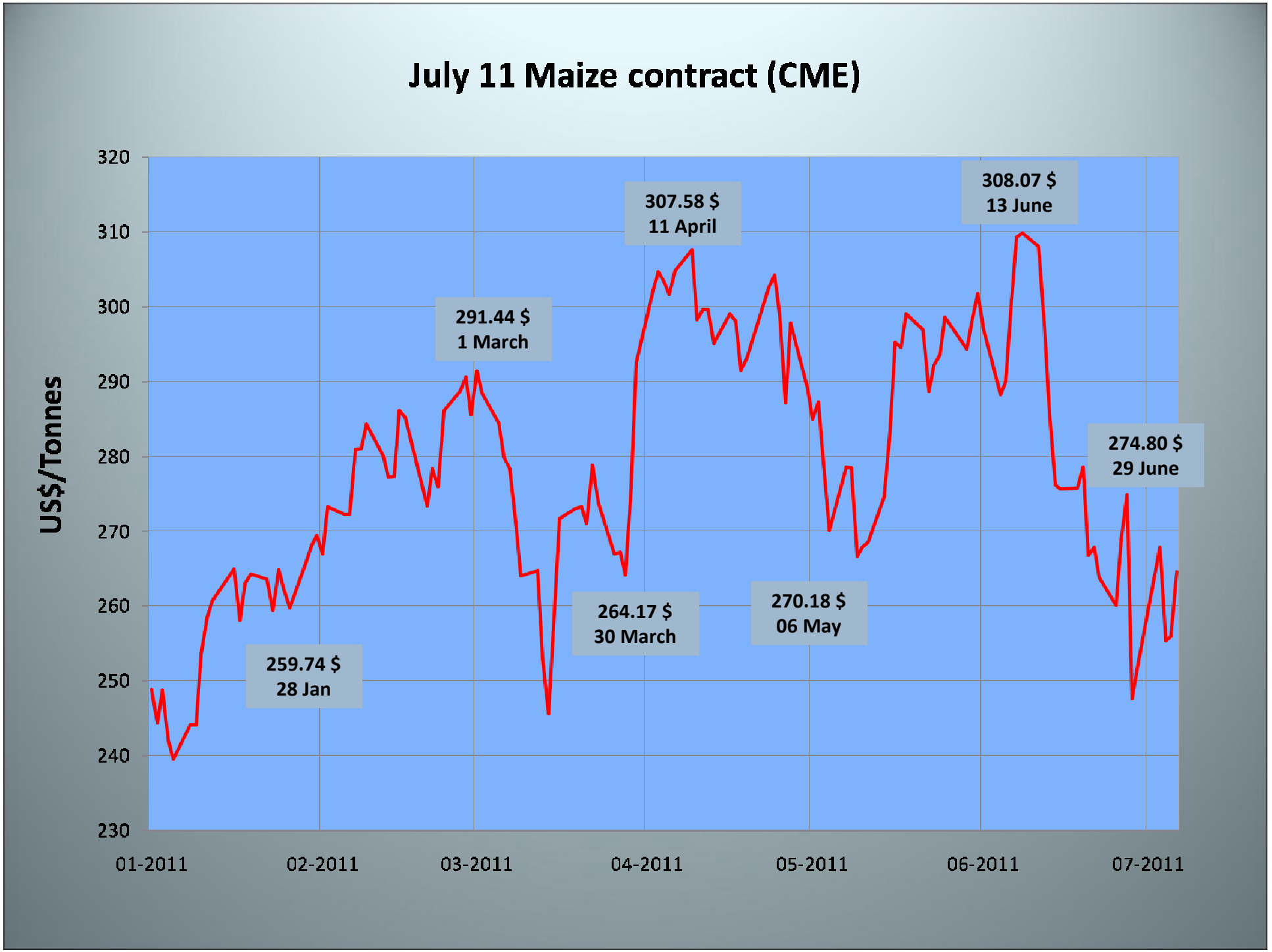
Agricultural Futures Markets

The volatility question


July 11 Maize contract (CME)
US$/Tonnes
320
310
300
290
280
270
260
250
240
230
01-2011
02-2011
03-2011
04-2011
05-2011
06-2011
07-2011
259.74 $
28 Jan
291.44 $
1 March
264.17 $
30 March
307.58 $
11 April
270.18 $
06 May
308.07 $
13 June
274.80 $
29 June

What are futures markets?

1) Centralized under an exchange
2) Venue for transferring risk
3) Center for price discovery
4) Central counterparty to all transactions
5) Provider of trading instruments

1) Centralized exchange

- Futures cannot be traded or transferred off-exchange as equities/bonds can
- In 1936, the United States Commodity Exchange Act specified all futures market orders be directed to centralized exchange for trade execution
- All global/domestic futures trading occurs on an exchange

2) Risk Transfer

Offsetting a position in the physical market by making an opposite futures contract purchase or sale

Risk averse traders (hedgers) transfer price exposure to risk takers (speculators)

Farmer selling harvest time futures against expected production is a short hedger

Miller buying wheat futures against inventory needs is a long hedger

Futures are proxy instruments held until making the eventual transaction – at which point – they are closed out

3) Price discovery

- Price at which a buyer(s) and seller(s) agree to buy or sell - or “exchange” futures contracts at any one point in time
- Price discovery is a dynamic process as new information is always being gathered by market participants
- Price discovery is an important informational component of futures markets – Price tells a story

