

FOOD VERSUS FUEL


Malcolm Shepherd
September 2008

1

BioFuel Matters Ltd

friends of **Le Monde Diplomatique**

and
FOOD VERSUS *BIO*FUEL



Malcolm Shepherd
September 2008

2

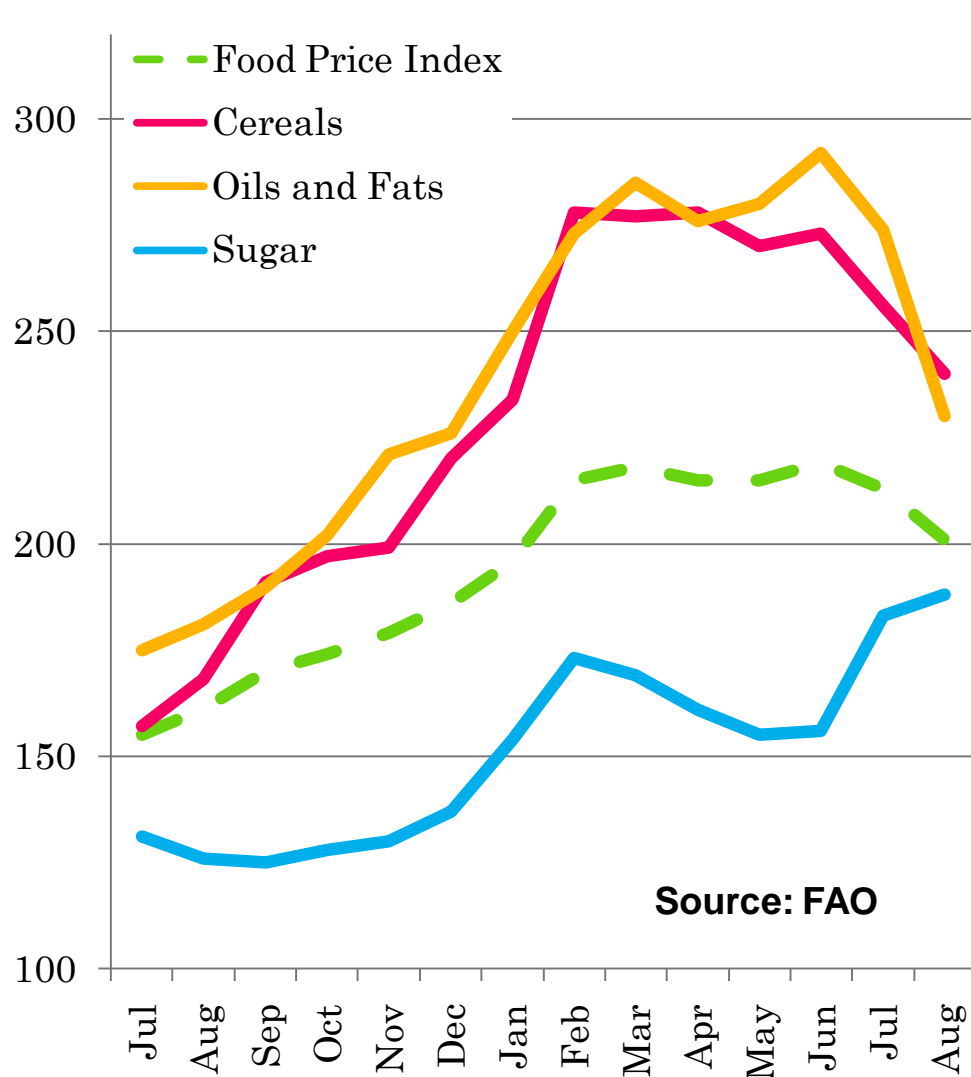
AGENDA

- Background
- Grain in context
- Why did grain prices spike in 2007/08 ?
- Can biofuels help to reduce the real problems?
- Summary

AGENDA

- Background
- Grain in context
- Why did grain prices spike in 2007/08 ?
- Can biofuels help to reduce the real problems?
- Summary

UN FAO FOOD PRICE INDICES JUL-07 TO AUG-08



Source: FAO

- Index :1998/2000 = 100
- All food to 219 in Jun-08
 - (Cereals 288 in Mar-08)
 - (Oils 292 in Jun-08)
- Biofuels consumed 73Mt of cereals & 8Mt veg oils*
- Food riots in
 - Egypt
 - Ivory Coast
 - Senegal
 - Yemen
 - Haiti
 - Bangladesh
 - Mexico
 - Etc....
- 8.9% annual rate of UK food inflation in Aug-08**

“SILENT TSUNAMI”



“..high food prices are creating the biggest challenge that WFP has faced in its 45-year history, a silent tsunami threatening to plunge more than 100 million people on every continent into hunger”

“This is the new face of hunger – the millions of people who were not in the urgent hunger category six months ago but now are” - April 2008

*World Food Programme
Executive Director
Josette Sheeran*



BIOFUELS – A “CRIMINAL PATH”

“The United States and the European Union have taken a “criminal path” by contributing to an explosive rise in global food prices through using food crops to produce biofuels” - April 2008



Jean Ziegler - United Nations special rapporteur on the right to food



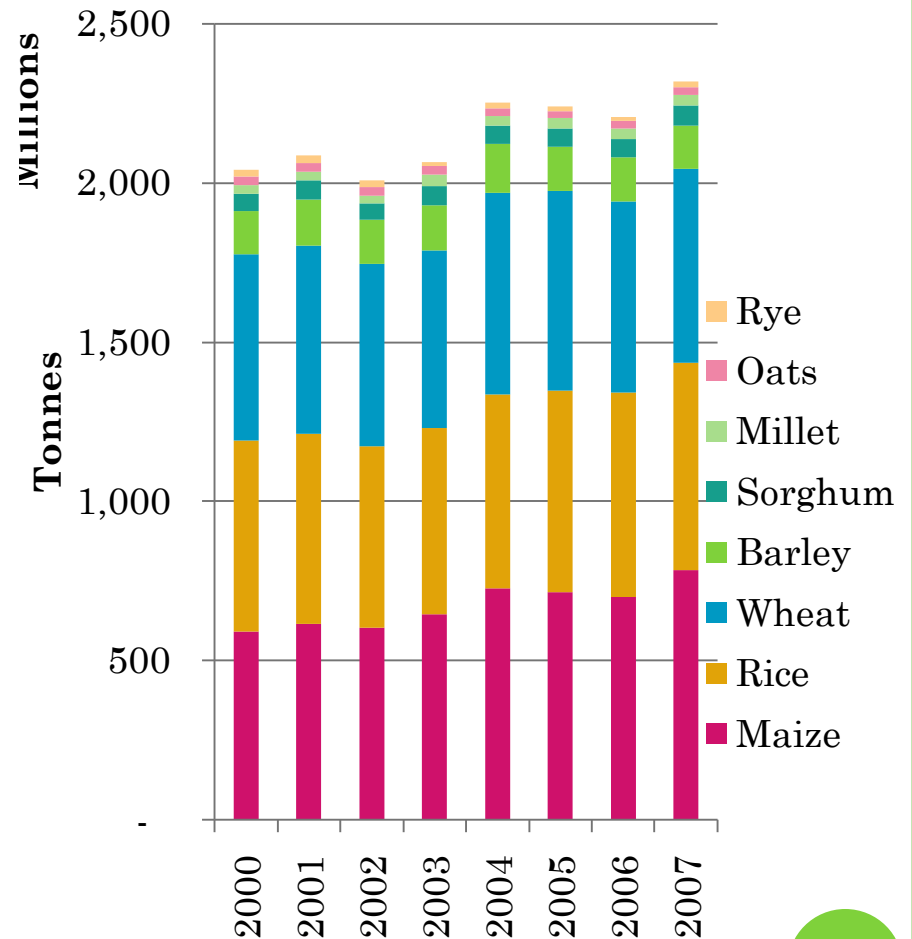
AGENDA

- Background
- Grain in context
- Why did grain prices spike in 2007/08 ?
- Can biofuels help to reduce the real problems?
- Summary

IMPORTANCE OF WORLD CEREALS

- On average cereals, directly or indirectly, provide 50%* of all energy in the human diet
- Wheat is mainly used for human food, animal feed, potable alcohol and starch
- Maize is mainly used for animal feed, some human food and bioethanol
- Barley is mainly used for animal feed, beer and spirit production.

