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# CATPRN

Canadian Agricultural Trade Policy And Competitiveness Research Network

## **COMMODITY PRICE VOLATILITY: THE IMPACT OF COMMODITY INDEX TRADERS**

**CATPRN Trade Policy Brief 2011-04**

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## Introduction

The dramatic rise in crop prices that occurred in the fall of 2006 was the beginning of an unprecedented level of volatility in agricultural markets. Corn prices for most of this decade have fluctuated within a range of US\$0.50 per bushel around an average price in the low US\$2 range. However, corn prices on the Chicago Board of Trade (CBOT) doubled within a six week period beginning in September 2006 and then doubled again by the spring of 2008. Corn prices then fell back to around US\$4 per bushel. Similar price spikes occurred in the wheat market. The recent rise of wheat and corn prices has revived memories of the commodity boom of 2006-2008.

The dramatic price changes evident in the commodity markets have consequences for both consumers and producers. The sudden increase in major crop prices translated into higher food prices in developing countries and spawned concerns over the “silent tsunami” that was spreading over the less fortunate who could not afford adequate nutrition. While the apparent higher average prices are a benefit to producers, the corresponding volatility has imposed greater demands on price risk management for farmers and grain handlers. The two most important purposes of derivative markets are risk shifting and price discovery. However, the “unusual” commodity market volatility has created uncertainty around the accuracy of prices and in the potential loss of the major price shifting tool producers and the industry have – just when they need it most. Higher volatility increases hedging costs associated with financing margin calls, and the increases have been large enough to force the closure of some small and mid-sized elevators. Other grain elevators are coping with the volatility and hedging costs by refusing to buy crops in advance from farmers, barring the most common way farmers lock in prices. In an attempt to determine appropriate policies to deal with the consequences of the dramatic price swings to both consumers and producers, answers are being sought to the questions surrounding the causes for price movements in the agricultural commodity markets.

A number of factors contributed to the rise in prices and the degree of volatility experienced in 2007-2008. The stock-to-use ratio had fallen to historic lows for most crops as production levels had flattened over the years in response to continued low prices. Poor harvests then occurred in some major exporting countries in 2006-2007 and this reduction in supply happened alongside several demand-side shifts. The US dollar fell relative to other currencies increasing the purchasing power of foreign commodity buyers. These buyers were increasingly from countries such as China and India which were experiencing GDP growth that was several times the global average. In addition, renewable fuel mandates, particularly in the US, represented a new demand source that now accounts for over one-third of the US corn crop.

Speculators were and continue to be a popular target for explaining the price swings experienced in the commodity markets. The increase in the number of contracts traded mirrors the increase in price and is given by some as evidence that the activity has pushed prices above that implied by the underlying supply and demand fundamentals and increased the price volatility. It became common for political leaders and the media to argue that commodity index traders (CITs) and other large institutional investors exerted a destabilizing influence on prices, particularly after a submission by William Masters to a US Senate sub-committee in the summer of 2008. Subsequently, there have been demands for regulatory intervention to lessen the

impacts of speculative trading on the assumption that the actions of index traders destabilize commodity prices.

The debate over the role of speculators on commodity prices was renewed in the summer of 2010. An OECD report by Irwin and Sanders released early in the summer dismissed the impact of index fund investments on commodity markets. While at the same time, other observers claim the doubling of wheat prices in July 2010 is partially due to the role of speculators and called for policies to dampen the volatility in agricultural markets.

The purpose of this brief is to review the impacts of commodity index traders on prices in agricultural commodity futures markets. Specifically, we aim to answer the following questions: 1) how do commodity index traders operate; 2) what are the arguments of those claiming speculators have influenced commodity and in some cases food prices; 3) what are the counter-arguments made by those who claim prices have moved due to underlying market fundamentals and not from speculator activity; and, 4) what are the implications of the presence of commodity index traders for the risk management and price discovery role of the futures market?

## **The Role of Speculators**

The futures market is a commodity exchange where futures contracts for buying and selling commodities for future delivery are traded. The futures exchange offers standardized contracts on set amounts of many commodities. In the vast majority of cases, traders of agricultural commodity futures contracts do not take physical delivery of the commodity being traded on the futures market. The primary purpose of the futures market is to establish prices for commodities for delivery at specified times in the future, and to enable commercial market participants to protect their business activities against the risk of future price fluctuations. In the futures market, the three major types of traders are: 1) commercial traders or hedgers who use futures to reduce the risk of future unfavorable changes in the price of commodities that they handle; 2) non-commercial traders or speculators who aim to benefit from future price movements; and, 3) arbitrageurs who attempt to profit by locking into more than one market.

