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In the current market environment, a key concern for investors is protecting portfolios against the prospect of rising inflation. An allocation to real assets in the form of commodities is often cited as a way to protect against this risk. Another reason many consider an allocation to commodities is their potential diversification benefit to portfolios due to their low correlation to traditional asset classes (i.e., equities and fixed income). In this paper, we evaluate the commodities marketplace and discuss whether investing in long-only commodities makes sense for institutional portfolios. Based on this analysis, we do not believe that a long-only investment in commodities should be included in client portfolios.

COMMODITY OVERVIEW HIGHLIGHTS

Commodities are broadly defined as “generic, largely unprocessed, goods that can be processed and resold.”¹ Investing in commodities represents an investment in the basic production inputs in the economy. By investing in commodities, an investor gains exposure to changes in commodity prices, which are ultimately driven by global supply and demand. A growing economy will see increased demand for commodities due to increased consumption, which puts upward pressure on prices. Higher prices typically result in increased supply coming online, which consequently drives prices lower. The key factors helping to drive demand over the long-term are a growing population, industrialization, and consumption while supply can be impacted by geopolitical events, weather patterns, or available capacity for processing commodities.²

While commodities tend to increase in price over time, many have increased at a rate lower than inflation. As an example, commodities such as cotton and coffee declined in price over the fifty-year period from 1951-2001. Alternatively, the price of natural gas, increased at an annualized rate of 7.3% over this same time period, outpacing the annualized increase in the consumer price index of 3.9%. This downward pressure on commodity prices comes as a result of new technologies, alternative methods of production, substitution, and increased efficiencies in production.

INVESTING IN COMMODITIES: AN OVERVIEW OF THE FUTURES MARKET

Investing in commodities is usually accomplished through the use of futures contracts and, therefore, understanding how the futures market functions is important.

Futures markets have been in existence for centuries and provide an efficient vehicle for buyers and sellers of goods to reduce price uncertainty and risk. A simple example would be a farmer who harvests a corn crop in the fall, but wants to guarantee a selling price several months prior to the harvest. The farmer can go to the futures market and sell a contract, whereby the purchaser of the contract agrees to buy his corn at a set price several months in the future. This transaction essentially eliminates the uncertainty that corn prices could drop prior to the time the farmer brings his crop to the market. Alternatively, a company that buys large quantities of corn, may want to hedge its risk of rising corn prices by locking in a set price for some point in the future by buying a futures contract on corn. Although the

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purchaser of a futures contract agrees to take physical delivery of the goods upon expiration of the contract, most futures contracts are settled on a cash basis. In purchasing a futures contract, the investor posts a margin, that represents a percentage of the actual price of the futures contract and can be as little as 5% of the cost of the contract. As the price of the underlying commodity fluctuates and the value of the contract changes, the account is “marked to market” on a daily basis and the investor may be required to post additional funds to the account if the account value falls below a specified level.

There are two groups of participants in the futures markets. The first group of participants comprises buyers and sellers of goods, known as *commercial participants*, or *hedgers*. This group includes farmers and other producers of goods who wish to sell their products at a specified price as well as buyers of commodities who wish to hedge against price increases.³ Commercial participants are not in the futures markets to make a profit, but rather to protect themselves against price changes. For example, if the price of corn drops before the time the farmer sells his futures contract, he is still guaranteed the price at which he sold the contract.

The second group of participants in the futures market is *investors* (also known as *speculators*). Investors serve an important function in the futures market because there is often an imbalance between those wanting to sell contracts and those wanting to buy. Investors provide much needed liquidity to the futures markets and are compensated for taking on this role.⁴ One of the distinguishing factors regarding the futures markets is that they exist primarily to protect against price uncertainty for buyers and sellers of goods. As a result, most of the participants are not in the market to make a profit, but rather to hedge against price risk. This can sometimes create opportunities for investors (or speculators) to make a profit.⁵

Commodities differ from paper assets (equity and fixed income) in that they require storage costs. While paper assets can be held in brokerage accounts at little or no cost, commodities such as crude oil, wheat, or livestock obviously cannot be stored in a vault or electronically in a database and storage costs for commodities can sometimes be significant. Storage costs must be a consideration for an investor, as they will impact the pricing structure of futures contracts of individual commodities. For this reason, the change in the price of futures contract for a commodity may vary from the change in the price of the underlying commodity because futures contracts take into account these storage costs.⁶ As a result of storage costs, longer dated futures contracts (for example, delivery in six months), will generally be priced higher than shorter dated futures contracts for delivery in one month.

