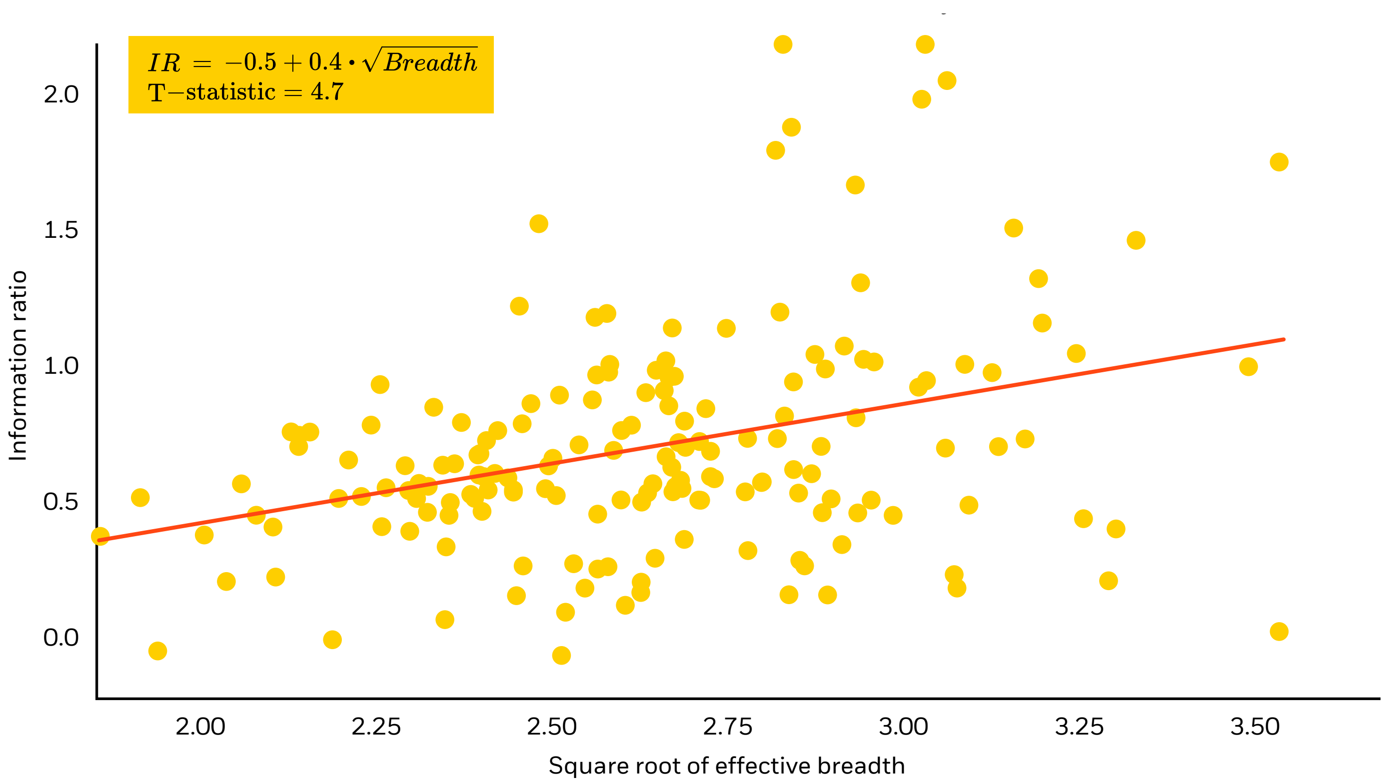
We then examine the relationship between breadth and performance. Consistent with the Fundamental Law of Active Management, Figure 2 shows a strong positive relationship between effective breadth and realized information ratios. Even this simple measure of effective breadth demonstrates a strong and statistically-significant linkage between breadth and the realized information ratios across macro strategies as suggested by the fundamental law.[9]

A key challenge in achieving breadth is that macro assets often share common underlying drivers. Even across a large universe of instruments, exposures tend to cluster around a small number of dominant factors — such as equities, rates, currencies, and commodities.