World cereal production

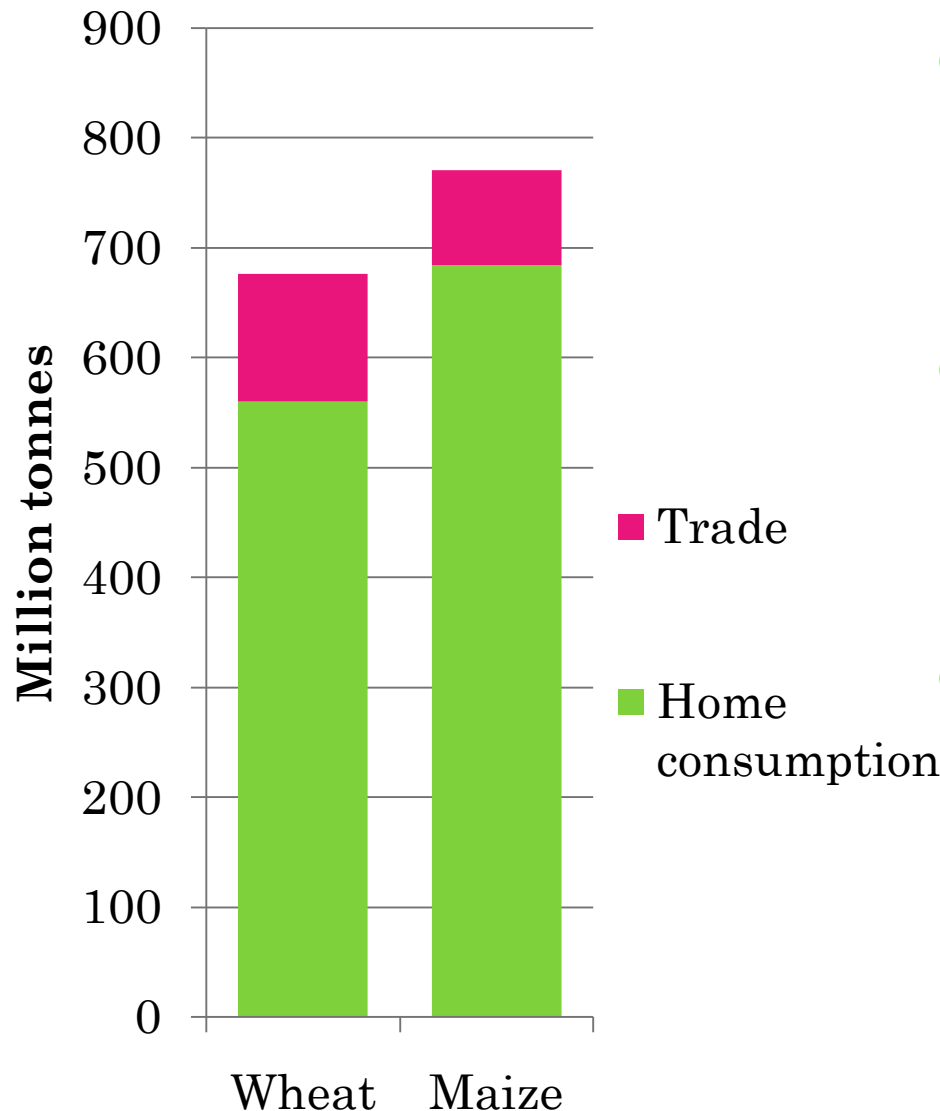


* FAO

Source: FAOSTAT



WORLD CEREAL PRODUCTION AND TRADE 2008/09



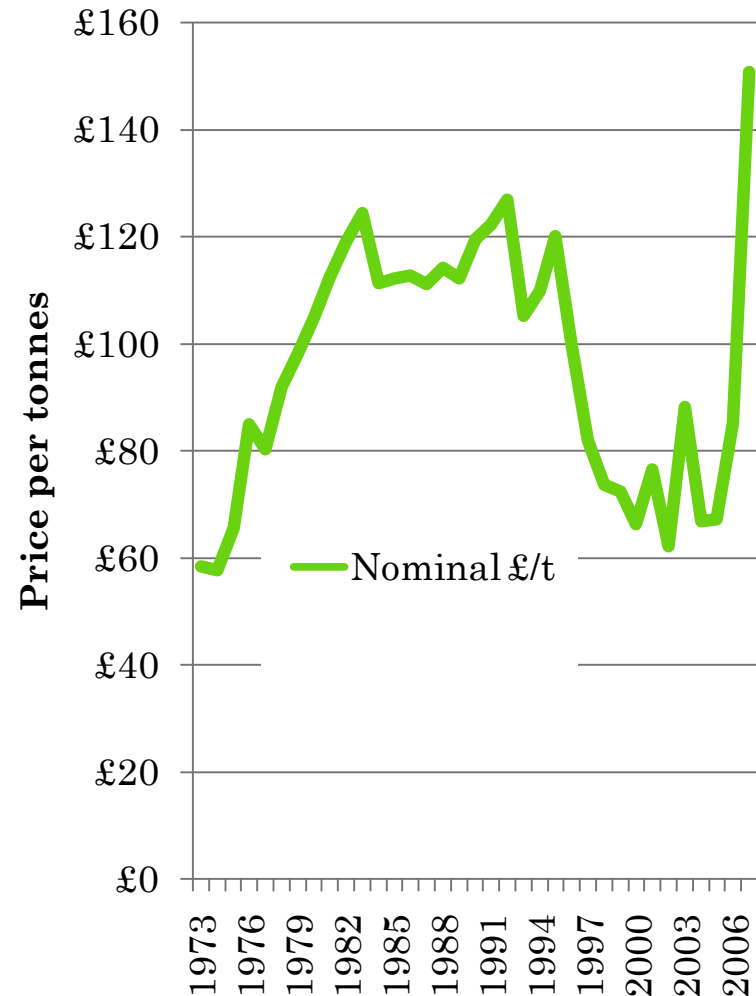
- About 83% of wheat is consumed in the country of production
- About 89% of maize is consumed in the country of production
- It is the supply & demand of the traded grain that determines the world market – and therefore - internal market prices



UK & EU CONTEXT

- Prices paid to farmers rose from joining EU in 1973
- McSharry reform of CAP in 1992
 - reduced support prices
 - introduced set-aside to reduce food production

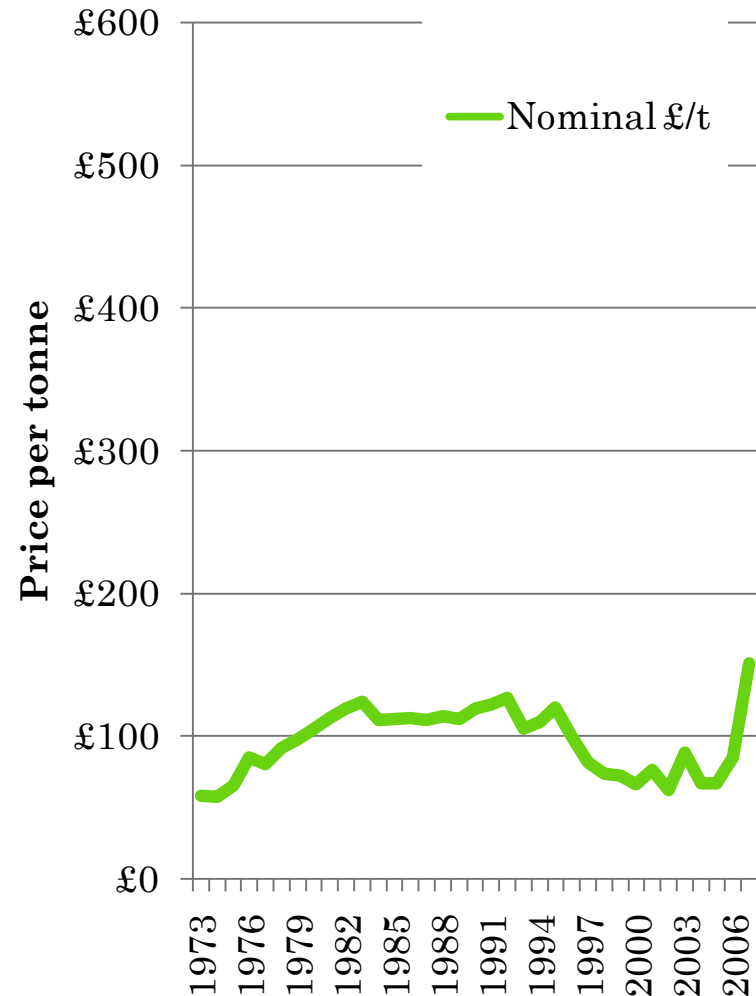
UK Ex-farm annual average ex farm wheat prices 1973 - 2007



Source: HGCA

- Same chart but change of scale

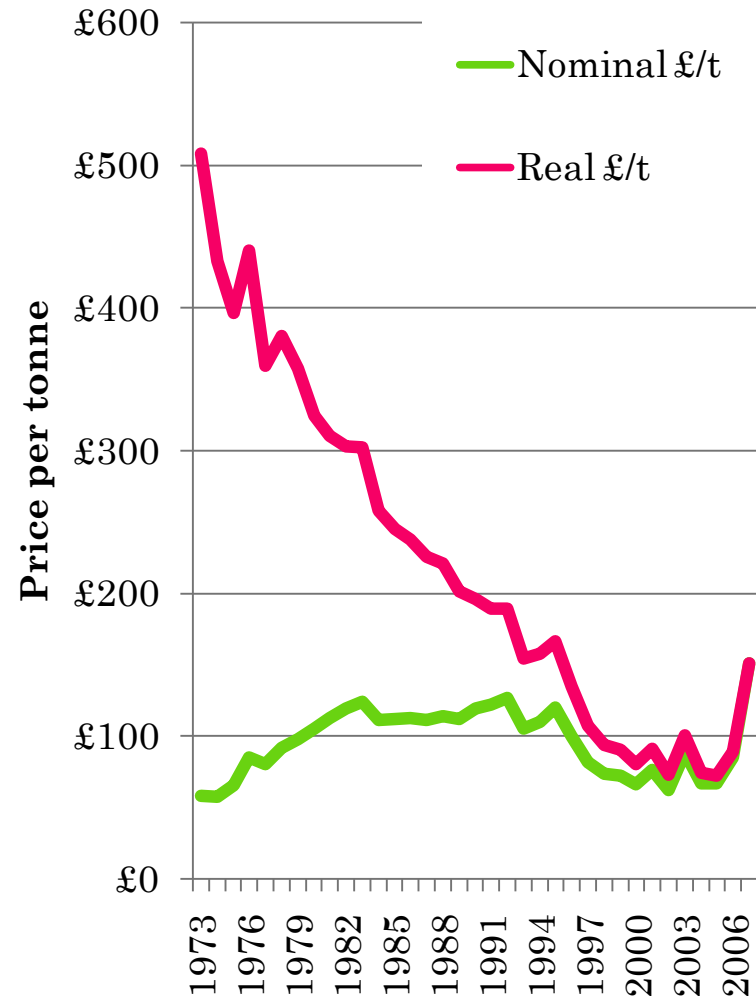
UK Ex-farm annual average ex farm wheat prices 1973 - 2007



