

Financialization of Agriculture Commodity Markets and Price Volatility

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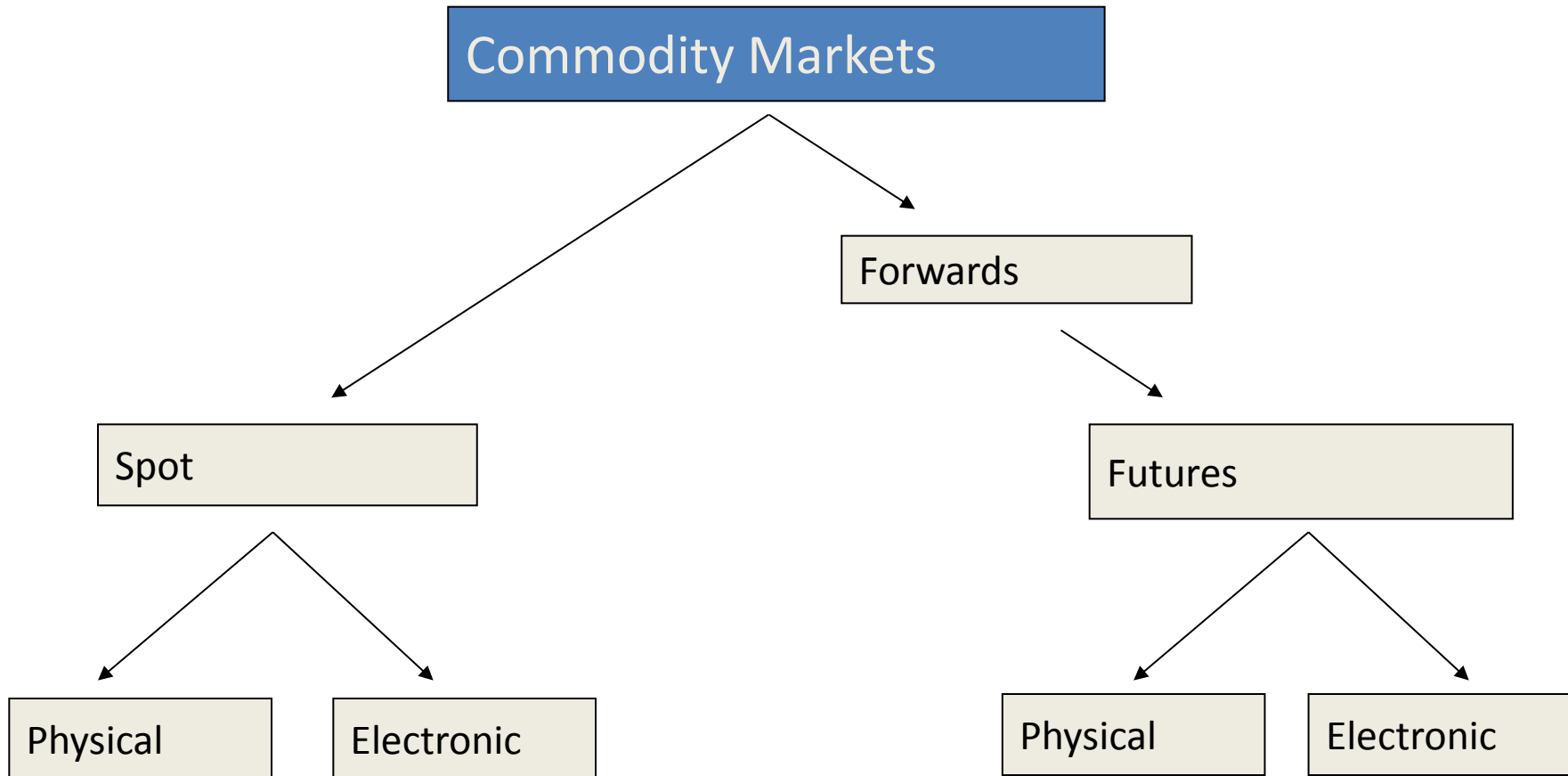
OUTLINE:

- 1. Backdrop – How Commodity Markets Work – price volatility**
- 2. Financialization – 2008 Food Crisis - Food-Feed-Fuel-Finance Conundrum - ‘new reality’ – impact on Commodity markets, Agriculture Commodity market**
- 3. Aftermath of 2008 Food Crisis – re-regulation**
- 4. Moving Forward – contained, but....**
- 5. Key Take Home Messages**

INTRODUCTION:

- **Purpose:** Two fold. (i) Consider 'financialization' of agricultural commodity markets and impact on price volatility, Food Crisis and Food Security – tomorrow's issues (ii) Given the objective and orientation of this Executive Forum, stimulate discussion at this Forum and beyond
- **Underlying theme:** policy makers, researchers, stakeholders should view the Financialization of agricultural commodity markets in proper perspective as well as understand the extent of interplay of the 'new dimensions' and dynamics and be prepared to make the necessary adjustments so as to 'get the basics and balance right'.
- **Definitions:** *Commodities – Goods that are capable of being traded/delivered, including metals, agricultural products, and energy products such as gas and oil.*
- *Financialization – the increasing role of financial motives, financial markets, financial actors and financial institutions*

How Commodity Markets Work



Commodity Futures Contract

- A **commodity futures contract** is an agreement to buy (or sell) a **specified quantity** of a commodity at a **future date** at a **price** agreed upon when entering into the contract – the futures price
- Futures investors **benefit** when the **spot price at maturity is higher** than this futures price
- Futures investors **lose** when the **spot price at maturity is lower** than this futures price

Forwards vs. Futures - in a nutshell

Particulars	Forward Contracts	Future Contracts
Trading	Traded on a private basis and bilaterally negotiated	Traded on the floor of an exchange through open outcry or electronically
Nature	Customized by the two counter parties as per their requirements	Exchange traded standardized contracts
Process	Private and negotiated bilaterally between the parties with no exchange guarantees	Transaction takes place through a clearing house which provides protection for both the parties
Margin Requirements	Involves no margin	Requires a margin to be paid

Forwards vs. Futures - in a nutshell (cont'd)

Particulars	Forward Contracts	Future Contracts
Liquidity	Less liquid as the contract prices are not transparent and there is no reporting requirement	More liquid as their prices are transparent due to standardization and market reporting of volumes and prices
Settlement	By actual delivery or offset with cash settlement. Can be reversed	Usually by closing out through offsetting of positions
Credit risk	Credit risk is substantial as the contracts are not bound by strict rules and regulations	Credit risk is largely eliminated by the use of margins (initial, additional, mark to market margins etc.)

Roles of a Commodity Exchange

- **Standardization**
- **Guarantor of all trades**
- **Provider of an anonymous auction platform**
- **Neutrality**
- **Risk transfer platform**
- **Provider of long-term price signals**
- **Market linkages and infrastructure**

