


# Is Increased Global Price Volatility Here to Stay?

## Implications for the World's Poorest

(Presentation at the USDA Agricultural Outlook Forum,  
February 26, 2009)



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# Outline

- **Some inconvenient facts of grain markets** and the food crisis in the poorer developing countries
- **Trends** in global grain price volatility
- **Drivers** of global grain price volatility
- **Implications** of increased grain price volatility for developing countries

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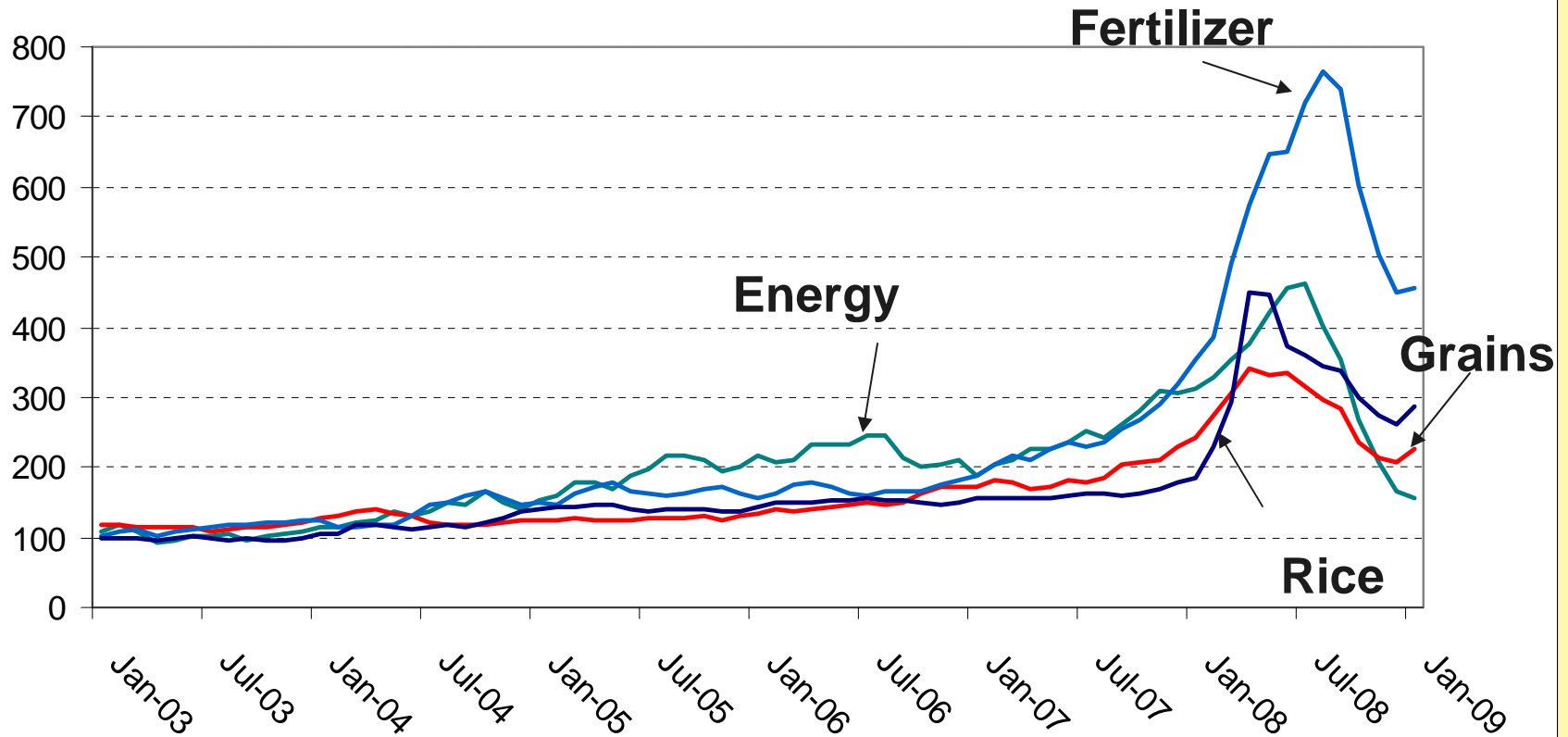
**The silent tsunami**  
The food crisis and how to solve it




Inconvenient Facts  
for Many Poor Country  
Grain Markets

# Global Prices Again Increasing, Likely to Remain High

Commodity price indices in current US\$ to Jan. 2009  
(2000=100)



