Going Long on

Index investing has long been popular in the securities markets. Now it is coming into fashion in the futures world, and bringing a new source of liquidity to commodity futures contracts.

Six ways to invest in commodities

- Goldman Sachs Commodity Index
- Dow Jones-AIG Commodity Index
- Deutsche Bank Liquid Commodity Index
- Rogers International Commodity Index
- S&P Commodity Index
- Reuters CRB Commodity Index

By Will Acworth

Over the last several years, the rapid rise of commodity prices has drawn the attention of investors frustrated by low returns on stocks and bonds and concerned by the prospects for inflation. In addition, recent academic research has highlighted the advantages of investing in futures based on physical commodities.

For these reasons, pension funds and other institutional investors are looking for ways to add commodity exposure to their portfolios. One simple way to do this is by investing in a commodity index. This approach is especially attractive to institutional investors who are familiar with index investing in the equities world and like the idea of "buying the market" in a single transaction.

Currently there are at least six indices measuring commodity prices. They are all based on futures market prices, which effectively excludes commodities like steel that are not actively traded on a futures market anywhere. All six indices measure the total return on a fully funded futures portfolio, including not only the changes in the price of the futures contracts but also the yield on the collateral and the return from rolling positions forward. There is no short-selling and no use of leverage. In other words, the investment strategy represented by these indices is based entirely on the "buy and hold" principle.

Analysts estimate that $40 billion to $50 billion has been invested in various types of instruments that track these six indices, with the bulk of this amount linked to the Goldman Sachs Commodity Index. That is only a third of the $127 billion invested in managed futures, as estimated by Barclay Trading Group. But the analysts expect the total to rise as institutional investors and their consultants give this investment strategy closer study. The Russell Investment Group, for example, issued a "practice note" in February analyzing these six indices to help its clients select the index that best meets their investment preferences.

The most common way to invest in a commodity index is to use over-the-counter instruments such as swaps and structured notes. The payout is usually based on the total return of a selected index, and a number of large derivatives dealers actively engage in trading and structuring these instruments.

A small number of funds also are available to U.S. retail investors, including Pimco's Commodity Real Return Strategy Fund, Oppenheimer's Real Asset Fund, and

Commodities

the Rogers International Raw Materials Fund. The Pimco fund relies mainly on commodity swaps. The Rogers fund puts all assets to work directly in the futures markets, while the Oppenheimer fund relies on both futures and OTC instruments for its commodities exposure.

All three are based on different indices: Pimco's fund is based on the Dow Jones-AIG Commodity Index, Oppenheimer's is based on the Goldman Sachs Commodity Index, and the Rogers fund is based on the Rogers International Commodity Index. At the end of the first quarter, the Pimco fund had $4.6 billion in retail assets under management, the Oppenheimer fund had $1.3 billion, and the Rogers fund, which is structured as a limited partnership rather than an investment company, had $37 million.

The latest entrant is Scudder's Commodity Securities Fund, which was launched in March. Half of this fund is invested in derivatives linked to the GSCI benchmark, and the other half in shares of companies in commodity-related industries, mainly in materials and energy.

How Commodity Indices Are Constructed

Typically the index managers ignore the front month contract in order to avoid the issues associated with expiration and delivery. Instead they build the index based on one or more of the deferred contract months, then shift or "roll" to the subsequent month's contracts as the lead or front month expires and the next month takes its place. The index managers do not actually hold these contracts. Rather, they derive the price of the index by looking at the official settlement prices posted daily by the exchanges, and then calculating the returns on a hypothetical basket of futures on the commodities in the index.

Although the dramatic rise in the prices for crude oil, copper and certain other commodities has been the main driver for the returns on these indices in the last few years, over the long run the roll return is a more important factor, according to commodity analysts. This is because most of the indices give a large weighting to futures on energy products such as crude oil. Energy futures are usually in backwardation, meaning that the prices for the deferred months are lower than the near months. As the date of expiry gradually approaches, the deferred months increase in price. This appreciation is captured in the index return through the roll process.

For example, Deutsche Bank estimates that over the last 15 years, the crude oil component of its commodity index had a compound annualized total return of 20.17%, even though the spot return was only 5.95%. The other components were roll returns of 8.99% and collateral returns of 4.84%.

The roll process is generally governed by rules. For example, the GSCI managers shift positions out of the expiring month during the fifth to ninth business days of the month. In practical terms, this means that in May, the GSCI's WTI crude oil futures contracts were rolled out of the June contract month and into July, the next deferred month. Under the GSCI's rules, 20% of the position is rolled on each business day within that five-day window.