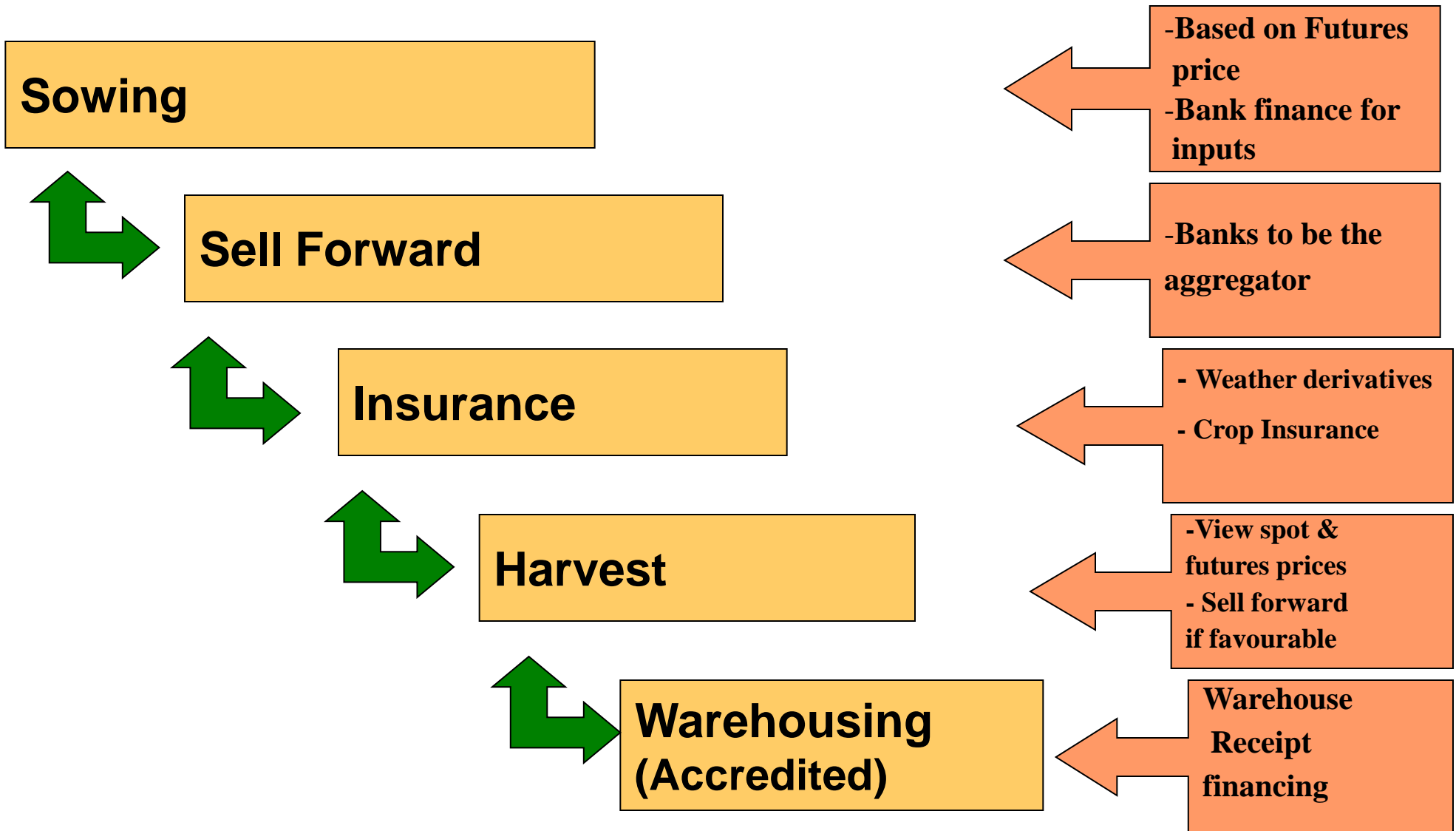
Benefit to Various Market Participants

- **Benefits to exporters and traders**
 - Hedging and forward price fixation
 - Scheduling of imports and exports
 - Hassle free price negotiation
 - Inventory management
- **Benefits to investors**
 - Portfolio diversifiers
 - Lower margins, lower risk
 - Better risk adjusted returns
- Benefits to commodity based Price Stabilization Entities and Govt. Organizations
 - Cost effective procurement for National Food Corporation (e.g. India)/Public Warehouse (e.g. Thailand)
 - Price control by delivering through exchange

Benefit to Farmers

- **Traditionally**
 - tendency to choose crops based on spot prices
 - leads to cobweb syndrome of overproduction, lower prices and income
 - subsequent shift to other crops yielding potential better returns
- **Use of futures markets**
 - above can be avoided if futures prices are used for taking cropping decisions
 - subsequent hedge on the commodity exchange to lock in the price

ASIDE: Crop Financing and Futures



Not only in developed countries, also in developing countries

Milestones in the evolution of Commodity Futures Exchanges

- **Early history (17th and 18th century):** Amsterdam (1695), Japan (1730, Dōjima rice market in Osaka).
- **Information travels faster than commodities (1840-1865):** Following the introduction of the steamship and the telegraph, information traveled faster than commodities.
- **Globalization (1865-1940):** After the installation of the transatlantic cable, futures exchanges become global institutions.
- **The post-WWII downfall (1940-1970):** Policy interventions at national and international levels and, often, outright **prohibition of futures contracts**.
- **The rebirth (1970-2000):** Following the collapse of Breton Woods numerous financial futures are launched. Options trading is improved (Black-Scholes formula); policy reforms in commodity markets remove an important impediment to futures trading; **Commodity Futures Trading Commission (CFTC)** is created; a crude oil market is established; international commodity agreements collapse.

ASIDE: Rice futures:

- The National Multi-Commodity Exchange of **India** Ltd. (NMCE) mainly trades in **sugar, spices and gold**. Futures trading of **rice was banned** by the Government in **2008** and only restarted in 2012.
- The Agricultural Futures Exchange of **Thailand** trades **rice**, with the bulk of its business in **rubber futures**. The exchange assisted the Thai government to handle some of the government's rice sales.
- There is also a commodity futures exchange in **Indonesia**, mainly trading in **rubber**. Large-scale millers and traders have discussed amongst themselves the **possibility that rice** could be traded on this exchange
- **Myanmar** uses commodity exchanges but these are based on **visual inspection of samples**, rather than specified grades, and **no futures trading** is involved

Never an Empty Bowl: Sustaining Food Security in Asia. Asia Society and International Rice Research Institute Task Force Report, Sept. 2010

- A robust **futures market for rice** should add substantial stability and transparency to formation of rice prices, which would help build confidence in the **reliability of the world rice market**. However, the successful development of a futures market depends heavily on the legal structure of the contracts and on access to modern financial markets to provide the liquidity that makes a futures market useful to traders. **Singapore seems a logical place** for a rice futures market because it can satisfy these criteria.
- **Singapore Mercantile Exchange (SMX)** announced intention to launch a rice futures in late 2011..but...

Financialization - the “new reality”?

- **Literature:** Numerous influential authors have argued that **commodities may be a profitable asset class**.
- **Dot com bubble burst end 2001** – also stock market, bonds, housing market and related complex instruments had ceased to offer attractive returns, growth of **non-traditional speculators** (institutional investors and investment banks acting as dealers – offering and entering into derivative contracts – with **only financial motives** and **no interest or knowledge of the underlying commodities nor their deliveries**
- **New players and the financialization of commodities:** Many funds (investment, hedge, pension, and sovereign wealth) began including commodities in their portfolios in order to diversify their holdings and receive higher returns .
- **The financialization of futures exchanges:** They **changed from member-holding institutions** (the equivalent of a Credit Union) to **exchange-listed companies** (the equivalent of an investment bank).
- **Liquidity:** Low policy rates, stimulus packages, government spending, and quantitative easing (not unique to commodities).
- **Technology:** Electronic trading, Commodity Exchange Traded Funds (ETFs), index funds, and information technology made commodity investment accessible .

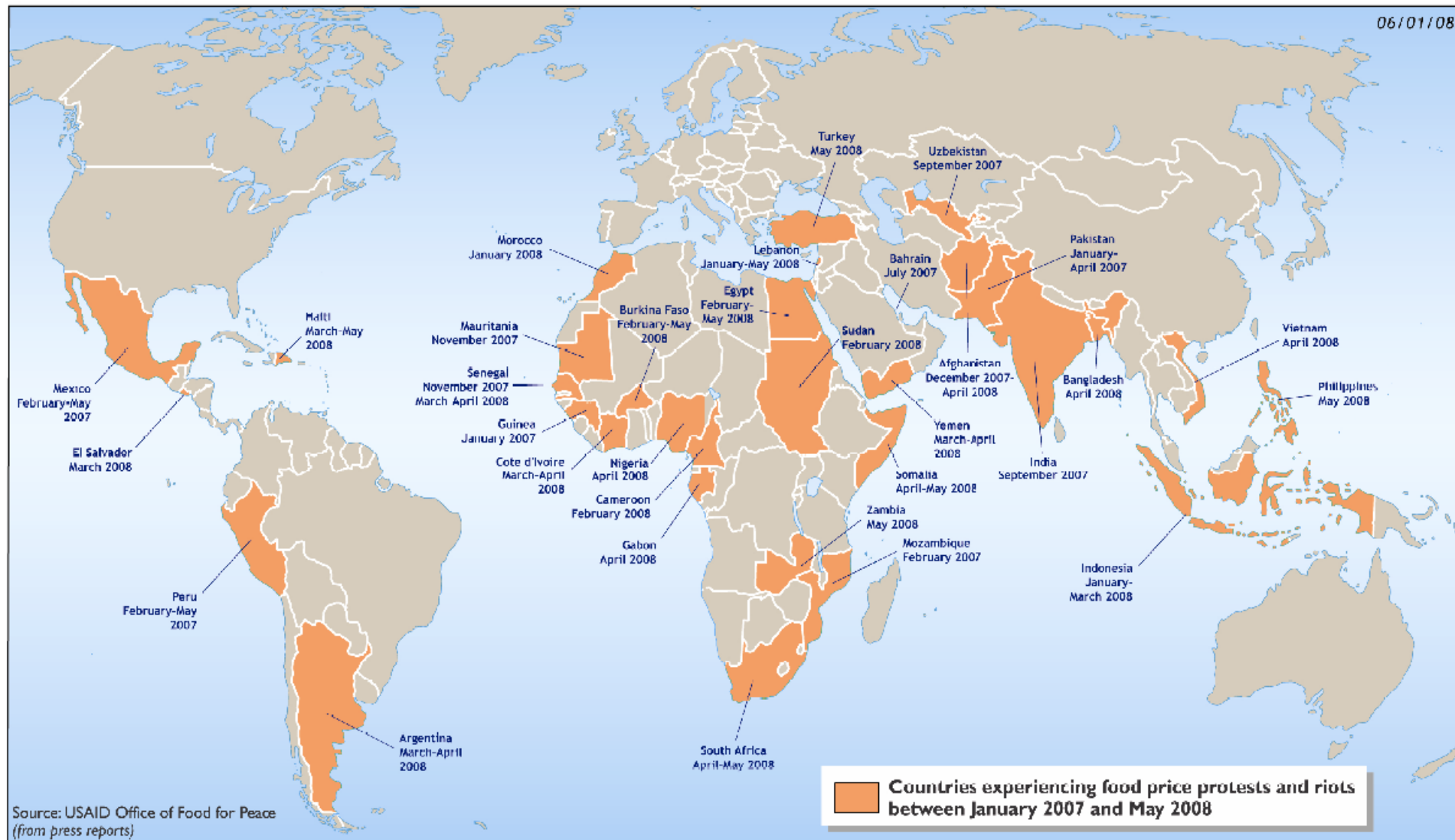
Leading exchanges for oil and agricultural commodity derivatives^a