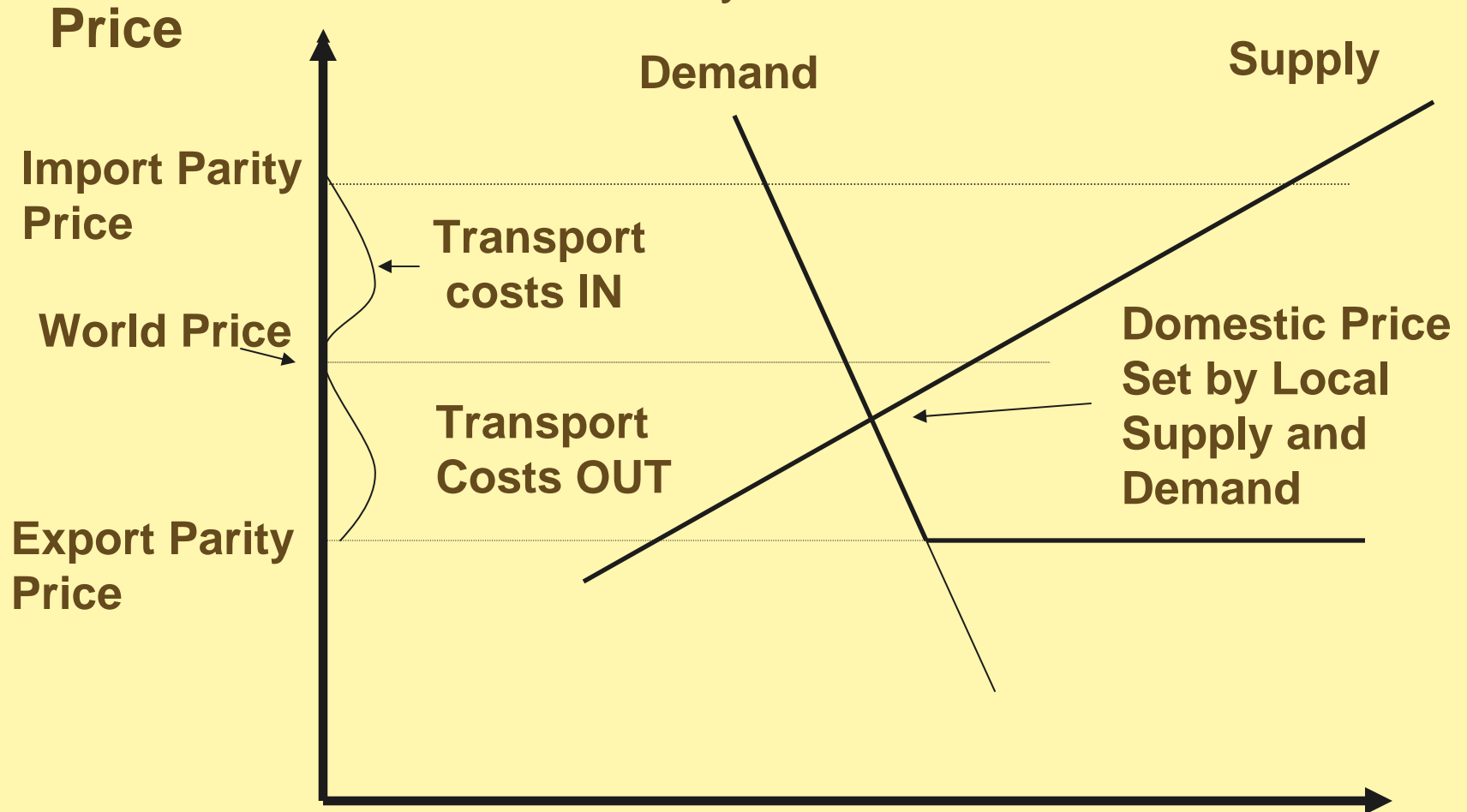


# Grain Markets in the Poorest Countries

- **World grain prices are still 40% (maize) to 100% (rice) higher** than the 2003-06 average.
- **The recent decline in world grain prices has not translated into a matching decline in many countries** where food markets are not fully integrated, as in landlocked Africa--grain not fully tradable, importance of local supply and demand: e.g. Sept. to Dec 2008:
  - World maize price down 32%
  - Nairobi maize price down 12%
  - Dar-es-salaam price up 16%


# Domestic Grain Prices Often Set by Local Factors

Small Poor Country Case with Poor Infrastructure




NB: Higher Fuel, Freight Means Wider Band!

Quantity



## But Agricultural Inputs in Poor Countries = Importables

- **Inputs are importables** in most countries, thus prices keyed to world prices (esp. volatile oil prices) but increased by transport costs, exchange depreciation, etc.
- **Local fertilizer prices set by high import parity prices**, including the effects of high fuel prices for transport
- During 2008 in inland Africa, **input prices often rose 3-4 times as much as output prices**



# The Meaning of Vulnerability to Grain Prices

- **In a world increasingly characterized by vulnerability of different kinds, being hungry all the time is the cruelest kind, still faced by one seventh of humanity: 923 million people are still chronically malnourished**
- **in Sub-Saharan Africa 1 in 3 people still do not have enough to eat**





# The Mechanism of Vulnerability to Grain Prices

- **The poor spend over half their income on food staples**, and have no choice but to respond to higher prices by reducing consumption even further
- **In Ethiopia, grain prices are 80% of family food cost; in the U.S. they are less than 5%**
- **Vulnerability to unavoidable hunger in poor countries is significantly increased when staple food prices become more volatile:** not only are prices high, but changes occurred suddenly, and were hard to predict



**But aren't high grain prices good for farmers??**

**Fact: 75% of the world's poor are rural and most are involved in farming (WDR 2008).**

**Problem: Few of them have the resources to take risks or expand production and many depend on partial diversification out of food production to improve or stabilize incomes.**

**Hypothesis: Uncertainty from volatility hinders smallholder adaptation as producers to higher prices.**



# The Financial Crisis Interacts With Food Vulnerability

- **Agricultural exports very important to income in Africa, but falling** due to falling demand and prices under global recession
  - Ex: Current account balance in Ghana = -17% in 2008; cheaper fuel helps, but ag exports a problem for 2009
- **Employment opportunities falling and fiscal space severely constrained**
  - GDP growth in SS Africa projected to fall to less than 4.6% in 2009 compared to over 5% p.a. in 5 preceding years, 5.4% in 2008 (GEP 2009)
- **Inflation rising**
  - Ex: 64% in Ethiopia in 2008, led by 80% food price inflation




## Thus Financial Crisis Makes it Even Harder to Adapt

- **Incomes are down, prospects daunting, and Gov'ts are out of funds**
- **Other coping mechanisms such as remittances** to developing countries of US\$250 billion in 2007 have started to collapse
- **Prospects for aid inflows are uncertain**
- **Thus the financial crisis is making it even harder for the poor and their governments to adapt** to food shocks, especially when faced with grain price volatility