Not all futures contracts have regular monthly expirations, however. For instance, the Chicago Board of Trade's corn futures contract, which is a component of all six indices, has only five contract months listed per year—March, May, July, September and December—so the roll process is triggered only five times a year.

Although the returns on these six indices are broadly similar, there are significant differences in the way that they are constructed. This affects not only how the indices behave under different market scenarios, but also the market impact of the flows generated by investments benchmarked to these indices.

One area of difference is in the process for changing the weightings of the various commodities in the index. Some indices, once constructed, never change the weightings. Others engage in an annual reweighting process to take into account changes in the level of global commodity production or consumption. Still others make regular adjustments to the weightings in accordance with certain mechanical rules they've set. These take into account such issues as the amount of liquidity in a particular futures contract or the tendency of commodity prices to revert to a mean.

There are also significant differences in the number of commodities tracked by the indices. At one extreme, the Rogers International Commodity Index tracks 35 commodities. At the other, the Deutsche Bank Liquid Commodity Index tracks just six commodities—crude oil, heating oil, aluminum, gold, wheat and corn.

Still another difference is in the frequency of rebalancing, a term that refers to the process for adjusting the basket of

Commodity Index Exposure by Market and Sector

		GSCI	DJ-AIG	DBLCI	RICI	SPCI	RJ/CRB*
Metals	Aluminum	2.72%	7.06%	12.50%	4.00%		6.00%
	Copper	2.31%	5.89%		4.00%	3.50%	6.00%
	Gold	1.73%	5.98%	10.00%	3.00%		6.00%
	Lead	0.31%			2.00%		
	Nickel	0.89%	2.61%		1.00%		1.00%
	Palladium				0.30%		
	Platinum				1.80%		
	Silver	0.21%	2.00%		2.00%	3.78%	1.00%
	Tin				1.00%		
	Zinc	0.55%	2.69%		2.00%		
Sector Total		**8.72%**	**26.23%**	**22.50%**	**21.10%**	**7.28%**	**20.00%**
Energy	Brent Crude Oil	14.27%					
	Gas Oil	4.74%					
	Heating Oil	8.40%	3.85%	20.00%	3.00%	11.49%	5.00%
	Natural Gas	9.00%	12.28%		3.00%	17.65%	6.00%
	Unleaded Gas	8.45%	4.05%		3.00%	10.32%	5.00%
	W.T.I.Crude Oil	28.98%	12.81%	35.00%	35.00%	9.74%	23.00%
Sector Total		**73.84%**	**32.99%**	**55.00%**	**44.00%**	**49.20%**	**39.00%**
Ags	Azuki Beans				1.00%		
	Barley				0.77%		
	Canola				0.67%		
	Corn	2.63%	5.94%	11.25%	4.00%	4.96%	6.00%
	Feeder Cattle	0.80%					
	Lean Hogs	2.04%	4.39%		1.00%	1.78%	1.00%
	Live Cattle	2.91%	6.15%		2.00%	5.03%	6.00%
	Oats				0.50%		
	Red Wheat	0.97%					
	Rice				2.00%		
	Soybean Meal				0.15%	3.81%	
	Soybean Oil		2.67%		2.00%	3.90%	
	Soybeans	1.96%	7.60%		3.00%	4.79%	6.00%
	Wheat	2.70%	4.87%	11.25%	7.00%	5.05%	1.00%
Sector Total		**14.01%**	**31.62%**	**22.50%**	**24.09%**	**29.32%**	**20.00%**
Softs	Orange Juice				0.66%		1.00%
	Cocoa	0.22%			1.00%	3.27%	5.00%
	Coffee	0.91%	3.02%		2.00%	3.36%	5.00%
	Cotton	1.05%	3.23%		3.00%	4.18%	5.00%
	Sugar	1.26%	2.93%		1.00%	3.39%	5.00%
Sector Total		**3.44%**	**9.18%**	**0.00%**	**7.66%**	**14.20%**	**21.00%**
Exotics	Lumber				1.00%		
	Rubber				1.00%		
	Silk				0.15%		
	Wool				1.00%		
Sector Total		**0.00%**	**0.00%**	**0.00%**	**3.15%**	**0.00%**	**0.00%**
TOTALS		**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Cole Asset Management

Note: Weightings as of May 27, 2005

** The CRB index was significantly updated in May 2005 and renamed the Reuters Jefferies CRB Index. This table shows the weightings under the new version of the index.*

futures to reflect changes in the prices and restore the weightings to their pre-set levels. Some indices, such as the GSCI, do not do this at all. Other indices rebalance on a monthly basis, reducing their exposure to commodities that have appreciated and increasing their exposure to commodities that have depreciated.