<i>Exchange</i>	<i>Relevant derivatives</i>	<i>Relative importance</i>
Chicago Board of Trade (CBOT) - part of CME Group	Maize, soft red winter wheat - futures, options wheat-maize inter-commodity spread options	Leading exchange for soft red winter wheat and maize
Dalian Commodity Exchange (DCE, China)	Maize - futures	Most important exchange for maize in Asia
Intercontinental Exchange (ICE)	United States: cocoa, raw sugar (no. 11) - futures and options Europe: Brent, WTI - futures and options Canada: barley - futures and options OTC: crude oil (various) - swaps	Leading exchange for raw sugar and cocoa futures (ICE Futures United States) and Brent crude oil futures (ICE Futures Europe)
Kansas City Board of Trade (KCBT)	Hard red winter wheat - futures and options	Specialized exchange for wheat
Minneapolis Grain Exchange (MGEX)	Hard Red Spring Wheat Index (HRSI), Hard Red Winter Wheat Index (HRWI), Soft Red Winter Wheat Index (SRWI), National Corn Index (NCI) - futures and options	Leading exchange for hard red spring wheat
Multi Commodity Exchange of India (MCX)	Brent crude oil, crude oil, barley, wheat, feed maize, white sugar	Among leading exchanges for crude oil
New York Mercantile Exchange (NYMEX) - part of CME Group	Cocoa, raw sugar (No.11) - futures (settlement: financial) WTI, Brent, others - futures and options	Leading exchange for light, sweet crude oil futures; Among leading exchanges for other commodities
NYSE LIFFE	London: white sugar, cocoa, feed wheat - futures and options Paris: milling wheat, malting barley, maize - futures and options	European exchange for agricultural commodities
Zhengzhou Commodity Exchange (ZCE, China)	Hard white wheat, strong gluten wheat, white sugar - futures	Largest number of contracts for white sugar , but contract size is 20 per cent of that at NYSE LIFFE

Source: Websites of the respective exchanges and Futures Industry Association.

^a Concerning the six commodities: barley, cocoa, crude oil, maize, sugar and wheat.

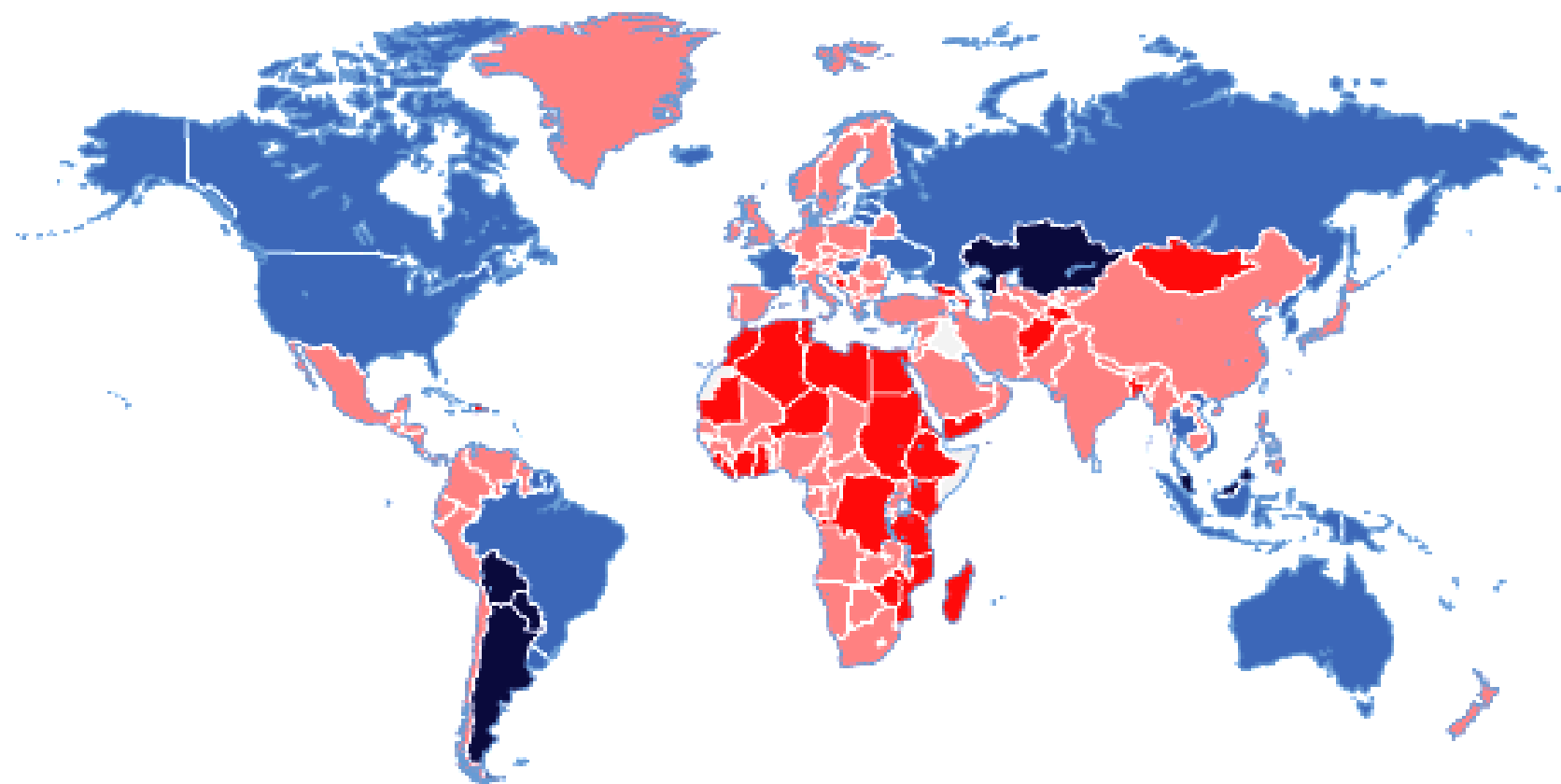
FOOD PRICE PROTESTS AND RIOTS FROM JANUARY 2007 TO MAY 2008



Source: USAID, Office of Food for Peace

2008 WORLD FOOD CRISIS: GAINERS & LOSERS

2007 - 2008 IMPACT OF PROJECTED FOOD PRICE INCREASES ON TRADE BALANCES



- Large losers (trade balance worsening > 1% 2005 GDP)
- Moderate losers (trade balance worsening < 1% 2005 GDP)
- Moderate gainers (trade balance improving < 1% 2005 GDP)
- Large gainers (trade balance improving > 1% 2005 GDP)
- No data