GAINING EXPOSURE TO COMMODITIES

There are essentially two ways for investors to gain broad exposure to changes in commodity prices. First, there are several long-only commodity indices that give investors exposure to passive long positions in a number of commodity futures contracts. This allows them to participate in gains that would otherwise only be earned from holding individual positions in these contracts. An investment in a commodity index does not give the investor ownership of the cash commodity, but rather, an exposure to changes in the future expected price,⁷ thus allowing an investor exposure to a broad section of the commodities market.

The second way for investors to gain broad exposure to commodities is through managed futures products that take both long and short positions in various commodities using different trading strategies. There are advantages and disadvantages to each type of product. We will first look at long-only commodity indices, how they are constructed, and how an investor might utilize these products to invest in this asset class.

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LONG-ONLY COMMODITY INDICES

Just as stock index funds seek to replicate a portion of the equities market, long-only commodity indices give an investor exposure, typically through futures contracts, to a cross-section of the commodities market. As with equity indices, that have specific weights in individual securities, commodity indices have weights to certain areas of the commodity market, such as energy, grains, metals, or livestock.

Commodity indices can be constructed using several different methodologies, all of which will impact the returns and the underlying volatility of the index. The three primary methodologies include production weighting, optimized weighting, or equal weighting. Production weighting involves assigning weights based on a moving average of world production.⁸ A production-weighted index will also have a heavier weighting in sectors that may be more important in the economy such as oil and natural gas. As a result, these allocations will have a disproportionate impact on the performance of the index. An optimized-weighted index includes specific constraints and objectives such as correlation with inflation, negative correlation to equities and fixed income, a focus on liquidity, and the sectors that are most relevant. Finally, an equal-weighted index keeps price fluctuations in any one sector from disproportionately impacting the index, but does not over/underweight sectors that may be more important in the economy, such as oil and natural gas, which are key elements in most industrial economies.⁹

The following is a brief summary of several long-only commodity index products that are available to investors seeking broad exposure to the commodity markets.

Commodities Research Bureau (CRB) Index: The CRB Index began trading on New York Futures exchange in 1986 and is the oldest of the indices. While futures on the index began trading in 1986, it was first calculated by the CRB in 1957 and has data going back to 1958. The index includes 17 individual components, which are equally weighted. This is one of the key drawbacks to the index because a product like corn or wheat will have the same weighting in the index as crude oil, when oil has significantly more economic impact than corn.

Goldman Sachs Commodity Index (GSCI): The GSCI index was created in 1992 and is available in the form of a single futures contract on the Chicago Mercantile Exchange. While it was launched in 1992, the GSCI has back-tested data going back to 1970. The index consists of 24 individual components and weights are assigned based on a five-year moving average of world production values. The result is that the index has a heavier weighting in commodities with more economic importance and higher liquidity. Consequently, the GSCI has a weighting of nearly 70% in energy related commodities making its performance highly sensitive to the energy markets and fluctuations in energy prices. The GSCI is rebalanced annually, and utilizes an arithmetic average in constructing returns for the index. Given its liquidity and longer performance data, the GSCI is often used as a proxy to analyze commodity returns.

Rogers International Commodity Index (RICI): Jim Rogers, a private investor and former hedge fund manager, created the RICI in 1998. Its weightings are based on world consumption patterns of raw materials and their relative importance in international commerce according to the research of Jim Rogers. The RICI is the broadest and most comprehensive index, consisting of 35 different commodities. Some of these components are less liquid and include obscure commodities such as flaxseed, azuki beans, canola oil, and

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raw silk. Weights for the individual components are fixed and the index is rebalanced monthly. The RIC1 is only available through a limited partnership and while it offers the broadest exposure of the major commodity indices, there could be some risk related to the liquidity of some of the index components.

Dow Jones AIG (DJ-AIG) Index: The DJ-AIG was established in 1999 and relies primarily on liquidity data and, to a lesser extent, dollar-adjusted production data in determining the relative weights of commodities in the index. All data used in both the liquidity and production calculations are averaged over a five-year period to determine component weights.¹¹ The index holds 20 components and limits any related group of commodities to 33% in order to ensure diversified exposure to commodities. (See table 1) Like the GSCI, the DJ-AIG index is rebalanced annually. The reason for using liquidity data rather than production data is that liquidity is an important indicator of the value placed on a commodity by financial and physical market participants.¹² Production data alone can underestimate the investment value that financial market participants place on certain commodities.