# Trends in Global Grain Price Volatility



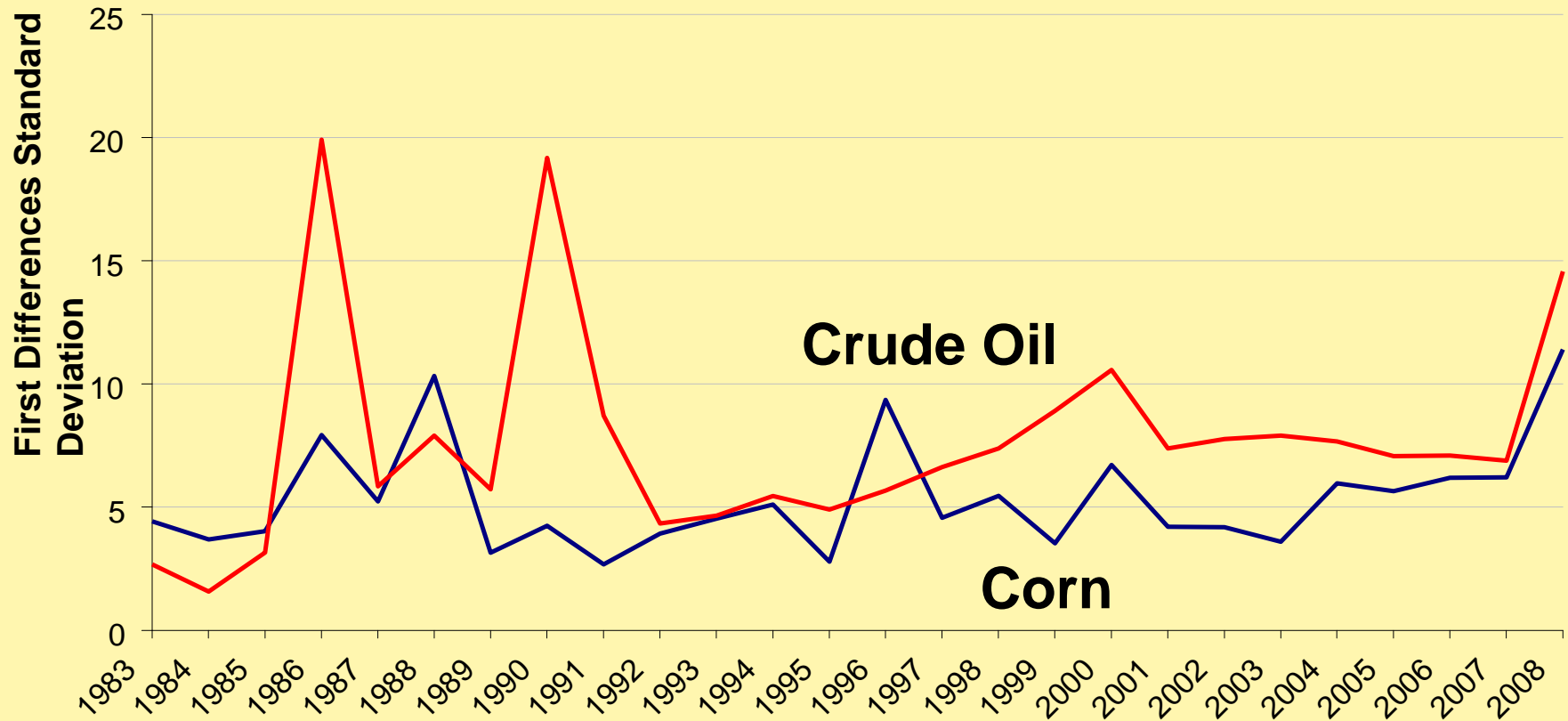


# Grain Price Volatility Seems to be Increasing

- **Grain price volatility for cereals thought to have decreased along with average real prices since 1970s until around 2000**
- **Price volatility has almost doubled for corn and wheat over the last 10 years (and for rice in the last year)**
- **Whether or not this is transitory depends on the drivers of change in volatility**

