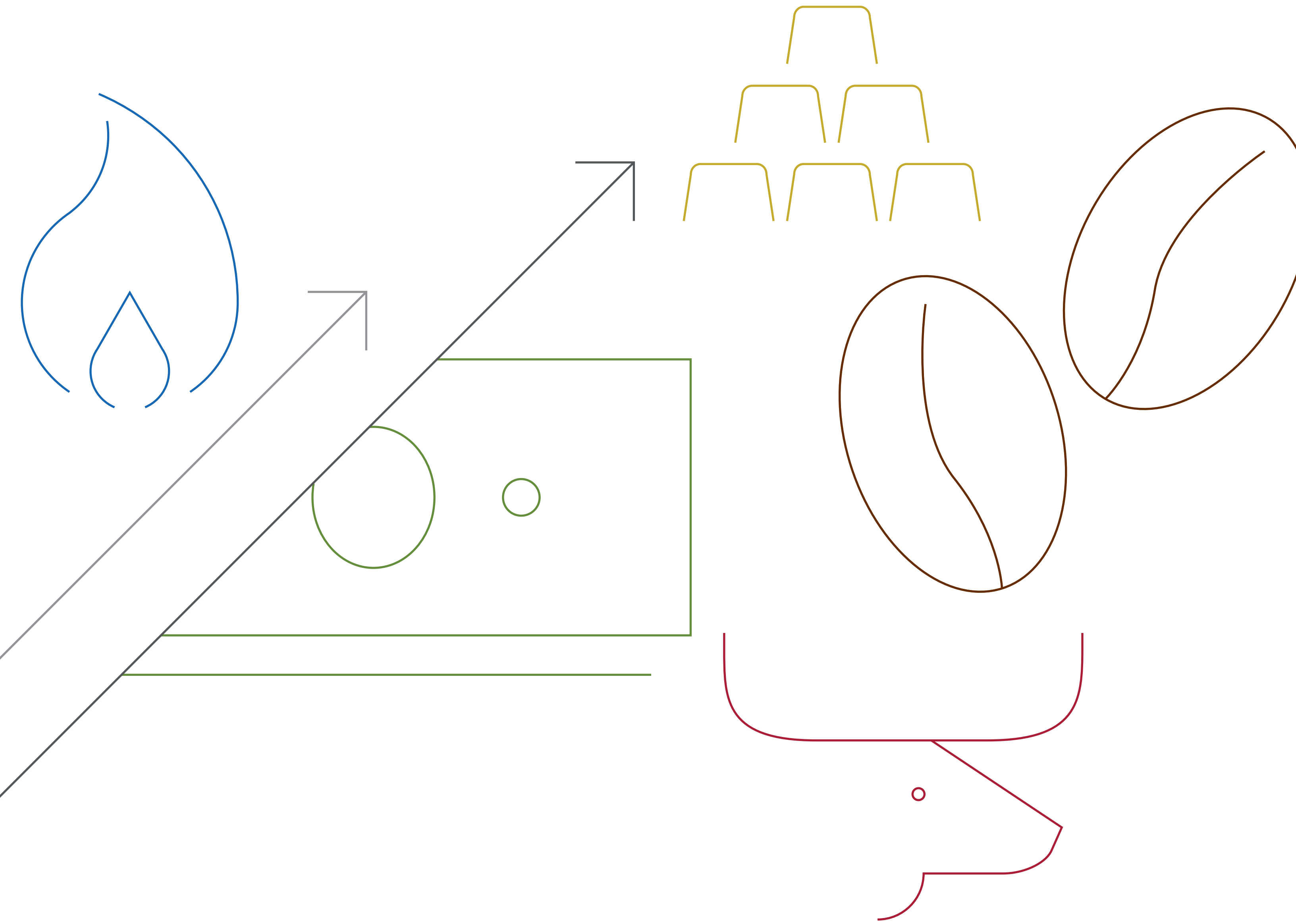
Industry Insights From
Morningstar® Indexes

Putting Momentum into Commodities



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A momentum-based long/short approach to commodity investing serves investors better than a long-only strategy.

Commodities are used by investors as a source of return, an inflation hedge, and a portfolio diversifier. However, to the surprise of many investors, products linked to commodity indexes often experience much lower returns than the percentage changes in the spot prices of the underlying commodities. By using a momentum-based approach that takes both long and short positions, Morningstar's commodity indexes aim to maximize both sources of commodity return—price change and roll yield.[1]

[1] For a full discussion of the underlying theory, see: Kaplan, Paul D. 2010. "The Long and Short of Commodity Indexes." Journal of Index Investing, Summer. Chapter 13 in Paul D. Kaplan, ed. 2012. *Frontiers of Modern Asset Allocation*. Hoboken, NJ: John Wiley & Sons.