In the sections that follow, we explore how macro hedge funds — both discretionary and systematic — can enhance true breadth. While macro strategies necessarily involve directional positioning and periodic exposure to risk premia, we argue that portfolio construction can have the goal of improving independence across bets, strengthen resilience, and reduce the likelihood of severe risk-adjusted drawdowns. By embedding more robust breadth into the investment process, macro managers may be able to preserve risk capacity and maintain the flexibility to deploy capital when opportunity sets are most attractive.

Figure 2: Relationship between the square root of effective breadth and information ratios across funds in HFRI Macro Index

Square root of breadth vs. information ratio by fund



Source: HFRI, BlackRock, as of March 31, 2026.

9 We note that while this is a rudimentary analysis, it is also inherently powerful. Despite that we have limited data on the underlying strategies, even basic assessments of diversification (only a risk — and not a return — lens) have a strong relationship with realized performance consistency.

Enhancing breadth in systematic macro strategies

Systematic macro strategies, in principle, can be well positioned to achieve high breadth. By allocating risk across many signals and exposures, they can diversify across a wide range of opportunities.

In practice, however, these strategies can still become concentrated. Even a universe of roughly 100 liquid derivatives across asset classes may appear broader than it truly is, because many assets share common factor exposures. These linkages can be structural, such as the U.S. dollar linking its funding complex, emerging markets ("EM") commodities, global equities, and credit spreads. They can also be episodic, as seen when geopolitical shocks, energy markets, and global inflation expectations become linked, or during the China driven commodity supercycle of the 2010s that tied together industrial metals, EM commodity producers, and Chinese domestic growth.

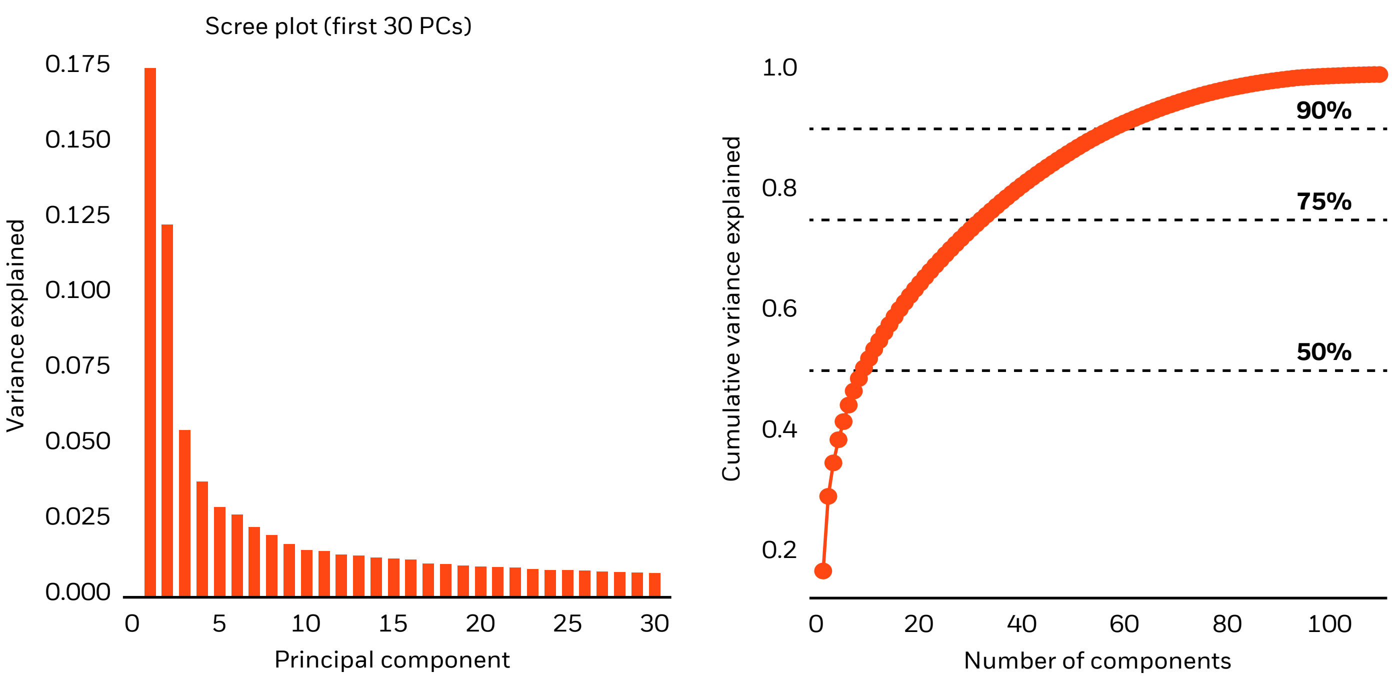
Figure 3 illustrates this point using a principal components analysis ("PCA") decomposition of weekly excess returns for a universe of 110 liquid derivatives from 1990 to 2026. Despite the size of the asset universe, only eight orthogonal components explain 50% of the return variance.[10] In other words, even a large set of instruments can be driven by a relatively small number of common forces.

