Commodities
An Inflation-hedging Asset Class

By Amanda M. Cogar, CFA®

Lately it seems that each time you fill up your gas tank or buy a loaf of bread, you are faced with higher prices attributable to commodity inflation. As investors, we know that one way to hedge against the negative impact of inflation is to invest in commodities. Whether you are still hesitating or already have done so, it may be time to consider (or reconsider) the reasons behind investing in commodities and to review the retail investment solutions available to provide that exposure.

Why Worry About Inflation?
For many years inflation has been mild, but recently it has picked up (see figure 1). Among the reasons for the rise in inflation: the weakening of the dollar; the growing trade surplus; the growth in money supply; the war in the Middle East; the return of government budget deficits; and the changing demographics in the United States.

Because people save mainly for the purpose of deferred consumption, inflation is a problem. It can erode one’s investment returns and thereby erode future purchasing power, as shown in figure 2.

Additionally, as Robert J. Greer emphasizes in his book, *The Handbook of Inflation Hedging Investments*, every type of investor is affected by inflation: defined benefit plans, endowments, foundations, insurance companies, and individual investors (Greer 2005). Individual investors, though, potentially have the greatest need for inflation protection, because their spending requirements are not as easily defined. Additionally, individuals do not necessarily have the luxury of looking to other sources for funding (like corpo-
rate pension plans and endowments can) and they cannot always reduce their spending (like foundations can). Therefore it is their responsibility to save for retirement and protect their assets’ purchasing power so that they may have enough to pay for gas, groceries, health care, and so on, in the future.

While inflation is dependent on too many unknowns to predict with any decent degree of certainty, investors need to position their portfolios so that their assets are not entirely invested in stocks and nominal bonds, which both historically have performed poorly during periods of rising inflation. Therefore, real return assets can play an integral role in nearly all investors’ portfolios.

What are Real Return Assets?

Real return assets, or real assets, are those investments that have an intrinsic positive correlation with inflation. Such assets should have returns that match or exceed the rate of inflation over the long term, and they should perform relatively well during periods of inflationary shocks. Stocks and nominal bonds are considered financial assets—rather than real assets—and perform better when inflation is stable or slowing.

It is important to note that expected future inflation already is incorporated into stock and bond prices, so it is the relationship between an asset and unexpected inflation⁴ that is what really is important. Commodities are the most-often cited inflation-hedging assets, outside of inflation-linked bonds, and are a good example of real assets.

**Commodities as an Inflation Hedge**

Rising commodity prices affect the cost of basic goods and services. In particular, the price of oil has a far-reaching impact on the economy as a whole. When the price of a barrel of oil increases, so do the prices of gasoline and jet fuel. This, in turn, makes the cost of transporting goods rise and also makes travel more expensive for individuals and businesses. The historically high correlation of unanticipated inflation and most commodity futures indexes should therefore be no surprise (see table 1).

Commodities are valuable additions to a portfolio—not only for their ability to hedge against unanticipated inflation but also for their diversification benefits—yet picking a commodity investment is not immediately intuitive. Issues such as the type of exposure to have (physical commodities, commodity-related stocks, or commodity futures), which commodities to have exposure to, and whether the exposure should be actively or passively managed, are just a few of the decisions that must be made.

**Commodities: Physicals, Equities, or Futures?**

The first debatable issue is this: What constitutes an investment in commodities? Investing in physical commodities is difficult and expensive (warehouse storage costs, transportation costs, etc.). So, for many years, the default method of gaining exposure was to hold the stock of commodity producers (oil and gas companies, mining companies, and so on). But, investing in commodity-related equities is not the same thing as getting direct exposure to commodity price changes. By owning the stock of a commodity-related company, investors are exposed to that company’s accounting practices, the effectiveness of the management team, and other businesses (which may not be commodity-related).

