The properties of commodity spot and futures markets

Preventing food price spikes requires an understanding of market price mechanism and identification of the price drivers

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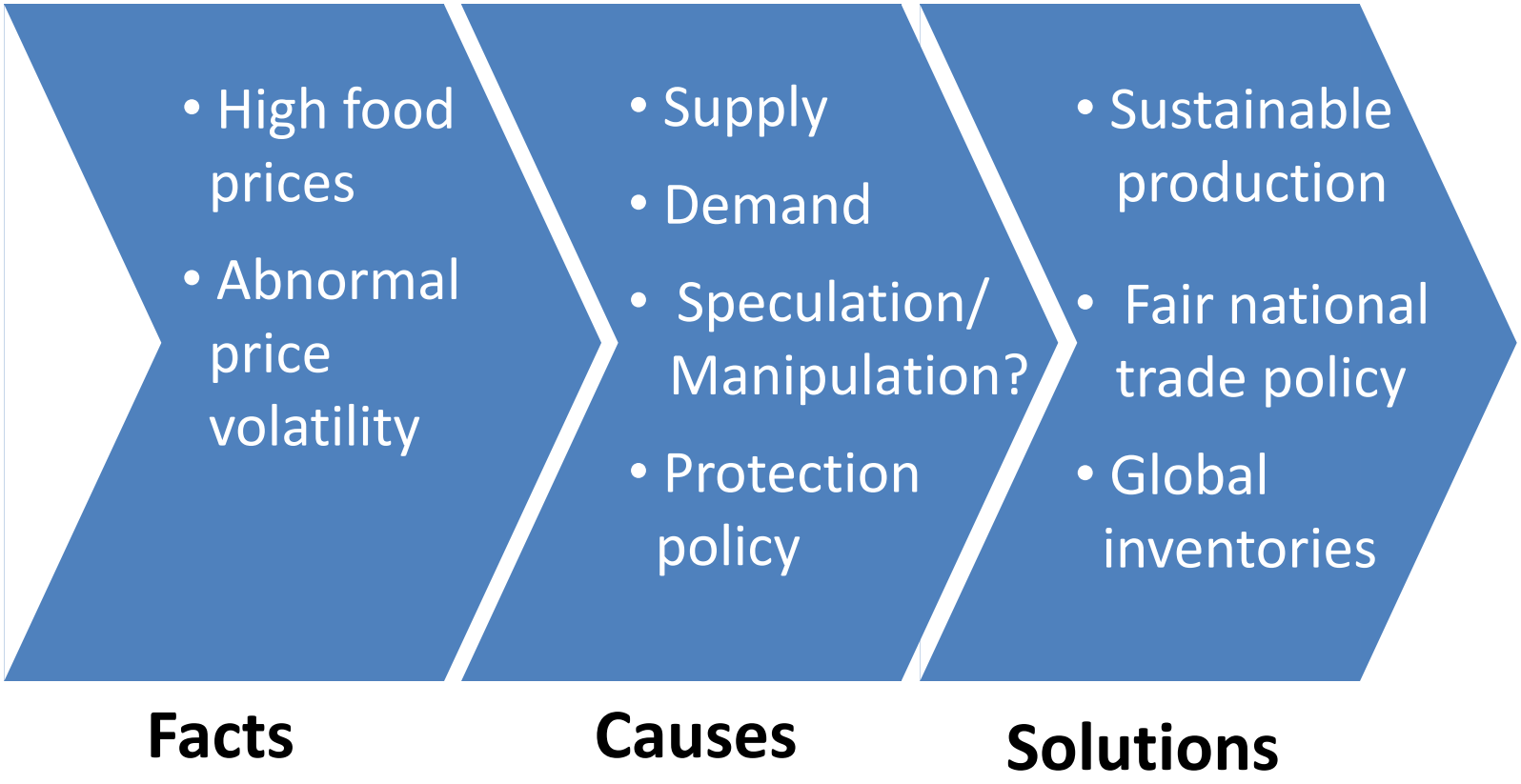
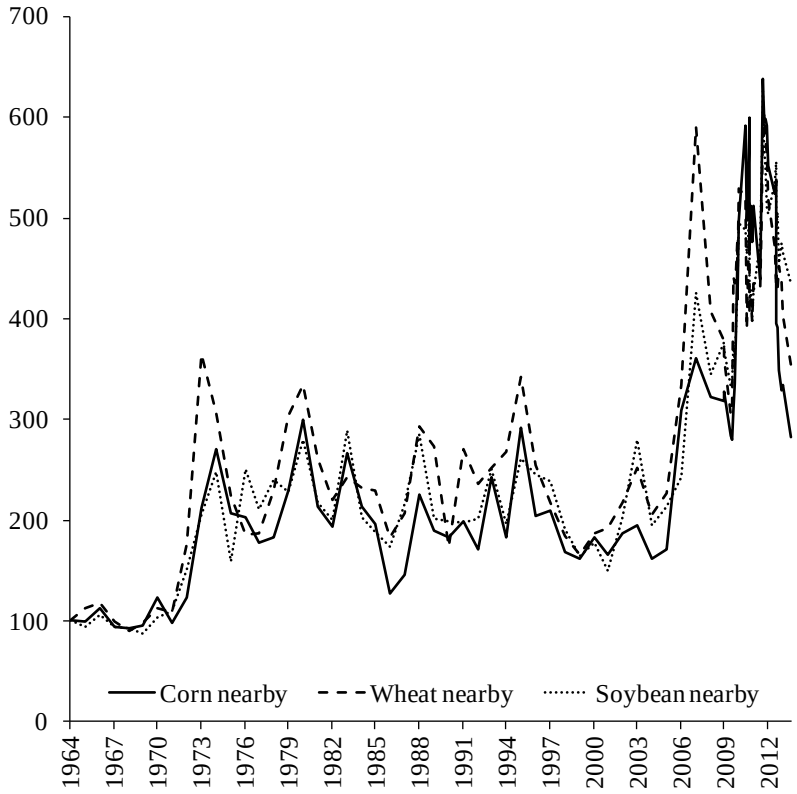
Understanding high food prices: The market price mechanism and key price drivers