4) Clearinghouse key element of futures markets

- Clearinghouse "breaks" every transaction (called a *novation*)
- Clearinghouse becomes the buyer to every seller and the seller to every buyer
- Clearinghouse is the counterparty to every trade
- As central counterparty, Clearinghouse is the financial guarantor of the futures exchange

Clearinghouse is always even – holding equal number of buys and sells – zero price exposure

5) Futures trading instruments

Buyers and sellers in futures marketplace transact in futures contracts:

- purchase and sales agreements created by the exchange with standardized terms/obligations:
  - Quantity
  - Quality
  - Delivery months/periods
  - Price basis ($/bu; €/MT)
  - Delivery method

4) Futures contract example – EU (euronext) corn

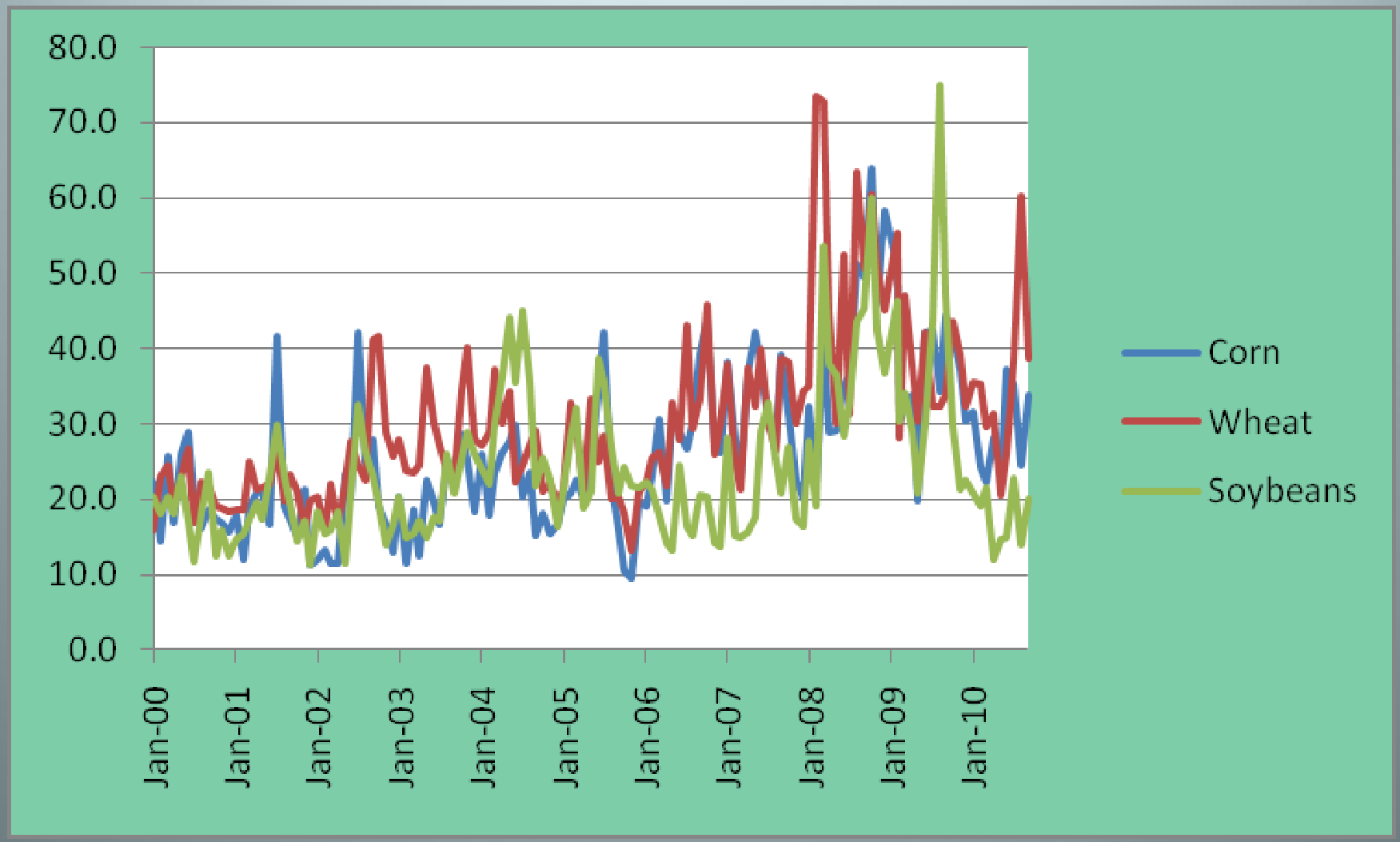
Quantity:	50 MT EU origin corn
Grade:	Sound, Fair, Merchantable Qlty
Months:	Jan, Mar, June, Aug, Nov
Price basis:	Euros per MT
Min price tick:	25 euro cents (€12.50)
Dlvy method:	WHR in store public silo Bayonne, Bordeaux, Blaye, Nantes

4) Futures contract example – CME yellow corn (maize)