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**TABLE 1: CORRELATION COEFFICIENTS OF COMMODITY FUTURES INDEXES**

<table>
<thead>
<tr>
<th></th>
<th>Dow Jones-AIG Commodity Index</th>
<th>S&amp;P Goldman Sachs Commodity Index</th>
<th>Deutsche Bank Liquid Commodity Index-Optimum Yield</th>
<th>LB Aggregate Bond Index</th>
<th>S&amp;P 500 Index</th>
<th>U.S. Inflation</th>
<th>Unanticipated Inflation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dow Jones-AIG Commodity Index</td>
<td>1.00</td>
<td>0.89</td>
<td>0.78</td>
<td>(0.15)</td>
<td>(0.20)</td>
<td>0.33</td>
<td>0.35</td>
</tr>
<tr>
<td>S&amp;P Goldman Sachs Commodity Index</td>
<td>0.89</td>
<td>1.00</td>
<td>0.85</td>
<td>(0.10)</td>
<td>(0.22)</td>
<td>0.39</td>
<td>0.39</td>
</tr>
<tr>
<td>Deutsche Bank Liquid Commodity Index-Optimum Yield</td>
<td>0.78</td>
<td>0.85</td>
<td>1.00</td>
<td>(0.16)</td>
<td>(0.23)</td>
<td>0.34</td>
<td>0.39</td>
</tr>
<tr>
<td>LB Aggregate Bond Index</td>
<td>(0.15)</td>
<td>(0.10)</td>
<td>(0.16)</td>
<td>1.00</td>
<td>(0.11)</td>
<td>(0.19)</td>
<td>(0.30)</td>
</tr>
<tr>
<td>S&amp;P 500 Index</td>
<td>(0.20)</td>
<td>(0.22)</td>
<td>(0.23)</td>
<td>(0.11)</td>
<td>1.00</td>
<td>(0.24)</td>
<td>(0.26)</td>
</tr>
<tr>
<td>U.S. Inflation</td>
<td>0.33</td>
<td>0.39</td>
<td>0.34</td>
<td>(0.19)</td>
<td>(0.24)</td>
<td>1.00</td>
<td>0.84</td>
</tr>
<tr>
<td>Unanticipated Inflation*</td>
<td>0.35</td>
<td>0.39</td>
<td>0.39</td>
<td>(0.30)</td>
<td>(0.26)</td>
<td>0.84</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* Unanticipated Inflation = U.S. Inflation less 30-day T-Bill Return
Correlation calculations done using quarterly series for the period January 1991 through December 2007
Source: Ibbotson Associates and Bloomberg

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*Unanticipated Inflation = U.S. Inflation less 30-day T-Bill Return*
Furthermore, there is a high probability that the company hedges some of its commodity exposure, so the equity investors do not end up with the commodity exposure they thought they were getting. Therefore, rather than invest in commodity-related equities, commodity futures are regarded as the ideal vehicle with which to get exposure to commodities. Futures represent exposure to the expected future price of the commodities they represent. Commodity futures are largely uncorrelated with one another (because the primary factors driving the expected price of cattle, for example, are different from those driving the expected price of crude oil), so viewing them as “a group of individual dissimilar assets is more meaningful than thinking of them as a homogenous market of similar assets” (Erb and Harvey 2006). This suggests that from an overall risk reduction perspective, diversification across commodity sectors is preferred over diversification within a given sector (Kat and Oomen 2006).

Commodity Futures: Which Benchmark?

To further complicate matters, index providers have constructed very different commodity futures-based benchmarks. Figure 3 shows the weights within each of the three major commodity futures indexes as of the beginning of 2008.

The Dow Jones-AIG Commodity Index (DJAI) is composed of futures contracts on 19 physical commodities. Expiring contracts are rolled forward to the next corresponding nearby commodities futures contracts. It assumes that for every notional dollar invested in futures, an actual dollar is invested in 3-month U.S. Treasury bills as collateral. To determine the component weightings, the index relies primarily on liquidity data but also, to a lesser extent, on world production data. The weightings also are determined by several rules designed to ensure diversified commodity exposure, including, for example, a rule to limit any related group of commodities (e.g., energy or precious metals) to no more than 33 percent of the index at the time of the annual index rebalancing.

