

The relevance of speculation

Food speculation is ubiquitous. Systemic benefits from risk sharing between farmers and financial speculators have to be weighed against the resulting high price volatility and the possible emergence of price bubbles. A new speculative strategy of index-oriented investments seems to be exacerbating recent upward price trends on the global food market. Adverse currency developments and local food speculation in the developing world are aggravating the plight of the poor.

Food speculation is by no means a new phenomenon. Already in biblical times, there was mention of the speculator who withholds corn – obviously in the hope of rising prices but much to the indignation of his fellow human beings (Proverbs 11.26). Furthermore, as harvest results are not predictable at the point of sowing, all participants in the grain trade have always been looking for ways and means to reduce the risk of adverse price changes. The most viable option is to agree upon guaranteed prices for future deliveries. This is the very essence of trading on the forward market – a commercial invention ascribed to ancient Greek mathematician Thales of Miletus. The institution of grain futures exchanges was introduced in Japan as early as in the seventeenth century. Since today's farmers, wholesalers, manufacturers, and financial institutions alike endeavour to anticipate price movements in their economic activities, speculating is not only a very old, but also a ubiquitous phenomenon on the food market – at least if we understand it in the way defined by John Maynard Keynes, one of the great economists of the twentieth century: as “forecasting the psychology of the market” (J. M. Keynes 1936: 161).

Dr Hans-Heinrich Bass
 Director, Institute for Transport and Development
 Bremen University of Applied Sciences
 Bremen, Germany
 bass@fbn.hs-bremen.de

Most recently, however, new participants from the finance industry have entered the grain futures market and their speculative activities seem to explain part of the current upward price trend on the global commodity market. This is the topic, which the present article focuses on.

■ Forwards and futures

While trade on spot markets is in physically existing commodities with immediate delivery of and payment for the product, trade on forward markets

is in rights to deliver or take delivery of commodities at guaranteed prices at a later point in time. Deals on the forward market may be either standardised or non-standardised. Contracts tailored to the volume and date of delivery (“forwards”) are agreed upon directly or via intermediaries between sellers and buyers and may be resold at any time before maturity. In this segment of the market – the “over the counter” trade (OTC) – the actual delivery of a

The Chicago Board of Trade, founded in 1848, is the world's most important commodities futures exchange (now part of the CEM group).



Photo: laif

commodity at a contract's maturity is no exception. In contrast, none of the market participants trading standardised contracts ("futures") on commodity futures exchanges is interested in the actual delivery of the commodity. Financial settlement is only required to make up for the difference between the price previously agreed upon and the actual spot market price at the time of the contract's maturity.

If a trader expects spot-market prices to rise, he will buy contracts today that guarantee him at the contract's maturity a supply at a lower price than the price he is expecting – he is entering a "long position". Vice versa, if he is expecting falling spot market prices, he will enter contracts guaranteeing him a higher than expected purchasing price for what he agrees to supply. He is entering a "short position". Whoever better predicts the "psychology of the market" can pocket a profit. This is why we may call these deals betting. If, for instance, Trader A has purchased the right to be supplied with a ton of wheat at 100 dollars while the actual spot market price at the contract's maturity turns out to be 110 dollars, Trader A is entitled to receive a payment of 10 dollars from the contract partner Trader B. For in order to really deliver, Trader B would have to purchase the wheat at 110 dollars on the spot market and sell it to Trader A at 100 dollars, which results in Trader B's loss of 10 dollars – equivalent to Trader B's cash settlement obligation. In this example, Trader A has won his bet.

Based on the motives for their transactions, three broad categories of market participants can be distinguished today: hedgers (rooted in the food industry, thus also called commercial traders), conventional financial speculators including arbitrageurs, and a relatively new type of index-oriented investors (both rooted in the finance industry). Data collected in Chicago, the world's largest food commodity futures exchange, offer some insight

into the size of the transactions of the different groups of traders – even if the data collection still exhibits methodological shortcomings and has only recently become reasonably comprehensive. According to these data, each of the three groups accounts for roughly one third of the market volume in grain futures.