This matters because, without careful risk management, most of the risk taken in this asset universe can fall within the same few dimensions. Indeed, this is entirely consistent with the finding from Figure 1 that demonstrates that most macro managers do not exhibit significant breadth in their strategies.

The PCA decomposition also provides some information about how these orthogonal factors behave. We create a simple autoregression characterized by the equation below, where ***ewm(ret)*** represents the 3-month exponentially-smoothed weekly returns, for PC number **k**, and time **t** represented in weeks.

$$ret^{k}_{t+1} = \beta^{k}_{0} + \beta^{k}_{1}\, ewm\left(ret^{k}_{t}\right) + \epsilon_{t+1}$$

Figure 3: Scree plot and cumulative variance explained by PCA decomposition for 110 liquid derivative weekly returns from 1990



Source: BlackRock, as of March 31, 2026.

10 We find that the first 5 PCs can be broadly characterized as directional equity exposure, directional rate exposure, US Dollar against other global currencies, oil exposure and EM rate exposure.

Figure 4 shows the t-statistics of the regression for each of the 110 principal components. Positive t statistics indicate momentum or trending behavior,[11] while negative values indicate reversal or contrarian behavior over this time horizon. We observe that the first and most important principal components exhibit more medium-term trending behavior, while almost all other components display more contrarian or reversal behavior.

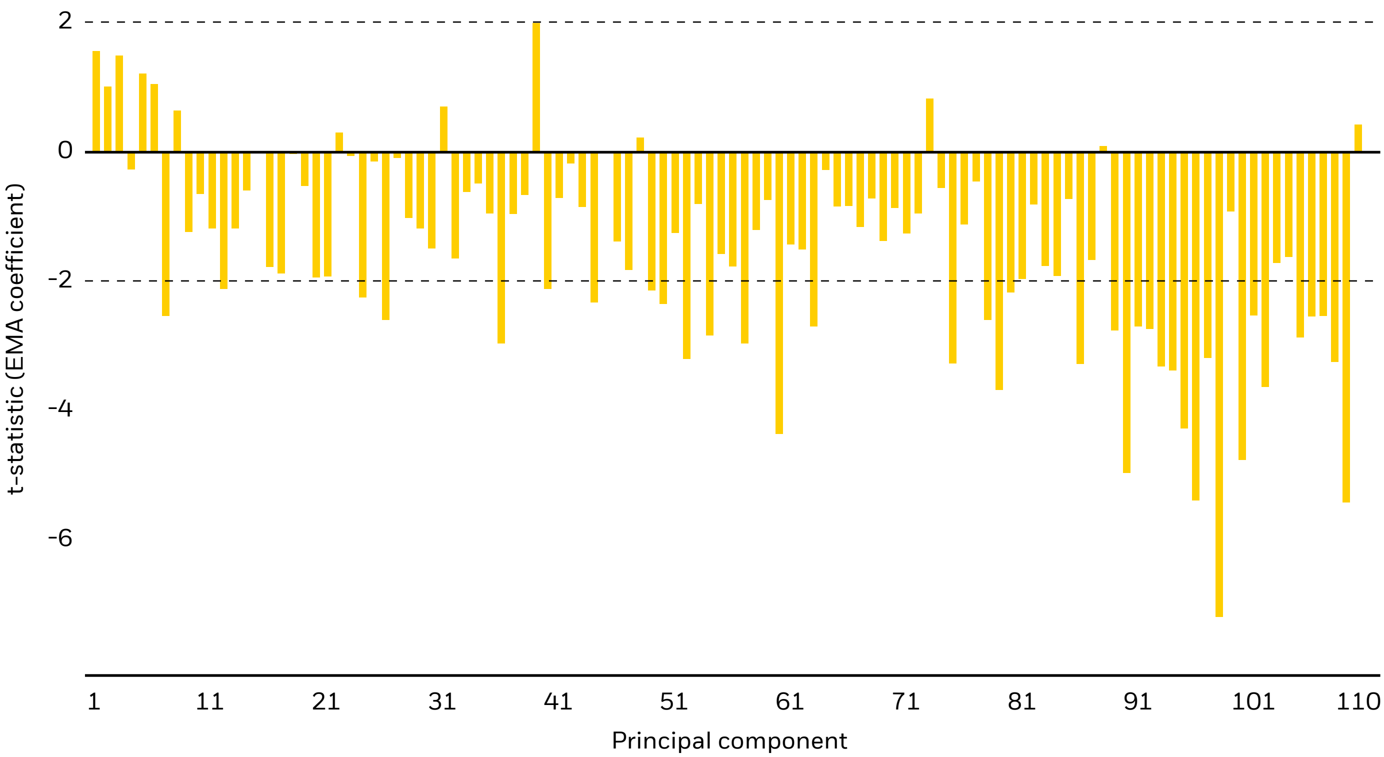
To achieve truly diversified systematic macro exposure, portfolio managers should emphasize the more idiosyncratic principal components rather than relying heavily on trend-driven factors. In practice, however, many funds, perhaps inadvertently, concentrate the bulk of their risk on the first five to six principal components, often exhibiting strong trend-following characteristics, thereby overlooking the substantial alpha opportunities embedded in the remaining components.[12]