The following tables summarize the sector weightings in the major commodity indices as well as their historical returns.

Table 1

Sector Weightings of Major Commodity Indices

	GSCI %	CRB %	DJ-AIG %	RIC1 %
Energy	67	18	33	44
Metals	10	24	25	21
Grains & Seeds	13	18	21	21
Softs ¹³	4	29	11	9
Livestock	6	12	10	3
Other	-	-	-	2
Total %	100	100	100	100
Total Components	24	17	20	35

Table 2

Commodity Index Returns For Period Ending December 31, 2003

Index	1 Year %	3 Year %	5 Year %	10 year %	Inception %	Standard Deviation %
GSCI	20.7	2.8	18.0	7.9	11.8	19.9
DJ-AIG	24.0	7.9	15.6	9.2	6.7	11.8
RRMI	31.9	12.8	20.8	-	16.5	17.7
CRB Index	8.9	3.9	6.0	1.2	1.8	10.5
Russell 2000	47.3	6.3	7.1	9.5	13.6	19.8
S&P 500	28.7	-4.1	-0.6	11.1	11.2	16.0
Lehman Aggregate	4.1	7.6	6.6	6.9	9.1	4.1
90 Day T-Bills	1.0	2.4	3.7	4.4	7.0	1.0

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ANALYSIS OF COMMODITY INDICES & SOURCES OF RETURNS

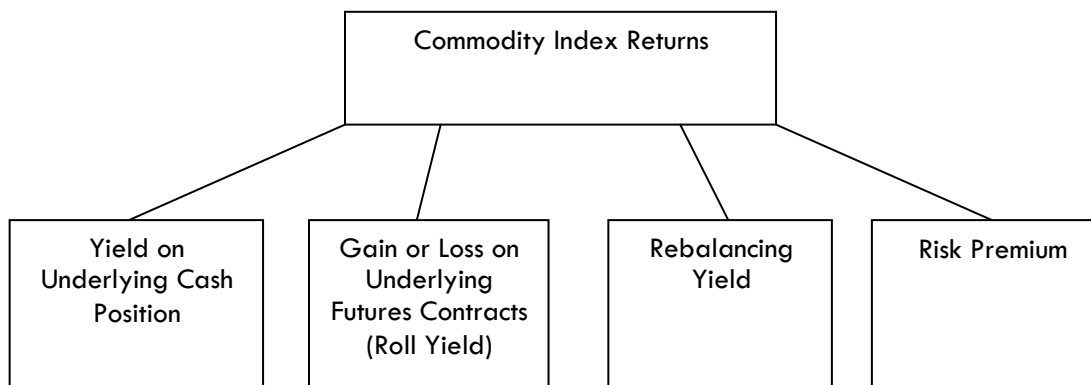
In calculating returns, the GSCI, RICI and the DJ-AIG indices use an arithmetic weighted average of the underlying commodities to represent the index. The CRB Index utilizes both geometric and arithmetic averages of the prices of the underlying commodities to construct returns. Geometric averaging creates lower overall volatility of returns than arithmetic averaging and, according to the CRB, geometric averaging “has the statistically attractive property that successive percentage changes in a component’s price do not alter that component’s relative weight in the index.¹⁴” Arithmetic averaging, on the other hand, causes the relative weight of a component to increase (or decrease) as that component appreciates (or depreciates) in value. The method used by the CRB allows the index to maintain equal weight in the 17 individual components so that no single commodity has undue impact on the index. The index is also less subject to the fluctuations associated with temporary supply and demand imbalances in any one commodity.¹⁵

Compared to other long-only commodity indices, the DJ-AIG offers a more balanced mix of commodities and is not as impacted by the performance of the energy sector as the GSCI. In terms of liquidity, the GSCI and the DJ-AIG have several products that seek to replicate the returns of the indices, which makes them more accessible to institutional investors. These indices are also the most widely followed and considered proxies for the commodity market. In analyzing performance, the CRB Index has trailed the other indices over time by a significant margin. This is due in part to its larger weighting in “softs” and lower weighting in energy related commodities compared to the other indices.¹⁶ “Softs”, as a group have failed to keep pace with inflation over time (See table 5) and this partially explains the relative underperformance of the CRB. When analyzing commodity indices, it important to recognize the impact of construction methodologies and sector weightings on the overall returns of the indices.

