

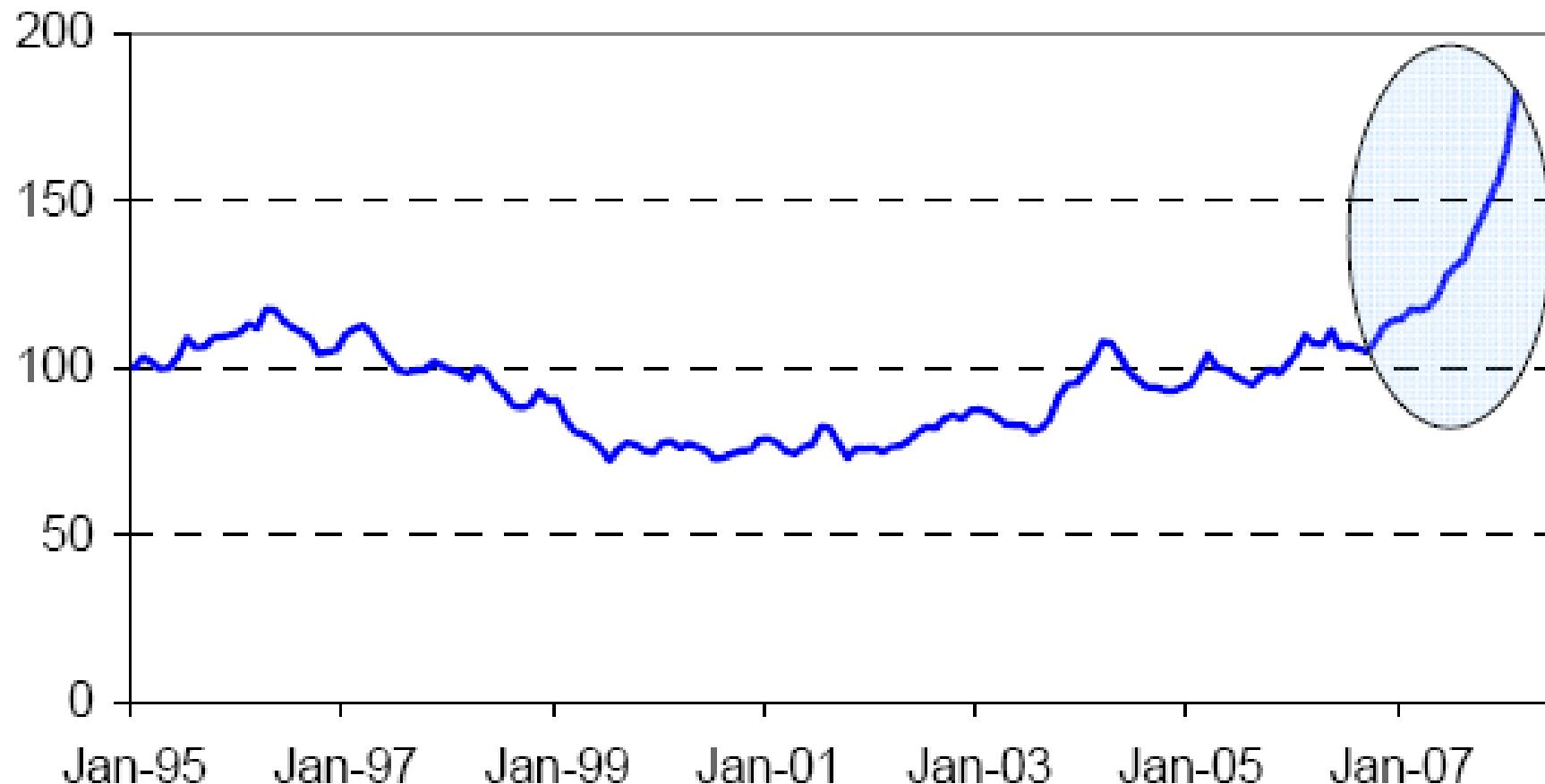
# Implications of Increasing Food Prices for Agricultural and Energy Policy

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## Figure 1. Food prices

(Nominal \$ Index, Jan 1995=100)



