

Riding the wave: high prices, big business?

The role of multinationals in the international grain markets.



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Riding the wave: high prices, big business?

The role of multinationals in the international
grain markets

Gerdien Meijerink
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Riding the wave: high prices, big business?; The role of multinationals in the international grain markets

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In 2007-2008, world market prices for grains and inputs such as fertiliser have risen sharply. At the same time, international trade is increasingly dominated by only a few large agribusiness firms. Civil society organisations are increasingly concerned about the potential impact of these two trends. This report provides an overview of the international trade of grains, the role of multinationals that trade in international grains, and the linkage of international and domestic grain markets in Africa. This research also provides an analysis of the role of multinationals and speculation on grain prices.

In 2007-2008 zijn wereldmarktprijzen voor granen en inputs sterk gestegen. Tegelijkertijd groeit de marktconcentratie van deze sectoren. Er is een groeiende zorg bij maatschappelijke organisaties over de potentiële gevolgen van deze twee trends. Dit rapport geeft een overzicht van de internationale graanhandel, de rol van multinationals in de internationale graanhandel, en de relatie tussen internationale en binnenlandse graanmarkten in Afrika. Het onderzoek geeft ook een analyse van de rol van multinationals en speculatie op graanprijzen.

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Preface

This report was commissioned by Oxfam-Novib (Netherlands). In 2007-2008 world market prices for major food commodities such as grains as well as inputs such as fertilisers, have risen sharply to historic highs. At the same time, these sectors are increasingly dominated by a few large agribusiness firms. Civil society organisations are increasingly concerned about the potential impact of these two trends. The position of large companies and retailers has been relatively well documented. However, less documentation is available about the linkage of international and domestic markets, especially in poor countries such as those in Africa.

We are grateful for the guidance and kind support provided by Gine Zwart (Oxfam), Martin Banse (LEI) and Siemen van Berkum (LEI) as well as the useful feedback obtained during the expert meeting of 16 December 2008.

A handwritten signature in black ink, appearing to read 'R.B.M. Huirne', written in a cursive style.

Prof Dr R.B.M. Huirne
Director General LEI Wageningen UR

Summary

In 2007-2008, world market prices for major food commodities such as grains as well as for inputs such as fertiliser have risen sharply to historic highs. At the same time, these sectors are dominated by a few large agribusiness firms. Civil society organisations are increasingly concerned about the potential impact of these two trends. The aim of this report is to provide empirical evidence that helps to understand the potential effects of the organisation of the world grain sector, the position of Multi National Enterprises (MNEs) in the grain supply chain, and world market pricing. This analysis is done based on a set of questions formulated by Oxfam-Novib:

1. What are the main features of the international grain markets?
2. What are the price trends in the international grain markets?
3. What are the main features of leading MNEs in international grain trade and what are their corporate strategies?
4. What is the position of MNEs in Sub-Saharan Africa and how are African farmers affected by international prices?
5. Do MNEs or does speculation affect grain prices at international markets?

International grains markets

Global demand for grains is increasing steadily, which is matched by an increasing supply, but only just. World grain stocks have decreased in the past decades, thus reducing effective supply in the world market. The USA is the major exporter of grains (especially maize). China is a large producer of grains, but exports only a small amount.

High food prices

Food prices have increased rapidly over the past years, with grains being among the commodities with the highest price increase. In the second half of 2008, grain prices have declined rapidly although they remain high compared to pre-2006 levels. Several factors have caused the recent price fluctuations. They reflect underlying trends in supply and demand for agricultural commodities that began more than a decade ago as well as other developments that have occurred more recently.

Grain demand has shown a rapid growth due to population growth but also, more recently, due to increased demand for for instance biofuels and livestock feed. These factors have contributed to a tightening of world balances of grains

over the last decade. In addition, many countries have reduced their grain stocks, thus reducing the buffer that could help reduce supply shocks. Weather conditions have been adverse in 2006 and 2007 in some major grain-producing areas, thus reducing world supply. Together with low stocks this has led to an increase in prices. Additional factors include the declining value of the US dollar, rising energy prices, increasing agricultural costs of production (due to higher fuel and fertiliser costs), growing foreign exchange holdings by major food-importing countries, and policies adopted by some exporting and importing countries to mitigate their own food price inflation. The 2008 situation resembled a 'perfect storm' in which different factors came together almost simultaneously, resulting in a peak in prices. In the last quarter of 2008, financial markets collapsed and a global economic downturn became clear. Grain prices fell steeply. Whether prices will continue to fall, or whether they will rise again in 2009 is unclear. However, most experts agree that the volatility of prices will remain high in the future. The reason for this is that world stocks are still low, and that any change in supply will have a large effect on prices.

International trade and MNEs

World grain trade constitutes only a small share of world production (from 7% for rice to 18% for wheat). The global trade is handled increasingly by only a handful of companies. Cargill, ADM and Bunge are the major players. In the grains market (and food markets in general) there is a continuing trend towards horizontal and vertical integration. Horizontal integration consists of merging firms at the same level in the supply chain while vertical integration consists of merging firms at different stages in the supply chain (for instance input and output sectors). There are several advantages to such mergers for MNEs. An important advantage is that they lead to reduced competition in global food markets. Large MNEs such as Cargill, ADM and Bunge engage in various collaborative contracts with large MNEs that specialise in inputs (such as agrochemicals and seeds). Such collaborations have been termed 'food clusters'. These food clusters wield much power in terms of decisions about what is produced, what is consumed and on what basis these decisions are made.

Although such food clusters are increasing in importance, there is relatively little recent data on them. The authors recommend therefore more detailed research on the role of large MNEs such as Cargill, ADM and Bunge in international grain trade as well as more updated information on the main food clusters.

Supply chain linkages

While the global grain trade is increasingly characterised by horizontal and vertical integration, which has been facilitated by trade liberalisation, producers all over the world face increasing competition. Technological progress has increased agricultural productivity, but has also depressed prices (by increasing supply). A large number of competitive and relatively powerless producers face a few large powerful buyers. These factors explain why throughout the world, the net incomes of producers have not increased much or have even decreased.

In Sub-Saharan Africa, the situation is somewhat different because the large MNEs are hardly active in the grain sector. Most African grain markets are characterised by a high fragmentation: trade is carried out by a multitude of small traders. Domestic grain markets are highly influenced by domestic and regional supply and demand factors rather than international factors. A failed harvest in one region, for instance, pushes up prices in that region as well as in neighbouring regions. Many grains produced and traded in Africa are non-tradable (such as sorghum, millet), which means there is no international market for them. Transaction and transport costs are relatively high in Africa, which leads to low price transmission i.e. high international prices are not translated to high local prices or with a substantial lag. Although international grain prices have a limited effect on African domestic markets, the high fertiliser prices in the international market did have a significant effect on local fertiliser prices, which increased considerably. Many farmers in Africa are net buyers of food, and thus they will not benefit from higher grain prices, while they are hurt by higher fertiliser prices.

Speculation and profits of MNEs

Based on the data and research analysed in this report, we found no clear evidence that speculation by index funds on the futures commodity markets has led to higher prices. First, while there has been an increase in speculative investments in the futures commodity markets, total trade in the futures markets (including non-speculative trade) has increased as well, so that the share of speculative trade has not increased much. Second, very high price increases have been found in sectors that do not have future markets. Third, a bubble in storable commodities (such as grains) should have been accompanied by an increase in storage, which has not been the case. Finally, the number of futures and derivative contracts that can be created is limitless, therefore simply observing that there has been a rise in speculative investment does not automatically prove that this has led to higher prices. Two in-depth studies using data of the main futures market (Chicago Board of Trade) have concluded that there is

no strong statistical evidence to support the claim that the increase in speculative investments has, indeed, led to higher prices.

There has been concern about the fact that the futures and cash prices on futures commodity markets no longer converged (the futures prices were higher than cash prices). This has also been attributed to speculation. However, again, there is no evidence that this is the cause. The cause may also lie in the storage and freight costs which have risen considerably as demand for commodities increased and fuel cost soared.

There is no evidence either that the dominant MNEs active in the international grain trade (Bunge, Cargill and ADM) have pushed up prices. They would only be able to do this by hoarding commodities such as grains on a large scale, and the data shows that in fact, stocks have decreased in the past years. There is more evidence that they did profit from high commodity prices although the evidence is somewhat mixed. In some cases they have clearly been able to profit: demand for commodities was high and those firms operating close to farmers could increase their margins. However, in some cases the high commodity prices resulted in a net loss because the operational costs of MNEs have also increased.

Whether the MNEs could profit depends on two factors. The first is timing: whether they could buy at low prices and sell against high prices. The second is the power that the MNEs can exert in setting margins. The large agribusinesses have global sourcing networks that provides them the flexibility to source where prices are relatively low, and to adjust manufacturing activities to respond to shifts in a dynamic global marketplace. On the second account, the main agribusinesses dominate a large share of the market and own not just one segment of the chain but a complex that includes input as well as output sectors. This has two advantages. If output prices rise (for instance for grains), the operational costs for MNEs may rise, but at the same time the demand for inputs (such as fertiliser) will also rise (assuming that farmers will start growing more crops when prices rise), leading to higher sales in that sector, and vice versa. Also, the integration of a whole chain puts MNEs into a good position to determine margins.

To build on these advantages, the MNEs continue to expand and merge. The trend towards free trade has clearly facilitated their ability to source globally. The MNEs are therefore able to deal well with higher price volatility. By contrast, farmers will face more difficulties when prices fluctuate, especially in the face of increasing competition in a free trade environment.

Conclusion

This report concludes that food prices in 2007-2008 increased as a result of a combination of different factors, in which a decrease in world grain stocks played a major role. The report finds no evidence that the increase in food prices was caused by speculation either in futures markets or by MNEs. It also finds no evidence that MNEs have driven up prices by exploiting their dominant position in world grain trade. It has found, however, that MNEs have in several cases been able to significantly profit from high demand and high prices. It also finds that MNEs are able to be flexible and make use of different opportunities with respect to sourcing, pricing et cetera, and to spread risk. They can achieve this due to their dominant position in world grain markets and due to the fact that they have integrated the inputs as well as the outputs sectors into large agri-business complexes that span various countries. This is illustrated by the fact that the fourth quarter of 2008 - when prices for grains and fertilisers fell, and the financial markets tumbled - MNEs were still able to make profits (although not on all segments).

This report is a quick scan of the world grain trade, the role of MNEs and the effect on Sub-Saharan Africa. It recommends to extend the analysis to Asia, where the MNEs are increasing their influence, both in the grain sector and in the input sector.

Samenvatting

De rol van multinationals in internationale graanmarkten

In 2007-2008 zijn de wereldmarktprijzen voor belangrijke voedselproducten zoals granen en voor inputs zoals kunstmest sterk gestegen tot historische hoogtes. Tegelijkertijd worden deze sectoren in toenemende mate gedomineerd door een paar grote agribusinessbedrijven. Er bestaat een groeiende zorg bij maatschappelijke organisaties over deze twee trends. Het doel van dit rapport is om feiten boven tafel te krijgen die helpen een beter beeld te scheppen van de organisatie van de internationale graansector, de posities van Multinationals (MN's) en prijszetting in wereldmarkten. De analyse is gedaan op basis van een aantal vragen die geformuleerd zijn door Oxfam-Novib:

1. Wat zijn de belangrijkste kenmerken van de internationale graanmarkten?
2. Wat zijn de prijstrends in de internationale graanmarkten?
3. Wat zijn de belangrijkste kenmerken van de grootste MN's in de internationale graanhandel en wat zijn hun bedrijfsstrategieën?
4. Wat is de positie van MN's in Sub-Sahara Afrika en wat is het effect van de internationale prijzen op Afrikaanse boeren?
5. Beïnvloeden MN's en/of speculatie de graanprijzen in internationale markten?

Internationale graanmarkten

De vraag naar granen is wereldwijd gestaag aan het groeien, waaraan nog maar net wordt voldaan door een groeiend aanbod. Graanvoorraden in de wereld zijn gedaald in de afgelopen decennia, wat het effectieve aanbod heeft verlaagd. De Verenigde Staten zijn de belangrijkste exporteur van granen (vooral van maïs). China is een grote producent van granen, maar exporteert slechts weinig.

Hoge voedselprijzen

Voedselprijzen zijn snel gestegen de afgelopen jaren, waarbij granen tot de producten hoorden die de hoogste stijging hebben doorgemaakt. In de tweede helft van 2008 zijn graanprijzen snel gedaald, hoewel ze hoog zijn gebleven vergeleken met de niveaus van voor 2006. Verschillende factoren hebben tot de recente prijsfluctuaties geleid. Ze reflecteren zowel langetermijnvraag- en aanbodsontwikkelingen van agrarische producten als andere, meer recentere ontwikkelingen.

De vraag naar granen is gegroeid door bevolkingsgroei, maar ook door de vraag naar bio-energie en veevoeder. Deze factoren hebben bijgedragen tot een krappere wereldbalans van granen gedurende het laatste decennium. Daarbij komt nog dat veel landen hun graanvoorraden hebben gereduceerd, waardoor de buffer is verkleind die een verlaging van het aanbod zou kunnen opvangen. Weersomstandigheden zijn slecht geweest gedurende 2006 en 2007 in sommige grote graanproducerende gebieden, waardoor het werelddaanbod werd gereduceerd. In combinatie met kleine voorraden heeft dit geleid tot een prijsstijging. Bijkomende factoren zijn een lagere dollarwaarde, hogere brandstofprijzen, hogere landbouwproductiekosten (door hoge brandstofprijzen en kunstmestprijzen), het aanhouden van buitenlandse deviezen door belangrijke voedselimporterende landen en beleid dat door sommige exporterende en importerende landen werd gevoerd om eigen prijsinflatie te beheersen. De situatie in 2008 is te vergelijken met een 'perfecte storm' waarbij verschillende factoren samenvielen en hebben geleid tot een piek in prijzen. In het laatste kwartaal van 2008 kregen de financiële markten een klap en een wereldwijde recessie werd duidelijk. Graanprijzen daalden sterk. Of prijzen verder zullen dalen, of dat ze weer zullen stijgen in 2009, is niet duidelijk. Toch verwachten de meeste experts dat de prijsvolatiliteit hoog zal blijven in de toekomst. De reden hiervoor is dat wereldgraanvoorraden nog steeds klein zijn en dat elke verandering in aanbod een groot effect op prijzen zal hebben.

Internationale handel en MN's

De wereldgraanhandel beslaat maar een klein deel van de wereldproductie (van 7% voor rijst tot 18% voor tarwe). De wereldhandel wordt in toenemende mate uitgevoerd door een klein aantal bedrijven. Cargill, ADM en Bunge zijn de belangrijkste spelers. In de graanmarkten (en voedselmarkten in het algemeen) is een groeiende tendens te zien van horizontale en verticale integratie. Horizontale integratie houdt in dat bedrijven in hetzelfde segment van de keten fuseren, terwijl verticale integratie betekent dat bedrijven in verschillende segmenten van de keten fuseren (bijvoorbeeld input- en outputsectoren). Er zijn verschillende voordelen van dit soort fusies voor bedrijven. Een belangrijk voordeel is dat ze leiden tot verminderde concurrentie in wereldvoedselmarkten. Grote MN's zoals Cargill, ADM en Bunge nemen deel aan verschillende samenwerkingsverbanden (contracten) met grote MNE's die gespecialiseerd zijn in inputsectoren (zoals agrochemie en zaden). Zulke samenwerkingsverbanden worden ook wel 'voedselclusters' genoemd. Deze voedselclusters hebben veel macht wat betreft beslissingsbevoegdheid over wat er wordt geproduceerd en geconsumeerd en op welke basis deze beslissingen worden genomen.

Hoewel zulke voedselclusters steeds belangrijker worden, is er relatief weinig informatie over te vinden. Wij bevelen daarom aan om meer gedetailleerd onderzoek te doen over de rol van grote MN's zoals Cargill, ADM en Bunge in de internationale graanhandel evenals meer recente informatie te vergaren over de belangrijkste voedselclusters.

Aanbodsketens

Terwijl de wereldgraanhandel steeds meer wordt gekenmerkt door horizontale en verticale integratie, wat is vergemakkelijkt door handelsliberalisatie, worden wereldwijd producenten geconfronteerd met grotere concurrentie. Technologische vooruitgang heeft agrarische productiviteit verhoogd, maar heeft ook tot lagere prijzen geleid (door een vergroot aanbod). Een groot aantal concurrerende en relatief machteloze producenten staan tegenover een klein aantal machtige opkopers. Deze factoren verklaren waarom over de hele wereld het netto-inkomen van producenten niet of nauwelijks is gestegen.

In Sub-Sahara Afrika is de situatie enigszins anders omdat de grote MN's nauwelijks actief zijn in de graansector. De meeste Afrikaanse graanmarkten worden gekenmerkt door een hoge fragmentatie: handel wordt uitgevoerd door een groot aantal kleine handelaren. Binnenlandse graanmarkten worden in veel grotere mate beïnvloed door binnenlandse en regionale vraag- en aanbodsfactoren dan door internationale factoren. Een mislukte oogst in een bepaalde regio, bijvoorbeeld, doet de prijzen in die regio stijgen, evenals in de aangrenzende regio's. Ten tweede, veel granen die verbouwd en verhandeld worden in Afrika zijn niet verhandelbaar op de wereldmarkt ('non-tradables' zoals sorgum of gierst). Ten derde, transactie- en transportkosten zijn relatief hoog in Afrika, wat leidt tot een lage prijstransmissie (hoge internationale prijzen worden niet vertaald in hoge lokale prijzen, of met een grote vertraging). Hoewel internationale graanprijzen in beperkte mate effect hebben op Afrikaanse binnenlandse markten, hebben de hoge kunstmestprijzen wel een significant effect gehad op lokale kunstmest prijzen, die sterk zijn gestegen. Veel boeren in Afrika zijn netto kopers van voedsel, en zij zullen dus niet profiteren van hogere graanprijzen, terwijl zij wel getroffen worden door hogere kunstmestprijzen.

Speculatie en winsten van MN's

Gebaseerd op de data en het onderzoek dat in dit rapport is geanalyseerd, vinden wij geen duidelijk bewijs voor het argument dat speculatie door indexfondsen op de termijnmarkten geleid hebben tot hogere prijzen. Hoewel er een stijging is geweest in speculatieve investeringen in agrarische termijnmarkten, is de totale handel in de termijnmarkten ook gestegen (met inbegrip van niet-

speculatieve handel). Ten tweede zijn er sterkte prijsstijgingen geconstateerd in markten waar geen termijnmarkten bestaan. Ten derde, een 'zeepbel' in prijzen van producten die opgeslagen kunnen worden (zoals granen) zou moeten samengaan met een grotere opslag van granen, wat niet het geval is geweest. Ten slotte, de hoeveelheid termijnzaken en derivaten die gecreëerd kunnen worden is onbeperkt en daarom is de observatie dat er een stijging in speculatieve investeringen is geweest, geen overtuigende reden om te stellen dat deze dus tot hogere prijzen heeft geleid. Twee grondige studies die gebruik hebben gemaakt van data van de belangrijkste termijnmarkten (de Chicago Board of Trade) concluderen dat er geen afdoende statistisch bewijs is om de stelling te onderbouwen dat speculatieve investeringen inderdaad hebben geleid tot hogere prijzen.