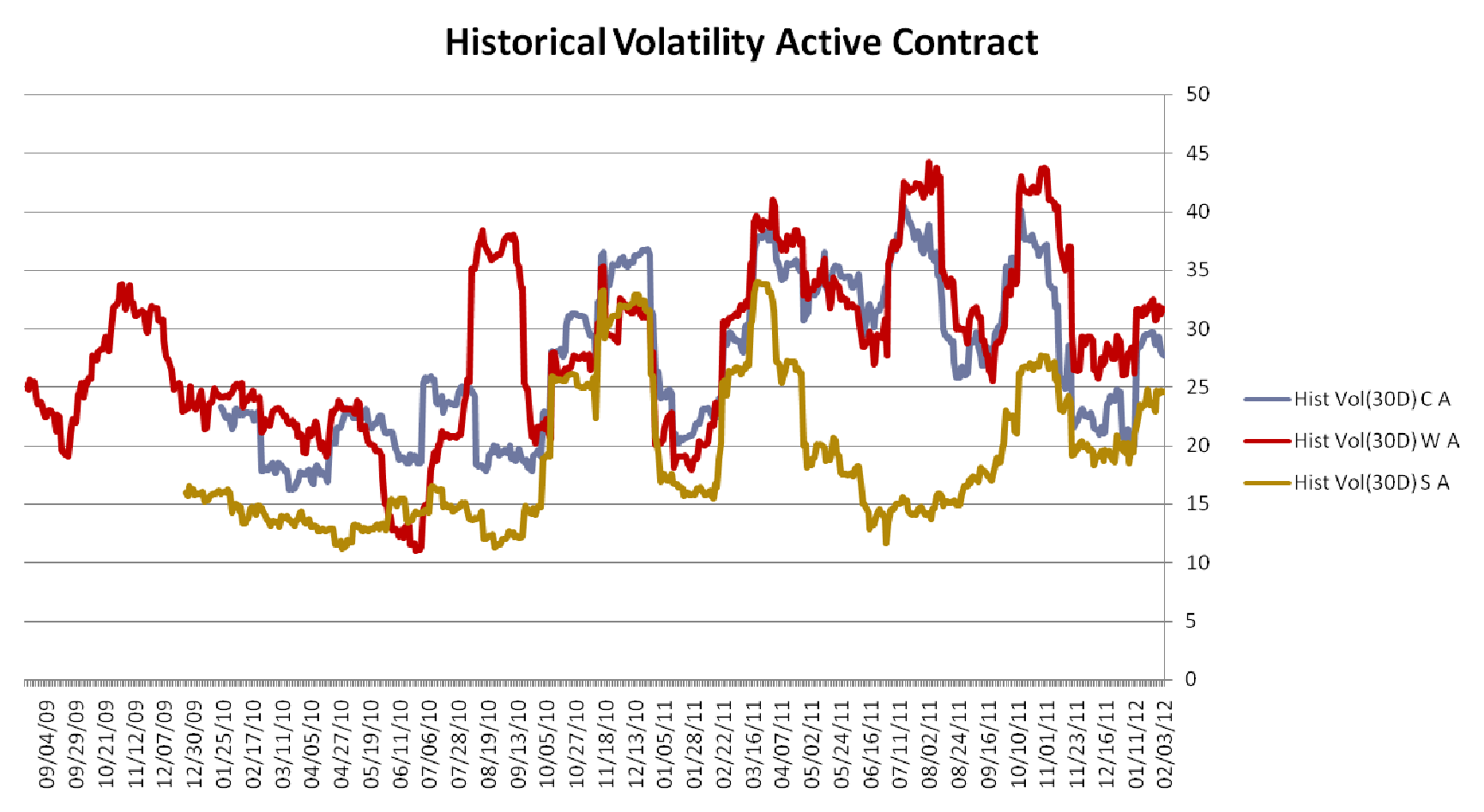
Quantity:	5000 bushels (127MT)
Grade:	No. 2 YC (USDA grade)
Months:	Mar, May, Jul, Sep, Dec
Price basis:	$/bushel
Min price tick:	1/4 □ ($12.50 per contract)
Delivery method:	Shipping certificates Chicago, Illinois River

