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Is Increased Global Price Volatility Here to Stay?

Implications for the World's Poorest

(Presentation at the USDA Agricultural Outlook Forum,
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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

The image shows the cover of The Economist magazine. At the top left, there is a red box with the magazine's name 'The Economist' in white. Below this, the date 'APRIL 13TH - 21TH 2008' and the website 'www.economist.com' are printed. On the right side, a list of articles is provided: 'Brazil as the next oil giant', 'God help Italy', 'London's funny but sad election', 'The return of Disney', and 'Cancer's link to stem cells'. The main title 'The silent tsunami' is prominently displayed in large white letters, with the subtitle 'The food crisis and how to solve it' underneath. The background of the cover features a dramatic sky with a storm brewing over a field of golden grain.

**The
Economist**

APRIL 13TH - 21TH 2008

www.economist.com

Brazil as the next oil giant
God help Italy
London's funny but sad election
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Cancer's link to stem cells

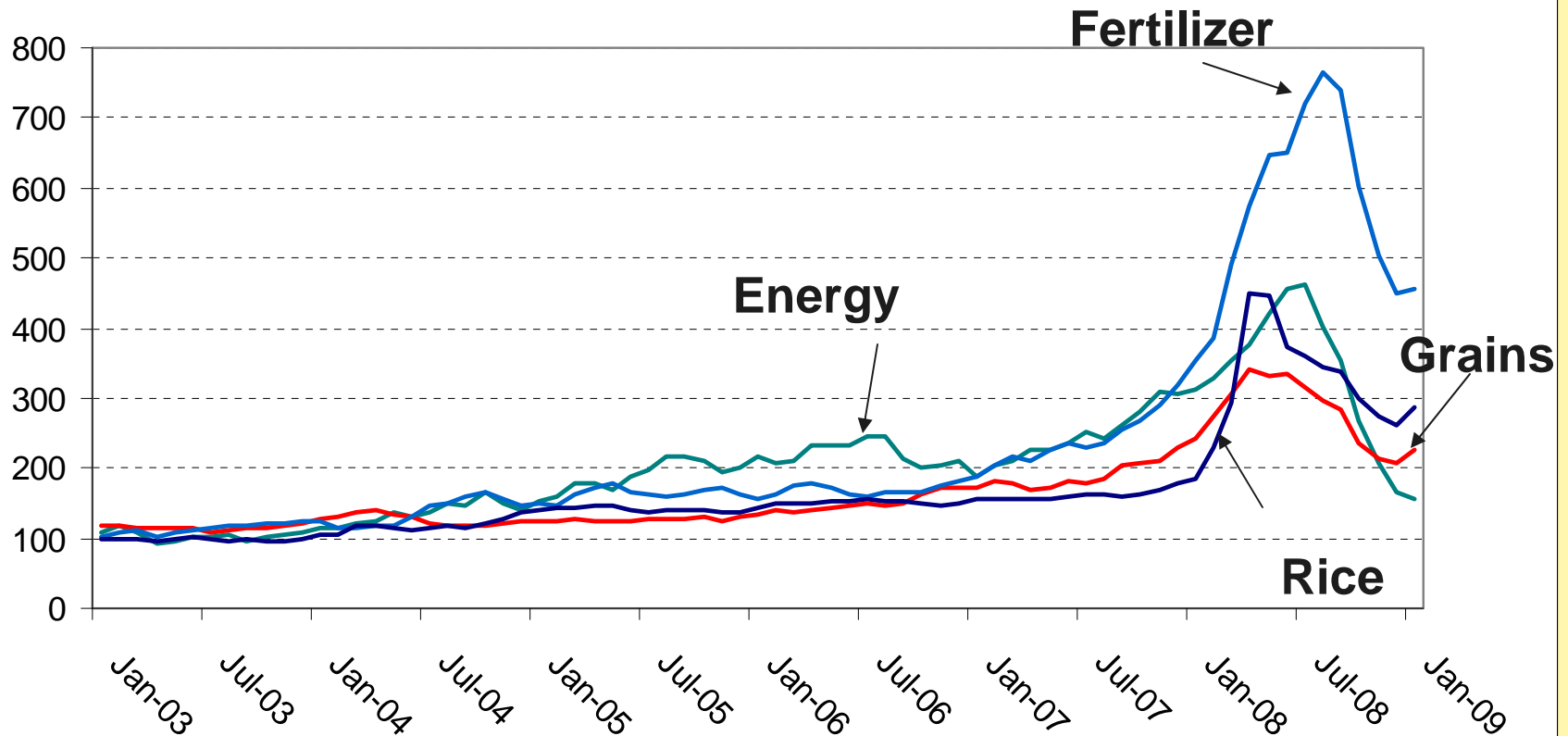
The silent tsunami The food crisis and how to solve it

A black and white photograph showing the silhouettes of grain stalks against a bright, low sun, creating a dramatic, high-contrast scene.

