



## The Economic Role of Hedgers and Speculators in the Commodity Futures Markets

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*This digest article briefly explains the economic role of hedgers and speculators in the commodity futures markets based on a review of both historical and empirically-grounded literature.*

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### Introduction

This article notes how the terms, “hedging” and “speculation,” are not precise. What futures markets accomplish is the specialization of risk-taking rather than the elimination of risk. In addition, this paper discusses how there is some empirical evidence to support the theory that speculative involvement *actually* reduces price volatility. The article also explains that even when commodity futures markets are viewed as “hedging” markets, there is still a vital role for speculators because there will not always be an even balance of short hedgers and long hedgers at any one time: speculators are needed to balance the market.

### Hedging as “Speculating on the ‘Basis’”

In discussing the economic role of hedgers and speculators in the commodity markets, one nuanced point to make straightaway is that the terms, “hedging” and “speculation,” are not precise, as developed by Cootner (1967) and discussed in Till (2012a, 2012b). For example, a commodity merchant who hedges inventories creates a “basis” position and is then subject to the volatility of the relationship between the spot price and the futures price of the commodity. The merchant is, in effect, speculating on the “basis.” The basis relationship tends to be more stable and predictable than the outright price of the commodity, which means that the merchant can confidently hold more commodity inventories than otherwise would be the case. What futures markets make possible is the specialization of risk-taking and not the elimination of risk.

### Speculation as a Risk-Bearing Specialization

Who would take the other side of the commercial hedger’s position? Answer: A speculator who specializes in that risk bearing. The speculator may be an expert in the term structure of a futures curve and would spread the position taken on from the commercial hedger against a futures contract in another maturity of the futures curve. Or the speculator may spread the position against a related commodity. Till and Eagleeye (2004, 2006) provided examples of both intra-market spreading and inter-market spreading, which arise from such risk-bearing.

Alternatively, the speculator may detect trends resulting from the impact of a commercial’s hedging activity, and be able to manage taking on an outright position from a commercial because the speculator has created a large portfolio of unrelated trades. Presumably, the speculator will be able to dampen the risk of an outright commodity position because of the diversification provided by other unrelated trades



in the speculator's portfolio. In this example, the speculator's risk-bearing specialization comes from the astute application of portfolio theory.

### Speculation's "Value to Society"

What then is the economic role of commodity speculation and its "value to society"? Ultimately, successful commodity speculation results from becoming an expert in risk bearing. This profession enables commercial entities to privately finance and hold more commodity inventories than otherwise would be the case because they can lay off the dangerously volatile commodity price risk to price-risk specialists. Those commercial entities can then focus on their area of specialty: the physical creation, handling, transformation, and transportation of the physical commodity.

Cootner (1961) wrote that in the absence of being able to hedge inventories, a commercial participant would not rationally hold "large inventories ... unless the expected price increase is greater than that which would be required to cover cash storage costs by an amount large enough to offset the additional risk involved."

If the existence of price-risk-bearing specialists ultimately enables more inventories to be created and held than otherwise would be the case, we would expect their existence to lead to the lessening of price volatility. To be clear, why would this be the case?

The more speculators there are, the more opportunity there is for commercial hedgers to find a natural other side for hedging prohibitively expensive inventories. This in turn means that more inventories can be economically held. Then with more inventories, if there is unexpected demand, one can draw from inventories to meet demand, rather than have prices spike higher to ration demand.

### Reduction of Volatility

There is some empirical evidence to support the theory that speculative involvement *actually* reduces price volatility.

For example, Professor David Jacks examined what happened to commodity-price volatility, across countries and commodities, before and after specific commodity-contract trading has been prohibited in the past. Jacks (2007) also examined commodity-price volatility before and after the establishment of futures markets, across time and across countries. Jacks' study included data from 1854 through 1990. He generally, but not always, found that commodity-price volatility was greater when there were *not* futures markets than when they existed, over 1-year, 3-year, and 5-year timeframes.

Irwin and Sanders (2011) noted that "[commodity] index positions [have] led to lower volatility in a statistical sense," when examining 12 agriculture markets and 2 energy futures markets from June 2006 to December 2009. Specifically, "... there is *mild* evidence of a negative relationship between index fund positions and the volatility of commodity futures prices, consistent with the traditional view that speculators reduce risk in the futures markets and therefore lower the cost of hedging." [Italics added.]