The S&P Goldman Sachs Commodity Index (S&P GSCI), on the other hand, has no such weight limits. Rather, it relies on world production data to determine the weights of the 24 component commodities, which explains energy’s dominance within the index (79 percent in 2008). Like the DJAI, expiring contracts are rolled forward to the next corresponding commodities futures contracts, and for every notional dollar invested in futures, it is assumed that an actual dollar is invested in 3-month U.S. T-bills as collateral.

Compared to the DJAI and the S&P GSCI, the Deutsche Bank Liquid Commodity Index-Optimum Yield (DBLCO-Y) is a bit of a different animal. The DBLCO-Y uses only six futures contracts in the most-significant sectors of the market (relative to the 19 and 24 in the DJAI and GSCI, respectively). It also is worth mentioning that the DBLCO-Y avoids two of the six main commodity categories entirely—livestock and softs (i.e., coffee, sugar, etc.)—due to heightened liquidity risk in those futures. Some may think that the simplified nature of this index may make it more volatile than other more broadly diversified commodity indexes; however, as shown in table 2, this has not necessarily been the case. Furthermore, the “Optimum Yield” part of the DBLCO’s name refers to the rules-based strategy employed by the index. This algorithmic, monthly rebalancing approach seeks to minimize the negative effects of rolling futures contracts when the commodities markets are upward-sloping—meaning that the next nearby contract is more expensive than the expiring contract currently held (i.e., in contango)—and to maximize the positive effects of rolling futures contracts when the market is downward-sloping (i.e., in backwardation).

As a result of different commodities being included in the indexes, the methodology used for weighting the components, and the management of the rolling expiring contracts, the risk-and-return characteristics of the DJAI, S&P GSCI, and DBLCO-Y have varied substantially, as seen in table 2.
Retail Commodity Solutions

The line-up of retail investment solutions currently available to provide exposure to commodities is growing constantly, so only a few of those that have been on the market for several years will be commented upon here. Furthermore, a variety of single-commodity solutions are available, but those require much more research and insight before using. So, what follows is only a glimpse at some of the more-established, broader-based commodity solutions currently available.5

PIMCO Commodity RealReturn Fund. The PIMCO Commodity RealReturn Fund is the largest commodities-related mutual fund, with approximately $14 billion in assets as of May 1, 2008; it has been around since mid-2002. The fund combines a position in commodity-linked derivative instruments, based on the DJAIGCI, backed primarily by a portfolio of inflation-linked bonds, though other fixed-income instruments may also be used tactically in the portfolio. The commodity-linked derivatives capture the price return of the DJAIGCI, while active management of the fixed-income assets seeks to add incremental return above those markets, along with additional inflation hedging. If PIMCO’s active management of the fixed-income portion of the portfolio outperforms 3-month T-bills (the implied collateral in the index), they generate an incremental return over the commodity markets. The institutional share class (ticker: PCRIX) has a net expense ratio of 0.74 percent.

Credit Suisse Commodity Return Strategy Fund. The Credit Suisse Commodity Return Strategy Fund is a newer alternative to the PIMCO fund, and it had approximately $1 billion in assets as of May 1, 2008. The method of obtaining passive exposure to the DJAIGCI is essentially the same as the PIMCO fund, but the investment of the collateral is what differentiates this fund from PIMCO’s fund. The collateral of the Credit Suisse fund is invested in a portfolio of cash equivalents (short-maturity investment-grade fixed-income securities normally having an average duration of one year or less). So, if Credit Suisse’s active management of the cash pool beats the return of 3-month T-bills, it will outpace the DJAIGCI. The common share class (ticker: CRSOX) has a net expense ratio of 0.70 percent.

