

Broken markets

How financial market regulation can help prevent another global food crisis



By Murray Worthy

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About the World Development Movement

The World Development Movement (WDM) campaigns for a world without poverty and injustice. We work in solidarity with activists around the world to tackle the causes of poverty. We research and promote positive alternatives which put the rights of poor communities before the interest of big business. WDM is a democratic membership organisation of individuals and local groups.

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Cover image: Traders at the Chicago Mercantile Exchange
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Contents

Executive summary	5
1. Introduction	8
2. The urgent need for action	10
3. A financial takeover: how speculation has taken hold	12
3.1 Financial domination	12
3.2 Massive passives	13
3.3 Active speculators	14
3.4 'Dark markets': over-the-counter trading	16
4. Broken markets: the effects of excessive speculation	18
4.1 Supply and demand?	20
4.2 How index funds cause price inflation	20
4.3 Oil, metals and food: price movements of unrelated commodities	21
4.4 Herding upwards	21
4.5 Persistence of bubbles	23
4.6 When rain becomes a flood: damaging liquidity	24
4.7 Forcing hedgers out of the market	24
4.8 Commercial speculators and opaque exchanges	25
5. How futures markets change the price of food	26
5.1 Great expectations	28
5.2 Physical commodity contracts	29
5.3 Arbitrage	29
6. What else is causing food prices to rise?	31
7. Fixing broken markets	32
7.1 Transparency: exchange trading and position reporting	32
7.2 Controlling speculation: position limits	34
7.3 International action	36
8. Conclusions	38
Glossary	40
References	42

Graphs

1. Food price index 1990-2011	6
2. Market share of hedgers and speculators in the Chicago wheat futures market	13
3. Financial holdings in agricultural commodity derivative markets 2006-2011	14
4. Maize supply, demand and price 1997-2011	27
5. Wheat supply, demand and price 1997-2011	27

Boxes

1. Hedgers and speculators	8
2. Futures exchanges	15
3. Understanding derivatives	17
4. Price discovery	19
5. What about commodities without futures markets?	29

broken markets

Executive summary

“Enormous amounts of capital are flooding these markets, causing sudden food price spikes that can be lethal for low-income families in developing countries. Increased volatility caused by the influx of ‘hot money’ into and out of commodity markets is also causing havoc for farmers, who cannot predict what price their crops will command from one month to the next”¹

Statement by over 100 civil society organisations, including Focus on the Global South, Africa Development Interchange Network and Alianza Mexicana por la Autodeterminación de los Pueblos

The world is facing a global food price crisis. In 2008 food prices reached record levels, rising 80 per cent in 18 months, pushing the total number of people going hungry to over 1 billion.² Following this peak food prices rapidly declined. However since 2009 the cost of food has been climbing again on global markets, with food prices reaching record highs once again in early 2011.³ Many commentators expect food prices to continue to rise, threatening the lives and livelihoods of millions of people.

This huge increase in the cost of food and a sharp increase in food price volatility over recent years have triggered a global debate on the causes and solutions to this crisis. Some factors are widely agreed to have had an impact on food prices, such as declining crop yields as a result of climate change, the impact of growing demand for biofuels and the long term neglect of investment in agriculture by governments around the world.

The role of financial speculation in contributing to this crisis has been much more controversial. Many have argued that the huge increase in financial participation in commodity derivative markets has played a central role, fuelling price inflation and increasing price volatility. In the UK, the World Development Movement has played a pioneering role in drawing attention to the impacts of financial speculation. Our 2010 report *The Great Hunger Lottery* introduced the issue to the UK public, highlighting the role of banks and other financial speculators in pushing up the price of food during the last food crisis, prompting significant debate.

Some commentators have questioned the very premise that financial speculation can affect the price of food. Others, proponents of 'efficient market theory', have argued that rather than contributing to food price rises, financial speculation stabilises food prices.

This debate is not just one of abstract financial market theory. In the wake of the financial crisis and in the context of a looming global food crisis we are faced with a unique political opportunity. The US, the European Union (EU) and the G20 are all considering rules to regulate commodity markets, to ensure their effective functioning and curb excessive speculation. This report argues that these reforms are urgently needed to prevent a global food price crisis driving millions more into hunger and poverty throughout the global south.

Broken Markets seeks to counter the arguments put forward by those sceptical of the influence of financial speculation. It shows how financial speculation has boomed, turning commodity derivatives into just another asset class for investors, distorting and undermining the effective functioning of agricultural markets. It shows how these changes in the financial markets translate into changes in the price of food, and the devastating impact this has had on the world's poorest people. It concludes by recommending urgent action to introduce new rules to limit the influence of financial speculators and bring transparency and stability to these out of control markets.

Graph 1.

Food price index 1990-2011⁴



Broken Markets reveals how financial speculation has overwhelmed commodity markets once designed as a tool to manage risk. It finds that:

- Financial speculators now dominate the market, holding over 60 per cent of some markets compared to just 12 per cent 15 years ago.
- In the last 5 years alone, the total assets of financial speculators in these markets have nearly doubled from \$65 billion in 2006 to \$126 billion in 2011. This money is purely speculative, with none of it being invested in agriculture, yet it is now 20 times more than the total amount of aid money given globally for agriculture.
- The nature of traders in the market has changed with the introduction of commodity index funds, high frequency and algorithmic trading and an enormous growth in opaque, deregulated 'over-the-counter' trading.

This financial takeover of commodity markets has effectively broken them, undermining their ability to fulfil their basic intended functions. Instead, the huge growth of financial speculation has:

- Led to prices no longer being driven by supply and demand for food, but by the sentiments of financial speculators and the performance of their other investments.
- Created huge inflationary pressure in the market, forcing food prices up.
- Increased herding and price volatility.
- Caused the prices of unrelated commodities to move together.

The consequences have been devastating. In the last six months of 2010 alone, 44 million people were pushed into extreme poverty by rising food prices, equivalent to almost two in every three people in the UK. According to some estimates, as many as 1.3 billion people currently go hungry. Over 16 per cent of people in developing countries and one third of the population in Sub-Saharan Africa do not have enough food. The price of food for households in developing countries is now 55 per cent higher than it was just four years ago.

Rising food prices have impacts beyond hunger. Increased food prices also force people to eat less fruit, vegetables, dairy and meat in order to afford staple foods; reduce any savings, sell assets or take out loans; and reduce spending on 'luxuries' such as healthcare, education or family planning. Rising prices also have a disproportionate impact on women.

Richer countries are also being hit hard by rising food prices. In the UK, food price inflation in June 2011 reached 6.9 per cent, increasing the average annual household food bill by £260 and forcing up overall inflation.

Effective regulation can tackle excessive financial speculation and prevent it from driving food prices higher. *Broken Markets* calls on regulators in the US, at the G20 and in the EU to introduce:

- **Market transparency** – Moving trading of derivatives from deregulated 'over-the-counter' (OTC) markets onto well regulated public exchanges, similar to the stock market, and introducing 'position reporting' so that regulators and analysts can properly assess the functioning of the markets.
- **Position limits** – Strict limits are needed on the amount of the market that can be held by individual traders and by financial speculators as a whole, to prevent them from overwhelming the markets. Based on analysis of data from US markets, financial speculation could be limited to as little as 25 per cent of the market.

Clear, hard rules are required to control financial speculation and to help prevent another global food crisis. The policies of the UK government and others who oppose effective regulation risk condemning millions to a future of hunger and poverty. Regulators should seize this unique opportunity to tackle the dominance of financial speculators and contribute to ensuring fairer and more stable food prices for consumers throughout the world.

1. Introduction

“The impact of financial speculation on food prices is now widely recognised, and this needs to be subject to control without delay.”⁵

Olivier De Schutter, UN special rapporteur on the right to food

Food is a fundamental human right and essential to our survival. Yet many are unaware of the powerful position that financial markets have come to hold in the global food system. Alongside markets for trading food (physical markets), financial markets for futures and other derivatives play a central role in setting the prices of the world’s food (see section 5).

Futures markets were originally developed to help those involved in producing food to manage their risk. Food producers and other commercial participants involved in the supply chain are inherently exposed to the risk of fluctuating prices. A producer growing a crop, such as wheat or maize, has to invest in production through buying seeds, or other inputs such as fertiliser. However, this investment is at risk as the price of the crop may fall while it is being grown.

Futures markets allow food producers and other commercial participants to transfer their price risk to someone else more willing to take on that risk. This could be another commercial hedger, or a financial speculator who hopes to profit from changing prices over the life of the futures contract.

Futures markets were developed for the benefit of those involved in the production of food, yet they have now changed almost beyond recognition. Over the past 10 years, financial markets for agricultural commodities have become dominated by speculators who simply use them as another form of investment. As a result, they are no longer able to fulfil their intended functions.

Moreover, most of the world’s food producers, the majority of whom are small farmers in developing countries who lack access to credit, do not have access to nor rely on commodity futures markets to manage risk. Many alternatives to market based risk management exist which would be better suited to the needs of most of the world’s farmers.

Wider structural changes are needed to ensure the global food system can meet the needs of a growing population and the needs of those who produce the world's food. A food system that is not shaped by unjust trade rules and a handful of powerful corporations, but instead supports ecologically sustainable small-scale food producers, is vital to achieving this goal.

Regulating agricultural commodity markets alone will not tackle the many challenges of global food production. But in the wake of the financial crisis, there is a unique opportunity to introduce financial market regulation, taking the first steps to improving the global food system for the benefit of food producers and consumers.

The enormous influx of financial speculation into agricultural commodity derivative markets has effectively broken them. Strong regulation is urgently needed to restore these markets back to their normal functioning and to help to prevent repeated global food crises.

Box 1. Hedgers and speculators

Commercial hedgers use futures markets to insure themselves against price risk from their commercial activity in commodity trading. A hedger could be a food producer seeking to guarantee a stable price to sell their crop at, or a flour milling company looking to secure stable prices at which to buy wheat.