SOURCES OF RETURNS

As shown in Figure 1, long-only commodity indices derive their returns from several sources, which are detailed below.

Figure 1



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Collateral Yield: In a long-only commodity index, futures positions are unleveraged, meaning they must be fully collateralized, usually with Treasury Bills. Therefore, a portion of the return will come from the underlying cash position that supports the futures contract. Some managers seek to actively manage this underlying cash position in order to enhance the overall return of products tracking the index. Others simply invest the cash in short-term Treasuries, which are then rolled over at maturity. Depending on the type of fixed income security used to collateralize positions in the long-only commodity index, the return on the underlying cash position could range from 2-4%.

There is some debate as to whether or not the yield on the underlying cash position should be included as a source of commodity index returns, because an investor could theoretically achieve this return by simply allocating cash to Treasuries and because this portion of return has no direct relation to the actual commodities. If this portion of the return were not included in the long-only indices, it would alter their long-term performance.

Rebalancing Yield: A second source of return from long-only commodity indices comes from what is known as the rebalancing yield. This portion of the return is attributable to the fact that commodity prices are not correlated with each another due to the varying factors that affect the price of each commodity. Because commodities do not rise and fall together, an index consisting of many commodities that is rebalanced regularly on a price basis is able to extract a return based on the tendency of commodities to revert to their mean prices. Historical data confirm that a price-rebalanced index will tend to extract a return from “buying low” and “selling high” the uncorrelated commodities. Robert Greer, senior vice president and portfolio manager for the PIMCO Real Return Fund, estimates that according to historical data, a commodities index can earn a rebalancing yield of approximately 2.5% on a long-term basis.¹⁷ The frequency of rebalancing is of particular importance, as data has shown that indices that rebalance more frequently are able to extract a greater return than those that rebalance less frequently.

Roll Yield: In addition to these two sources of return, a long-only commodity index will have gains associated with the change in price of the underlying commodities and the futures contracts on those commodities. For example, as a contract nears expiration, it will be “rolled over” to purchase new contracts on the commodity. At the time the position rolled over, there will be a gain or a loss depending on whether the underlying commodity has risen or declined in value. This portion of return is known as the “roll yield,” and will depend in large part on whether the underlying commodities are increasing or decreasing in value as well as the allocations of various commodities in the index.

Risk Premium: Finally, participants in the futures market can earn an insurance (or risk) premium since the long position is absorbing price risk that commodity producers, who are natural sellers, do not want. There may often be an imbalance between those wanting to sell futures contracts (like a farmer) and those willing to purchase futures contracts (such as a cereal manufacturer). The consumer (buyer of commodities) has less price risk than the producer because the end user can raise prices on the final product. Investors in the futures markets serve to balance the market demand and in return, they are compensated for providing liquidity and assuming price risk.¹⁸ As a result, the investor is able to extract a return and profit from participation in the market and achieve an inherent positive return, or a compensation for the risk assumed by the investor. This component of return is closely related to the gain or loss on the underlying futures contract discussed previously. An investor purchasing a futures contract and holding it to expiration will capture some risk premium in the marketplace and will also have a gain or loss depending on where the price settles at maturity. While these components of return are shown separately, they are closely linked and in some cases indistinguishable.¹⁹

In evaluating the sources of long-only commodity index returns, we believe it is important to focus on

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those sources that relate specifically to an investment in commodities. As figure 1 shows, the key sources of return for a long-only commodity index are the gain or loss on the underlying futures contracts, the rebalancing yield, and a risk premium for providing liquidity to the market. The yield on the underlying cash position may or may not be considered as a source of returns to the index, although returns of the major indices include these in their total return calculations.

In the final analysis, the two main sources of return that relate directly to commodities are the gains and losses on the underlying futures contracts and the return that will come from providing liquidity to the markets due to the nature of futures contracts and the commodities markets. When analyzing long-only commodity index returns, it is important to focus on those sources that are related to commodities rather than those that are exogenous to the actual changes in prices of the futures contracts.