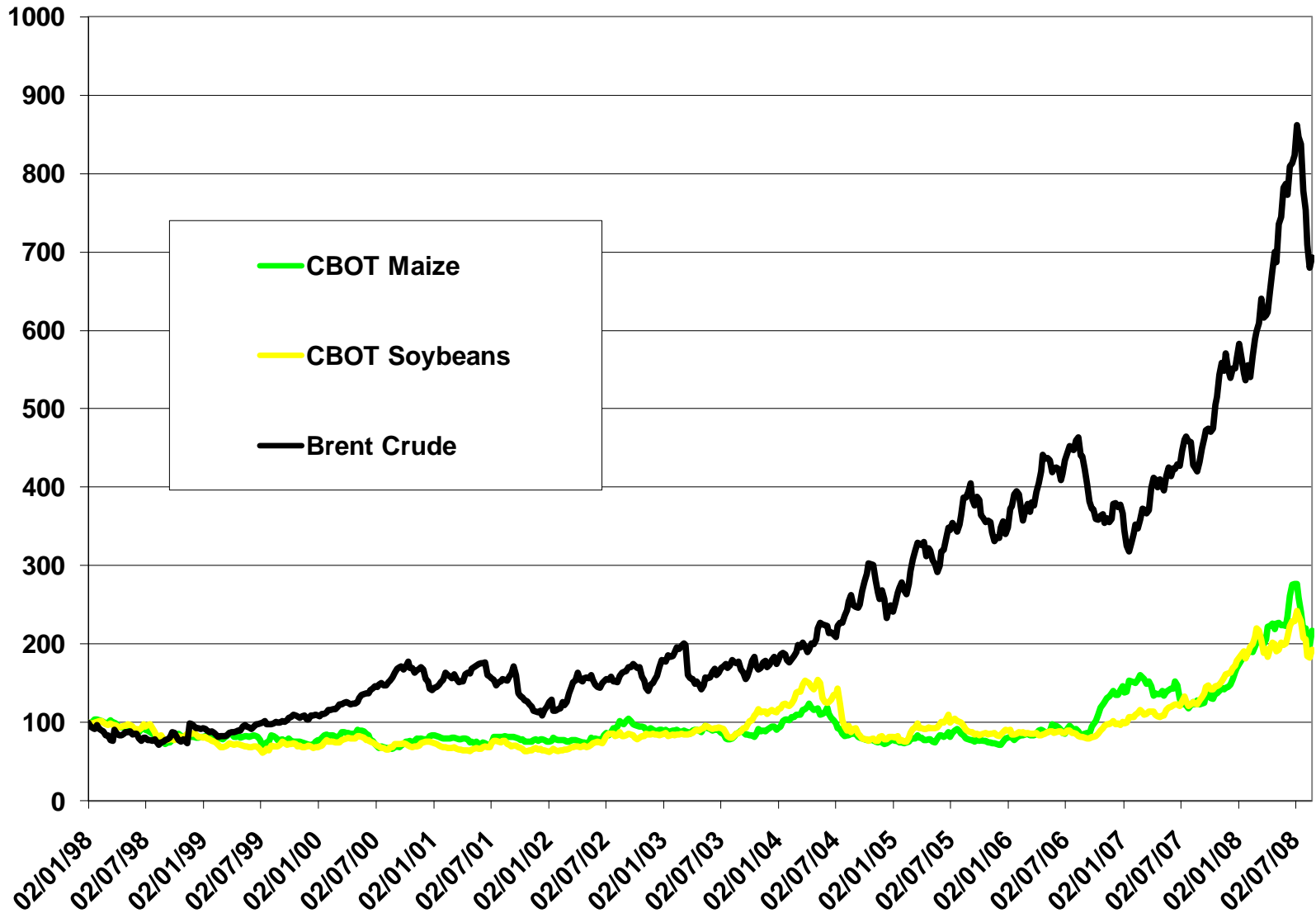
Source: HGCA

- Taking account of inflation the real value of wheat in 1973 (based on 2007 £ value) was £508.43 / tonne
- By 2005 the prices was £72.22 in real terms (£67.12 / t in nominal terms)
- For the period from 1996 until 2006 prices were often below the cost of production

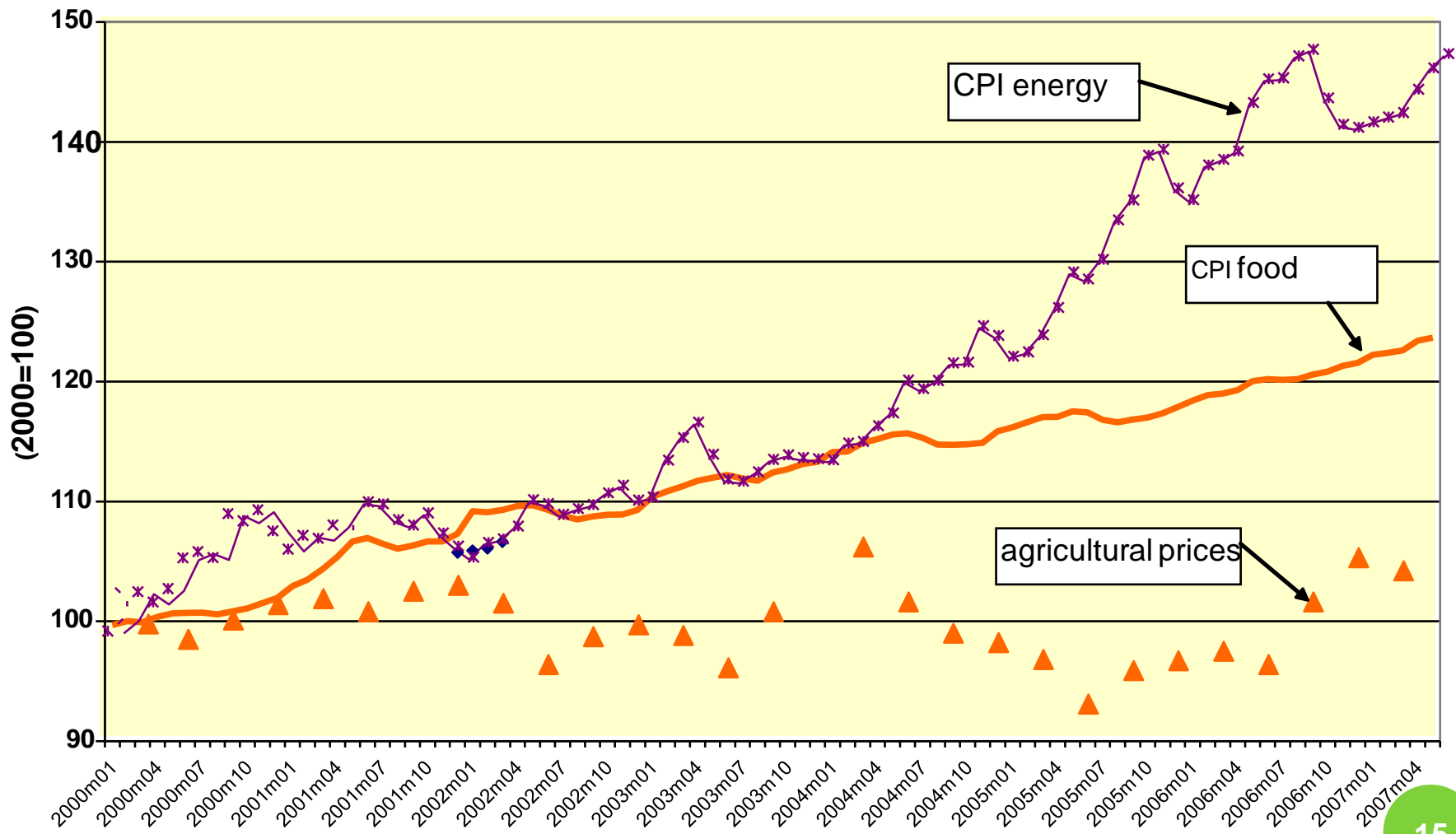
UK Ex-farm annual average ex farm wheat prices



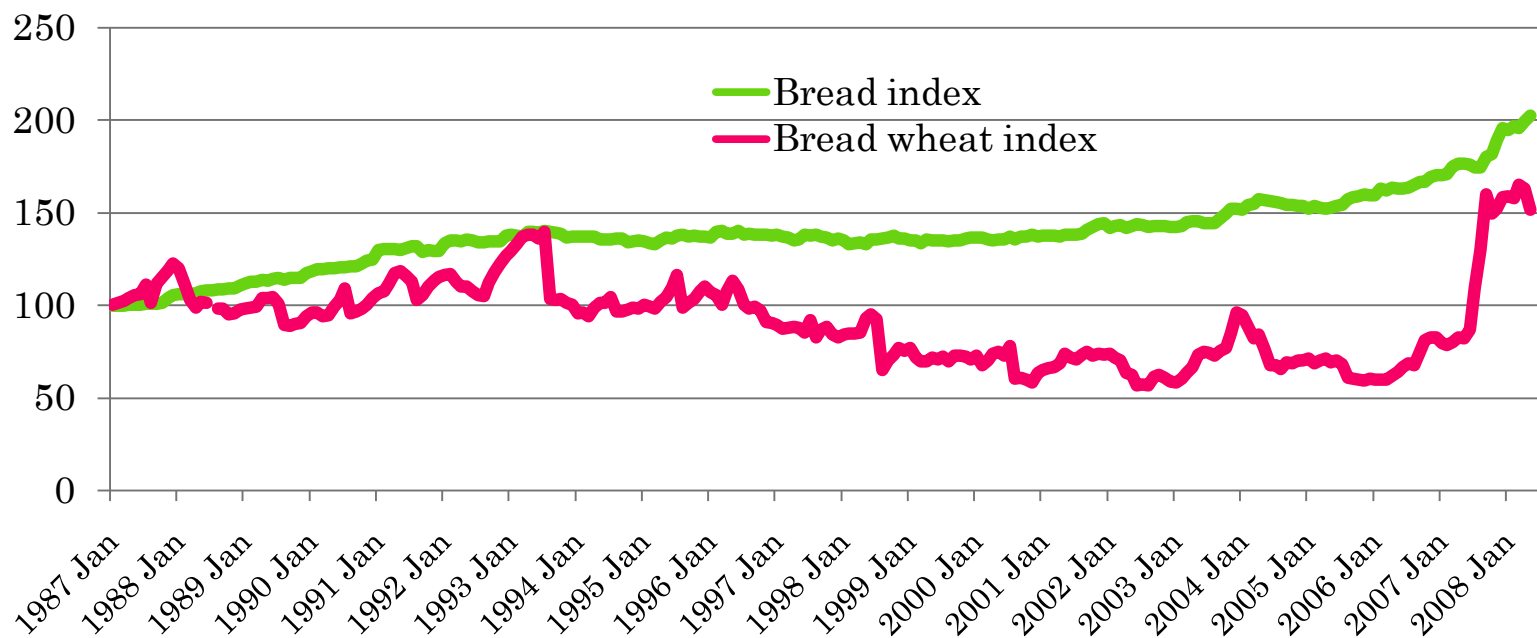
Commodity price indices (Jan 1998 = 100)



EU INFLATION - ENERGY, FOOD & AGRICULTURE 2000 - 2007



UK BREAD PRICES (1987 – 2008)