SOURCE: USDA

FUTURE FOOD SYSTEMS

Ambler-Edwards et al (2008) – Chatham House Report

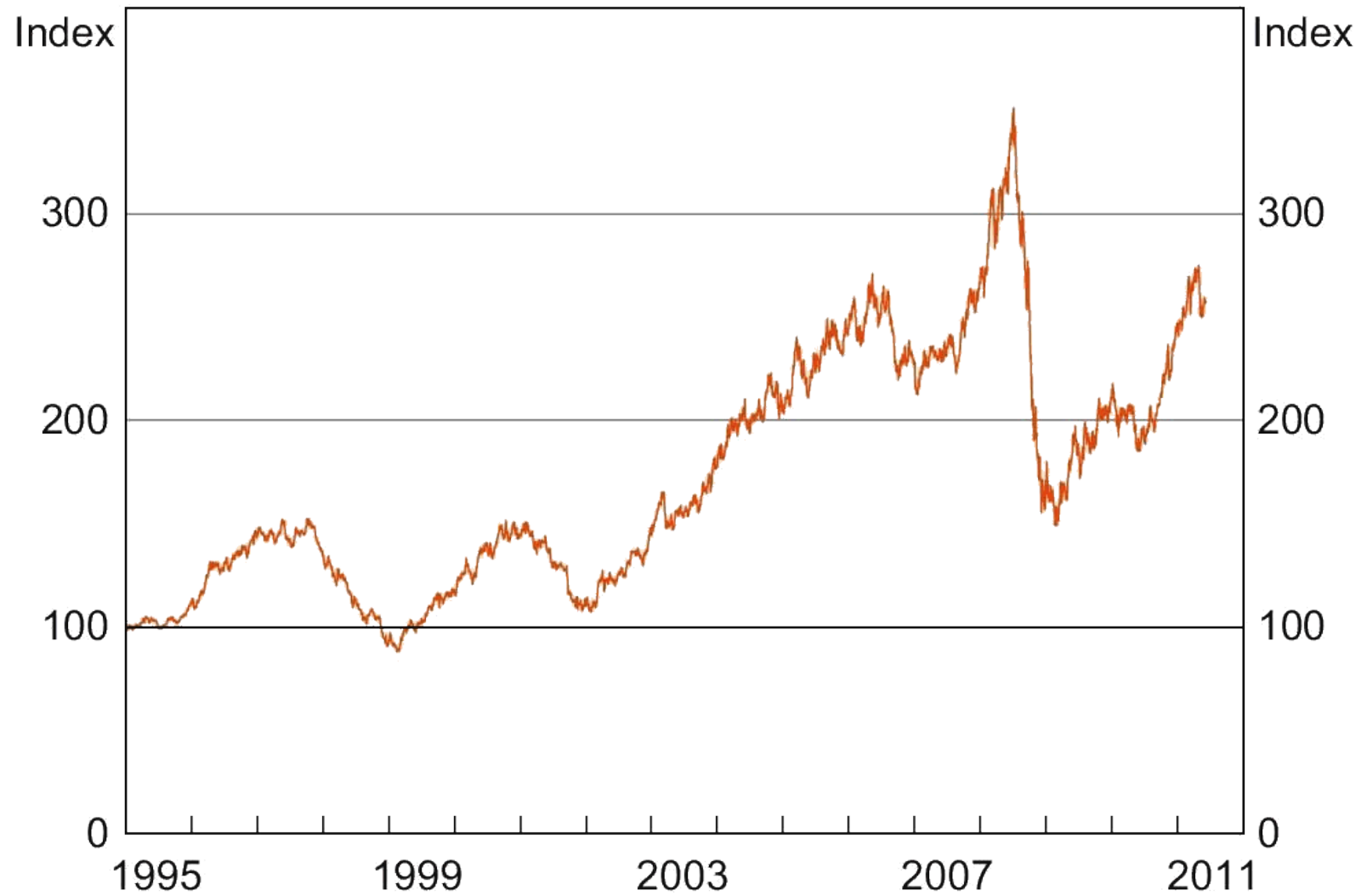
...over the next few decades, the global food system will come under renewed pressure from the combined effects of seven fundamental factors:

- Population Growth; Nutrition Transition; Energy; Land; Water; Labour; Climate Change

Consequently, supply systems going to be more uncertain and prices more volatile

Commodity Prices*

1 January 1995 = 100, daily

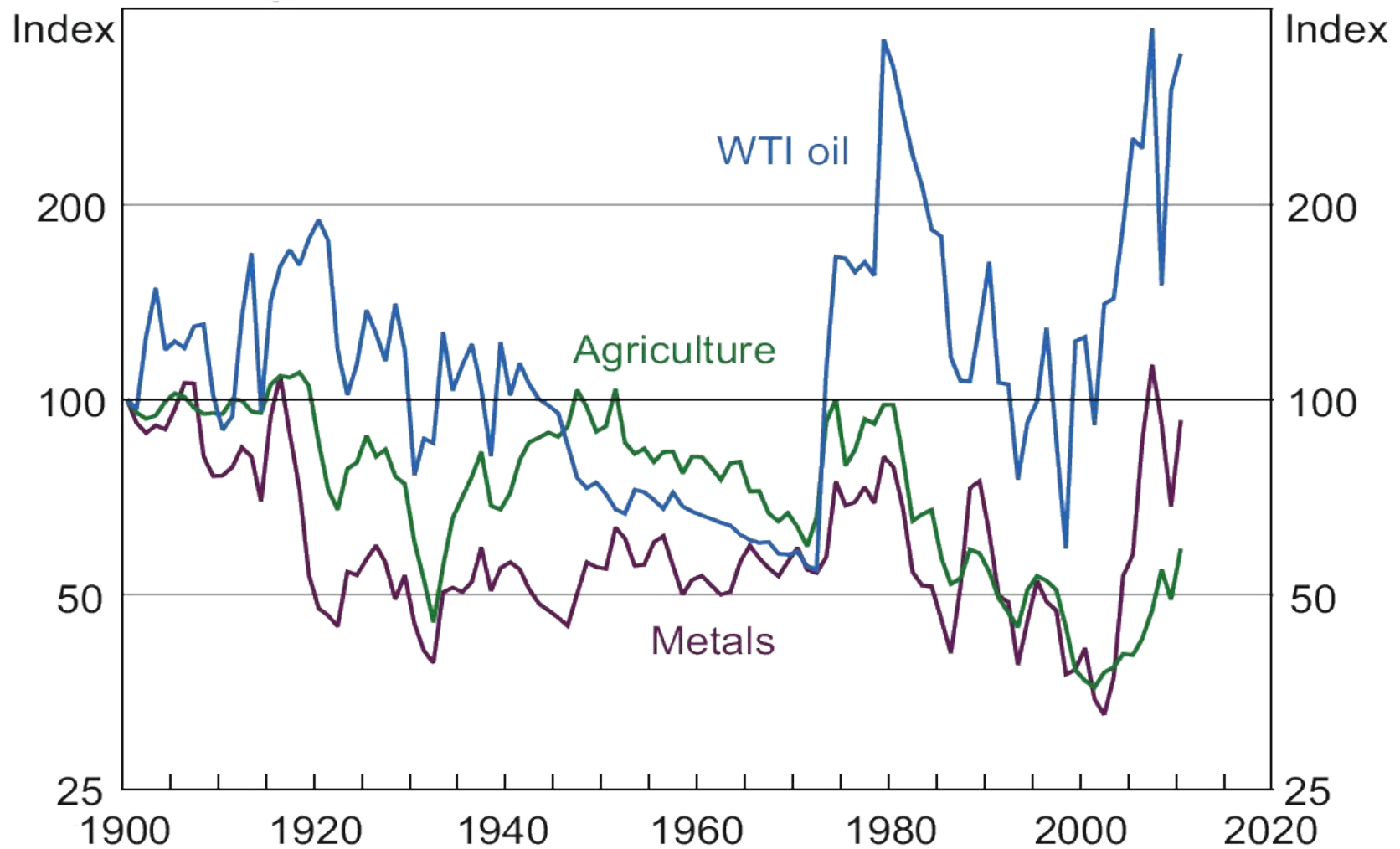


* CRB index

Source: Bloomberg

Real Commodity Prices by Sector*

Log scale, 1900 = 100, relative to US GDP deflator



* Equal weighted (geometric) indices, annual

Sources: Bloomberg; Cashin and McDermott (2002); Global Financial Data; Grilli and Yang (1988); IMF; RBA; Thomson Reuters