# Price Volatility of Corn and Oil 1983-2008

**Are corn and oil price volatility converging?**

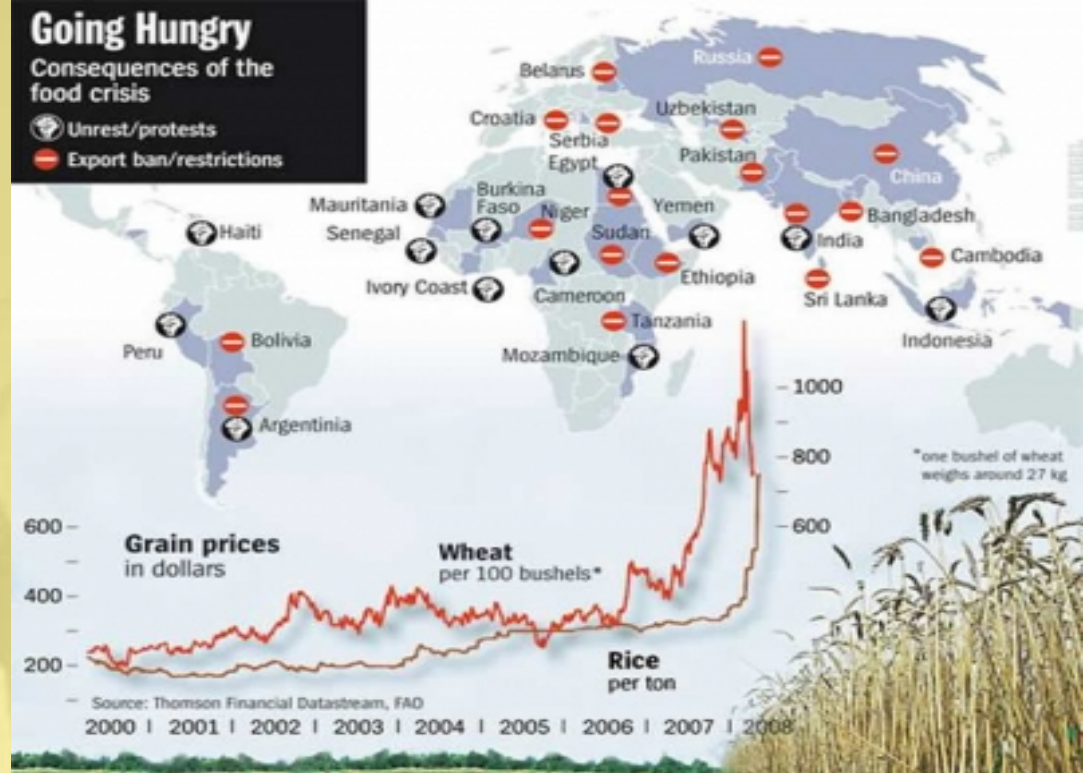


*Standard deviation (in %) of monthly first differences within years.*

## Going Hungry

Consequences of the food crisis

- Unrest/protests
- Export ban/restrictions



## Drivers of Grain Price Volatility

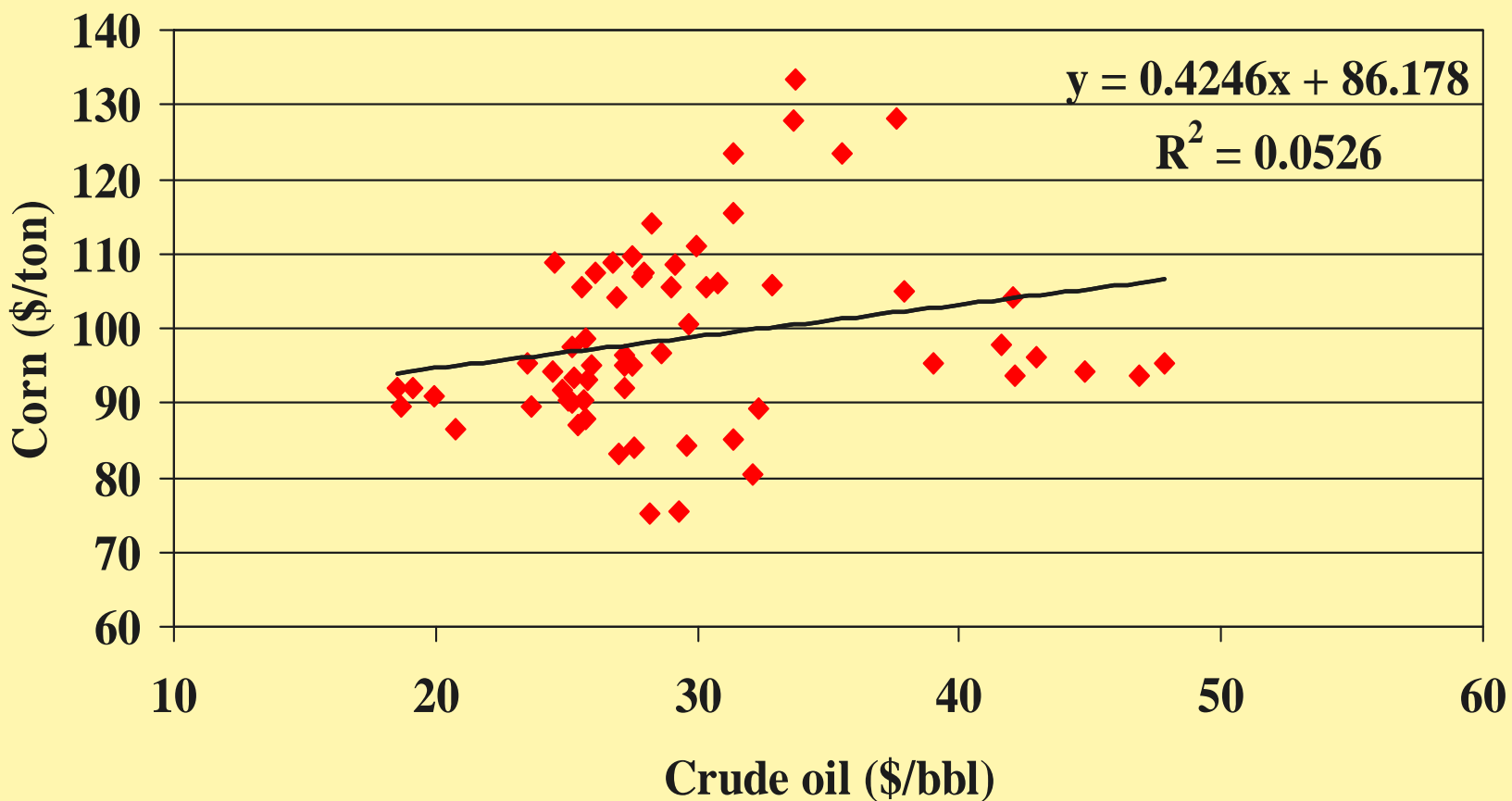




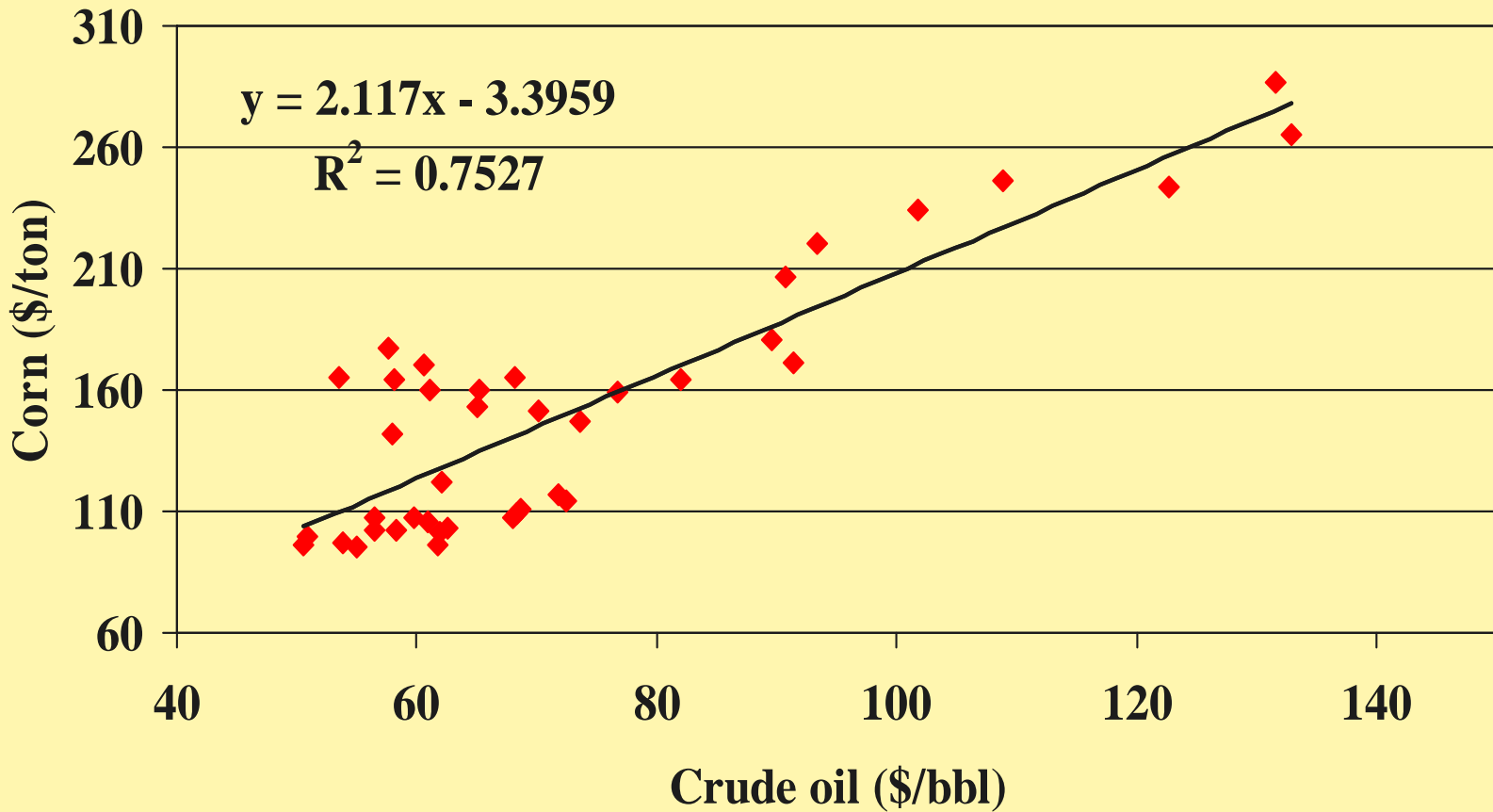
# Drivers of Price Volatility (1)

- **Hypothesis:** The higher price volatility of oil markets was transferred to corn markets as oil prices rose above \$50/barrel and corn-based ethanol use increased over the past 3 years.
- **Fact:** Metal and oil prices are more than twice as volatile as corn prices since 2000
- **Fact:** The correlation of corn prices with oil prices is much higher when the oil price is high (especially when high relative to corn)

# Linkages: Corn and Crude Oil (<\$50/bbl)



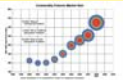
# Linkages: Corn and Crude Oil (>\$50)



Source: Don Mitchell, World Bank DEC-PG

## Drivers of Price Volatility (2)

- **Hypothesis: Food futures are increasingly tied to the more volatile behavior of non-agricultural commodities.**
- **Fact: Commodity index funds included US\$250 billion in agricultural futures in the 2003 to 2007 period, accounting for 27% of total U.S. agricultural futures (World Bank, GEP 2009)**