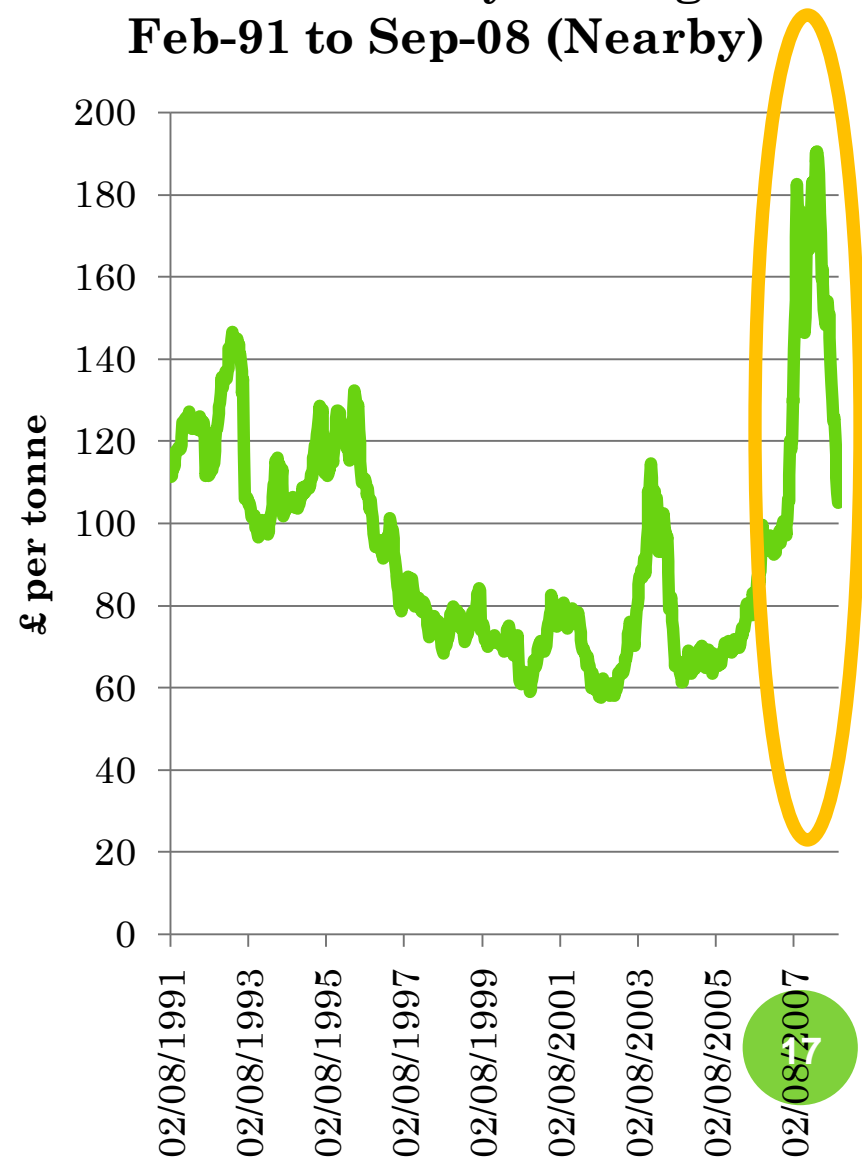


- From Jul-06 to Jul-08 the standard UK bread loaf rose by 44p from 80p to 124p.
- In the same period bread wheat rose from £83.60/t to £168.30/t
- As wheat is only a minor cost in the make up of bread the wheat price element in bread cost rose by 6.4p
- So **37.6p per loaf increase was nothing to do with the wheat price**

THE END OF THE SPIKE ?

- Prices now falling like a stone
- Farmers responded to the price signal and ramped up production
- Stocks now being rebuilt
- Final nail in the price spike coffin will be if the Australian harvest yields more than 20Mt by Xmas

**LIFFE Wheat Futures
Prices Weekly Average
Feb-91 to Sep-08 (Nearby)**



AGENDA


- Background
- Grain in context
- Why did grain prices spike in 2007/08 ?
- Can biofuels help to reduce the real problems?
- Summary

WHAT DETERMINES GRAIN PRICES ?

- The price that people are prepared to pay
 - *the buyer will not pay more for a commodity than the price of the cheapest equivalent*
- The price that growers are prepared to accept to plant the crop
 - *the grower will not plant if he expects the price to be less than production cost*
- But after the crop is harvested the supply is set and then demand is rationed by the price mechanism – it will take another year before more grain can enter the market
- Cereals are classic commodities where price is determined by the balance of supply and demand

WHAT DETERMINES GRAIN PRICE?

Balanced supply and demand



Internal
price set
by supply
&
demand

**Balanced
Country**

- If prices get too high then imports are sucked in
 - All internal prices then fall because of surplus
- If prices get too low then grain is exported
 - All internal prices rise because of shortage

Example - China

WHAT DETERMINES GRAIN PRICE?

More demand than supply



**Deficit
Country**

- Internal prices rise to a level that draws in imports
- The imports then cause all internal prices to become equivalent to the imported

Example - Japan

WHAT DETERMINES GRAIN PRICE?

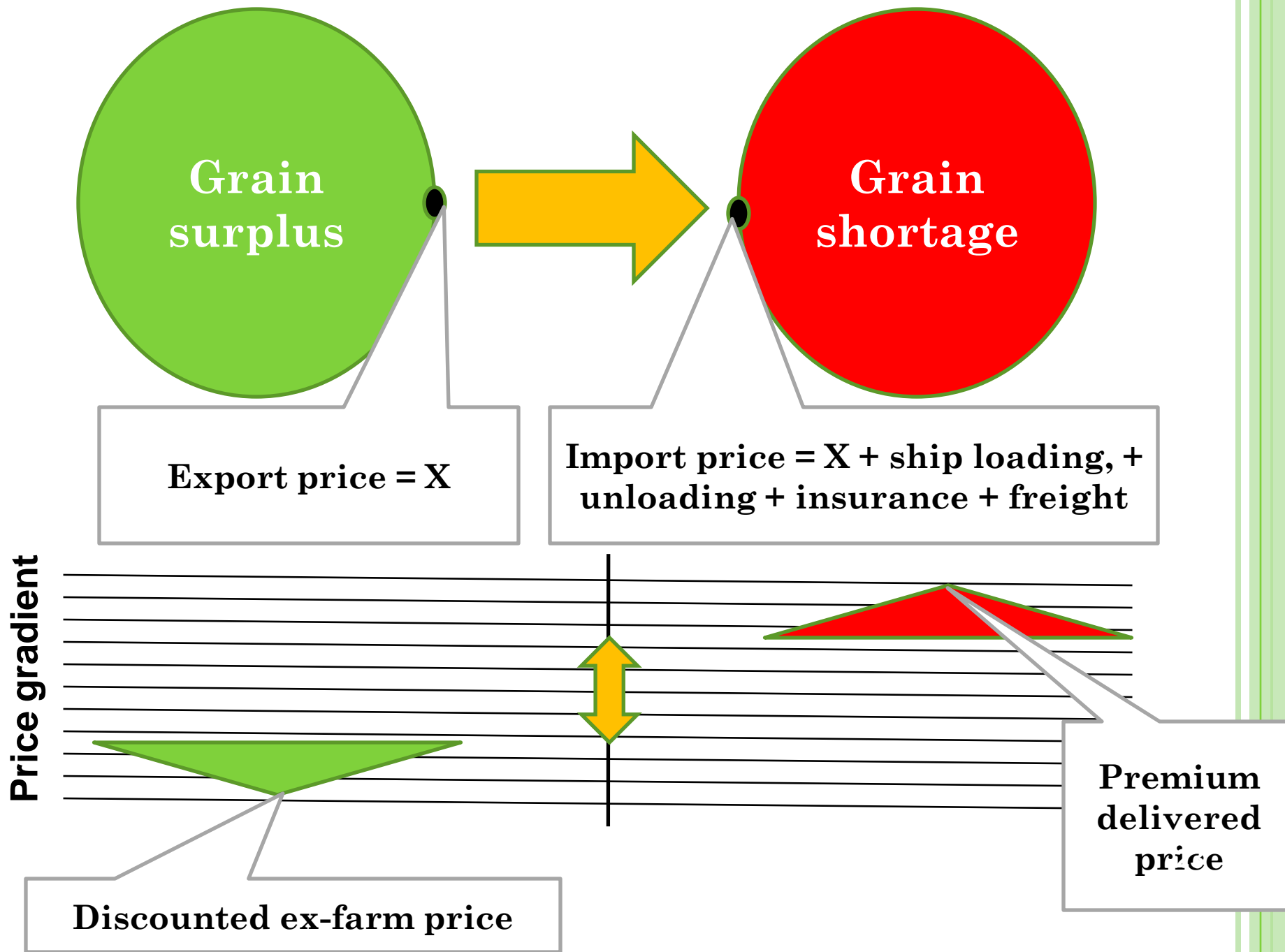
More supply than demand



**Surplus
Country**

- Internal prices fall until they are cheap enough to compete in the export market