Er is zorg geuit over de ontwikkeling dat de prijs op de termijnmarkt ('futures price') en de geldende prijs ('cash price') niet langer samenvallen (de prijzen op de termijnmarkt blijven hoger dan de geldende prijs). Dit wordt ook toegeschreven aan speculatie. Toch hebben wij geen bewijs gevonden dat dit het geval is. De oorzaak kan namelijk ook liggen in opslag en vrachtkosten die aanzienlijk zijn gestegen omdat de vraag naar goederen is gestegen en brandstofkosten een hoge vlucht hebben genomen.

Wij hebben ook geen bewijs gevonden dat de drie grote multinationals die actief zijn in de graanhandel (te weten Bunge, Cargill and ADM) de prijzen hebben omhooggestuwd. Zij zouden dit alleen hebben kunnen doen wanneer zij op grote schaal graanvoorraden zouden hebben aangelegd en de gegevens tonen aan dat graanvoorraden juist zijn gedaald afgelopen jaren.

Er zijn meer argumenten te vinden voor het feit dat de multinationals hebben geprofiteerd van de hoge prijzen hoewel het bewijs gemengd is. In sommige gevallen hebben zij duidelijk kunnen profiteren: de vraag naar graan was hoog en die bedrijven die dicht bij boeren opereerden hebben hun marges kunnen vergroten. Aan de andere kant, in sommige gevallen zorgden de hoge prijzen voor een nettoverlies omdat de operationele kosten van sommige multinationals daardoor ook omhooggingen.

Of de multinationals hebben kunnen profiteren hangt samen met twee factoren. De eerste factor is timing: of ze tegen lage prijzen konden opkopen en daarna tegen hoge prijzen konden verkopen. De tweede factor is de macht die multinationals kunnen uitoefenen om marges te stellen. De grote agribusiness-bedrijven hebben een mondiaal sourcing netwerk dat hen de flexibiliteit geeft om daar aan te kopen waar prijzen relatief laag zijn, en om het productieproces aan te passen zodat ze kunnen voldoen aan veranderingen in een dynamische, mondiale marktplaats. Met betrekking tot het tweede punt, de grote agribusiness-

bedrijven domineren een groot deel van de markt en zijn eigenaar niet van slechts een segment van de keten maar van een complex dat zowel input- als outputsectoren beslaat. Dit heeft twee voordelen. Ten eerste, als outputprijzen stijgen, zoals voor graan, stijgen weliswaar de operationele kosten van MN's, maar tegelijkertijd zal de vraag naar inputs, zoals voor kunstmest, waarschijnlijk ook stijgen (aannemende dat boeren meer zullen produceren als prijzen stijgen), wat zal leiden tot hogere verkopen in die sector en vice versa. Ten tweede, door de integratie van een hele keten bevindt de MN zich in een goede positie om marges vast te stellen.

Om voort te bouwen op genoemde voordelen, blijven de multinationals uitbreiden en fuseren. De trend naar meer vrije handel heeft hun vermogen vergroot om mondiaal in te kopen (sourcing). De multinationals zijn daarom beter in staat om hogere prijsvolatiliteit te hanteren. Daarentegen zullen boeren het moeilijker hebben als prijzen fluctueren, vooral in het geval van grotere concurrentie door handelsliberalisatie.

Conclusie

Dit rapport concludeert dat de voedselprijzen in 2007-2008 gestegen zijn door een combinatie van verschillende factoren, waarin een daling van graanvoorraden een belangrijke rol heeft gespeeld.

Het rapport vindt geen bewijs dat de toename in wereldgraanprijzen is veroorzaakt door speculatie in de termijnmarkten noch door MN's. Het vindt ook geen bewijs dat MN's prijzen hebben opgedreven door hun dominante positie in de wereldgraanmarkt te exploiteren. Het rapport vindt wel aanwijzingen dat MN's in bepaalde gevallen flink hebben kunnen profiteren van een hoge vraag en hoge prijzen voor zowel graan als inputs zoals kunstmest. Het rapport concludeert ook dat multinationals in staat zijn geweest om flexibel te opereren en gebruik te maken van uiteenlopende kansen met betrekking tot sourcing, prijszetting en risicospreiding. Zij hebben dit kunnen doen door gebruik te maken van hun dominante positie in de wereldmarkt, en door het feit dat zij zowel input- als outputsectoren hebben geïntegreerd tot grote agribusinesscomplexen die verschillende landen beslaan. Dit kan geïllustreerd worden aan de hand van het vierde kwartaal van 2008 - waarin prijzen voor granen en kunstmest daalden en de financiële markten ineens stortten - maar waarin de multinationals nog steeds in staat waren om winsten te behalen (hoewel niet op alle segmenten).

Dit rapport bestaat uit een snelle scan van de wereldgraanhandel, de rol van multinationals, en de situatie in Sub-Sahara Afrika. Het adviseert om de analyse uit te breiden naar Azië, waar de multinationals hun invloed aan het uitbreiden zijn, zowel in de graan- als in de inputsector.

1 Introduction

The past few years, world market prices for major food commodities such as grains¹ have risen sharply to historic highs. At the same time, these sectors are increasingly dominated by a few large agribusiness firms. There is growing concern on the part of civil society organisations on the impact of MNE positioning and strategies on the international grain price development.

The aim of this report is to provide empirical evidence that helps understand the impact of MNE market positioning and strategies on international grain price development. This analysis is done based on a set of questions formulated by Oxfam-Novib (based on ToR Taking away options, October 2, 2008):

1. What are the main features of the international grain markets?
2. What are the price trends in the international grain markets?
3. What are the main features of leading MNEs in international grain trade and what are their corporate strategies?
4. What is the position of MNEs in Sub-Saharan Africa and how are African farmers affected by international prices?
5. Do MNEs or speculation affect grain prices at international markets?

Chapter 2 provides a background overview of the international grain market. Data are presented on quantity and value traded internationally (compared to total production), as well as historic price trends and expected price trends in the future. The chapter briefly explains the factors that led to the grain price increase in 2007-2008. Chapter 3 presents information about the major players in the international grains markets. It describes the trend of increasing horizontal and vertical integration of MNEs into large 'food clusters'. Chapter 4 explains the global supply chain linkages with a special focus on the grain supply chain in Sub-Saharan Africa. It explains why many countries in Sub-Saharan Africa have not (yet) been affected much by the trends described in chapters 2 and 3. The report concludes with chapter 5 with an analysis on the possible role of speculation and the role MNEs have played in the grain price fluctuations.

¹ In this reports, we will use the term grains to include maize, wheat, rice and coarse grains.

The information in this document is based on secondary data obtained through reports and databases available at LEI Wageningen UR. The researchers do not pretend to be complete in the presentation of the findings. Nevertheless, this report provides a first insight that helps understand the possible relation between grain prices, speculation, MNEs, supply chain linkages and price transmission along the chain.

2 Background: overview of the international grain markets and positions

2.1 Introduction

Food is a basic necessity. The share of poor people's income used to purchase food is high, and therefore food price increases are socially and politically an important issue. For this reason, this report tries to shed light on the possible relations between market concentration and the recent price trends. To be able to do so, a better understanding of the international grain sector and market is necessary. This chapter presents the basic data on the international trade of grains and gives an overview of recent price trends and of future projections.

2.2 Global grain production and trade

Globally, most of the domestic consumption of grains is met by domestic production (figure 2.1) but only just. Only a few countries are net importers or exporters (figure 2.2). Figure 2.1 shows that global grain stocks have decreased significantly in recent years, thus reducing buffers to accommodate a sudden drop in supply, for instance as a result of adverse weather or increase in demand, for instance an increase in ethanol demand. This is one of the main factors behind the increasing, yet fluctuating grain prices.

Figure 2.1

World consumption, production and stocks of rice, maize, wheat and coarse grains

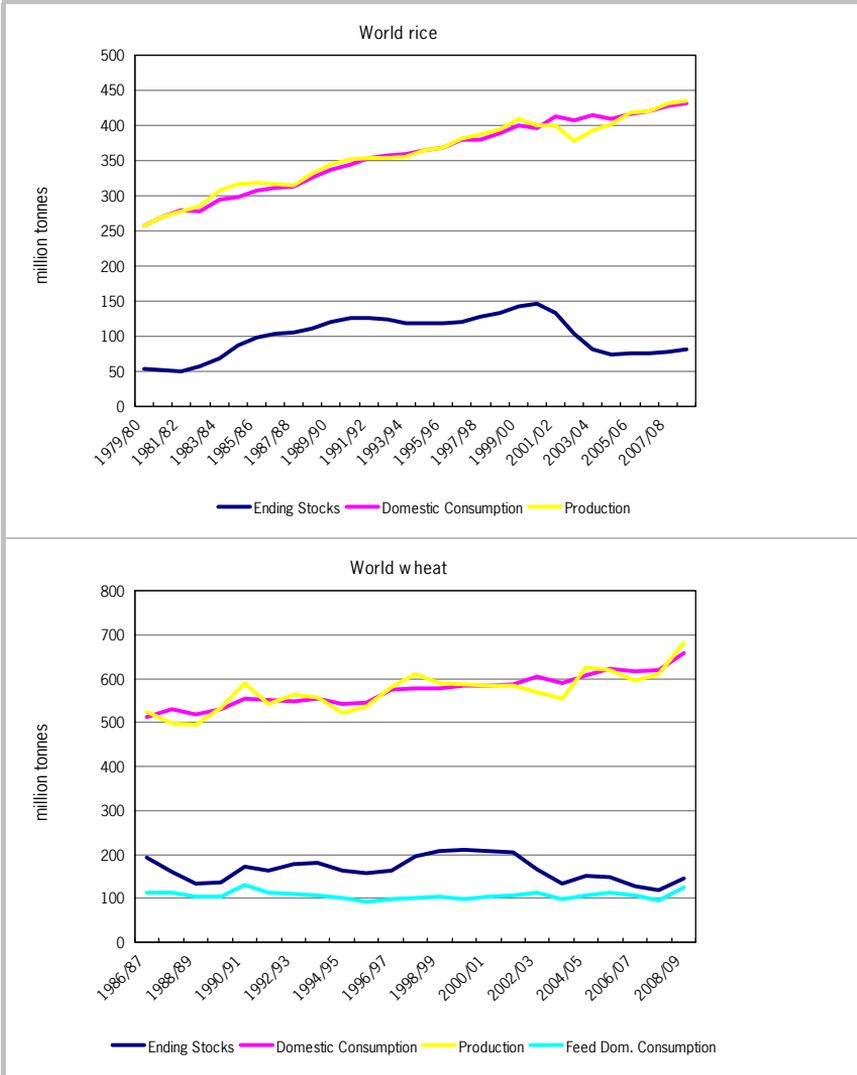
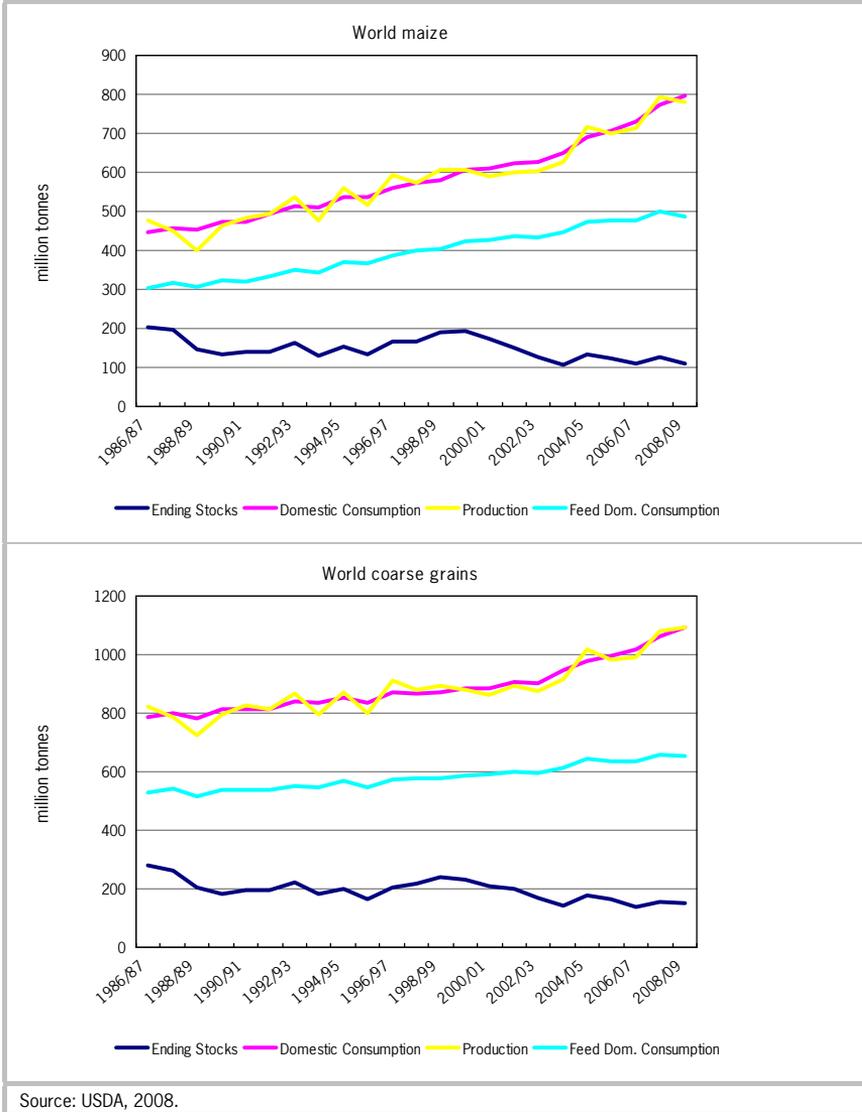


Figure 2.1 World consumption, production and stocks of rice, maize, wheat and coarse grains (continued)

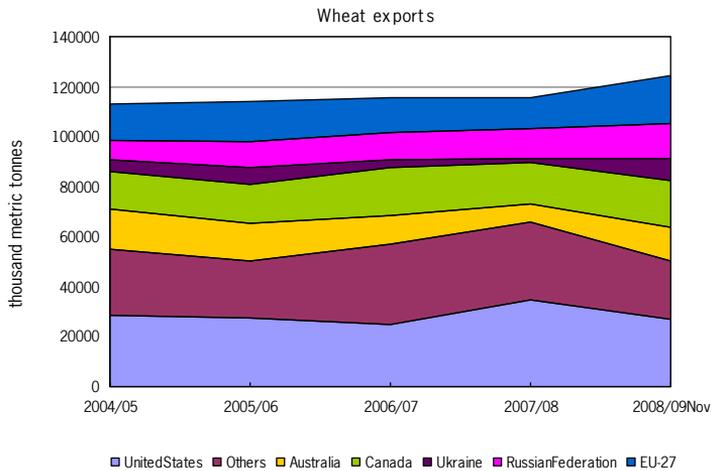


Source: USDA, 2008.

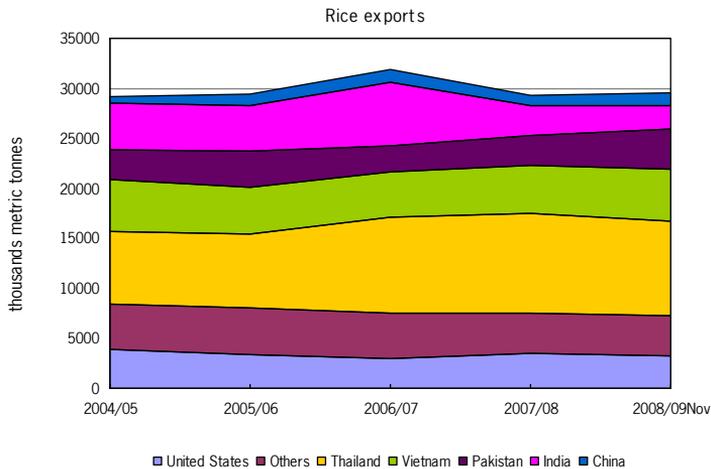
Figure 2.2 shows that the USA is the major exporter of most grains. Because international prices are determined for a large part by demand and supply dynamics, the USA, as a major supplier will have a certain level of influence on

international prices. When the USA lowers its supply, international prices will likely increase, and vice versa, provided the supply change is not offset by a concomitant change in supply by other major exporting countries.

Figure 2.2 Wheat, maize rice and coarse grains exports 2004-2008 according to major exporters



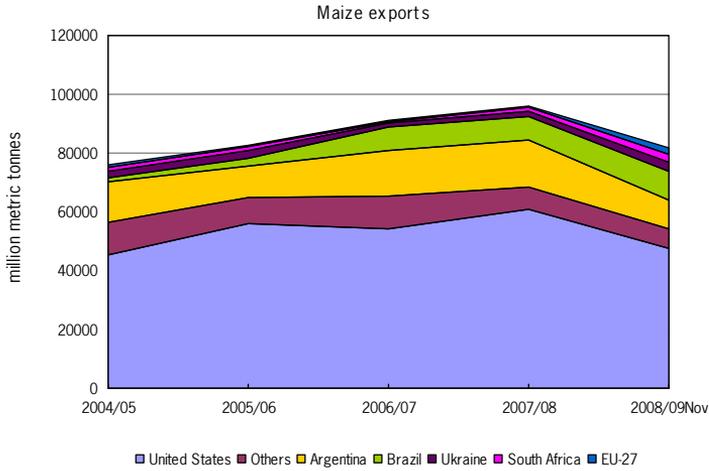
Others = Argentina, Kazakhstan, China, Brazil and Pakistan



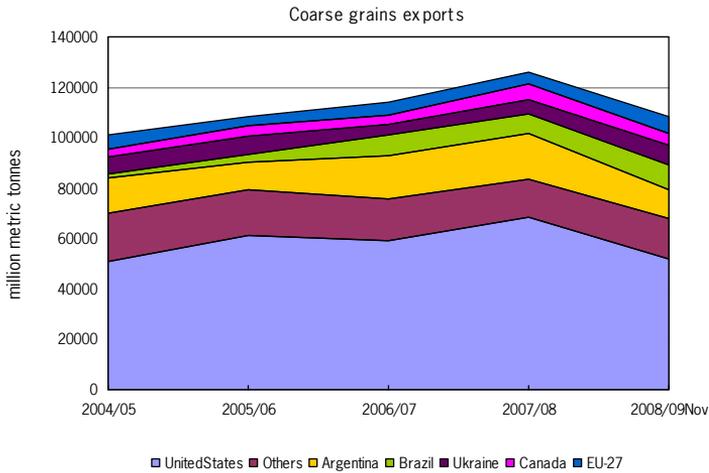
Others = India, Paraguay, Serbia, China and Thailand

Figure 2.2

Wheat, maize rice and coarse grains exports 2004-2008 according to major exporters (continued)



Others = Egypt, Uruguay, Argentina, Brazil, Cambodia, Guyana, Burma, Japan, EU-27 and Ecuador



Others = Australia, Russian Federation, South Africa, India and Paraguay

Source: USDA (2008).