Source: Michael Masters, U.S.  
Senate testimony

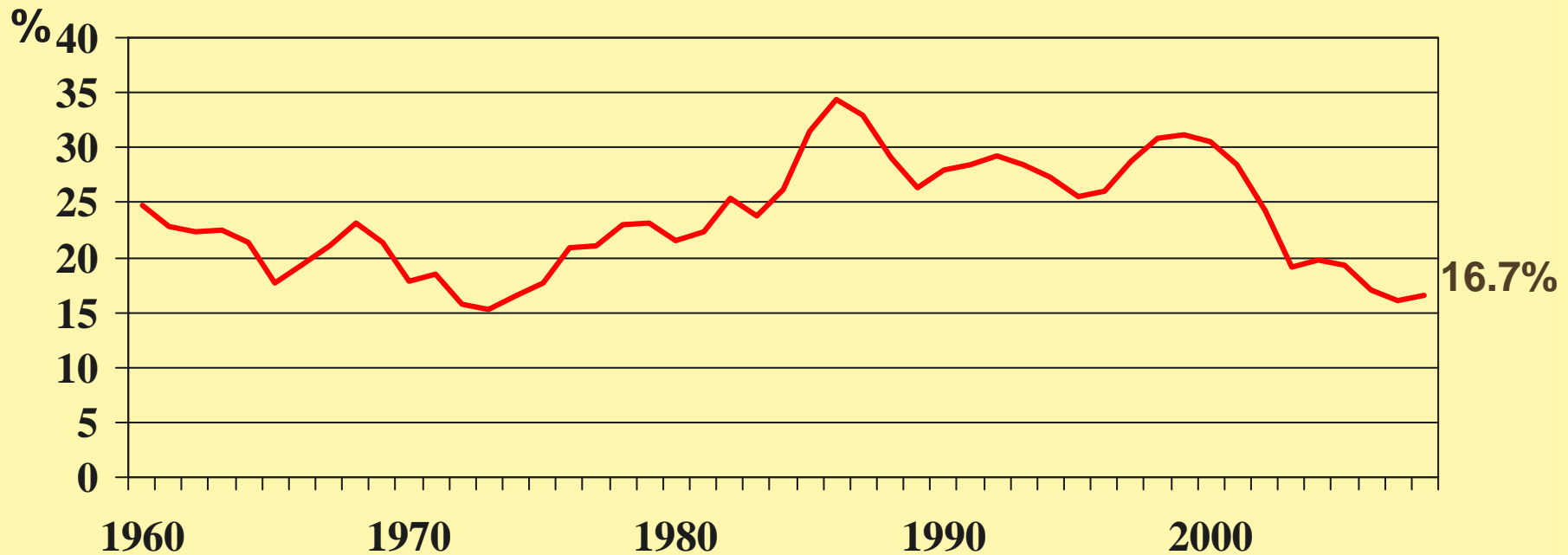


## Drivers of Price Volatility (3)

- **Hypothesis: Global carryover grain stocks in the range of 14% to 20% of total usage now, compared to 30% to 35% in the late 1980s and 1990s, have been associated with more defensive policy stances (such as trade barriers, price wedges)**
- **Fact: growing influence of Asia compared to US/Europe in global grain stocks and markets**
- **Fact: national policies in Asia associated with early 2008 spikes**

# Global Grain Stocks Remain Quite Low

## World Grain End Stocks-to-Use

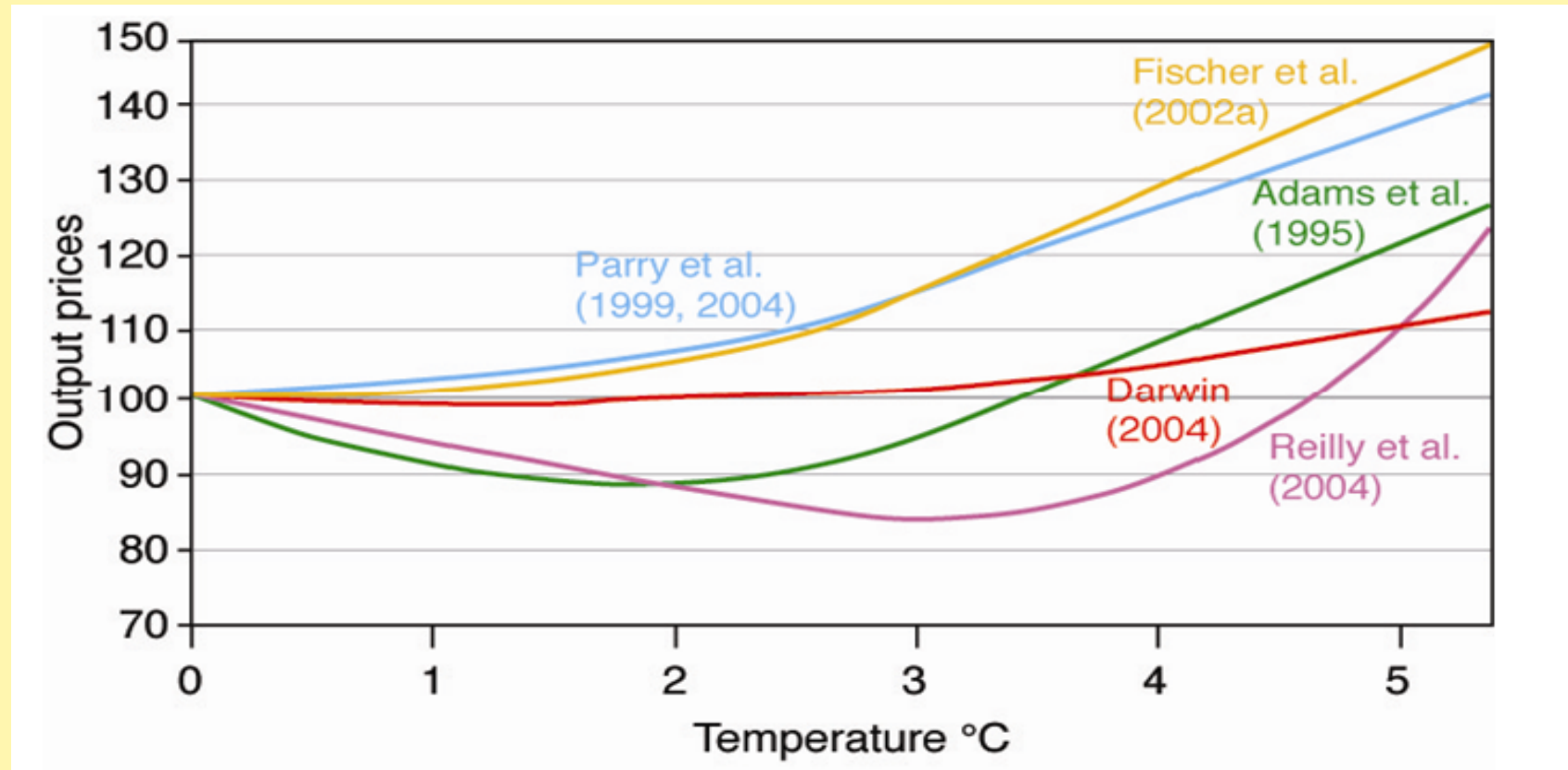




## Drivers of Price Volatility (4)

- **Hypothesis: Climate events are becoming more extreme under climate change,** especially in the tropics, and these are likely to accelerate, leading to much higher volatility and even lower viability of grain self-sufficiency strategies
- **Fact:** higher temperatures very unfavorable to agriculture in tropics
- **Fact:** large share of developing country agriculture is rainfed or lowland coastal

