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The role of commodities in a multi-asset portfolio

by Scott E. Wolle

In brief

There are different views on whether commodities should be included in a multi-asset portfolio. We believe that they should be included: due to the specific way they react to growth and inflation, commodities can provide diversification relative to stocks and bonds. At the same time, however, we believe it is important not to simply track a conventional commodity index. Instead, the focus should be on commodities that are difficult to store, since such commodities are more often in backwardation than contango - and backwardation can lead to higher expected returns from commodity contracts. Also, when determining the commodity weight of a multi-asset portfolio, other components such as equities must also be taken into account.

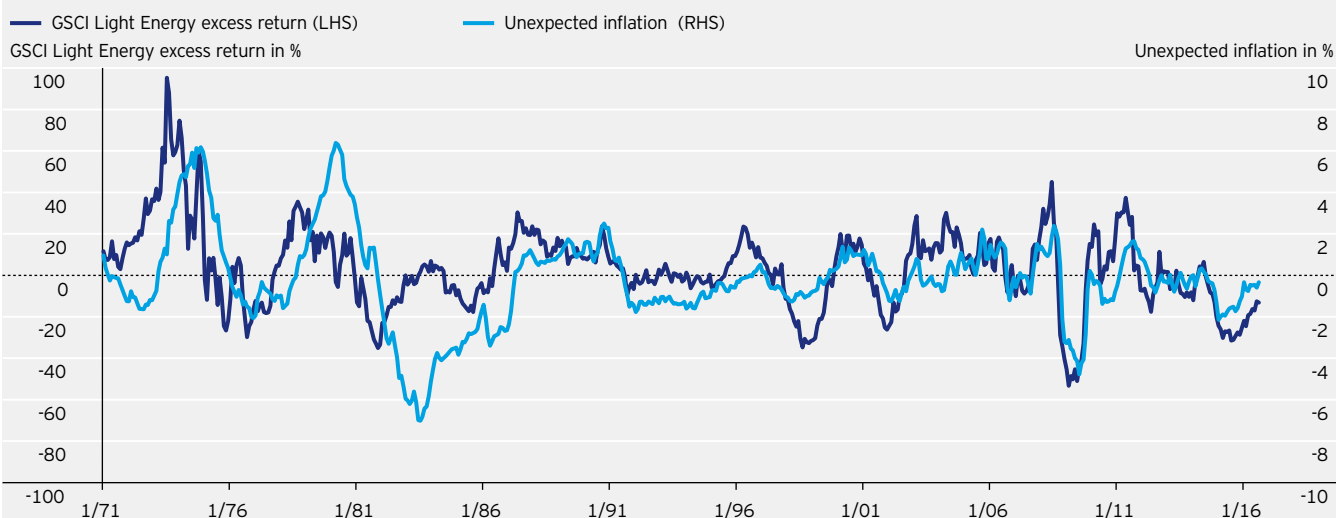
Investors have long debated the wisdom of including commodities in a portfolio. Invesco's Global Asset Allocation Team has a clear position: commodities belong in a portfolio, but not without the right plan. We summarize our research process feeding into multi-asset portfolios as well as a dedicated commodity strategy which we have been applying now for almost a decade.

The prevailing argument for including commodities in a portfolio relates to their inflation-hedging potential. Commodities have indeed demonstrated a strong correlation to inflation (figure 1). Despite the declining relative importance of energy-intensive industries, this correlation has remained intact in recent years. Beyond simple pass-through effects of commodity price changes, most observers link the effect to some combination of monetary policy (i.e., increases in money supply lead to increases in commodity prices) and changes in inflation expectations.

The link between commodities and inflation also helps to explain the second benefit often attributed to commodities: their diversification potential relative to traditional assets such as stocks and bonds. Stocks and bonds should respond in opposite ways to changes in real growth. But both tend to do poorly

Figure 1

Commodity excess returns and unexpected inflation



We believe the correct way to compare any asset relative to inflation is by comparing excess returns of the asset relative to cash against unexpected inflation (here defined as year-over-year inflation less its five-year moving average). This is because cash returns have typically been highly correlated to expected inflation so their exclusion from the analysis represents a purer measure.