■ Conventional players

Market participants from the food industry, either large producers or manufacturers, want to hedge risks from adverse spot-market price movements for their future physical deliveries and purchases. Conventional financial speculators, on the other hand, are attracted to the futures market by the prospects of profits in a game based on information, rumours, and calculations. Participants from both groups may hold net long positions or net short positions, based on their respective hopes and fears. However, as a group the hedgers usually hold net short positions, while the conventional speculators as a group usually hold net long positions. The conventional finance-industry speculators thus usually contribute to the functioning of the market by providing the necessary liquidity when taking the counter-positions to the hedgers. If, for instance, a farmer seeks to enter a short position at a given price, the deal will only work if someone else, no matter whether a manufacturer or a finance institution, enters a long position.

A particular sub-group within the conventional speculators are the arbitrageurs. Their strategy is to take advantage of minute price differentials between different futures exchanges (such as between Chicago and exchanges in Kansas City, Paris, or Dalian) or between futures of different maturities. As such, arbitrageurs perform the important role of integrating different markets, thus contributing to the efficiency of the system as a whole. In addition, however, it is this strategy



which transmits developments on the futures exchange to the spot markets.

■ Price fluctuations and bubbles

It is self-evident that gambling as well as herd behaviour among these market participants can trigger strong fluctuations of prices, including extreme peaks. Even price bubbles are possible, i. e. market situations in which "the price of an asset rises [for some time] above what appears to be its fundamental value" (N. G. Mankiw 2008: 194) – the latter usually understood to be a sort of average or normal value derived from "real" demand and supply factors. Both price bubbles and a high volatility can result in high profits for the traders – but also in high losses!

The development of a price bubble has to be understood as a self-enforcing process: For whatever reason, contracts are increasingly bought, which results in price increases and hence in potential profits from futures that have



Photo: J. Boethling

*The backdrop to speculations:
forecasting the psychology of the market.*

of pushing the upward trend among world food prices, which has now persisted for ten years. Readers of crime novels know that once a new suspect appears on the stage, his motive and opportunities have to be investigated. So what drives the index speculators to engage in activities on the grain futures markets? And are they capable of influencing food prices?

■ A new dimension of speculation

Index-oriented financial investors distribute their investment among different classes of assets that are weighted in analogy to a price index. The construction of indices is a common method in economics. For instance, in order to describe price developments for a group of commodities, an average price is synthesised which considers the prices for copper, mineral oil or wheat with certain weights (often according to their relevance in world trade). Index investors keep futures on different commodities in their portfolio according to the weights used in the index. When contracts reach maturity, they are sold in order to avoid actual delivery, but new contracts are then purchased in roughly the same volume to be represented in the portfolio according to the pre-defined proportion – insensitive to prices or market rumours. The process of swapping near-to-mature contracts for contracts due to be settled later is called rolling.

■ Motives for index-oriented investment

What are the motives of the index-oriented investors? *First*, demand for grain is growing worldwide, and the expansion of production can hardly keep pace with the increase in demand. Since the middle of the 1990s, the

world-market prices have therefore been increasing. This trend is set to continue over the next few years. Thus, it makes sense for investors to have assets in their portfolio that are going to increase in value in the medium term. However, since no financial investors wish to store grain, they do not engage on the spot markets but on the futures exchanges with rolling contracts (while in the case of precious metals financial investors may wish to own warehouse stocks). *Second*, the principle applies that you should not put all your eggs into one basket. It can be shown mathematically that the total profit is maximised if assets are diversified and the profits and losses from the individual asset classes develop independently of one another. In empirical studies, it has been demonstrated that this applies to commodities in relation to stocks or government bonds. *Third*, in the long run, nobody is smarter than the collective intelligence of all market participants – “the market”. This means that no fund manager will be able to outperform the average performance of an asset class by investing in particularly promising assets. Therefore, instead of an active fund management or *stock picking*, a passive replication of the market developments is recommended – such as always keeping shares in one’s portfolio according to their weight in an index. Owing to its non-selective behaviour, this investment strategy is referred to as the *random-walk strategy* (B. Malkiel).