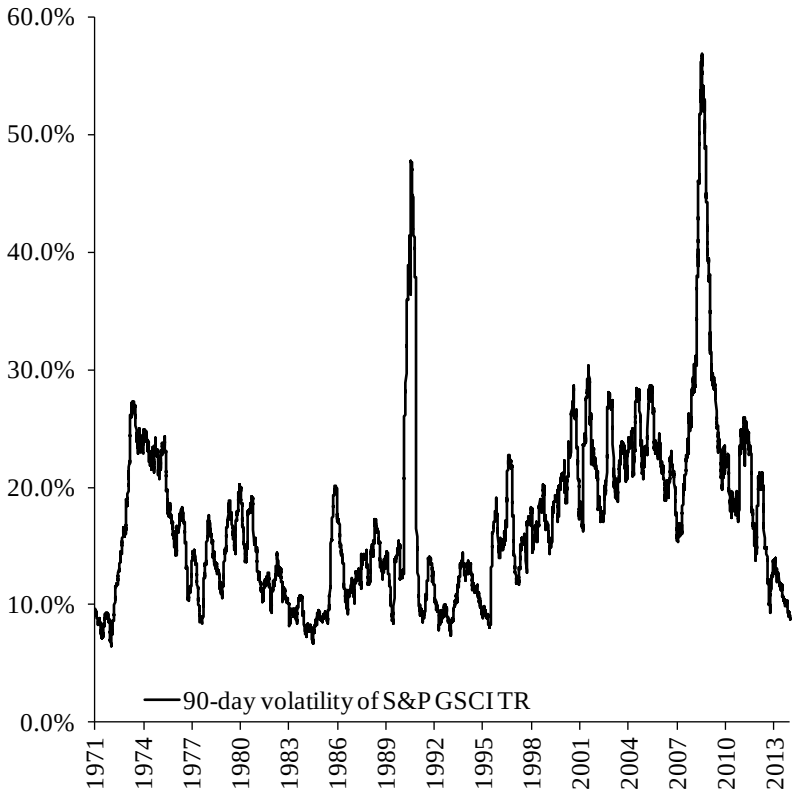
High food prices and price volatility in 2007-08

Grain and oilseed prices



Data: Bloomberg. Nearby prices normalized.

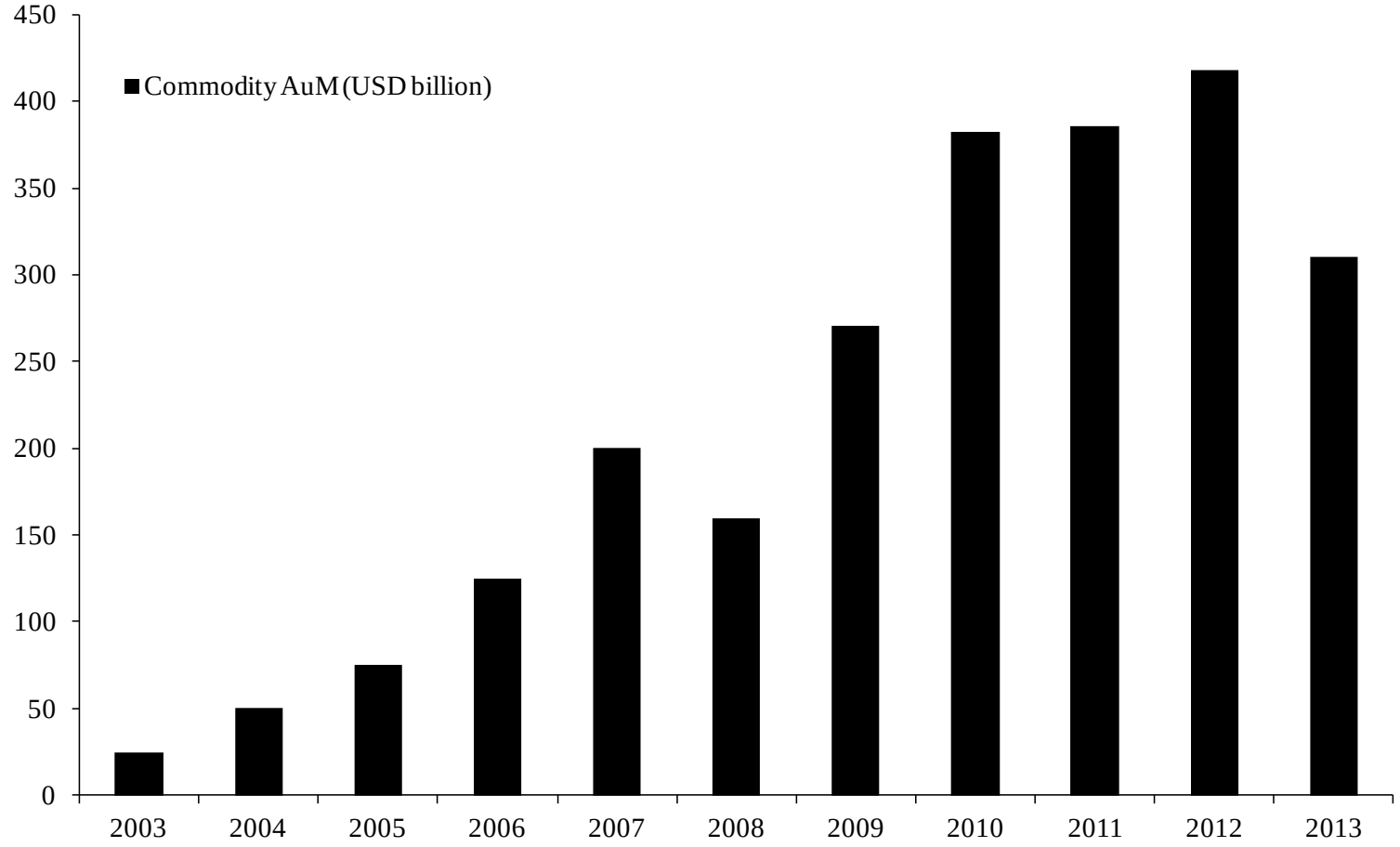
Volatility



Data: Bloomberg. 90-day volatility of S&P GSCI.