Unlike commercial hedgers, financial speculators do not have any exposure to price risk from involvement in the physical market, but will take on risk as they seek to make a profit from rising or falling prices. Hedge funds, investment banks and pension funds are examples of financial institutions often involved in speculation.

2. The urgent need for action

“For the middle classes, it means cutting out medical care. For those on \$2 a day, it means cutting out meat and taking the children out of school. For those on \$1 a day, it means cutting out meat and vegetables and eating only cereals. And for those on 50 cents a day, it means total disaster.”⁶

Josette Sheeran, head of the UN’s World Food Programme, regarding the 2008 food crisis

The case for urgent action to tackle the damaging impacts of financial speculation could not be clearer. According to the UN Food and Agriculture Organisation (FAO), food prices have recently exceeded those seen during the last food crisis in 2007-2008, rising by 39 per cent in the year to July 2011.⁷ In the last six months of 2010 alone, 44 million people were pushed into extreme poverty by rising food prices, equivalent to almost two in every three people in the UK.⁸

Rising food prices

In just three months at the end of 2010 and early 2011 the price of maize, a key staple food, rose by 27 per cent in Kenya, by 25 per cent in Uganda and by 20 per cent in the Democratic Republic of Congo.⁹ South American countries also saw dramatic increases in the price of maize during the same period, with prices in Mexico rising by 37 per cent, in Brazil by 15 per cent and in Argentina by 14 per cent.¹⁰ The impacts of food price rises are not felt equally, low and middle income countries are on average experiencing 5 per cent higher annual food price inflation compared to rich countries.¹¹ These have also translated into stark rises in the price of food for individual households. In a survey of 58 developing countries in late 2010 local food prices were around 55 per cent higher than in May 2007.¹²

Human impact

The human impact of rising food prices can be devastating, increasing hunger and malnutrition. According to some estimates, as many as 1.3 billion people currently go hungry.¹³ Over 16 per cent of people in developing countries overall and one third of the population in Sub-Saharan Africa do not have enough food.¹⁴

Rising food prices have impacts beyond hunger. Increased food prices also force people to eat less fruit, vegetables, dairy and meat in order to afford staple foods; reduce any savings, sell assets or take out loans; reduce spending on 'luxuries' such as healthcare, education or family planning; and have a disproportionate impact on women.¹⁵ As a result of rising food prices in 2010, households in lower middle-income countries like the Philippines reduced their food consumption by 85 per cent, essential medical expenditure by 55 per cent and 40 per cent borrowed money.¹⁶

Social unrest

Sudden food price rises also frequently lead to social and political unrest; during the 2007-2008 food price crisis, food riots took place in 31 countries.¹⁷ In Haiti a week of riots brought down the government and left five people dead, while in Bangladesh 20,000 workers rioted over high food prices.¹⁸ In 2011 food price rises have been one of the key triggers for the protests in Tunisia, Egypt and Jordan and elsewhere in the Middle East and North Africa, eventually leading to the overthrow of the Tunisian and Egyptian governments.¹⁹

Economic impact

Rising food prices also have a huge impact on the economies and government budgets of developing countries. High food prices increase the cost of food assistance and critical subsidy programmes as well as decreasing government revenue from lower taxes and tariffs in food import-dependent countries. The last food crisis forced governments to cut expenditure on areas such as education and health, pushing the financial burden onto individual households already hit directly by

rising food prices.²⁰ An additional challenge for governments to deal with is the impact of rising food prices on inflation; according to the IMF food price increases accounted for around 70 per cent of total inflation amongst the emerging economies during the last food crisis.²¹

Volatility

It is not just rising prices that are a danger. Increases in price volatility have a hugely damaging impact on food producers. They rarely gain from price increases when markets are volatile. When prices fall the reductions are passed down the supply chain to producers whose costs and margins are squeezed. However when prices recover benefits are absorbed by other participants in the supply chain, such as food processing corporations, leaving food producers still suffering from lower prices.²²

UK impacts

The impacts of rising food prices are not only felt in developing countries. In June 2011 the UK annual food price inflation was 6.9 per cent, making a significant contribution to inflation which continues to remain well above the Bank of England's 2 per cent target.²³ This translates into an average £260 increase in annual food bills for the average household in the UK. At a time when the UK economy is barely avoiding recession, this is a cost many households can ill afford.

3. A financial takeover: How speculation has taken hold

“It is deeply alarming that the greatest proportion of activity in the futures markets no longer involves those in the supply chain but is, instead, taken up by speculators... Food commodities are too important to be played about with by day traders and speculators”²⁴

President of National Farmers’ Union
Scotland

In order for futures markets to function effectively a degree of financial speculation is needed. Financial speculation can provide liquidity to the market (see section 4.6) and can also play an important role in transferring price risk away from food producers. However, the extent to which it is beneficial to the market is hotly debated. In recent years, speculation has exploded in scale across agricultural commodity markets. Rather than just providing liquidity to help markets’ core functions of hedging and price discovery, financial speculation has come to dominate them.

3.1 Financial domination

Deregulation of commodity markets in the US in the late 1990s and early 2000s has allowed an enormous growth in financial speculation in these markets, allowing purely financial actors a much greater role in the markets and facilitating the development of new financial products that allow investors to treat commodities as another asset class, like equity (shares). Investment banks offering access to commodity markets also pitched them as an ideal addition to a portfolio of investments. They promoted research which showed that commodity market returns were less volatile than equities or bonds and provide a good hedge against inflation.²⁵

Over the course of the last decade agricultural commodity markets have become dominated by financial speculators, overwhelming the normal functioning of these markets. Historically, when commodity markets functioned effectively, providing sufficient liquidity for commercial hedgers and allowing effective price discovery, commercial hedgers dominated the markets with only a tiny percentage held by financial speculators. This has now reversed with financial speculators holding the majority of the market.

Looking at the largest wheat futures market in the US, in the mid-1990s financial speculators held just 12 per cent of the market, with the rest held by commercial hedgers. In 2011, 61 per cent of the market is held by purely financial speculators and commercial hedgers only make up 39 per cent of the market.

This dominance of financial speculators is also reflected in the size of the market held by financial institutions; in the last five years alone the total assets of financial speculators in agricultural commodity markets have nearly doubled from \$65 billion in 2006 to \$126 billion in March 2011.²⁷ This money is purely speculative, with none of it being invested in agricultural production, yet it is over 20 times more than the total amount of aid money given globally for agriculture.²⁸

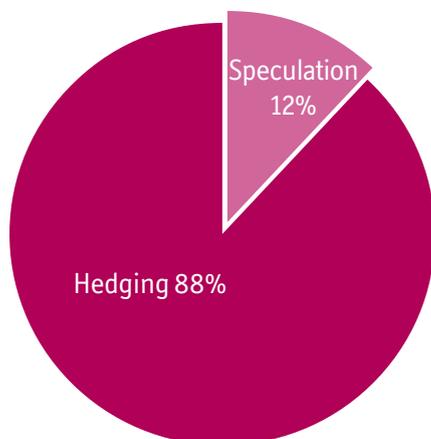
3.2 Massive passives

One of the key innovations that facilitated the enormous growth of financial speculation has been the use of commodity index funds, first pioneered by Goldman Sachs in 1991. Commodity index funds work to transfer commodity contracts into an asset that can be bought by other financial institutions such as pension funds. These funds are 'long only' which means they only take positions speculating that prices will rise and 'roll' their positions, replacing contracts each month to maintain the same position in the market. These funds are also completely passive; their trading does not respond to price changes in the market or changes on the ground, instead their trading is influenced by the amount of money investors hold in the fund.³¹ The purpose of index funds

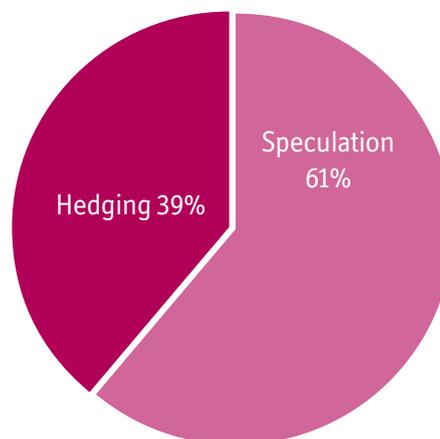
Graph 2.

Market share of hedgers and speculators in the Chicago wheat futures market²⁶

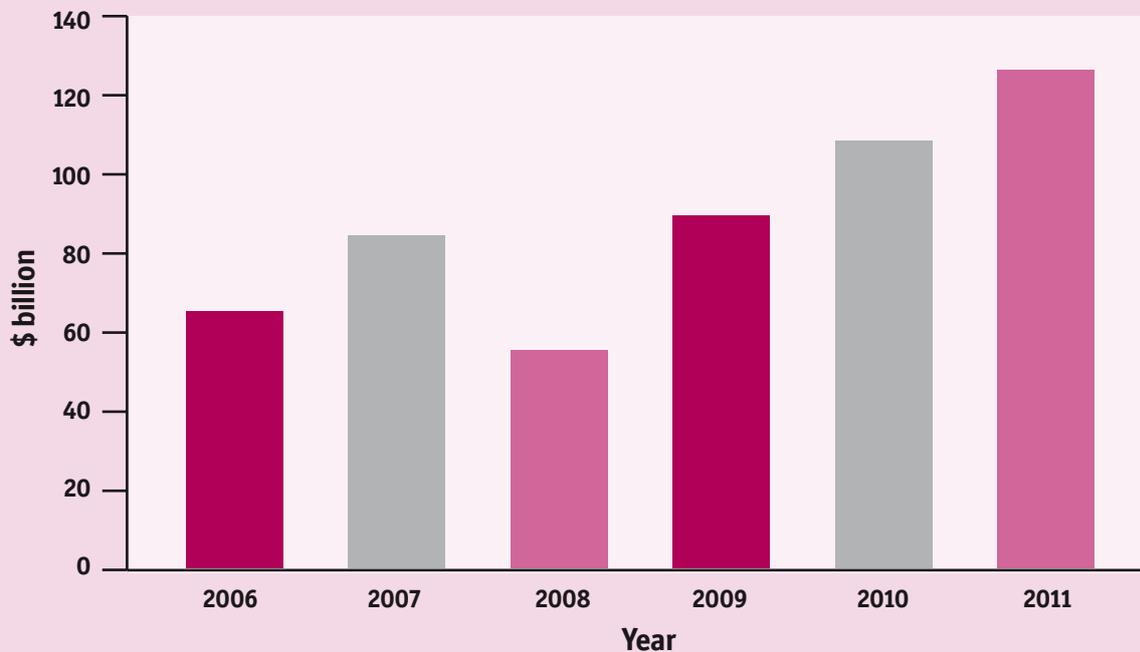
25 June 1996



21 June 2011



Graph 3. Financial holdings in agricultural commodity derivative markets 2006-2011²⁹



was to accumulate an “everlasting, ever-growing long position, unremittingly regenerated”.³² Index funds also speculate across a basket of commodities; the most popular funds include oil, gas, metals and agricultural commodities.³³