10 year Ag volatility

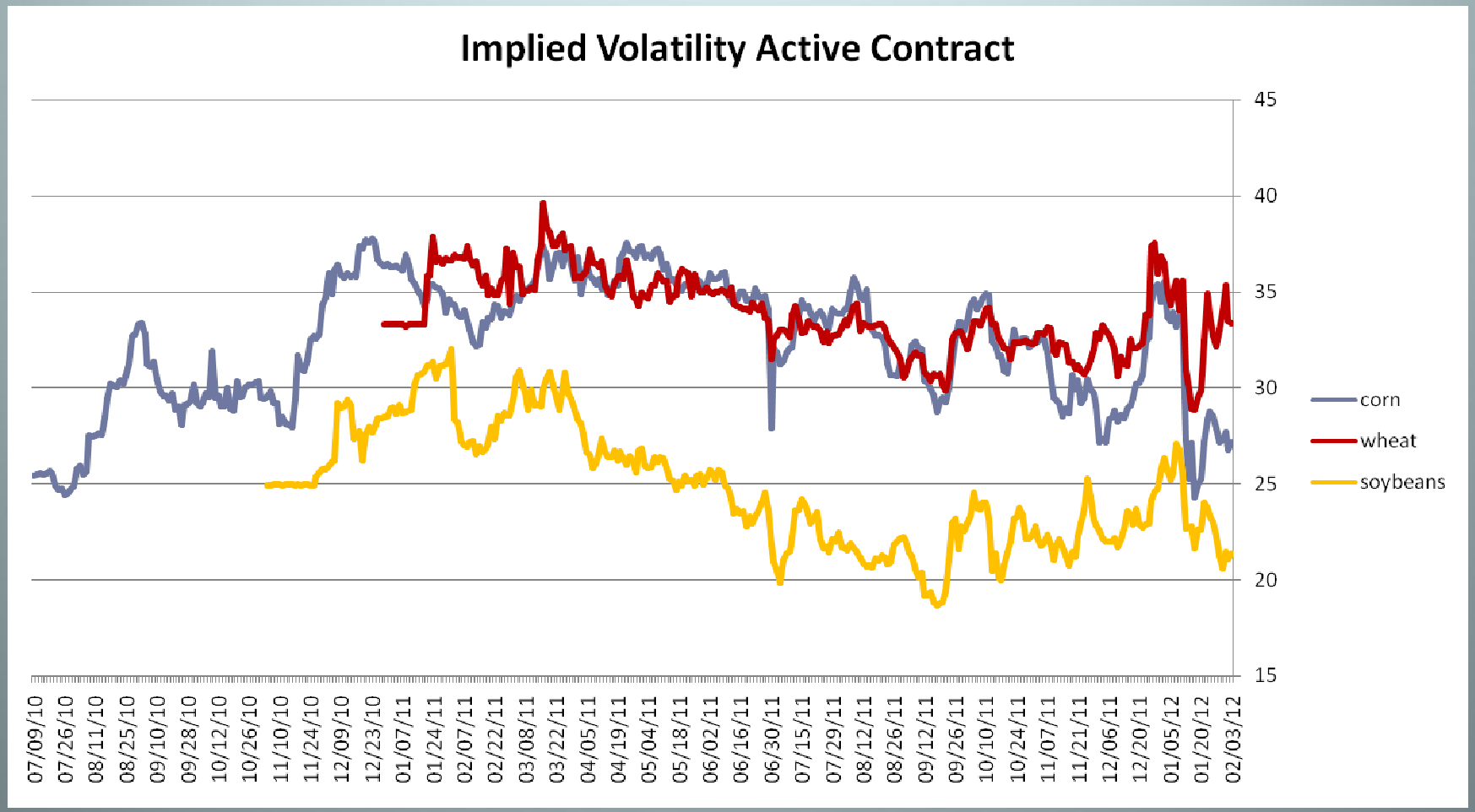
(source CME)



