



**WELLS
FARGO**

Agricultural Outlook

Trend v. Cycle

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Wells Fargo

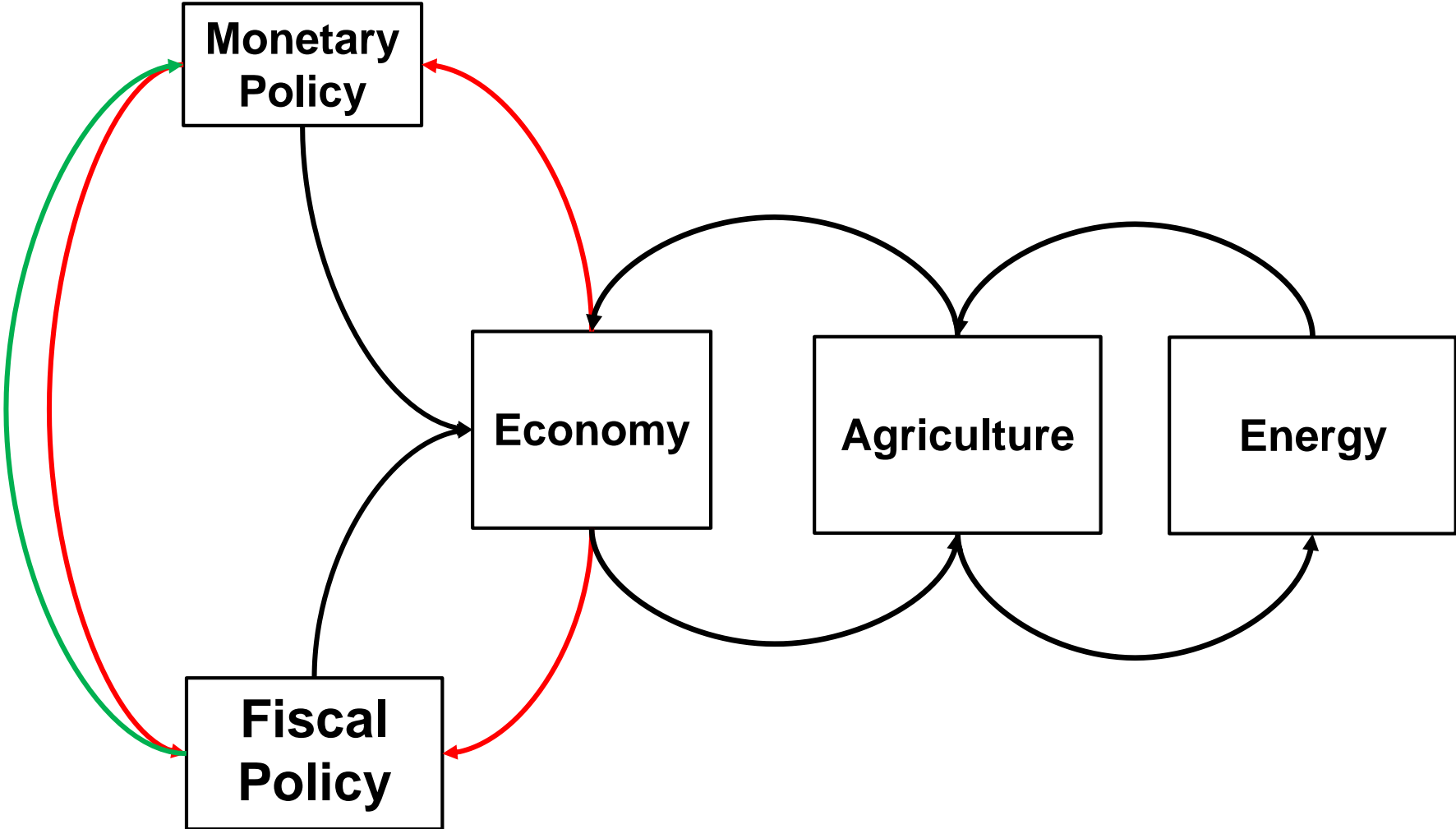
February 2016

Everything is connected