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)



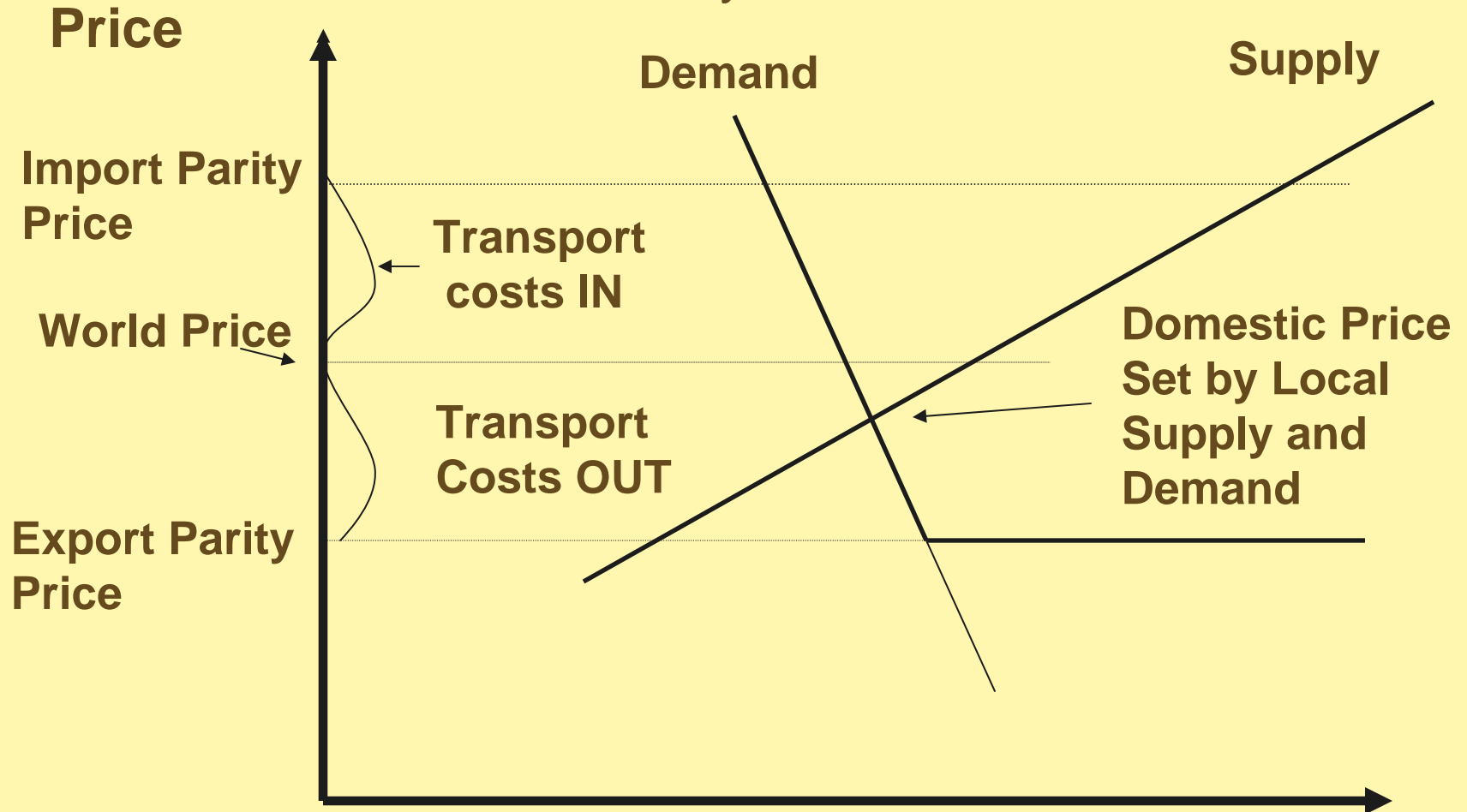


Grain Markets in the Poorest Countries


- **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



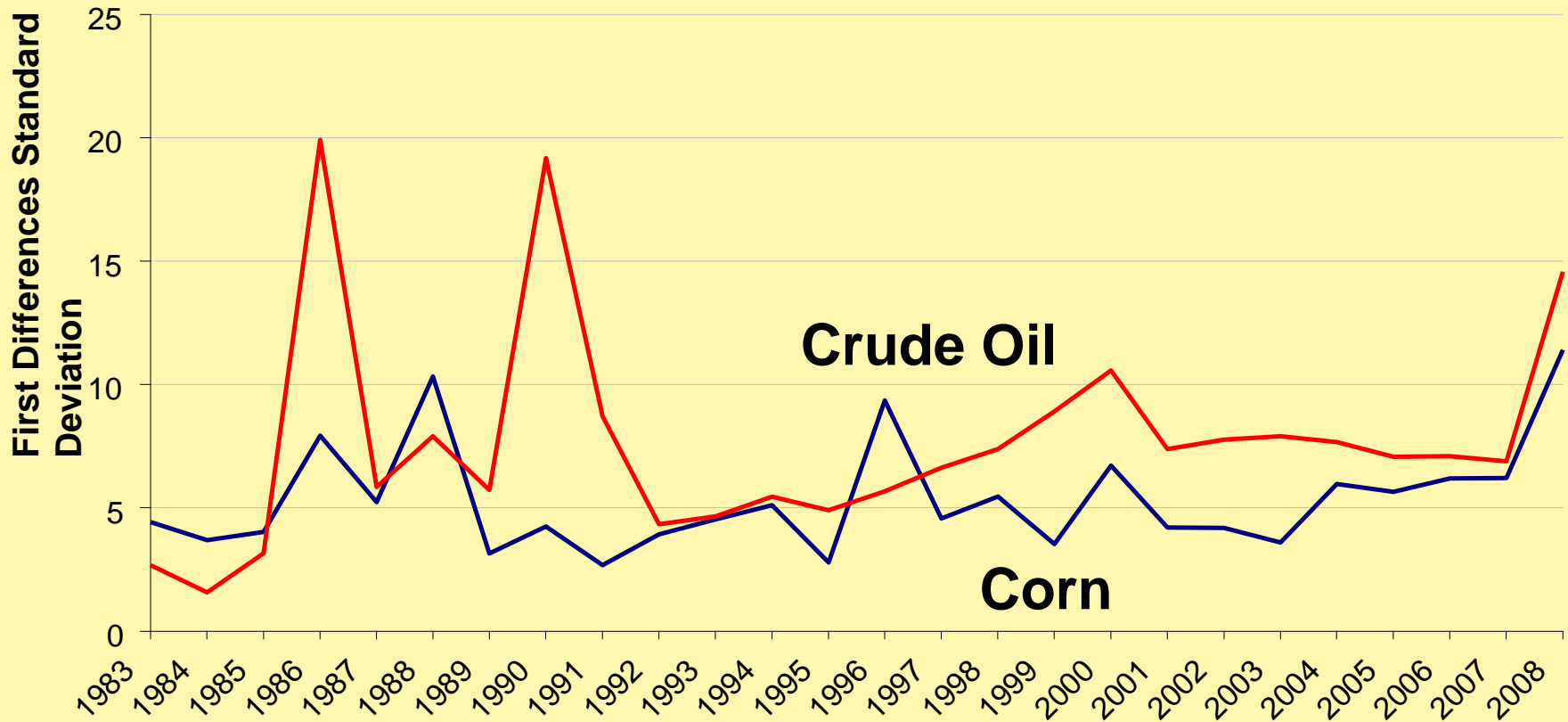


Grain Price Volatility Seems to be Increasing

- **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?