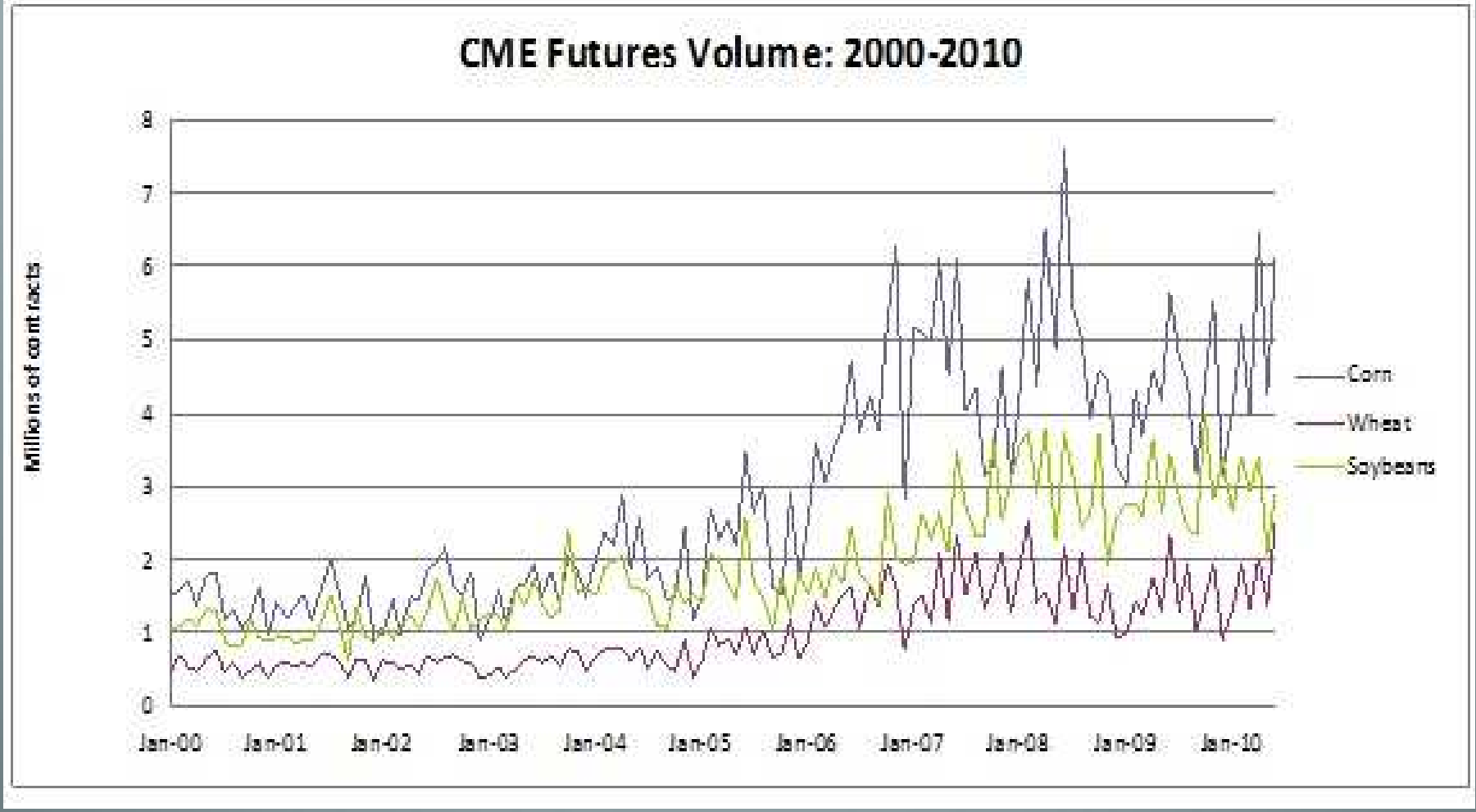
Historical Volatility since 2009



Implied Volatility – derived from *at the money* options



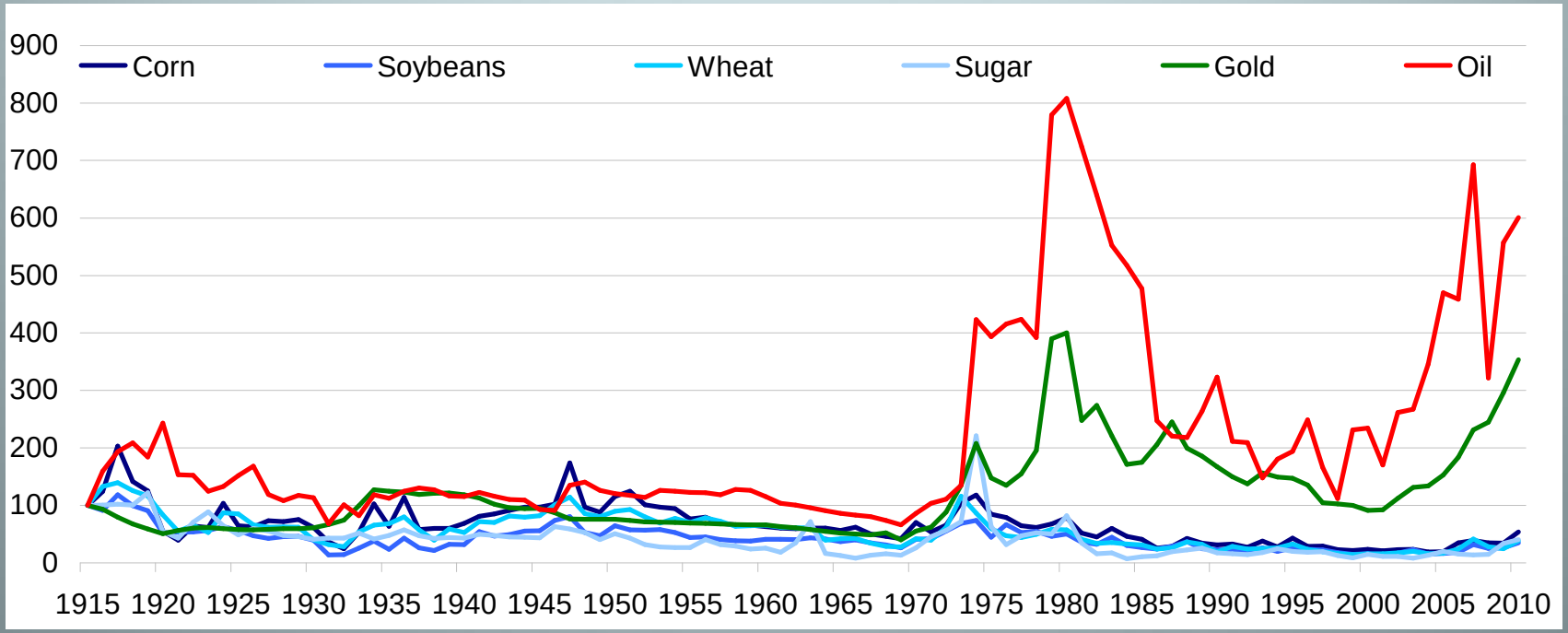
Futures volume



Dramatic rise in Ag price volatility
macro factors

- Markets liberalization and decline of price supports
- Diversion of foodstuffs into fuel products
- Rising demand for food in emerging markets
- Under-investment in agriculture
- Climatic and geological events
- Sudden governmental interventions in the export market such as export bans, tariffs and quotas
- Expansive monetary policy (US)

Commodity Real Price Evolution - Index Points (1915=100)