Commodities are a volatile asset class with temporarily overshooting prices

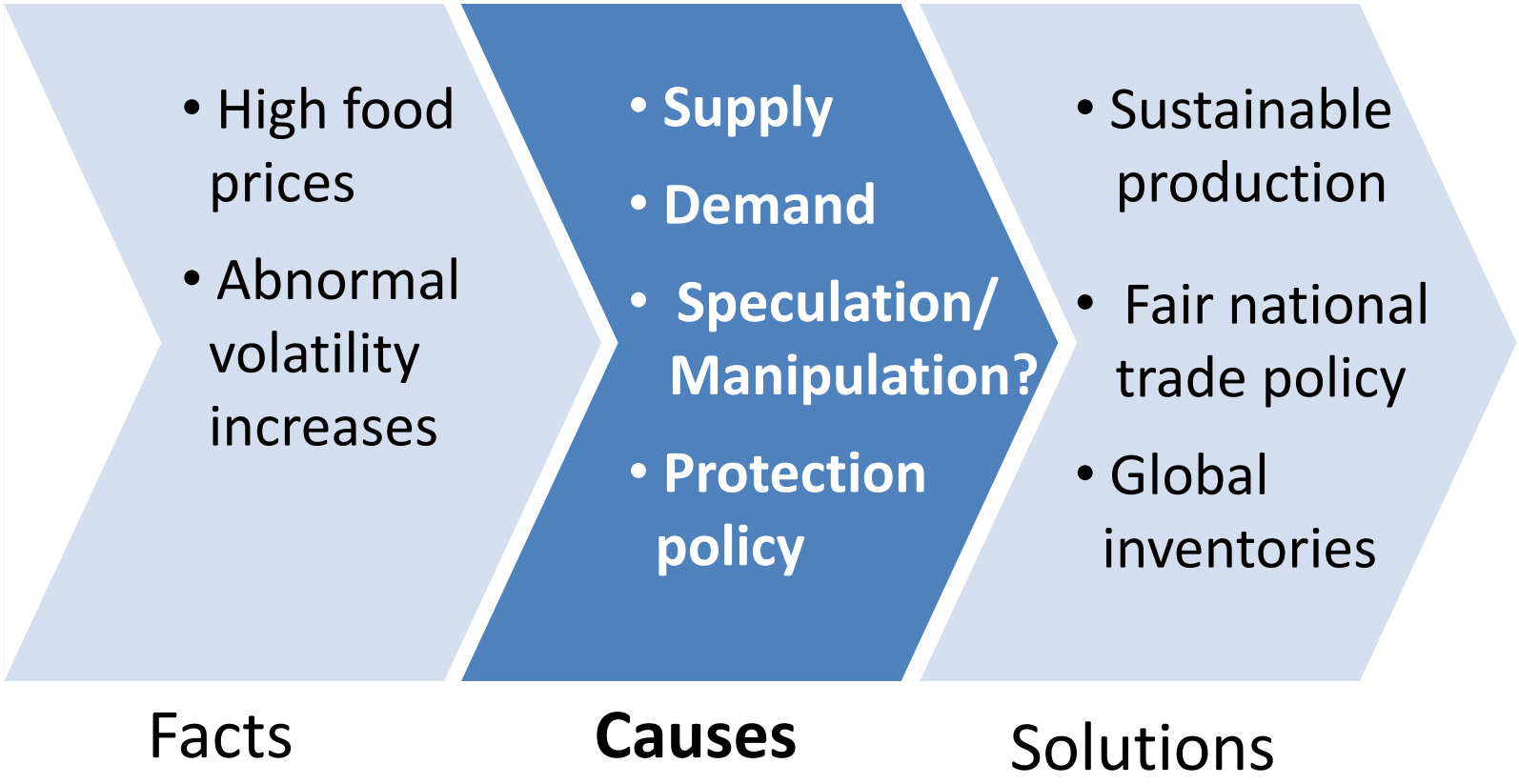
Increasing commodity assets under management



Data: Barclays. Commodity assets under management in billion US Dollar.

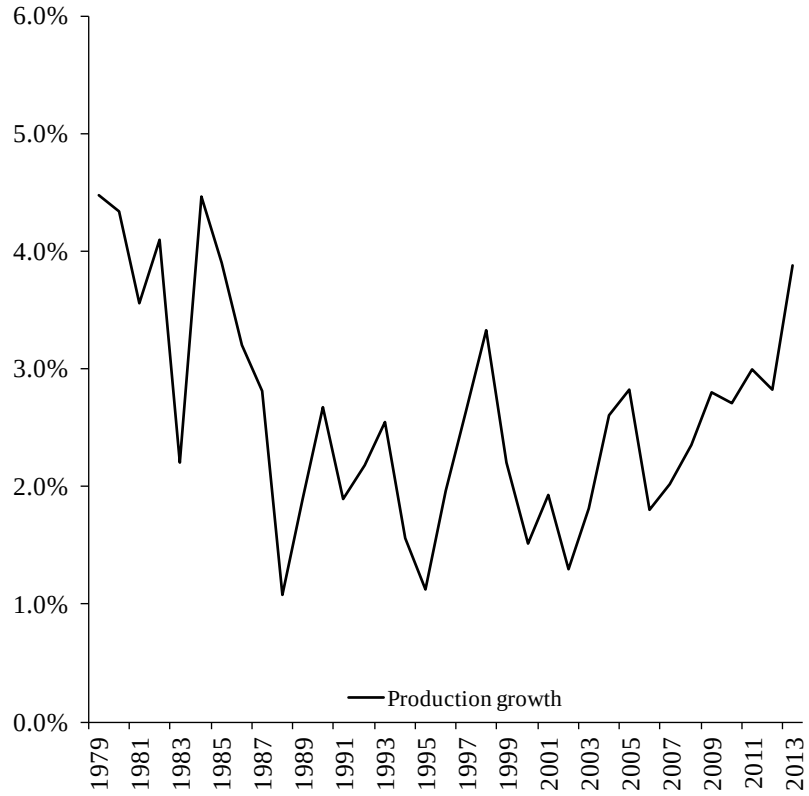
Does the increase from USD 20 to over 400 billion impact prices?

Understanding high food prices: market price mechanism and the key price drivers



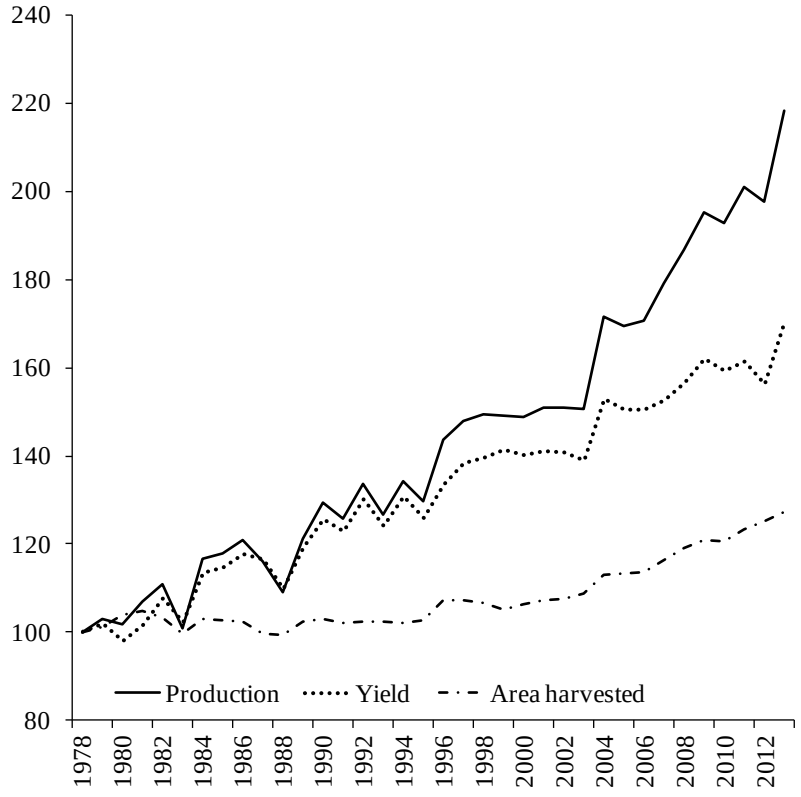
Supply side – slowing production growth

Growth in grain and oilseed production



Data: USDA. Corn, wheat and soybean combined.