This analysis reinforces our view that capturing the full breadth of macro opportunities requires systematic strategies to be deliberate in how they allocate risk across underlying drivers, with a greater emphasis on relative-value exposures. This can be enhanced not only through intra-asset strategies, but also by incorporating cross-asset approaches that tap into the later, more idiosyncratic principal components.

Equally important is maintaining a strong fund-level focus on mitigating concentration risk that can arise from temporary spikes in correlations across strategies and by placing greater scrutiny on the share of risk explained by any single factor or approach. It is neither necessary nor optimal to deploy every signal across every asset class; rather than optimizing at the individual strategy level, the real objective should be to maximize diversification at the portfolio level, which is what ultimately drives outcomes.

Figure 4: Autoregression t-statistics of PCs from return decomposition for weekly returns in Figure 3

3-month EMA forecast of next-week PC returns (exret, weekly PCA)



Source: BlackRock, as of March 31, 2026.

11 Notably, we find that the fourth PC (oil factor) has no auto-correlation, but the following two PCs (EM rates and Agricultural commodities) again show strong trending behavior.
12 Indeed, as we demonstrated in Global Macro Matters, the macro investment style tends to exhibit negative autocorrelation. By concentrating the majority of risk on the leading, trend-driven principal components, investors forgo a meaningful opportunity to capture the alpha inherent in macro strategies characterized by a reversal footprint.

Enhancing breadth in discretionary macro

Discretionary macro strategies face a different, but related challenge. These strategies rely on a set of high-conviction, and often largely directional positions. While this can create meaningful return potential, it can also expose portfolios to concentration-driven drawdowns.

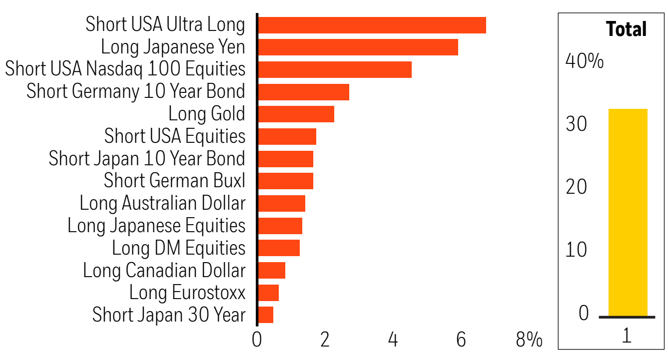
Traditional approaches often seek diversification by organizing research into asset class pods, such as currencies, equities, and rates. Yet if those pods are guided by a centralized macro view, the portfolio may only have the appearance of diversification. For example, a positive view on U.S. growth could lead the equity pod to go long U.S. equities, the rates pod may short U.S. rates, and the currency pod may go long the U.S. dollar. Although these are distinct positions, they all depend on the same underlying view. If that core U.S. growth view proves incorrect, all positions are likely to underperform simultaneously. In that sense, asset class breadth can generate an illusion of diversification.