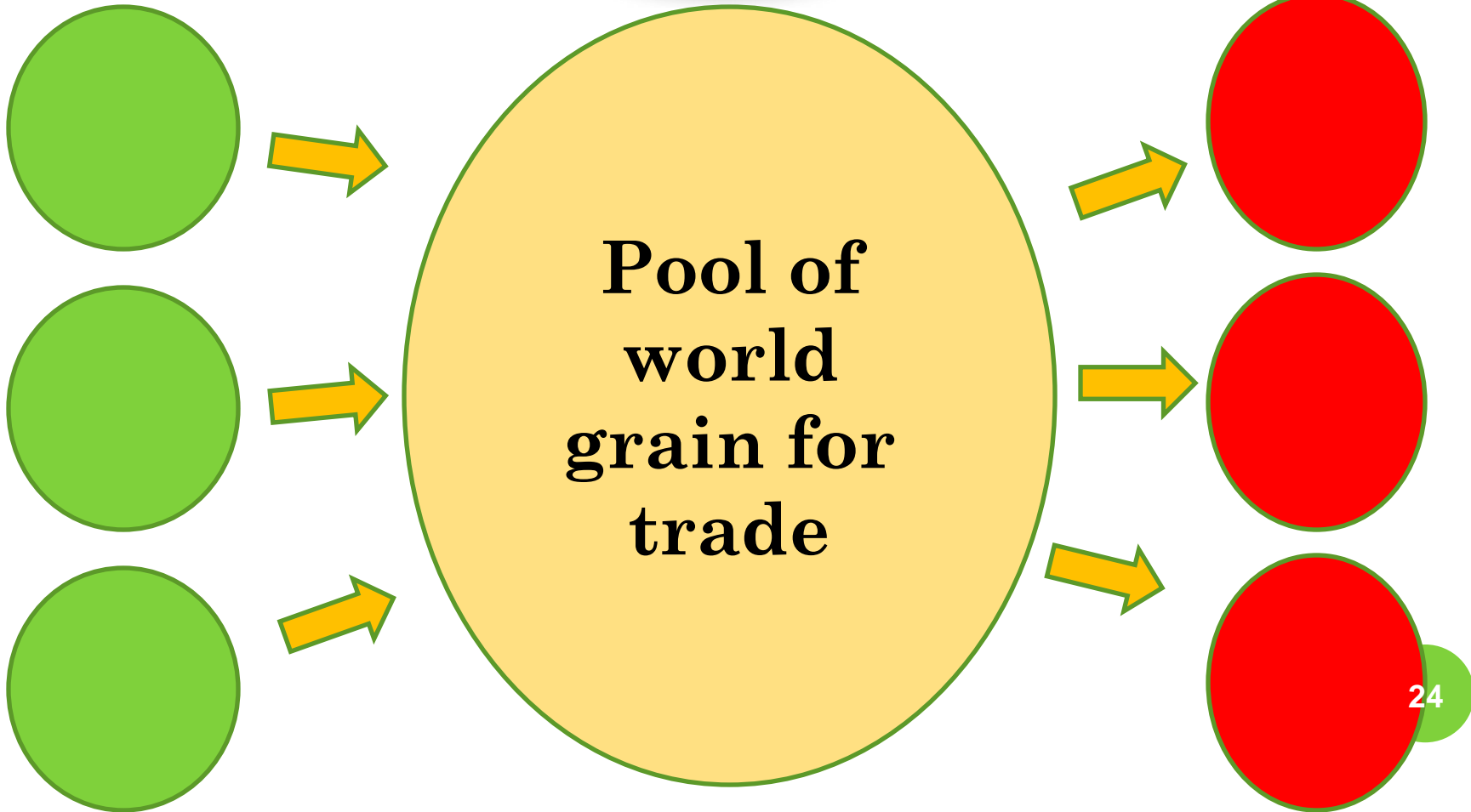
Examples – USA & UK





**Surplus
Countries**

**Deficit
Countries**



SO WHAT CHANGED BETWEEN 2005/06 AND 2007/08 ?

- The price spike started to build in Autumn of 2006 and then prices soared from autumn 2007
- Prices were caused to rise by:
 - Countries increasing demand or reducing supply to the world grain pool
- Prices were caused to fall by :
 - Countries reducing demand or increasing supply to the world grain pool

THE GREATEST IMPACT ON **LIFTING** WORLD PRICES

Wheat

Coarse Grains

		2006/07	2007/08			2006/07	2007/08
1	EU-27	-0.2	-4.2	1	EU27	-4.01	-15.03
2	Australia	-4.0	-3.8	2	Ukraine	-3.50	-3.41
3	Morocco	0.6	-2.9	3	Australia	-3.60	-2.23
4	Canada	3.9	-2.7	4	Others	1.98	-2.05
5	Ukraine	-3.1	-2.3	5	Mexico	-1.11	-0.62

Change in net supply – million tonnes compared to 2005/06

WHY DID THESE COUNTRIES CHANGE THEIR SUPPLY / DEMAND ?

- **EU 27** – the poor harvests of 2006 and 2007 changed Europe from a net grain exporter of about 10Mt per annum to being a net importer of 10Mt in 2007/08
- **Australia** – Two consecutive drought-decimated harvests reduced production from about 23Mt to around 10Mt – virtually eliminating their exportable surplus
- **Ukraine** – two consecutive years of poor harvests
- But it was not just weather that reduced the harvest: low prices discouraged growers from planting crops and to reduce the levels of management and inputs.

THE GREATEST IMPACT ON DAMPING WORLD PRICES

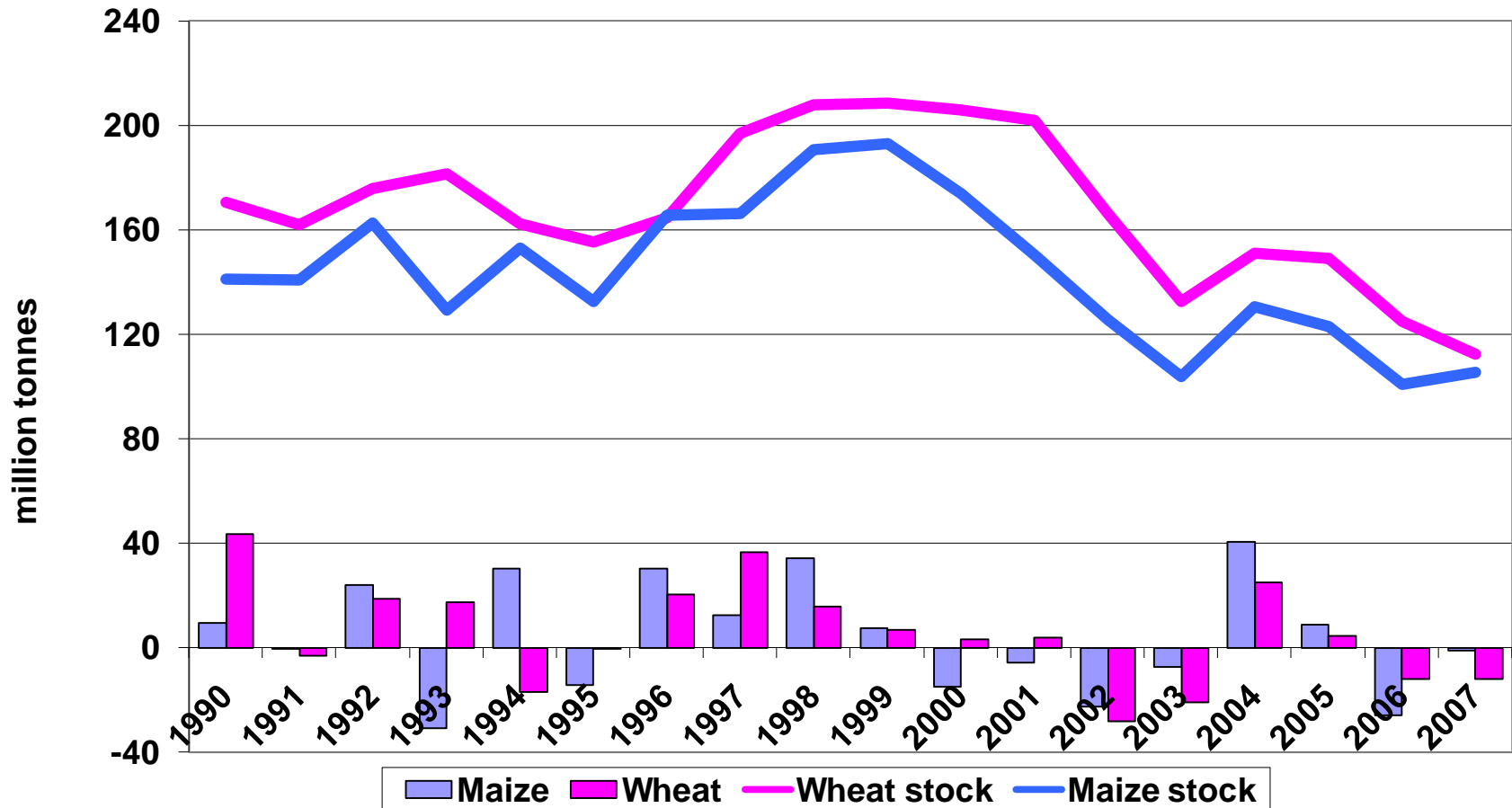
Wheat				Coarse Grains			
		2006/07	2007/08			2006/07	2007/08
30	Nigeria	0.3	0.6	30	China	1.15	1.03
31	Russia	0.1	1.2	31	India	0.09	2.52
32	Brazil	-2.3	1.5	32	Argentina	5.95	5.56
33	USA	-3.5	10.0	33	USA	-2.60	6.18
				34	Brazil	4.96	7.19

Change in net supply – million tonnes compared to 2005/06

WHY HASN'T WORLD CEREAL PRODUCTION KEPT UP WITH DEMAND ?

- Lower crop areas
 - Government policies to reduce food production
 - EU 7 million hectares in set-aside
 - US 15 million hectares in CRP
 - Loss of land in former Warsaw pact countries
 - In Russia, Ukraine & Kazakhstan 23 million hectares arable land left idle after 1990
- Lower crop yields
 - Low prices
 - Weather problems
- Governments had forgotten that productivity matters

WORLD GRAIN STOCKS



- Government policy in EU, US and China to reduce grain stocks

RISING PRICES CAUSED BY SUPPLY SHOCK !

- It was poor harvests in Europe, Australia and the Ukraine that caused the **Supply Shock** to the grain market
- There was **No Demand Shock** from increasing living standards in China and India. China actually increased supply into the world market
- Depression in agriculture and enforced land idleness meant that supply was falling behind demand and **Reduced Buffer Stocks**
- **Leaving nothing to cushion the supply shock**

...THEN MATTERS WERE MADE WORSE

- A new breed of **speculators** took large positions in the grain markets – hedge funds – partly to offset the falling value of the US\$
- Exporter **governments** decided to introduce export taxes and quotas – Ukraine, Russia, Kazakhstan, Argentina, etc.
- Importer **governments** lowered import tariffs – EU, India, etc
- Shipping **freight rates** rose to record levels – Up 80% in a year (*mainly due to Chinese imports of iron ore from Brazil*)
- **Energy costs** hit all parts of the supply chain – especially on farm – N fertiliser up >100%, fuel up >40%
- April 08 China imposed **export tax** of up to 135% on fertiliser

SO WHERE DID BIOFUELS FIT IN ? – IN EUROPE

- Within Europe the level of cereals used for bioethanol was reducing as grain prices rose. (Of the 1.9Mt used in 2007/08 about 0.75Mt was specially grown on set-aside and not permitted to be sold for food)

EU25 Cereals	04/5	05/6	06/7	07/8
Production	286	253	242	245
Cereal use for ethanol	0.7	2.7	2.5	1.9

- The impact on the food market can be reduced by 33% because the ethanol process returns concentrated protein back to the animal feed market – substituting for cereals and protein ingredients such as soya. Equivalent to >6Mt in 2007/08

SO WHERE DID BIOFUELS FIT IN ? – IN THE USA

- Maize production was beginning to fall because of prices being below the cost of production – (<\$2.5 / bushel) even with the demand for 54 million tonnes in ethanol. But when world prices started to rise in 2006 US farmers responded by increasing 2007 production by much more than was needed by the ethanol sector

	04/05	05/06	06/07	07/08
Production	300	282	268	332
Ethanol Use	34	41	54	80
Exports	46	54	54	62