Investors who consider an allocation to commodities should also recognize the potential volatility of returns for long-only indices. In 1998, for example, the GSCI declined by 35%, a substantial one-year loss that was driven in large part by difficulties in the emerging markets. While this is comparable to the 30% decline in the Russell 2000 Growth Index during 2002, commodities do not provide the same long-term upside as small cap equities, with the key exception being energy related commodities, which have provided higher real returns. The longer-term standard deviation of the GSCI is close to 20% and, while this index has shown strong gains, the impact of the oil crisis of the 1970s heavily influenced the returns of this index. For example, from January 1970 through January 1980, the GSCI increased at an annualized rate of 21.8%, in large part due to the steep rise in oil prices during this time period.

DO COMMODITIES REPRESENT A DISTINCT ASSET CLASS?

As we have seen, commodities encompass a wide range of products including basic and precious metals, agricultural and food products, and energy related products such as crude oil and natural gas. We view an asset class as a group of securities with similar characteristics and properties that tend to react in similar way to economic factors.²⁰ For example, equities, fixed income and real estate are examples of pure asset classes because their returns are driven by similar factors. Additionally, securities in these different assets classes are mutually exclusive of one another indicating that an equity security is distinct from a fixed income security and vice versa. Given this framework, do commodities represent a distinct asset class?

We believe that commodities are most accurately viewed individually or on a sector basis, rather than collectively as one asset class. The reason for this is that the returns of one type of commodity may have little correlation with the returns of another type of commodity. An example would be an agricultural commodity such as wheat or corn and crude oil. Weather patterns in certain areas of the world will impact corn or wheat prices, whereas these same weather patterns will have little or no impact on the change in oil prices, which may be driven by geopolitical events or other factors. Our analysis of the correlation between the prices of several commodities confirms this. For example, the long-term correlation between the price of crude oil and gold is -0.03. Similarly, the long-term correlation between the price of sugar and crude oil is -0.37%. Therefore, when analyzing investments in commodities, we believe it is important to evaluate commodities individually or on a sector basis and determine which commodities make sense as tactical or strategic investments.

DO COMMODITIES ENHANCE PORTFOLIO RETURNS?

Because commodities as a group, measured by the long-only indices, have a low correlation to traditional asset classes such as fixed income and equities, we would expect a diversification benefit by adding an allocation to commodities to a traditional portfolio. This diversification benefit is often cited

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as a key reason for making an allocation to commodities. In order to analyze the benefit of commodities, we used the Goldman Sachs Commodity Index as a proxy for commodities and added an allocation to a traditional stock/bond portfolio over several time periods.

The following chart shows the impact on return and volatility of adding a 10% allocation to commodities to a portfolio of broad asset classes from 1976-2003 and from 1980-2003.

Table 3

Effect of Commodity Allocation to a Portfolio

Dates	Allocation- Stocks/Bonds/Commodities ²¹	Annualized Return %	Standard Deviation %	Sharpe Ratio %
1976-2003	60% S&P 500 Index	11.9	11.9	0.60
	40% Lehman Brothers Aggregate Bond Index			
	55% S&P 500 Index	11.7	9.4	0.71
	35% Lehman Brothers Aggregate Bond Index			
1976-2003	10% Goldman Sachs Commodities Index			
	50% S&P 500 Index	11.5	8.8	0.73
	40% Lehman Brothers Aggregate Bond Index			
	10% Goldman Sachs Commodities Index			
1980-2003	60% S&P 500 Index	12.6	12.3	0.63
	40% Lehman Brothers Aggregate Bond Index			
	55% S&P 500 Index	12.0	8.9	0.78
	35% Lehman Brothers Aggregate Bond Index			
1980-2003	10% Goldman Sachs Commodities Index			
	50% S&P 500 Index	11.5	8.8	.73
	40% Lehman Brothers Aggregate Bond Index			
	10% Goldman Sachs Commodities Index			

As expected, an allocation to commodities does reduce portfolio volatility and increases the Sharpe Ratio, although we do not see an enhancement to overall absolute return over the time periods studied. There are two important issues to keep in mind when evaluating the diversification benefits associated with an allocation to commodities. First, the long-term returns of the GSCI are somewhat skewed by its heavy weighting in the energy sector. The oil crisis of the 1970s had a significant impact on energy prices and the returns of the index. During this decade, the GSCI had an annualized return of almost 22%, which was largely attributable to the surge in oil prices of the early-mid 1970s. Given the significant weighting of energy in the GSCI, this was a key factor impacting its long-term performance relative to the other commodity indices. Second, there are other investments, apart from commodities, with low correlations to equities and fixed income that could enhance portfolio returns. An allocation to an investment based solely on its diversification benefit that does not look at its relative attractiveness may not be prudent.