Commodity index funds were highly attractive to a range of investors, notably pension funds, because they allowed investors to gain exposure to a wide range of commodities markets without having to engage in costly and risky direct trading in the market. This led to an enormous growth in index funds holdings in agricultural commodity markets, increasing 26 fold from around \$3 billion in 2003 to \$80 billion in 2011, with index funds now making up over 60 per cent of overall financial holdings in agricultural futures markets.³⁴

This combination of enormous size and their passive trading strategy led Bart Chilton, a commissioner on the Commodity Futures Trading Commission (CFTC), the US commodity regulator, to describe them as ‘massive passives’.

3.3 Active speculators

While passive investment has remained popular amongst investors, a survey in December 2010 found that 43 per cent were planning to choose active management to engage in commodity markets in 2011.³⁵ These active strategies can include the use of other investment vehicles, such as Exchange Traded Products (ETPs), which are traded on stock markets and track either one or a set of commodities. These can allow much smaller investors much easier access to commodity markets, while others are designed to better suit the needs of large scale investors such as pension funds.³⁶

As well as there being a vast array of financial products for investors, some speculators such as investment banks and hedge funds trade directly in the markets themselves. These active speculators approach the market in a radically different way from investors using index funds to gain long term exposure to commodity markets; seeking to profit from short term price changes

in the market. Price based technical analysis is often used to inform trading decisions, where past price movements are analysed to provide information for likely future price trends. This is the 'traditional' approach to speculation, seeking to buy into rising markets and then aiming to sell out before the market falls.

One strategy increasingly used by active speculators is the use of computerised high frequency trading, often based on analysis of previous price trends, and trading in the market for very short periods of time. High frequency algorithmic trading can add significant volatility to markets by buying or selling into price movements. The dangers of this form of trading are most clearly seen in the 'flash crashes' that

took place in the international sugar market in late 2010 and the cocoa market in early 2011. Falling prices triggered the computerised models to automatically sell, fuelling a downward trend that led to prices falling 11 per cent for sugar and 12.5 per cent for cocoa in a single day.³⁷

While high frequency trading has been hugely profitable for commodity exchanges, which profit from the increased trading volume, it has been heavily criticised for providing little if any benefit to commercial hedgers. High frequency traders only enter the market for short periods of time and will often close out any positions at the end of every trading day. As a result they do not provide the long term hedging partner needed for commercial hedgers to transfer price risk.

Box 2. Futures exchanges

In futures markets, standardised contracts (e.g. for a tonne of a particular commodity) are traded through a central exchange. The number of futures contracts traded through exchanges is not limited by the availability of the underlying commodity; for example, the amount of wheat futures contracts traded on an exchange can significantly exceed the amount of available wheat.

Futures contracts can be created indefinitely as long as there are two participants willing to trade – one to take the 'long' side of the contract, speculating that the price of the contract will rise over time – and another to take the 'short' side of the contract, speculating that prices will fall.³⁰ As long as the two participants can reach a price they are both willing to trade at, a new futures contract can be created. For commercial hedgers, the short side of the market is associated with food producers selling agricultural commodities, seeking to insure themselves against falling prices, while the long side is associated with buyers seeking to reduce the risk of prices rising.

While for each futures contract there is a long and a short side, traders will rarely hold just long contracts or just short contracts. Many will hold some long contracts and some short contracts. The balance of these contracts held by a trader (total long contracts minus total short contracts) is known as the trader's 'position'.

Futures contracts include a set date for delivery, that is the holder of the long position would need to settle the contract on that day – either through buying the physical commodity or settling the contract in cash (depending on the rules of that exchange). Financial speculators who seek to use these markets to profit from exposure to changing prices usually do not want to take physical delivery of the underlying commodities. To avoid this situation traders can 'close out' their position ahead of the set date for delivery – that is ensuring that their total position of long and short contracts is zero on that day. Through this process traders can continually profit from changing prices in the market, without ever having to take physical delivery of the underlying physical commodity.

The huge growth in high frequency trading has led to outcry from commercial traders in the market; earlier this year the chairman of the World Sugar Committee, the industry body that represents the major sugar traders, wrote to the US sugar exchange: *“Computer-based traders do not even contribute to the traditional function of the speculator in allowing producers and consumers to transfer price risk, since they do not take price risk home. Instead, it would appear that the computer-based traders are parasitic.”*³⁸

Over the past ten years there has been a radical change in the make up of agricultural derivative markets. Whereas previously markets were predominantly made up of commercial buyers and sellers involved in the production of food, these markets are increasingly dominated by index funds, traders using investment products like ETPs and high frequency algorithmic driven speculation.

3.4 ‘Dark markets’: over-the-counter trading

At present only futures and some options trading takes place on exchanges, the rest of the derivatives market, such as swaps, is traded through unregulated bilateral deals known as ‘over-the-counter’ trading (OTC). As OTC trading takes place bilaterally and without effective regulatory oversight, prices are not reported publicly, little data is available on the size of the market and there are no requirements for trade reporting, as would happen on a regulated exchange. This has led OTC trading to be referred to as the ‘dark markets’ due to the lack of market transparency.

This lack of transparency and regulation is thought by many to have been at the heart of the 2008 credit crisis⁴¹ and the G20 has now resolved to bring more transparency to these markets.⁴² The value of outstanding OTC derivatives for all commodities (not just agricultural commodities) stands at nearly \$3 trillion, nearly one and half times the UK’s GDP.⁴³

One of the major advantages of trading OTC is the comparatively low margin requirements for any contract, compared to trading on a regulated futures exchange. Margins are a sum of money that is paid to the exchange for all futures contracts to cover the risk the trader has taken on through this contract. As OTC trading does not go through a central exchange, margin requirements are often very low, reducing the costs to both the parties but taking away the vital risk management function served by margin payments. The other significant feature of OTC trading that has made it attractive to financial and commercial traders is the opportunity to produce highly customised swaps. While all futures contracts are standardised, swaps can be highly complex and exotic; tailored to meet the specifications of individual companies.

Rather than benefiting the overall market, OTC trading also allows a tiny group of financial institutions dealing in large volumes of swaps, such as investment banks like Goldman Sachs, to maintain and exploit information asymmetries at the expense of their clients; as the swaps dealers are central to the market they have access to information unavailable to all of their clients. As OTC trading does not require publicly quoted prices for contracts there is also no guarantee that swaps dealers are offering fair and equal pricing between their clients.

The subprime crisis clearly showed the dangers of unregulated trading in OTC derivatives, yet the risks of this trading in dark markets still exist for agricultural commodities, with potentially even greater risks.

Box 3. Understanding derivatives

A futures contract is a form of derivative, which is a financial contract the value of which is 'derived' from the price of something else, known as an 'underlying asset'. For example a wheat derivative contract has value because of the value of the wheat, the underlying asset to the contract. Derivatives are a very broad category of financial instrument and the underlying asset can be anything from commodities (such as wheat or oil), equities (shares), interest rates, currencies or even the weather.³⁹

There are four main types of commodity derivative contracts:

Commodity forwards

A forward contract is a contract to exchange a set amount of a specified asset for delivery on a future date at a price agreed at the outset of the contract. This gives the seller of the forward contract (the producer) certainty over the price they will receive and transfers the risk from changing prices to the buyer of the contract.

As an example, a producer could agree to sell one tonne of wheat for \$100 in six months' time.

Commodity futures

Futures are similar to forward contracts in that they are contracts for the delivery of something at an agreed date in the future. They differ in that they are standardised contracts that are traded on exchanges and do not always require delivery of the underlying asset – in some markets contracts can be settled in cash rather than physical delivery.

As they are traded on exchanges traders can 'close out' their positions before the agreed delivery date, ensuring that their net position is zero, and therefore do not have to take delivery. Only two per cent of exchange traded futures contracts result in physical delivery of the underlying asset.⁴⁰

Commodity options

An option contract gives the buyer the opportunity, but not the obligation, to buy an asset at a specified price within a specified amount of time. The seller is required to fulfil the transaction if the buyer exercises their right to buy.

As an example, a grain trader could buy the option to buy a tonne of wheat for \$100 in six months' time.

Commodity swaps

In a swap, the user of a commodity could secure a set price and agree to pay a financial institution this fixed price. Then in return, the user would get payments based on the market price for the commodity involved. On the other side, a producer who wishes to fix their income would agree to pay the market price to a financial institution in return for receiving fixed payments for the commodity.

Swaps are also used in investment products such as commodity index funds. Commodity index funds use 'total return swaps' to track a basket of commodities. This means that the fund (which other investors put their money in) gets the 'total return' that would be gained by rising or falling prices within the commodities in the commodity index.