To work towards diversification, discretionary macro strategies can instead allocate risk across a set of distinct and differentiated macro insights. In this framework, the portfolio is diversified across key macro views, with positions selected to express each insight in the most effective way.

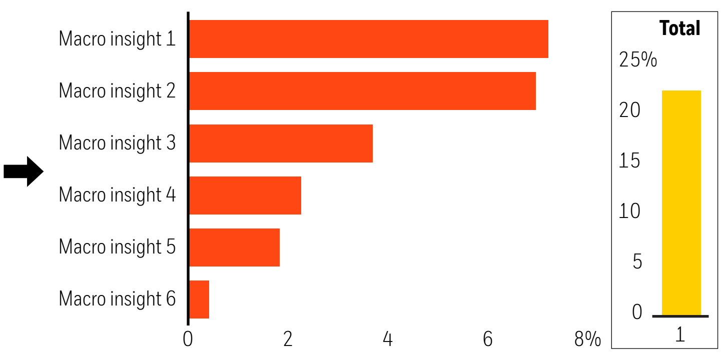
Figure 5 illustrates this approach. At the position level, the portfolio appears to hold many trades as shown in subfigure 5A, with aggregate risk of approximately 33%. Those positions are then mapped to a set of core macro insights in a diversified manner, as shown in subfigure 5B, with risk per insight ranging from 0.5% to 7% and total risk across insights of about 22%. Importantly, because the insights themselves are designed to be diversified, as shown in subfigure 5C, with an average correlation of only 0.1, total portfolio risk declines to approximately 11%, as shown in subfigure 5D. This represents a reduction of about two thirds relative to the position level view and one-half relative to the macro insight view. This demonstrates how diversification across underlying macro insights can reduce overall portfolio risk while preserving return potential.

Figure 5: Example of discretionary macro strategy diversification by macro insight