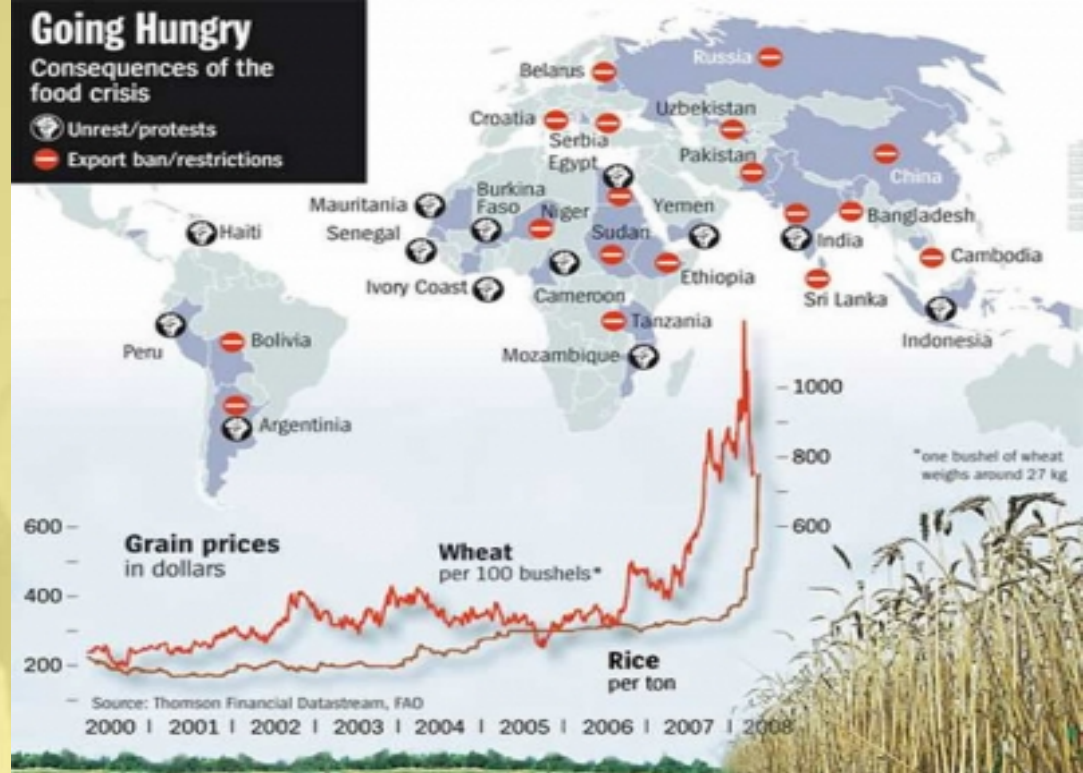


Standard deviation (in %) of monthly first differences within years.

Going Hungry

Consequences of the food crisis

- Unrest/protests
- Export ban/restrictions



Drivers of Grain Price Volatility

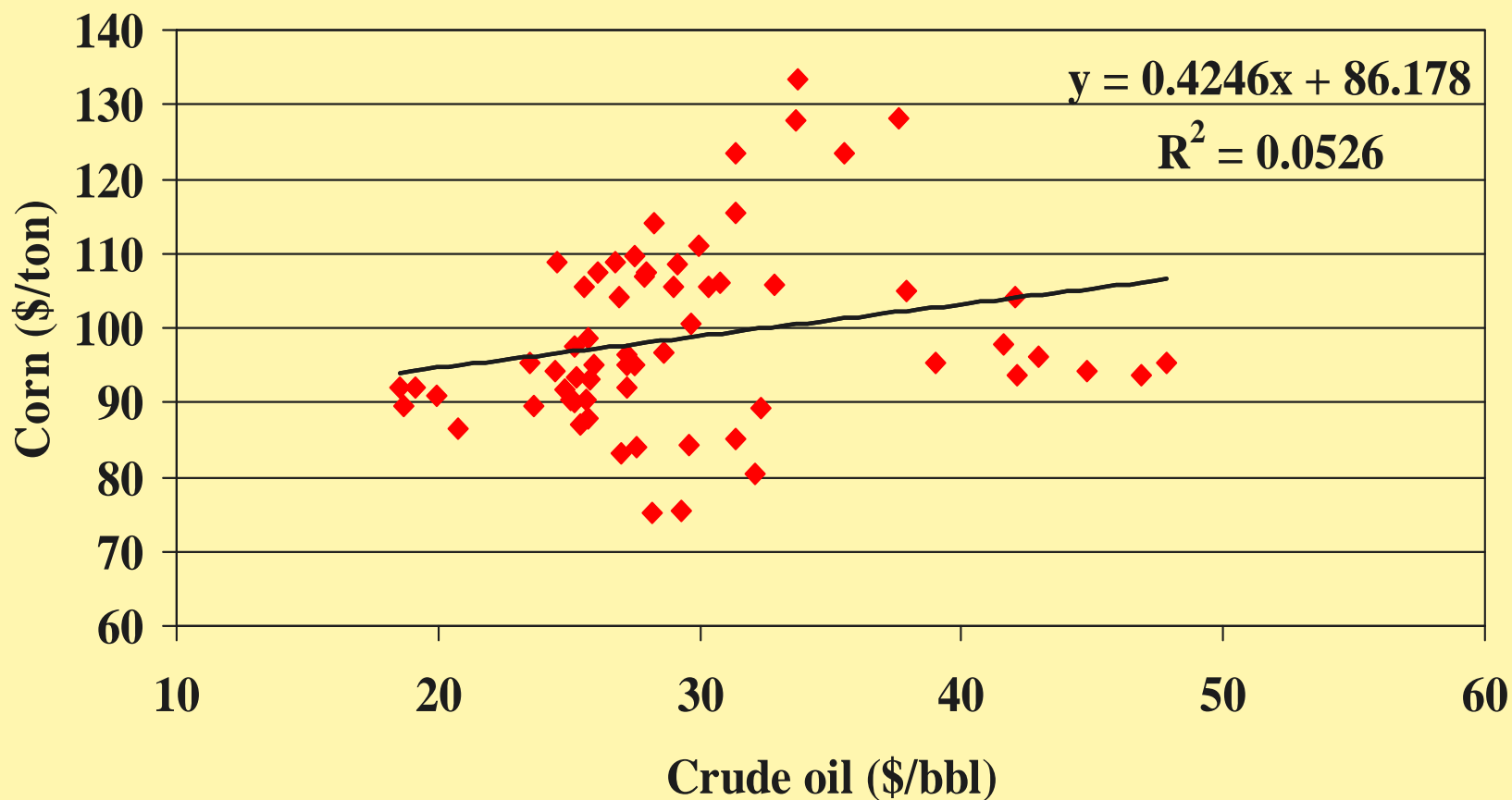


Drivers of Price Volatility (1)

