



Are Commodities Futures Too Risky for Your Portfolio? Hogwash!

Everyone uses commodities such as wheat, cocoa, crude oil, butter, coal and electricity. But most investors know that speculating on commodities in the futures markets is only for the pros, and no sensible amateur would bet his retirement or college funds on sugar, silver, orange juice or feeder cattle. One of the most infamous commodities investments, pork belly futures, is shorthand for "how to lose your nest egg in the wink of an eye."

But are commodities really that risky? A shortage of data has left that question unanswered. Until now. Using the most comprehensive data on commodities futures returns ever assembled, Wharton finance professor [Gary Gorton](#) and K. Geert Rouwenhorst, finance professor at the Yale School of Management, have reached a surprising conclusion: Commodities offer the same returns as investors are accustomed to receiving with stocks, which are typically viewed as safe enough for ordinary investors. "That was quite startling to many people around the world, both in academia and outside academia," Gorton said. "They thought it would be lower."

Commodities are, in fact, not as risky as stocks, according to Gorton and Rouwenhorst, who recently completed a paper on this topic titled, "Facts and Fantasies about Commodity Futures." Most important, commodities are "negatively correlated" with stocks and bonds, meaning their prices tend to rise when stock prices fall, and vice versa. This is largely because commodities tend to do well when inflation is high, while stocks and bonds do not.

That would make a commodities portfolio ideal for diversifying, or spreading risk among various types of investments. "When it's raining in the equity markets, the sun is shining in commodities futures," Gorton said. "On average, when one is going up, the other is going down....One safe thing that I would be willing to conclude from our study is that no institutional investor should have zero allocated to commodities futures." Small investors, too, might be wise to put some holdings into commodities futures, selecting from the handful of commodities mutual funds, or from commodities-holding exchange-traded funds soon coming to market, he added.

Many investors have been impressed with commodities' recent performance. The Dow Jones-AIG Commodities Index, which tracks futures contracts on 19 commodities, returned a stunning 21.36% in 2005, and over the past five years has produced average annual returns of nearly 12%.

Commodities are bought and sold in various ways. Day-by-day sales of commodities themselves are conducted on the spot market. Speculators can also trade commodities options, which give their owners the right, but not the obligation, to buy or sell a given amount of a commodity at a set price during a given period of days, weeks or months.

Gorton and Rouwenhorst focused on the multi-trillion-dollar futures markets. These involve contracts that commit the buyer and seller to trade a given volume of a commodity at a set price -- the futures price -- on a specific date, typically within three months. For example, on the New York Mercantile Exchange, a contract for light, sweet crude oil involves a 1,000-barrel transaction. A contract for frozen pork bellies traded on the Chicago Mercantile Exchange is an agreement to trade 40,000 pounds of bacon.

The first futures contracts covered stock in the Dutch East India Company in the 17th century. But modern commodities futures appear to have originated with Japanese rice contracts first traded in Osaka a century later.

Farmers and other commodities sellers use futures to lock in prices for crops and other commodities that are not yet ready for market, protecting themselves from the kind of price drops that come when supplies suddenly soar -- at harvest time, for example. Futures buyers, such as cereal makers or oil refiners, use the contracts to protect against price spikes.

Futures contracts also are traded among speculators, who hope contract prices will change as deadlines approach. If the spot price moves higher than the price in a futures contract, the contract's value will go up, since its owner could use the contract to buy the commodity at the lower price and then sell it at the higher one on the spot market. A futures contract is a bet on the movement of spot prices.

On the various commodities exchanges, contract prices are tracked moment-by-moment much the way stock prices are posted at stock exchanges. Many commodities futures traders have no intention of ever having physical possession of the underlying commodity. No cash changes hands when buyer and seller agree to a futures contract, and at that moment the contract's value is zero. However, during the trading day, the contract will rise in value if the spot price rises, or if traders come to think the spot price will rise in the future. The contract will fall in price if the opposite occurs.

At the end of the day, the contract's price change results in an automatic payment from one party's account to the other's, causing the contract's price to return to zero. The process is repeated on every trading day until the contract expires.

Futures investors do not make any money on spot-price changes that everyone expects, such as the rise in heating oil prices in winter. Expected changes are reflected in contract prices when the contracts are created, much the way an airliner's stock price today would reflect big ticket sales expected in next summer's vacation season.