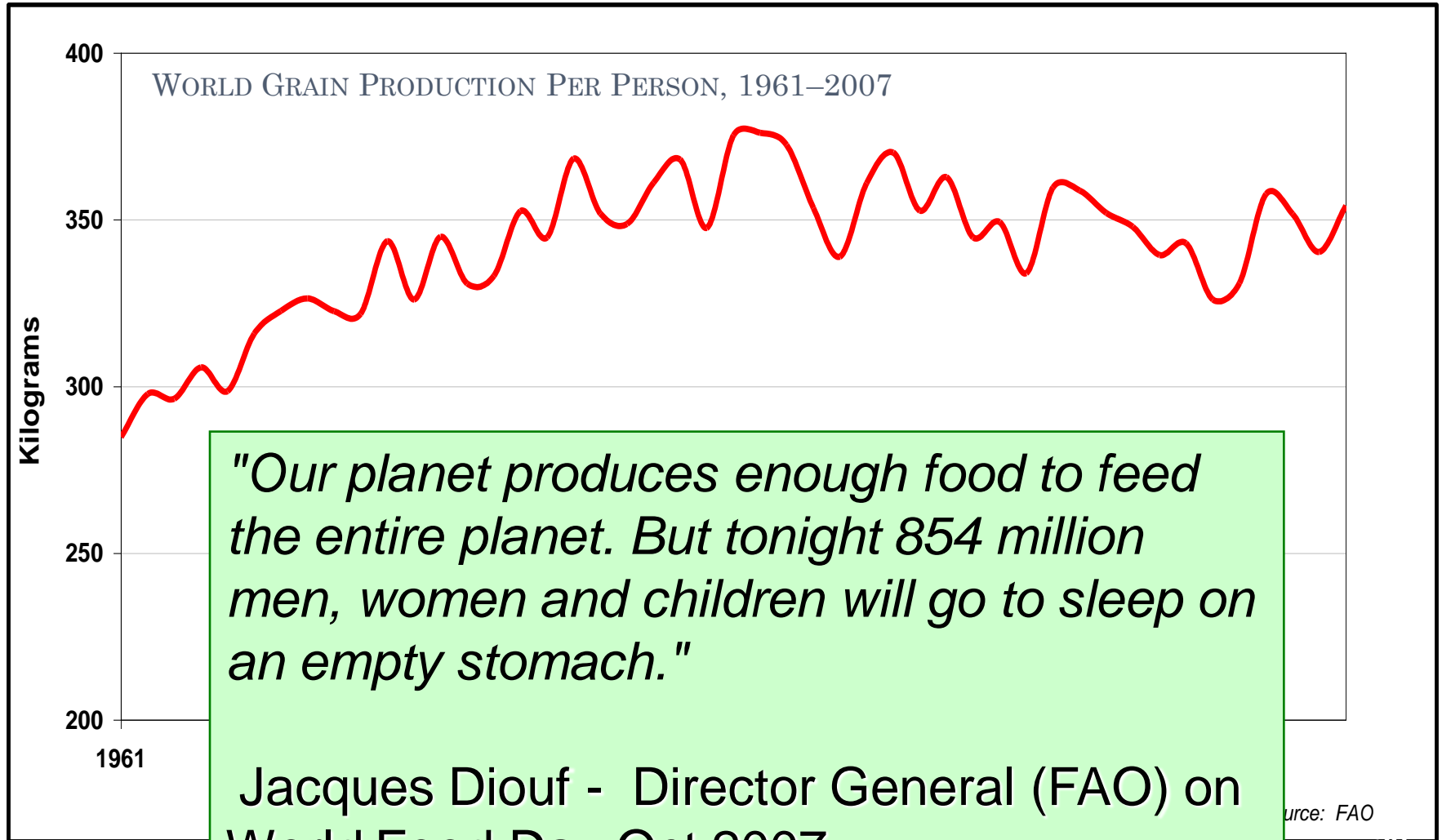
- US maize exports increased by 8 million tonnes despite consuming a further 26Mt for ethanol and therefore tended to dampen world grain prices
- In addition about one third of the grain used was returned to the animal feed sector as high protein animal feed as substitute for soya and cereals.

AGENDA

- Background
- Grain in context
- Why did grain prices spike in 2007/08 ?
- Can biofuels help to reduce the real problems?
- Summary

Food crisis?

Is food short or is Poverty the problem?



"Our planet produces enough food to feed the entire planet. But tonight 854 million men, women and children will go to sleep on an empty stomach."

Jacques Diouf - Director General (FAO) on World Food Day Oct 2007

Source: FAO

AGRICULTURAL DEVELOPMENT

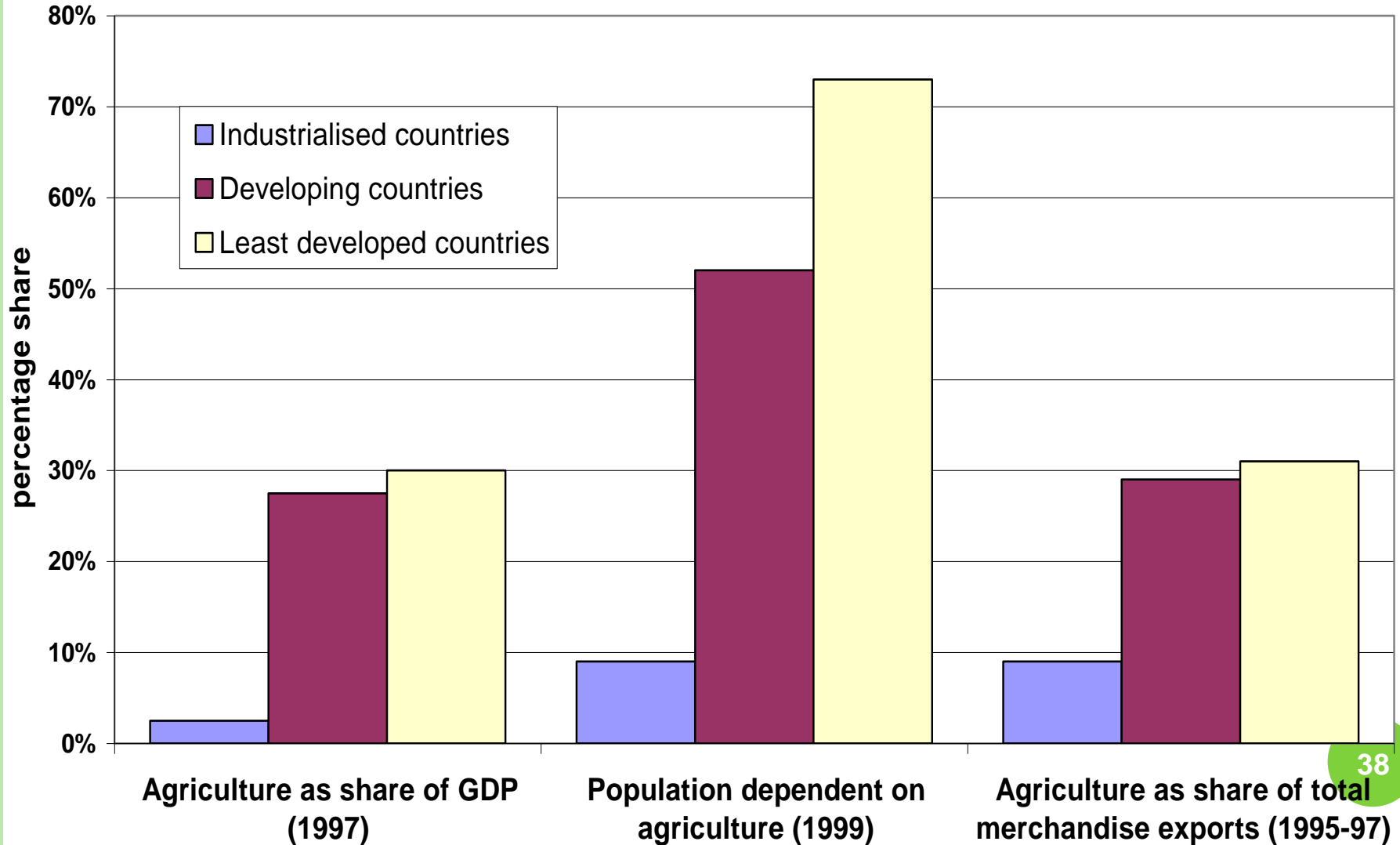
- FAO and all of the development agencies recognise that the main cause of hunger in the developing world is poverty – *the lack of resources to buy food or the means of producing food*

- The World Bank states that agriculture is the best driver for reducing poverty in the world – *up to 4 times more effective than investment in any other sector at reducing poverty*

AGRICULTURAL DEVELOPMENT

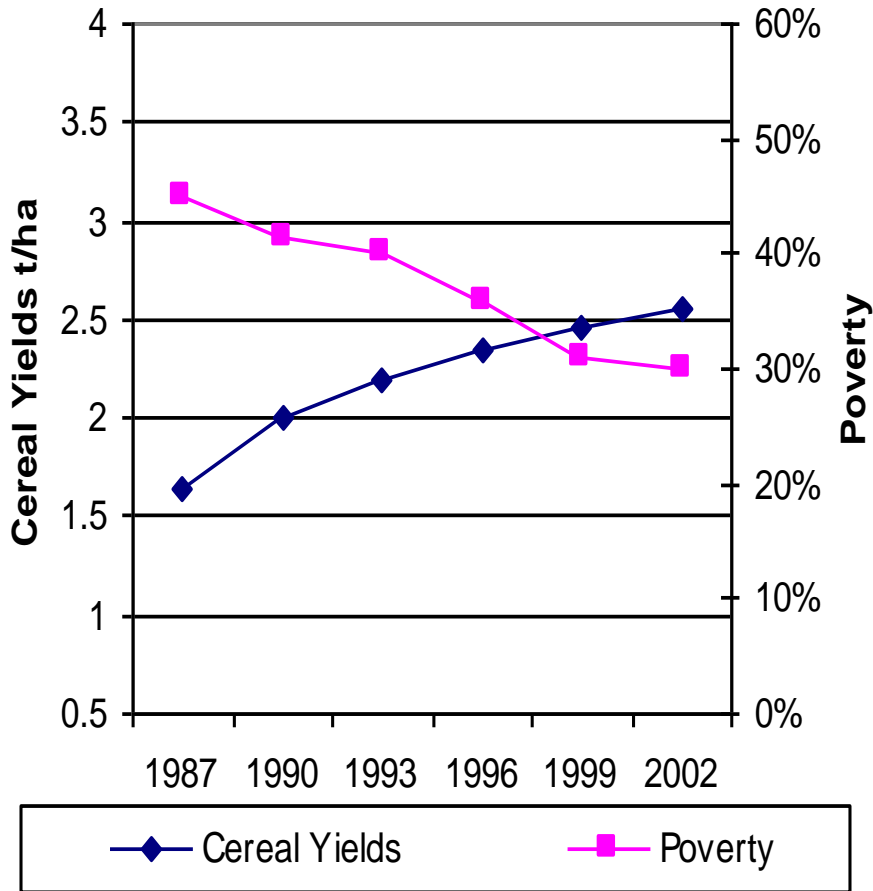
Importance of Agriculture

(GDP, employment & exports)