No Such Thing as Commodity Beta

For many asset classes it is very easy to take a pure beta exposure—multiple asset class proxies are available, many of which are reasonable substitutes for each other. Commodity indexes, however, do not display the same level of consistency. Dramatic differences in constituents and weighting schemes as well as rebalancing rules are likely the cause of the performance differences in the commodities indexes.

Both Long and Short Positions for Positive Risk Premiums

Long-only commodities futures strategies can prove inadequate in providing investment exposure to commodities, which is why professional commodity trading advisors (CTAs) tend to take both long and short positions in commodity futures, often based on trends in prices.

Sources of Excess Return

A futures strategy generates excess return (i.e., return in excess of the risk-free rate) from two sources:

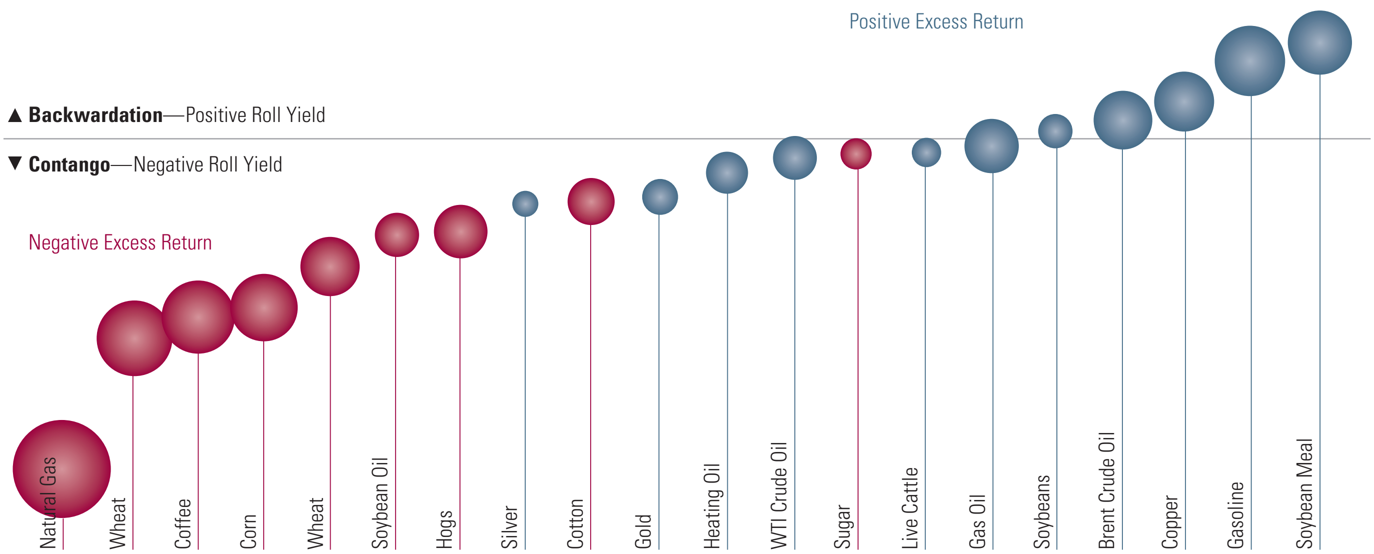
- Changes in futures prices
- Roll yield—either positive or negative—that results from replacing an expiring contract with a further out contract in order to avoid physical delivery yet maintain positions in the futures markets.

Roll Yield and Excess Return

Roll yield's effect on excess return can be substantial. In fact, several studies have shown that excess return is primarily attributable to roll yield, not to changes in futures prices. Long-term excess returns on commodities that exhibit mean reversion in price and that tend to trade in contango will generally be negative, and those that tend to trade in backwardation will generally be positive.

This behavior can be seen in Figure 1, which shows the relationship between roll yield and excess returns on the commodities listed for the 30-year period April 1990–December 2019. Of particular interest are the natural gas futures. Because the price of natural gas grew at 0.95% per year over the 30-year period, one might have expected a natural gas futures index to have provided a comparable rate of return. However, because natural gas futures traded in contango (and consequently experienced negative roll yield), the excess return was an abysmal negative 15.17%.

Figure 1. **Roll Yield and Excess Return**
April 1990–December 2019



Source: Morningstar Indexes

Size of the circle represents the magnitude of the excess return

Building a Better Strategy

Since futures price changes and roll yields are the sources of excess return, long-only indexes have no way to capture the returns available from shorting futures when there is downward price pressure or a positively sloped futures price curve.

Passive strategies that use a momentum-based long/short approach can better serve investors by attempting to capture the full excess return from a futures strategy.

We created a family of commodity indexes that includes combinations of long commodity futures, short commodity futures, and cash. The primary index, called the Morningstar® Long/Short Commodity Index,℠ holds commodity futures both long and short based on momentum signals. The other indexes are derived from this Long/Short index. The family includes a long/flat version, which holds cash in place of the short positions in the primary version so that investors who do not want or cannot have short positions can still get some benefits of a momentum-based long/short strategy.

