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“Any reasonable investment policy should consider a full range of scenarios.”

KEY POINTS

1. An inflationary shock may be unlikely, but, in the current low-yield environment, it would have an outsized impact on portfolio returns. A modest amount of inflation protection would mitigate the risk.
2. Unlike stocks and bonds, commodities are effective in hedging against unexpected inflation.
3. A simulated “smart” commodity portfolio produced superior results by eliminating the negative “roll” returns that often arise in the process of selling one contract and reinvesting the proceeds in another.

Go for the Gold: Commodities and Inflation

At present, many investors assign small probabilities to a sudden increase in inflation. They may, in fact, be more concerned about the near-term possibility of deflation. However, any reasonable investment policy should consider a full range of scenarios, not just the one that is considered most likely. In the current market environment, the impact of unexpected inflation could be stunning, but even a modest amount of inflation protection would mitigate the risk of portfolio losses due to an abrupt rise in prices. In this article, we argue in favor of using commodities to hedge against inflation, and we explain how a smart approach to managing commodity futures contracts can dramatically improve results.

Low Asset Class Yields

Yields for most asset classes remain skimpy (**Table 1**). At such low levels of yield, even a moderate rise in inflation is damaging. This is particularly worrisome for traditional 60/40 portfolios allocated to core stocks and core bonds. Take the prevailing U.S. inflation rate¹ of 2% (as of July 2014). Given that initial yields are a pretty good forecast of future bond returns,² slightly higher inflation in the near future would mean lower—and likely negative—*ex post* real returns. For other asset classes, nominal yields would likely rise, forcing prices to fall and resulting in poor nominal returns.

Investors should also consider the timing and pricing of inflation-hedging assets. Would it be better to purchase some form of protection now or at a time when inflation is surging and every investor is afraid? It should come as no surprise that it costs significantly less when the likelihood of inflation is small.³

The Case for Commodities

We have, on many occasions, highlighted the benefits of third pillar assets in terms of diversification and inflation protection.⁴ Commodities have special characteristics that make them ideal candidates to receive at least a small allocation in every investor’s portfolio.

Commodities provide inflation protection for a very simple reason. The constituents of the main commodity indices are either members of the Consumer Price Index (CPI) basket or inputs to other goods in the CPI: gasoline and natural gas (transportation and housing), copper and aluminum (home construction and durable goods), corn, coffee, and cocoa (food), cotton (apparel), and silver (jewelry). Commodity indices also tend to be heavily weighted toward energy and food, providing protection where it really counts: surging prices in the two most volatile components of the CPI.



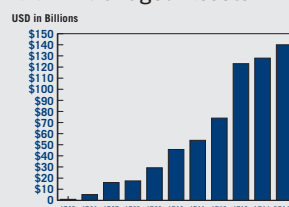
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Table 1. Yields of Selected Asset Classes, July 2014

Index	Asset Class	Yield
Russell 2000	U.S. Small Cap	1.3%
S&P 500	Core Stocks	2.0%
Barclays US Treasury US TIPS	TIPS	2.3%
Barclays US Aggregate	Core Bonds	2.3%
MSCI EM	EM Stocks	2.7%
Barclays US Treasury Long	Long Treasuries	2.8%
MSCI EAFE	EAFE Stocks	3.4%
JPMorgan ELMI+	EM Local Bonds	3.5%
FTSE NAREIT ALL REITS	REITs	4.1%
Barclays US Long Corporates	Long Credit	4.6%
JPMorgan EMBI+	EM Bonds	5.4%
Barclays Corporate High Yield	High Yield Bonds	5.7%

Source: Research Affiliates, based on data from Bloomberg, MSCI, and Barclays.

To quantify the amount of protection offered by commodities, **Table 2** shows the correlation between annual inflation rates and concurrent annual returns of three commodity portfolios: the S&P GSCI, the Bloomberg Commodity Index (BCOM),⁵ and an equally weighted (EW) portfolio containing 23 commodities. (The equally weighted portfolio allows us to confirm broad results without any bias for or against existing indices.) Core stocks and core bonds are also shown as reference points.

With a correlation of -51%, bonds offer no inflation protection whatsoever. Perhaps startling is the fact that stocks are uncorrelated with inflation. This important result should serve as a warning to investors who think they are protected by their equity positions. Companies eventually raise prices to reflect higher material, transportation, and labor costs, but they are reluctant to do so at first for fear of losing customers. Notice also that a portfolio comprising only stocks and bonds invariably ends up

“In the current market environment, the impact of unexpected inflation could be stunning.”

with a negative correlation with inflation. The numbers for commodities are starkly different from those for equities and bonds. All three commodity portfolios exhibit correlations in excess of 50%, and the magnitudes vary according to the amount of energy exposure in each. The S&P GSCI currently has an allocation of about 70% to energy, whereas the BCOM has about 33%. The equally weighted commodity index has an

allocation of about 22% (5 commodities out of 23) to energy, resulting in a slightly lower correlation with inflation of 56%.