iPath Exchange-Traded Notes. The iPath exchange-traded notes (ETNs), launched in mid-2006, are similar to exchange-traded funds (ETFs) in that they provide passive exposure to an underlying index (either the DJAIGCI or the S&P GSCI); however, these ETNs are 30-year debt securities backed by the credit of the issuer, whereas ETFs typically are registered investment companies and are collateralized by an underlying portfolio of securities. When you buy an iPath ETN you are not buying a stake in the underlying commodity; rather, you are buying a senior debt note from Barclays PLC. With this note, Barclays promises to pay the return on the underlying index, less the expense ratio. Therefore, the primary risk associated with ETNs is credit risk rather than tracking risk (i.e., there is no tracking error beyond the management fee). As of May 1, 2008, the DJAIGCI-linked iPath ETN had more than $3.3 billion in assets, while the S&P GSCI-linked iPath ETN had nearly $240 million in assets. The expense ratio for both iPath ETNs (tickers: DJP and GSP) is 0.75 percent.

iShares S&P GSCI Commodity-Indexed Trust. The iShares S&P GSCI Commodity-Indexed Trust is an exchange-traded commodities pool that tracks the S&P GSCI Excess Return. As of May 1, 2008, the trust had almost $2.4 billion in assets. The trust is fully collateralized through a portfolio containing long-dated (five-year) commodity futures contracts and short-term fixed-income instruments. There may be tracking error resulting from the management of the portfolio and capital gains distributions from unrealized collateral income, the sale of the short-term fixed-income instruments, the sale of futures, and future rolls. The expense ratio (ticker: GSG) is 0.75 percent.

Deutsche Bank Commodities Index Tracking Fund. The DB Commodities Index Tracking Fund is a publicly traded partnership that tracks the DBLCI-OY Excess Return. The Excess Return version of the index does not include interest earned on collateral. The fund collateralizes its futures contracts with 3-month U.S. T-bills; the interest earned by the collateral is used to offset the fund’s expenses. Like the iShares Trust, the primary risk is tracking risk. As of May 1, 2008, the Deutsche Bank

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### TABLE 2: HISTORICAL RISK AND RETURN OF VARIOUS COMMODITY INDEXES

<table>
<thead>
<tr>
<th>Index</th>
<th>Annualized Return (%)</th>
<th>Annualized Standard Deviation (%)</th>
<th>Sharpe Ratio</th>
<th>Maximum Decline (%)</th>
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<tbody>
<tr>
<td>DJ-AIG Commodity Index</td>
<td>7.9</td>
<td>12.1</td>
<td>0.19</td>
<td>-32.5</td>
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<td>S&amp;P Goldman Sachs Commodity Index</td>
<td>6.8</td>
<td>18.3</td>
<td>0.12</td>
<td>-44.8</td>
</tr>
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<td>Deutsche Bank Liquid Commodity Index</td>
<td>13.3</td>
<td>14.1</td>
<td>0.34</td>
<td>-36.4</td>
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<td>Index-Optimum Yield</td>
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<td></td>
<td></td>
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January 1991 through December 2007

Maximum Decline = the largest peak to trough decline in the index value over the defined period.

Source: Ibbotson Associates and Bloomberg
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Fund had almost $790 million in assets. The management fee (ticker: DBC) is 0.75 percent, but an additional 0.08 percent is charged for estimated futures brokerage expenses. Therefore, the total fee is approximately 0.83 percent.

Conclusion

Real assets, such as commodities, can play an important role in nearly every investor’s portfolio. Not only are commodities negatively correlated with stocks and nominal bonds, thus being an excellent diversifying asset, but they have a positive correlation with unanticipated inflation, meaning they are a good hedge against inflationary shocks. The multitude of commodity-based investments requires careful review, but it also provides investors with some very good selections from which to choose.

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Endnotes

1 Unexpected inflation can be defined as monthly U.S. inflation less the return of 30-day Treasury bills.
2 The return on commodity futures has three components: change in the spot-price of the commodity, roll yield, and collateral income. The income earned on the collateral (which generally is invested in T-bills) is the simplest component to understand. The spot return is also clear and is a result of commodities becoming more, or less, expensive over time. The more complex component of return is the roll yield, which may be positive or negative, depending upon the shape of the yield curve (which is influenced by factors such as interest rates, storage costs, and the convenience yield).
3 Given the variety of structures that the following commodity solutions come in, it is advisable to consult your tax consultant to understand the tax implications of each of the following vehicles.

References