Source: Morgan Stanley, Bloomberg

Dramatic rise in Ag price volatility

financialization of futures

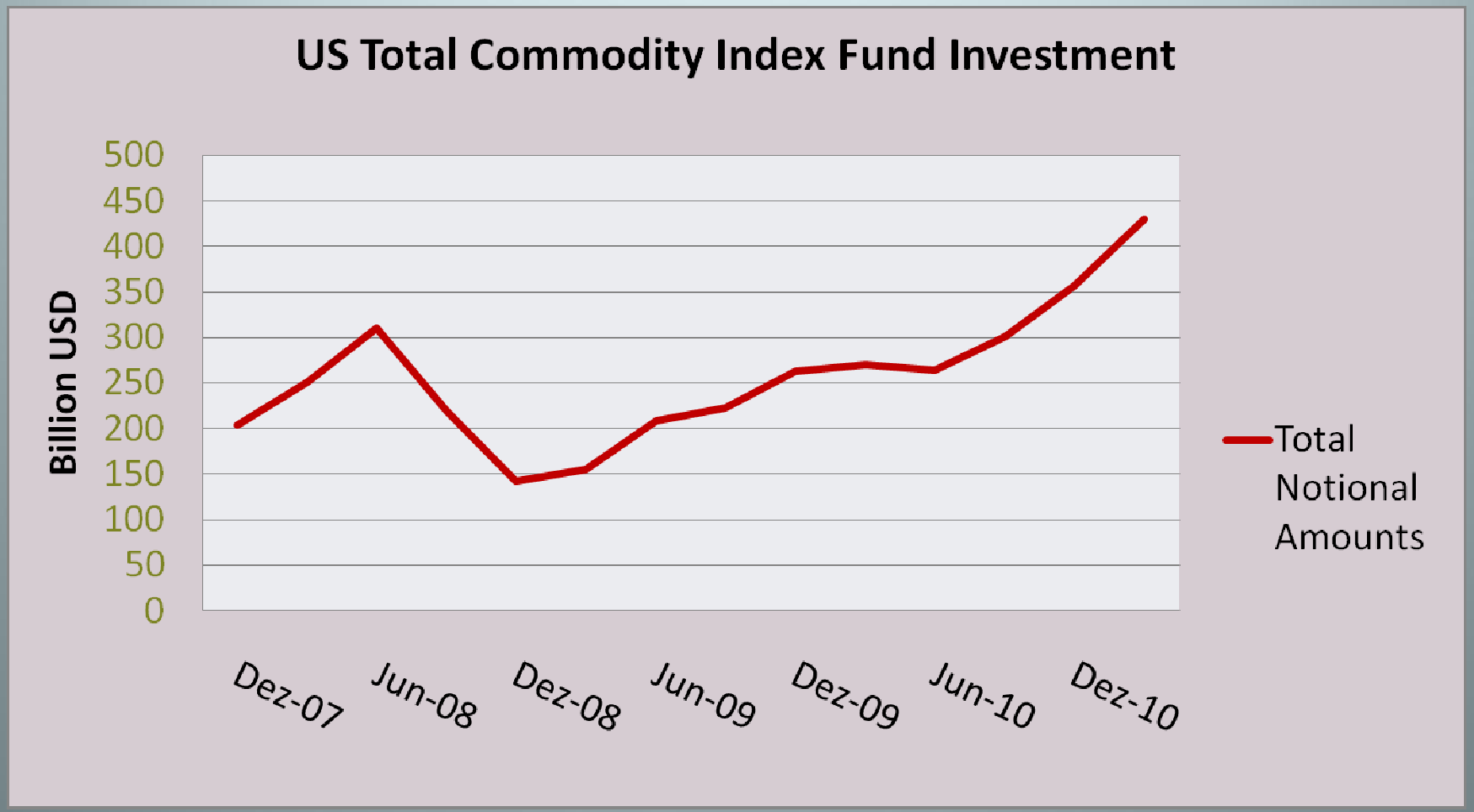
- Deregulation of the financial service sector in the US in 2000
- Declining margins in securities trading
- Ease of access to electronic market place
- Restructuring of primary exchanges from member organizations to for-profit corporations
- Multifold expansion of position limits

CBOT spec limit for maize is now 33,000 contracts = 4.3 million MT (raised Jan 2012 from 22,000)

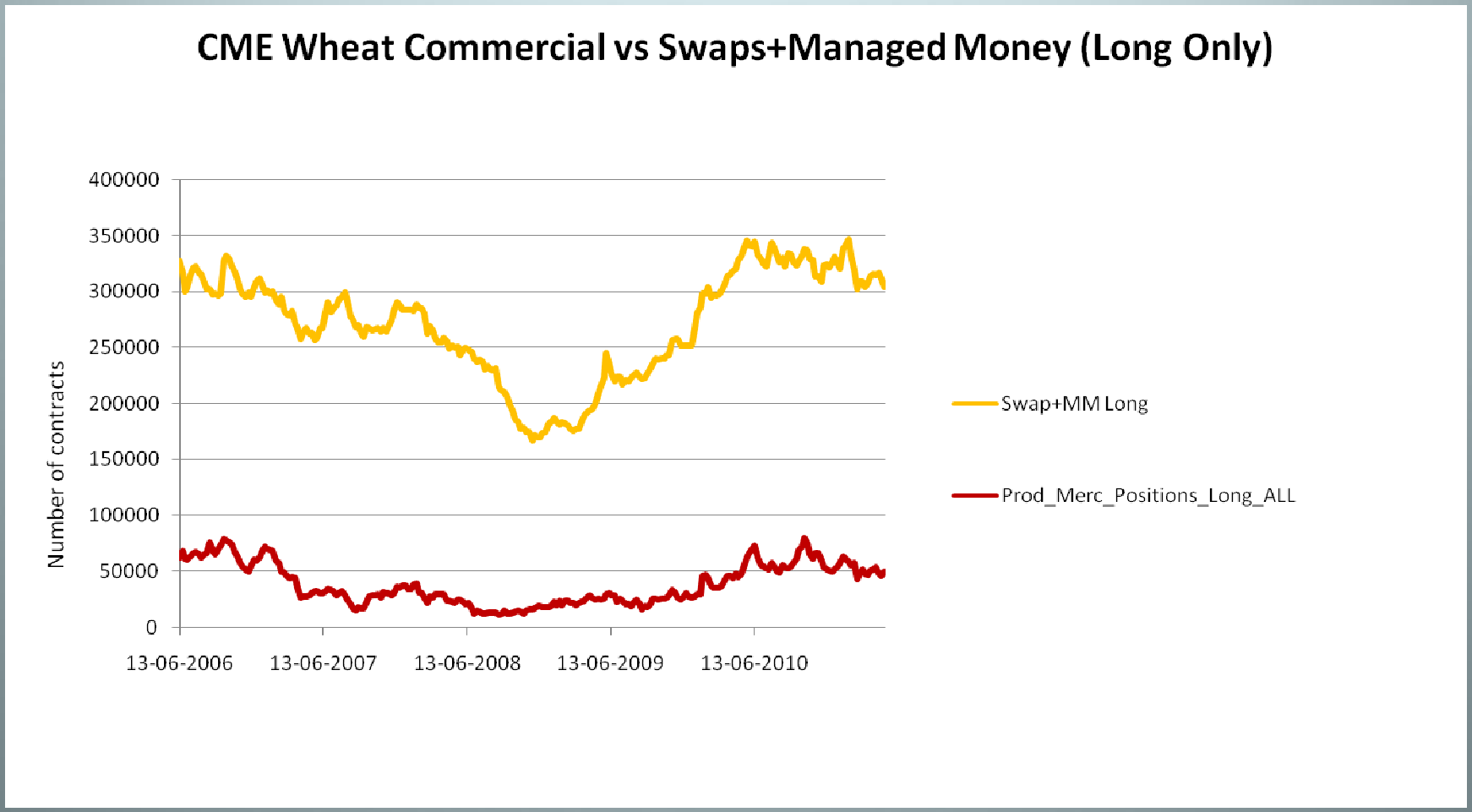
Commodity futures have become a new playing field