Development in grain and oilseed production, yield and area harvested

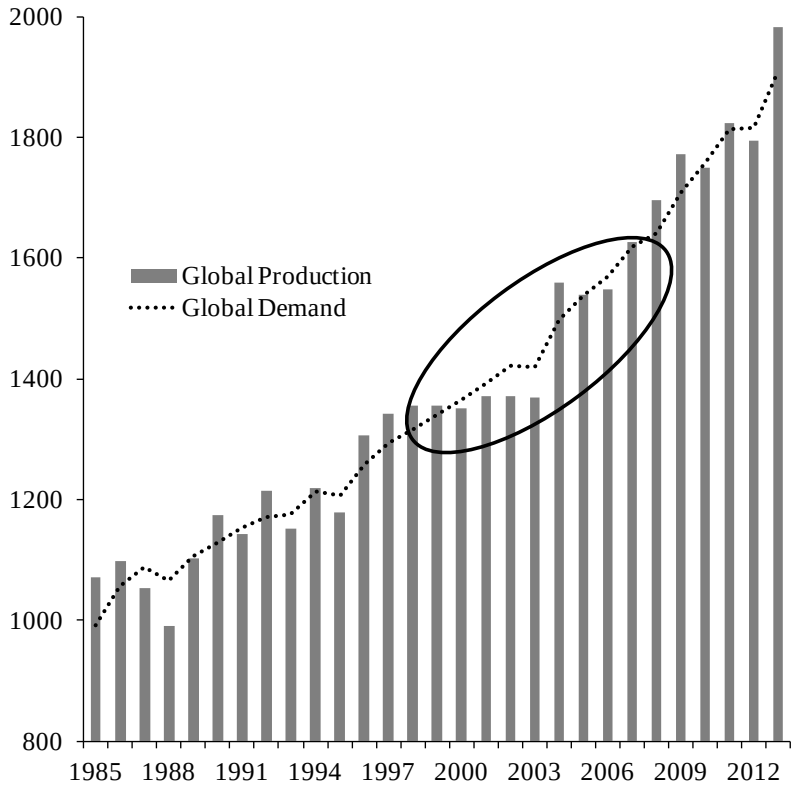


Data: USDA. Corn, wheat and soybean combined (normalized).

Production growth halved for the period before 2007-08

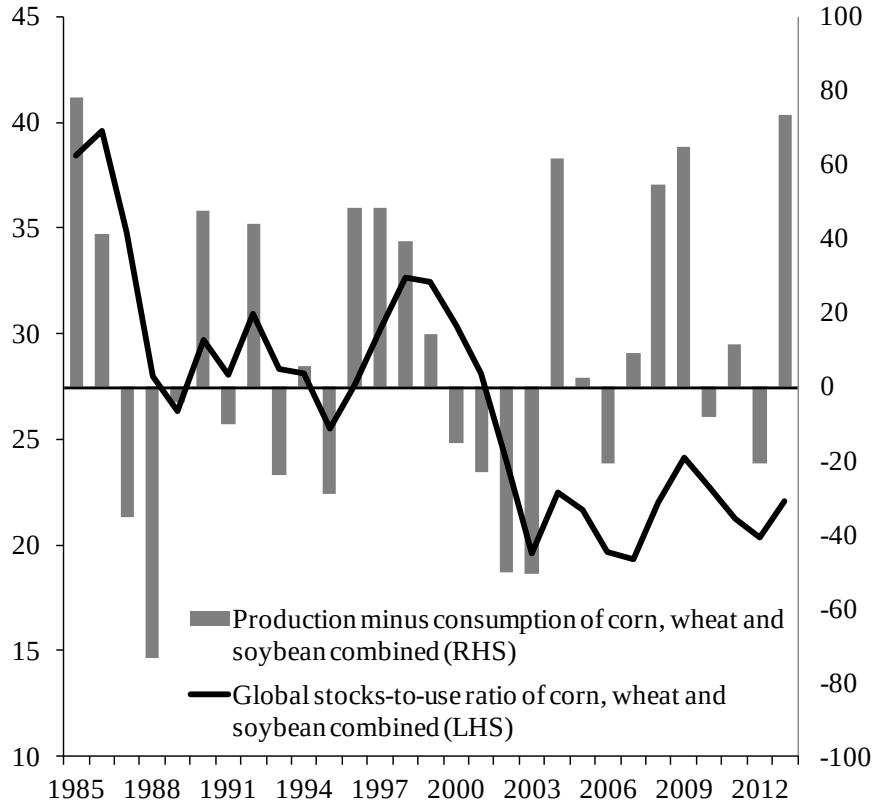
Demand side – increasing demand

Production vs consumption of corn, wheat and soybean combined



Data: USDA. Million tons.

Consequence – global stocks tumbled

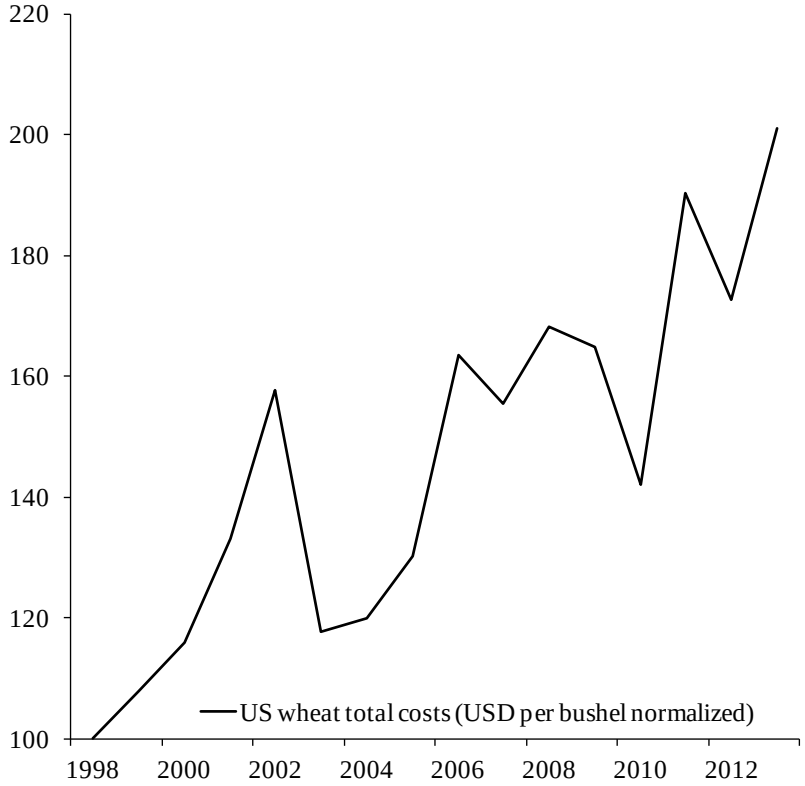


Data: USDA. Corn, wheat and soybean demand and supply combined.

Stocks tumbled to the lowest level in decades

Other factors – driving prices higher

Production costs of US wheat (normalized)



Data: USDA. US total production costs in USD per bushel.

US Dollar (normalized)

Data: Bloomberg. DXY Index normalized.