DO COMMODITIES PROTECT AGAINST INFLATION?

One of the key points often made for investing in commodities is that they act as a hedge against inflation. The validity of this argument depends largely on which index is used to represent commodities. Table 4 shows the change in the spot price of 17 commodities over the period from 1951-2003 as well as the percentage change in the consumer price and producer price indices. While it is important to distinguish between spot prices and futures prices, over the long term, the futures and spot prices of commodities will closely track each other. As a futures contract nears expiration, its price

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will converge with the underlying spot price. Therefore, historical changes in spot prices can give us an idea of the types of gains an investor could expect over the long term from holding a futures contract on a particular commodity. We can see that the prices of very few commodities have kept pace with inflation (as measured by the CPI) over the long run. The key exceptions are energy-related commodities such as crude oil and natural gas. Lower real commodity prices should not be surprising given that advances in technology and production efficiencies create downward pressure on prices and reduce the effects of limited supply of natural resources. While some argue that certain natural resources may be finite, given attractive enough economic incentives, innovation will lead to alternative ways to use or substitute natural resources, limiting their price increases. As seen in Table 4, the prices of many commodities have shown only slight increases over time and most do not increase at a rate that keeps pace with inflation.

Table 4

Historic Commodity Prices 1951-2003

	\$ Price 1951	\$ Price 2003	Percent Change
Natural Gas	0.1	5.9	8400%
Nickel	34.7	16565.0	1291%
Crude Oil	2.5	32.3	1175%
Gold	34.7	416.1	1098%
CPI	26.0	184.9	598%
Silver	0.9	6.0	578%
PPI	30.9	144.8	369%
Aluminum	396.8	1599.0	303%
Copper	0.3	1.1	273%
Hogs	0.2	0.5	167%
Soybeans	3.1	7.9	159%
Cattle	0.3	0.7	153%
Zinc	462.9	1016.7	120%
Cocoa	776.0	1515.0	95%
Sugar	0.0	0.1	89%
Cotton	0.4	0.8	88%
Wheat	2.4	3.7	52%
Corn	1.8	2.4	34%
Coffee	0.5	0.7	20%

Source: AIG Trading Group

The degree to which commodities provide a hedge against inflation depends largely on the index used to represent commodities. As shown in table 5 below, the GSCI has posted impressive long-term gains and outpaced inflation. Nevertheless, much of these returns are attributable to its large weighting in energy-related commodities and the resulting strong performance achieved during the 1970s due to the oil crisis. More equally weighted indices such as the CRB have clearly not kept pace with inflation, and the DJ-AIG index, which is more balanced, provides a more accurate representation of the types of returns that an investor could expect from commodities.

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Table 5

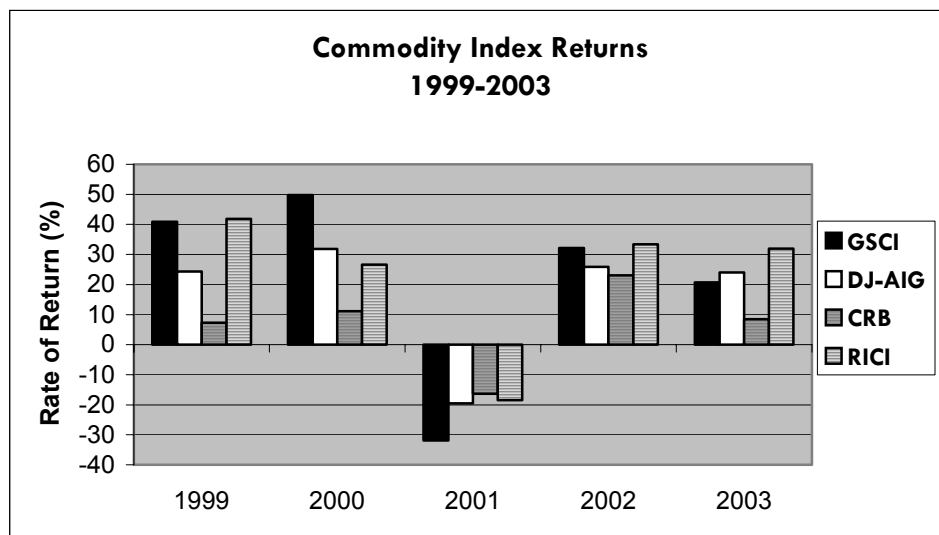
Commodity Returns Index Returns versus the CPI