4. Broken markets: the effects of excessive speculation

“The buying and selling of index investors is driven by asset allocation decisions, portfolio rebalancing [...] not views on the supply and demand fundamentals.”⁴⁴

Goldman Sachs research paper

The increase in financial speculation in commodity markets over the last ten years is clear, however the effects that this has had are hotly debated. Proponents of efficient market theory have argued that speculation is inherently stabilising. By buying when prices are low and selling when prices are high speculators are believed to help smooth volatility in the market. In practice this has not been the case. Increasing financial speculation has in fact:

- Distorted prices away from expectations of supply and demand.
- Increased price volatility.
- Caused the prices of unrelated commodities to move together.
- Increased costs for traditional hedgers, forcing them out of the market.

The effect of the increasing presence of financial speculators in agricultural derivative markets has been to undermine their basic functions of risk hedging and supporting price discovery. These markets are now barely fit for purpose both for those who rely on these markets directly and in terms of their devastating impact on food prices around the world.

Box 4. Price discovery

Price discovery is essentially the process of working out how much something is worth – its ‘true market value’. According to market theory this is best achieved through a large number of well informed market participants trading in a transparent market (that is where traders have clear information on what is being traded and at what prices) which is highly liquid (where a large amount of trading is taking place).

If one person wanted to buy a commodity, such as wheat, from another person they could go through a process between them to agree a price they would both be willing to trade at, however this price may not actually represent the true market value of that wheat. However if the same process was repeated with a large number of buyers and sellers the resulting price at which the wheat would be traded would be likely to better reflect its true market value. This is the concept behind price discovery.

Physical markets (also known as ‘spot’ markets) for agricultural commodities are believed to perform price discovery poorly, largely due to limited transparency and the fact that much physical trading takes place bilaterally, with trading based on a range of fragmented sources of information and based on individual traders personal and commercial motivations.⁴⁹ These attributes of the physical market for commodities are now widely recognised, as a recent report by the International Organization of Securities Commissions (IOSCO) for the G20 noted, “*The transparency and functioning of cash markets for commodities remains a prominent concern.*”⁵⁰ Theoretically, as futures markets are more transparent and, generally, have greater liquidity, they play a vital role in supporting the price discovery process for agricultural commodities through providing important price information and price signals to the physical market.⁵¹

According to the ‘efficient market hypothesis’, which is widely supported by pro free market commentators, all publicly available information is immediately reflected in prices in financial markets, such as commodity futures markets. Theoretically, all traders in the market are wholly rational and trade based on the best available data, so through their actions any new information is incorporated into prices. If this theory were true, commodity futures prices would reflect nothing but information on current, and informed expectations of future, supply and demand.⁵² In practice however these price signals increasingly reflect a whole range of other factors relating to the trading decisions of financial speculators, rather than serving as a fair predictor of future physical prices, the role these markets are theoretically meant to fulfil.

4.1 Supply and demand?

In theory, trading in futures markets should be motivated by information and expectations of the supply and demand of the underlying commodity, ensuring that the price reflects the best available market information. However, financial speculators are much less likely to trade based on information regarding supply and demand but are motivated by a desire to diversify a range of investments. Commodities are simply seen as an investment alternative to 'traditional' investment asset classes such as equities (shares), bonds (debt) or property.⁴⁵

One clear example of the impact of financial speculators trading on information unrelated to supply and demand was seen in the cocoa futures market following the release of US employment data in 2010. The release of this data should theoretically have little or no impact on cocoa prices, as there is no causal link between US employment and world chocolate consumption. However the cocoa futures price dropped nearly one per cent in under five minutes after this data was released.⁴⁶ If traders based their trading purely on supply and demand information there would be little or no change in prices. But the spill over from other financial markets and the impact on investor sentiment led to a sharp drop in cocoa prices.

By using commodity markets as another asset class financial speculators distort the price of agricultural commodities. Instead of prices being determined simply by information about the supply and demand of an agricultural commodity, they are now strongly influenced by their value to financial speculators for a whole range of other motivations.⁴⁷ When combined with the dominance of financial speculators in the market this undermines the ability of futures markets to provide effective, informed price signals for the physical market.⁴⁸

4.2 How index funds cause price inflation

While the increasing presence of financial speculators as a whole has moved prices away from expectations of supply and demand, index funds have been singled out by many commentators for their particularly damaging effects; driving price inflation in commodity markets.⁵³

Due to index funds' size and long only positions they place a structural upward pressure on prices in futures markets, with huge amounts of money speculating on rising prices. The enormous scale of this buying on one side of the market then forces prices upwards, as the prominent financier George Soros describes it: "*institutional investors are piling in on one side of the market and they have sufficient weight to unbalance it.*"⁵⁴

Commentators sceptical of the role of commodity index funds in the recent dramatic increase in prices have argued that index funds could not exert an upward pressure since there is an unlimited supply of futures on an exchange. Due to the limitless supply of futures contracts they argue that the additional money buying into the long side of the market does not represent new demand, therefore prices would only change in response to new market information, not the trading of index investors.⁵⁵

This view however grossly oversimplifies trading on commodity exchanges. In order for a transaction to take place, traders on both the long and short side of the contract must reach a price they both agree on. If there is huge demand on one side of the market, traders will demand that they are paid a premium to enter a contract on the other side, inflating the price. This dynamic of buyers moving the market price up is well recognised, as noted by Goldman Sachs to the US Senate: "*Buyers need to enter the market, drive the market price to a place where it attracts sellers. That is the natural balancing act that goes on day in and day out.*"⁵⁶

4.3 Oil, metals and food: price movements of unrelated commodities

Commodity index funds not only work to push up commodity futures prices, they also cause the prices of previously unrelated commodities, such as oil, metals and food, to move together.⁵⁷ As financial investors generally lack commodity specific knowledge they buy investment products which include a range of commodities. This could be motivated primarily by a desire to gain access to a specific class of commodities, such as energy and metals which make up the bulk of most commodity indices, but by doing so they also drive money into agricultural commodity markets. This then causes the rises and falls of the larger markets, such as oil and metals, to drive price changes across a whole range of commodities including food.⁵⁸

Empirical research into price trends across a range of commodities found that the prices of non-energy commodities, such as agricultural commodities, became increasingly correlated with oil during the mid-2000s, in parallel with the huge growth in financial speculation in commodity index funds.⁵⁹ At the end of the 1990s there was almost no correlation between food and oil prices, however by 2008 this correlation had become extremely high.⁶⁰

4.4 Herding upwards

The increased presence of financial speculators in commodity derivative markets has also facilitated greater herding behaviour amongst traders. Herding is when traders act following the actions of a larger group rather than acting independently and rationally based on the information available to them.⁶¹ Herding behaviour is most common in situations of uncertainty, a key feature of commodity markets due to the lack of standardised and reliable data on commodity supply and demand. While data is available from a range of sources such as the FAO and the US Department of Agriculture, these sources are often criticised as being unreliable and provide an incomplete picture of global food production.⁶² Furthermore much information, such as stocks held by private companies, is only available to a minority of traders, leading to greater uncertainty amongst other traders in the market.⁶³

Herding behaviours can come in many forms and can be both rational and irrational. One example of irrational herding common in commodity markets is that led by investor beliefs or market sentiment, independent of individual fundamentals, as a major determinant of asset market prices.⁶⁴ In commodity markets this is particularly seen in a widely held assumption that in the medium to long-term commodity prices will continue to rise.⁶⁵

The impact of the beliefs and sentiment of traders can also be clearly seen in the sharp rise in commodity prices following the financial crisis of 2008. It is widely believed, and has been seen following previous crises, that during a recovery commodity prices rise in parallel with economic growth as demand for physical commodities increases. However following the 2008 economic crash, commodity prices rose much earlier in the economic cycle, significantly ahead of increasing physical demand. Rather than being driven by rising demand, market participants' belief that commodity prices would rise as a result of the recovery drove prices up, completely unrelated to supply or demand.⁶⁶

Another form of irrational herding as a result of greater participation of financial speculators has been that of trading based on price based technical analysis, or 'trend chasing', by active speculators. They are often termed momentum traders as they buy into the momentum of pre-existing upwards or downwards price trends within the market.⁶⁷ These traders add significantly to the volatility in commodity futures markets, increasing the likelihood of markets overshooting both when prices rise and fall.

Many of these traders also use similar forms of statistical analysis to inform their trading strategies. This can risk creating a self fulfilling cycle whereby traders collectively generate and then follow price trends entirely separate from anything dictated by information about supply and demand fundamentals.^{68,69}

Not all herding behaviours are irrational. In a market where information is limited and uncertain, and traders know that other market participants may have access to private information they do not have access to, traders can believe that they can gain this information through assessing the trading movements of others.⁷⁰ If one trader sees a trend towards betting on higher prices, they may believe that other traders have access to information they do not have access to and so will seek to follow their trading activities believing them to be based on information about underlying supply and demand. While such actions can be seen to be entirely rational when information is limited, these forms of herding can again become self fulfilling, distorting prices away from the fundamentals of supply and demand.

An additional complexity to such herding behaviour is created by the significant presence of index funds and other passive speculators in commodity markets. As they take a passive approach and speculate across a range of commodities, index traders make decisions irrespective of prevailing conditions in the underlying commodity markets, instead led by other external motivations. Their presence makes it difficult for other traders to judge whether price changes are occurring due to the position changes of index funds or as a response to new information about market fundamentals.⁷¹ This can then lead to traders believing they are rationally following the actions of more informed traders, but are actually replicating the movements of index funds whose trading decisions are wholly unrelated to supply and demand.

Collectively these forms of herding lead to increased price volatility as traders buy into upward trends and sell out of downward price trends, exacerbating the volatility that already existed in the market. As many of these forms of herding are individually and collectively self reinforcing they can also lead to long term and persistent price deviations away from prices that would be determined by supply and demand. Given the current context, where commodity prices are expected to rise following the financial crisis and a widespread sentiment that food prices will rise due to long term population pressures, these price deviations serve to inflate prices. In other words increasing financial speculation fuels and sustains price bubbles within commodity derivative markets.