- Hedgers – producers, refiners, millers, exporters – traditional users
- Swaps dealers – offer securities that track futures prices or offer end-users swap agreements – mostly buyers (long) futures
- Managed money – trade aggressively on behalf of clients –buy and sell (long and short)
- Others – old fashioned speculators

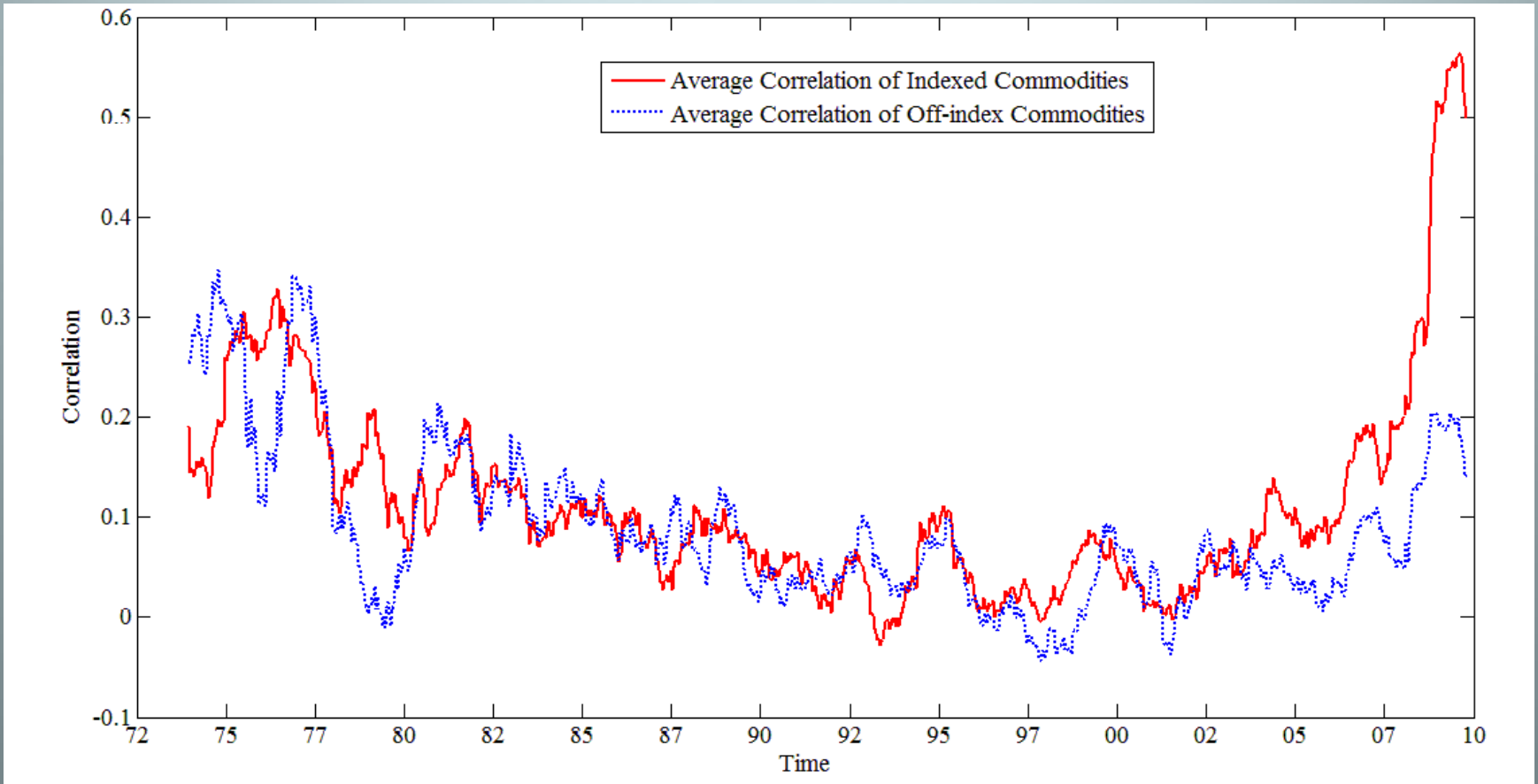
Index fund investment up sharply



Long hedgers are small percentage of market (US)