■ Impacts of index-oriented investment

Because of the rolling process, index investors have virtually no impact on the liquidity on the futures exchange. Whenever the contracts in their portfolio reach maturity, they purchase new ones. This is, of course, beneficial to the commercial trader, since he has better chances to hedge against falling prices. If prices on the spot market fall, the hedger will nevertheless receive the

already been taken into a trader’s portfolio – which in turn attracts further buyers. As long as buyers can be found to join the bandwagon, the price of the future will continue to increase – until suspicion arises and somebody begins to sell. Then the crash sets in.

Such developments are probably the price that an economic system has to pay for the provision of financial-market based insurance against possible losses among the farmers. The participation of financial speculators in this market ensures the readiness of commercial farmers to produce food under essentially unpredictable conditions. The alternative would be a planned economy with price guarantees for the producers given by the state, as was the case in the European Economic Community (EEC) grain market regulations of the 1960s.

Very recently, however, a third category of market participants has emerged on the futures exchange – the index investors. They are suspected

higher guarantee price, while the index trader takes a loss. On the other hand, if the spot market price rises, the index trader will have won the bet, and the hedger will pay the insurance premium equivalent. Obviously, the index investor's strategy can only work if commodity prices continue to rise more often than they fall, i.e. if they are following an upward trend – as they have done over the last ten years.

In sum: The conventional speculators enter both short and long positions and can thus reinforce both price *fluctuations* and price bubbles on the futures market. Leaving aside portfolio corrections, the index speculators only enter long positions and enforce an already existing upward *trend* in prices, as regardless of the price a large demand for futures exists. The higher the commodities prices rise and the longer lasting the trend is, the more investors will join the bandwagon.

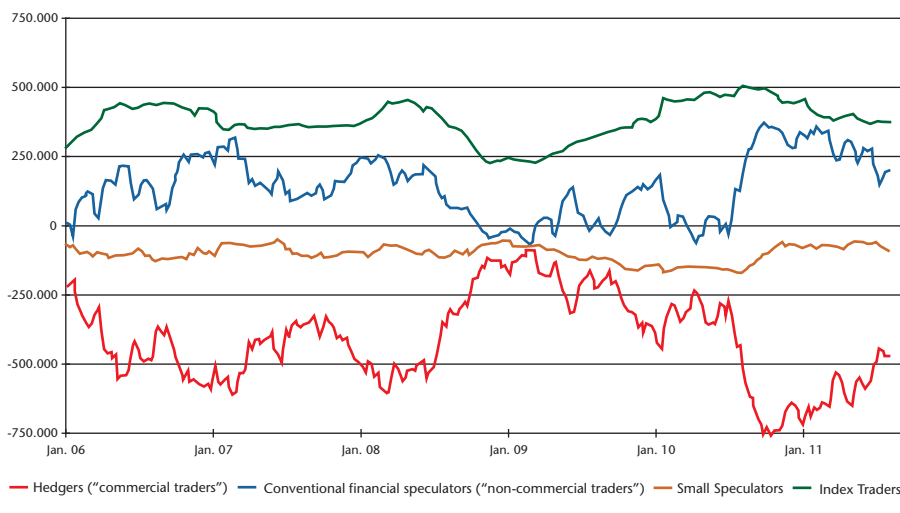
■ A global saving glut

Index-oriented investor behaviour has been made possible through the creation of new investment instruments in the course of the worldwide liberalisation of the financial markets: Exchange Traded Commodities (since 2006), Exchange Traded Funds (since 1993), and commodities-based Investment Certificates (since the 1990s). With these instruments, capital can be accumulated and invested in commodities markets – either by the funds themselves or by the financial market actors who have specialised in trading risks of different classes – the swap traders (another sub-category of conventional speculators).