Although grains trade has increased since the 1980s - especially rice (figure 2.3) - international trade in grains as a share of total production is still only 10% in 2008 (USDA, 2008; table 1 on p. 16).

Figure 2.3 World trade in rice, maize, coarse grains and wheat 1980-2008 (in millions of tonnes)

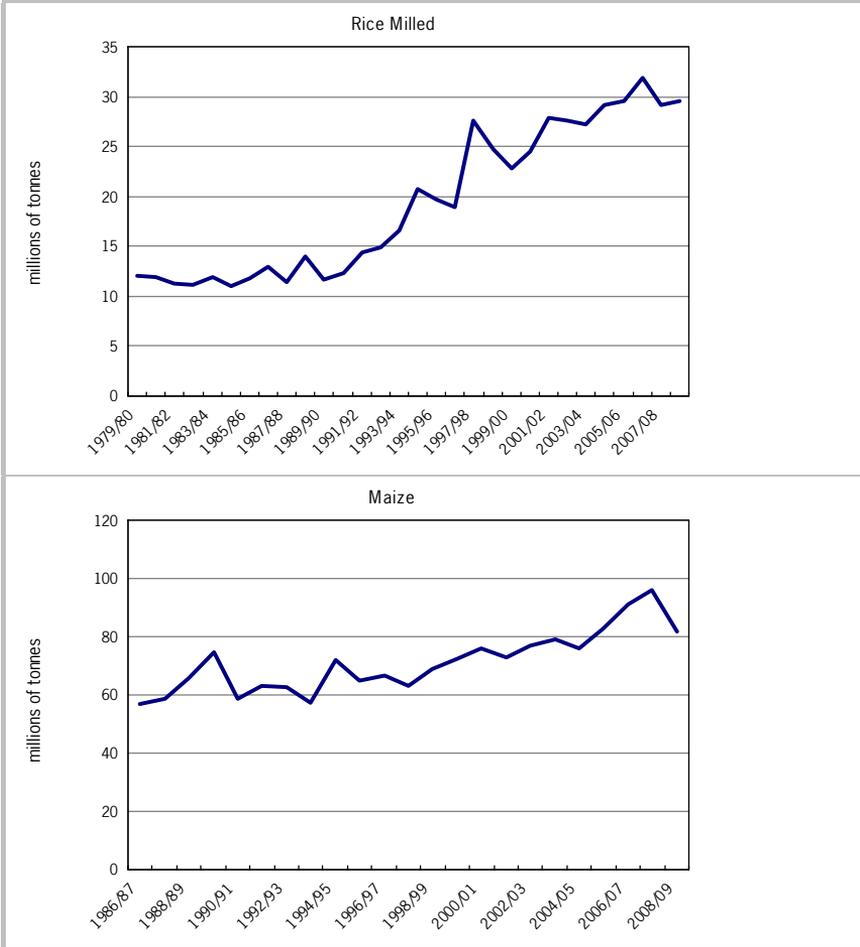


Figure 2.3 World trade in rice, maize, coarse grains and wheat 1980-2008 (in millions of tonnes) (continued)

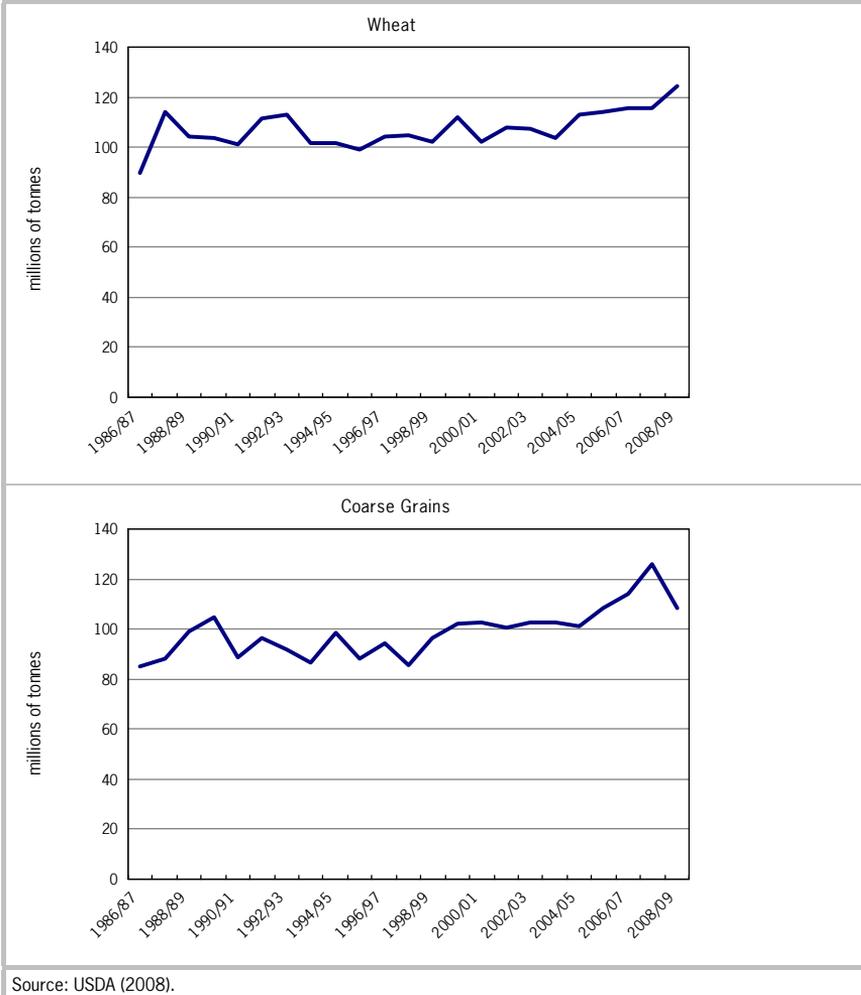
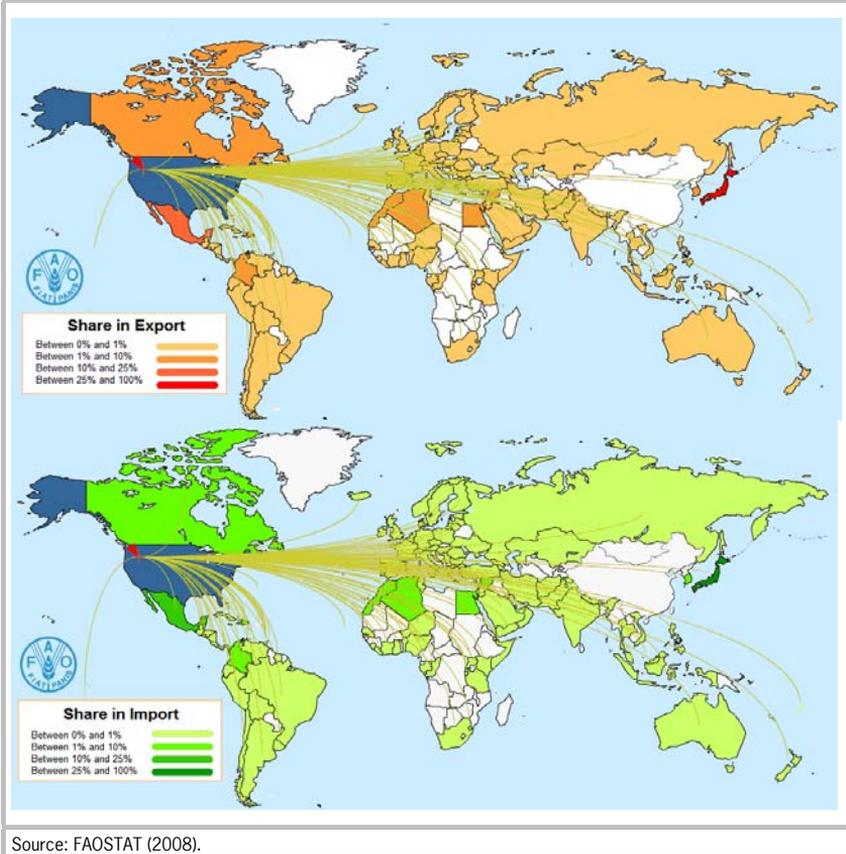


Figure 2.3 shows that except for wheat, trade has started to decrease in the 2007-08 period, which reflects a decrease in global demand. One reason for this may be the high prices, which reduced demand. This trend is expected to be reinforced by the current global recession.

Figure 2.4 shows the extent to which the USA is linked to other countries by means of trade (in this case maize). Interestingly, the USA also imports maize,

although much less than they export. International trade is facilitated by only a few MNEs, while domestic trade (not shown in figure 2.4) is mainly in the hands of national firms.¹ Almost all the grain that moves between nations, passes through Cargill, ADM, or Bunge (Hendrickson and Heffernan, 2005).

Figure 2.4 Export and import flows of maize from the USA to the rest of the world (2005)



Source: FAOSTAT (2008).

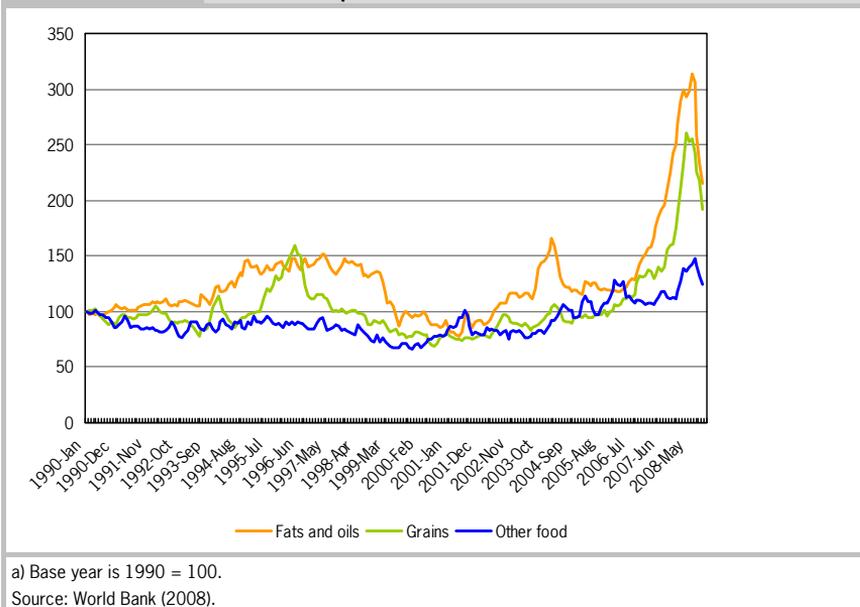
¹ In the USA, four firms - Cargill, Cenex Harvest States, ADM, and General Mills - control 60% of the terminal grain handling facilities, while Cargill and ADM (combined with Zen-Noh) export 81% of USA maize. In addition, 68% of American flour milling is controlled by three firms, including ADM, ConAgra, and Cargill (Hendrickson and Heffernan, 2005).

Though China is not involved to a great extent in world trade at present, its potential influence on world prices may increase significantly in the future due to its huge grain production and stocks. China produces large amounts of grains, and hold the world's largest stocks: around 170 million tonnes in 2008 - almost 40% of world stocks - compared to around 50 million tonnes - or 11% of world stocks - held by North America. By comparison, international trade of grains was 255 million tonnes in 2008. However, China trades only a small amount: exports and imports consist of less than 1% in 2008 as share of total domestic production (FAO, 2008a).

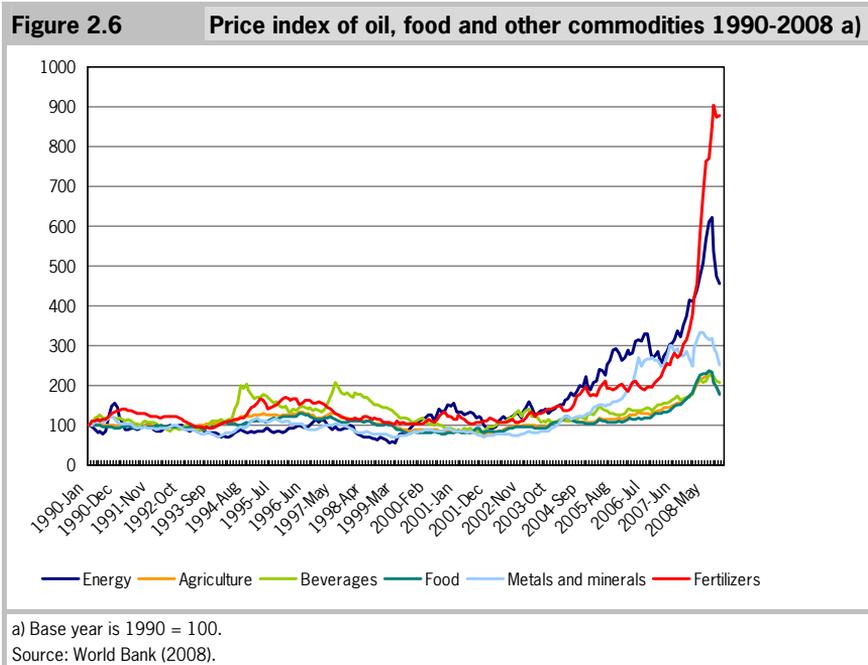
2.3 Historic price trends of the global grain sector

Food prices have increased rapidly over the past years, and only recently showed a declining trend (figures 2.5 and 2.6). As the two figures show, grain prices are among the commodities with the highest price increase. In the second half of 2008, prices have declined rapidly although they remain high compared to pre-2006 levels.

Figure 2.5 Price index data 1990-2008 for fats and oils, grains and other food a)



These high food prices need to be put into perspective, because many other prices (such as energy, metals and minerals and especially fertilisers) rose even more during the same period (figure 2.6).

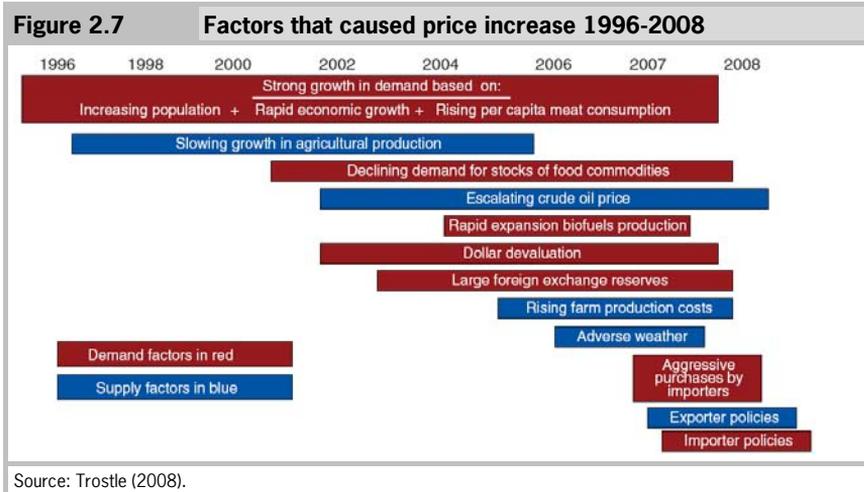


It is important to note that several factors have caused the recent price fluctuations. They reflect long-term underlying trends in supply and demand for agricultural commodities that began more than a decade ago as well as other more recent developments.

Part of the price fluctuation fits into the long-term trend of periodic spikes in prices of the four major crops (wheat, rice, maize and soy beans) since the 1980s (Trostle, 2008). Although some of these price spikes relate to only one of the crops, in general the prices of all four crops rise and fall in a similar fashion. This occurs because buyers can substitute among these or other commodities, whether for food use or animal feed use, and purchase whichever is cheaper. With the exception of the early 1970s, each period of rapidly rising prices was followed by a fall, back to their pre-spike level.

However, the recent unprecedented price peak was caused also by other factors, more unique to this specific time period. Figure 2.7 sums up the main

factors in a historical perspective. Banse et al. (2008) point out that the high prices reflect a 'perfect storm' in which different factors have come together almost simultaneously, resulting in a peak.



A number of long-term trends have affected the global supply and demand for food commodities and have led to tightening of the global supply and demand balance. This, in turn has gradually put upward pressure on agricultural prices. There were also several short-term factors that played a role (Trostle, 2008):

1. An important factor has been China, which reduced its grain stocks. Also elsewhere, there were incentives for governments and the private sector to reduce stocks, for instance because stocks are expensive. The resulting low level of world stocks in 2007 has caused importing countries to become anxious about being able to obtain their future food needs, putting additional pressure on prices;
2. In 2004, agricultural production costs began to rise, especially for energy (oil) related inputs such as fertiliser, fuel, and pesticides;
3. Biofuels have been another factor. Production generally grew slowly until after the turn of the century. USA ethanol production began to rise more rapidly in 2003 and EU biodiesel production began to increase more rapidly in 2005. The growth in biodiesel production was stimulated by government policies such as subsidies. Brazil and the USA account for most of the

world's ethanol production but Brazil uses sugarcane as a feedstock, while the USA uses almost exclusively maize;

4. Beginning in 2002, the US dollar began to depreciate. As the dollar lost value relative to the currencies of importing countries, it reduced those countries' costs of importing which increased demand. Since the USA is a major source of many agricultural commodities, foreign countries' imports of commodities from the USA began to rise. This put upward pressure on USA prices for those commodities. Further, since the world price of major crops are typically denominated in US dollars, the depreciation of the dollar also raised prices (measured in dollars);
5. In 2007, a number of adverse weather events affected yields across the globe and resulted in a drop in global average grain harvests;
6. The lower production caused yet another decline in the global stocks-to-use ratio. In response to rising food prices, some countries began to take protective policy measures designed to reduce the impact of rising world food commodity prices on their own consumers. Such policy measures included export taxes, export quantitative restrictions, export bans and lower import tariffs. However, such measures typically force greater adjustments and higher prices onto global markets (therefore such policies are called 'beggar-thy-neighbour' policies).

We will not go further in detail into the reasons behind the price increase because they have been described extensively in other reports (Trostle, 2008; Banse et al., 2008; Mitchell, 2008; Martuscelli, 2008).