Based on the total return of the GSCI Light Energy Index in USD. Cash return defined as 3-month US Treasury Bill rate.

Source: Datastream, Invesco analysis. Data as at August 2016.

in conjunction with rising inflation, at least in the short-term, whereas commodities tend to do well (figure 2).

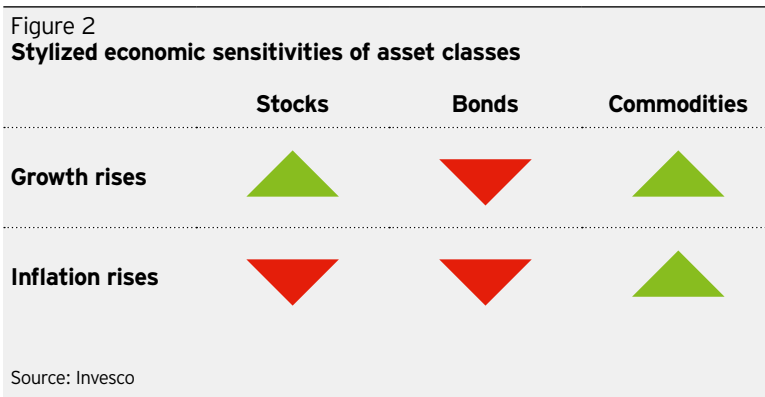
Commodities and investment returns

One would think that several decades would be sufficient for practitioners and academics to agree on whether an asset should deliver positive excess returns over the long term. But, no such agreement yet exists for commodities, with even some relatively recent papers debating the asset class' merits.¹ However, at its core, commodity investing relies upon the central tenet of any successful investment strategy: buy low, sell high.

Backwardation, a phenomenon characterized by further-dated commodities trading at a discount to the current spot, represents one of the most appealing and direct applications of this simple concept. In the absence of any forecast, prices should naturally rise to the spot level as the investor moves forward in time. Specific situations may make holding the more dearly priced contract the more attractive option, but most traditional investment strategies will always favour the purchase of the discounted asset.

In 1930 Keynes coined the term "normal backwardation".