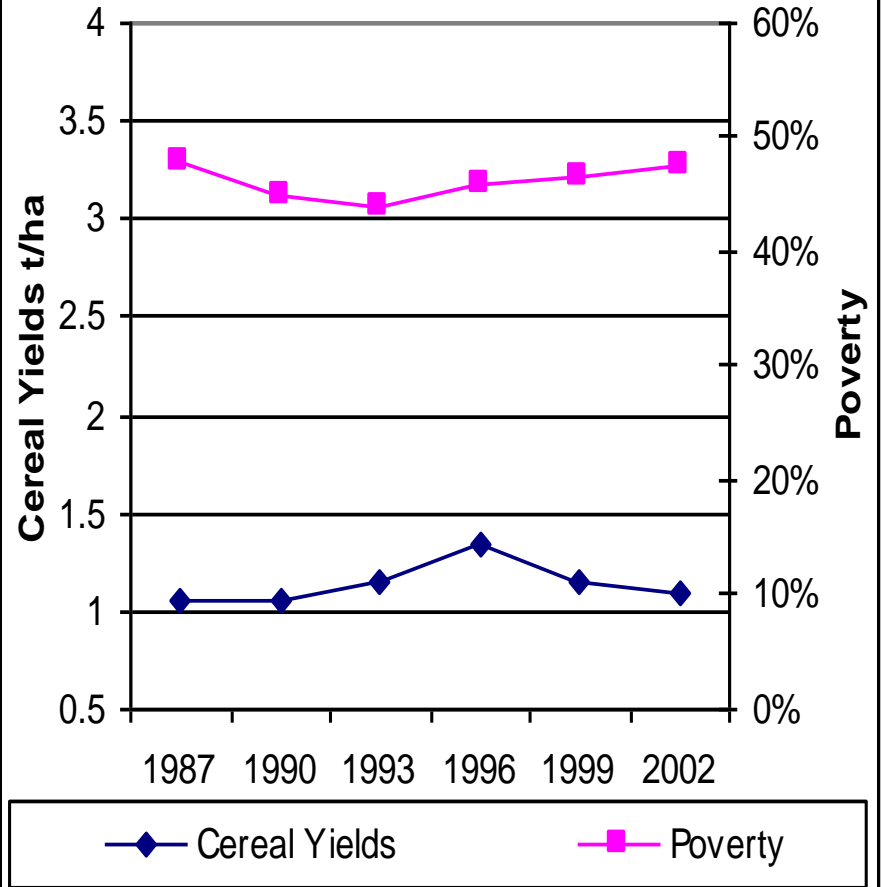


BUT IT IS PRODUCTIVITY THAT MATTERS

South Asia



Sub-Saharan Africa

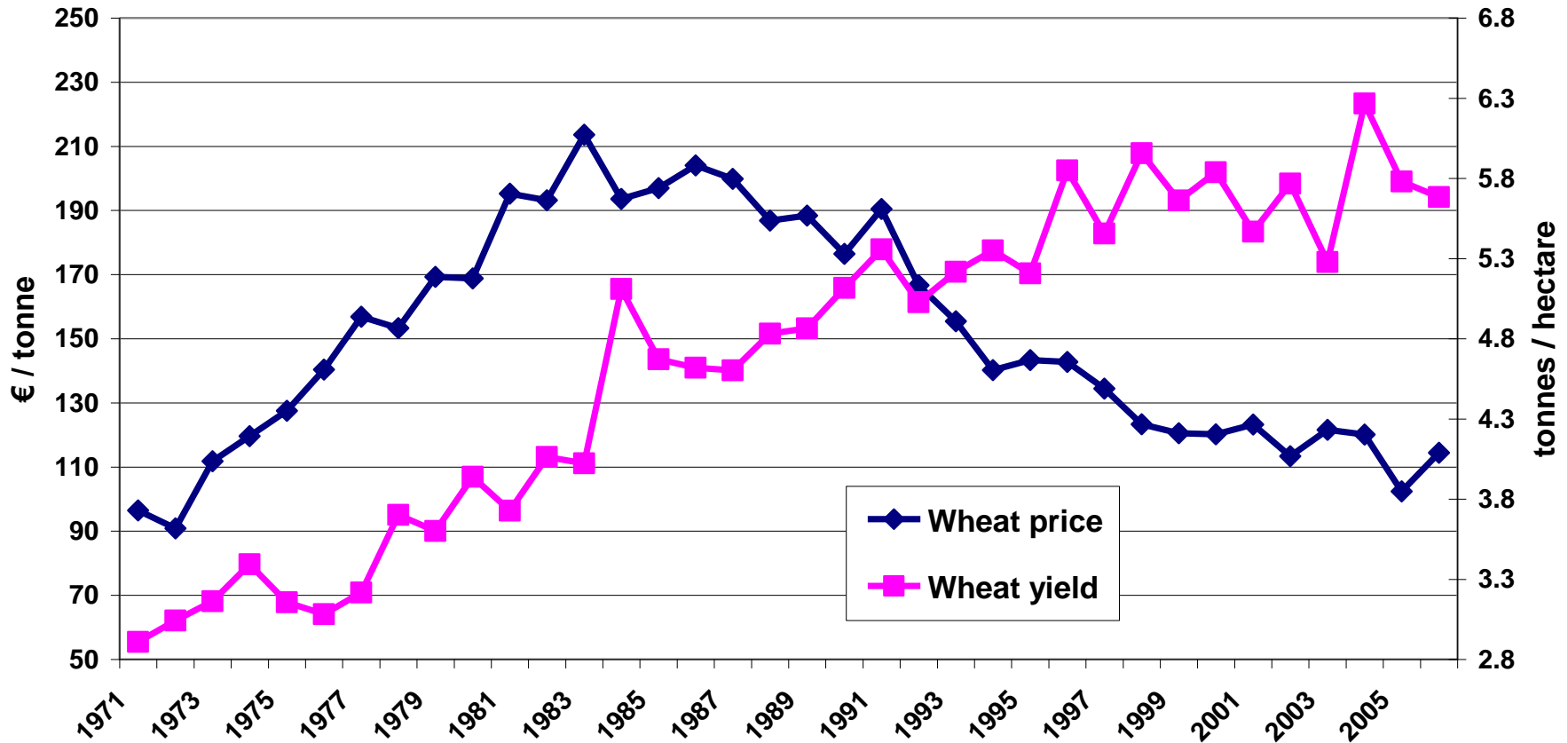


Source: Ravallion and Chan; World Bank 2006y

AGRICULTURAL PRODUCTIVITY

- It was productivity that allowed food prices to continue to fall in real terms for decades
- But productivity needs market confidence and investment
- That is what Europe had with its Intervention system that made the UK one of the most productive cereal producers in the world
- The world needs a new market regulator that takes excess food crops out of the market but provides growers with the incentive to plant crops. The alternative will be extreme supply and price volatility