Speculators have been characterized by many as both ‘bad’ and ‘good’ when market prices are either too low or too high. Markets are efficient if all available information is embedded into the price, which subsequently then follows a random walk. In well-functioning capital markets, rational speculators enhance market efficiency. The literature identifies two types of speculators – rational traders and noise traders. Rational or informed speculators base trading on market fundamentals and are likely to stabilize markets by reducing excess price fluctuations. Noise or uninformed traders are investors who irrationally trade noise as if it were information pertinent to the value of the assets. Noise traders can drive a wedge between market prices and fundamental values. According to this classification, speculative trading can be either stabilizing or destabilizing depending on which type of investors dominate the commodity market. While the efficient market hypothesis assumes that all trades are informed so that market fundamentals determine commodity prices, the information content of trades only become evident over time and uninformed trading based on trends in prices can significantly influence prices.

## *Commodity Index Speculators*

The traditional approach to investing in a commodity market was through the purchase of a contract on a futures market like the Chicago Board of Trade. The volatility and margin call risks meant that such an investment was made primarily by hedgers or traditional speculators and not ordinary, risk-averse investors. The development of financial instruments, particularly commodity index funds, created a vehicle for individuals and institutions to readily invest in these markets. A new category of trader, commodity index speculators (including pension and endowment funds), have been created and are now a significant part of futures markets.

Commodity index traders (CITs) are institutional investors engaged in commodities futures trading strategies that seek to replicate one of the major commodities indices by mechanically following that index's methodology. Commodity indexes are derivatives that allow institutional investors to invest in a basket of commodities, where funds are not directly traded on futures exchange. CITs consider commodity futures as an asset class, comparable to equities, bonds, real estate and emerging market assets. CITs take positions on commodities as a group based on the risk-return properties of portfolios containing commodity futures relative to those confined to traditional asset classes. CITs are passive traders who take on price risk, and are buyers (with a transparent buy and hold strategy). The participation by active (informed) traders and noise traders provides information about the future returns of an asset class, whereas the participation by passive investors should have no predictive power.

As opposed to traditional speculators, index traders buy exposure to commodities in futures markets and maintain their position through pre-specified rolling strategies - buy and hold. Index funds provide a mechanism for the average investor to hold a position in the commodity market. Commodity index traders seek exposure to commodities through passive long-term, long-only investment in commodity indexes. Passively managed investments can be attractive to institutional investors with a longer-term investment horizon, such as pension funds.

The amount of money invested in commodity index funds has risen from \$13 billion at the end of 2003 to \$260 billion in March 2008. In terms of crop markets specifically, Masters noted that index speculators purchased over 2 billion bushels of corn contracts on the CBOT in a 5 year period beginning in 2003. Total investment in commodity index funds dropped slightly in 2009 to approximately \$240 billion due to lower commodity prices. Although this amount is approximately 1% of the global value of pension and sovereign wealth funds, it is large relative to the size of commodity markets. The next question is what impacts did this "new" money have on commodity markets?

### **Index Funds Created a Price Bubble**

The correlation between the value invested by commodity index funds (CITs) and the increase in commodity futures prices is indisputable. One group of CIT critics argues that the large inflow of funds into commodity markets by index investors caused prices to rise higher than justified by economic fundamentals. These critics contend the new money became the driving force in the market and created a price bubble, as opposed to the traditional view in which commercial hedgers determine the volume of activity and speculators follow.

The concern over CITs was ignited in part to the submission by Michael Masters to the US Senate Committee on Homeland Security and Government Affairs in July 2008. Masters noted that while traditional speculators have always been an integral part of the commodity futures market, index speculators are a relatively new component that entered after the stock market fall of 2002. As Masters testified and as discussed in the previous section, index speculators buy futures and roll their positions forward by buying calendar spreads in contrast to traditional speculators who buy and sell future positions. The “virtual hoarding” by CITs represented a new demand shock that decreased market liquidity rather than enhanced it as with traditional speculators. As commodity prices rise, the subsequent allocation to a commodity futures index increases thereby accelerating the rate of price increase. Thus, investors betting on high prices became a self-fulfilling prophecy according to Masters.