4.5 Persistence of bubbles

*"I see so much focus on food, and it seems to be so trendy in the investment world. ... The markets seem to me to have a bubble-like quality."*⁷²

Jim O'Neill, Chairman of Goldman Sachs Asset Management

According to efficient market theory, bubbles can only persist for a very short period of time, if at all. Any traders who trade against prices driven by the fundamentals will be punished when traders who trade 'correctly' seek to correct prices back to prices informed by supply and demand. According to this theory any traders that take positions that are not driven by information about fundamentals will not profit and therefore be driven out of the market.⁷³ Through this analysis of commodity markets, financial speculators could only move prices away from the levels indicated by supply and demand in the very short term, but there could be no lasting price bubble in commodity prices.

While over a long enough period of time it is possible that commodity prices may return to the anchor of fundamentals, commodity markets are highly unlikely to quickly correct back to fundamental levels.⁷⁴ This is due to well recognised limitations on the availability of reliable data about supply and demand fundamentals, significant information asymmetries, very limited elasticity of supply and demand (see section 5.1) and an overwhelming number of financial speculators not trading based on supply and demand.

For the market to correct, it requires other informed participants to trade against the financial speculators whose trading does not reflect supply and demand. However these informed traders face potential losses if prices move still higher under the influence of herding financial speculators, so their short selling may not bring prices back down. Due to this inherent risk it is often not logical for informed traders to attempt to restore prices back to a level dictated by the fundamentals. In a market where index funds, hedge funds and investment banks hold such a large influence over the market, exerting a sustained influence on prices, it also may not be possible for informed traders to trade against them.⁷⁵ Once financial speculators who do not trade based on supply and demand hold such a strong influence in the market it no longer makes sense for any trader to swim against the tide by vainly clinging onto market fundamentals.

The end result of this is that bubble prices can be sustained in commodity markets for at least the medium term, if not over the longer term. Taking the example of currency markets, where the fundamentals are clear price differentials, currency speculation can be seen to move exchange rates away from the fundamentals for extended periods of time, in some cases for three to five years.⁷⁶ Given that information on fundamentals is much less clear in commodity markets, there is little reason to believe that food price bubbles could not persist for as long, if not longer. The 2007-2008 food price spike lasted less than two years yet had a devastating impact on people throughout the global south.

4.6 When rain becomes a flood: damaging liquidity

According to the same efficient market theory, the increase in liquidity associated with the increase in financial speculation should exert a stabilising role on prices. However in practice the increase in liquidity has now become a flood, facilitating herding and increasing price volatility within the market.

In order for futures markets to work effectively to allow hedging and effective price discovery there needs to be enough liquidity in the market, that is there needs to be enough willing buyers and sellers at any one time. Having sufficient liquidity can:

- Ensure that there is a greater likelihood that there will be someone else to take the other side of the futures contract, allowing the transfer of price risk.
- Improve the price discovery process as it ensures that new information is regularly reflected in the futures price through the high volume of trading taking place.
- Reduce volatility as with more buyers and sellers the market is better able to absorb large trades without a significant price response.
- Reduce 'bid-offer spreads', that is the difference between the price someone is willing to buy something for, compared to the price they are willing to sell it for (this is most commonly seen in day-to-day life when exchanging currency).

While it is true that ensuring markets have sufficient liquidity can reduce volatility, it does not hold that more liquidity always reduces volatility. As Adair Turner, the Head of the Financial Services Authority, noted in a recent research paper:

It does not follow that 'more liquidity is always limitlessly beneficial' since beyond some point there must be diminishing marginal returns to additional liquidity. It is also possible that more liquidity, while in some ways beneficial to end-users, could also, by facilitating pure speculation, produce more variable medium-term price trends.⁷⁷

This critique of the damaging effects of increasing liquidity is supported by empirical analysis of the huge growth in liquidity in agricultural commodity markets that accompanied the recent influx of financial speculation. A recent study of agricultural commodity markets from 1990 to 2011 found that:

- Volatility was relatively steady prior to the significant increase in liquidity between 2003 and 2008.
- The highest levels of volatility are associated with the rapid increases in liquidity towards the end of this period.
- There is strong evidence that the rise in liquidity is associated with higher levels of volatility.
- There is no evidence that prices on food commodity markets that were observed behaved in a more volatile way when markets were less liquid.⁷⁸

4.7 Forcing hedgers out of the market

Increased volatility in futures markets also makes it more expensive and more risky for commercial traders to hedge risk. On a futures exchange all traders are required to provide 'margin' on their contracts – a sum of money paid to the exchange. The level of margin required is closely linked to volatility in futures markets, so as volatility rises, so do the margin payments for commercial hedgers. During the period January 2003 – December 2008 volatility increased so dramatically that margin levels, as a proportion of contract value, increased by 142 per cent in maize, 79 per cent in wheat and 175 per cent in soybean on the Chicago Board of Trade.⁷⁹ As well as these increased costs of hedging being passed onto consumers through higher prices, increased margin costs are likely to drive out the very commercial traders these markets are designed to help.

4.8 Commercial speculators and opaque exchanges

Commercial speculators

While the enormous influx of financial speculators has had an enormous impact on agricultural commodity markets, damaging speculation is also undertaken by some large agricultural multinational corporations such as Glencore and Cargill. These companies do have significant commercial exposure to price risk and so can claim a genuine need to use these markets to hedge risk. However these firms can take significant advantage of their role in the physical markets to add to their profits through speculating in the derivative markets.⁸⁰ Indeed, for some, the extensive internally available company data on production and supply can be seen as equivalent to trading based on insider information in a bank or financial firm,⁸¹ a practice outlawed in most other financial markets.

One of the clearest examples of this was the revelation that Glencore, one of the world's largest commodity traders, took out large speculative positions betting on rising grain prices in the summer of 2010.⁸² The company then encouraged Russia to introduce a wheat export ban which drove up the price of wheat, in the process delivering significant returns on its trading in the derivative markets. The combined impact of speculators rushing to bet on rising prices as a result of the export ban, and the export ban itself, drove wheat prices up 70 per cent in four months, in spite of the fact the global wheat harvest was one of the highest on record.⁸³

Opaque exchanges

One of the challenges of assessing the impact of financial speculation, particularly in European agricultural commodity markets, is the absence of detailed market data to provide a basis for analysis. Most of the analysis of the impact of financial speculation is drawn from US exchanges, where all futures and options exchanges are required to report traders' positions daily to the US regulator, the CFTC. This detailed position reporting is then aggregated by the CFTC and reported publicly, showing the different positions of different categories of traders. This data allows effective analysis to take place of different categories of traders and their influence on futures market price developments. No such reporting to regulators takes place in European markets; the only available data is semi-annual data provided by the Bank for International Settlements on the size of derivative markets.⁸⁴ This lack of rigorous market data is exacerbated by the lack of dedicated regulatory expertise for commodity markets in many European countries such as the UK.

5. How futures markets change the price of food

“Without any real supply or demand issues we are witness to the fact that most agricultural food commodities are at record highs at once, and coffee is at a 34-year high. Through financial speculation – hedge funds, index funds and other ways to manipulate the market – the commodities market is in a very unfortunate position. This has resulted in every coffee company having to pay extraordinarily high prices for coffee.”⁸⁵

Howard Schultz, chief executive, Starbucks

Financial speculation has overwhelmed agricultural derivative markets. It has inflated prices, increased price volatility and created bubbles completely unrelated to supply and demand. However the fact that this speculation takes place in the financial, rather than physical markets has led some to question the extent to which this activity can have an impact on the physical price.

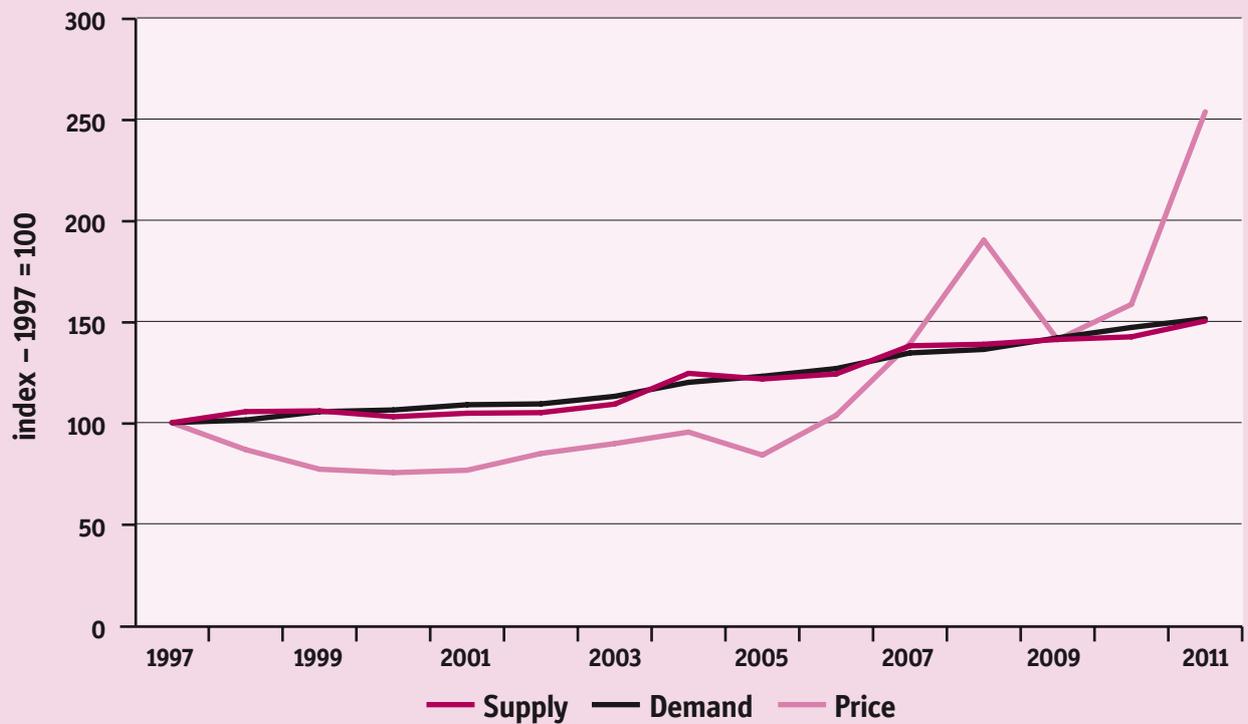
The US economist Paul Krugman argued that “A futures contract is a bet about the future price. It has no, zero, nada direct effect on the spot (physical) price”.⁸⁶ Others, including research papers for the OECD⁸⁷ and the UK Government,⁸⁸ have all argued that financial speculators could only affect the physical price if they took physical delivery and held these supplies off the market, thereby changing the supply of the commodity.