- **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)

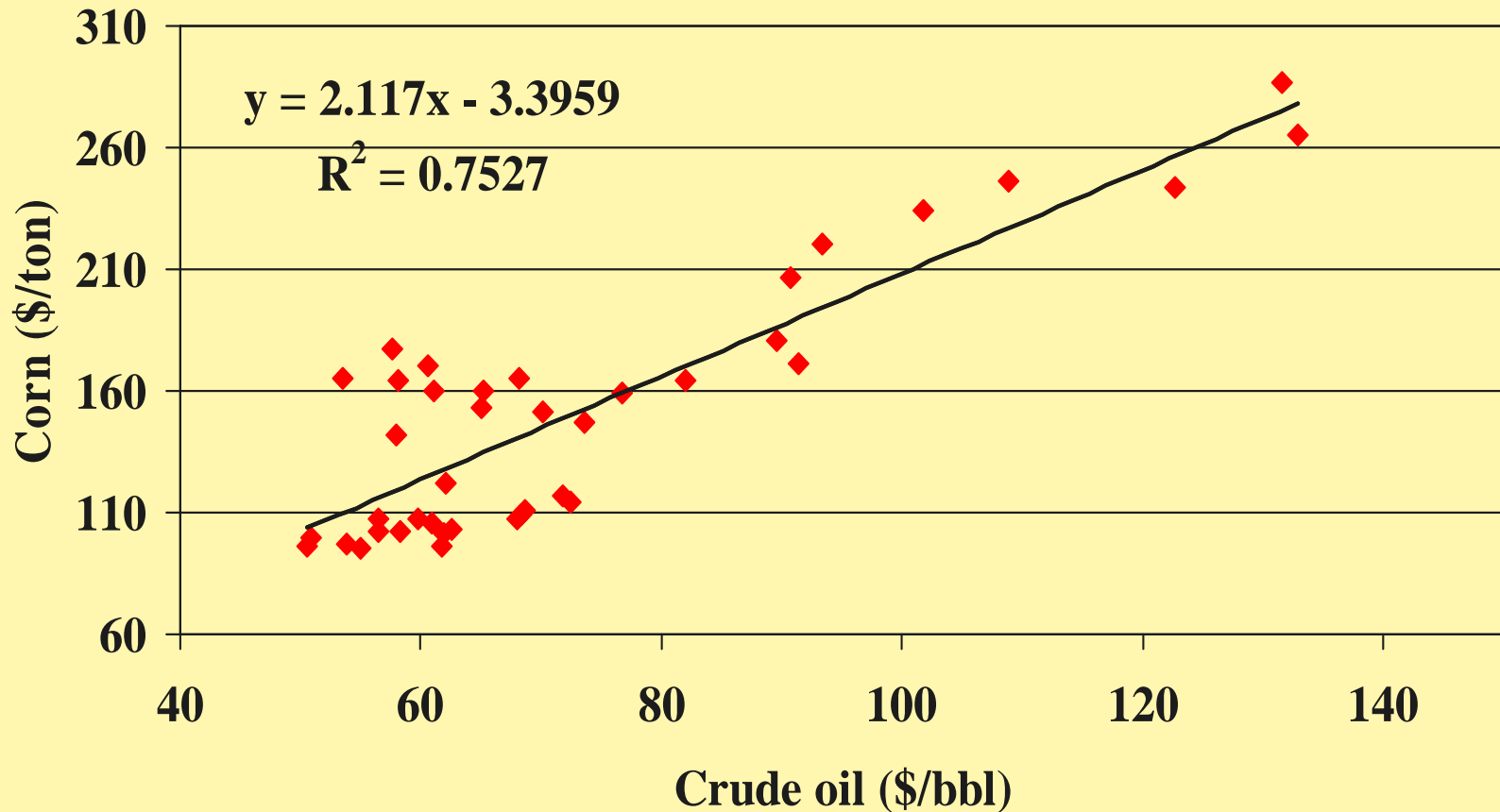


Linkages: Corn and Crude Oil (<\$50/bbl)



Source: Don Mitchell, World Bank DEC-PG

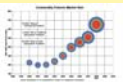
Linkages: Corn and Crude Oil (>\$50)