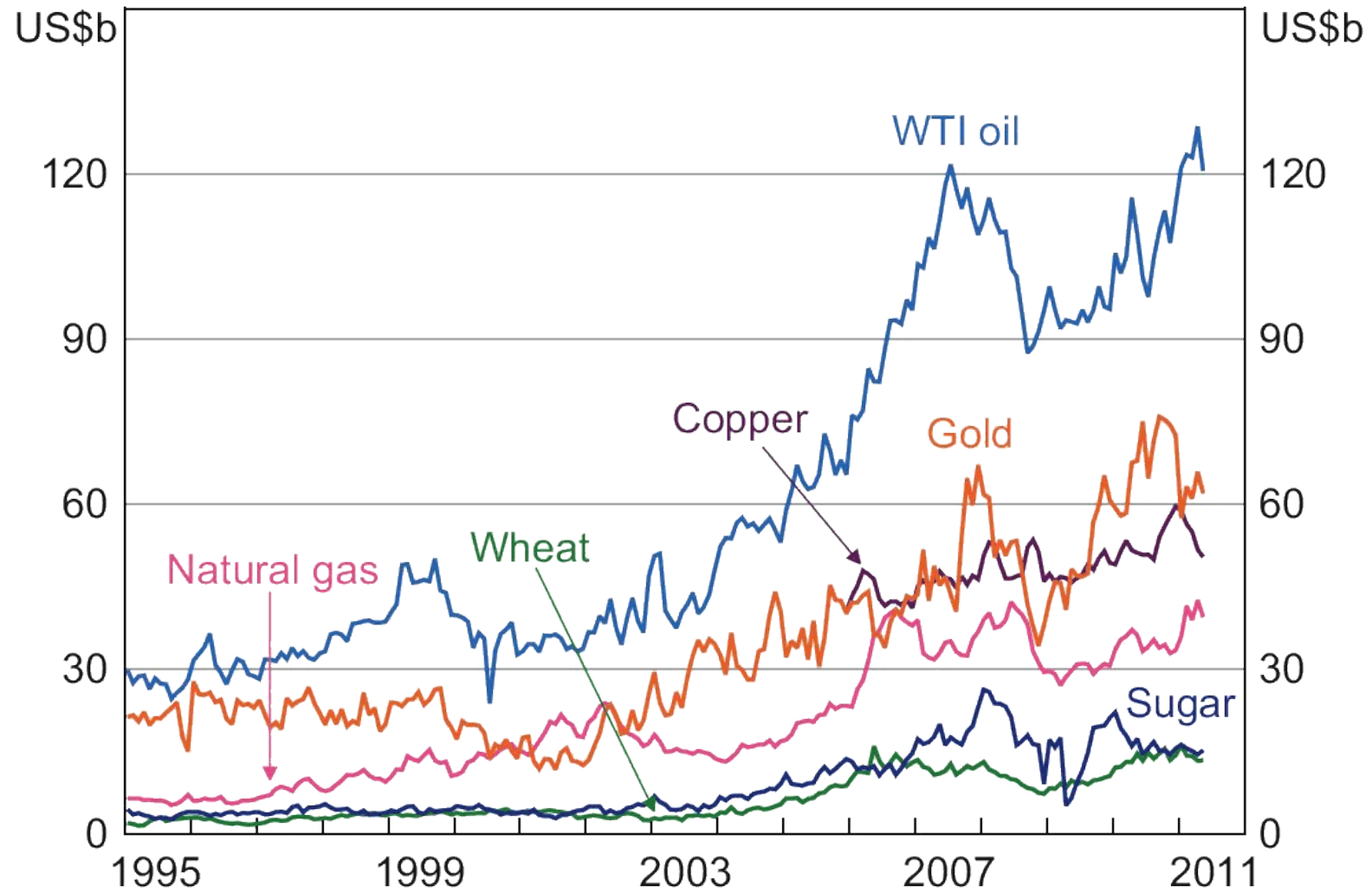
Volatility in Commodity and Other Asset Prices

Standard deviation of daily returns, percentage points

	Jan 90–Jun 07	Jul 07–May 11
Individual prices		
Natural gas	3.6	3.5
WTI oil	2.3	2.9
Sugar	2.1	2.7
Rice	1.7	1.8
Wheat	1.6	2.6
Copper	1.4	2.2
Soybeans	1.3	1.9
Gold	0.9	1.4
Individual S&P 500 companies (average volatility)	2.4	2.8
Commodity and financial indices		
S&P 500 energy index	1.2	2.3
Goldman Sachs Commodity Index	1.2	1.9
S&P 500 index	1.0	1.7
CRB index	0.9	1.5

Commodity Futures Market Size*

Value of month-end open interest, 2010 prices



* Open interest for the largest contract covering each commodity

Source: Bloomberg

Physical and Financial Market Size of Major Commodities

2009/10, US\$ billion

	Physical market(a)			Financial market (exchange traded)	
	Annual production	Annual exports	Inventories (end period)	Annual turnover	Open interest (b)
Oil(c)	2,395	206	312	22,843	193
Natural gas(d)	584	67	na	2,084	29
Coal(e)	844	124	na	24	4
Copper(e)	143(f)	44(d)	6	10,891	81
Iron ore	222	117	na	na	na
Gold(e)	104	na	na	6,249	76
Corn	130	16	23	1,093	20
Wheat	143	28	41	602	14
Soybeans	199	68	29	4,775	41
Rice	235	16	50	35	1
Sugar	81	27	14	4,425	27

(a) RBA estimates based on volumes and indicative world prices

(b) Average of open interest outstanding at the end of each month

(c) Export and inventory figures for OECD economies

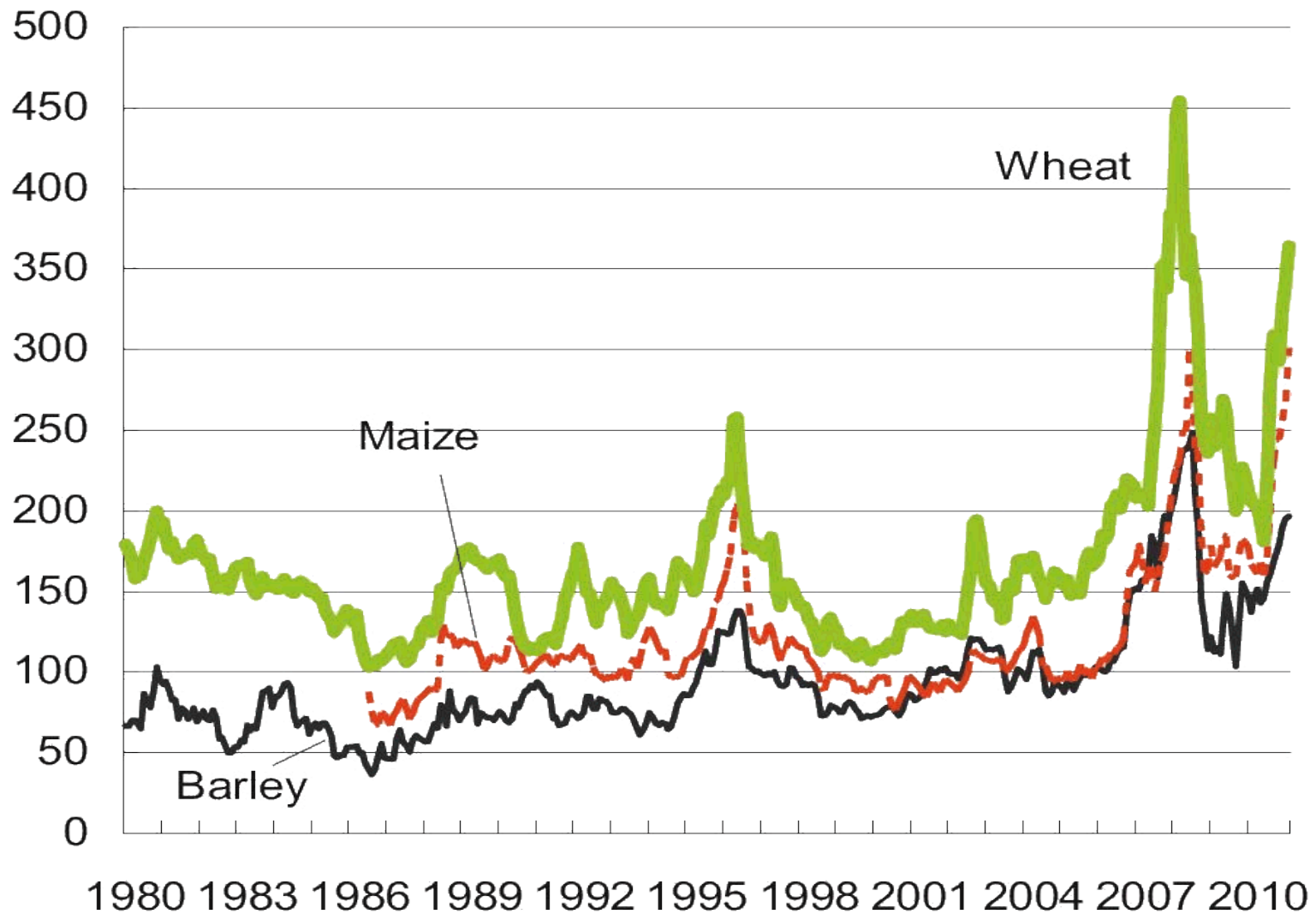
(d) Physical market data are for 2009 calendar year