Implications for the Futures Industry

For the futures industry, the vogue for commodity index investing has at least three implications. First, since this is almost by definition a long-term strategy, the growth in its popularity is likely to lead to a long-term increase in the open interest for a wide range of commodity futures, and a significant spike in trading activity whenever positions are rolled into a new contract.

Second, this strategy could affect the term structure of commodity futures contracts in unusual ways. Because of the mechanics of the index process, the funds tied to these indexes will go predominantly into the nearest deferred months, rather than the lead month or the distant back months. Market analysts say they have already noticed this effect in the WTI crude oil futures market, which is one of the largest components of all six of these indices.

Third, the growth of commodity index investing may create new trading opportunities. One possibility would be to combine a long position in the index with a short position in one or more commodities. Opportunities may also arise for speculative traders to take advantage of the mechanical way in which these indices are constructed, especially during the roll process.

Goldman Sachs Commodity Index

The GSCI was created in 1991 and is widely considered to be the most heavily followed commodity index. It is world-production-weighted, which means that the quantity of each commodity in the index is determined by the average value of production in the last five years of available data. This weighting system is adjusted annually and put into effect in January. The composition is also adjusted by liquidity to ensure "true price discovery, cost-effective implementation and true investability," according to Goldman Sachs.

Currently, the GSCI contains 24 commodities: six energy products, five industrial metals, eight agricultural products, three livestock products and two precious metals. The weight assigned to each of these commodities is adjusted once per year. The most notable characteristic of the GSCI is its exposure to energy prices. In April 2005, nearly 75% of its index weight was in the energy sector. This feature greatly increases the volatility of the index. GSCI futures are listed on Chicago Mercantile Exchange.

Dow Jones-AIG Commodity Index

The DJ-AIGCI was created in 1998 and has a large following among institutional investors. Currently, the index contains 19 commodities. The weighting of the various commodities is based on a combination of average global production and average trading volume over the most recent five-year period. The weightings are adjusted once a year and put into effect in early January.

In contrast to the GSCI, the DJ-AIG index is explicitly designed for diversity. No one commodity can comprise more than 15% or less than 2% of the index, and no one

Risk and Return Characteristics: January 1991 - December 2004

Index	Compound Annual Return	Annualized Standard Deviation	Sharpe Ratio	Worst Drawdown
Goldman Sachs Commodity Index	5.66	18.06	0.10	-48.25%
Dow Jones-AIG Commodity Index	6.98	11.82	0.26	-36.20%
Deutsche Bank Liquid Commodity Index	10.09	18.49	0.34	-46.11%
Rogers International Commodity Index	10.10	14.04	0.44	-36.94%
S&P Commodity Index	4.79	13.04	0.07	-37.95%
Reuters CRB Commodity Index	3.30	8.34	-0.07	-28.37%

Risk and Return Characteristics: August 2001 - December 2004

Index	Compound Annual Return	Annualized Standard Deviation	Sharpe Ratio	Worst Drawdown
Goldman Sachs Commodity Index	12.39	21.97	0.50	-23.51%
Dow Jones-AIG Commodity Index	12.46	13.48	0.82	-12.88%
Deutsche Bank Liquid Commodity Index	18.53	19.28	0.89	-20.26%
Rogers International Commodity Index	19.51	14.84	1.22	-15.61%
S&P Commodity Index	10.14	15.88	0.55	-20.57%
Reuters CRB Commodity Index	9.65	9.33	0.88	-9.60%

Source: Cole Asset Management

Note: Estimates are based on total return data. Some of the data has been back-filled to cover periods before the indices were created. Worst drawdown is measured from peak to trough. Sharpe ratio measures risk-adjusted performance by subtracting the risk-free rate from the rate of return and dividing the result by the standard deviation of the returns.

sector can represent more than 33% of the index. Cocoa, for example, was dropped from the index in 2005 because its weighting fell below the 2% floor. Likewise, energy futures are limited to 33%. These rules make the index relatively less volatile, an attractive feature for certain types of institutional investors such as pension funds. Futures on the DJ-AIGCI are traded at the Chicago Board of Trade.