Correlations measure the tendency of two series to move in the same direction, but they don't contain much information about levels or average performance. Most commodity portfolios are highly correlated with inflation; do they offer similar performance as well?

One of many ways to answer this question is to look at the portfolios' average excess returns in periods of low and high inflation. **Table 3** shows that from January 1999 to May 2014, approximately one-third of the trailing 12-month periods (61 observations) had inflation above 3%, whereas the other two-thirds (124 observations) had inflation lower than 3%. It supports the evidence from Table 2 that (a) both stocks and bonds provided good returns in periods of low-to-moderate inflation, but underperformed in periods of moderate-to-high inflation, and (b) all commodity portfolios outperformed by a considerable margin in periods of high inflation. The weakness of the three commodity portfolios has been their unfavorable performance in periods of low inflation (which comprise two-thirds of the observations!), during which they produced relatively low or even negative average excess returns.

Table 2. Rolling Annual Correlation with Inflation, January 1999–June 2014

	Core Stocks	Core Bonds	S&P GSCI	BCOM	EW
Correlation w/ Inflation	3%	-51%	70%	62%	56%

Source: Research Affiliates, based on data from Bloomberg, Barclays, and CRB.

Table 3. Average Annual Excess Return of Selected Portfolios in Periods of High and Low Inflation, January 1999—May 2014

Inflation	# of Observations	Core Stocks	Core Bonds	S&P GSCI	BCOM	EW	Smart EW
High (>3%)	61	0.9%	2.0%	24.7%	14.4%	14.1%	27.9%
Low (<3%)	124	6.4%	3.6%	-3.3%	-1.2%	0.9%	4.2%

Source: Research Affiliates, based on data from Bloomberg, Barclays, and CRB.

Fortunately, there are techniques one can use to construct smarter commodity portfolios that both maintain attractive inflation protection characteristics and, at the same time, improve their performance. One example is shown in the last column of Table 3. This “smart” version of the equally weighted portfolio has significantly better performance than traditional equal weighting and the other two indices, both in times of low and high inflation.

A Smart Approach

What are the enhancements that generate improved performance while maintaining excellent inflation protection? The answer has to do with the mechanics of investing in commodities.

Betting on commodity prices via spot markets is impractical—or even impossible in some cases—leaving investors with no other option than to use derivatives, often futures contracts.⁶ In practice, one has to buy a futures contract, hold it for a few days or months, sell it before its delivery date, and immediately reinvest the proceeds in another contract. This constant process of moving from one contract to another is known as the “roll,” and depending on the shape of the term structure of futures prices, can significantly affect the end result. As a general rule, if a commodity is in contango—long-term contracts

have a higher price than short-term ones—the investor faces a headwind, because contract prices have a tendency to go down as they approach the delivery date. The opposite case, or backwardation, gives the investor a tailwind, because contract prices move up over time.

“Stocks are uncorrelated with inflation.”

Given the characteristics of commodity futures markets, it is useful to separate the excess returns obtained by investors into two components. The first one is usually called the *spot return* and is calculated by tracking the futures prices but *ignoring* the roll of the contracts. The second one is called the *roll return* and isolates the effect of the roll as if it were a separate investment. One cannot invest in either

of these components separately, but they are a useful tool in evaluating the sources of return from an investment in commodity futures. Negative roll returns can be seen as a form of inefficiency that could be significantly reduced and even exploited in most cases.

Table 4 shows that all four portfolios had very similar spot returns of about 10% over the past 16 years.⁷ The similarities stop here, however. The first three had negative roll returns, reducing their excess returns to less than 5%. The simulated Smart EW portfolio, on the other hand, not only avoided a significant negative roll return, but was able to turn it into a positive 1.3%, raising its excess return to 11.7%.

These results show that the underperformance of the first three portfolios over the past 16 years can be attributed exclusively to roll returns. In reality, the negative roll returns are not particular to them and can be traced back to the main characteristics of all pure beta commodity indices:

- a) The obligation to invest in contracts at the front of the curve.
- b) A lack of flexibility in changing the weights of the individual commodities to reflect different market conditions.

Table 4. Excess Return Decomposition for Selected Commodity Portfolios, January 1999—June 2014

	Spot Return	+	Roll Return	=	Excess Return
S&P GSCI	10.4%		-6.7%		3.7%
BCOM	10.4%		-7.1%		3.2%
EW	11.7%		-6.9%		4.8%
Smart EW	10.4%		1.3%		11.7%

Source: Research Affiliates, based on data from Bloomberg and CRB.