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

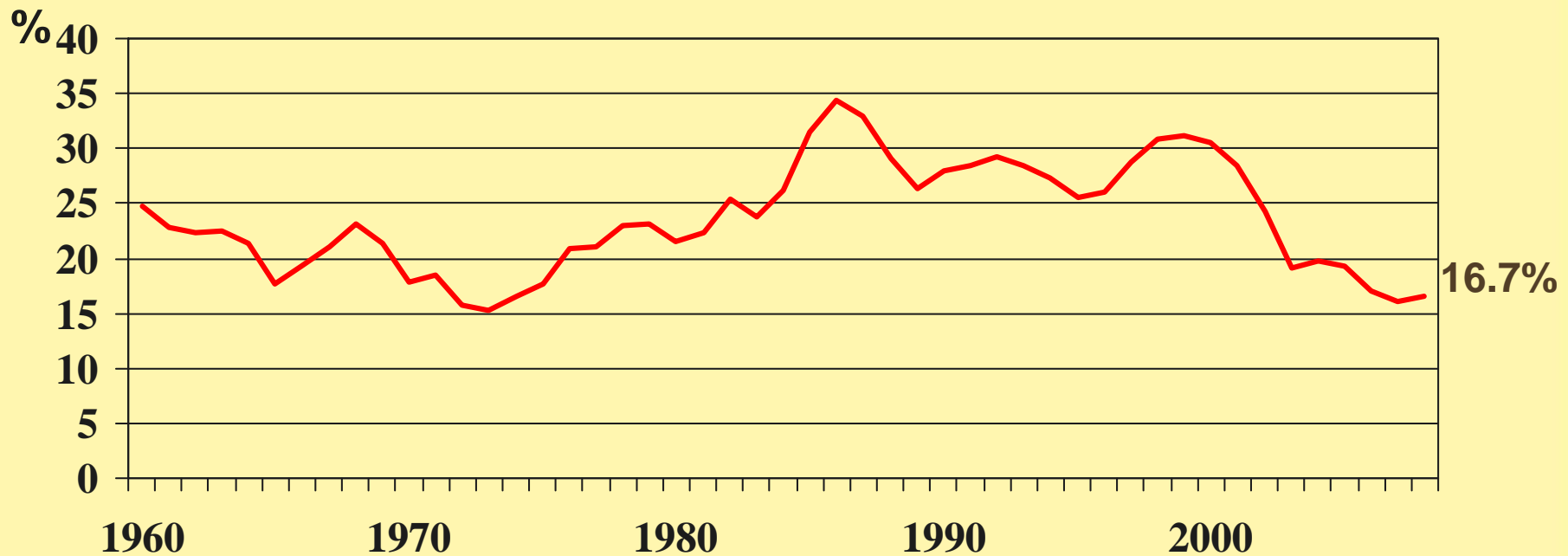


Drivers of Price Volatility (3)