EU15 weighted farm gate wheat price vs yields 1971-2006



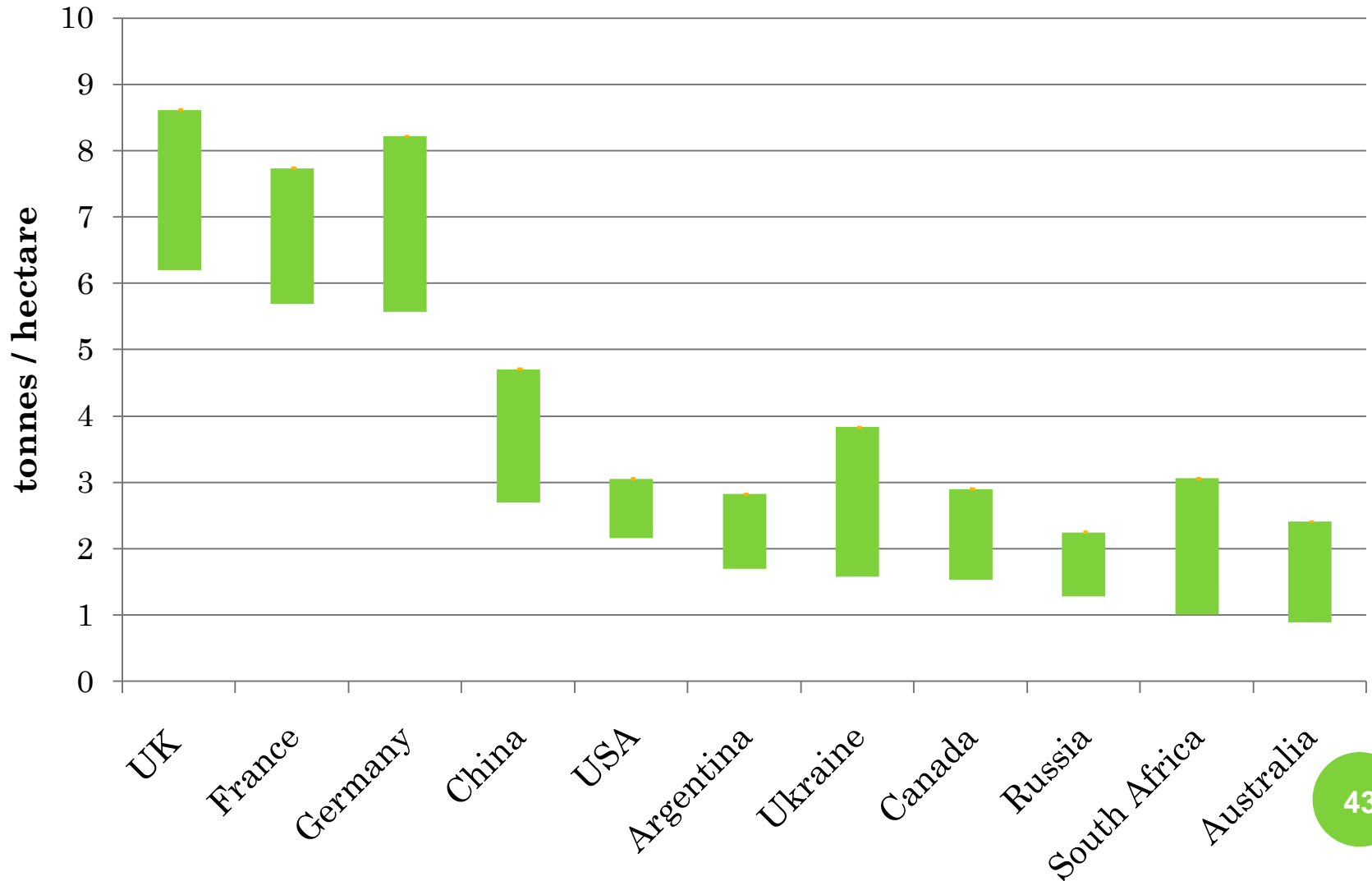
OECD Stats

This is what market security did to productivity up to the mid 1990s

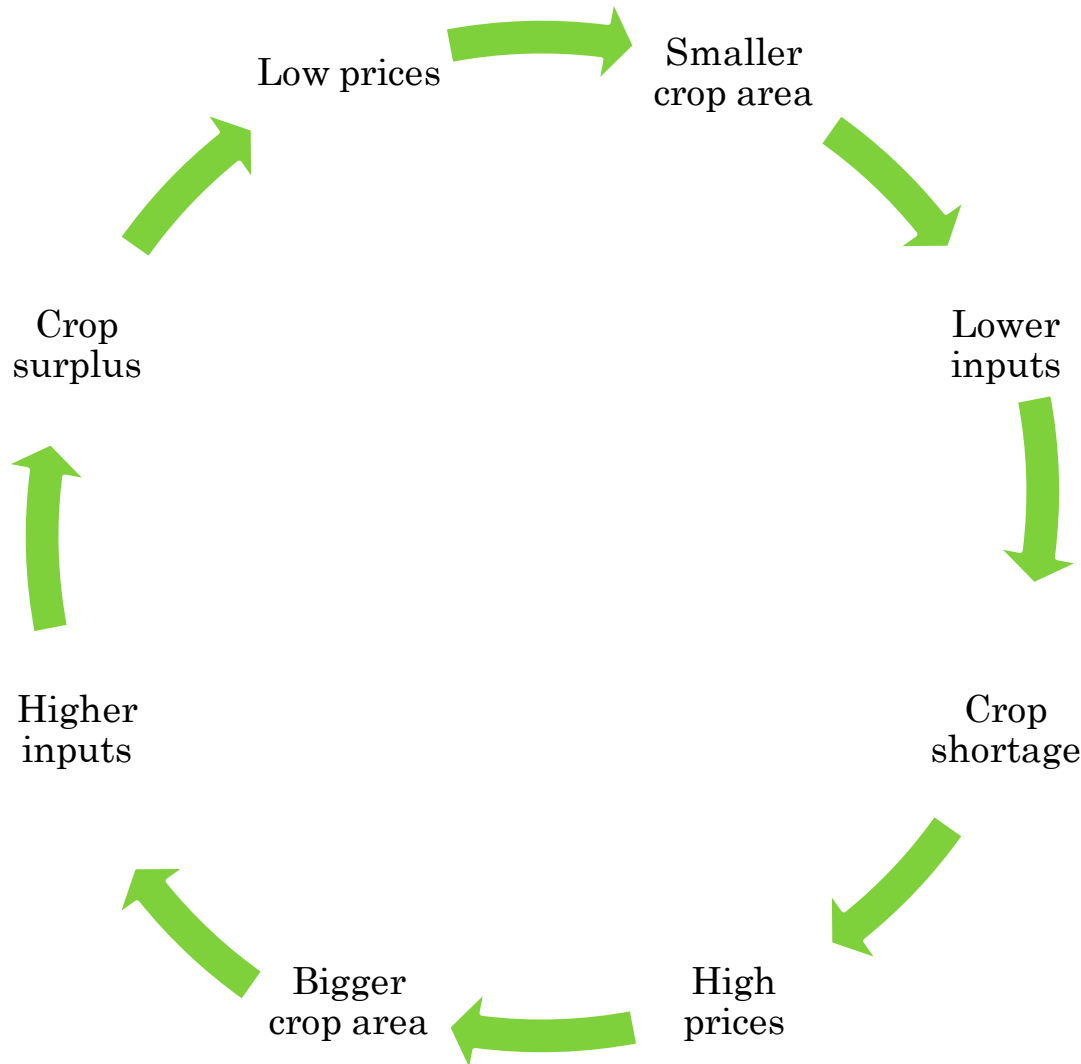
FOOD INSECURITY, FOOD PRICES & POVERTY ?

- According to the FAO the world agriculture markets are **Demand Constrained**
- The productive capacity of the US and Europe forced down world prices by **dumping** subsidised exports in the 1980s and 1990s
- But the risk to world food supplies by the EU and US becoming more reliant upon the developing world for food is too high – for the developed AND the developing world.

WHEAT YIELD PROBABILITY (95%)



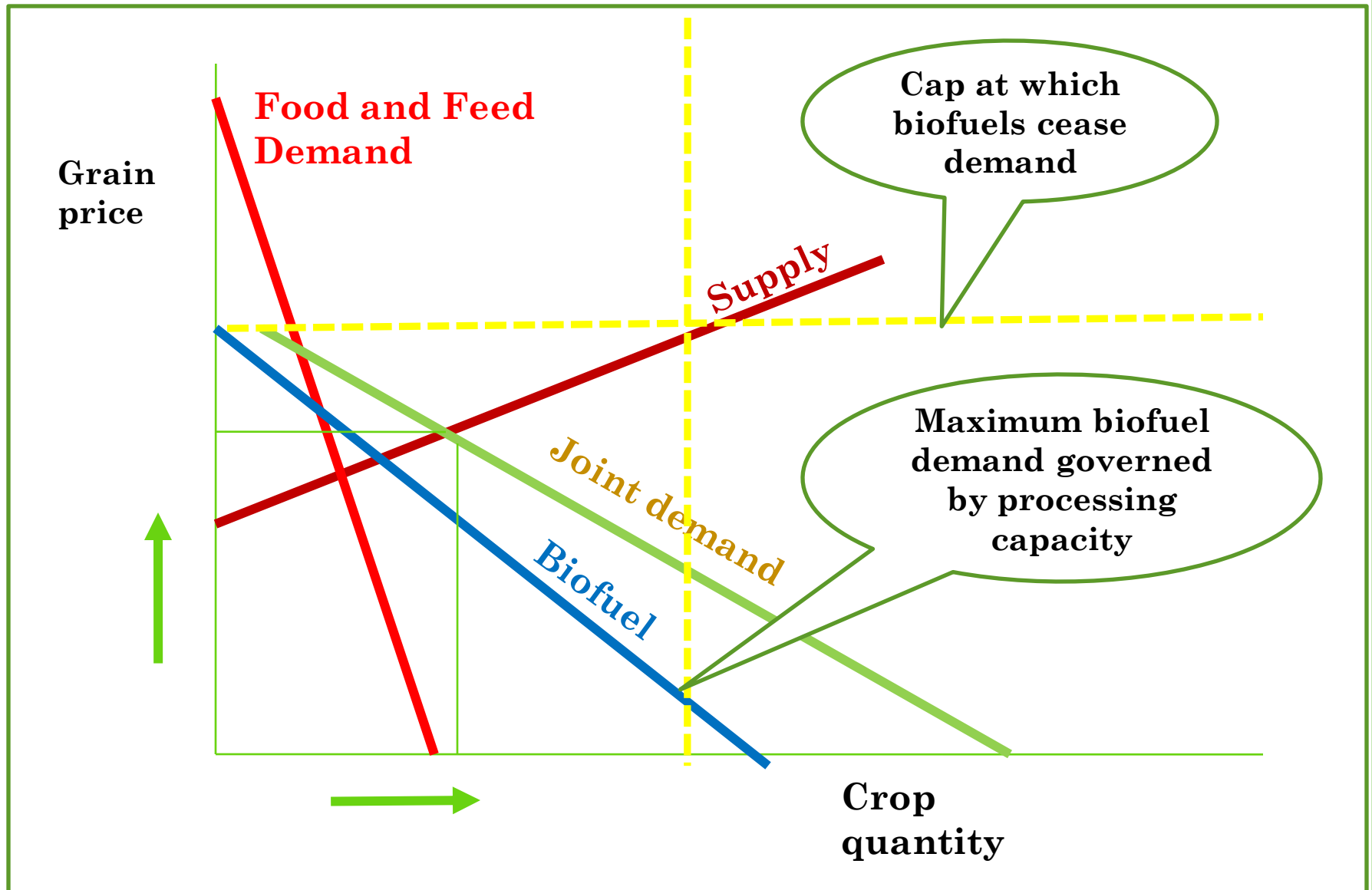
FOOD INSECURITY, FOOD PRICES & POVERTY ?



- But all crop production is subject to crop yield failures
- The consequences of low plantings followed by poor yields means that no new food supplies can be sources for at least a year
- It is in society's interest for farmers to plant more food & feed crops than we need
- But what do we do with the surpluses ?

- The world needs new markets usefully absorb grain surpluses
- And to provide the cushion of harvested crop that can be allocated by the price mechanism in the event of poor harvest yields

BIOFUELS CAN ACT AS A MARKET REGULATOR



AGENDA

- Background
- Grain in context
- Why did grain prices spike in 2007/08 ?
- Can biofuels help to reduce the real problems?
- Summary

SUMMARY

- The grain price spike was caused by **supply shocks**
- Government policies to discourage production caused supply to fall behind demand and led to low world grain stocks – there was **no cushion to absorb stocks**
- It takes one to two years for growers to respond to the price signals
- Agriculture in the developing world has been held back because the food markets have been **demand constrained**
- The threat of dumping from the US and EU **discouraged investment in agriculture**
- **Agriculture is the best driver to reduce poverty**

Biofuels can play a market regulating role for food supply and food prices for the benefit of both the developed and the developing world

THANK YOU – ANY QUESTIONS?

Malcolm Shepherd

Tel: +44 7889 157302

The logo for BioFuel Matters Ltd features a green semi-circle on the left side of a white rectangular background. The text "BioFuel Matters Ltd" is positioned to the right of the semi-circle, with "BioFuel" in white and "Matters Ltd" in green.

BioFuel Matters Ltd

malcolm.shepherd@biofuelmatters.co.uk

WORLD POPULATION GROWTH

- Rate of growth falling since 1960s
- Annual population increase peaked in 1980s
- Each future decade will see annual increase fall by 8 million per year
- World population expected have levelled out at about 9 billion in 2050s