2.4 Projections of future price fluctuations

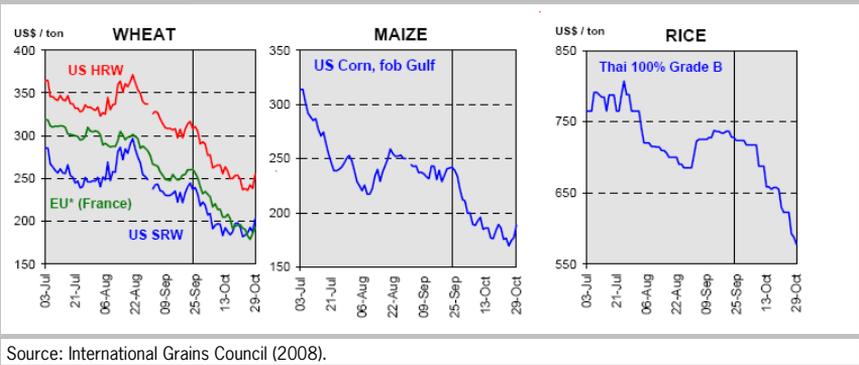
The turmoil in global financial markets that started in October 2008 was reflected in steep price falls in all grains (figures 2.8 and 2.9), with the US dollar's renewed strength and declining energy prices also playing a role. The collapse of ocean freight rates, which was caused by both low fuel prices as well as the economic downturn, further reduced grain import costs and therefore import prices. As markets tumbled, there were reports of defaults on some earlier purchases and of financing problems under a much stricter credit environment. Global demand is falling, consequently putting more downward pressure on prices (International Grains Council, 2008).

Figure 2.8 Spot prices at the Chicago Board of Trade (in USD) a)



World wheat export prices at one stage dipped to their lowest levels since early 2007 (figure 2.9). The decrease in prices partly reflected the recovery in supplies. However, there were also worries that the global economic downturn would affect international demand for grains. The recent falls in world prices triggered the reintroduction of EU import tariffs. Substantial reductions were seen in international rice prices, the benchmark Thai export grade falling by 21% to a 7-month low, as buyers hesitated to enter a declining market (International Grains Council, 2008).

Figure 2.9 Export prices for wheat, maize and rice, July-October 2008



The FAO (2008c) estimates that world grain trade will fall by 7 million (m) tonnes to 231m in 2009. A fall of 17m tonnes in EU imports will only be partly offset by increases in exports in Near East Asia and Pacific Asia. Among exporters, USA sales are expected to show the largest decline. End-season stocks in the five major export countries are now projected to rise to 44m tonnes compared with only 29m in 2007/08 (the biggest rise is in the EU). However, world stocks are expected to decline to a 5-year low by the end of 2008/09. Futures indicate a slight increase in prices (figure 2.10), although these may be subject to change.

Figure 2.10 Index price for futures for maize, wheat and rice December 2008 – 2011 a)

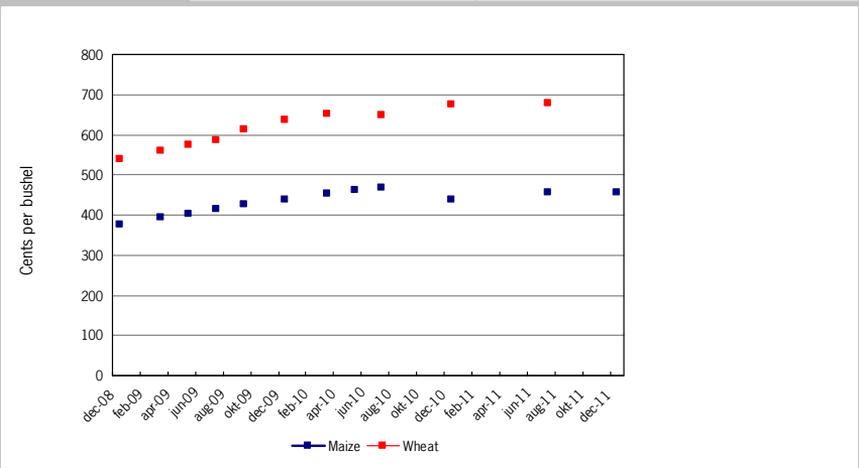
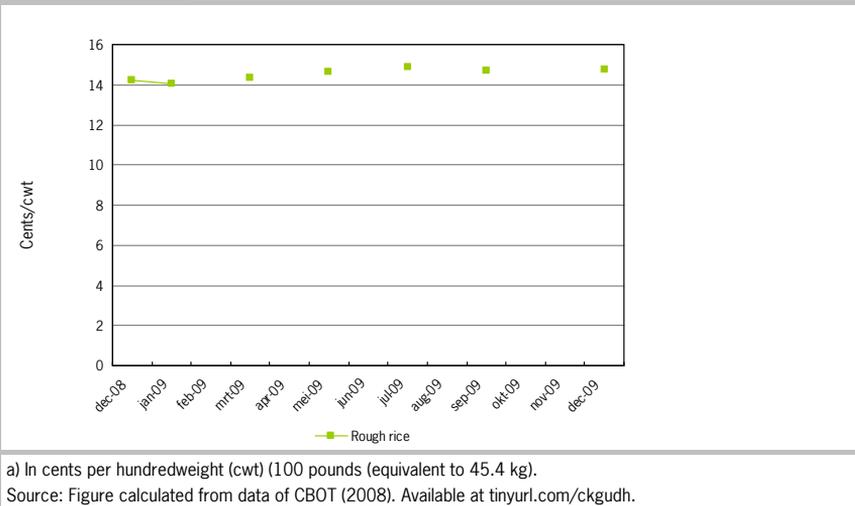


Figure 2.10**Index price for futures for maize, wheat and rice
December 2008 – 2011 a) (continued)**

Despite these recent price falls, a study on changes in agricultural world market prices concludes that the mega-trend of declining world market prices has ended, although fluctuations above and below the trend will continue to exist, and are likely to be stronger in the future than they have been in the past (Witzke et al., 2008). In fact, volatility¹ of grain prices has been increasing since the 1980s (figure 2.11). Higher price variability means higher costs for managing farm risks (higher option premiums, higher margins on futures contracts, wider futures-cash price bases, and higher premiums for crop revenue insurance). Prices will need to increase to compensate farmers for these higher costs. In addition, processors of crops will need to widen their margins to cover the higher price risk of crop inputs. These impacts of higher price risk will translate into higher food prices for consumers (Zulauf and Roberts, 2008).

¹ Volatility is the measurement of change in price over a given period. It is often expressed as a percentage and computed as the annualised standard deviation of the percentage change in daily price. Linear denotes the trendline.

Figure 2.11 Volatility of maize, wheat and rice, 1980-2008

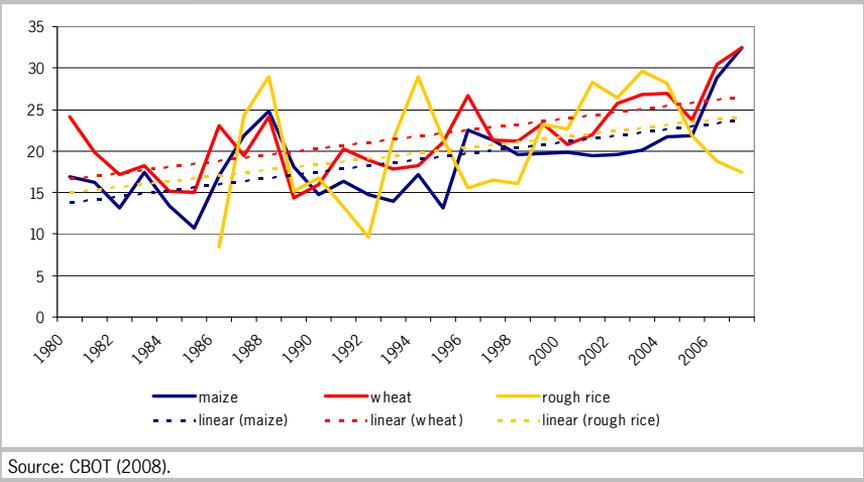
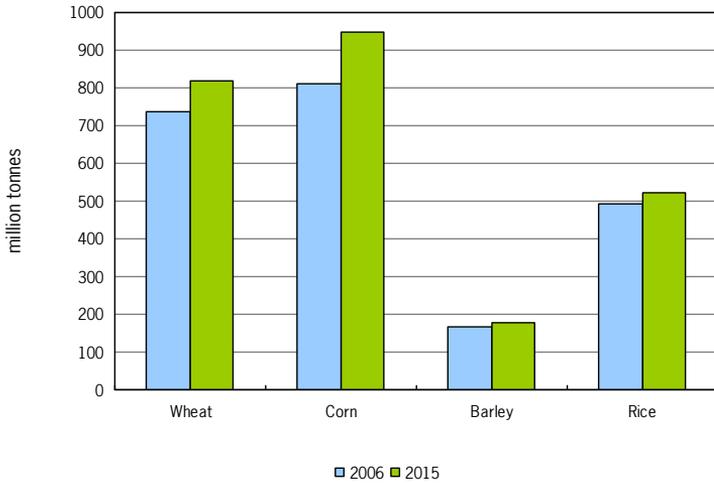


Figure 2.11 shows an increase in volatility based on historical data. However, most experts believe that volatility will continue to play a role in commodity markets (Jodock, 2009). This may lead to tighter risk management of farmers as well as other actors in the chain such as grain elevators. The reasons behind the expected volatility are not clear. However, the same reasons that were put forward for the price increase in 2007/08 may play a role in explaining price volatility: demand continues to increase, while supply is slowing somewhat (figures 2.12-2.13). More importantly, stocks are still very low, so if due to some factor, for instance failed harvest, supply suddenly decreases while demand remains the same, prices will peak again.

Figure 2.12 Projected increase in world crop demand



Source: Witzke et al. (2008) and FAPRI (2008).

Figure 2.13 Projected production, trade and stocks of maize, wheat and rice, 2000-2018

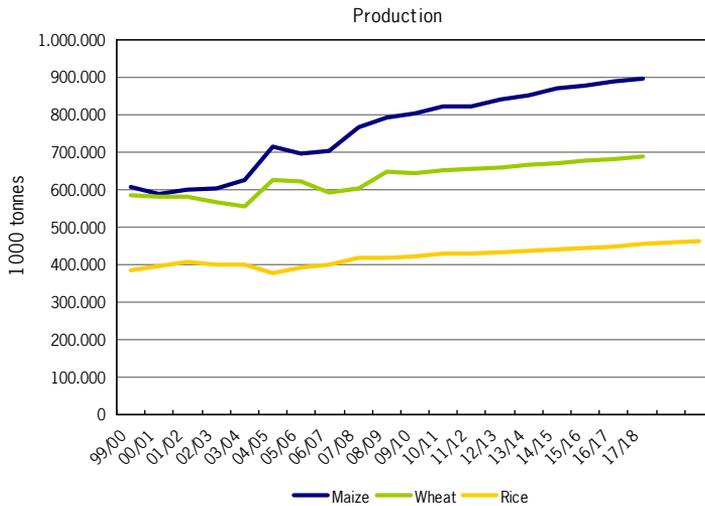


Figure 2.13 Projected production, trade and stocks of maize, wheat and rice, 2000-2018 (continued)



Source: FAPRI (2008).

The impacts of the financial crisis that hit the world markets in October 2008 will be felt in developing countries at the macro-level, with potentially negative effects on the agriculture sector and on food security. Agricultural

markets will be affected on both the demand and supply sides. In general, the slowing down of economic growth will negatively affect international demand for commodities - especially raw materials and livestock products - with such impacts likely to be more limited for staple crops such as grains (FAO, 2008b).

Financial analyst Bloomberg¹ expects that the credit crunch will lead to a profit squeeze for farmers that may reduce global harvests and worsen a food crisis for developing countries. The main reason is that farmers are having difficulties in obtaining credit from banks to purchase fertiliser and other inputs. For instance, in Brazil, the world's third-biggest exporter of maize after the USA and Argentina, production may fall more than 20% because farmers are unable to obtain loans to buy fertiliser (Enori Barbieri, vice president of the Brazil National Maize Producers Association cited by Bloomberg).

2.5 Conclusions

This chapter described the various factors that underlie the agricultural commodity price increases of 2006-2008 and the price drop that started at the end of 2008. There are long-term as well as short-term factors in supply and demand. A major factor has been the decrease in global grain stocks. The world market for grains is very sensitive to supply and demand shifts: prices will react quickly to any change. Other short-term factors that contributed to the peak included expansion of biofuel production facilitated by government policies, higher livestock feed requirements, dollar devaluation, rising farm production costs (increasing fuel and fertiliser costs) and reduced supply through failed harvests. A new factor is the financial crisis which has hit the world since the 'credit crunch' of October 2008, when banks started failing and lending froze. It seems that this will have an impact on farmers who face difficulties in obtaining credit both from banks and agribusiness.

Whether prices will continue to fall as they have done in the last months of 2008, or whether they will go back to their high levels of 2007/08 is unclear and depends on many factors. What seems to be clear, however, is that price volatility will continue to be an important factor in the future. Price ups and downs will follow each other more rapidly.

¹ tinyurl.com/6rfkds.

3 Increasing market concentration

3.1 Introduction

This chapter starts with an explanation of what horizontal and vertical integration are and why firms would want to engage in such mergers. It then gives an overview of the main MNEs that operate in the international grains market, i.e. Cargill, ADM and Bunge. The chapter illustrates the increasing trend of horizontal and vertical integration with examples of large 'food clusters'. The chapter ends with some conclusions and the recommendation that more research is needed in this area.

3.2 Background: horizontal and vertical integration

We can distinguish horizontal integration and vertical integration. Both are important in increasing market concentration. The acquisition of additional business activities at the same level of the value chain is referred to as horizontal integration. This form of expansion contrasts with vertical integration, which is when firms expand into upstream or downstream activities. There are several reasons why MNEs are involved in horizontal and vertical integration (see for instance Milgrom and Roberts, 1992). Horizontal integration offers the following advantages:

- Economies of scale (for instance through selling more of the same product, for example by geographic expansion);
- Economies of scope (for instance through sharing resources common to different products. Commonly referred to as 'synergies');
- Increased market power (over suppliers and downstream channel members);
- Reduction in the cost of international trade by operating factories in foreign markets.

Vertical integration potentially offers the following advantages:

- Improved supply chain coordination;
- Better protection of investments;
- Reduced need for strong performance incentives;
- Avoiding monopoly distortions;
- Capturing upstream or downstream profit margins;

- Increase entry barriers to potential competitors, for example, if the firm can gain sole access to a scarce resource;
- Gain access to downstream distribution channels that otherwise would be inaccessible.

Levin (2001) adds another point related to price fluctuations, profits and competition, which is relevant for our study. In a year with bountiful harvest, processors, i.e. buyers are in a favourable position because there is much product on offer for low prices. However, a year with a shortfall in harvests, for instance due to drought, will lead to competition among buyers, higher prices for farm products and possibly lower profits for buyers. The input suppliers, on the other hand, will now be in a favourable position because high output prices will lead to more demand for inputs. According to Levin:

'Sooner or later, the largest most powerful economic interests in the processing sector will face the largest, most powerful interests among the (input) suppliers. What is of best interest to the one will not be of best interest to the other, and vice versa'.

Instead of engaging in a 'nasty and unproductive war' between the two sides, they agree to collaborate in a vertical integration structure.

Information on the degree of market concentration often lacks and no systematic approach exists to deal with the different stages of the commodity chain. This is also the case for the grain sector. The following section is an attempt to explore emerging patterns in the grain sector. However, more in depth research on this topic is required.

3.3 Overview of the main MNEs operating in international grain trade

International grain trade varies between 7 and 18% of world grain production (table 3.1). Although this is a small share of the total production, trade is still significant considering the volumes involved (255m tonnes in 2008; FAO, 2008c).

| Table 3.1 International trade in grains as share of global production (2008) | |
|---|---|
| Grain | International trade as share of production |
| Rice | 7% |
| Maize | 10% |
| Barley | 13% |
| Wheat | 18% |
| Coarse grains | 10% |
| Source: USDA (2008). | |

The global grains trade is handled increasingly by only a handful of companies. Few (public) sources are available that reveal details about this market concentration. One interesting source is the research at the University of Missouri. Heffernan et al. (1999 and 2002) and Hendrickson and Heffernan (2005) have tracked changes in markets for major agricultural commodities since the mid-1980s. This research shows that almost all the grain that moves between nations, passes through Cargill, ADM, or Bunge.

3.3.1 Cargill¹

Cargill is an international provider of food, agricultural and risk management products and services. Its headquarters are in Minnesota, USA. It has 75 businesses organised around five major segments: agriculture services, food ingredients and applications, origination and processing, risk management and financial, and industrial. Cargill is also involved in 29 joint ventures.

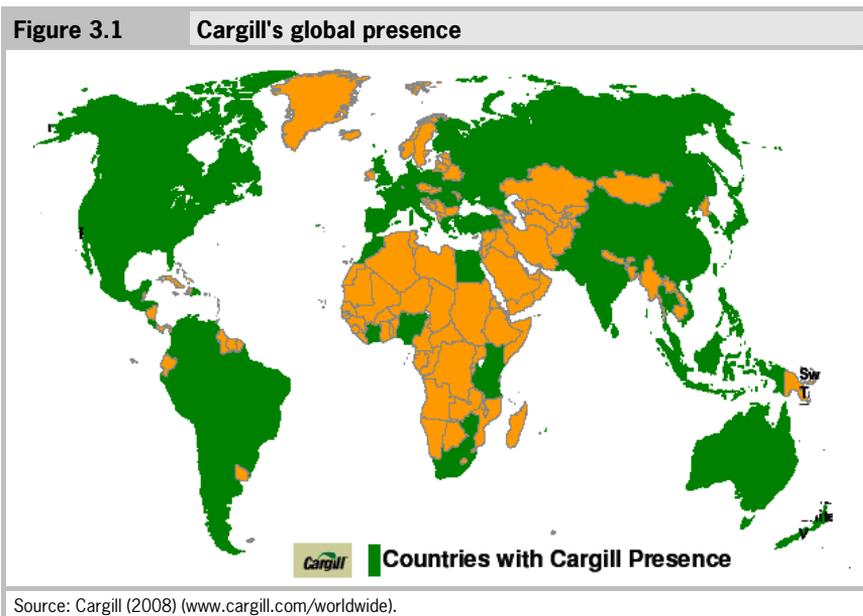
The grain & oilseed supply chain employs 15,000 people in 50 countries (figure 3.1). They operate 324 interior silos, 31 import/export elevators, 54 crush plants in 17 countries and 137,000ha of palm oil plantations in Indonesia and Papua New Guinea. The grain & oilseed supply chain consists of 13 business units that operate on an integrated global basis. They source, trade, process and distribute grain and oilseeds. The main bulk products handled are wheat, maize, oilseeds, barley and sorghum, as well as vegetable oils and meals. Because they charter more than 150m tonnes of dry bulk tonnage, they have the logistical flexibility and opportunity to leverage efficiencies in the supply

¹ This information was compiled from Cargill's 2008 annual report and its website at www.cargill.com.

chain. The grain & oilseed supply chain also includes ocean freight and logistics business. It coordinates all of Cargill's ocean bulk freight needs and a growing volume of other companies' coal and mineral freights.