The smart, equal-weight portfolio eliminates negative roll returns, and consequently achieves its outperformance, by using simple and well-known strategies to improve on each of those points. First, among a universe of liquid contracts for each commodity, it picks the best point on the curve in order to minimize the negative influence of roll returns. Second, it uses two well-known strategies in commodities—momentum and roll yields—to overweight commodities with favorable market conditions (backwardation) and underweight those with weak market conditions (contango).

Efficient Protection

The Smart EW portfolio has a significant correlation with annual inflation of about 70%, or as high as the S&P GSCI

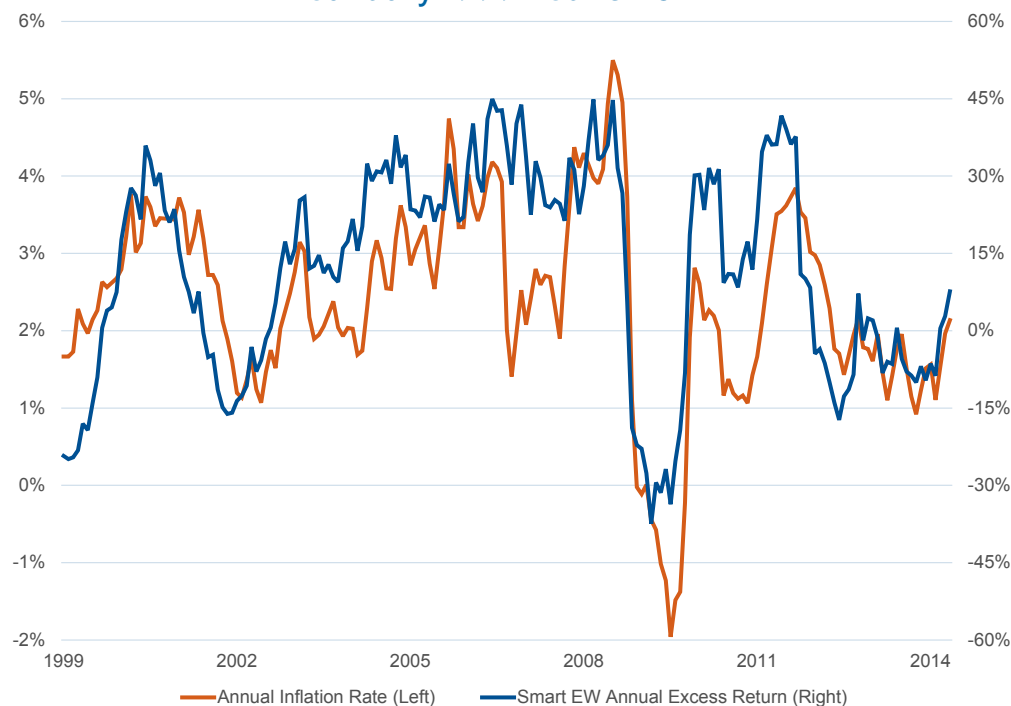
“Commodity prices usually rise by a multiple of the percentage increase in inflation.”

(Figure 1). It is striking how closely its annual returns track inflation. A more careful inspection of the vertical axes also shows that this portfolio—and commodities more generally—provide an “amplified” exposure to inflation: Commodity prices usually rise by a multiple of the percentage increase in inflation.⁸ This magnified relationship is what makes commodities so attractive. Even a small allocation provides a reasonable amount of insurance against inflation surprises.

The risk of higher inflation probably isn't on the radar of most investors at this moment. However, in an environment of low yields across the board like the one we have right now, even small doses of inflation can cause investors to sustain significant losses in market value and, over the long term, in purchasing power.

Commodities are broadly recognized as providers of insurance against increases in inflation. But the excess returns of pure beta indices have disappointed in the recent past, mostly due to a heavy performance drag coming from roll returns. Smarter portfolio construction techniques in commodities offer strong excess returns by eliminating the negative influence of roll returns.

Figure 1. Annual Inflation and Smart EW Portfolio Excess Return, January 1999—June 2014



Source: Research Affiliates, based on data from Bloomberg and CRB

Endnotes

1. Throughout this article, we use the all items, seasonally adjusted, Consumer Price Index (CPI) for all urban consumers as the inflation measure.
2. See West (2010).
3. See West (2013a).
4. See West (2013b); Arnott (2008, 2009, 2011).
5. The Bloomberg Commodity Index is the new name of the former DJ UBS Commodity Index.
6. Most investors would find it difficult to buy live cattle, among others. And that doesn't even take into account short positions!
7. The annual inflation rate over the same period was 2.4 percent, highlighting the amplified relationship of commodities and the CPI discussed in the next section.
8. There are multiple reasons for the amplified response of commodities to inflation. The CPI includes other items, like housing, healthcare, or entertainment, that are not as volatile as energy and food. Some commodities are only one input (besides labor, for instance) to other consumer goods, which means that only a fraction of commodity price changes are passed through to the final price. Finally, some commentators also argue that the official figures understate the actual price inflation experienced by consumers.

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