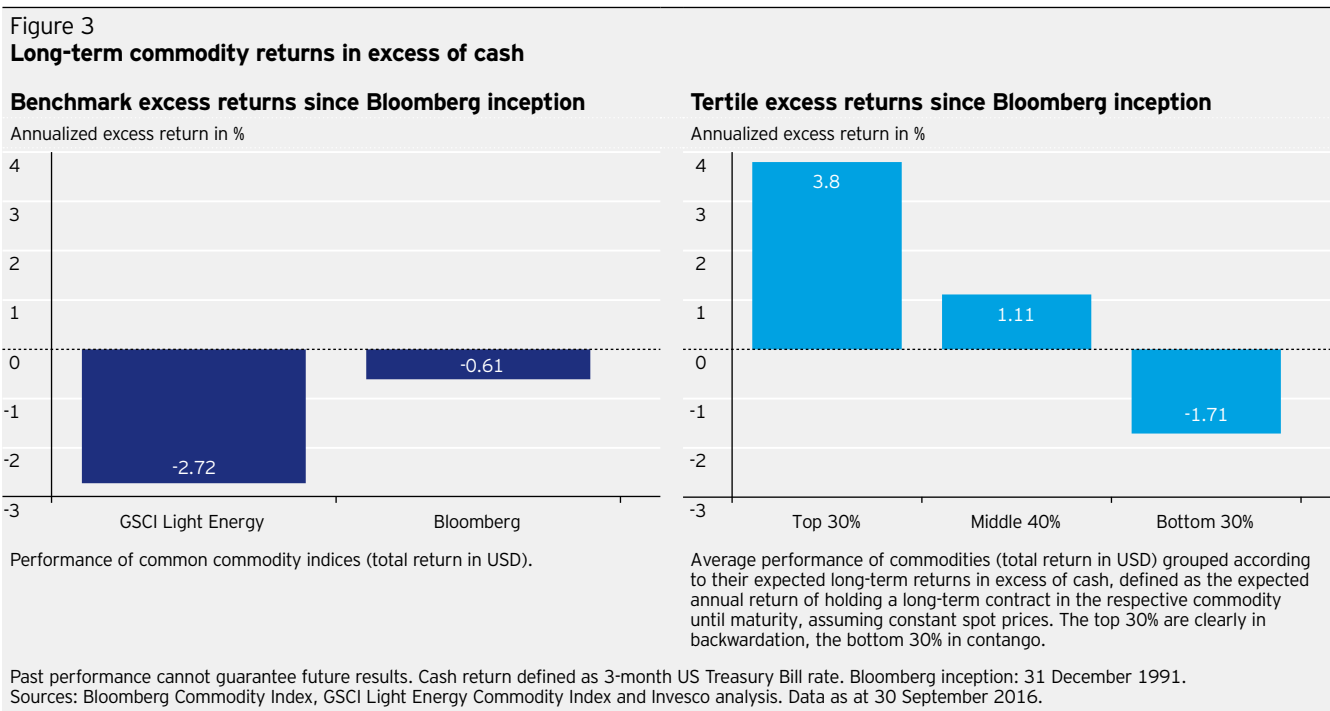
In 1930 Keynes coined the term "normal backwardation". Subsequent research has clearly proven that backwardation is not normal for most assets.² These assets trade in contango, where the more distant asset trades at a premium to the



spot price, and therefore tends to cause investors to buy high and sell low. Some investors find this set of facts - most assets trade in contango on average, and contango often generates negative returns - sufficient to avoid the asset class. We believe that this ignores the potential return that is equally clear from the research.

Specifically, we've identified four return drivers for the asset class: storage difficulty, equal risk contribution, optimal roll yield and tactical allocation. Of these four, storage difficulty deserves primacy. It stems from the work of several economists, including Working³ and Kaldor⁴, and argues that commodities that are difficult to store, or simply scarce, will tend to trade in backwardation.

The subsequent challenge lies in defining which commodities exhibit this scarcity or high storage cost. Normal inventory levels for commodities vary widely relative to consumption, as each commodity has its own idiosyncratic market structure. A typical inventory-to-demand relationship in wheat, for instance, offers little insight into industrial metal





dynamics. Thus, to standardize our view of the storage situation across commodities, we use a market-based proxy: the long-term average return of each commodity, based on its term structure. The historic excess returns of three groups of commodities ranked on this basis (attractive: top 30%, moderate: middle 40%, poor: bottom 30%) clearly support the initial hypothesis (figure 3, right).

This process of evaluating each commodity's attractiveness serves as the foundation for how we structure commodity allocations within a multi-asset portfolio and individually. The live results since autumn 2008 are consistent with our expectations based on historic simulations, and reinforce our conviction that common commodity indices (figure 3, left) are a suboptimal ways to gain commodity exposure.

Commodities within a multi-asset portfolio

One of the key goals of our multi-asset portfolio is to be resilient in the face of economic shocks. This leads us to link assets to specific economic environments and then determine portfolio weights based on risk contribution. The later step instills confidence that we own the right amount of an asset in the event the environment occurs.

We use a parsimonious portfolio structure based on the three main environments (figure 4). Different asset classes are expected to do well in different environments, and target risk contributions determine the allocations.