Cargill offers financial and hedging products to the products and services of the grain & oilseed supply chain by close cooperation with its trade and structured finance business unit, and the company's risk management teams add a further range of financial and hedging products to the products and services offered through their grain & oilseed supply chain.

Its industrial segment includes The Mosaic Company, in which Cargill is the major investor. It mines, manufactures, markets and distributes fertiliser around the world. Mosaic is one of the world's leading producers and marketers of concentrated phosphate and potash crop nutrients.



3.3.2 ADM¹

Archer Daniels Midland Company (ADM) is one of the largest commercial agribusinesses in the world. ADM has its headquarters in Decatur, USA. It processes grains and oilseeds and deals with the storage and transportation of commodities. ADM's products are used agriculturally for human consumers and livestock, as well as in the fuel industry. ADM has become an increasingly international business, with a large presence in Brazil and China (figure 3.2). The company employs 27,600 people in 58 countries on 6 continents at more than 320 sourcing facilities and more than 230 processing plants, interconnected by 2,100 trailers, 2,200 barges and 23,800 railcars. ADM is involved in various business segments: oilseeds processing, corn processing (including biofuels), other food and feed ingredients and agricultural services.

With respect to corn processing, ADM operates both wet and dry mills for the production of various products that are sold to the food and beverage industry. It also sells various products that are used by the pork and poultry industry.

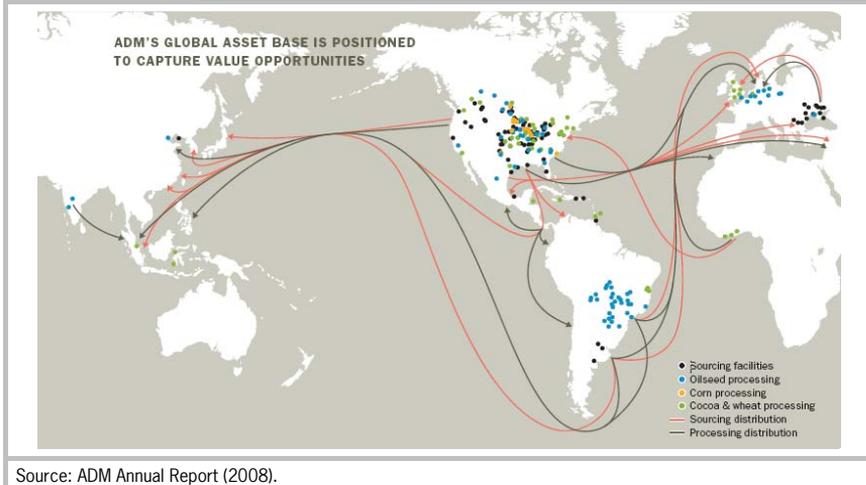
ADM produces biodiesel in Brazil and is looking into renewable energy in the form of ethanol. ADM currently holds partial ownership of the Brazilian company Cosan SA and there is speculation of larger buyouts. This would allow ADM to enter the sugar-cane ethanol market.

ADM's agricultural services' segment makes use of the company's elevators and transportation network to transport, store, buy, and clean commodities such as oilseeds, maize, wheat, milo, oats, and barley, and then resell these to the agricultural processing industry. This in turn provides reliable services to its own processing operation. ADM is involved in various other operations including: milling wheat, maize, and milo into flour; producing wheat starch, gluten, and lecithin.

During the past five years, ADM has experienced significant growth, spending approximately USD5.3b. for construction of new plants, maintenance and expansions of existing plants, and the acquisitions of plants and transportation equipment.

¹ This information was compiled from ADM's 2008 annual report and its website at www.adm.com.

Figure 3.2 ADM's global presence



3.3.3 Bunge¹

Bunge is a world leader in the agribusiness and food industry. It has its headquarters in Bermuda. The company employs nearly 24,000 employees and is active in North and South America, Europe and Asia, with international marketing and sales offices around the world (figure 3.3). Bunge's main focus is soybeans, but it also handles, processes and sells rapeseed, sun seed, maize, wheat and other crops.

Operations are segmented into four major divisions: agribusiness, fertiliser, edible oil products, and milling products. Edible oil and milling products are grouped together into a collective 'food products' category. While fertiliser accounts for 10% of revenue, it is an important sector for Bunge.

¹ This information was compiled from Bunge's 2008 annual report and its website at www.bunge.com.

Figure 3.3**Bunge's global presence**

Source: tinyurl.com/cn3bj8.

The agribusiness sector involves the purchase, storage, transport, processing, and sale of agricultural commodities and products. This sector works primarily with grains and oilseeds but also includes sugar (mainly exported from Brazil) and biofuels (mostly biodiesel and maize-based ethanol). Bunge markets its grains and oilseed products to feed manufacturers, wheat/maize millers, other oilseed processors, livestock, poultry, and aquaculture producers, edible oil processing companies (including its own food division), and biofuel customers, all of which operate among approximately 80 countries. Bunge also works with farmers (mainly in Brazil) as a financier, chiefly with prepaid commodity purchase contracts.

Bunge is currently the largest supplier of fertiliser to South America. In Brazil it is involved in every stage of the process, from mining to marketing. It also controls 26% of the Brazilian nitrogen, phosphate and potassium fertiliser retail market. This foothold in Brazil allows the company to greatly cut-down on transportation expenses to South America.

The food products sector is divided into edible oil products and milling products. The company has refining and packaging facilities in North America, South America, Europe, and Asia. Its milling products sector provides wheat flours chiefly to Brazil and maize products such as maize grits, meal and flour, maize meal, and maize-soy blend to North America, used both for human and animal consumption.

According to Bunge, integration enables it to supply global needs efficiently and create value in a variety of market conditions. Its decentralised structure enables it to stay close to local markets, where it can react quickly to customer needs.

In the agribusiness Bunge is expanding its network of oilseed processing and storage assets. In 2007, it purchased a majority interest in a soybean processing plant in the Chinese city of Tianjin, and continued to enhance facilities in North America. Recently, Bunge announced the planned construction of a new plant in Brazil. It agreed to acquire Maize Products International in June 2008.

3.4 Food clusters

An important trend in the international grain sector, which also applies to the overall food sector, is greater concentration at several stages of the supply chain from the agricultural input sector up to the agricultural retailing. The UN body UNCTAD (2006) has carried out a broad inventory of this trend in response to shared observations that:

'the added value retained by many developing countries' producers of commodities is decreasing in some sectors, and their participation in domestic and international value chains is a major challenge. This situation may be further complicated by concentrated market structures at the international and national level' (São Paulo consensus para 64)¹

And:

'[...] rather than diversification of commodity patterns of trade, in several countries concentration has increased over the past decade; only a few countries have made tangible progress in diversification, primarily based on agro-business' (UNCTAD XI Bangkok Plan of Action).²

UNCTAD observes a trend towards greater concentration at several stages in various commodity sectors. In the agricultural input sector there has been a

¹ Cited in UNCTAD 2006.

² Cited in UNCTAD 2006.

host of divestitures, mergers and acquisitions leading to a few major integrated companies, each controlling proprietary lines of agricultural chemicals, seeds, and biotech traits. There has been a significant increase in the concentration of the input industries (tables 3.2 to 3.4), especially in recent years.

| Table 3.2 Top 10 agrochemical companies, ranking by sales, 2004 | | |
|--|---|-----------------------------------|
| Company | Agrochemical Sales 2007 (USD millions) | Market Share (percent) |
| 1. Bayer | 7,458 | 19 |
| 2. Syngenta | 7,285 | 18 |
| 3. BASF | 4,297 | 11 |
| 4. Dow AgroSciences | 3,779 | 10 |
| 5. Monsanto | 3,599 | 9 |
| 6. DuPont | 2,369 | 6 |
| 7. Makhteshim Agan | 1,895 | 5 |
| 8. Nufarm | 1,470 | 4 |
| 9. Sumitomo Chemicam | 1,209 | 3 |
| 10. Arysta Lifescience | 1,035 | 3 |
| <i>Total</i> | <i>34,396</i> | <i>89</i> |

Source: ETC (2008).

| Table 3.3 Top 10 seed companies | | |
|--|---|--|
| Company | 2007 seed sales (USD millions) | % of global proprietary seed market |
| 1. Monsanto (US) | 4,964 | 23 |
| 2. DuPont (US) | 3,300 | 15 |
| 3. Syngenta (Switzerland) | 2,018 | 9 |
| 4. Groupe Limagrain (France) | 1,226 | 6 |
| 5. Land O' Lakes (US) | 917 | 4 |
| 6. KWS AG (Germany) | 702 | 3 |
| 7. Bayer Crop Science (Germany) | 524 | 2 |
| 8. Sakata (Japan) | 396 | <2 |
| 9. DLF Trifolium (Denmark) | 391 | <2 |
| 10. Takii (Japan) | 347 | <2 |
| <i>Top 10 Total</i> | <i>14,785</i> | <i>67</i> |

Source: ETC (2008).

| Company | 2007 Net Income |
|--------------------------------|------------------------|
| PotashCorp | 1,104 |
| Yara | 4,027 |
| Mosaic (Cargill has 55% stake) | 944 |
| Israel Cheinals Ltd | 461 |
| Agrium | 441 |
| K+S Group | 303 |
| Sociedad Quimca y Minera | 165 |
| <i>Total</i> | <i>7,445</i> |
| Source: ETC (2008). | |

Levin (2001) points out that market concentration does not always result in higher prices or greater profits. Profit alone, however measured, is an incomplete measure of power. Economies of scale may, for instance, be passed on to consumers in order to capture larger market shares. Power can also be more a reflection of size than monopoly. Size confers market power through acquisition, leading to logistical control, economies of scale, barriers to entry of competitors, et cetera.

Besides horizontal integration through mergers and acquisitions UNCTAD (2006) identifies a trend towards increased 'coordination', which typically refers to contractual arrangements, alliances and tacit collusive practices. At the horizontal level, UNCTAD finds a trend towards heightened strategic cooperation among the largest competitors in the agricultural biotechnology sector, but also *vertical* coordination upwards and downwards along the food chain, with the establishment of 'food clusters' that combine agricultural inputs (agrochemicals, seeds and traits) with extensive handling, processing and marketing facilities.

In 1999, Heffernan et al. (1999) have identified three such clusters: Cargill/Monsanto, ConAgra, and Novartis (now Syngenta)/ADM (figures 3.4 and 3.5 for the situation in 1999 for examples of food clusters with Cargill and ADM) although these clusters have changed since then.¹ We have reprinted the 1999

¹ The Novartis/ADM cluster has undergone significant changes with ADM buying Farmland's grain operations, Novartis combining seed and chemical operations with AstraZeneca and becoming Syngenta, and IBP ceasing to exist as a stand-alone company. Cargill has developed joint ventures with Dow and Hormel while restructuring itself to become more than a commodity trader. Other firms, such as Bunge, Tyson, and Smithfield, are positioned to form other food chain clusters (Hendricksen and Heffernan, 2005).

figures in this report to illustrate what these complex clusters look like. Unfortunately, there is very little new material. ETC (2008) has provided some sample alliances between agribusiness and big oil, synbiotech and chemicals. UNCTAD (2006) has also identified three 'food clusters': (i) Cargill/Monsanto Joint Ventures and Strategic Alliances; (ii) Novartis (now Syngenta)/ADM; (iii) DuPont/ConAgra, but details are missing.

The logic behind these large 'food clusters' is clear, however. The agricultural input companies need the grain handlers' extensive handling and processing facilities to guarantee a downstream market to producers using their (genetically modified) seed stock. By strengthening cooperation with upstream partners, grain traders enhance their access both to farmers and raw materials.

Hendricksen and Heffernan (2005), in an update on their 1999 analysis,¹ describe that while changes still take place, a new structure in food and agriculture is emerging. Although the clusters in figures 3.4 and 3.5 have changed, integrated clusters now dominate agriculture and food production around the world. Hendrickson and Heffernan (2005:22) conclude that:

'One of the most important issues raised by the globalizing structure of the food system is who makes the decisions about what is produced and consumed and on what basis these decisions are made. The structure briefly described (...) means that decisions about who produces our food, what food is produced, how it is produced, and who gets to eat that food have been steadily moving from the more public realm of debate and dialogue to the more private realm of corporate boardrooms. As the structure of the marketplace has changed for farmers, the decisions they can make about what plants and animals to use in their farming operations have been severely constrained. The vast amount of food grown on today's farms is already destined to move inexorably through one of the food chain clusters that we have documented. In addition, consumers who rely on major supermarkets, chain restaurants, or institutional food services to supply their food needs face more limited choices, a counter-

¹ However, Heffernan has stated in 1999 that 'When we began collecting the data in the mid-1980s, this information was relatively easy to obtain in trade journals, government reports, annual reports from corporations and other secondary sources. Over time, this information has become more difficult to obtain. Trade journals have come under pressure not to publish some of this information and government agencies often say that to reveal the proportion of a market controlled by a single firm in such a concentrated market is revealing proprietary information.' This is probably why we have been unable to find updated versions of figures 3.4 to 3.6.

intuitive argument given the vast array of produce available in supermarkets.'

Figure 3.4 Cargill/Monsanto cluster in 1999

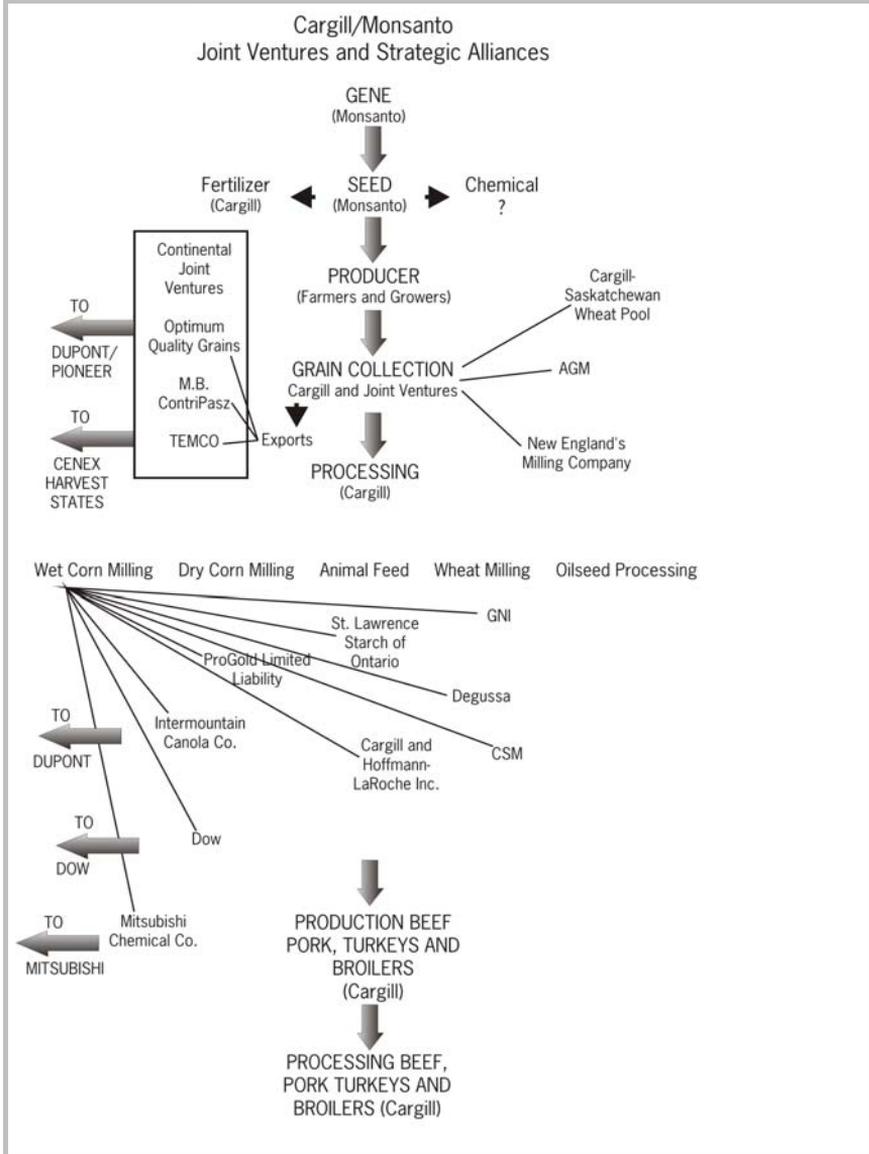
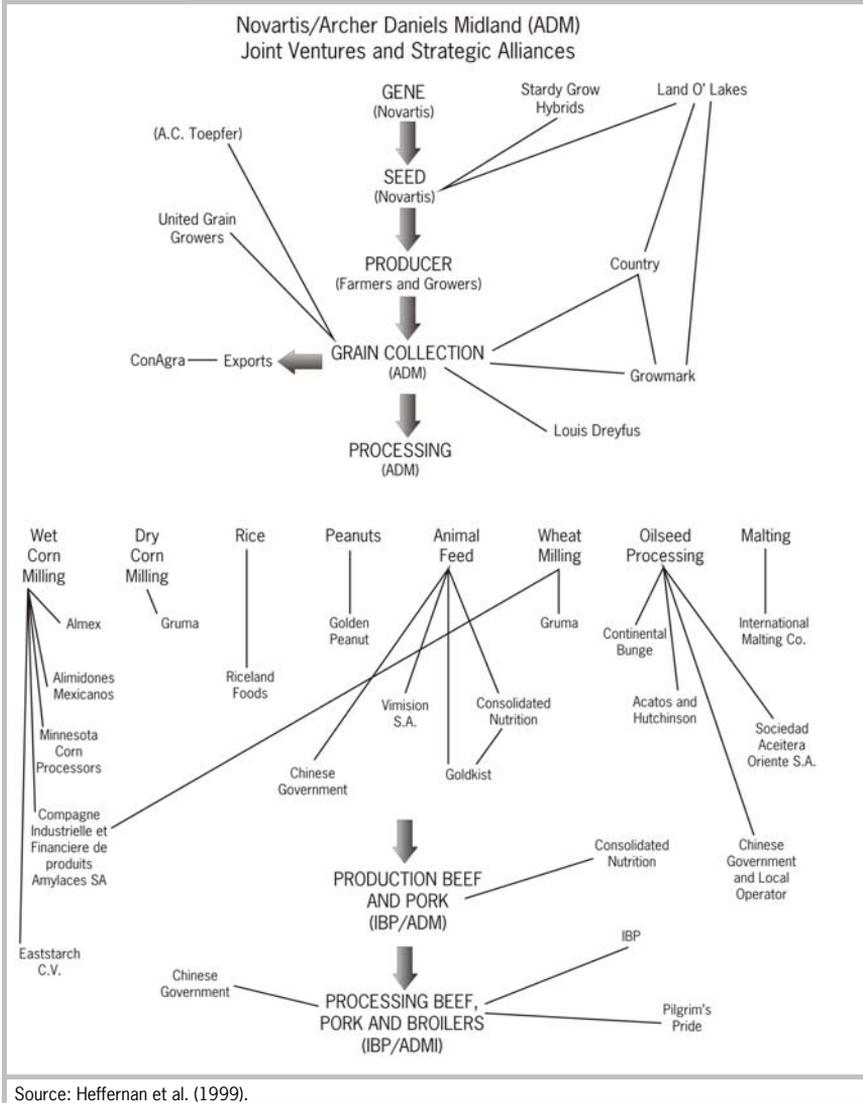


Figure 3.5 Novartis-ADM¹ cluster in 1999



¹ Novartis is now Syngenta.