Index	Annualized Return %
GSCI-1970 Inception-December 2003	11.8
CPI (Same time period)	4.8
CRB-1957 Inception-December 2003	1.8
CPI (Same time period)	4.1
DJ-AIG 1991 Inception-December 2003	6.7
CPI (Same time period)	2.5

While we recognize that a tactical allocation to commodities may be beneficial during inflationary periods, over the long-term most commodity prices do not keep pace with the CPI (again, energy being the key exception). For this reason, we believe commodities are better viewed on an individual basis with a focus on those commodities or areas of the commodity market that provide the greatest potential for long term gains.

THE CASE FOR COMMODITIES

Recent gains in the commodity markets have been substantial and many are asking if now is a good time to allocate assets to this area of the market. As seen by the returns in the graph below, the major long-only commodity indices posted annualized gains approaching 20% over the past five years. Indeed, rising commodity prices seem to dominate the headlines as of late. Proponents of investing in commodities point to increased demand from emerging markets as a key factor that could drive higher long-term prices. Proponents also point to the time lag in bringing new supply of certain commodities to the market. There can be significant time required to build new oil refineries, steel production facilities and mining operations, all of which are capital-intensive investments and could contribute to supply shortages.



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Other points made for investing in commodities include strong performance by financial assets over the past 20 years, driven largely by falling interest rates. While a number of factors could contribute to inflationary pressures going forward, including excessive monetary liquidity and supply/demand imbalances, most commodities, as we have seen, do not constitute a good long-term inflation hedge.

Given the recent gains in commodities, most notably energy-related commodities, it is difficult to make a case that now is a good time to take a long position in an index with a significant weighting in energy. Crude oil has increased five fold since 1998, rising from \$10 a barrel to over \$50 today, and continues to press toward new highs almost daily. Likewise, natural gas has more than doubled since the end of 2001. While we recognize that there are a number of factors that could increase demand for natural resources and commodities, we also recognize that current record high prices of many commodities may not be sustainable and may present significant risk. We are also mindful that a slowdown in emerging markets could result in a slowing demand for commodities and put downward pressure on commodity prices, as emerging markets are a primary source of demand for many commodities.

CONCLUSIONS AND RECOMMENDATIONS

We believe that individual commodities should be evaluated based on their relative attractiveness in order to fully capture the benefit of investing in this area. Based on historical data, energy-related commodities have outpaced inflation and have provided the most attractive returns while agricultural-related commodities have failed to keep pace with inflation. Our conclusion is that accessing commodities through long-only indices is not the most effective means to benefit from this area of the market. While long-only commodity indices provide a simple way to gain exposure to a cross section of the commodity market, we believe that commodities are better viewed on a sector-specific basis to determine which commodities may make compelling investments. Other vehicles, such as managed-futures strategies, may be more appropriate when seeking to gain exposure to commodities.

We also recognize that macro economic trends will likely favor real assets going forward and that some commodities will benefit from increased global demand. We recommend that clients consider the available long-only alternatives to protect portfolios from rising inflation. These include:

- Allocations to Timber
- Investments in Energy Partnerships
- TIPS
- Real Estate

While commodities represent an opportunity to add exposure to an asset class with a low correlation to equity and fixed income, their ability to act as a long-term hedge against inflation remains unclear because most commodities have not kept pace with inflation over the long-term. Additionally, the diversification benefit to an already diversified portfolio that results from their low correlation to other asset classes does not appear compelling enough to warrant a strategic allocation to the long-only indices. The same diversification benefit could be achieved by adding other asset classes to a portfolio with lower volatility. Additionally, much of the returns offered by these investments come from sources other than the underlying commodities themselves. By approaching physical commodities and natural resources from a sector basis we believe investors can benefit from those areas that have the most potential for producing the greatest returns and benefits to the portfolio.

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18. Lightner, Charles. *A Rationale For Managed Futures.* *Technical Analysis of Stocks & Commodities*, March 1999.
19. Greer, Robert J. "The Nature of Commodity Index Returns," *Journal of Alternative Investments*, Summer 2000.
20. Ibbotson Associates, *Stocks, Bonds, Bills & Inflation: Market Results for 1926-1999.*
21. Stocks are measured using the S&P 500, Bonds using the Lehman Brothers Aggregate Index, and the Goldman Sachs Commodities Index represents commodities.