

## Executive Summary

# WHAT'S IN YOUR REAL ASSET PORTFOLIO? Introducing RASA™

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In prior research we highlighted the diversity of individual real assets in terms of their sensitivities to the equity and bond markets and to macroeconomic factors such as growth and inflation.<sup>1</sup> We now extend our analysis to real asset *portfolios*. Since real assets are a heterogeneous asset class, we explore whether real asset portfolios also display such heterogeneity, or if they exhibit similar fund characteristics and performance.

We examine sensitivities of real asset portfolios to various macroeconomic and financial market variables, at both short and long horizons, using our **Real Asset Sensitivity Analysis (RASA™)** framework.<sup>2</sup> Portfolios with similar asset class allocations may have different macroeconomic and market sensitivities, and RASA can uncover these differences.

We identify and examine 20 currently active real asset funds (anonymously identified) in the eVestment database with at least seven years of performance history. These funds are liquid and invest in multiple assets. One-third of the total AUM are in institutional defined contribution (DC) plans, one-third in institutional corporate, public and E&F plans and the remainder in sub-advised, retail and other categories. DC plan sponsors need the daily liquidity offered by these funds. Institutional investors also allocate to these funds to manage cash inflows and outflows, and to increase the capacity of their overall real asset allocations.

### Differences in Fund Characteristics and Performance

Over their investment history the funds in our sample have invested in 21 different asset categories. To summarize funds' asset class exposures, we use "cluster analysis" to group together similar asset classes into seven clusters. The largest cluster by number of assets includes fixed income, TIPS, cash and currency assets, which we label "FICC." The second largest cluster is "Other Equities," which includes infrastructure equities, REITs, global equities and US equities. Natural Resource Equities, EM Equities, MLPs, Commodities and Gold each form their own cluster. Both historical

1 See H. Parikh, and W. Zhang, "The Diversity of Real Assets: Portfolio Construction for Institutional Investors," PGIM IAS, June 2019.

2 See H. Parikh, "Institutional Gold!" PGIM IAS, November 2019, which details the methodology underlying RASA™.

**The findings shown are derived from statistical models. Reasonable people may disagree about the appropriate model and assumptions. Models should not be relied upon to make predictions of actual future account performance. See additional disclosures.**

(using style analysis) and recent asset allocations show that funds share a large average allocation to the FICC, Other Equities, and Commodities clusters. However, there are large differences in weights across funds, and funds tend to have cluster concentrations.

The funds’ performances were also diverse. On average, funds exhibited moderate annual total return volatility (8.3%/y). However, some funds had equity-like volatility (~11%/y) while others had bond-like volatility (~4%/y).

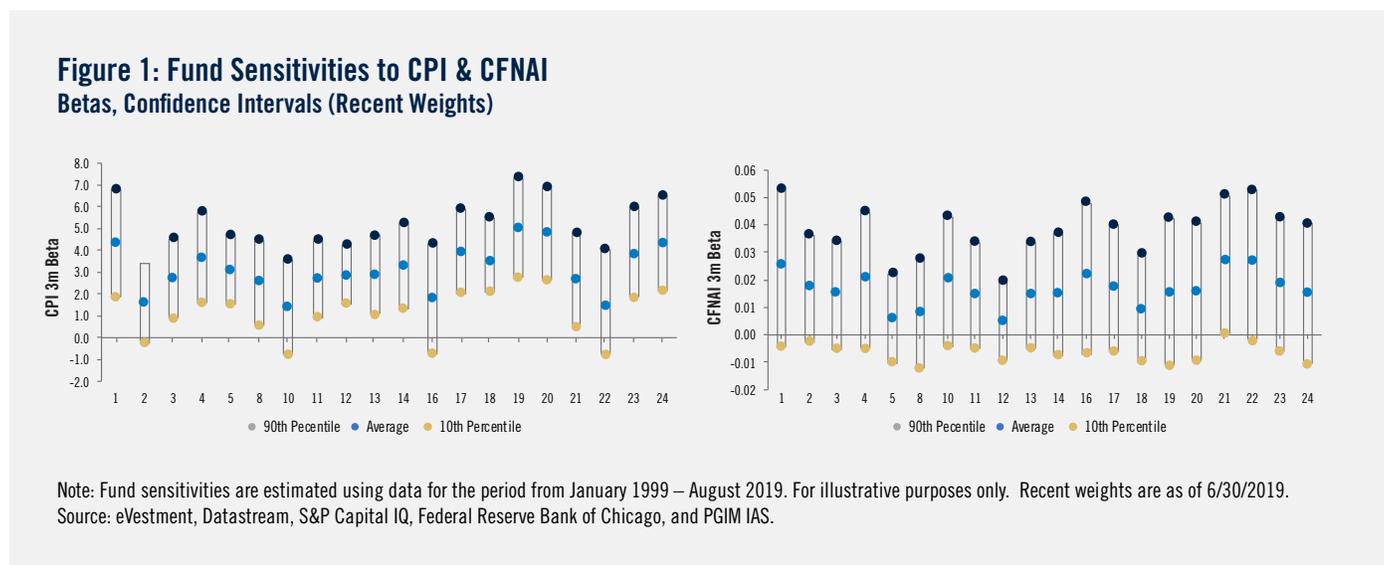
## Differences in RASA Sensitivities

Using our RASA framework, we report average financial market and macroeconomic sensitivities at both a short horizon (3m – matching performance reporting frequency) and at a longer horizon (24m – which may match a CIO’s investment horizon). These fund-level sensitivities can help CIOs gauge if a real asset fund matches their investment objectives.