3.5 Conclusion

World grain trade constitutes only a small share of world production (from 7% for rice to 18% for wheat). The global trade is handled increasingly by a handful of companies. Cargill, ADM and Bunge are the major players. In the grains market (and food markets in general) there is a continuing trend towards horizontal and vertical integration. An important reason for firms to engage in such mergers is reduced competition in global food markets. Large MNEs such as Cargill, ADM and Bunge engage in various collaborative contracts with large MNEs that specialise in inputs (such as agrochemicals and seeds). Such 'food clusters' wield much power in terms of decisions about what is produced, what is consumed and on what basis these decisions are made.

Although such food clusters are increasing in importance, there is relatively little recent data on them. We therefore recommend two areas of further research. First, more detailed research on how the responsibilities and roles are divided between countries, i.e. governments, and MNEs. It is unclear how decisions are made on issues such as what quantities are exported to which countries or imported from which country. What role do domestic policies (export tariffs, et cetera) or international policies play - for instance when food clusters span the whole globe, what is the role of the WTO?

4 Supply chain linkages

4.1 Introduction

In this chapter we examine the organisation of the global grain supply chain. We then explore the organisation of the African grain supply chain and how international grain markets are linked to domestic African grain markets. We examine briefly the role of the large MNEs in grain markets in Africa, which, as we will see, is limited. We conclude the chapter by analysing what effect the high international grain prices have had on farmers in Sub-Saharan Africa.

4.2 The global grain supply chain: a few large MNE and many farmers

A noteworthy characteristic of the grains value chain is its length (Rabobank, 2005). By the time a grain is turned into a final product, it has passed through many stages of collection, trading, processing and further processing. Although, in fact, many different value chains exist under the grains umbrella, all of them share some common characteristics. First, as mentioned above, there is the length of the chain. Second, the scale required to perform in the first stages of the value chain (up to and including the first line of processing). Third, traders, wheat millers, and maize refiners are usually huge industries (with relatively low margins) that operate in a consolidated environment. Finally, most firms in the supply chain are either present up to and including processing, or start from there and focus on the manufacturing of (branded) grain-based consumer products.¹

Although industrialisation has resulted in substantial increases in agricultural productivity over the last century, its effect has created downward pressures on farm prices even as input costs have increased consistent with inflationary

¹ According to Burkhardt (1991:321) the historical analogies are clear: nearly every efficiency-increasing innovation in technology over the past 100 years that has been introduced into agriculture and widely adopted by agricultural producers has contributed to the industrialisation and concentration of agricultural production. The predominant concern of the agricultural establishment (including farmers), as well as the implicit opinion of consumers, has been that increased productivity, yields, and cheap and available food are of key importance. From a cost-benefit point of view this will be best (or only) achieved by high-tech, large-scale agricultural operations, so that technologies favouring this structure have been and probably will continue to be introduced into agriculture.

norms (Hendrickson and James, 2005). The downward pressure on prices resulting from increased productivity causes what Cochrane already in 1958 identified as a 'technological treadmill'. Agricultural technology increases farm productivity, but this in turn lowers prices, thus reducing farmers' incomes, enforcing farmers to invest in productivity-increasing technology, et cetera. This applies to farmers in the developed and developing world.

As was described in chapter 3, current agricultural markets are characterised by both horizontal and vertical concentration. Only a few MNEs dominate the same stage of production (horizontal concentration) and these MNEs have united different products or services (vertical integration). There is now a situation in which a large number of competitive and relatively powerless suppliers face a few large powerful buyers (Vorley, 2003). Farmers are playing to the rules of perfect competition while their large MNE customers are part of a complex monopoly. Levins (2001) points out that the competitiveness of farmers is the main cause of many problems:

'Of all the economic sectors of our food system, farmers are universally regarded as being the most competitive among themselves. Such competition, in a world of giants, works against farm income in many ways. For example, why do farmers rush to adopt technology that will benefit a few in the short run, but hurt everyone in the long run? Competition among themselves. Why do farmers constantly produce more than markets can reasonably be expected to take at reasonable prices? Competition among themselves. And why do farmers have such low economic power that they lose profits to landowners and agribusiness giants? Again, the answer is competition among themselves.'

This explains also why throughout the world, farmers' net incomes have been increasing only slightly (or even declining), while the profits of the large MNEs such as Cargill, Bunge and ADM have been increasing fairly rapidly.

According to Levins (ibid), ensuring that farmers receive higher prices no longer constitutes a real solution in today's world. Although higher prices will introduce additional profits into the farming system, those new profits will eventually be claimed by sectors of the agricultural economy that have greater economic power than farmers. The problem is that farmers are unable to claim profits. One evident solution is that farmers should act collectively in their own economic interests and thereby gain economic power. For farmers in developed countries, where a strong farm lobby exists (but which may be offset by more powerful lobbies from large MNEs), this might be easier to achieve than in de-

veloping countries. In developing countries, especially in Sub-Saharan Africa, farmers are often those with least power, because they live far away from political centres, because they have no economic power, because they lack information, et cetera. Establishing cooperatives may help improve such problems.

4.3 Sub-Saharan Africa: a different situation

This study examines the influence of the world's largest MNEs on poor farmers in the grain sector and it chose therefore to focus on Africa. Most of Africa's farmers live on less than 1 dollar a day.

4.3.1 Grain supply chain in SSA

In many parts of Africa, trade in food crops such as grains is not (yet) dominated by a few large firms such as in the developed countries and increasingly in Asia and Latin America. In Africa, the grains trade is characterised by a high level of fragmentation. Box 1 gives an example of maize trade in East Africa, which is illustrative for most of the food trade in Sub-Saharan Africa. Although several large agribusiness firms are active in Africa, their operations are usually limited to (export) crops such as tea, cocoa, coffee or cotton. These are well-integrated chains, often involving plantations or a system in which smallholders sell directly to a major company.

Box 1 also shows that much of the cross-border food trade is unrecorded and thus does not show up in official export figures. Although free trade agreements have made much headway around the world, this has often not been the case for many regions within Africa, where tariffs and non-tariff measures still apply between neighbouring countries. African countries might gain by opening their trade to neighbouring countries, which could help balance deficient and surplus areas and prevent local famines and stabilise prices. A study by CIRAD (Daviron, 2008) shows that when a country has closed its borders to grains trade, domestic grain prices will fluctuate much more compared to a situation of open borders. The reason for this is that when a country cannot balance its surpluses and deficits through trade, and depends on domestic supply only, it is much more susceptible to fluctuations. When grain harvests fail, the lack of supply (with constant demand) will cause prices to increase. The study also shows that local grain varieties such as sorghum and millet have remained unaffected by the international price peak because these crops are essentially non-

tradables¹ and only domestic and regional supply and demand dynamics determine their prices.

This is supported by a recent study on the likely impact of rising world food prices on the welfare and food security of Ugandan households (Benson et al., 2008; IFPRI, 2008). It finds that the causes that led to the global rise in food prices do not apply strongly to Uganda. The transmission of prices for staple foods from the international market to Ugandan markets exists only for rice and, presumably, for wheat, both tradables. Food traders and market analysts suggest that regional and local factors account for increases in Ugandan staple food prices. There are several reasons why the rise in global food prices have not affected Uganda's food prices much. The country is quite isolated from global food markets, and prices from those markets are not transmitted very effectively to Uganda (table 4.1: transport and transaction costs are very high for a landlocked country). Second, several of Uganda's key staples are not traded on international markets. Finally, regional demands, for instance from neighbouring countries Kenya and Sudan, may have a greater impact on Ugandan grain prices than international prices. These issues are not only relevant for Uganda but for many other Sub-Saharan countries as well.

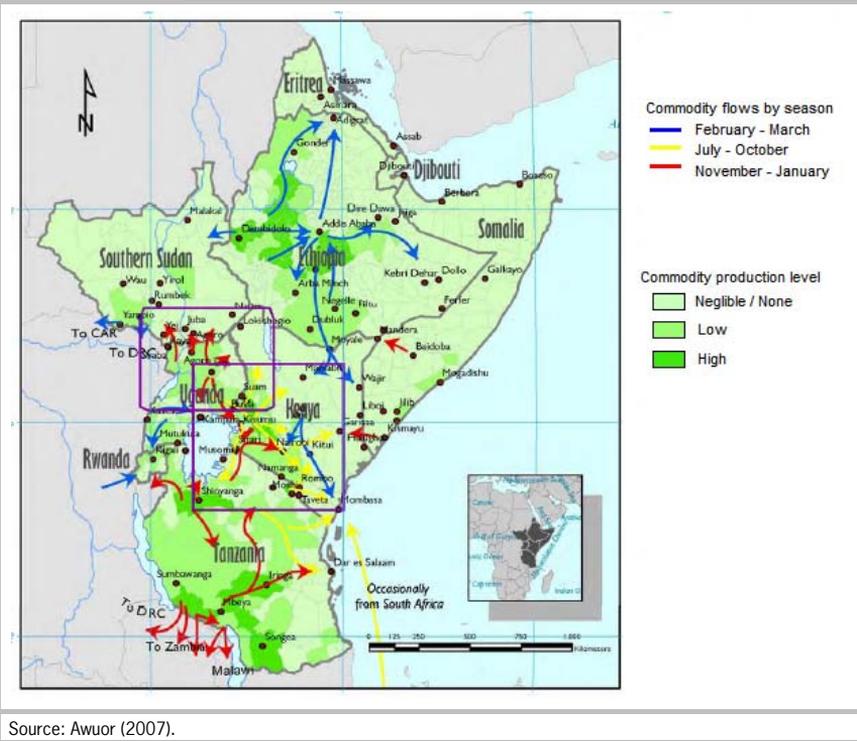
Box 1

Cross-border trade in East Africa: high market fragmentation

There are many small and medium scale traders (SMTs) involved in food trade in East Africa. The main actors in the cross-border trade in East Africa, including DRC, CAR, Malawi, and Zambia, are SMTs from all countries in the region. For example, it is believed that SMTs move at least 70,000m tonnes per year of cross-border maize between Kenya and Uganda, as well as considerable tonnages of beans and maize between Tanzania, Uganda, Rwanda, Kenya, and DRC using vehicles and backload capacity. The estimated tradable surplus of maize in Kenya is between 600,000 and 750,000m tonnes per year. Of the estimated cross border maize imports into Kenya of between 100,000 and 175,000m tonnes, 75-80% is unrecorded trade by SMTs. Large private traders or processors rarely engage in cross-border trade because they are able to purchase their requirements through these SMTs. National strategic grain reserves do occasionally sell or purchase from each other. In 2004, Tanzania's strategic grain reserves purchased 20,000m tonnes of maize from Kenya's National Grains and Produce Board (Awuor, 2007).

¹ A tradable commodity is a commodity that is traded on the world market, for instance at the Chicago Board of Trade. This means that it has an international price.

Figure 4.1 Cross-border maize trade flows in East Africa



Source: Awuor (2007).

Although domestic grain prices in Africa seem to be relatively unaffected by international prices, farmers in Africa were confronted with much higher prices of inputs (i.e. fertilisers), which are almost all imported. In Sub-Saharan Africa, the use of those inputs is generally very low because the prices of these inputs are too high relative to the expected returns. Even higher fertiliser prices have led to lower use, thus reducing yields (Jayne et al., 2008).

4.3.2 Presence of MNEs in Africa¹

Although Cargill, Bunge, ADM and other MNEs do have a presence in Africa, it is limited to traditional cash-crops such as cocoa. These MNEs have only limited operations in Africa in the grain sector.

ADM crushes and exports cocoa and shea nuts in West Africa (Cameroon, Côte d'Ivoire and Ghana). ADM is a world leader in cocoa processing, and West Africa produces 70% of the world's cocoa beans. Bunge is active in Northern Africa, which is a destination market for soybean meal, wheat and maize but Bunge does not *import* grains from North Africa. Cargill is present in various African countries: Côte d'Ivoire, Nigeria, Ghana, South Africa, Kenya, Tanzania, Malawi, Zambia, Morocco, and Zimbabwe. In West Africa Cargill is involved in cacao, in Kenya in tea and in Tanzania, Zimbabwe and South Africa in cotton. Cargill is involved on a small scale in grain in Morocco and South Africa. It is clear that the major MNEs have a limited presence in grains in Africa², at least compared to other continents.

There are various signs that large agribusiness firms are increasing their scale of operation in Asia. In its financial report of October 2008, Bunge reports that it has purchased a 50% stake in the port of Phu My in Vietnam. Since 2004, Bunge has had exclusive rights to ship agricultural commodities through the port. Now that it is a part owner of the port, Bunge can expand the port's capacity and accelerate the growth of its business in the market (Bunge, 2008).

Vorley (2003) discerns an increasing role of transactional agribusiness in the rice market in Asia. UNCTAD's rice commodity information³ shows that for a long period of time, rice trading was exclusively a government affair (public contracts) and/or a family business, but that the importance of private exporters has grown. In Thailand, for example, private trading exportation has risen over the past ten years from 20% to 80%. In Vietnam, private negotiators have also appeared increasingly, following national economic reforms that took place in the 1990s. The main Asiatic parastatals - which used to be in charge of international trade - still manage large exportable stocks but they now usually sell through private exporters. These exporters are in direct contact with private im-

¹ In recent years, MNEs from Asia and the Arab States have been involved in large-scale land leases in Africa such as Madagascar, Ethiopia, Mozambique and Sudan. The land leased by these MNEs is used to grow food crops such as maize or oilcrops such as palmoil for domestic consumption. These land leases, however, were not part of this study.

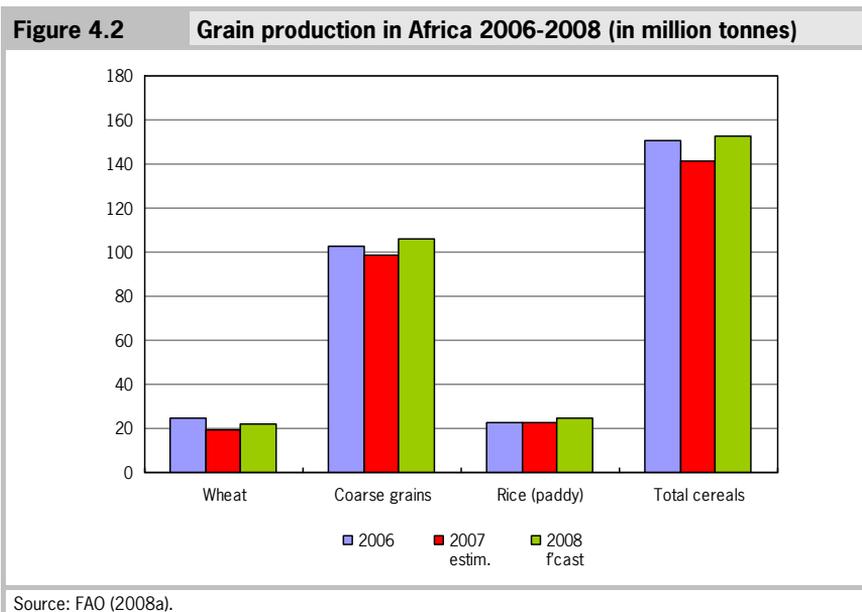
² It should be noted that the presence of MNEs in Africa is much greater for inputs such as fertilisers.

³ Available on the internet at tinyurl.com/bfk4td. Accessed February 2009.

porters from Europe, the Middle East and Africa. The liberalisation and commercialization of production chains as well as the end of cereal import state monopolies have allowed for this transition to take place. It is therefore now easier for large MNEs to get a foothold in these countries.

4.3.3 Impact of high prices on farmers in Sub-Saharan Africa

This section briefly examines the question whether the high grain market prices benefited farmers in SSA. We conclude that this has not been the case for the majority of farmers, for several reasons. First, we examine whether high prices led to a supply response: did farmers in Africa start growing more grains because they could receive higher prices? The data does not seem to indicate this.



In the period 2006-2008, the production of grains has not increased much in Africa (figure 4.2). This seems to indicate that the supply response to prices has been very low, which again is an indication of various factors that impede farmers in Africa to increase production. One major factor has been the increase in fertiliser prices, which has outpaced the price increase of grains. As fertiliser prices rose, farmers decreased fertiliser use (Jayne et al., 2008). An-

other factor has been various weather conditions such as drought in several countries which have led to crop failure.

Secondly, price transmission - the extent to which world market prices are transmitted to farmers - is not high in Africa. There are various reasons for this. The most important reasons are that traders in Africa face high transport and transaction costs, which increase the margins between the price that farmers get and the price consumers have to pay (table 4.1).

| Region | Trading time across borders for exports (days) | Average transport costs (USD per container to Baltimore) | Population in landlocked countries (%) | Road density (km² of road per surface area (1999)) |
|----------------------------|---|---|---|--|
| East Asia & Pacific | 24 | 3,900 | 0.42 | 0.72 |
| Europe & Central Asia | 29 | n.a. | 23.00 | n.a. |
| Latin America & Caribbean | 22 | 4,600 | 2.77 | 0.12 |
| Middle East & North Africa | 27 | 2,100 | 0.00 | 0.33 |
| South Asia | 34 | 3,900 | 3.78 | 0.85 |
| Sub-Saharan Africa | 40 | 7,600 | 40.20 | 0.13 |

Source: WorldBank (2008).

Trading time across orders in Africa is much higher than in any other continent. Average transport costs are also much higher, due to the fact that many countries are landlocked and goods need to be transported over land before they can be loaded on a cargo ship. Road density is also low in Africa. These high transport and transaction costs may be one reason why large MNEs such as Cargill, Bunge and ADM are not (yet) interested to source their grains from Africa.