- **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

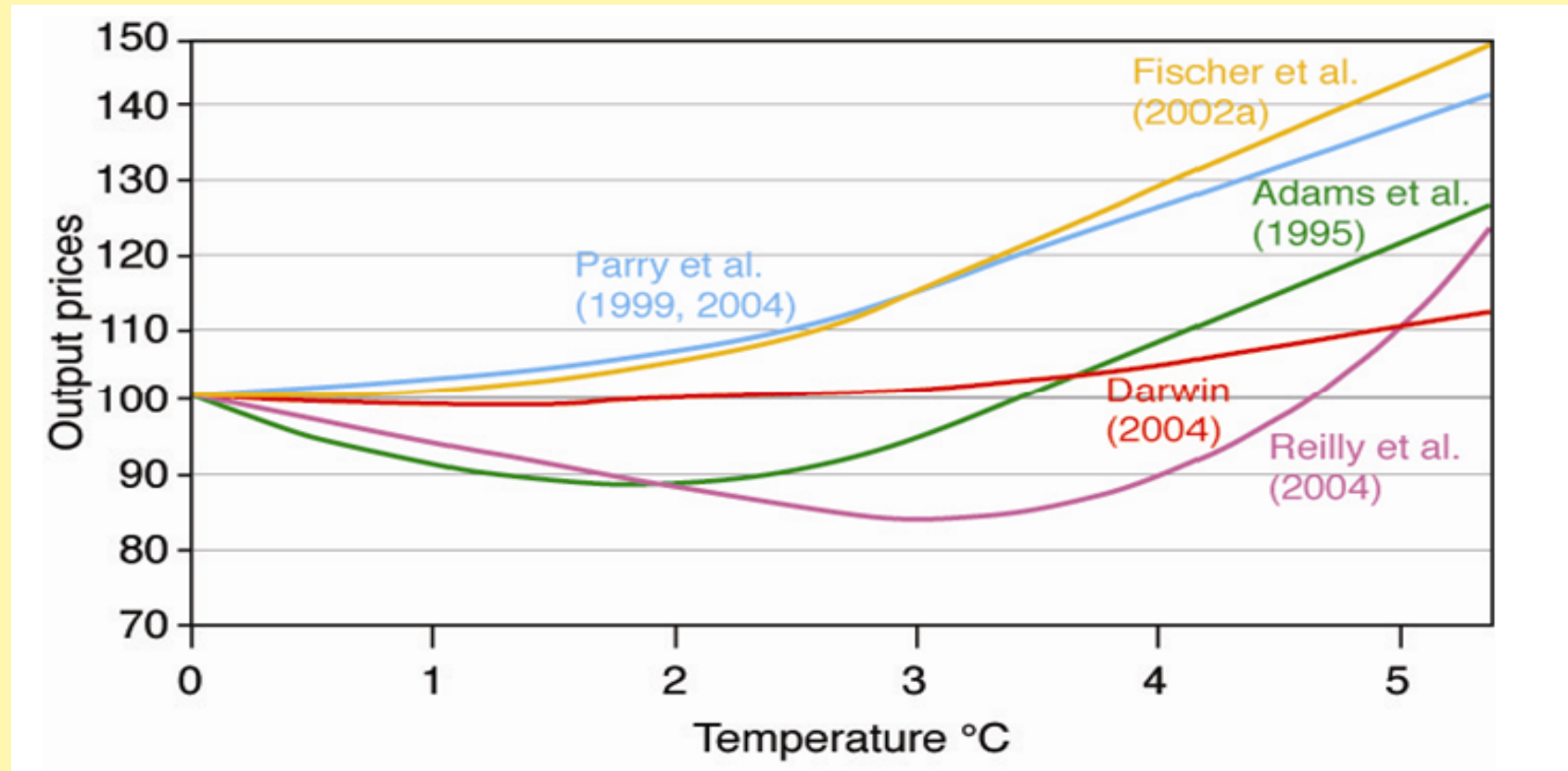




Drivers of Price Volatility (4)