Figure 1 shows a wide range of inflation and growth sensitivities across funds. CPI betas, at a 3m horizon, range from 1.4 to 5.0, and CFNAI (Chicago Fed National Activity Index) betas range from 0.005 to 0.027.

RASA also generates confidence intervals for the true beta.<sup>3</sup> Figure 1 presents 90% confidence interval bands for CPI and CFNAI betas. Five out of 20 funds may have a true CPI beta close to or lower than zero. Similarly, even high average CFNAI beta funds may have a true beta close to zero.

Cluster weights do not tell the full story which is why CIOs could benefit from using RASA. While funds with greater FICC cluster allocations tend to have lower CFNAI betas, funds could have achieved this sensitivity differently. For example, two funds have similar allocations to the FICC cluster, but one fund invests only in inflation linkers, whereas another fund allocates between leveraged loans and linkers. While these differences in allocations produce the same CFNAI betas, the fund CPI betas are different.



## Fund-Level Cluster Analysis

With so much disparity in funds across dimensions like asset cluster weights and RASA sensitivities, CIOs might wonder how best to identify those real asset funds that align with their investment objectives.

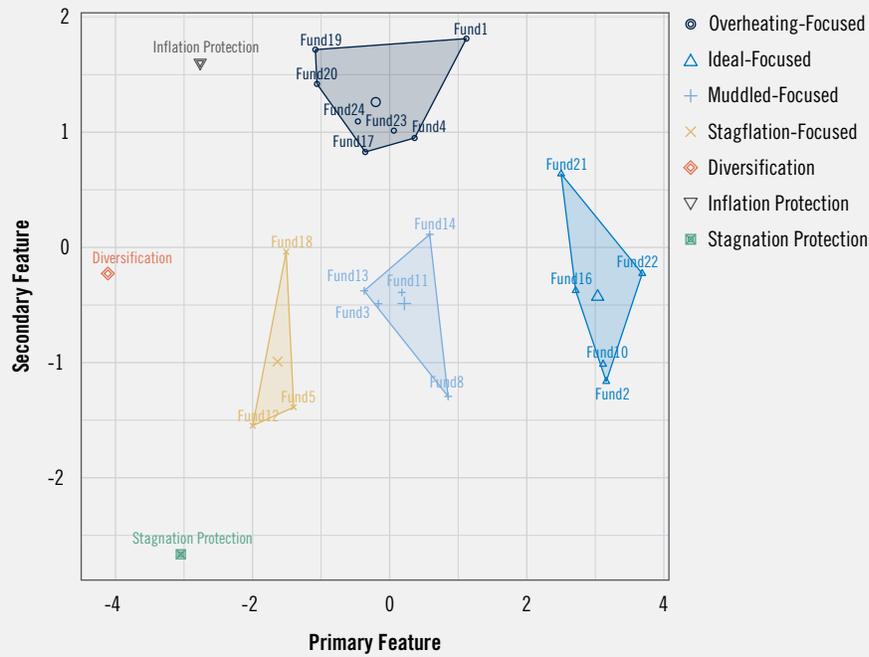
Using each fund’s estimated recent RASA sensitivities, we cluster the 20 funds into four different clusters (Figure 2). To form fund clusters, we use six fund characteristics – 3m and 24m CPI & CFNAI betas and stocks and bonds regression R<sup>2</sup>s.

Based on the funds’ RASA sensitivities in each of the four clusters, we identify the economic environment best suited for each fund cluster. Each cluster is focused on a distinct economic environment – **overheating** (high-inflation/high-growth), **ideal** (low-inflation/high-growth), **muddled** (mid-inflation/mid-growth) and **stagflation** (high-inflation/low-growth).<sup>4</sup> These results can help a CIO construct their own real asset strategy portfolio using one or more funds. For example, an **Inflation Protection** objective strategy is expected to outperform in both overheating and stagflation environments.

<sup>3</sup> Parikh (2019) shows how such uncertainty (*i.e.*, estimation error) can be incorporated into portfolio construction. Confidence intervals vary with return horizon and data period.

<sup>4</sup> For more details on the economic environment definitions, see “The Diversity of Real Assets.”

**Figure 2: Clustering Real Asset Funds Using Recent RASA Sensitivities**



Note: A scatter (principal component) chart shows how close the 20 different funds are to each other. Primary Feature axis is the first principal component value and Secondary Feature axis is the second principal component value of 20 funds based on the six dimensions: 3m and 24m CPI and CFNAI betas and stock-bond regression R<sup>2</sup>s. For illustrative purposes only.

Source: eVestment, Datastream, S&P Capital IQ, Federal Reserve Bank of Chicago, and PGIM IAS.

## Conclusion

CIOs have different investment objectives and need real asset portfolios that align well. There is a wide mix of real asset funds, which complicates fund selection or portfolio construction. While traditional analysis considers dimensions like performance, asset allocation and fund characteristics (such as investment objectives, benchmark, etc.), we show that fund and portfolio analysis is enriched using RASA. Portfolios with similar asset class allocations may have different macroeconomic and market sensitivities which RASA can uncover.

Using RASA, investors can identify real asset funds and construct real asset portfolios that can be better aligned to their investment objectives.

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