Production costs doubled and the US Dollar depreciated significantly versus other major currencies

Short summary for price increase

- **Growth rate of production < growth rate of consumption**
- **Compensation of shortage in supply by an outflow of global inventories**
- **Rising production costs and weak US Dollar**

Did financial speculation play a role in the price spikes in spot markets?

Does financial speculation impact spot prices?

- Spot/Futures markets: Characteristics of spot and futures markets and the risk transfer function of futures markets
- Speculation: Necessity of financial speculation to balance mismatch of hedging needs
- Storage: Speculative storage holder as link between spot and futures markets
- Manipulation: The difference between speculation and manipulation
- Policy: National protection programs harm poor population

It can, but only if storage responds

Excursion – participants in agricultural markets

- **Commercials** (producers or consumers)
  - Spot and futures markets

- **Financial speculators** (e.g. index funds like ETFs)
  - Futures markets **only**

- **Speculative storage holders**
  - Spot and futures markets

- **Manipulators**
  - Spot and/or futures markets

Financial speculators do not make spot-transactions

Spot market is spread over the world

Characteristics

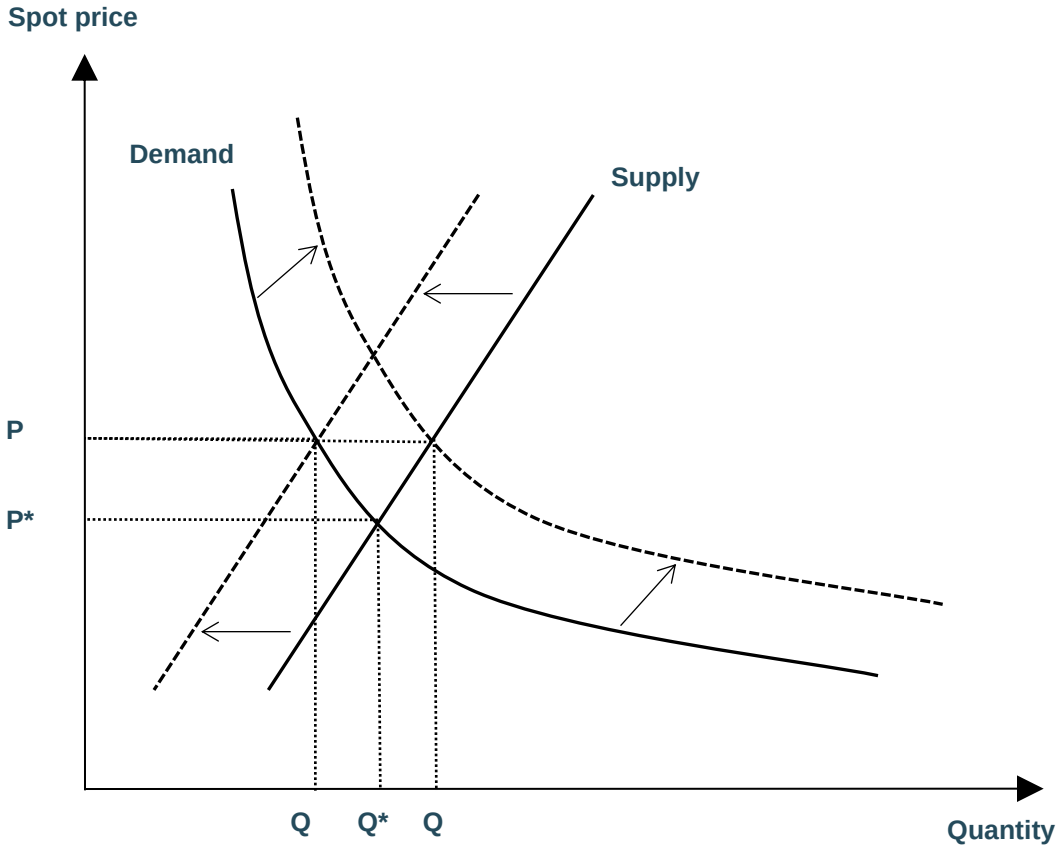
- Bilateral negotiation
- Physical trading
- Immediate settlement
- World wide delivery
- Counterparty risk

No single quality

No single spot price

No single spot market

The spot price is driven by physical supply/demand



Demand increase:

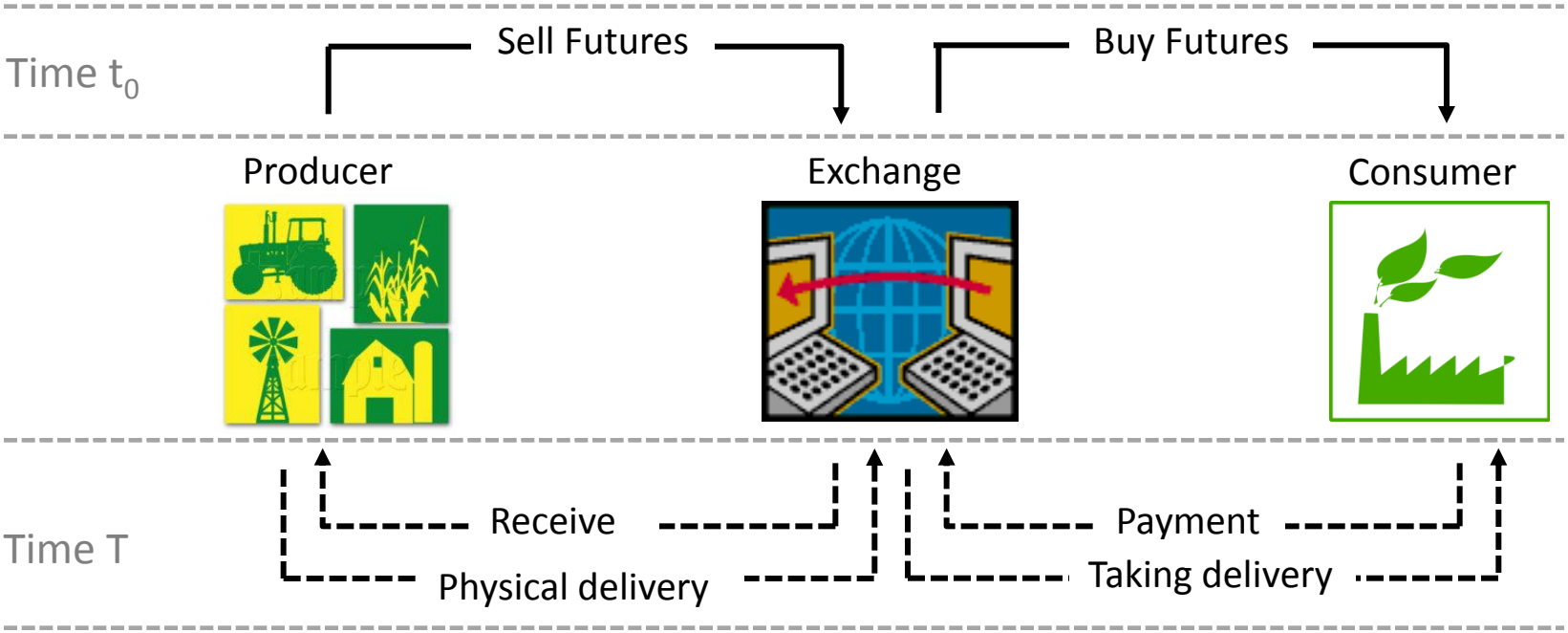
- Bioethanol
- World population
- Consumption behaviour