Source: DECPG

Source: World Bank

# Outline

- Drivers of food and agricultural commodity price increases
- Impacts on:
  - policies in developing countries
  - policies in the U.S. and other high income countries
  - the WTO ag trade negotiations

# Differentiate between Increases in Raw Commodity Prices & Food Prices

- In the U.S. the farmers' share in retail food expenditures averages only 19%, ranging from 6% in cereals and bakery products to 47% in beef.
- The fraction of the retail price of processed foods that is accounted for by raw agricultural commodities is so small that increasing commodity prices can account for at most a small fraction of the increase in retail food prices.
  - More than one-third of the retail value is labor services added after the products leave the farm gate.
  - Rapidly increasing diesel fuel cost is pushing up transportation cost and adding significantly to retail prices.
- The increasing cost of feed has reduced the profitability of meat, egg and milk production, so their prices have to rise for farmers to continue their production.

# U.S. Farm Value-Share of Food Purchased at Food Stores, 2005

<u>Food Group</u>	<u>Percent</u>
Beef	47
Pork	31
Dairy products	31
Fresh fruit	28
Fresh vegetables	25
Processed fruits & vegetables	19
Fats and oils	17
Cereals and bakery products	6

Source: USDA Economic Research Service database.

# Longer Run Underlying Agricultural Commodity Market Trends

- Continuing population growth in developing countries (about 80 million per year)
- Unprecedented rate of poverty reduction in low income countries giving millions of people the purchasing power to upgrade the quality of their diets to include meat, dairy and poultry products, fruits and vegetables and edible oils.
- Under-investment in agricultural and rural development in low income countries by their governments, foreign aid programs and international banks.
  - More than proportionate decline in investment in agricultural research in low income countries

# Agriculture Fell Off the Global Development Agenda

- Between 1980 to 2005, foreign aid to LDCs for ag development dropped from \$8 to \$3.4 billion/yr (from 17 to 3% of the whole)
- In the 1980s, 25% of US foreign aid went to agriculture; dropped to 6% by 1990 and 1% last year.
- Share of World Bank lending going to agriculture fell from 30% in 1978 to 16% in 1988 to 8% in 2006.

# OECD Policy Changes Reduced Global Grain Stocks

- Many high income countries changed how they support farm incomes from market purchases to payments to farmers (e.g. deficiency payments and direct payments)
- As a result, there are few publicly owned reserves of grain to buffer crop shortfalls caused by droughts.
- India & China used to have large inventories, but they too have been reduced.

# Biofuels Now Driving Ag Outlook

- Production of ethanol in the U.S. and biodiesel in Europe comprise the biggest shock to world agriculture since 1970s.
- Creating large additional demand for corn and edible oils, which is pulling land out of other crops in U.S. & destroying rainforests in SE Asia
- Higher feed grains prices reducing profitability of livestock and poultry industries.
- When will we have technology for producing ethanol economically from cellulosic feedstocks? Can they be produced on inferior soils?

# Growth of U.S. Ethanol Industry

- 2000: 1.7 billion gallons of ethanol produced; used 6% of U.S. corn production.
- 2007: 5.8 billion gallons produced; used 20% of corn harvest (now larger than exports).
- Now 134 ethanol plants are operating with total capacity of 7.2 billion gallons; 77 more are under construction or expanding.
- This will bring capacity to 13.4 billion gal. by 2008-09
  - Energy Bill of 2007 mandated 36 billion gal. of biofuels by 2022, of which 15 billion from corn.

Source: Renewable Fuels Association

# U.S. Crop Acreage, 2006-08 (million acres)

Crop	2006	2007	2008
Corn	78.3	93.6	87.3
Soybeans	75.5	63.6	74.5
Cotton	15.3	10.8	9.3
Spring Wheat	14.9	13.3	14.2
Winter Wheat	40.6	45.0	46.6
Cons. Reserve	36.0	36.8	34.8

Source: U.S. Dept. of Agriculture

# The U.S. Bulks Large in World Agriculture (2002-05)

<u>Commodity</u>	<u>% of World Production</u>	<u>% of World Trade</u>	<u>% of Prodn Exported</u>
Corn	40	60	18
Soybeans	38	44	35
Wheat	9	25	50
Cotton	20	40	70

Source: Congressional Research Service

# Medium Term Developments over Last Few Years

- Poor wheat crops due to drought in Australia in last two years and reduced crops elsewhere.
- Significant depreciation of U.S. dollar.
- Significant increase in global money supply.
- Increasing participation of hedge funds & investment funds in commodity markets.