In our view, the risk target for each economic environment should be at least 10% of total portfolio risk. Otherwise, the investor would gain insufficient

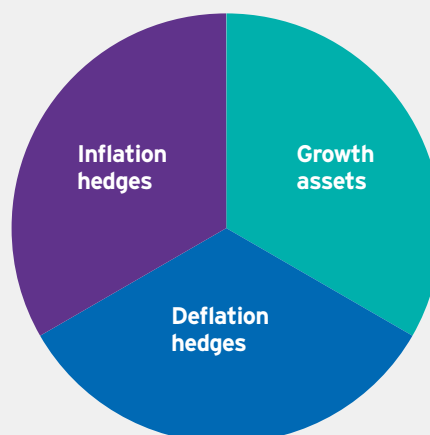
Figure 4
The portfolio structure of Invesco's Global Asset Allocation Team

Inflationary growth

High correlation with unexpected inflation

Examples:

- Commodities
- Direct real estate
- Infrastructure
- Inflation-linked bonds



Non-inflationary growth

Positive beta to real economic growth

Examples:

- Developed equities
- Emerging equities
- Private equity
- High yield/credit

Recession

Effective "shock-absorber" during recessions and crises

Examples:

- Long-term government bonds (hedged)

Source: Invesco. For illustrative purposes only.

Figure 5

Approximate allocations to gain at least 10% inflation hedge risk exposure

	Total inflation hedge weight (commodities only inflation hedge)	Total inflation hedge weight (multiple inflation hedge)
High equity weight	10 - 15% (commodities only)	20 - 25% (commodities 4 - 7%)
Low equity weight	5 - 7% (commodities only)	10 - 15% (commodities: 2 - 5%)

Source: Invesco Global Asset Allocation Team. For illustrative purposes only.

overall benefit to make the exposure worthwhile. A number of variables affect the target allocation of commodities, so we cannot suggest a single, specific weight. We can, however, consider the required commodity allocation to achieve 10% inflation risk exposure based on two key variables: the equity allocation of the base portfolio and the mix of inflation-hedging assets.

A higher equity weight requires a higher inflation hedge allocation, due to the relatively high volatility of equities (figure 5). In addition, the inflation hedge allocation needs to rise if commodities do not comprise the entire inflation hedge. This is due to the higher volatility of commodities relative to other inflation-hedging assets such as direct real estate.⁵

Conclusion

We believe commodities offer important potential benefits, including the ability to hedge against unexpected inflation and diversify a portfolio of stocks and bonds. Investors could consider pursuing commodity strategies that take advantage of techniques that have historically benefitted returns (such as investing in commodities that are normally in backwardation), and eschew those that largely rely on production weighting (such as following conventional indices). Ultimately, the proper allocation into commodities depends on a number of factors, such as the base portfolio's equity weight and whether commodities are the exclusive inflation hedge in the portfolio.

About the author



Scott E. Wolle
 CIO, Invesco Global Asset Allocation
 Scott Wolle serves as the Chief Investment Officer for Invesco's Global Asset Allocation team which focuses on alternative investment strategies including risk parity, risk-balanced commodities and active-balanced solutions.

Notes

- 1 Gorton, Gary and K. Geert Rouwenhorst. "Facts And Fantasies About Commodity Futures," *Financial Analysts Journal*, 2006, v62(2,Mar/Apr), 47-68; Erb, Claude B. and Harvey, Campbell R., "The Tactical and Strategic Value of Commodity Futures (January 12, 2006). Available at SSRN: <http://ssrn.com/abstract=650923>
- 2 Cp. Kolb, Robert W (1992): Is Normal Backwardation Normal?, *Journal of Futures Markets* 12(1), pp. 75-90.
- 3 Working, Holbrook. "The Theory of Price of Storage." *The American Economic Review* 39.6 (1949): 1254-1262.
- 4 Kaldor, N. (1939). "Speculation and Economic Stability." *Review of Economic Studies*, 7, 1-27.
- 5 Fisher, J., Gatzlaff, D., Geltner, D., and Haurin, D. "Controlling for the Impact of Variable Liquidity in Commercial Real Estate Price Indices," *Real Estate Economics*, Volume 31, Number 2, Summer 2003

Important Information

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