Others suggested that the funds flowing into commodity markets through CITs and others represented not only a new demand but one that was too large relative to the size of the market. They claimed that the effect of taking a long position and continually rolling the hedge forward created a “synthetic” long position that was balanced against short positions held by commercial participants holding actual inventories of the commodity. As a result, the “synthetic” buying pressure relative to the actual stocks of the commodity pushes up prices in the short-run.

### **Index Funds Did Not Create a Price Bubble**

The view that the new money flowing into commodity futures markets from CITs and other investors drove prices upward is countered by a group of economists who claim there is no causal link between commodity trading activity and futures prices. The lack of a link is based on four counter arguments: 1) physical inventories are not held by index investors; 2) new money or new demand for contracts are met by new supply; 3) index funds will sell rather than increase investment levels during rising prices acting to stabilize futures prices; and 4) the trading by CITs is predictable rather than noise trading that could possibly influence price away from fundamentals.

The first counter argument against the view that index funds fueled the price boom is that virtual hoarding does not exist. Futures markets trade contracts for buying and selling commodities for future delivery and rarely involve dealing with actual physical goods. In order to impact cash prices, the CITs must take delivery of the good after letting their long position contract expire and then hold these physical inventories off the market. While the Hunt Brothers did so a generation ago in the silver market, there is no evidence that CITs have taken possession of commodities and thus affected the cash price through hoarding.

A second argument is that the new demand for futures contracts by CITs can be met by a new supply of contracts. Unlike the supply of the actual physical commodity, there is no limit on the number of futures contracts that can be created. The futures market is a zero-sum game so for every long (or short position), a corresponding short (or long) position is established. Consequently, if the long positions of the CITs represent a new demand, the short positions of the same contracts represent the new supply. This new supply does not require the inducement

of a higher price. Since futures markets are zero-sum games, the money inflows will not directly impact prices.

Irwin, Sanders and Merrin suggest that the passive investment strategy by CITs stabilizes the market rather than creating bubbles. Masters along with others argue that index funds will invest more in commodity markets as prices rise and thus the investment is a self-fulfilling prophesy. In contrast, Irwin claims that CITs invest a certain percentage of their portfolio in commodities. Higher prices will raise index values, and thus cause the CITs to sell some of their positions to reduce the percentage back to the desired allocation. The selling during times of high prices thereby acts to reduce prices and stabilize the market.

A final argument revolves around the predictable nature of CIT trading. As discussed earlier, trading must be unpredictable for any group to consistently push prices away from its market equilibrium. Index funds follow the same passive investment strategy and do not attempt to hide their current positions or their next move, thus it is highly unlikely that other large traders would allow index funds to push future prices away from fundamental values for long when trades are easily anticipated.

## **Conclusions and Implications<sup>1</sup>**

Over the years, critics have argued that futures market prices have been either too low or too high. Speculators have often been the target for the wrath of those feeling the futures price does not properly reflect market fundamentals. Recently, the criticism has been vented toward a new type of speculator that has been blamed for the dramatic changes in agricultural commodity prices experienced over the last several years. Commodity index traders (CITs) and other large institutional traders are commonly accused of exerting a destabilizing influence on commodity prices. The intensity of the debate over the role of CITs appeared to wane with the reduction in commodity prices since 2008 but the recent release of a well-publicized OECD report on the issue by Irwin and Sanders along with the doubling of wheat prices along with claims that the rise was due to speculative activity has renewed the debate.

The contrasting opinions still existing highlight the lack of credible consensus that has formed on the issue of causation between index fund investments in futures markets and commodity prices. One side is the argument that the level of investment by CITs tracks the changes in prices. The virtual hoarding generated by this activity has pushed up prices and that the revolving long positions held by these institutional investors puts constant upward pressure on prices. The counter argument is that hoarding cannot occur with futures contracts as new supply is automatically created to meet any new demand. This group of analysts claim that the passive and transparent investment strategy by CITs, without market power, should stabilize prices. It is highly unlikely that CITs would push futures prices away from fundamental values for long when their trades are so easily anticipated.