# Impacts on Policies in Developing Countries

# Poverty Is the Root of Household Food Insecurity and Hunger

- Hunger is due mainly to poverty except in times of war, natural disaster or politically-imposed famine.
- In 2005, *before* the ag commodity price rise:
  - 854 million people were suffering hunger or under-nutrition.
  - 1.4 billion people were living on less than \$1.25 per day (70% live in rural areas, and most are farmers)
  - 3.1 billion (almost half of the world's population) were living on less than \$2.50 per day.

# Higher Food Prices Increased the Incidence of Hunger

- Low income people spend a large fraction of their incomes on food, so higher food prices reduce the purchasing power of their meager incomes.
- This has increased the number of people suffering hunger by 75-100 million in the last 2 years and precipitated political crises in many countries.
  - The need for food aid exploded, but higher grain prices meant that the amount that could be procured by food aid agencies, which operate on fixed annual budgets, dropped.

# Share of Food\* Expenditures in Total Expenditures (Percent)

Quintile	Bangladesh	India	Indonesia	Philippines
1st	69.3	62.0	63.3	64.6
2nd	66.9	59.4	58.1	59.2
3rd	63.2	56.2	54.1	54.1
4th	58.7	50.8	49.0	47.7
5th	45.2	36.4	37.9	35.4

\*\*Food" in low income countries has much less value-added after the farm gate than in high income countries. Source: Asian Development Bank.

# Huge Impact of Food Price Inflation in Developing Countries

Country	Population	%<\$1/day	%<\$2/day
China	1318	9.9	34.9
India	1132	34.3	80.4
Indonesia	232	7.5	52.4
Brazil	189	7.5	21.2
Pakistan	169	17.0	73.6
Bangladesh	149	41.3	84.0
Nigeria	144	70.8	92.4
Philippines	85	14.8	43.0

Source: World Bank. [World Development Indicators](#) database (2007)