As a *saving glut* (B. Bernanke) has emerged in recent years in both the high-income countries and the emerging economies, such as China, yields of low-risk government bonds are now

hardly above the rate of inflation. Large and small investors alike look for more profitable investment options, and an increasing amount of money is directed to index speculation. Moreover, in the wake of the 2009 financial crisis, the global market has been flooded by central-bank money available virtually free of charge – mainly to restore inter-bank lending. Financial investors, however, have been seeking profitable investments for this easily available money. In addition to nourishing a new bubble on the stock market (the bursting of which we experienced in late summer 2011), a flight into tangible assets such as metals and real estate had set in. This again constitutes a self-fulfilling prophecy: For not only can rising commodity prices result in a monetary inflation, but they can also lead to deteriorating profits from commodity-processing manufacturing industries. Thus, incentives arise to redeploy capital to financial investment in commodities (futures or, in the case of metals: real stocks), the price of which in turn continues to rise.

Net positions in corn futures (à 5,000 bushel) held by different groups of traders, Chicago Board of Trade, January 2006 to August 2011 (weekly data)



Positive values: long positions, negative values: short positions.
 Data source: CFTC, <http://www.cftc.gov/MarketReports/CommitmentsofTraders/HistoricalCompressed/index.htm>
 [01. September 2011]. Diagram: author's own design.

This diagram shows:

- 1) By definition, the net values of all groups cancel each other out since there is a corresponding short position on the market for each long position that has been entered.
- 2) The counter-position to the hedgers (who, by definition, also hold physical stocks or wish to purchase them, the price of which they are hedging by trading in futures) is assumed by traditional speculators *and* index speculators.
- 3) While the hedgers and the traditional speculators are mirror images of one another (and both sides could trade with reversed signs in net values, see early 2009) and their positions are also subject to severe fluctuations, the index speculators maintain a virtually constant, high net long position.

■ Transmission mechanisms: From futures to spot markets

Finally, an upward trend on the futures market is transmitted to the spot market by the activity of the arbitrageurs. The reason is obvious: With a high price for the next due wheat contract and a low price on the wheat spot market, an arbitrageur could stock up on cheap wheat from the spot market and offer to fulfil his future contract with this delivery. The spot market suppliers will anticipate this rising demand and for their part increase prices.

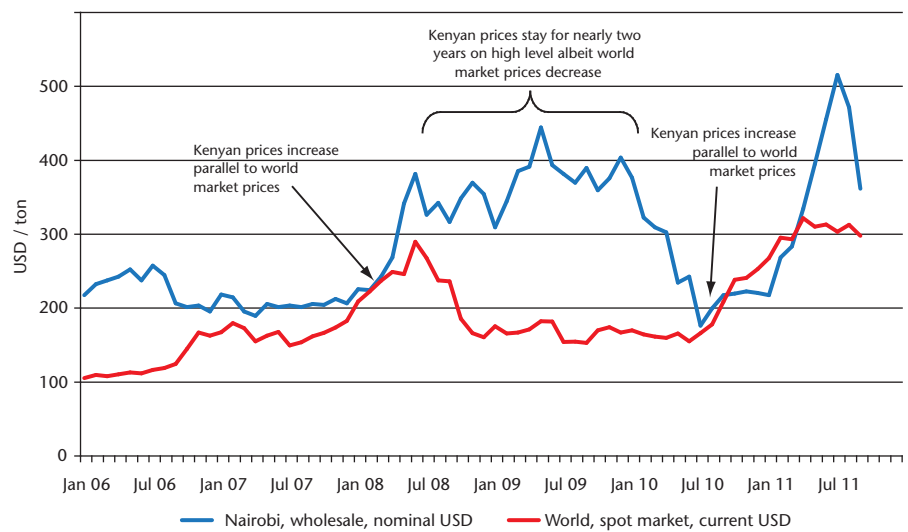
It is this international spot market for grain where food-importing countries replenish their supplies. With increasing international spot market prices, import prices will usually also increase. As, however, price quotation on the world market for grain is in US-dollars, import price changes may be cushioned or amplified by the develop-

ment of the value of a country's currency. An upvaluation vis-à-vis the US dollar – such as that experienced by the Euro-linked West and Central African CFA-Franc during the recent global food price bubble – helps, while other countries – such as Haiti – also had to accept adverse developments from the foreign exchange market.