(e) Physical market data are for 2010 calendar year

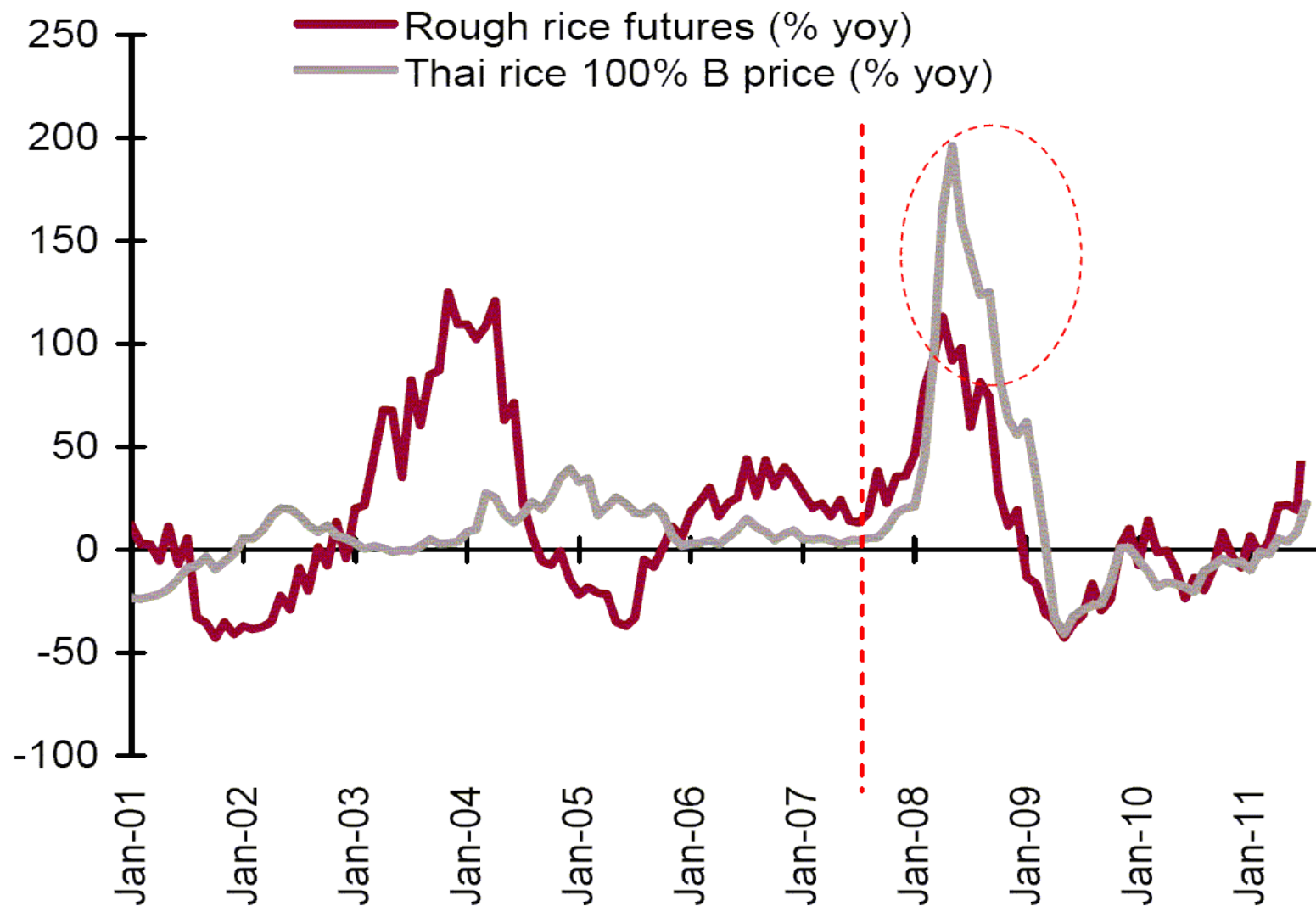
(f) This figure is for new production only and does not include scrap metal supply

Evolution of grain prices, 1980–2010

(\$ per ton)

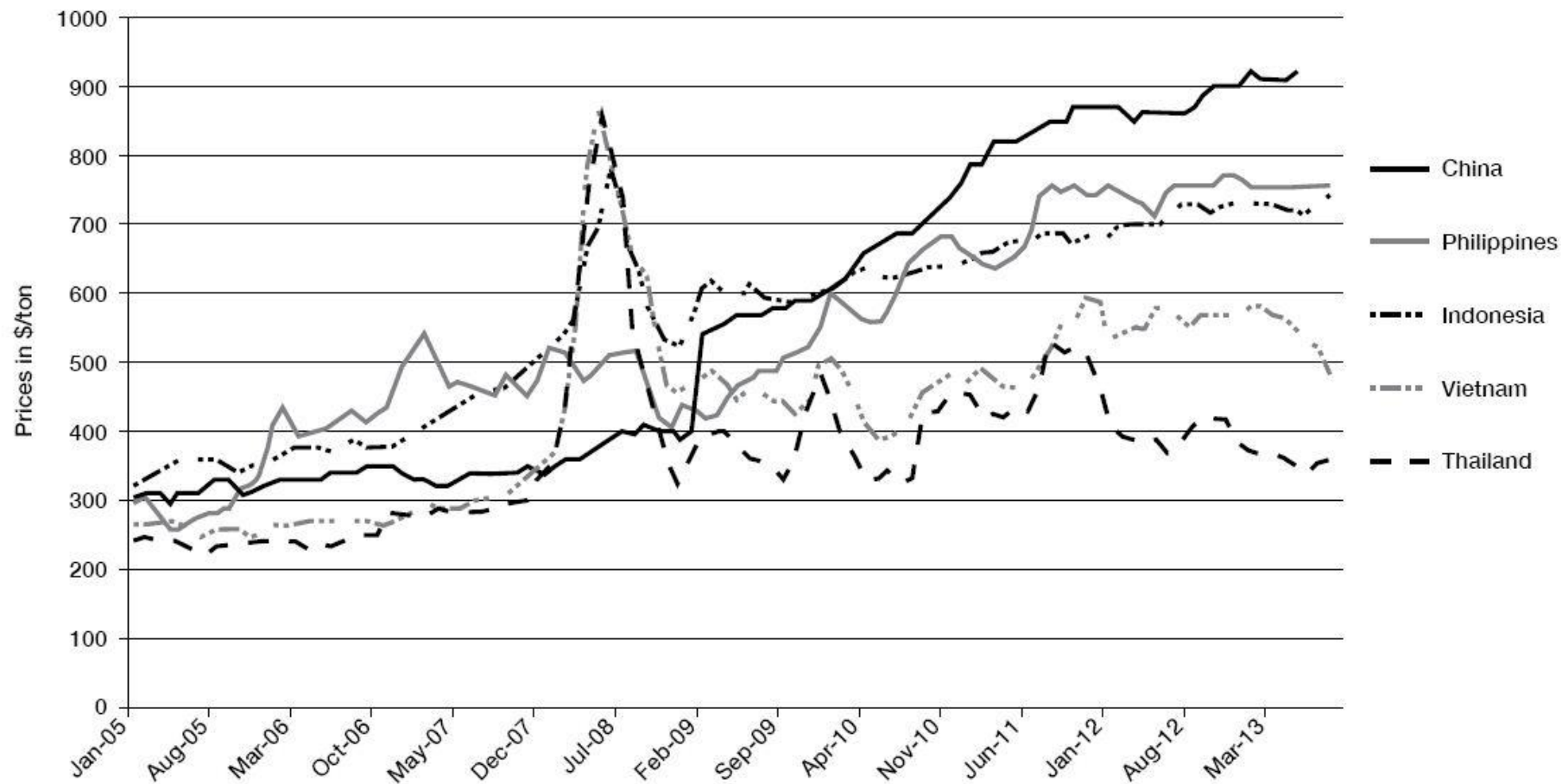


Caused by the least financialized products



- Not part of the well-known food commodity index

Average wholesale prices of rice in selected countries, \$/ton



Source: FAO GIEWS.

The inconclusive nature of the findings is not surprising given the numerous factors that affected commodity prices during the boom

	2001-05	2006-10	change
Crude oil prices (US\$/barrel)	33	75	+130%
Exchange rates (US\$ against abroad index of currencies)	119	104	-13%
Interest rates (10-year US Treasury bill)	4.7	4.1	-14%
Funds invested in commodities (\$ billion)	30	250	+730%
GDP growth, low and middle income countries (annual %)	5.0	5.8	+16%
Industrial production low and middle income countries (annual %)	6.3	7.1	+13%
Stock-to-use ratio of maize, wheat, and rice (months of consumption)	3.2	2.5	-20%
Biofuels production (million of barrels per day equivalent)	0.4	1.3	+200%
Average yields of wheat, maize, and rice (tons/hectare)	3.8	4.0	+7%
Growth in yields (% change per annum)	1.4	1.0	-32%
Natural disasters (droughts, floods, and extreme temperatures)	374	441	+18%

Views wrt role of speculation and volatility of commodity prices

ON THE ONE HAND

- **Krugman:** “... a futures contract is a bet about the future price. It has no, zero, nada direct effect on the spot price” (*NY Times*, June 23, 2008).
- **Wolf:** “if speculation were raising prices above the warranted level, one would expect to see inventories piling up rapidly, as supply exceeds the rate at which oil is burned. Yet there is no evidence of such a spike in inventories” (*FT*, May 13, 2008).
- **Frankel:** “The evidence does not support the claim that speculation has been the source of, or has exacerbated the price increases” (weblog, July 25, 2008).
- **Verleger:** “... the 2007/08 crude oil price spike was caused by the incompatibility of environmental regulations with the global crude supply. Speculation, he argued, had nothing to do with the price increases” (CFTC testimony, August 5, 2009).

