INSTITUTIONAL ADVISORY & SOLUTIONS

Executive Summary

INSTITUTIONAL GOLD!

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We find that gold has not performed particularly well long-term compared to other assets. However, there is a place for gold-related assets in institutional portfolios separate from commodities and energy equities. The role for gold lies in its diversification and macroeconomic hedging benefits. We examine the potential role of gold in institutional portfolios, analyzing this question from three perspectives – as a hedge against inflation, a hedge against slow economic growth, and as a portfolio diversifier within a portfolio of financial assets (e.g., stocks and bonds).

To assess gold's portfolio role, we use returns from January 1973 to January 2019 and measure correlations using investment horizons relevant to CIOs. We find that gold-related assets can play an important hedging function, separate from commodities and energy equities, in institutional portfolios.

The paper is divided into four parts:

- How can institutions invest in gold? The size of the financial gold market, excluding official sector holdings, is more than $1.9t (source: World Gold Council). We discuss several institutional vehicles for investing in gold: physical gold, futures, gold miner equity, royalty agreements and streaming agreements. For futures, we illustrate a rolling futures strategy to improve performance for long-term gold exposure. For gold miner equity we illustrate how an investor might construct an investable earnings-quality-style portfolio that outperforms the sector.
- What has been the long-term performance of gold and its correlation to other institutional assets and macroeconomic variables? These correlations are sensitive to the time period and the investor's investment horizon. This is partly the reason why there are often conflicting views of gold's portfolio role.

  We estimate the correlations of gold to US financial assets (US equity and Treasury bonds) and to macroeconomic variables (US CPI and the level of economic activity (Chicago Fed National Activity Index, CFNAI)).[1] We calculate correlations using 6m up to 5y horizon returns.

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.

1 https://www.chicagofed.org/research/data/cfnai/current-data.

For investment horizons relevant to CIOs, we find that gold is positively correlated with the US CPI (more so than US equity) and negatively correlated with growth (contrary to equity). Gold has exhibited strong negative correlations with equity and Treasuries.

- Some investors may use hedging overlay portfolios to achieve a desired portfolio-level macroeconomic sensitivity. What is the allocation to gold-related assets in inflation and growth hedging portfolios? We highlight how this allocation depends on both the investor's objective (*e.g.*, protection against inflation or slow growth) and investment horizon. We find that there is a role for gold-related assets in hedging portfolios separate from commodities and energy equities. Alternatively, investors could consider employing short-term dynamic allocation strategies.
- We discuss the difficulties of estimating correlations, especially for long horizons. We highlight the importance of measuring estimation uncertainty and show how this uncertainty can be incorporated into the portfolio construction process for investors intending to hold long-term allocations.

Figure 1 summarizes the differences in the average correlation, and its variability (using bootstrapped samples), depending on the length of the return horizon (6m and 5y). For example, gold is more positively correlated to the CPI using 5y returns than 6m returns (6m $\rho = 0.10$; 5y $\rho = 0.21$). However, at a 5y horizon the interval bands (10th and 90th percentiles) for the correlation estimate are wider. For example, gold's estimated 5y correlation to the CPI ranges from -0.26 (10th percentile) to +0.65 (90th percentile).

In contrast, US equity tended to have low average correlation to the CPI (6m $\rho = -0.16$; 5y $\rho = 0.08$) which may be surprising to investors who believe that equities have reliable inflation hedging properties. Notably, cash and Treasury also had high 5y correlations to the CPI. This is because at longer horizons actual inflation is similar to expected inflation which is embedded in the yield of fixed income assets.

Figure 1

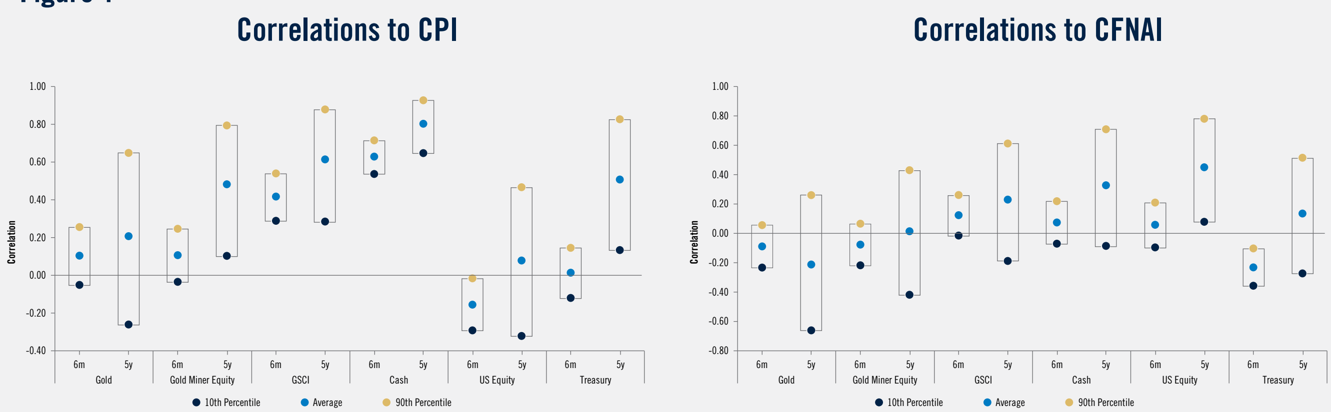


Figure 2: Average Correlations and Exposures with CPI and CFNAI; Short vs. Long Horizons

(USD total returns; January 1973 – January 2019)

		Short Horizon (6m)		Long Horizon (5y)	
		Correlation	Beta	Correlation	Beta
Gold	**vs. CPI**	0.10	**3.08**	0.21	**1.40**
Gold Miner Equity		0.11	1.72	0.48	**2.93**
US Equity		-0.16	-0.56	0.08	-0.13
Treasury		0.01	0.12	0.51	**0.87**
Gold	**vs. CFNAI**	-0.09	-0.01	-0.21	**-0.19**
Gold Miner Equity		-0.08	0.00	0.01	-0.10
US Equity		0.06	0.01	0.45	**0.15**
Treasury		-0.23	0.00	0.14	**0.05**

Source: PGIM IAS. Provided for illustrative purposes only.