# Predicted Cereal Prices & Global Temperature Increase

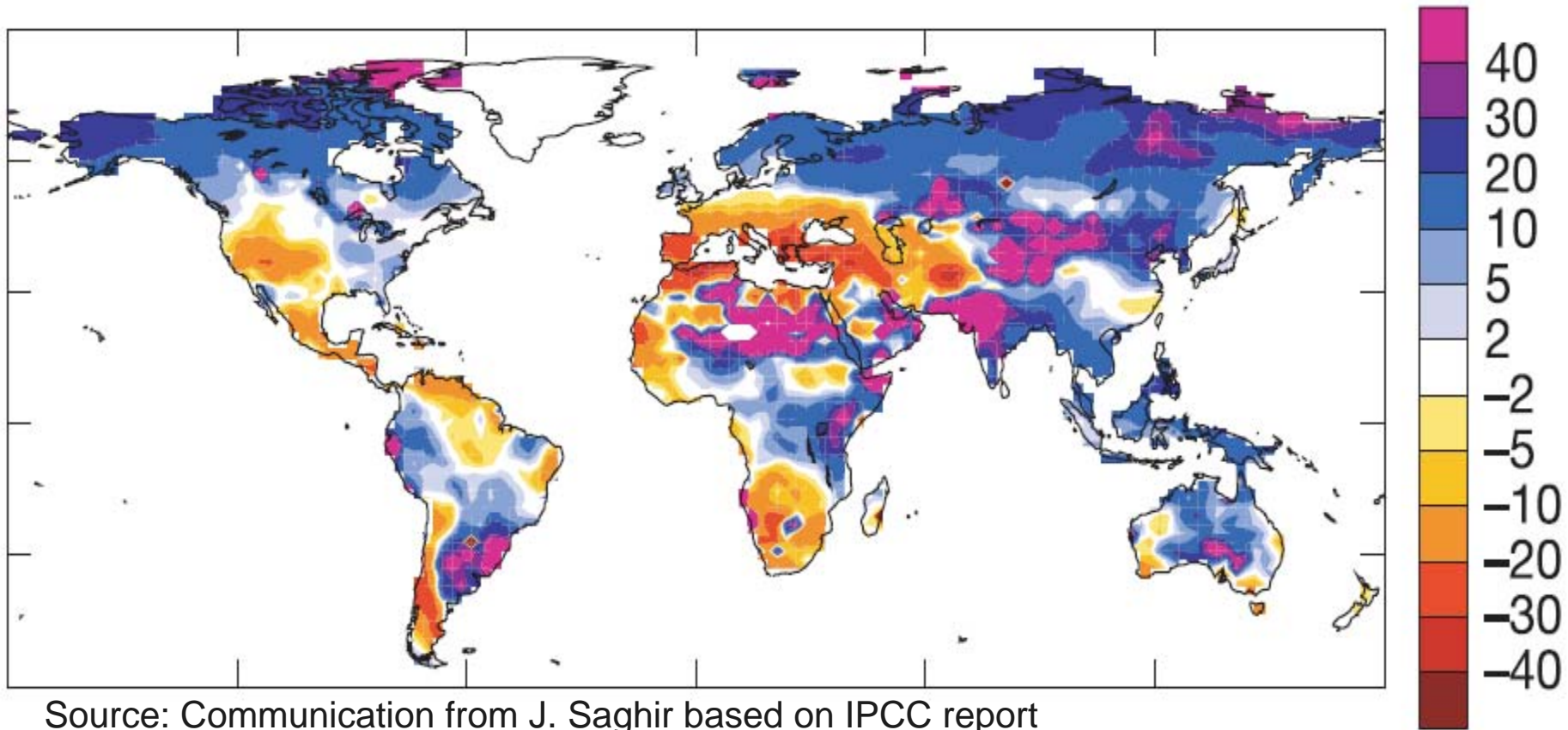


Source: Easterling et al., 2007. Figure 5.3: E cereal prices vs.  $\Delta T$  (IPCC, 2007. WGII)



# % Change in Runoff by 2050

a



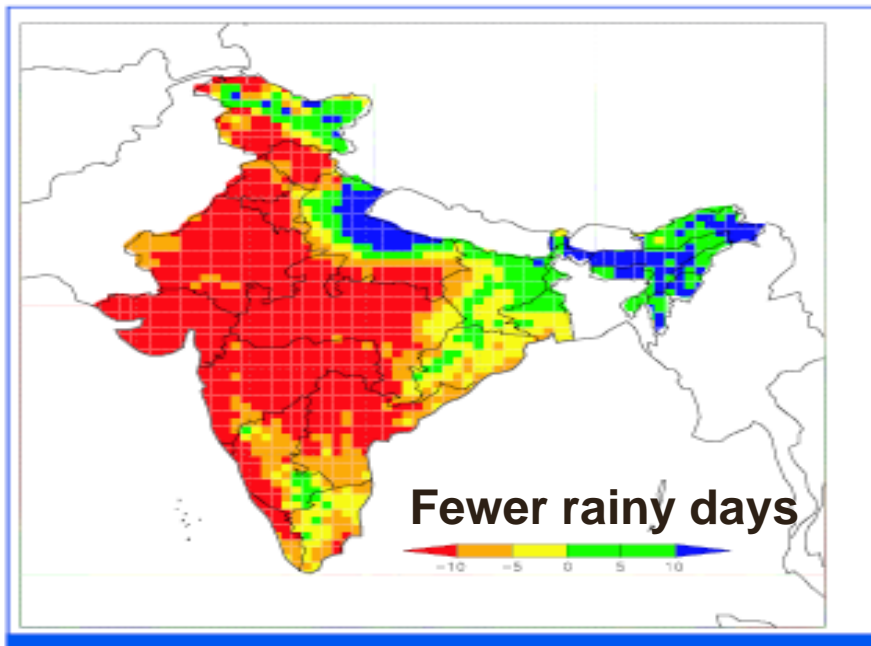
Source: Communication from J. Saghir based on IPCC report