Over long periods, the unexpected peaks and valleys in spot prices typically cancel one another out, so there is no way for a long-term investor to simply buy a variety of futures contracts and count on them rising in value from unexpected spot-price changes.

Traders are therefore left with two ways to make money. First, those who are talented or lucky may be able to time the market, anticipating spot-price changes others don't see. These would be like stock market traders who move in and out of specific stocks to exploit opportunities others haven't found. In theory, traders also can profit from any "risk premium" -- a compensation built into contract prices that pays them for the risk of not knowing for sure how spot prices will change. If a risk premium exists, an investor could make money with a strategy of owning a wide range of commodities futures for the long term and riding the entire market upward.

This is what stock market investors do when they own index-style mutual funds that hold a wide range of stocks for the long term, mirroring the broad market's gains. In the stock market, the risk premium has given long-term investors annual returns of about 5 percentage points above what they could make in completely safe U.S. Treasury bills.

Like Paying an Insurance Premium

But do commodities offer a risk premium? Until now, said Gorton, no one knew. Data was hard to get and "there was a perception that these markets are different from what they actually are." Research has been somewhat skimpy because commodities futures, which are difficult to trade, do not appeal to ordinary investors, he said. "For a long time it's been a bit of a ghetto."

In fact, many experts believed commodities offered no risk premium at all, Gorton

added. In effect, commodity futures trading would therefore be a zero-sum game, with the winners' gains offset by the losers' losses. In the stock market, in contrast, the average investor is a winner over time.

In commodities, a risk premium would be reflected in the difference between current futures prices -- the price at which the commodity would be traded under the contract -- and the spot price expected in the future. But why would the futures price be lower?

According to Gorton and Rouwenhorst, researchers as far back as the 1930s have noted that futures are essentially insurance contracts. A grain producer, for example, wants to lock in a future price, but a speculator will only commit to the contract if it lets him buy the grain for less than he expects to get when he turns around to sell it on the spot market at the contract's deadline. The difference is the speculator's expected profit. The grain producer commits to sell for less than he expects on the spot market because he eliminates the risk of getting less than he expects. This difference is like paying an insurance premium.

As an example, Gorton and Rouwenhorst describe a situation in which the spot price for oil is expected to be \$27 in three months. With a futures price set at \$25, the futures-contract investor would make a risk premium of \$2 a barrel if the price were \$27 in three months.

To measure the risk premium in the real world, the researchers built an index from data maintained by the Commodities Research Bureau, which has tracked futures contract prices since 1959. The index covered nearly 40 commodities contracts from aluminum to oats to zinc, traded from July 1959 through December 2004.

"What's new here is that, for the first time, we have a large data set of commodities futures prices," Gorton said. "While it's small by [stock market] standards, it's much, much larger than anything that has been studied before." The researchers then calculated annual returns for an investor who held \$1 in each contract. As contracts expired, new ones were acquired. The holdings were rebalanced every month to maintain an equal investment in each commodity.

The study found that investments in this futures index would have performed far better than investments in the commodities themselves, bought on the spot market. That extra return reflected the risk premium. Over the entire period, returns, with compounding, averaged 9.98% a year for the futures investment, versus 7.66% for an investment in the spot market. Both beat inflation, which averaged 4.13% a year.

The results show that returns on the futures over 45 years were virtually identical to those that could have been earned investing in the main stock-market index, the Standard & Poor's 500. The futures index beat the S&P 500 during the 1970s but trailed it in the 1990s. Commodities futures and stocks both beat bonds by a wide margin.

In addition, the risk premium on commodity futures was 5.23 percentage points a year, versus 5.65 percentage points, according to the study. "It was astounding to find that commodities futures have basically the same excess return" as stocks over no-risk T-bills, Gorton said. And yet commodities futures were less risky, with a standard deviation of 12.10 compared to 14.85 for stocks. A bigger standard deviation means an investment is more volatile, with wider swings up and down. And, as noted earlier, Gorton and Rouwenhorst found that commodities futures are negatively correlated with stocks and bonds, meaning that futures went up when the others fell, and vice versa (an effect that was more pronounced with longer holding periods).

Why have commodities futures offered stock-like returns despite this negative correlation? "The answer is we just don't know," Gorton said. "That will be the

subject for more research....We are compiling the futures prices back to the 1880s...
We are going to look at a longer data series just to confirm that what we found is
true."

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