With respect to the CFNAI, the 6m correlation of gold to CFNAI was -0.09, but the 5y correlation was -0.21, suggesting that gold might serve as a hedge against economic slowdowns.

We also measure, using regression, the sensitivities (*i.e.*, betas) of gold-related assets to macroeconomic variables. Figure 2 summarizes the gold and gold miner equity betas to CPI and CFNAI, and how these relationships differ with the length of the investment horizon. As for correlations, we also measure the variability of these beta estimates.

Investors may want to add a hedging portfolio that targets a high-inflation beta (for inflation protection) or a low-growth beta (for low-growth protection). Investors can construct hedging portfolios with an overall target exposure (beta) to a specific macroeconomic variable but penalize the allocation weighting to assets whose estimated betas are less reliable. Figure 3A shows optimal portfolio weights for different target CPI betas, at a 5y horizon, and compares it with the optimal portfolio weights at a 6m horizon. Generally, for a higher target portfolio 5y CPI beta the allocations to cash and TIPS decrease, and allocations to gold, gold miner equity and GSCI increase. Figure 3B compares optimal portfolio weights for various target 5y CFNAI betas with those for various target 6m betas. At increasingly negative target levels of CFNAI beta, allocations to cash and TIPS decrease while allocations to gold and gold miner equity increase.

Depending on the investment horizon, the optimal weights to asset classes vary for a given target level of inflation or growth exposure. Notably, there is a portfolio role for gold-related assets separate from commodities and energy equities.

Figure 3A: Inflation Hedging Portfolio Weights – Target 6m vs. 5y CPI Exposures
(USD total returns; January 1973 – January 2019)

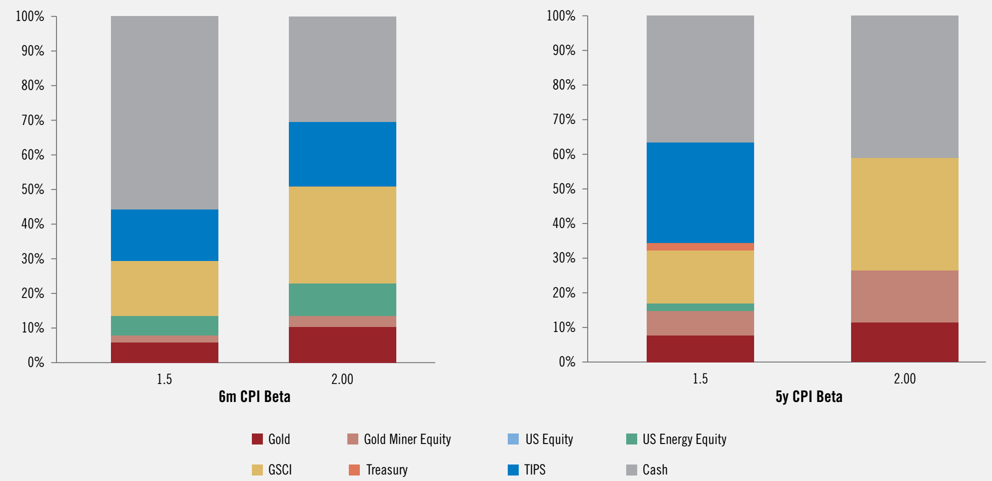
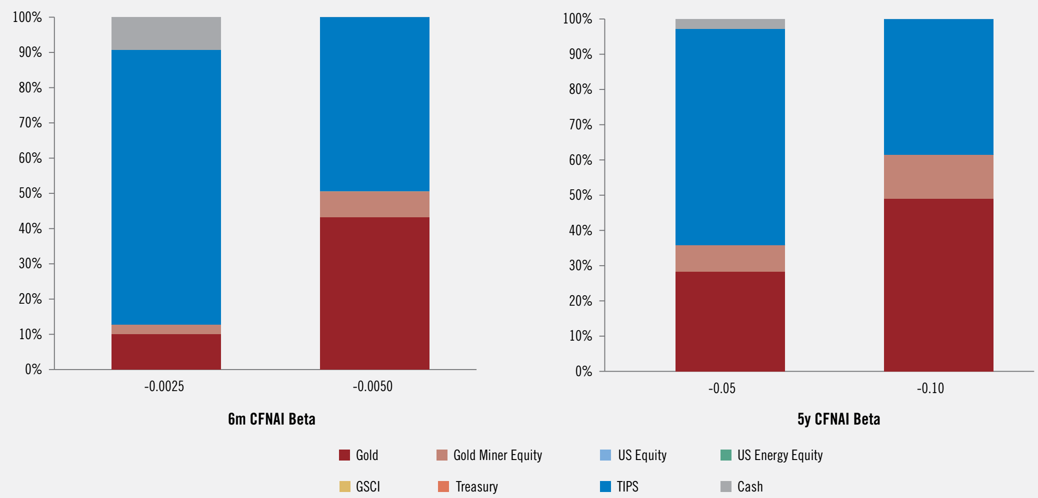


Figure 3B: Growth Hedging Portfolio Weights – Target 6m vs. 5y CFNAI Exposures
(USD total returns; January 1973 – January 2019)



Source: PGIM IAS. Provided for illustrative purposes only.

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