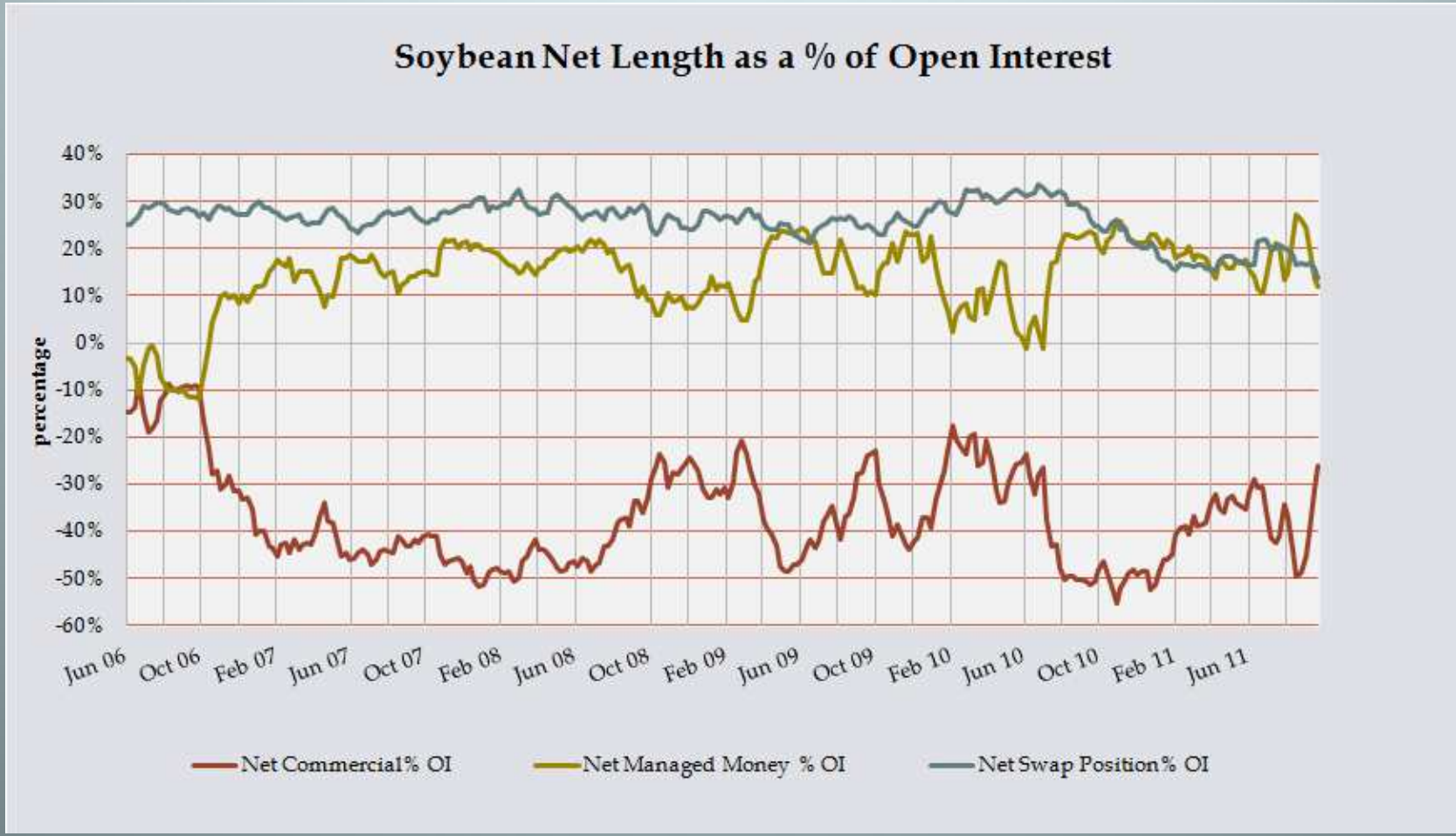


Increasing correlation among indexed commodities contracts



Source: Xiong and Tang

5 years of consistent trade pattern



Shift from Open Outcry to Electronic

- Computer program trading – 50% of trades
- Much of trade is executed without human intervention – e.g. High Frequency Trading
- Trades are “matched” by the exchange-operated matching system
- Order entry and trade confirmations are instantaneous
- Information is also instantaneous – hyper trading?

Shift from Open Outcry to Electronic

- Orders to buy/sell *at the market* can "take out" the entire book of resting orders (first mover advantage)
- Local traders no longer there to smooth out price spikes
- Large speculators have crowded out small hedgers

During 2008 food crisis, (US) banks stopped lending to producers who had sold futures as a hedge

Where do we go from here? Reforms vs. Real World

- 2010 – US Dodd-Frank Wall Street Reform & Consumer Protection Act
- 2011 – France (G-20) calls for regulatory initiatives to curb excessive speculation in foodstuffs

Today - rising global tensions: Sovereign instability, Currency issues, Banking crises, Global contraction, Food and energy inflation

On balance, real world issues far outweigh any regulatory reform efforts

Two scenarios

- Commodities continue to be a hedge against monetary easing to solve debt crisis. High prices and volatility remain norm
- Global contraction causes prices to fall and creates large exodus of recent players from market. Sharp dip in prices and return to more normal volatility levels