# Number of People Living in Extreme Poverty (in millions, 2005)

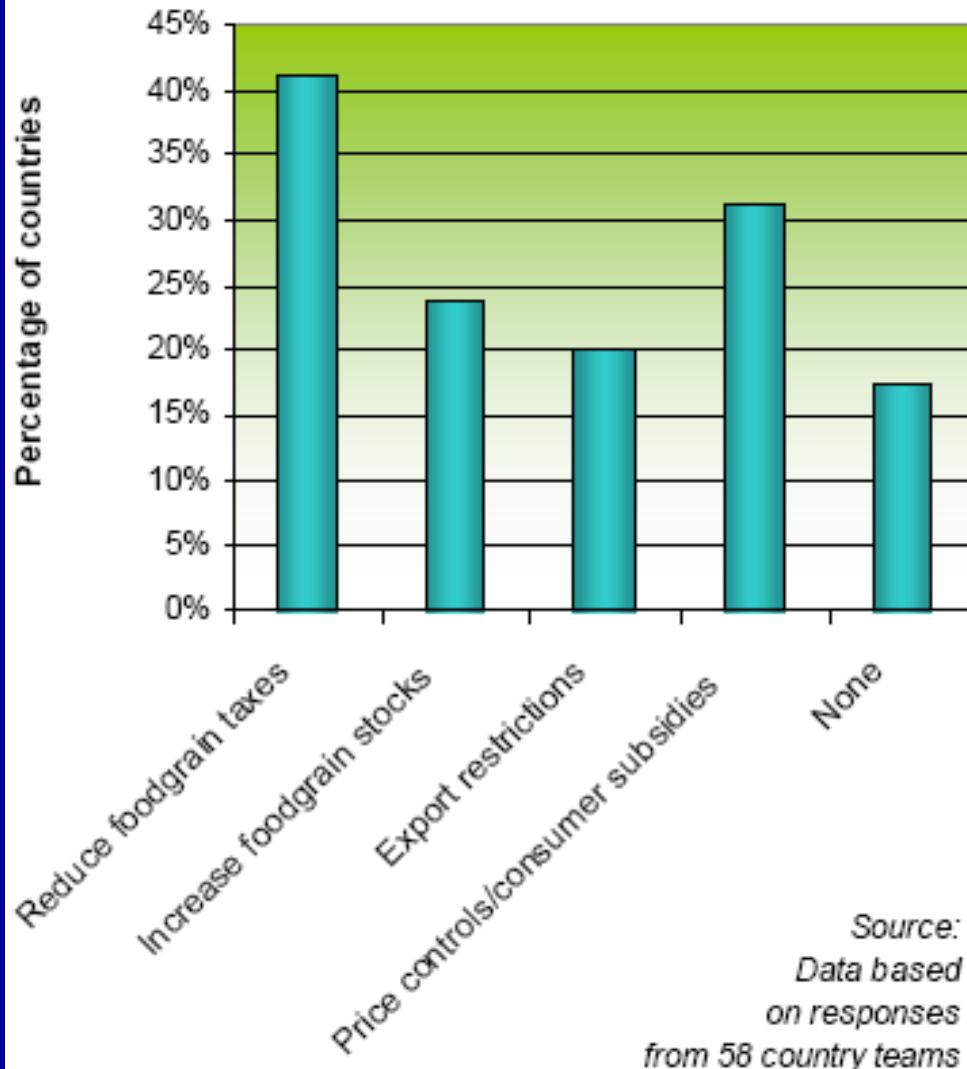
Region	<\$1.25/day	<\$2.50/day
South Asia	596	1,246
Sub-Saharan Africa	384	610
East Asia & Pacific	337	987
Latin America & Carib	45	133
E. Europe & Central Asia	24	70
Middle East & N. Africa	14	94
<b>Total</b>	<b>1,400</b>	<b>3,140</b>

Source: Chen & Ravallion, World Bank, 2008.

# Policy Responses to Rising Food Prices in LDCs

- In response to consumer outcry, a number of governments introduced food price controls, reduced import tariffs and other taxes on food, increased export taxes and a few imposed embargoes.
- While such policies may help consumers in the short run, they reduce the incentive for farmers in those countries to produce more food; this makes the problem worse.
  - Income transfers or food stamps to low income consumers would have been a much more effective policy response.

**Figure 2. Food Price Policies  
(% of 58 countries)**



Source: World Bank

# LDC Policy Response & Media Hype Contributed to Price Rise

- Such government actions plus the associated media hype and exaggeration caused panic buying and hoarding by consumers (and likely speculative behavior by merchants as well).
- Food and ag commodity prices rose much more than necessary to equilibrate supply and demand in both developing countries' national markets, as well as in the world market.

# The big policy question: Will agriculture get back onto the global development agenda?

“Give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime.”

# Impacts on U.S. and Other High Income Countries' Policies

# U.S. Producer Support, 2000-2004

(% of gross revenue provided by all support)

Sugar	53-62
Milk	38-56
Rice	18-52
Sorghum	30-47
Wheat	22-48
Barley	20-42
Corn	13-34
Soybeans	14-28
Wool and lamb	05-26
Pork, beef and broilers	04-05
Overall	15-24

Source: OECD PSE database

# The Landscape Going Into the 2007 Farm Bill Debate

- Many farm groups were happy with 2002 Farm Bill until they saw grain & oilseed prices projected to stay high enough for next 5 years that no grain or oilseed LDPs or CCPs would be triggered.
  - Only the direct payments and cotton program payments would continue.
- Record high net farm income
- Under its “pay-go” commitment, Congress’ budget constraint for ag commodity programs dropped by half.