This view is based on the economic theory that the pricing of commodities is led only by the supply and demand relationship of the physical commodity.⁸⁹ If this theory were correct recent changes in food prices would be driven by clear and corresponding changes in the fundamentals of supply and demand. However this is not the case. Taking data from the US Department of Agriculture on global supply and demand for wheat and maize, there is no significant shortfall of supply or excessive demand associated with the sharp price spikes seen in these markets in recent years.

Rather than prices being affected only by changes in supply and demand of the physical commodity, futures markets are at the heart of changing commodity prices. They provide price information and signals, acting as a benchmark for the physical markets. Futures markets affect the price of food in the physical commodity markets through:

- Influencing the expectations of buyers and sellers in the physical market.
- The incorporation of futures prices directly into contracts for food.
- Traders taking advantage of differences between prices in futures and physical markets.

Graph 4. Maize supply, demand and price 1997-2011⁹⁰



Graph 5. Wheat supply, demand and price 1997-2011⁹¹



It is important to recognise that financial investors do also trade in the physical market. Separate from speculation in derivative markets, financial traders are increasingly involved in physical commodities. This was seen in the cocoa market in 2010 when the hedge fund Armajaro attempted to 'corner' the physical market by trying to buy up huge amounts of the world's supply, forcing up prices.⁹² There is also a growing trend to financial investment in physically-backed exchange traded products (ETPs), where physical commodities are essentially hoarded by financial speculators seeking to profit from rising prices in the physical market, though these remain a smaller market than for futures-backed ETPs.

While these kinds of interventions in the physical market can force up prices, betting in the financial market can translate directly into changing food prices without financial speculators touching a grain of wheat.

5.1 Great expectations

*"[Futures] markets for cocoa in London and New York play a vital role in the formation of prices for physical cocoa throughout the world. Indeed, in this respect, London and New York function as the benchmark for prices paid."*⁹³

International Cocoa Organisation

The role of futures markets in providing price signals to the physical market is well recognised by regulators in both the US⁹⁴ and the UK.⁹⁵ As noted above, this is due to the fact that futures markets are generally more liquid and transparent than the physical markets, and are believed to be better able to react to emerging market information and reflect this through changing prices.

In practice, prices in the futures markets provide information and help set the expectations of

traders in the physical markets.⁹⁶ Put simply, traders in the physical markets use the futures market as a benchmark on which to bid in physical auctions.⁹⁷ If futures market prices are high and rising this then changes the expectations of both buyers and sellers in the physical markets, pushing up the price of physical commodities.⁹⁸ If food producers, informed by prices in the futures markets, believe that they will be able to gain a higher price in the future they will be likely to withhold their supply anticipating a higher price in the future. This withdrawal of supply then pushes up the price.

Some critics, such as those noted above, have argued that if price transmission occurred in this way then there would be a significant growth in inventories as commodities are held off the market by producers anticipating higher prices.⁹⁹ Such an argument assumes that futures prices only affect the expectations of food producers and not of food buyers. As food buyers also look to the futures market to inform their expectations they may also be willing to pay a higher price now to avoid paying a higher price in future. As food producers are then able to sell their food at a higher price now (as both buyer and seller have agreed at a higher price) commodities are not held off the market, but the price of the commodity has risen.¹⁰⁰ If the impact on expectations is greater on buyers than on sellers, it would clearly be possible for the physical commodity price to rise in response to changes in the futures markets, while at the same time inventories are falling.¹⁰¹

The short run price elasticity of supply and demand for agricultural commodities is also very low, in other words supply and demand do not respond quickly to changing prices. People need to eat and will be willing to give up other expenditure in order to maintain their levels of consumption. Production of food takes months or years, so producers cannot react quickly in response to rising or falling prices. Therefore only very significant and long lasting price changes could be expected to change supply and demand sufficiently to produce a noticeable change in actual inventories.¹⁰²

5.2 Physical commodity contracts

In addition to informing the expectations of participants in the physical markets, futures prices are often used as the basis of pricing physical market contracts. Long term contracts and many forward contracts are often based on the futures price plus or minus an agreed 'basis' for other factors such as location of delivery or quality of the physical product. As noted by the UN special rapporteur on the right to food: *"The grain futures price quoted by the Chicago Mercantile Exchange tend to be incorporated directly into grain contracts the world over."*¹⁰³ This type of 'basis' forward contract is reflected in publications from multiple agricultural product associations describing physical delivery contracts.¹⁰⁴

By incorporating the futures price directly into physical commodity contracts the price discovery process takes place entirely through the futures market, completely separate from the supply and demand of the commodity. Through their incorporation into physical market contracts, increases in futures prices as a result of financial speculation directly increase the cost of food.

5.3 Arbitrage

Arbitrage is the process through which traders can take advantage of an asset being quoted simultaneously at different prices in two different markets. In theory, there should be no significant difference in value between a futures contract for a tonne of wheat for delivery today and an actual tonne of wheat. Therefore traders (arbitrageurs) who are willing and able to take physical delivery, such as the large commodity firms and some hedge funds, can seek to profit from differing prices between futures near their delivery date and the price of the physical commodity. This process of arbitrage then works to close the difference in price between the two markets.¹⁰⁵

If futures prices are higher than physical prices, traders seeking to buy physical commodities who hold futures near to their delivery date will close out their positions in the futures market and seek to take ownership of physical commodities, rather than continuing to hold more expensive futures contracts through to delivery. This increase in demand in the physical market pushes up prices.

Taken together, the processes of informing traders price expectations, direct inclusion in physical commodity contracts and arbitrage provide strong mechanisms for price changes in futures markets to translate directly through into changing prices in the physical market.

Box 5. What about commodities without futures markets?

The huge price increases seen in basic agricultural commodities in the last ten years have not been limited to those with futures markets or to those markets which have been subject to significant financial speculation. Analysts sceptical of the role of financial speculation have argued that this is evidence that financial speculation cannot be playing a significant role in commodity price rises and that the increases must reflect changes in supply and demand.¹⁰⁶

This view however overlooks the significant transferability of demand between commodities, particularly in staple foods. If the price of wheat increases then consumers will substitute other similar foods such as rice, which does not have a significant futures market.¹⁰⁷ This then increases the demand for foods which do not have a futures market, raising their prices.

Therefore financial speculation is in fact contributing to rising prices in food commodities that do not even have a futures market.

6. What else is causing food prices to rise?

“Shifts in commodity market fundamentals ... alone are not sufficient to explain recent commodity price developments; another major factor is the financialization of commodity markets”¹⁰⁸

**United National Conference
on Trade and Development**

A range of other factors are contributing to high and volatile prices. But even when taken together they are not sufficient to explain the scale, pace and timing of recent price movements.¹⁰⁹

Harvests and stocks

Market economics would dictate that high prices are driven by a mismatch between supply and demand. However, analysis by researchers from the Consultative Group on International Agricultural Research argues that the 2007–2008 food crisis occurred amid *“rather minimal shocks”* to supply.¹¹⁰ More recently, 2010 saw the third highest global wheat harvest on record alongside the third highest prices.¹¹¹

Export bans

Export bans by major food producers following weak harvests are commonly cited as a major cause of rising prices. A FAO paper that reviewed a number of studies concluded that *“export restrictions did play a significant role in fuelling the price spikes”* between 2007 and 2010, but that *“other factors like aggressive shopping for food imports even when prices were surging (the ‘panic behaviour’) also contributed to the crisis.”*¹¹² Whilst important, the impact of export bans can only explain part of the price increases triggered by other factors.

Climate change

Climate change is already affecting food production by altering temperatures and rainfall. Research published in *Science* estimated that the impacts of climate change have already added 5 per cent to food prices. They have led to a decline in maize yields, for example, equivalent to Mexico’s annual production.¹¹³ Yet even these severe effects do not correspond with the price rises and volatility in food commodity markets, such as the 102 per cent increase in maize prices in the year to April 2011.¹¹⁴

Biofuels

European fuel policies and US subsidies are encouraging the diversion of land and crops from food to the production of biofuels, putting pressure on food supplies.¹¹⁵ The demand is on a huge scale: 40 per cent of US maize was used for fuel in 2010–2011.¹¹⁶ Biofuels are contributing to higher food prices, as well as harming local communities and increasing greenhouse gas emissions.¹¹⁷ Globally, though, biofuel production is rising steadily over the long term.¹¹⁸ This contrasts with the rapid swings in food prices witnessed since 2007.

Oil prices

Rising oil prices are contributing to higher food costs by making oil based fertilisers and transport fuel more expensive. Oil prices are also subject to the inflationary impacts of financial speculation. In April 2011, Goldman Sachs estimated that speculative positions were adding around 20 per cent to the price of oil.¹¹⁹ High oil prices also affect food prices indirectly by making biofuels more competitive.

Demand from China and India

The growing size and wealth of China and India's populations are often said to be driving up demand and global food prices.¹²⁰ However, as the FAO notes, *"Because these changes are gradual, it is not correct to consider them as an underlying cause for any sudden price increase such as the one experienced [in 2007-2008]... Cereal use in China and India has in fact been growing more slowly than in the rest of the world."*¹²¹ Whilst India is exporting less wheat than a decade ago, Chinese and Indian combined net wheat imports accounted for just 0.17 per cent of global production on average between 2007 and 2010.¹²² Changing demand from these emerging economies also cannot explain the drastic fall in food prices in the second half of 2008.