Supply decrease:

- Adverse weather
- Export bans

Spot prices responds to physical quantities

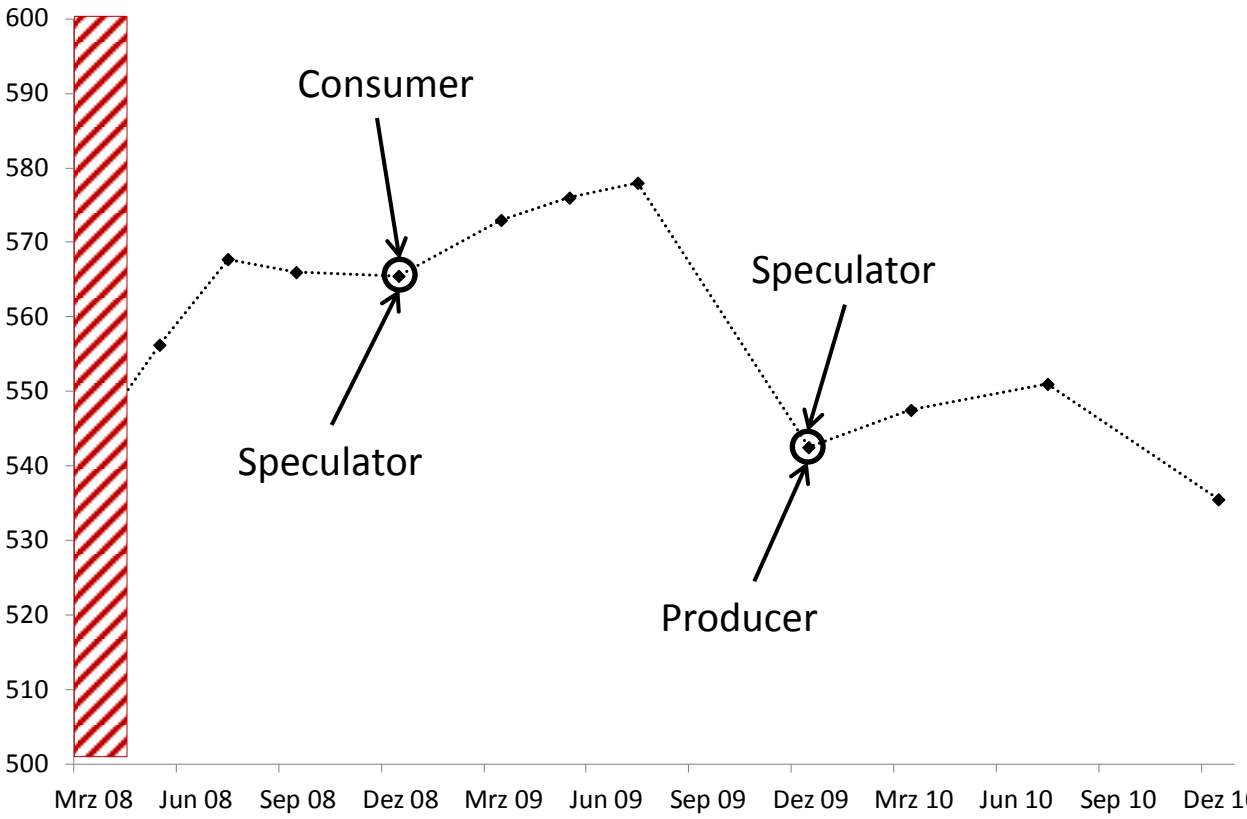
Future markets transfer price risk



- Centralized exchange with standardized contracts
- No counterparty risk

Speculators balance the mismatch of hedging needs

Futures curve of corn (USd/bushel), March 2008



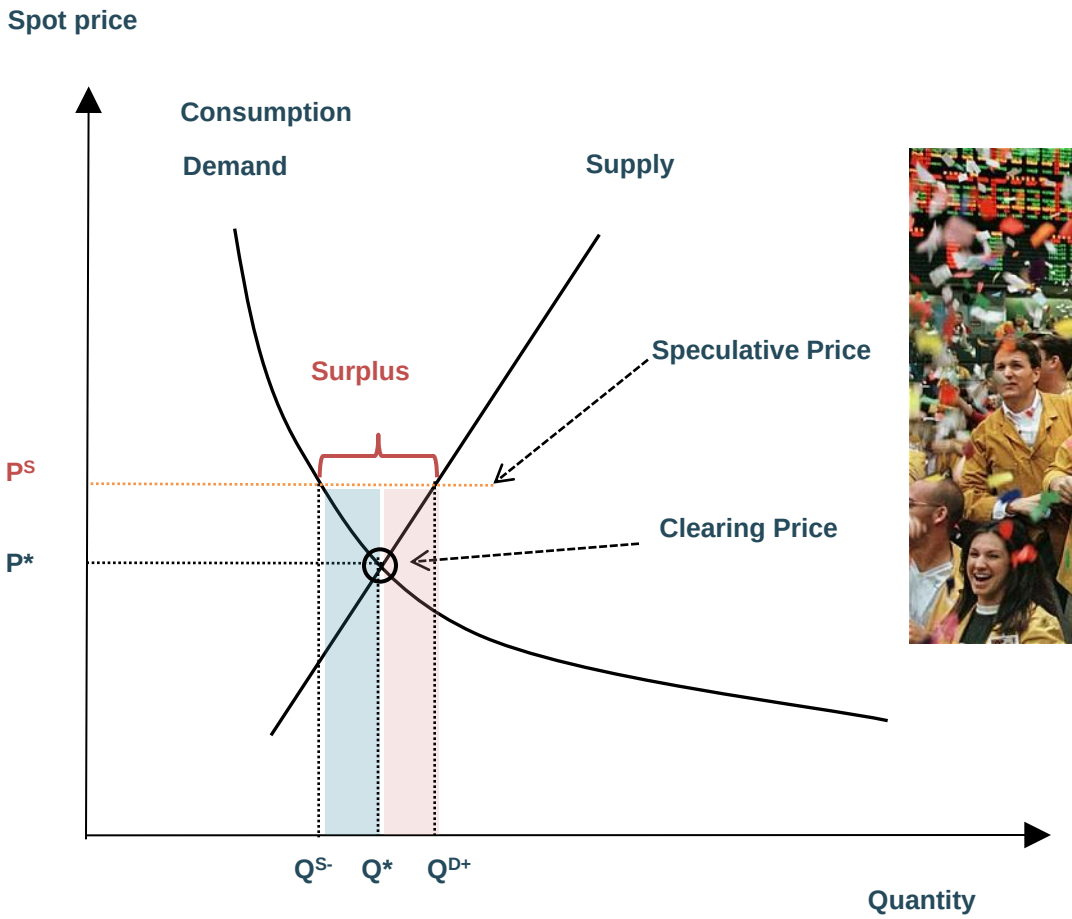
Speculators expect:

- Risk premium
- Inflation protection
- Diversification

Speculators avoid physical delivery!