# The Food, Conservation & Energy Act of 2008 (“The 2008 Farm Bill”)

- Winners
  - Nutrition Programs: +\$10.361 billion
  - Specialty Crops (fruits & vegetables): \$1.35 billion of new money
  - Conservation: + \$4 billion in CSP & other programs
  - Bioenergy (other than corn-based): +\$1 billion
  - Drought-prone states: \$3.7 billion
- Losers
  - Corn-based ethanol: no new budgetary support; blenders' tax credit reduced
  - Crop insurance industry: subsidy reduced
  - Taxpayers

# 2008 Farm Bill Commodity Programs

- Keep present marketing loan-loan deficiency payment-counter cyclical payment structure for grains, oilseeds & cotton
  - Increase number of supported commodities (+4)
  - Increase some loan rates & target prices, and reduce others (a little); reduce direct payments.
  - Give farmers option of switching Counter-Cyclical Payment trigger from market price to state-level revenue from 2009 (ACRE Program)

# Average Crop Revenue Election

- Provides counter-cyclical revenue program triggered by *statewide* average revenue (optional, but decision irreversible)
  - Based on 5-year average state yields and 2-year national average prices
- Using two recent years of these historically high prices significantly increases the potential federal budget cost if grain and oilseed prices drop.

# Biofuels in the Farm Bill

- No more money for expansion of corn-based ethanol industry
- \$900 m for cellulosic ethanol: pilot plants, research, & feedstock grower incentives
- Reduce corn-based ethanol blenders credit by 12% to 45 cents per gallon, but create a new cellulosic ethanol blenders credit of \$1.01/gal.
- Extend ethanol import tariff 2 years beyond current expiration in Dec. 2010, but no reduction in the tariff rate.

# Declining Support to Agriculture in High Income Countries\*

Years	Percent of Gross Receipts
1986-88	37
2006	26
2007	23

\* “High income countries” refers to the 30 OECD member countries.