■ Speculation in the developing world

Food import quantities in many developing countries are still relatively small in comparison to overall consumption – due to a high degree of subsistence farming and a still low degree of urbanisation. Nevertheless, increases in import prices are often rapidly transferred across the board to the national markets – quite contrary to high-income countries, where the vicissitudes of the world market prices for grain are seldom really felt by the consumers. One reason for this is that price elasticity of demand for food in developing countries is very low: A day-labourer's family in Africa that even in normal times has to spend two thirds and more of its meagre income on *mealie pap* (the common maize porridge) cannot reduce its food consumption further without going hungry. If market prices increase, the family will therefore attempt to acquire the usual amount of food at literally any cost and save elsewhere – on medicine or on school fees – or run into debt. The low price sensitivity of demand on

Maize: World market prices and wholesale prices in Nairobi / Kenya, US dollar (USD) per ton, 2006–2011



Data sources: <http://www.fao.org/giews/pricetool2/> (for Nairobi wholesale prices) and <http://databank.worldbank.org/ddp/> (for world market prices) [17. October 2011].
Diagram: author's own design.

the border between malnutrition and outright hunger enables suppliers to enforce price increases on local markets.

This effect is aggravated by three factors. *First*, peasants in developing countries usually have a low marketing rate. Supply cannot be rapidly enlarged; it is rather price-insensitive. In addition, peasants often have to sell their surpluses immediately after harvest in order to allow for their monetary expenditures – they usually cannot speculate and wait for higher prices. *Secondly*, there are just a small number of importers and wholesalers in most developing countries, i.e. the market is oligopolistic at this stage of the supply chain. Not only do whole-

salers have the opportunity to purchase at cheap prices immediately after harvest and sell later at much higher prices, agreements between the few wholesalers are easy to arrive at, too. This leads to asymmetric local price reactions to the international market developments: An increase in import prices is immediately passed on to the end consumer while decreases are delayed (example: see diagram above). *Thirdly*, local food markets are poorly integrated. Neither goods nor price information flows easily between various locations. Transport bottlenecks and unfavourable storage facilities result in considerable price differences between markets but also allow for large profits from arbitrage.

Zusammenfassung

An den Getreideterminbörsen werden Garantieprieße für fiktive künftige Lieferungen vereinbart – als Wettgeschäfte. Auf Terminbörsen werden aber auch Kapitalanlagen getätigt – das indexorientierte Investment. Dieses reagiert auf einen steigenden Preistrend bei Nahrungsmitteln – und verstärkt diesen. Intensive Preisschwankungen sowie Preisblasen sind weitere mögliche Auswirkungen eines individuell durchaus rationalen spekulativen Verhaltens von Marktakteuren. Preisentwicklungen an den Terminbörsen werden häufig auf die realen Märkte übertragen, nicht zuletzt über die

Importpreise auch auf nahrungsmittelimportierende Niedrigeinkommensländer. Verschärfend kommen hier Auswirkungen lokaler Spekulation hinzu.

Resumen

En las transacciones a futuro de las bolsas de cereales, se acuerdan precios garantizados para suministros ficticios a futuro... como si se tratara de apuestas. Pero en los mercados de futuros, se comercian también activos de capital, lo cual se conoce como inversiones basadas en índices. Estas últimas reaccionan frente a la tendencia al alza en los niveles de los precios de

alimentos – y actúan como refuerzo de la corriente. Las fuertes fluctuaciones y las burbujas de precios constituyen otros posibles impactos de lo que individualmente podría considerarse como un comportamiento especulativo perfectamente racional por parte de los actores individuales del mercado. La evolución de los precios en los mercados de futuros a menudo se extiende luego a los mercados reales, también a través de los precios de las importaciones y las compras de alimentos que efectúan los países de bajos ingresos en el extranjero. Los efectos de la especulación local agravan la situación.