Prices respond to supply and demand of futures

Physical surplus if price is above clearing price



What happens with the surplus?

Speculative storage holder links spot and futures prices

Speculative storage holder absorbs surplus

Storing grains is expensive

Corn futures curve and carry costs (USd/bushel), March 2008

Trading profit only in rare circumstances

Short summary financial speculation

- Speculative storage holder links spot and futures prices
- Price transmission channel between spot and futures requires:
  - a **storable** commodity
  - sufficient storage **capacity**
  - futures price > spot price, i.e. **arbitrage opportunity**
- Storing grains is expensive

▶ Financial speculation only harms if storage responds

▶ Weak evidence that financial speculation impact prices

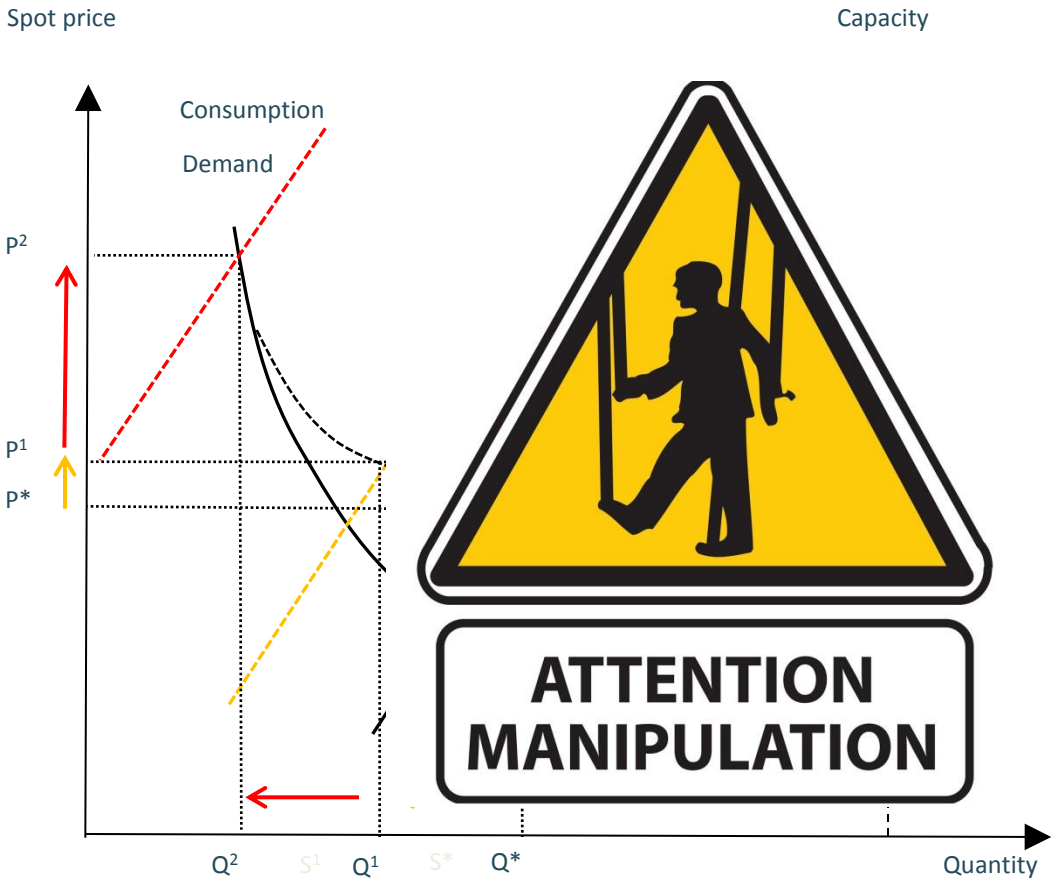
Manipulators change market prices for their own benefit

Necessary conditions:

- Manipulator must control a **large fraction** of the market

Impact on spot prices:

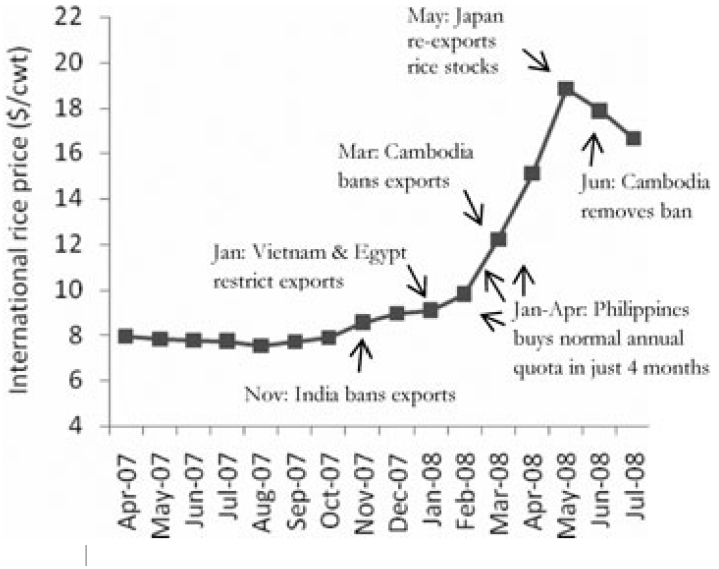
- **Direct** if manipulator acts in **spot markets**
- **Indirect** if manipulator acts in **futures markets** (storage channel)



Manipulation is most damaging if stocks are low

National protection programs harm poor populations

Example Rice price 2007/08:



Source: Headey and Fan (2008)

- Insulating policy accounts for 45% of rice price surge
- Protection rates explain 30% of wheat price surge