ON THE OTHER HAND

- **Soros:** “... commodity index trading is intellectually unsound, potentially destabilizing, and distinctly harmful in its economic consequences” (*US Congress testimony*, June 3, 2008).
- **Calvo:** “Increases in commodity prices during 2007/08 were a result of portfolio shift against liquid assets by sovereign investors and sovereign wealth funds, partly triggered by lax monetary policy” (weblog 2008).
- **Rubini:** “Improving fundamentals ... justify oil going from \$30 to maybe \$50. The other \$30 is all speculative demand feeding on it— speculation and herding behavior.” *FT*, November 1, 2009).
- **Khan:** “While market fundamentals played a key role in the run-up of the oil prices after 2003, the price increase of 2008 was a price bubble.” (2008)

UNCTAD – 2009 Trade Development Report: *‘the trend towards greater financialization of commodity trading is likely to have increased the number and relative size of price changes that are unrelated to market fundamentals’*

Fundamentals (in relation to agricultural commodities)::

Demand side – population increase, income growth, changing diets, biofuels

Supply side – yield growth, bad harvest (weather, pest & disease), price of inputs, stock/reserves level

Others – hoarding (at national, firm and household levels), value of USD (exchange rates)

Recall our focus – financialization/non-traditional financial speculators in the agricultural commodity markets and their impact, especially on price volatility and consequences

Post 2008 Food Crisis – Closer look at **Derivative Instruments**:

- Commodity Futures Contract or **commodity futures**
- **Swaps**
- **Option or Option Contract**
- **Subcategories** – based on different variables (price, date, currency) and different underlying commodities

Trading of derivatives – two broad categories of markets – commodity exchange and **over-the-counter (OTC)** Trading [OTC traded privately, outside of transparent venues like exchanges – not guaranteed by clearing house with collateral].

Lehman Brothers, party to **134,000 derivative contracts** of all kinds without sufficient collateral just before it **collapsed in September 2008**.

Critical analysts linked the **steep fall of commodity prices** in the second half 2008 with the **withdrawal of non-traditional speculators' money** from the financial commodity markets arising from the collapse of Lehman Brothers (and scrutiny of OTCs)

The total of OTC commodity derivatives trading, covering oil, metal and agricultural commodity derivatives was valued at **\$4.4 trillion gross notional amount outstanding in December 2008**

The largest commodity **swap dealers** are **large banks and investment banks** – Bank of America, Goldman Sachs, Citibank, Deutsche bank, HSBC, Morgan Stanley, and J.P. Morgan

Goldman Scahs, J.P. Morgan, Bank of America (that now owns Merrill Lynch), Citigroup and Morgan Stanley were party to **96% of the \$293 trillion in OTC** derivatives trade made by the 25 US Banks holdings by 31 December 2009.

Major European players in the derivatives markets are Credit Suisse, Deutsche bank, HSBC, Robobank and UBS.

In 2009, the largest US Banks earned at least **\$28 billion in derivative trading** – speculating as swap dealers, trading in own account, designing and brokering derivatives for a fee, and offering commodity index related services as well as from interests on loans they offer to speculators or hedgers.,

Price Volatility and re-regulation:

After the dust have settled,

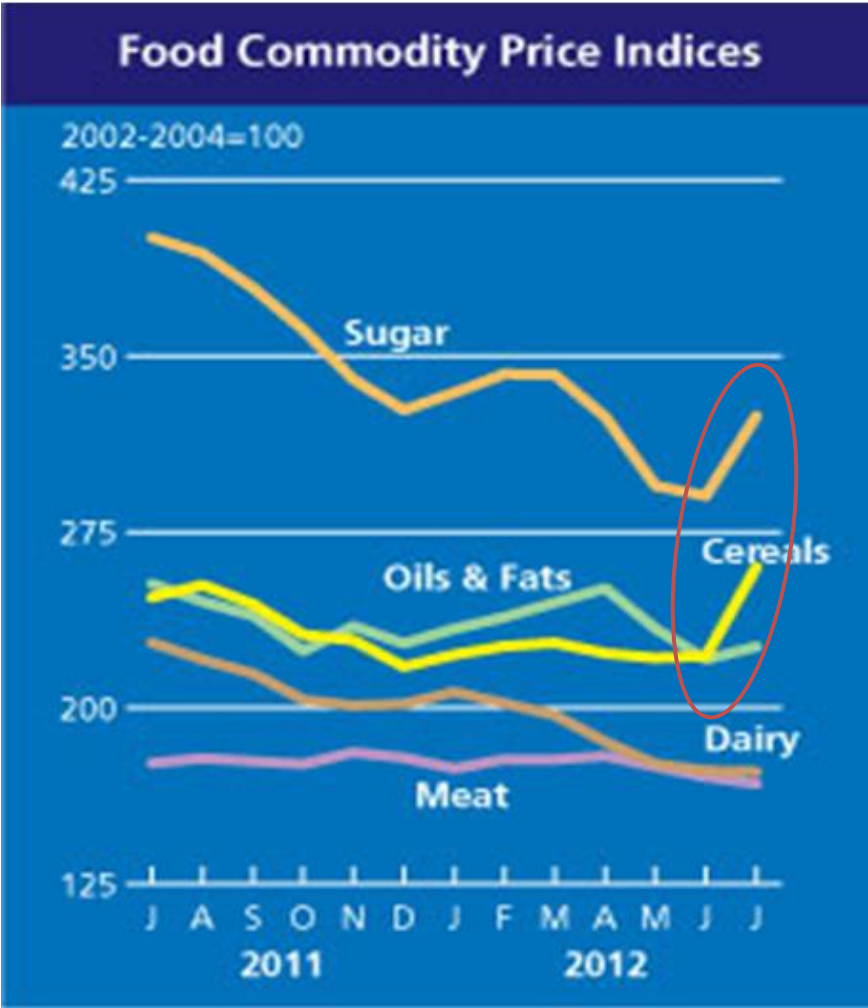
- Food price increases in 2007-2008 – resembled what was defined by US Commodity Exchange Act as ‘**excessive speculation**’. European Commission concluded that ‘there seems to be an overlap between periods of high prices and increased volatility’.
- FAO argued that volatility in itself is again attractive to investors as ‘**the wider and more unpredictable the price changes in a commodity are, the greater is the possibility of realizing large gains by speculating on the future price movements of that commodity. Thus, volatility can attract significant speculative activity, which in turn can initiate a vicious cycle of destabilizing cash prices**’.
- It was pointed out that a contributing factor was the deregulation of commodity markets as commodity financial markets expanded and there is an **obvious need for re-regulation**

In **January 2010, President Obama** introduced a proposal (‘Volcker Rule’) that would prevent banks from trading with their own money on the commodity financial market..

EU – ‘Speculating in Basic foodstuffs is a scandal when there are a billion starving people in the world”

However, US and EU decisions on re-regulation of derivative markets - often frustrated **by fierce lobbying of financial industry and parties with vested interest** – fuelling government fear uncoordinated action will result in the flight of commodity financial industry to another country.