We created a set of single-commodity indexes to serve as constituents for the Long/Short Index and the related composite indexes by calculating a "linked" price series that incorporates both price changes and roll yield. The weight of each individual commodity index in each of the composite indexes is the product of two factors: magnitude and the direction of the momentum signal. The direction depends in part on the type of composite index, and as we explain below, in part on the type of commodity in the Long/Short Index.

In the Long/Short Index each month, if the linked price exceeds its 12-month daily moving average, the index takes a long position in the subsequent month. Conversely, if the linked price is below its 12-month moving average, the index takes the short side. An exception is made for commodities in the energy sector. If the signal for a commodity in the energy sector is short, the weight of that commodity is moved into cash; that is, we take a flat position. Energy is unique in that its price is extremely sensitive to geopolitical events and not necessarily driven purely by supply-demand imbalances.

- The Long-Only Index is always long for every commodity
- The Long/Flat Index includes the same long positions as the Long/Short Index, but replaces the short positions with flat positions

Figure 2: **Commodity Index Comparative Risk & Return for the Trailing 15-Year Period**
Through March 31, 2020

	Annualized Return %	Standard Deviation %	Maximum Drawdown %	Sharpe Ratio
Morningstar Long-Only Commodity	-3.37	18.38	-33.93	-0.16
Morningstar Long/Short Commodity	0.71	10.65	-18.53	0.00
Morningstar Long/Flat Commodity	1.07	10.63	-17.50	0.03
S&P GSCI	-9.28	23.44	-47.74	-0.35
Bloomberg Commodity	-4.98	16.53	-29.25	-0.30

Source: Morningstar Direct

How They Stack Up

Figure 2 shows the general performance statistics of the Morningstar Long/Flat, Long-Only, and Long/Short Indexes for the trailing 15-year period through the first quarter of 2020, compared with other indexes.

Generally, the Morningstar Commodity Indexes' return and risk characteristics rank favorably relative to other benchmarks. Note, for example, the Morningstar Long/Short Index's better return and moderate risk compared with the S&P GSCI and Bloomberg Commodity indexes.

Downside Protection

While all long-only commodity indexes tend to provide strong protection when the stock market is down and in inflationary environments, the Morningstar Long/Flat Commodity Index and Morningstar Long/Short Commodity Index do a much better job by limiting downside risk while negotiating ups and downs in the commodity markets themselves. Clearly, commodities strategies that are not long-only are better equipped to tap into the underlying momentum of commodity prices, thereby limiting losses in down markets.

Figure 3: **Commodity Indexes Correlation Matrix**
Time period: April 1, 2005 to March 31, 2020

	1	2	3	4	5	6	7
1. Morningstar Long-Only Commodity							
2. Morningstar Long/Short Commodity	0.42						
3. Morningstar Long/Flat Commodity	0.74	0.86					
4. S&P GSCI	0.94	0.42	0.67				
5. Bloomberg Commodity	0.96	0.41	0.75	0.89			
6. Morningstar Global Core Bond	0.32	0.04	0.24	0.24	0.36		
7. Morningstar Global Markets	0.61	0.10	0.35	0.61	0.62	0.32	
8. Morningstar U.S. T-bill	0.06	0.05	0.06	0.04	0.07	0.07	-0.02

1.00 to 0.60	0.60 to 0.20	0.20 to -0.20	-0.20 to -0.60	-0.60 to -1.00
Extreme Positive	**Positive**	**Moderate**	**Negative**	**Extreme Negative**

Source: Morningstar Direct

Long and Short of It

The recent market correction has once again proven that the long-only strategies that currently dominate the commodity index market do not best serve investors as investment vehicles or as benchmarks. Because futures price changes and roll yields are the sources of excess return, long-only indexes have no way to capture the returns available from shorting futures when there is downward price pressure or a positively sloped futures price curve. Long-only indexes generate negative roll yields when markets are in contango (when distant delivery prices exceed near delivery prices), often resulting in negative returns when commodity prices are rising. The long-only indexes are not appropriate benchmarks, rendering traditional approaches to represent beta exposure unsuitable. By using a momentum-based approach that takes into account both price change and the slope of the futures price curve, Morningstar's commodity indexes aim to maximize both sources of excess return—price change and roll yield. Our indexes are logically consistent with the underlying economics of commodity futures markets. As passive investment alternatives, these rules-based indexes could offer easier access to actively managed commodity trading strategies.

About Morningstar Indexes

Morningstar Indexes combine the science and art of indexing to give investors a clearer view into the world's financial markets. Our indexes are based on transparent, rules-based methodologies that are thoroughly back-tested and supported by original research. Covering all major asset classes, our indexes originate from the Morningstar Investment Research Ecosystem — our network of accomplished analysts and researchers working to interpret and improve the investment landscape. Clients such as exchange-traded fund providers and other asset management firms work with our team of experts to create distinct, investor-focused products based on our indexes. Morningstar Indexes also serve as a precise benchmarking resource.

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