- Many of the major “food-bowls” of the world are projected to become significantly drier
- Globally there will be more precipitation
- Higher temperatures will tend to reduce run off
- A few important areas drier (Mediterranean, southern South America, northern Brazil, west and south Africa)

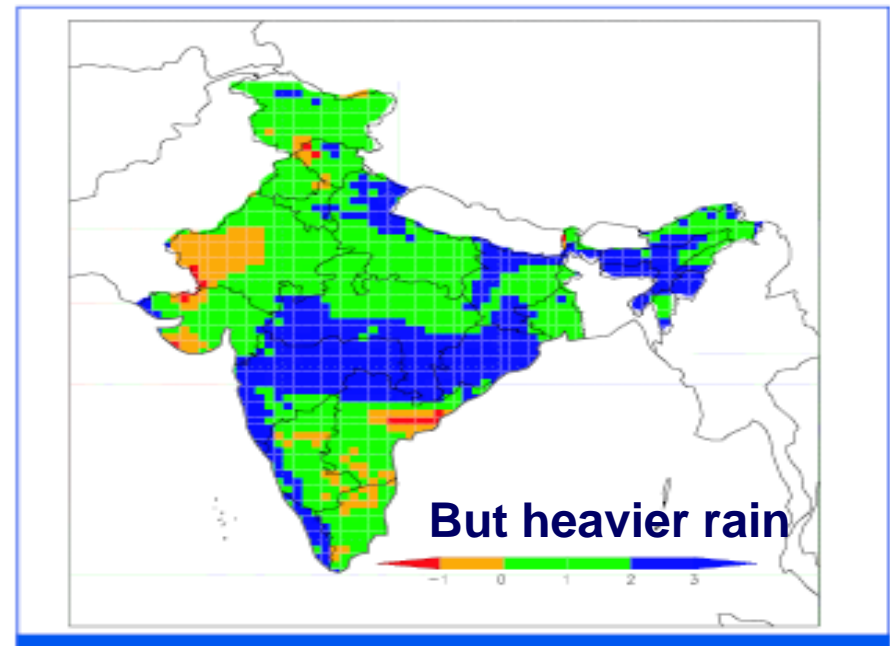
# Likely to Lead to More Variable Ag. Outcomes

- Patterns of precipitation and runoff will change substantially
- Rain in fewer, heavier events leading to more floods and dry spells; less ground water recharge


Projections for increased number of rainy days (**left**) and amount of rain per wet day (**Right**) for 2041-2060 period based on modeling (HadRM2)




**Figure 3.14:** Projections of mean incremental annual number of rainy days for the period 2041-2060, based on the regional climate model HadRM2.



**Figure 3.15:** Projections of mean incremental rainy day intensity (mm/day) for the period 2041-2060, based on the regional climate model HadRM2.




## Implications for Poor Countries of Grain Price Volatility




# Impact of High Food Price Volatility

- **Unless high grain prices** engender productivity growth in developing country agriculture, they tend to raise costs more than overall HH income
- **Volatile grain prices** tend to discourage investment in increasing food productivity that would help solve long-term problem
- **Fact: volatile food prices tend to encourage over-investment in backyard subsistence food production** for risk mitigation (well established in 1970s, 1980s)



# Impact of High Food Price Volatility

- **Hypothesis: volatile food prices also tend to discourage labor-intensive industrialization**
- **Fact:** South African unit labor costs rose 10.5% in Q2 of 2008 due to food price related wage claims
- **Fact:** empirically the large majority of both urban and rural people were worse off in developing countries under the unexpected grain price spikes (Ivanic and Martin 2008, other World Bank analysis)



# Interventions on Drivers of Volatility Effective? Likely?

**Fighting the pernicious effects of price volatility by targeting hypothesized drivers—will they work? Can they happen? Will they happen?**

- **Eliminate grain-based biofuels policies that are distortionary?**
- **Regulate commodity futures index funds** for less unintended impacts on grain spot prices?
- **Create conditions for better access to international grain stocks** in times of need in order to encourage greater faith in markets?
- **Mitigate effects of climate change on agriculture and promote adaptation?**
- **Increase productivity and stability of agriculture generally in poor countries** (the penalty for ignoring the need for this has gone up)



# Targeting Impacts of Food Price Volatility Directly...

Fighting the pernicious effects of price volatility directly through prices at the individual and household level is not easy either, **but there is a track record:**

- **Individual level: safety nets, consumer protection** (roughly 1/3 of World Bank's \$1.2 billion Global Food Crisis Response Program-GFRP--if budget support to create fiscal space for social protection financing is included)
- **Farm level: crop/weather insurance** (ex: weather insurance pilots in Malawi); « **smart** » **input subsidies** (the World Bank has already disbursed \$300 million under GFRP for seeds and fertilizers in a number of countries using a « smart subsidy » approach that targets to poorest, uses private sector for distribution, has an exit strategy, and makes the opportunity cost transparent)
- **Post-harvest: loss reduction and better distribution**



# Targeting Price Volatility Beyond the Household Level

**Trying to affect grain price volatility directly through national and international grain buffer stock schemes raises difficult governance issues:**

- **National level: stocks and reserves**, physical and financial; grain market regulation, taxes, and subsidies...
  - expensive and poor track records from heyday in 1980s; non-market decision-making has tended to preclude activity of other market actors
- **Regional level:** ditto, but what triggers actions, at what price? (was not resolved in 2008 regional cases in Asia)
- **Global level:** ditto, but what governance? What cost? how to avoid negative or even prohibitive interaction with multiplicity of private actors??





# Conclusions

- Although a great deal of further empirical investigation is warranted, there are **strong reasons to think that increased volatility of global grain prices is here to stay**, and may grow further
- **The impacts on the poor of the World are devastating, and require urgent action**
- Finding at least intermediate level solutions for both poor consumers and poor producers is **one of the big humanitarian and security issues of the next few decades**
- **It will not be easy**
- **There are already lessons to build on**