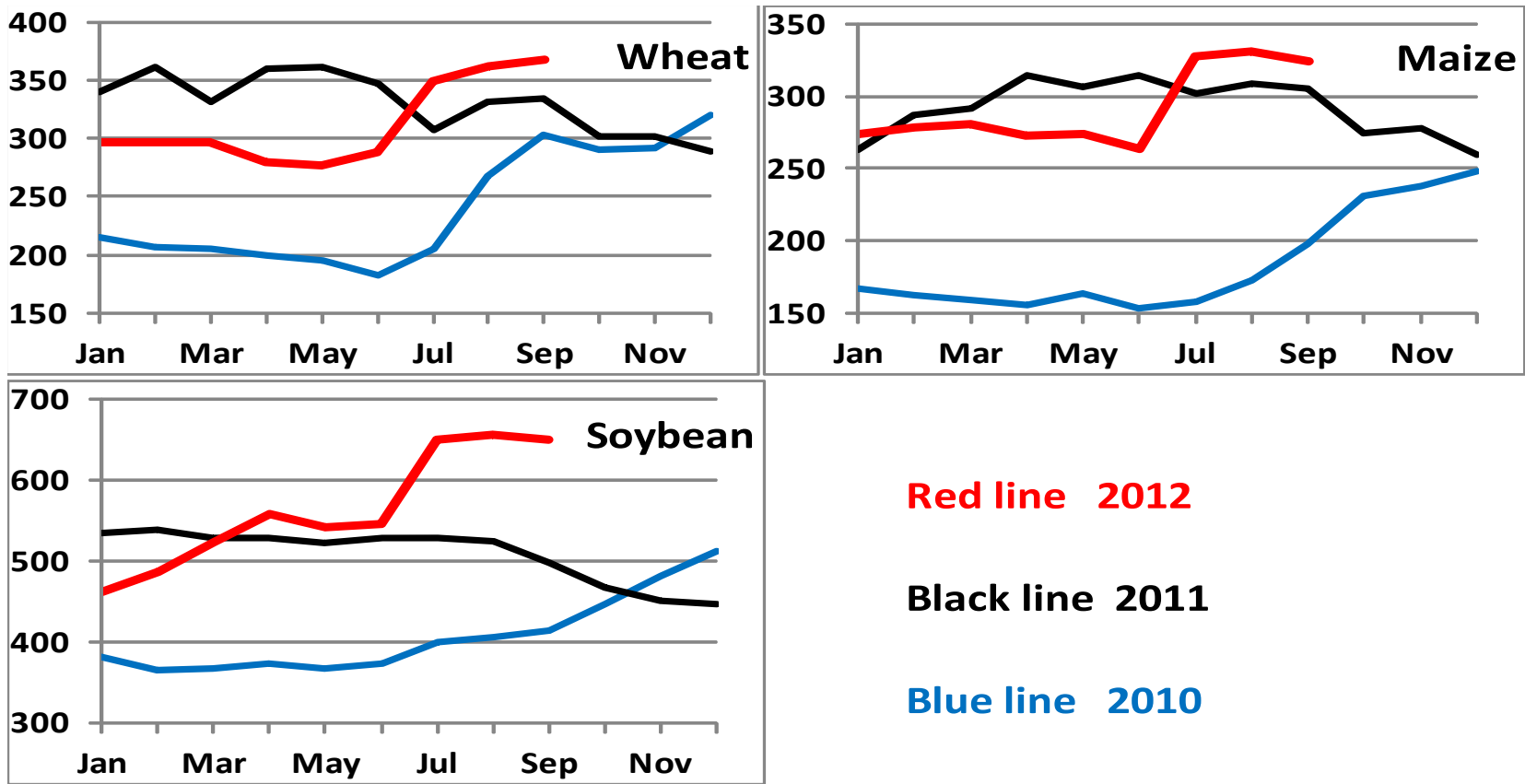
FAO'S FOOD PRICE INDICES BY CATEGORIES – 2008 -2012



Source: FAO (2012)

2012 CONCERN OF BREWING FOOD PRICE CRISIS

2012 prices in summer seemed like in 2010/11 (as well as 2008)
crisis
(world market prices, USD/tonne)



RECENT CONCERN OF BREWING FOOD PRICE CRISIS

FALSE ALARM - No Food Crisis?

- **Food Prices expected to remain high**

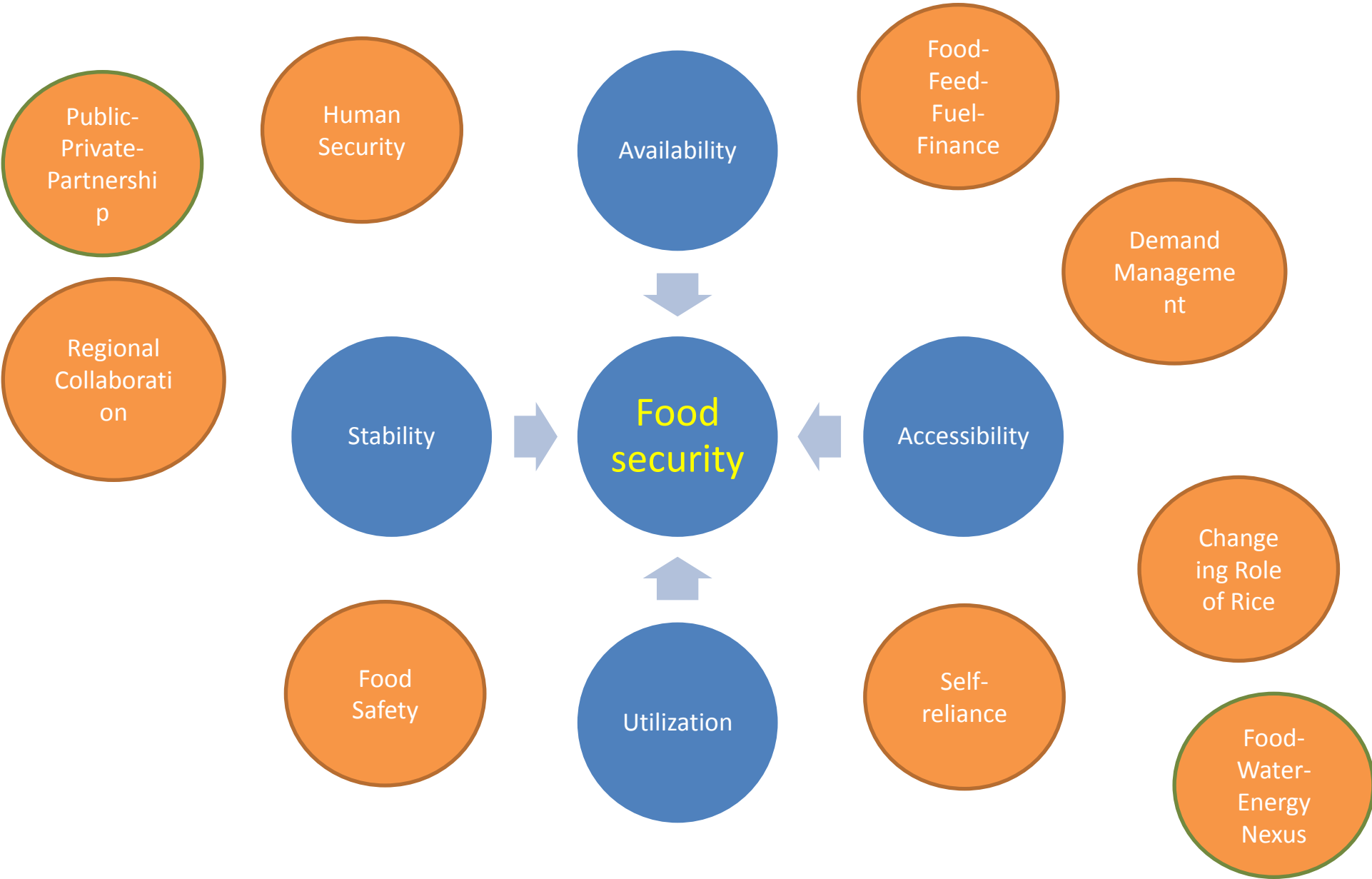
- Global **maize** & **wheat** market balances tight and so vulnerable to any unexpected negative event (e.g. export restriction)
- **Rice** situation more stable (large stocks, and export bans did not happen this time)

- In spite of high prices, **market conditions and fundamentals very different from 2007/08**, scenario most notably:

1) slower econ. growth => reduced demand; 2) Lower oil prices than in 2007/08; 3) much reduced speculative fund in food futures; 4) deceleration (if not contraction) in maize use in ethanol; 5) freight rates near record lows; and 6) fertilizer prices well below 2007/08.

BUT need to be vigilant ...

ASIDE: FOOD SECURITY - FROM TRADITIONAL TO NEW DIMENSIONS



Key Take Home Messages:

- ☐ Financialization was not the main culprit of the 2008 food price crisis, it played a part
- ☐ Limiting access to or investment by commodity index funds and derivative trading have avoided a rerun of crisis in early 2011/12 (rice was the saviour) BUT may not prevent the next food price crisis
- ☐ May have unintended consequence (Kaminska 2010)
- ☐ The anatomy of the crisis shows that the dynamics that generated the crisis was not so different from what we see in a financial crisis
- ☐ Domestic food prices may be less volatile – being shielded from international markets by pricing policy interventions
- ☐ Interaction of new dimensions and dynamics need too be understood
- ☐ Above all need to aware and be Vigilant!

THANK YOU !



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