Monetary policy

Low interest rates and other sources of cheap money, such as quantitative easing, in the US, EU and China are also associated with higher commodity prices in that they drive inflation. This can fuel commodity speculation as finance becomes cheaper and traders seek high returns on the large amounts of money available, which can be better achieved through speculation in markets such as commodities, rather than lower return on investment in the 'productive economy'.¹²³

7. Fixing broken markets

“How can we ignore the fact that food has become an object of speculation or is connected to movements in a financial market that, lacking in clear rules and moral principles, seems anchored on the sole objective of profit?”¹²⁴

Pope Benedict XVI

Excessive speculation on food prices is having a devastating impact in the global south, increasing hunger, malnutrition and poverty. Effective financial market regulation can ensure that these markets work for both those who use these markets for the hedging of commercial risk and to the benefit of food consumers throughout the world.

The US has already passed legislation including provisions to tackle excessive speculation in financial commodity markets. The G20 and the European Union (EU) are now looking at what new measures are needed to effectively regulate markets outside of the US. In order for all of these reforms to be effective in combating excessive speculation, regulators need to ensure market transparency by moving commodity derivative trading onto well regulated exchanges and to place strict limits on the overall amount of the market that can be held by financial institutions.

Reforms that fall short of these measures are highly unlikely to tackle the dominance of financial speculators within these markets or the enormous inflation in basic food commodity prices they have caused.

7.1 Transparency: exchange trading and position reporting

The first step in ensuring commodity derivative markets work effectively is ensuring proper market transparency. Commodity derivative trading in Europe currently takes place either on exchanges, such as the NYSE Liffe in London and Paris, where there is little transparency in the positions of different categories of traders, or off exchanges altogether through OTC deals. This lack of transparency inhibits effective market oversight and regulation, prevents fair access to markets and fair pricing and is associated with greater bid-offer spreads (the difference between the price someone is willing to buy something for, compared to the price they are willing to sell it for).¹²⁵

Introducing proper market transparency through exchange trading and effective position reporting will allow regulators to address excessive speculation. It will also allow the public to effectively assess the impact financial speculation is having in financial commodity markets and to ensure these markets work effectively for the food buyers and producers who rely on them.

Exchange trading

All standardised and sufficiently liquid commodity derivatives should be moved out of OTC trading and onto well regulated exchanges, in the same way other financial assets such as equities are traded on the stock market. The aim of such regulation should be to ensure that the vast majority, if not all, commodity derivative transactions which currently take place via the 'dark' OTC markets are moved onto public exchanges.

Regulators need to work with commercial and financial participants to standardise OTC derivatives so as to ensure that greater liquidity can be achieved in a smaller number of standardised derivatives. The Committee of European Securities Regulators proposed this approach in their advice to the European Commission on financial market reform calling for *"ambitious targets to be set for an increased and high level of standardisation"* with clear powers for regulators to intervene if these targets are not met.¹²⁶ Without efforts to ensure standardisation of key derivatives that are currently traded OTC, there is the risk of a huge increase in the use of intentionally complex bespoke OTC derivatives intended to have insufficient liquidity to be exchange traded.

Once a greater standardisation of derivative contracts has been established, the responsibility must lie with market participants to prove to regulators that any remaining OTC contracts exist for the hedging of genuine commercial risk and cannot be achieved through standardised

exchange traded contracts. Without effective work to pre-emptively close loopholes and ensure standardisation, there is significant risk that OTC trading could continue to make up a large part of financial commodity markets. If this were to continue it would benefit a handful of financial institutions at the expense of other market participants and the effective functioning of derivative exchanges.

Position reporting

To ensure effective market oversight by regulators, and to allow meaningful analysis, all market participants should be required to provide position reporting information to regulators across all contract types, including OTC markets. Position data should be provided frequently and regularly, preferably daily, by exchanges to regulators. Data should be aggregated and made available to the public by both category of trader (e.g. commercial, financial), type of company (e.g. hedge fund, investment bank) and also by investment vehicle (e.g. index fund). This aggregated data must also be provided to the public frequently and on a regular basis. Such position reporting is vital for regulators, analysts and the public to clearly assess the impact of different categories of traders, such as financial speculators, on commodity prices.

Position reporting from commodity exchanges takes place in the US through the CFTC, providing public data on the overall positions of different categories of traders, yet no such reporting currently takes place for European commodity markets.

7.2 Controlling speculation: position limits

“There is strong evidence that speculation exacerbated the last oil and food bubble. Speculation will fuel the next one too, unless meaningful speculative position limits are established.”¹²⁷

Sir Richard Branson, founder of Virgin Group

Improving transparency alone is not enough to tackle excessive financial speculation. Regulators also need the power to limit the amount of market share financial speculators can hold, reducing their influence on food prices.

Position limits

Individual position limits cap the amount of the market that can be held by an individual trader. These position limits can be used to prevent market manipulation where one participant corners the market by holding the majority of the market for the underlying commodity and squeezing up prices. Such limits can be useful in preventing large financial firms from having too great an influence on the market through holding excessive positions and can tackle ‘commercial speculators’ – large multinationals who use commodity markets for speculation as well as hedging.

The limitation of *individual* position limits is that while they can help prevent individual traders having too large an influence on the market, they do not tackle the influence of a category of traders, such as financial speculators, on the market. To address this *aggregate* position limits are needed. Aggregate position limits cap the amount of any market that can be held by any category or group of traders in total, ensuring there is not an excessive concentration of such a group. Position limits require active analysis, oversight and intervention by regulators. If a category of traders reach their aggregate position limit, regulators would intervene to require the

largest market participants within that category to reduce their positions until that category fell below the aggregate limit.

Any such limits should be permanently established throughout the lifetime of the derivative contract and ensure a sustainable balance of commercial and non-commercial participants, while allowing sufficient liquidity. Given the lack of transparency in UK and EU markets in terms of composition, liquidity and trading volumes it is very difficult to independently assess the exact levels at which they should be set. However, data from the US markets in the 1990s suggests that commodity markets worked effectively for commercial participants, without a lack of liquidity, and with relatively stable prices, with as little as 25 per cent of the market being held by financial speculators.¹²⁸ In setting aggregate position limits regulators should use this historical data, together with ongoing market analysis, as the reference point for setting limits.

Enforcement of position limits should be absolute and market participants should be strictly prevented from exceeding them, without exception. The limits must work across contract types – establishing them only in futures markets without addressing OTC trading would be likely to simply see a huge shift in trading off regulated exchanges and onto dark, unregulated markets.

Effective permanent position limits which strictly control the amount of the market that can be held by financial speculators, such as index funds or investment banks, can prevent them having dominance over the price discovery functions of these markets. It is only through regulatory intervention to ensure a sustainable balance of commercial and financial participants that these markets can be brought back to delivering their intended purposes of allowing commercial participants to hedge risk and of price discovery for the physical markets. Without effective regulation to limit the impact financial speculators can have within the futures market it is likely that prices will become increasingly disconnected from supply and demand fundamentals, become more volatile and continue the dramatic upward trend seen in recent years.

Position management: deregulation by another name

Critics of position limits, such as the UK government, have argued that these measures are inflexible and that a more flexible system of 'position management' by regulators or exchanges would better suit the "fast changing, dynamic environment" of modern derivative markets.¹²⁹ Position management does not involve the setting of strict clear limits on traders positions but instead gives "the exchanges authority to manage positions at any time throughout a contract's life cycle and to instruct a member to close or reduce a position with the exchange, if that is necessary, to secure fair and orderly markets".¹³⁰ Such a system relies on the judgement of the exchanges. However this creates a significant conflict of interest as they have a strong incentive not to intervene in the market as they profit from the trading volume they are responsible for controlling.

In the UK, position management is the norm for regulating commodity markets and analysis of its implementation shows its clear failure in ensuring sufficient regulatory oversight. The UK regulator, the FSA, did not exercise its powers to intervene in commodity markets at all in 2010, delegating responsibility to the commodity exchanges and admitting it was not aware how often the exchanges themselves intervened in the markets.¹³¹

The failures of this system are all too apparent. For example, in July 2010 the hedge fund Armajaro nearly cornered the entire European cocoa market through the London based cocoa exchange – pushing prices to a 33 year high.¹³² Again, in May 2011 Frontier Agriculture, one of the UK's major grain marketing businesses, bought all the futures contracts available on the London feed wheat market, effectively buying up the whole market.¹³³ Had position limits been in place, these incidents would simply not have been possible.

Position management by exchanges hands control of the market over to those with the greatest motivations not to intervene. Without the strict, transparent and objective rules of position limits, position management effectively results in deregulation, with little or no action taken. In order to provide certainty that markets are properly managed, regulators cannot hand their powers over to the judgement of exchanges but must set clear hard limits that can provide confidence amongst market participants and the public that these markets are being regulated effectively.

Additional measures

In addition to introducing exchange trading and position limits, a range of other measures can be considered which may also help to reduce the damaging impacts of financial speculation:

- **Margins** – Increasing margin requirements for financial speculators both increases trading costs and increases firms' own financial risk in each transaction. Combined, the increase costs and risk could help reduce excessive speculation.
- **Financial transactions tax (FTT)** – An FTT on all commodity derivative transactions, set at a high enough level, could increase costs for high frequency traders and short term speculators who increase volatility and herding in the market.
- **Regulatory capacity** – At present specific regulatory expertise and capacity on commodity markets is lacking in the UK and throughout the EU. Dedicated expertise and increased capacity for commodity market regulators is required to ensure any rules proposed are enforced effectively.

7.3 International action

The World Development Movement is not alone in calling for reform. The director general of the FAO, the UN special rapporteur on the right to food, the UN Conference on Trade and Development (UNCTAD), governments including those of France, Indonesia, and the Dominican Republic, the Pope, amongst others, have all now called for action to tackle excessive financial speculation.¹³⁴

Earlier this year over 100 NGOs called on the G20 to introduce effective market transparency and position limits¹³⁵ and in the US over 450 organisations lobbied the US Congress to ensure effective rules were introduced.¹³⁶ It is now vital that these calls are heard and action is taken in the US, at the G20 and in Europe to effectively tackle financial speculation.