## Holbrook Working's Answer on How to Measure "Excessive Speculation"

The historical writings of Holbrook Working frequently provide insight and a sense of constancy in how to frame the ongoing debate on futures trading. Working was a Stanford University professor whose writings on the economic role of futures trading are considered fundamental to our present understanding of these markets. His work spanned the 1920s through the 1970s.

According to Working, the economic purpose served by commodity futures markets is to allow commercial participants to hedge prohibitively expensive inventories. The role of the speculator, then, is to take on and manage this risk. If one accepts this framework, then one does not see futures exchanges as casinos.

A U.S. federal agency (which preceded the CFTC) provided data that classified market participation as either hedging or speculation. With this data, one could construct ratios to see how much excess speculation (if any) there was over hedging needs. Holbrook Working created a simple ratio to do just that. This is Working's Speculative T index.

Sanders *et al.* (2008) defined the Working T index as follows:

$$T = 1 + SS / (HL + HS) \text{ if } (HS \geq HL)$$

or

$$T = 1 + SL / (HL + HS) \text{ if } (HL > HS)$$

where open interest held by speculators (non-commercials) and hedgers (commercials) is denoted as follows:

SS = Speculation, Short

HL = Hedging, Long

SL = Speculation, Long

HS = Hedging, Short"

Some explanation is in order to make this statistic intuitive. The denominator is the total amount of futures open interest due to hedging activity. If the amount of short hedging is greater than the amount of long hedging, then speculative longs are needed to balance the market; and technically, speculative shorts are not required by hedgers. Any surplus of speculative short positions would thereby need to be balanced by additional speculative long positions. Technically, then the speculative short positions would appear to be superfluous or perhaps even "excessive." The Speculative T index measures the excess of speculative positions beyond what is technically needed to balance commercial needs, and this excess is measured relative to commercial open interest.

Sanders *et al.* (2008) explained, "Working is careful to point out that what may be 'technically an excess of speculation is economically necessary' for a well-functioning market."



For the Speculative T index, are value(s) greater than 1 considered excessive?

The following are average T indices from historical agricultural studies, excerpted from Sanders *et al.* (2008):

- 1.21 (calculated from 1954-1958 data);
- 1.22 (calculated from 1950-1965 data);
- 1.26-to-1.68 (calculated from 1947-1971 data); and
- 1.155-to-1.411 (calculated from 1972-1977 data).

Evidently, the concern in past historical studies was the *inadequacy* of speculation in the agricultural futures markets, so these historical T indices would therefore *not* be considered indicative of excessive speculation.

Interestingly, the past historical studies referenced in Sanders *et al.* (2008) contradict the assertion that well-functioning commodity futures markets should necessarily relegate speculative participation to a residual role. Perhaps if one sees commodity speculators as a heterogeneous set of risk-bearing specialists, then one would understand why it would not be beneficial to force speculative participation into a tertiary role.

Sanders *et al.* (2008) studied whether there was excessive speculation in the agricultural futures markets, updating previous studies that began with Working (1960), and using Working's T index. After calculating Working's T index across agricultural futures markets, these economists found no pervasive evidence that then-prevalent speculative levels were in excess of those recorded historically for agricultural futures markets, even after accounting for index trader positions.

In the Fall of 2009, the CFTC released a dataset, which facilitated further analysis of the speculative excess hypothesis across commodity markets. Specifically, on October 20, 2009, the CFTC released three years of enhanced market-participant data for 22 commodity futures markets in the "Disaggregated Commitments of Traders" (DCOT) report. The release of this data was important because one could then evaluate whether the balance of outright position-taking in the U.S. exchange-traded *crude oil* derivatives markets had been excessive relative to hedging demand during the previous three years. One could do so by calculating T indices for the U.S. crude oil futures market.

Using this data and with some notable caveats, one could conclude that speculative position-taking in the U.S. oil futures markets did not appear excessive when compared to the scale of commercial hedging at the time, according to Till (2009). One has to be careful with how strongly one states this paper's conclusions since, for example, the paper did not examine whether there was excessive speculation in the oil markets in other venues besides the U.S. oil futures markets.



## Conclusion

Public scrutiny of, and skepticism about, commodity futures markets has had a long tradition in the United States, dating back to (at least) the last great era of globalization in the 1890s. As a result, it will likely always be useful to be reminded about the economic function of commodity futures markets, as public debate periodically flares up regarding these markets.

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### **Keywords**

Hedging, speculation, price volatility, commodity futures.