Deutsche Bank Liquid Commodity Index

The DBLCI was created in 2003 and consists of only six commodities, all of which are among the most liquid in their sectors. This has the advantage of reducing transaction costs and increasing capacity for new investments. Deutsche Bank argues that the main disadvantage—the loss of diversity—is not important since price movements for commodities in the same sector tend to be closely related.

The index has an unusual policy on rebalancing. Positions in energy futures—namely WTI crude oil and heating oil—are rebalanced each month, while positions in the other four contracts are rebalanced once a year. Because most of these other commodities are generally in contango—the prices for more distant months are higher than for near months—the roll yield on those contracts is negative. The dual rebalancing policy therefore maximizes the positive return from rolling the energy futures and minimizes the negative return from rolling the rest of the index.

Deutsche Bank also offers a mean-reverting version of this index, the DBLCI-MR, to address a fundamental characteristic of the commodity markets—prices do not rise steadily upward indefinitely but instead tend to fluctuate within a historical range. This version of the index therefore changes the weightings of the six components on a monthly basis, underweighting those commodities that are above their five-year average, and overweighting the commodities that are below the five-year average. In February 2005, for example, the exposure to crude oil had ratcheted down to 13.21%, compared to 35% in the regular DBLCI index, and the exposure to aluminum had moved up to 19.98% from 12.5%. Most notable of all, the exposure to agricultural products, one of the smallest components in the other commodity indices, had more than doubled to 50%.

Rogers International Commodity Index

The RICI was created in 1998 and is the broadest and most international of the six indices. It consists of 35 commodities, including such obscure commodities as zinc, nickel, lumber, oats, barley, azuki beans, wool, rubber and silk. Like the DBLCI and unlike the other four indices, the RICI is rebalanced monthly, a feature that some analysts believe leads to higher returns. The selection and weighting of the index is based on consumption and overseen by Jim Rogers, the author of *Hot Commodities*, *Adventure Capitalist* and *Investment Biker* and the co-founder of the Quantum Fund with George Soros. Since its creation in 1998, the composition and weighting of the index has not changed, with two exceptions: soybean oil was substituted for palm oil in 2002 and soybean meal was substituted for flaxseed oil in 2004.

Standard & Poor's Commodity Index

The SPCI was introduced in 2001 and tracks 17 commodities, all traded on U.S. exchanges. The weighting is based on liquidity, as measured by the level of open interest held by commercial traders. One unusual feature of this index is that it uses a geometric methodology to calculate the index. This leads to lower volatility than the arithmetic methodology used by the other index managers but results in higher trading costs, according to analysts at Russell Investment Group. The SPCI also adjusts for "double-counting" by reducing the weighting of commodities that are "upstream" from other commodities in the index. For example, the weighting for live cattle is reduced to take into account the amount of corn used as cattle feed. The SPCI is also the only index that excludes gold, with the reasoning being that the vast majority of gold inventory is held in storage and is not consumed like other commodities.

Reuters Commodity Research Bureau Index

The Reuters CRB Index, the oldest commodity index, was introduced in 1957 and began trading on the New York Futures Exchange, now part of the New York Board of Trade, in 1986. On May 10 Reuters, which owns the rights to the index, announced a major revision of the index in partnership with Jefferies Financial Group. Instead of giving all the commodities an equal weight, the index now assigns each commodity to one of four tiers, with weightings ranging from 23% for crude oil to 1% for orange juice, nickel and wheat. In addition, the index will be rebalanced monthly and prices will be drawn from the nearby futures contract month, rather than the six month average previously used as reference period. The new version will be formally launched on June 20. ■

Will Acworth is the editor of *Futures Industry*.

For more information:

Collateralized Commodity Futures: Selecting the Right Index by Rachel Carroll, John Ilkiw and Muzammil Waheed, published in February 2005 by Russell Investment Group

Commodities: A Case for Active Management by Rian Akey, published in February 2005 by Cole Partners

Commodity Indexes: Overview and Analysis published in July 2003 by Seamans Capital Management

Facts and Fantasies about Commodity Futures by Gary Gorton and K. Geert Rouwenhorst, published in June 2004 by the Yale International Center for Finance

Investor Guide to Commodities published in April 2005 by Deutsche Bank

The Tactical and Strategic Value of Commodity Futures by Claude Erb and Campbell Harvey, a working paper published in January 2005 by Trust Company of the West, Duke University and the National Bureau of Economic Research