Third, only farmers who are net sellers can increase their income when output prices rise (and input prices remain the same). However, many of Africa's farmers are net buyers. A study on the likely impact of rising world food prices on the welfare and food security of Ugandan households by IFPRI (2008) examined whether farmers benefited from high (grain) prices. It shows that a rela-

tively small segment of Ugandan households might have benefited directly from rising food prices - the net sellers of food crops, which constitute only between 12% and 27% of the population. Therefore, the study concludes that for broad economic growth and poverty reduction, consideration must be paid to how the increased income these relatively few households realise from higher food prices is invested privately to result in significant economic growth in their communities and the nation as a whole.

Finally, many of SSA's grains are non-tradables such as millet, sorghum etc (section 4.3.1) which are relatively unaffected by international market prices for tradable grains, but depend on domestic supply and demand dynamics.

4.4 Conclusion

While the global grain trade is increasingly characterised by horizontal and vertical integration, which has been facilitated by trade liberalisation, producers all over the world face increasing competition. Technology has increased agricultural productivity, but has also depressed prices (by increasing supply). Farmers in developed as well as developing countries find themselves in a 'technological treadmill'. A large number of competitive and relatively powerless producers face a few large powerful buyers. These factors explain why throughout the world, net incomes of producers have not increased much or have even decreased. Farmers might counter this situation by organising themselves and protecting their interests.

In Sub-Saharan Africa, the situation is somewhat different because the large MNEs are hardly active in the grain sector. Most African grain markets are characterised by high fragmentation: trade is carried out by a multitude of small traders. Domestic grain markets are highly influenced by domestic and regional supply and demand factors rather than international factors. A failed harvest in one region, for instance, pushes up prices in that region, as well as neighbouring regions. Many grains produced and traded in Africa are non-tradable (such as sorghum, millet), which means there is no international market for them. Transaction and transport costs are relatively high in Africa, which leads to low price transmission, i.e. high international prices are not translated to high local prices or with a substantial lag. Although international grain prices have a limited effect on African domestic markets, the high fertiliser prices in the international market did have a significant effect on local fertiliser prices, which increased considerably. Many farmers in Africa are net buyers of food, and thus they will

not benefit from higher grain prices, while they are hurt by higher fertiliser prices.

The study shows that the MNEs are not active in Africa, which might be due to the high transaction and transport costs that exist in the agricultural sector. However, it might be worthwhile to get a better picture of the plans of MNEs with respect to Africa. A recent trend in Africa has been the lease of huge areas of agricultural land to countries and companies from the Middle East and Asia. Although this was not part of our study, it does show the interest in large and powerful players in the African agricultural sector, i.e. land. It might also be worthwhile to execute a similar study of the role of the three large MNEs in Asian grain trade, where they appear to be much more active.

5 Influence of speculation and MNEs on price setting

5.1 Introduction

This chapter analyses the role of MNE and speculation on grain prices. It first gives some background information on speculation and financial markets. It then examines what evidence or arguments there are for speculation leading to higher prices. In section 5.2 the role of MNEs on prices is examined by analysing the financial results of Bunge, ADM and Cargill. It attempts to determine how MNEs are able to generate such high profits in times of high prices. Section 5.3 concludes.

5.2 Role of financial markets and speculation

5.2.1 Background: what is speculation?

Speculation consists essentially of making investments in anticipation of a price increase or decrease. Speculation is often (mis)understood to always lead to higher prices and ultimately lead to a 'bubble', where prices no longer reflect their intrinsic 'real' value. Speculation is also (mis)understood as purely a form of gambling. Both beliefs are untrue in most cases.

First, speculation and the presence of speculative traders are a normal feature of many markets. Speculation plays a price discovery role and can thus lead to more efficient markets, i.e. markets that readjust quickly to a new situation of scarcity or plenty. Second, speculators usually make informed decisions. Finally, many speculative investors will use a hedging strategy in combination with their speculative investment in order to limit potential losses. As a result of this, investments that anticipate higher prices will be combined with investments that anticipate lower prices.

However, in some cases, speculation does cause prices to deviate from their intrinsic value. This is the case if speculators trade on misinformation, or wrong expectations (believing prices will continue to rise/decrease in the future). For example, speculative purchasing can push prices above their true

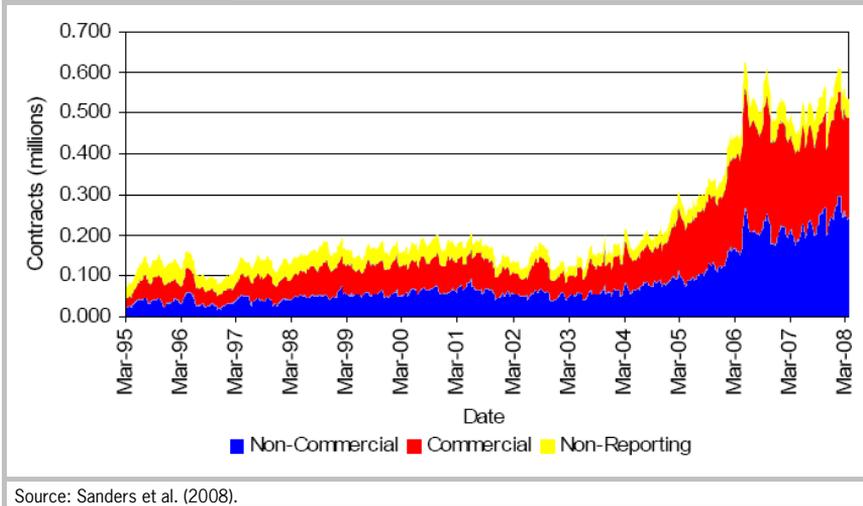
value simply because the speculative purchasing artificially increases the demand.

In this section we therefore do *not* analyse the existence of speculation, because there is always speculative buying and selling presence in grain markets, but our aim is to investigate whether speculative buying has been one of the causes of high grain prices in 2008.

5.2.2 Overview of financial and futures markets

Agricultural futures markets - where specific quantities of a commodity or financial instruments are bought and sold at a specified price with delivery set at a specified time in the future - experienced rapid growth starting in late 2004. The open interest (or total amount of contracts) for many agricultural futures markets doubled or even tripled from late 2004 through 2006. For example, figure 5.1 shows that open interest for Chicago Board of Trade (CBOT) for wheat increased significantly. The increase in open interest may be attributed to electronic trading and easier market access, an inflationary environment for many commodity markets, and, potentially, an increase in the use of commodity futures as an investment tool and inflation hedge (Sanders et al., 2008). Figure 5.1 shows that there was a significant increase in trade by non-commercial traders, large speculators who do not actually trade in a commodity but only speculate that prices will increase or decrease. Usually, hedging contracts are balanced by speculative contracts. Also trading by commercial traders increased. These traders actually provide a commodity such as wheat to the market or have bought a contract to take delivery of it. They trade in the futures market to hedge against price fluctuations. The trade by non-reporting (small speculators) remained the same.

Figure 5.1 Combined futures and options open interest (total trade) for Chicago Board of Trade for wheat, 1995-2008



5.2.3 Speculation as a root cause of high prices?

The impact of speculators on commodity prices has been hotly debated in the popular press and political circles. A number of bills have been introduced in the USA Congress with the purpose of prohibiting or limiting index fund speculation in commodity futures and 'over the counter' (OTC)¹ derivative markets. Proponents of the speculative theory claim that the speculative positions created a 'bubble,' where market prices far exceed fundamental values. It is interesting to note that most claims are not based on real evidence or convincing arguments. The mere fact that there has been an increase in speculative investments in recent years seems to be sufficient evidence that speculation has increased prices. However, there are various arguments against the speculative theory (Irwin, 2008):

1. For every speculative long position, there is a short position, or in other words: 'For everyone who thinks the price is going up there is someone

¹ Over-the-counter (OTC) trading is trade of financial instruments such as stocks, bonds, commodities or derivatives directly between two parties. It is contrasted with exchange trading, which occurs via facilities constructed for the purpose of trading, i.e. exchanges, such as futures exchanges or stock exchanges.

who thinks it is going down, and for everyone who trades with the flow of the market, there is someone trading against it.' If speculation is driving prices above fundamental values, it is not obvious in the level of speculation relative to hedging. In most markets, the increase in (long) speculative positions was equalled or surpassed by an increase in (short) hedging¹;

2. Recent price increases do not neatly fit a bubble explanation. Price increases are concentrated in the grain and oilseed markets. Yet, the highest concentration of long-only speculative positions has been in the livestock futures markets. Very high prices have also been observed for commodities without futures markets, such as durum wheat and edible beans, and in agricultural futures markets that are not included in popular commodity indices such as rice and fluid milk;
3. If speculators create a bubble in futures prices for storable commodities, this also creates an incentive to store commodities because prices in the future exceed levels normally required to compensate inventory holders for storage. There should therefore be an increase in inventories when a bubble is present. In fact, inventories for grains and oilseeds have fallen sharply over the last two years (figure 2.1);
4. A very large number of futures and derivative contracts can be created at a given price level. In theory, there is no limit. This is another way of saying that flows of money, no matter how large, do not necessarily affect the futures price of a commodity at a given point in time. Simply observing that large investment has flowed into the long side of commodity futures markets at the same time that prices have risen substantially does not necessarily prove a causal effect between speculation and prices.

Two in-depth analyses have been executed, both of which conclude there is not enough evidence to support the claim that speculative investments have led to higher prices in the commodity markets. The first study (Sanders et al., 2008) examined the size and activity of trader categories in the traditional Commodity Futures Trading Commission (CFTC), Commitments of Traders (COT) reports, the Commodity Index Trader (CIT) reports, and the Bank Participation (BP) report. The authors find no pervasive evidence that the speculative

¹ A 'long position' means the holder of the position, i.e. futures contract owns the security and will profit if the price of the security goes up. In contrast, 'short selling' or short hedging occurs when the seller does not yet own the commodity at the time of the sale but intends to purchase the commodity at a later date. Short selling is done with intent of later purchasing at a lower price. Short-sellers attempt to profit from an expected decline in price.

levels of 2008 were in excess of those recorded historically for agricultural futures markets.

The second study was done by David Kass, Senior Economist at the Division of Market Oversight of the CFTC¹, who gave a presentation during a roundtable discussion on April 22 2008, organised by the CFTC.² The Roundtable discussed several issues linked to the volatility on commodity markets, including the impact of financial players such as speculators and index traders on the functioning of the markets and the commercial players. Kass presented data on grain markets and gave an analysis of whether the price increase was caused by speculation. In his presentation he concluded:

'So we find it hard to find a direct relationship between the amount of index trading by percent or otherwise versus some of the volatility and some of the price rises we've seen of late. At least there's no simple analysis.'

Finally, on the question whether speculation by large MNEs has contributed to higher prices, Irwin (2008) makes the following point. In order to impact the equilibrium price of commodities in the cash market, index investors would have to take delivery and/or buy quantities in the cash market and hold these inventories off the market. There is absolutely no evidence that index fund investors are taking delivery and owning stocks of commodities. Furthermore, the scale of this effort would have to be immense to manipulate a world-wide cash market as large as the crude oil market, and there simply is no evidence that index funds are engaged to that extent in the cash market activities.

To conclude, although there has been an increase in speculative investments, there are valid arguments against the claim that these investments caused high grains prices. Second, there is little empirical evidence to support this claim. We therefore conclude that the peak in grains prices in 2008 did not, in fact, constitute a 'bubble' but was a result of underlying demand and supply dynamics as described in section 2.3.

¹ The CFTC is independent agency with the mandate to regulate commodity futures and option markets in the United States.

² CFTC (2008), Agricultural Forum, 22 April 2008. Presentations are available at tinyurl.com/bz2fbp.

5.2.4 Other effects of speculation?

Another claim that is often made is that the growing influence of speculative interests has recently led to a lack of convergence between cash and futures prices (National Grain and Feed Association cited in Laws, 2008). The difference between futures prices and cash prices is called the 'basis'. The two prices are supposed to converge on the date when futures expire because you cannot have two different prices at the same time at the same place for the same commodity. The basis on the day of delivery is thus supposed to be zero. However, in the past period, futures prices have been higher than cash prices. Many believe that the lack of convergence is symptomatic of a poorly functioning futures market or a result of excessive speculation. Well-functioning futures markets have a price discovery role for those involved in grains business. For instance, a farmer making planting decisions at the beginning of the year will do this on the basis of expected future prices; cooperatives use futures prices to commit to purchases of their members. When futures and cash prices no longer converge, the price signal is no longer reliable. There are several factors that play a role in convergence (Harris, 2008):

1. Cost of storing the commodity: high storage costs can be expected when storage facilities are scarce and this will widen the basis;
2. Value of having immediate access to the commodity;
3. Cost of delivering the commodity according to the contract: with the high oil prices, freight rates have been at a historical high, thus increasing the cost of deliverance;
4. Arbitrage activity: arbitrage consists of examining the three previous factors for profit potential. If there is no convergence and this is due to true mispricing, arbitrageurs would short futures and buy in the spot market to deliver on these contracts, thus rectifying the lack of convergence.

According to Harris (2008), the higher costs of storage and freight rates are the best explanations for the lack of convergence and there is no reason to conclude that excessive speculation has contributed to the lack of convergence. Again, we can conclude that there is no strong argument to believe that high speculative investments have led to a lack of convergence in the cash and futures market. What we may conclude is that 2008 has been an exceptional year, in which different factors that created a 'perfect storm' have influenced grains markets, as was explained in figure 2.7.

5.3 High commodity prices and MNE profits

Chapter 2, on price trends in the global grain sector, explains that the price fluctuations - a sharp increase during 2006-2008 and a sharp fall in the second half of 2008 - are caused by a complex set of factors that determine supply and demand of grains and consequently their prices. In the period when food prices increased all over the world, the large agri-businesses reported record profits. In this section we will try to determine how the MNEs have been able to achieve these results.

5.3.1 Bunge

Table 5.1 shows the annual results of Bunge for 2007 and 2008. It shows that volumes traded increased slightly (1%) except for fertiliser, which decreased with 15%. However, net sales and also gross profits increased significantly (with 39% and 60% respectively). Net sales and gross profits are much higher while volumes remained the same and we may assume that Bunge has been able to take advantage of higher selling prices, even when its input costs may also have increased.

Bunge was able to produce record results in one of the most volatile years. In 2008 the company earned over USD1b. in net income for the first time in its existence and produced USD2.5b. of cash flow from operations. Bunge has been able to achieve these results by high demand and resulting high prices and therefore high profits: with only 1% increase in volume, it has generated an increase of 60% in gross profits. However, in its fourth quarter (not in the table), when worldwide prices were decreasing, Bunge made a loss of USD210m. on its agribusiness, fertiliser, and edible oil sectors. The fourth quarter included a charge of approximately USD185m. related to counterparty risk provisions resulting from a combination of the depressed global economy and the adverse impact of significant declines in agricultural commodity, freight and energy prices on certain customers. There were also foreign exchange losses of USD749m. due to US dollar-denominated financing of working capital and devaluations.

| Table 5.1 | Financial overview of Bunge year results (2007 and 2008) | | |
|------------------------------------|---|----------------|-----------------|
| | 2007 | 2008 | % change |
| <i>Volumes (metric tonnes)</i> | | | |
| Agribusiness | 114,365 | 117,661 | 3 |
| Fertiliser | 13,077 | 11,134 | -15 |
| Edible oil products | 5,530 | 5,736 | 4 |
| Milling products | 3,983 | 3,932 | -1 |
| <i>Total</i> | <i>136,955</i> | <i>138,463</i> | <i>1</i> |
| <i>Net sales (million USD)</i> | | | |
| Agribusiness | 26,990 | 36,688 | 36 |
| Fertiliser | 3,918 | 5,860 | 50 |
| Edible oil products | 5,597 | 8,216 | 47 |
| Milling products | 1,337 | 1,810 | 35 |
| <i>Total</i> | <i>37,842</i> | <i>52,572</i> | <i>39</i> |
| <i>Gross profits (million USD)</i> | | | |
| Agribusiness | 1,407 | 2,029 | 44% |
| Fertiliser | 639 | 1,449 | 127% |
| Edible oil products | 334 | 356 | 7% |
| Milling products | 135 | 202 | 50% |
| <i>Total</i> | <i>2,515</i> | <i>4,036</i> | <i>60%</i> |
| Source: Bunge (2008). | | | |

Although the decrease in prices and the general decline in the global economy has affected Bunge's fourth quarter results, Bunge expects 2009 to be another year with profits. Alberto Weisser, Bunge's Chairman and Chief Executive Officer said¹:

'First, periods of lower demand for our core products are generally short lived. People may cut back consumption during times of economic uncertainty, but in the end, many of our products are the basic staples necessary to feed the world's growing population. [...] Second, global commodity stocks remain tight, and this reality is being exacerbated by weather issues in South America. Even with lower economic growth, the

¹ In Bunge Reports Fourth Quarter Results: tinyurl.com/dy4ofj.

world will need additional supplies of crops. Current futures prices indicate that the market will provide incentives for farmers to plant, and this should encourage fertiliser use. [...] During this time we continue to take steps to lower costs and improve the efficiency of our asset network. We expect that the stronger US dollar should benefit the cost structures of our foreign operations. We are also investing for the long-term in our core businesses, and in complementary value chains such as sugar [...].'

This statement basically asserts that because Bunge is involved in 'basic staples necessary to feed the world's growing population' Bunge is somewhat 'recession-proof': the demand will always be there. By owning and increasing complementary value chains it is able to stabilise its income and maximise profits.

5.3.2 ADM

Table 5.2 shows financial results of ADM from 2004 to 2008. Since 2004, ADM's net earnings have increased with 264%. Net sales increased with 93% in the same period. Compared to 2007, net sales increased with 59%. ADM's segment operations have increased in 2008: its oilseed operations with 67%, maize operations with 23%, its agricultural services with 66%. However, profits were mixed, with oilseeds processing and maize processing generating a loss. The oilseed processing sector lost because of decreased biodiesel margins in Europe. However, crushing and origination operating profits increased with 76% to USD727m. due principally to improved crushing margins in North and South America and improved fertiliser results in South America.

Maize processing generated a loss because:

'the market price of maize rose due to increased demand, resulting in higher raw material costs for maize processing which were only partially passed on in the form of increased selling prices for sweeteners and starches' (ADM, 2008: 21).

The large profit in agricultural services was mainly a result of:

'enhanced merchandising and handling margins caused by volatile global grain and freight markets, favourable risk management results, and to a lesser extent, increased sales volumes' (ADM, 2008: 24).