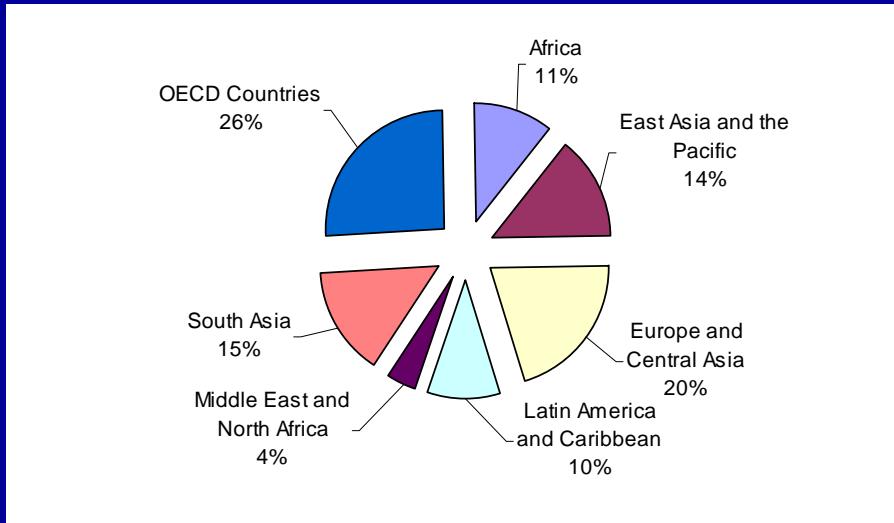
Source: OECD PSE database

# Impacts on Doha Round of WTO Ag Trade Negotiations

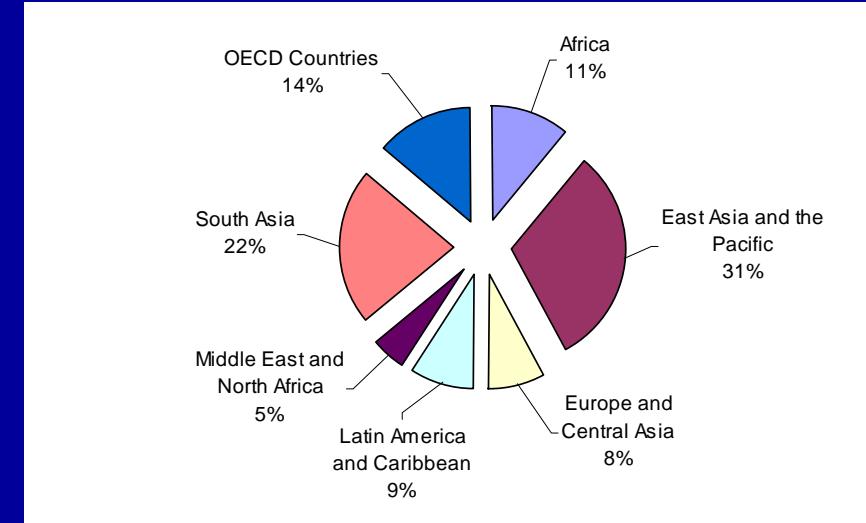
# Globalization of Agriculture

- Fraction of world agricultural production that moves through trade has been growing rapidly.
- Fraction that flows in value-added form is increasing faster than bulk commodities
- The fraction of world food trade that flows within multinational companies is rising.

# Larger Fraction of Ag Production to Move Through Trade



Distribution of Arable Land



Distribution of World Population

- With population growth, urbanization and broad-based economic development, many low-income countries' food consumption will outstrip their production capacity, and they will become larger net importers.

How much loss in confidence  
has occurred since 2006 in the  
world markets' ability to ensure  
the food security of net food  
importing developing countries?

# “Doha Development Round”

- OECD countries tend to be most protectionist in products in which low income countries have a comparative advantage at this stage in their development
  - E.g., textiles, footwear, sugar, rice; cotton.
- OECD ag subsidies induce larger production and exports of their most subsidized commodities, driving down the world market price from which developing country farmers get their entire incomes
  - E.g. sugar, rice, cotton, and peanuts

# Key Players in Doha Round Agricultural Negotiations

- United States
- European Union (now EU-27!)
- G-20 (Brazil, India, China, S. Africa+)
- G-10 (Japan, Korea, Norway, Switzerland+)
- Various groupings of developing countries  
(with heterogeneous interests)
- Cairns Group

# Doha Round Ag Negotiations

- Much had already been agreed by 7/31/04:
  - Eliminate all ag export subsidies
  - Reduce the *cap* on trade-distorting domestic subsidies (highest the most, but exceptions possible)
  - Reduce *cap* on tariffs (highest the most, but exceptions allowed if increase tariff-rate quota)
  - Give the least developed countries open access to high income country markets for most goods.
- The high recent world market prices should have made it easier to bring the Doha Round to a successful conclusion. But....

# Stalemate of WTO Negotiations

- Three key disagreements:
  - U.S. demands real increases in market access.
  - E.U. & developing countries demand real cuts in U.S. trade-distorting ag supports.
  - Brazil and India are asked to offer more market access for services and non-ag manufactured goods.
- The agricultural growth markets of the future are in the developing countries where population and purchasing power are growing.

# Projected World Food Demand

- World food demand could double by 2050
  - 50% increase from world population growth – all in developing countries
  - 50% increase from broad-based economic growth in low income countries
- The World Bank estimates that the number of people in developing countries living in households with incomes above \$16,000 per year will rise from 352 million in 2000 to 2.1 billion by 2030.
- How many presently low income consumers are lifted out of poverty will be the *most important* determinant of the future global demand for food.

# Why the Development Focus in the Doha Round?

- It's in our economic self-interest: They are the only potential growth markets for agricultural products, but only if and when they can afford to eat meat, fruits, vegetables; edible oils.
- Trade is a more powerful engine of growth than aid.
- Persistent poverty can have adverse geopolitical effects (Doha was 2 months after 9/11) and cause illegal immigration
- With almost half the world's population living on less than \$2 per day, it's the right thing to do.
- Developing countries are now the majority of WTO members; there will be no agreement until they perceive something of value in it to them (unlike the past).

# Long-Run Price Prospects

- Since Malthus, prophets of doom have argued population growth will increase food demand faster than agricultural production can grow.
- Public and private sector investments in agricultural research have increased productivity faster than demand growth, with resulting 150 year downward trend in real price of grains.
- Need to double world food production by 2050 using less water and little more land than today & also produce feedstocks for biofuels production.
- Future world market price trend will depend on whether research increases land and water productivity faster than world demand grows.