G20

The G20 has focused on reforming derivative markets, initially in the wake of the financial crisis and more recently as a result of volatile commodity prices.

In 2009 the G20 committed to introduce central clearing and exchange trading for all standardised OTC derivative contracts by the end of 2012.¹³⁷ This year the current French presidency of the G20 has made combating commodity price volatility one of the six core priorities for the G20 meetings. Among the measures the hosts of the summit aim to achieve is a common set of rules for commodity markets.¹³⁸

The G20 agriculture ministers have already encouraged regulators to introduce better regulation of agricultural commodity markets, including considering the introduction of permanent position limits.¹³⁹ As a whole, the G20 should call for all its member states to move commodity derivative trading onto well regulated exchanges and to introduce effective position limits to tackle financial speculation. Through coordinated international action the G20 can ensure that damaging financial speculation does not simply relocate to less regulated markets.

US

Deregulation in the late 1990s and early 2000s saw regulations that had previously prevented excessive financial speculation undermined or withdrawn. Since the financial crisis the US has been the first country to propose new rules to reregulate commodity derivative markets, as part of a wide ranging package of financial reforms signed into law by President Obama in July 2010. The Dodd-Frank Wall Street Reform and Consumer Protection Act:

- Introduces mandatory clearing and exchange trading for commodity swaps, that until now had been traded OTC.
- Allows for the introduction of individual and aggregate position limits across futures, swaps and options with the stated purpose of tackling excessive speculation.

The US regulator, the CFTC, is currently developing and consulting on a wide range of proposed rules to implement the measures included in the Dodd-Frank Act, much of which is being heavily opposed by financial lobbyists and some parts of the US Congress. It is essential that the CFTC fully implements the measures laid out in Dodd-Frank to tackle excessive financial speculation, including individual and aggregate position limits, to ensure that the major US markets are restored to their proper functions free from the damaging impact of excessive financial speculation.

European Union

The European Commission is also developing proposals for the regulation of commodity derivative markets as part of the wide ranging review of the Markets in Financial Instruments Directive (MiFID). Michel Barnier, the European commissioner for internal market, who has previously described financial speculation as 'scandalous',¹⁴⁰ has made clear his intention to use this opportunity to tackle excessive financial speculation: *"We want to know who is doing what, when they are engaged in speculation [...] We are going to make proposals for limits."*¹⁴¹

The Commission's consultation on the review of MiFID outlined proposals for a range of measures to regulate commodity derivative markets, including:

- Requiring all "clearing eligible and sufficiently liquid derivatives" to be traded on regulated markets.
- Requiring all commodity derivative markets to make available data on position reporting available to regulators, in detail, and to the public, in aggregate.
- Introducing hard position limits for commodity derivatives on exchanges and OTC markets, including aggregate limits for categories of market participants such as financial speculators, or for specific investment vehicles such as commodity index funds.¹⁴²

In order to ensure that the review of MiFID tackles excessive speculation it is vital that these proposals are introduced in full when it is considered by the European Parliament and Council of Ministers, due to be in autumn 2011.

Strict rules on exemptions are vital to avoid loopholes that could allow financial traders to avoid any new regulations. Exemptions from clearing requirements and position limits should only be granted to commercial organisations using these markets for the management of genuine risk relating to physical commodities. Any such exemptions for hedgers should be assessed on a case by case basis and must be based on strict criteria to prevent large multinationals involved in food production, such as Glencore or Cargill, abusing their positions to engage in excessive and damaging speculation. No financial institution, such as pension funds, should be granted exemptions from these requirements.

Action in Europe is vital to achieving effective regulation internationally. The rules proposed in the US to tackle excessive speculation are at risk as traders threaten to move to less regulated exchanges. By ensuring that clear and strong action is taken in Europe this can prevent the risk of regulatory arbitrage, of competition and deregulation between different trading venues and ensure meaningful regulation of the world's major food commodity markets.

By introducing effective transparency and effective position limits, the review of MiFID can ensure commodity derivative markets work better, for the benefit of commercial market participants, food producers and food consumers throughout the world.

8. Conclusion

“Speculation in basic foodstuffs is a scandal when there are a billion starving people in the world. We must ensure markets contribute to sustainable growth. I am fighting for a fairer world and I want Europe to take the lead on that.”¹⁴³

Michel Barnier, European commissioner for internal market

Excessive financial speculation in any market can cause harm, as the subprime mortgage crisis and the ensuing credit crunch demonstrated. Now it is all too apparent in food commodity markets.

The enormous growth in financial speculation in agricultural commodity markets has overwhelmed these markets; making them unable to fulfil their intended purpose of managing risk and supporting price discovery based on supply and demand. Speculation on food prices has led to price inflation, increased price volatility and most importantly, has caused massive harm to the people most at risk of hunger and poverty. Around one billion people currently go hungry and millions more are at risk of hunger, malnutrition and poverty if prices rise further.

Effective regulation of financial commodity markets is urgently needed, to prevent excessive speculation leading to further hunger and poverty and to make markets work for the commercial traders who rely on them. In the light of the devastating impact of speculation, commodity derivatives cannot be left unregulated, as if they were just another asset class for financial investors.

Far from stabilising commodity markets, the high volume of financial speculation has had the effect of a devastating flood. The level of speculation is far beyond that needed to provide liquidity to commercial hedgers, and is now undermining the effective working of these markets. Reducing the amount of the market that can be held by purely financial speculators is vital to make these markets work.

Financial market regulation is feasible and can be implemented without damaging the functioning of the markets for the commercial traders who rely on them. While the challenges of the global food system will not be solved by curbing speculation alone, such regulation would have a significant impact on ensuring fairer and more stable food prices.

The financial services industry, which has capitalised on agricultural commodity markets at the expense of commercial traders and the world's consumers, is lobbying hard to prevent regulation. With banks like Goldman Sachs making over \$1 billion (£600 million)¹⁴⁴ and Barclays making as much as \$550 million (£340 million) from speculation on food in one year alone,¹⁴⁵ it appears their motivation to oppose reform is driven more by financial self-interest than a concern for the effective functioning of these markets.

Those who oppose clear and strict regulations to tackle excessive speculation, including the UK government, risk condemning millions of people to a future of hunger and poverty. In the US, at the G20 and through the European Commission's review of the Markets in Financial Instruments Directive (MiFID), there is a unique opportunity to put in place the regulation that is so urgently needed. Regulation of agricultural derivative markets would end the dominance of financial speculators, and make these markets work for the benefit of food producers and consumers throughout the world. Regulators must take this opportunity to act for the benefit of all.

Glossary

Arbitrage

Arbitrage is the process through which traders can take advantage of an asset being traded simultaneously at different prices in two different markets. The process of arbitrage reduces the price difference between the two markets.

Asset

An asset is any resource that can be owned that has economic value.

Bid-offer spread

The difference between the price someone is willing to buy something for, compared to the price they are willing to sell it for (this is most commonly seen in day-to-day life when exchanging currency).

CFTC

Commodity Futures Trading Commission. The US commodity markets regulator.

Commercial hedger

Someone who uses futures markets to manage risk from their commercial activity in buying or selling commodities.

Commodity

A commodity is a type of physical good which is the same no matter who produces it. There is no difference in quality. Because a commodity is the same, it can be easily traded at one global price.

Derivative

A financial contract, the value of which is 'derived' from the price of something else, known as an 'underlying asset'. For example a wheat derivative contract has value because of the value of the wheat, the underlying asset of the contract.

ETP

Exchange traded product. An investment product that is then traded on an exchange, in the same way that company shares are traded on the stock exchange.

FAO

United Nations Food and Agriculture Organisation.

Financial speculator

Someone who does not have any exposure to price risk from the underlying asset, but will take on the risk as they seek to make a profit from rising or falling prices.

Forwards

A forward contract is a contract to exchange a set amount of a specified asset for delivery on a future date at a price agreed at the outset of the contract. This gives the seller of the forward contract (the producer) certainty over the price they will receive and transfers the risk from changing prices to the buyer of the contract.

As an example, a producer could agree to sell one tonne of wheat for \$100 in six months' time.

Fundamentals

The 'fundamentals' are the supply and demand of an asset. According to market theory the price of any asset is based upon the balance of supply of and demand for that asset.

Futures

Futures are similar to forward contracts in that they are contracts for the delivery of something at an agreed date in the future. They differ in that they are standardised contracts that are traded on exchanges and do not always require delivery of the underlying asset – in some markets contracts can be settled in cash rather than physical delivery.

Hedging

The transfer of price risk from one market participant to another.

Liquidity

The number of trading opportunities in a market, which depends on factors such as the number of willing buyers and sellers in a market at any one time.

Long position

Holding a futures contract, on the expectation that the price will rise.

Options

An option contract gives the buyer the opportunity, but not the obligation, to buy an asset at a specified price within a specified amount of time. The seller is required to fulfil the transaction if the buyer exercises their right to buy.

As an example, a grain trader could buy the option to buy a tonne of wheat for \$100 in six months' time.

OTC

'Over-the-counter' trading. Deals agreed privately between two participants with little transparency or regulation.

Physical (or spot) market

The market for trading in physical commodities, such as wheat or maize.

Position

The balance of long and short contracts held by a trader in a futures market. Total long contracts – total short contracts = trader's position.

Price discovery

The process of working out how much something is worth – its 'true market value'.

Short position

Selling a futures contract, on the expectation that the price will fall.

Swaps

In a swap, the user of a commodity could secure a set price and agree to pay a financial institution this fixed price. Then in return, the user would get payments based on the market price for the commodity involved. On the other side, a producer who wishes to fix their income would agree to pay the market price to a financial institution in return for receiving fixed payments for the commodity.

Underlying asset

The asset that a derivative is based upon. For example for a wheat futures contract, the underlying asset is the wheat.

Volatility

The degree of price fluctuation or the extent to which prices rise and fall.

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