- **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

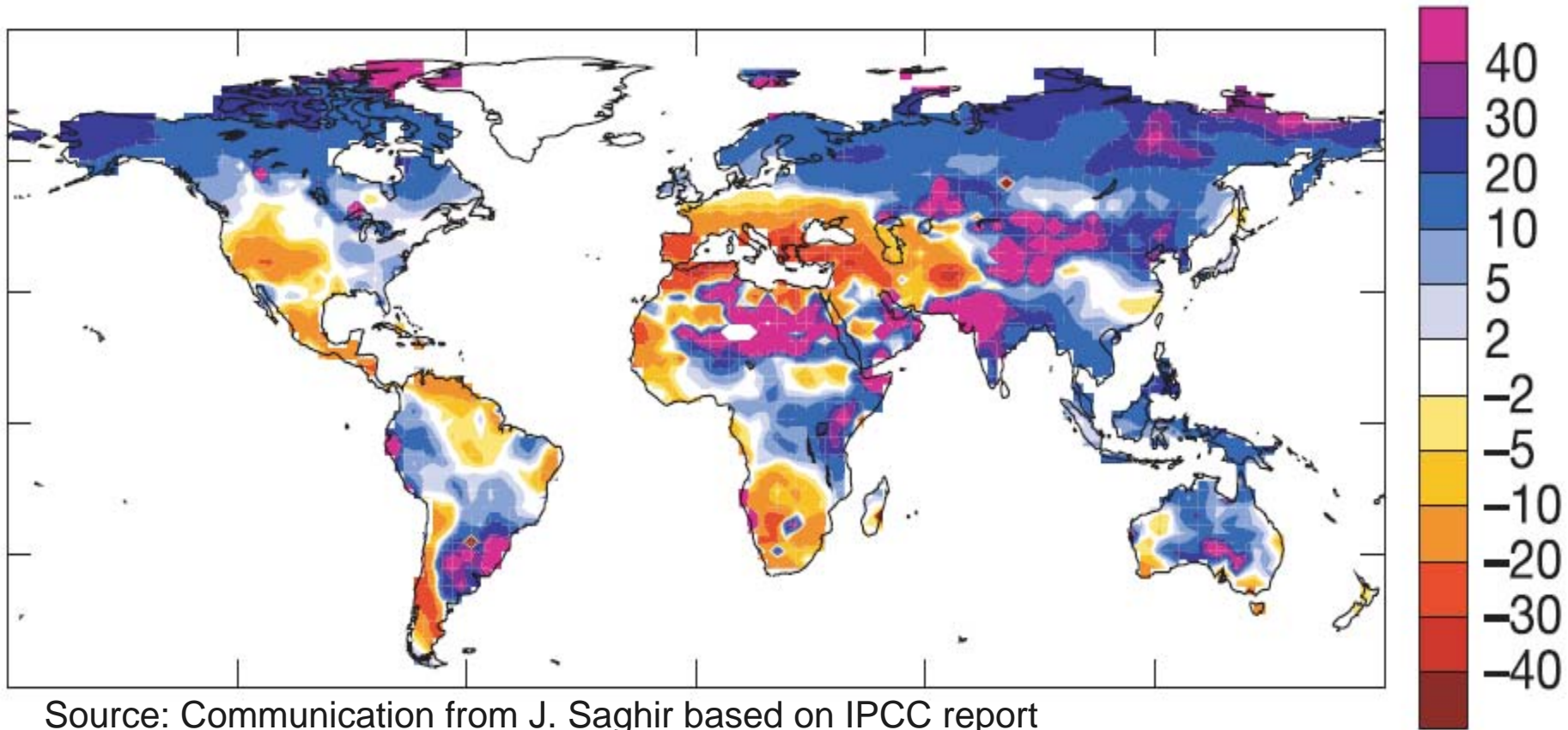
Predicted Cereal Prices & Global Temperature Increase