Transportation operating profits decreased with 8% to USD144m. primarily due to increased fuel costs.

| Table 5.2 Financial Highlights ADM | | | | | | |
|---|------------------|---------------|-----------------|---------------|--------------|-----------------|
| (in million USD) | 2004 | 2005 | 2006 | 2007 | 2008 | % change |
| Net sales and other operating income | 36151 | 35943 | 36596 | 44,018 | 69,816 | 93 |
| Net earnings | 495 | 1044 | 1312 | 2,162 | 1,802 a) | 264 |
| | Net sales | | | Profit | | |
| (in million USD) | 2007 | 2008 | % change | 2007 | 2008 | % change |
| <i>Oilseeds processing</i> | | | | | | |
| Crushing & origination | 8,036 | 14,477 | 80% | 414 | 727 | 76% |
| Refining, packaging, biodiesel and other | 5,758 | 8,588 | 49% | 202 | 181 | -10% |
| Asia | 149 | 214 | 44% | 523 | 132 | -75% |
| <i>Total oilseeds processing</i> | <i>13,943</i> | <i>23,279</i> | <i>67%</i> | <i>1,139</i> | <i>1,040</i> | <i>-9%</i> |
| <i>Maize processing</i> | | | | | | |
| Sweeteners and starches | 2,761 | 3,546 | 28% | 509 | 529 | 4% |
| Bio products | 3,064 | 3,591 | 17% | 596 | 432 | -28% |
| Total maize processing | 5,825 | 7,137 | 23% | 1,105 | 961 | -13% |
| <i>Agricultural services</i> | | | | | | |
| Merchandising and handling | 20,222 | 33,749 | 67% | 382 | 873 | 129% |
| Transportation | 197 | 219 | 11% | 156 | 144 | -8% |
| Total agricultural services | 20,419 | 33,968 | 66% | 538 | 1,017 | 89% |
| <i>Other</i> | | | | | | |
| Wheat, Cocoa and Malt | 3,738 | 5,335 | 43% | 209 | 217 | 4% |
| Financial | 93 | 97 | 4% | 170 | 206 | 21% |
| Total Other | 3,831 | 5,432 | 42% | 379 | 423 | 12% |
| <i>Total</i> | <i>44,018</i> | <i>69,816</i> | <i>59%</i> | <i>3,161</i> | <i>3,441</i> | <i>9%</i> |
| a) Earnings before income taxes decreased in 2008 due principally to gains totalling USD1.0b. before income tax on business disposals recorded in 2007. | | | | | | |
| Source: ADM (2008). | | | | | | |

From table 5.2 it becomes clear that ADM does face risks due to fluctuating supply and prices. ADM list several risk factors among which:

- The availability and price of the agricultural commodities and agricultural commodity products the company produces and merchandises can be affected by weather, disease, government programs, competition, and various other factors beyond the company's control and could adversely affect the company's operating results;
- Fluctuations in energy prices could adversely affect the company's operating results;
- The company is subject to economic downturns, political instability and other risks of doing business globally which could adversely affect the company's operating results (ADM, 2008: 10).

Although ADM has reported losses in its oilseed and maize processing segments, and transport due to higher commodity and fuel prices, it has been able to increase its overall segment profits with 9%. So how was ADM able to generate profits despite higher commodity and fuel prices? Table 5.2 already provides an indication for this. In some cases, ADM did profit from higher selling prices for, for instance oilseeds and fertiliser. And it profited from merchandising and handling, which makes up 25% of its 2008 profit. The same Annual Report of ADM (ADM, 2008:3-4) gives further insight into this question (our emphasis included):

'ADM's procurement network includes more than 300 facilities on six continents, and we continue to add capacity in strategically important geographic areas as customer demand and new opportunities warrant. [...] Our more than 230 processing plants around the world generate a remarkable array of products made from maize, wheat, cocoa, oilseeds and other feedstocks, *and the breadth of our operations gives us flexibility to adjust our manufacturing activities to respond to shifts in a dynamic global marketplace.* [...] In a changing world, with volatile commodity prices and evolving consumer preferences, we work with customers to provide cost-effective solutions from among the array of ingredients we create from the crops we process. This year, as crop prices rose, we collaborated with feed customers to identify affordable nutrient blends using alternatives such as canola meal, soybean meal and distiller's dried grains combined with advanced nutritional additives. *Our insight into crop availability - combined with our global sourcing network, delivery capabilities and processing efficiencies - helped to keep*

products moving to customers despite market and weather-related disruptions.¹

Through its breadth of operation (and global sourcing network) which gives ADM flexibility, ADM is able to generate profits.

5.3.3 Cargill

Cargill earned USD3.95b. in the fiscal year¹ 2008, up 69% from the prior year and sixth consecutive year of record financial performance. Cargill does not report annual results but results per fiscal year (1 June 2007-31 May 2008) - see table 5.3 for more figures.

| Table 5.3 Financial Highlights Cargill 2007-2008 | | | | |
|--|--------------|--------------|--------------|-----------------|
| Fiscal year a) | | | | |
| USD in millions | | 2008 | 2007 | % change |
| Sales and other revenues | | 120,439 | 88,266 | 36 |
| Net earnings | | 3,951 | 2,343 | 69 |
| Cash flow from operations | | 7,012 | 3,965 | 77 |
| Annual year b) | | | | |
| Net earnings in million USD | | 2008 | 2007 | % change |
| 3rd quarter | Dec - Feb 29 | 1,030 | 553 | 86 |
| 4th quarter | Mar - May 31 | 744 | 628 | 18 |
| 1st quarter | Jun - Aug 31 | 1,490 | 917 | 62 |
| 2nd quarter | Sep - Nov 31 | 1,190 | 945 | 25 |
| Total | | 4,454 | 3,043 | 46 |
| a) Cargill does not publish its financial report for the general public. More data was not available to the authors; | | | | |
| b) Compiled through Cargill Press Releases and tinyurl.com/apq366 . | | | | |

According to Greg Page, Cargill's chairman and chief executive officer, Cargill has been able to achieve a record financial performance in the fiscal year 2008 - which was a year of exceptionally strong commodity demand, market turbulence and price risk - by using its business diversity, the full capacity of its global assets, strong risk management and a significant increase in capital deployed. Mr Page said Cargill's investment in the fertiliser industry also contributed significantly to company results (Cargill Press Release 19 August 2008).

¹ The fiscal year does not coincide with 2008 but starts in June 2007. This is why we have added two tables - one for the fiscal year and one for the annual year.

Cargill's first-quarter results (fiscal year 2009) received a substantial boost from its investment in the fertiliser industry through its holdings in The Mosaic Company, which mines, manufactures, markets and distributes fertiliser around the world. Among Cargill's five business segments, the increase in first-quarter earnings was thus led by the industrial segment, which reflected continued demand for crop nutrients in response to the world's increased need for higher crop yields (Cargill Press Release 13 October 2008).

Results in the second quarter (fiscal year 2009) were led by its origination and processing segment (including grains) and by its industrial segment (including fertilisers), both of which increased earnings significantly from the second quarter a year ago. Cargill's fertiliser business through The Mosaic Company was a significant contributor to company results. Excluding earnings from that investment, Cargill's second-quarter results were moderately below the year-ago level and, in the first half, just under the same period a year ago. Earnings in agriculture services decreased moderately. Results declined overall in the food ingredients and applications segment, with steady or improved performance in some food ingredient and meat units offset by weaker performance elsewhere. The risk management and financial segment incurred a loss related to financial markets activities. At the same time, the segment's energy businesses jointly surpassed last year's second-quarter earnings by a significant margin (Cargill Press Release 13 January 2009).

The analysis of the financial results of Cargill makes clear that its fertiliser as well as origination and processing segment (including grain and oilseed supply chain) have contributed in a significant way to its financial results. Like the other MNEs, the second half of 2008 was more difficult as the global economy slowed down and the financial crisis ensued. Also in line with the other two MNEs, Cargill is able to be flexible, using its worldwide sourcing network and business diversity.

5.3.4 The sources of profit of MNEs

The analysis of the financial annual reports of Bunge, ADM and Cargill provides us several clues about the relationship between the high food prices and record profits of the MNEs. First of all, they did seem to have profited from the high demand for commodities such as grain as well as inputs such as fertiliser and the resulting high prices. The second half of 2008 - when the global economy slowed down and prices decreased - appears to have been more difficult for the MNEs. However, Cargill did report that it still made profits from its fertiliser business, because demand increased.

Because the large agribusiness corporations have sourcing and selling locations all over the world, they are flexible in managing supply, demand and price differences. This is how they manage to continue to achieve high earnings. Cargill reported that it was able to manage risk because the company was able to 'respond to supply-and-demand fundamentals in fast-moving markets'. Farmers and consumers on the other hand do not have this flexibility and are increasingly faced with fluctuating input and output prices. Vorley (2003) makes the point that global commodity traders actually seem to rely on market instability for their profitability. According to him, disruption and instability in trading patterns allow MNEs to use their superior market intelligence to capture the profits resulting from such instability. Having diverse sources of supply to draw from allows traders to exploit temporary opportunities for profit. Our analysis seems to confirm this analysis.

In the past years, tariffs, quotas, and duties have been reduced worldwide, in effect reducing the economic borders between nations. Farmers in different countries increasingly compete in the same international market. At the same time, the reduction in trade barriers seems to have facilitated agribusiness mergers reducing competition for these corporations. The process of corporate concentration has accelerated and increased the rate at which locally-owned agricultural processing plants are taken over by foreign-owned corporations. These trade agreements have boosted the volume of agricultural commodity trade exports. Thus two opposing trends can be distinguished: more competition for farmers and less competition for large scale agribusiness.

Large agribusiness firms have their own international trade priorities, which do not necessarily coincide with national interests. Cargill's subsidiary in for instance Canada does not directly 'compete' with its parent company, but rather pursues measures which will benefit the parent company's bottom line (NFU, 2008).

We have to note that not all food-related companies have benefited from the high prices. Companies that work most directly with farmers, such as Cargill, Bunge and ADM, are gaining the most from higher food and grain prices, while companies further along in the food chain have had a difficult time passing along the higher food prices to consumers (Kesmodel et al., 2008). USA companies such as Tyson Foods Inc., Pilgrim's Pride Crop., Smithfield Foods, Dean Foods and Kraft Foods all posted losses over 2007. Prices for purchasing their raw materials went up more than prices for their products. However, large food companies such as Nestlé SA, Groupe Danone SA and Unilever have passed on higher prices to consumers with apparently little or no impact on profits (Kesmodel et al., 2008).

5.4 Conclusion

Based on the data and research we have analysed, we find no strong evidence that speculation by index funds on the futures commodity markets has led to higher grain prices. Firstly, although there has been a large flow of speculative money into the futures commodity markets, total trade in the futures markets (including non-speculative trade) has increased as well, so that the share of speculative trade has not increased much. Secondly, no clear cause and effect relationship can be established between the increase in speculative trade and higher prices. It might well be that the causation is the other way round: increasing prices led to more speculation. There has been concern about the fact that the futures and cash prices on futures commodity markets no longer converge (the futures prices are higher than cash prices). This has also been attributed to speculation. However, again, there is no evidence that this is the cause. The cause may also lie in the storage and freight costs which have risen considerably as demand for commodities increased and fuel cost soared.

There is no evidence either that the dominant MNEs active in grain trade (Bunge, Cargill and ADM) have pushed up prices. They would only be able to do this by hoarding commodities such as grains on a large scale, but the data shows that in fact, stocks decreased in the past years. There is more evidence that they did profit from high commodity prices although the evidence is somewhat mixed. In some cases they have clearly been able to profit demand for commodities was high and those firms operating close to farmers could increase their margins. However, in some cases the high commodity prices resulted in a net loss, for instance for ADM, because the costs of purchasing the commodities have also increased.

Whether the MNEs could profit depends on two factors. First, the timing: whether they could buy at low prices and sell against high prices. Second, the power that the MNEs can exert in setting margins. The large agribusinesses have a global sourcing network that gives them the flexibility to source where prices are relatively low, to adjust manufacturing activities to respond to shifts in a dynamic global marketplace. On the second account, the large agribusinesses dominate a large share of the market and own not just one segment of the business but a complex that includes input as well as output. This puts them into a good position to gear supply to demand and to determine margins.

To build on these advantages, the MNEs continue to expand and merge. The trend towards more free trade has clearly facilitated their ability to source globally. The MNEs are therefore able to deal with higher price volatility. By contrast,

farmers will face more difficulties when prices will fluctuate, especially in the face of increasing competition in a more free trade environment.

This study could not go in-depth into the strategies of the large MNEs and their effect on how international grains markets are organised. A more in-depth study on the strategies of large MNEs (not limited to grains markets) is recommended.

6 Conclusions and recommendations

6.1 Overview of the international grain markets and positions

This report has described the various factors that underlie the agricultural commodity price increases of 2006-2008 and the price drop that started in the second half of 2008. These include long-term as well as short-term factors in supply and demand. The last decade has seen a gradual increase of demand for food and feed due to increasing income developments, especially in some of the larger emerging economies of the world. As just a small percentage of world production is traded, the world market price for grains is very sensitive to supply and demand shifts. A major cause of high prices has been the lowering of expensive global grain stocks by various countries (which could have acted as a buffer), combined with the fact that production growth has been only barely keeping up with demand growth. Other, short-term factors that contributed to the peak included expansion of biofuel production facilitated by government policies, dollar devaluation, rising farm production costs (due to increased fuel and fertiliser costs) and reduced supply through failed harvests. A new factor is the financial crisis which has hit the world since the 'credit crunch' of October 2008 when banks started failing and lending froze. It seems that this will have an impact on farmers since they face difficulties in obtaining credit both from banks and agribusiness.

Whether prices will continue to fall as they have done in last months of 2008, or whether they will go back to their high levels of 2007/08 is unclear and depends on many factors. What seems to be clear, however, is that price volatility will continue to be an important factor in the future. Price ups and downs will follow each other more rapidly.

6.2 Increasing market concentration

World grain trade constitutes only a small share of world production (from 7% for rice to 18% for wheat). This global trade is handled increasingly by a handful of companies. Cargill, ADM and Bunge are the major players. In the grains market (and food markets in general) there is a continuing trend towards horizontal and vertical integration. An important reason for firms to engage in such mergers is reduced competition in global food markets and increased economies of

scale. Large MNEs such as Cargill, ADM and Bunge engage in various collaborative contracts with large MNEs that specialise in inputs (such as agrochemicals, seeds etc). Such 'food clusters' wield much power in terms of decisions about what is produced, what is consumed and on what basis these decisions are made.

Although such food clusters are increasing in importance, there is relatively little good quality and up to date data on them. We therefore recommend further research into the market behaviour of food clusters and the impact of this type of concentration and business collusion on market competition. More specifically, the question is how and to what extent MNEs can influence prices, and if they can, what government policies would be optimal to ensure a real or 'fair' competitive market environment.

6.3 Supply chain linkages

While the global grain trade is increasingly characterised by horizontal and vertical integration, farmers all over the world face increasing competition. Technology has increased agricultural productivity, but has also depressed prices (by increasing supply). Farmers in developed as well as developing countries find themselves in a 'technological treadmill'. A large number of producers face a few large buyers that determine the market conditions. These factors explain why throughout the world, net incomes of farmers have not increased much or have even decreased. Farmers might counter this situation by organising themselves and protecting their interests.

In Sub-Saharan Africa, the situation is somewhat different from the situation of grain farmers in developed markets, Latin America and Asia. The reason for this is that the large MNEs are hardly active in the grain sector. Most African grain markets are characterised by high fragmentation: trade is carried out by a multitude of small traders. Domestic grain markets are highly influenced by domestic and regional supply and demand factors rather than international markets. A failed harvest in one region, for instance, pushes up prices in that region, as well as neighbouring regions. Many grains produced and traded in Africa are not trade internationally. Transaction and transport costs are relatively high in Africa, which leads to low price transmission, i.e. high international prices are not translated to high local prices or only with a substantial time lag. Although international grain prices have a limited effect on African domestic markets, the high fertiliser prices in the international market did have significant consequences for local fertiliser prices, which increased considerably. Many

farmers in Africa are net buyers of food, and thus they will not benefit from higher grain prices, while they are hurt by higher fertiliser prices.

The study shows that the MNEs are not active in the trade and milling of cereals in Africa, which might be due to the high transaction and transport costs that exist in the agricultural sector. However, it requires further research to get a good quality and in-depth picture of the MNEs strategies with respect to Africa. A recent trend in Africa has been the lease of huge areas of agricultural land to countries and companies from the Middle East and Asia. Although this was not part of our study, it does show the interest of large and powerful players in the African agricultural sector (i.e. land), which might be worthwhile to investigate. It might also be worthwhile to execute a study of the role of the three large MNEs in Asian and Latin American grain trade, where they appear to be much more active.

6.4 Influence of speculation and MNEs on price setting

Based on the data and research we have analysed, we find no strong evidence that speculation by index funds on the futures commodity markets has led to higher grain prices. Firstly, although there has been a large flow of speculative money into the futures commodity markets, total trade in the futures markets (including non-speculative trade) has increased as well, so that the share of speculative trade has not increased much. Secondly, no clear cause and effect relationship can be established between the increase in speculative trade and higher prices. It might well be that the causation is the other way round: increasing prices led to more speculation. There has been concern about the fact that the futures and cash prices on futures commodity markets no longer converge: the futures prices are higher than cash prices. This has also been attributed to speculation. However, again, there is no evidence that this is the cause. The cause may also lie in the storage and freight costs which have risen considerably as demand for commodities increased and fuel cost soared.

There is no evidence either that the dominant MNEs active in grain trade (Bunge, Cargill and ADM) have pushed up prices. They would only be able to do this by hoarding commodities such as grains on a large scale, but the data show that in fact, stocks decreased in the past years. There is more evidence that they did profit from high commodity prices although the evidence is somewhat mixed. In some cases they have clearly been able to profit as demand for commodities was high and those firms operating close to farmers could increase their margins. However, in some cases the high commodity prices re-

sulted in a net loss, for instance for ADM, because the costs of purchasing the commodities have also increased.

Whether the MNEs could profit depends at least on two factors. First, the timing: whether they could buy at low prices and sell against high prices. Second, the power that the MNEs can exert in setting margins. The large agribusinesses have a global sourcing network that gives them the flexibility to source where prices are relatively low and to adjust manufacturing activities to respond to shifts in a dynamic global marketplace. On the second account, the large agribusinesses dominate the market and own not just one segment of the business but a complex that includes inputs as well as outputs. This puts them into a good position to gear supply to demand and to determine margins.

To build on these advantages, the MNEs continue to expand and merge. The trend towards more free trade has clearly facilitated their ability to source globally. The MNEs are therefore able to deal with higher price volatility. By contrast, farmers will face more difficulties when prices will fluctuate, especially in the face of increasing competition in a more free trade environment. This study could not go into details of the strategies of the large MNEs and their effect on the organisation of international grains markets. A more in-depth study on the strategies of large MNEs (not limited to grains markets) is recommended.

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