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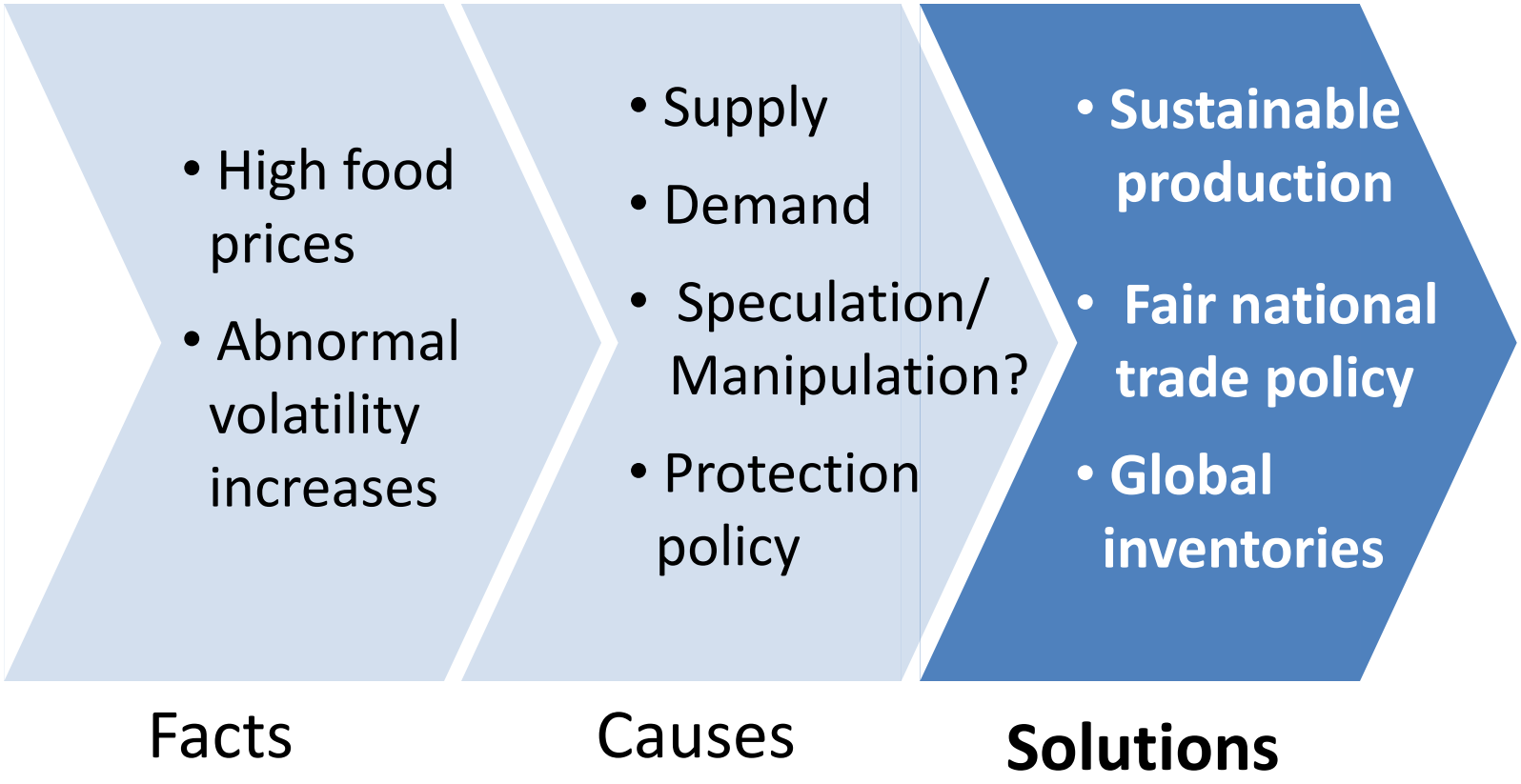


Summary

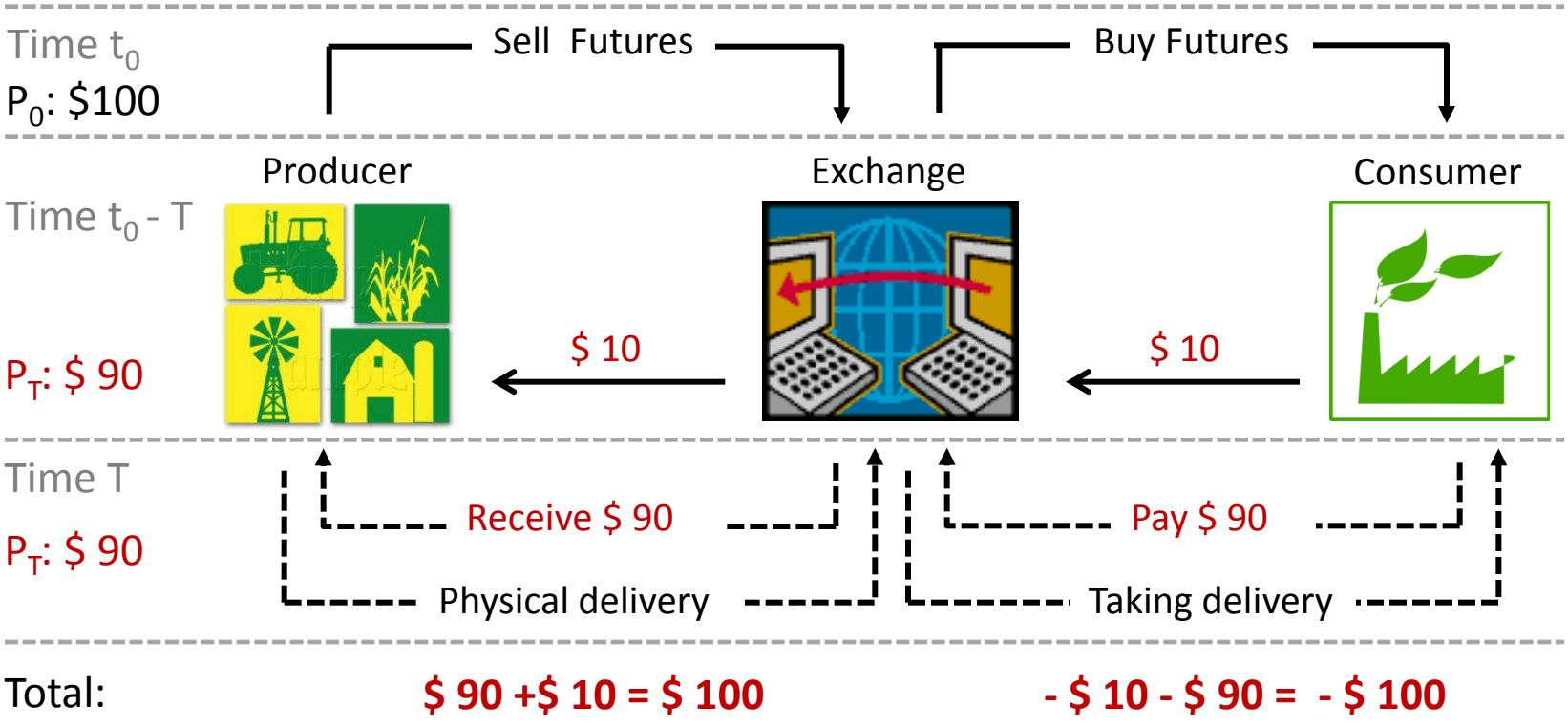
- Prices increase due to demand and supply imbalances
- Weak evidence that financial speculation impact prices
- Trade policy multiplies price increase
- Low global inventories increase price impact

Solutions:

- Sustainable production growth in line with consumption
- Reduction of social price protection policy
- Global inventories as a buffer against supply shocks

MANY THANKS FOR YOUR ATTENTION

Future markets transfer price risk (2/2)



- Price risk is hedged through daily cash settlement
- Avoiding physical delivery by closing futures