Source: Easterling et al., 2007. Figure 5.3: E cereal prices vs. ΔT (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)

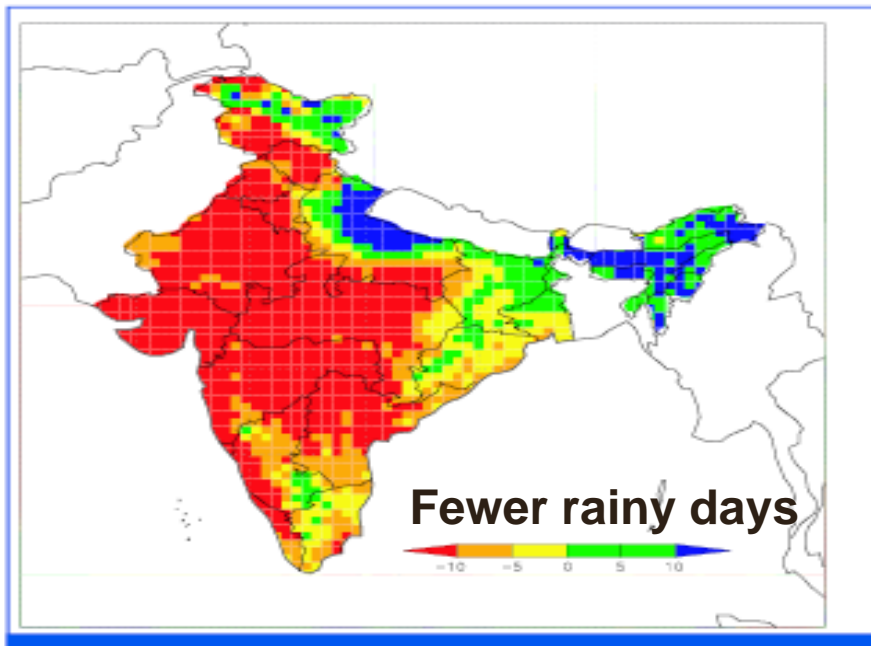


Figure 3.14: Projections of mean incremental annual number of rainy days for the period 2041-2060, based on the regional climate model HadRM2.

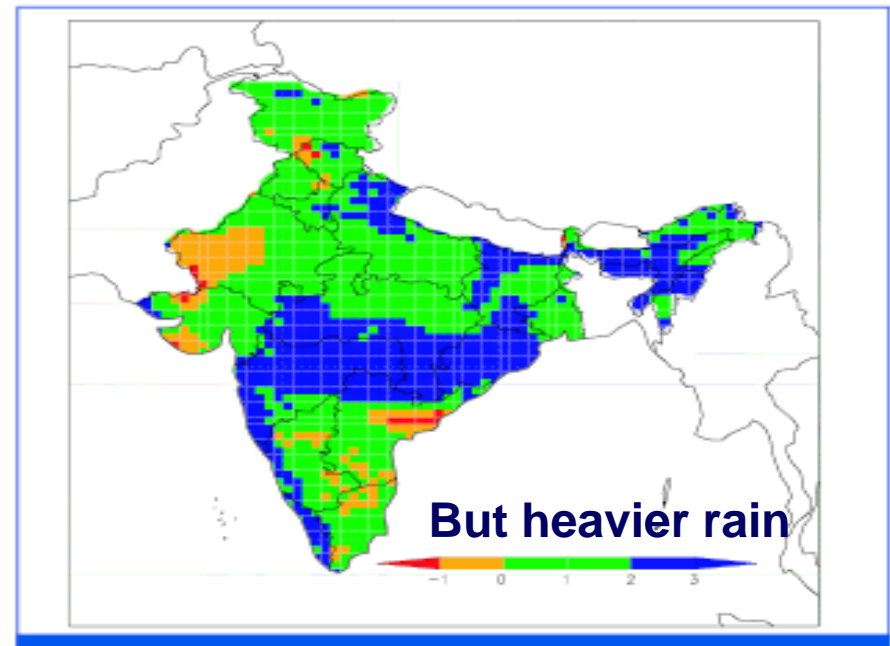



Figure 3.15: Projections of mean incremental rainy day intensity (mm/day) for the period 2041-2060, based on the regional climate model HadRM2.




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**