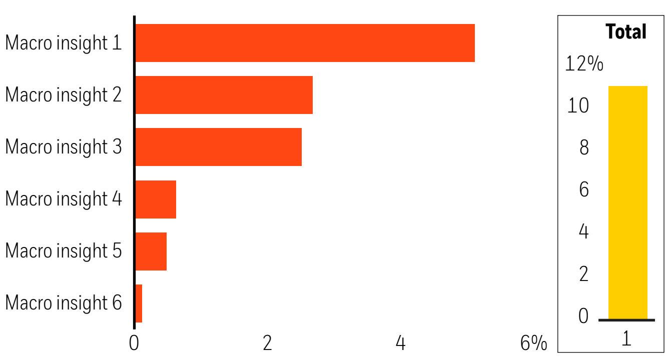
1 Figure 5A Standalone risk by position



2 Figure 5B Standalone risk by macro insight



4 Figure 5D: Risk contribution by insight



3 5C Macro insight correlation

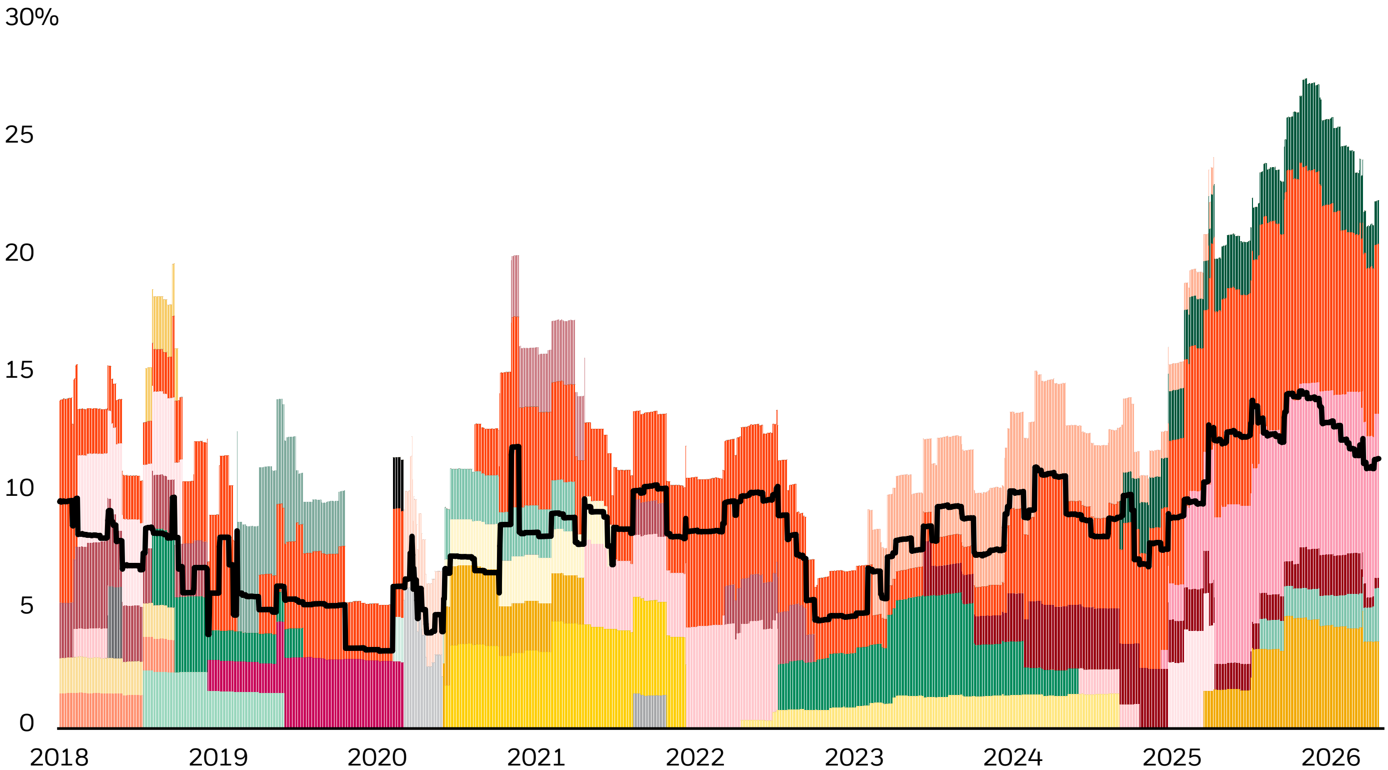
Average = 0.1

Insight correlations	Macro insight 1	Macro insight 2	Macro insight 3	Macro insight 4	Macro insight 5
Macro insight 1					
Macro insight 2	-0.1				
Macro insight 3	0.1	0.3			
Macro insight 4	-0.2	0.2	0.3		
Macro insight 5	0.7	-0.1	0.0	-0.3	
Macro insight 6	0.3	-0.1	-0.1	-0.2	0.3

Source: BlackRock, as of March 31, 2026.

Figure 6: Illustration of ex-ante risk spend by macro insight

Ex-ante active risk over time



Source: BlackRock, as of March 31, 2026.

Another key feature of discretionary macro investing that can enhance breadth is the incorporation of opportunistic risk allocation over time. This approach introduces positions only when they are deemed unpriced by the market and often rotates expressions of prevailing macro insights based on where the opportunity appears greatest. As a result, risk can vary both across macro insights and in aggregate, creating dynamics that differ meaningfully from systematic macro investing, where risk allocation tends to be more stable over time. This process can build enhanced time breadth by actively adjusting position sizes and evolving asset expressions of existing views, allowing the strategy to scale exposure when conviction and perceived edge are strongest.

Conclusion

Maintaining breadth in a dynamic macroeconomic environment is a critical driver of differentiated macro alpha. While macro hedge funds often appear diversified, realized breadth is typically much lower, leaving portfolios exposed to concentration and correlated drawdowns.

Addressing this requires a more deliberate approach to portfolio construction, with a clear focus on how risk is distributed across independent alpha views.

Ultimately, managers who deliberately expand and actively manage their breadth, across factors, insights, and time, may be better positioned to enhance resilience, preserve risk capacity, and capitalize on evolving opportunity sets. In this sense, breadth represents not just a theoretical concept, but a structural source of competitive advantage in macro hedge fund investing.

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