Why Conventional Commodity Indexes Will Likely Disappoint

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I hate to pile on commodities funds, already beaten down by years of underperformance and outflows, but most are terribly flawed in both construction and premise. The static, long-only commodity futures indexes do not capture the biggest sources of profits that accrue to investors in commodity futures.

In fact, unlike with stocks and bonds, a long-only position in commodity futures is not always expected to provide an excess return above the risk-free rate. To understand why, it helps to think of the commodities futures market as an insurance market, where hedgers and speculators trade risks. There is no expectation of positive returns in aggregate--someone's gain is exactly offset by someone else's loss, minus frictional costs. Hedgers pay an insurance premium to speculators. They willingly bear a negative expected return in order to shed themselves of risk.

In John Maynard Keynes' theory of normal backwardation, producers are the natural hedgers. They compensate the insurers--the speculators--with a positive roll yield, the profit from rolling over a longer-dated futures contract to a shorter-dated one. This occurs when more-distant futures trade at lower prices than the spot price, a condition known as backwardation. In this framework, a static, long-only futures position should be compensated with positive expected returns.

However, the historical data is not very supportive of this story. The average roll yield for 12 major GSCI commodity futures for the period January 1983 to January-end 2012 is negative. In other words, contango, the state opposite of backwardation, was the greater force. Something else is going on.

A better approach accounts for the fact that sometimes long-only futures exposure becomes a negative return proposition. Two possibly complementary approaches are the hedging pressure hypothesis and the theory of storage. The hedging pressure story is more general than Keynes' theory of normal backwardation: It holds that when producers demand more hedging, the futures term structure goes into backwardation, rewarding long positions; when consumers demand more hedging, the term structure goes into contango, rewarding short positions. The theory of storage holds that backwardation and contango can be explained largely by physical inventory levels; when inventory is low, markets become backwardated; when it's high, they become contangoed.

Both theories hold that the rewards for bearing risk accrue to the side, long or short, that offers some kind of insurance. In other words, long-only positions will not always possess positive expected returns. A static, long-only commodity

allocation over the course of a full market cycle will switch between insurance provision (positive expected returns) and insurance consumption (negative expected returns). A static, long-only investor is partly betting that the long side of the market remains mostly in insurance-provision mode over the course of his investment.

There are good reasons to think that the expected returns of commodity futures aren't terribly high. Claude Erb and Campbell Harvey propose that the returns of a long-only portfolio of commodity futures can be decomposed into four parts: the risk-free rate, the spot-price return, the roll yield, and the diversification return. We'll treat each component in turn.

1. **Risk-free rate.** The risk-free rate is low, so fully collateralized futures investors won't earn much of a cash return. Historically, this has made up about half the returns of the GSCI, the most popular commodity index.
2. **Spot-price return.** Over the long run, commodity prices have tended to fall. The surge in prices over the past decade was driven in large part by Chinese demand and is anomalous when judged against the broad sweep of history.
3. **Roll yield.** When commodity mania took off prior to the financial crisis, roll yields turned sharply negative. Fortunately, they've recently become positive.
4. **Diversification return.** Historically, commodities have had low correlation with each other and high volatilities. By simply regularly rebalancing, many indexes earned a positive "diversification return," which accounts for a big part of the excess returns commodity indexes earned. Ke Tang and Wei Xiong documented surging correlations between individual commodity futures, especially ones in the S&P GSCI and the DJ-UBS Commodity Index. The historical diversification return for the big indexes has been around 3%. If correlations remain high, that return could halve.

A plausible projection using the building-block approach can go like this:

Expected long-only futures return = Risk-free rate + Spot-price return + Roll yield + Diversification return = 0% + 0% + 1% + 2% = 3%

There's another reason to expect lower expected returns: The pool of insurance buyers has been shrinking relative to the pool of providers. Hedge funds, pensions, and individual investors have all scrambled to add long commodity futures to their portfolios. Proportionately, hedgers have shrunk. In fact, long-only investors may have transformed into insurance demanders, possibly accepting low or negative expected returns for inflation protection.

Not only that, but the most popular indexes are hideously inefficient. Each month, they predictably buy and sell a large number of contracts, and this predictability is exploited by traders. Yiqun Mou of Columbia University estimates that the GSCI forewent 3.6% annualized from January 2000 to March 2010 owing to these costs. Investors pay dearly for tracking the big indexes.

Dynamic commodities exposures have a better rationale for positive excess expected returns, particularly ones that take advantage of momentum and backwardation. (Paul Kaplan provides a cogent summary of why this is the case.)

Momentum is especially powerful. In a 2008 study typical of the genre, Ana-Maria Fuertes, Joelle Miffre, and Georgios Rallis found that momentum-based strategies were exceptionally profitable. For instance, a strategy that goes long the highest-returning 20% of commodities over the past 12 months and short the lowest-returning 20%, rebalanced and reconstituted monthly, earned 12.6% annualized from January 1980 to January-end 2007, well above the equal-weighted benchmark's 3.4% annualized return.

They find similar results for backwardation strategies. A simple strategy that each month owns the top 20% in backwardated contracts and shorts the 20% most-contangoed contracts, reconstituted and rebalanced monthly, earned 11.7% annualized.

Some researchers, such as Gary Gorton, Fumio Hayashi, and K. Geert Rouwenhorst argue that momentum- and backwardation-based strategies exploit information about inventory levels, suggesting that such strategies will continue to have positive excess returns.

Two ETF strategies offer the kind of dynamic exposure we like: PowerShares DB Commodity Tracking ETF (DBC), each month, targets futures contracts that offer the highest implied roll yield; United States Commodity ETF (USCI), each month, picks the seven most-backwardated contracts and then the seven highest-returning contracts, equal-weighting them.

By intelligently adjusting their exposures, the ETFs stand a chance to eke out excess profits. While they may not be able to short contracts, Fuertes-Miffre-Rallis' research suggests that most of the profits to momentum and backwardation strategies come from the long side.

Unfortunately, these funds come with nasty tax complications and are expensive. USCI, in fact, has utterly failed to track its index. As of Sep. 30, it has returned 10.22% annualized since inception, while its target benchmark has returned 17.13%. Despite the incompetent implementation, it has still managed to beat plain-old commodity indexes, indicating just how flawed they are.

An even better option is to invest in PIMCO CommoditiesPLUS Strategy (PCLIX) or PIMCO Commodity Real Return Strategy (PCRIX), which both charge 0.74% expense ratios. Not only are they cheaper than most passive commodity funds, they avoid the losses suffered by commodity indexes due to predictable roll schedules.

But even they don't guarantee great (or even positive) returns. Hedge funds are likely squeezing out much of the profits to such strategies. But the alternative--static, conventional commodity indexes--is even more unappealing.

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