While both sides agree that there is a correlation between CIT activity and commodity futures prices, the direct of causation is the point of contention. The empirical evidence is mixed with very limited support for the view that higher commodity prices draws in investment activity

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<sup>1</sup> Weersink and Hailu contains a review of the empirical evidence from which these conclusions follow.

by index funds. However, a recent study by Gilbert appears to partially reconcile the two camps by suggesting commodity index funds are a means by which a common, albeit small, demand side shifter across all markets (i.e. GDP growth in China and India) can have a large effect across those markets. There is more empirical support for the claim that CITs are associated with greater market volatility. Khara in a Brookings report argues it is unpredictable price volatility that is the real problem for producers, consumers and governments, not the level of prices.

The controversy over the effect of CITs has prompted the regulator of futures markets, the Commodity Futures Trading Commission (CFTC), to provide additional information on agricultural markets and to consider regulations on position limits, trading limits, and margins. If the CFTC decides to set new position limits for commodities of finite supply, this response may weaken the price discovery function of futures markets and this would not serve the public interest. Imposing a rigid, inflexible position limit, solely on U.S. futures trading, could cause those traders who seek commodity price exposure to shift to OTC or to foreign exchanges. If price discovery shifts to the OTC markets, it is more difficult for the CFTC to oversee.

Despite the controversies around the influence of CITs, one can conclude that the rise in futures volatility will have implications on the hedging decisions of commercials. For example, if hedgers are concerned about mark-to-market risk and basis risk, they tend to hold a smaller futures position. At the same time, higher volatility on spot commodity markets calls for a need for price risk management. However, during the dramatic commodity futures price rise in the spring of 2009, the common price risk tool of forward contracting was not available to producers as some grain elevators refused to hedge a position associated with a guaranteed harvest price, to the farmer, in order to avoid the financial risks of large margin calls. Thus, an increase in commodity market volatility may lead to greater costs for managing risk: more costly insurance premiums, higher options premiums, and greater margins for hedging.

The research conducted to-date suggests commodity index traders had little to do in driving prices upward but are one of the reasons for the significant increase in market volatility over the last several years, but are not the sole cause. Demand growth associated with factors such as rising incomes in developing countries and increases in non-food uses like bioproducts, has resulted in edginess within agricultural markets. Tight stock to use ratios mean any increase in demand or reduction in supply can send prices suddenly higher. The most recent example is the July 2010 jump in wheat prices from the announcement of a decline in Russian supply. Volatile markets provide opportunities for arbitrageurs and speculative money will naturally flow into such a market. Kharas argues that price volatility attracts speculators to markets and it is incorrect to suggest that speculators cause price volatility. Restrictions on the level of such investment will reduce liquidity when markets are unstable and liquidity required. Rather than regulate markets, governments should consider enhancing the risk management skills and opportunities for commercial producers.

## References

Gilbert, C.L. 2009. "Commodity Speculation and Commodity Investment. Dipartimento di Economia, Università degli Studi di Trento. Discussion Paper No. 20.

Irwin, S. H. and D.R. Sanders. 2010. “The Impact of Index and Swap Funds on Commodity Futures Markets: Preliminary Results.” *OECD Food, Agriculture and Fisheries Working Papers*, No. 27, OECD Publishing. doi: 10.1787/5kmd40wl1t5f-en

Irwin, S.H., D.R. Sanders and R.P. Merrin. 2009. “Devil or Angel? The Role of Speculation in the Recent Commodity Price Boom (and Bust).” *Journal of Agricultural and Applied Economics*, 41(2):377-391.

Irwin, S.H. and B. R. Holt. 2004 The Impact of Large Hedge Fund and CTA Trading on Futures Market Volatility.” in *Commodity Trading Advisors: Risk, Performance Analysis and Selection*. Greg N. Gregoriou, Vassilios N. Karavas, Francois-Serge L’Habitant and Fabrice Rouah, eds, New York: John Wiley and Sons, Inc. pp. 151-182.

Kharas, H. 2011. Making Sense of Food Price Volatility. Brookings Institution. Washington,D.C. [http://www.brookings.edu/opinions/2011/0303\\_food\\_prices\\_kharas.aspx](http://www.brookings.edu/opinions/2011/0303_food_prices_kharas.aspx)

Masters, M.W. 2008. Testimony Before the Committee on Homeland Security and Government Affairs, U.S. Senate. Internet Site:  
[http://hsgac.senate.gov/public/\\_files/052008Masters.pdf](http://hsgac.senate.gov/public/_files/052008Masters.pdf) (Accessed December 8, 2009).