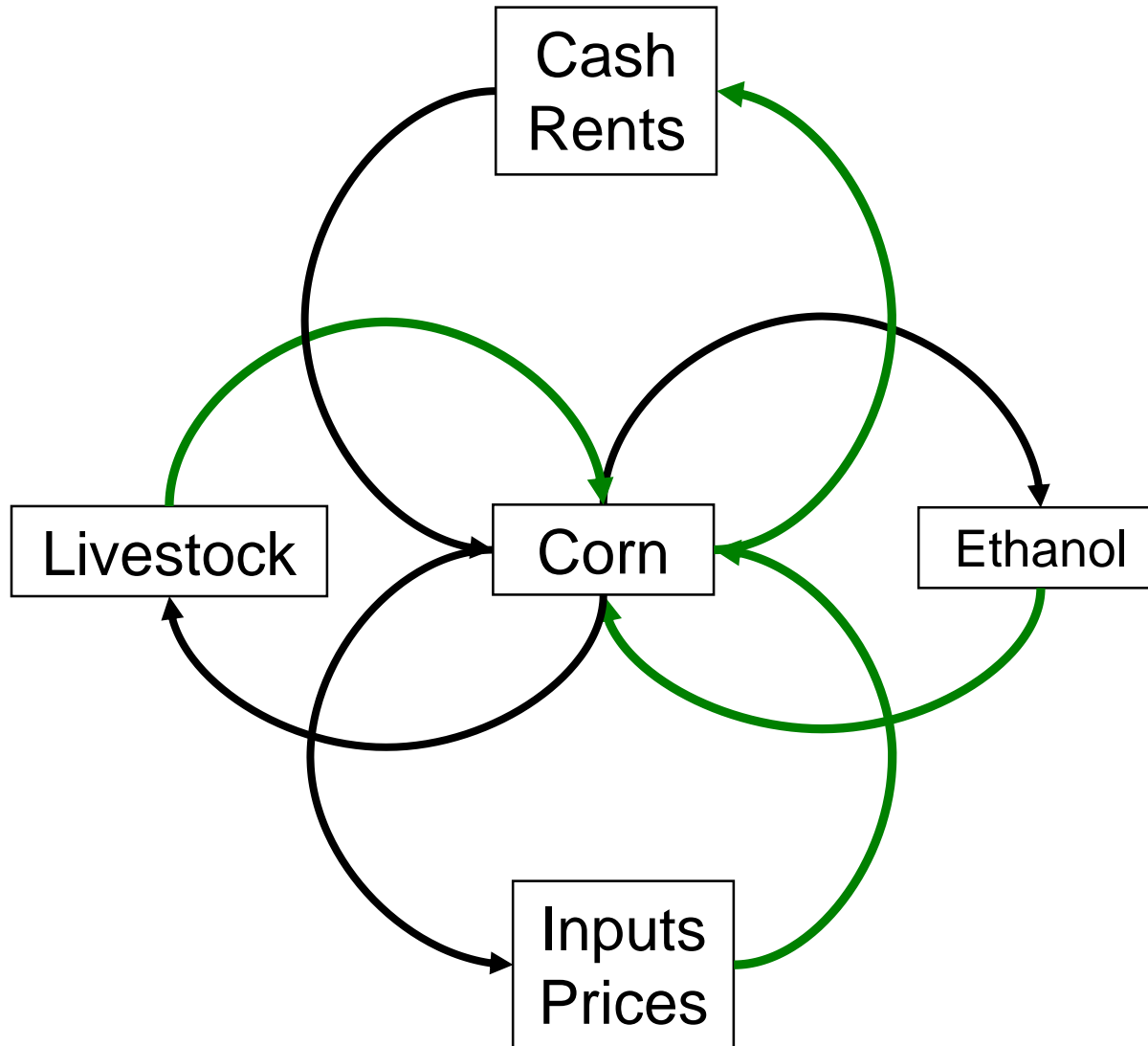
we just don't see how.

**Connection corollary:
Nothing natural moves in
a straight line**

Loops create cycles



A single loop ... from a subsystem

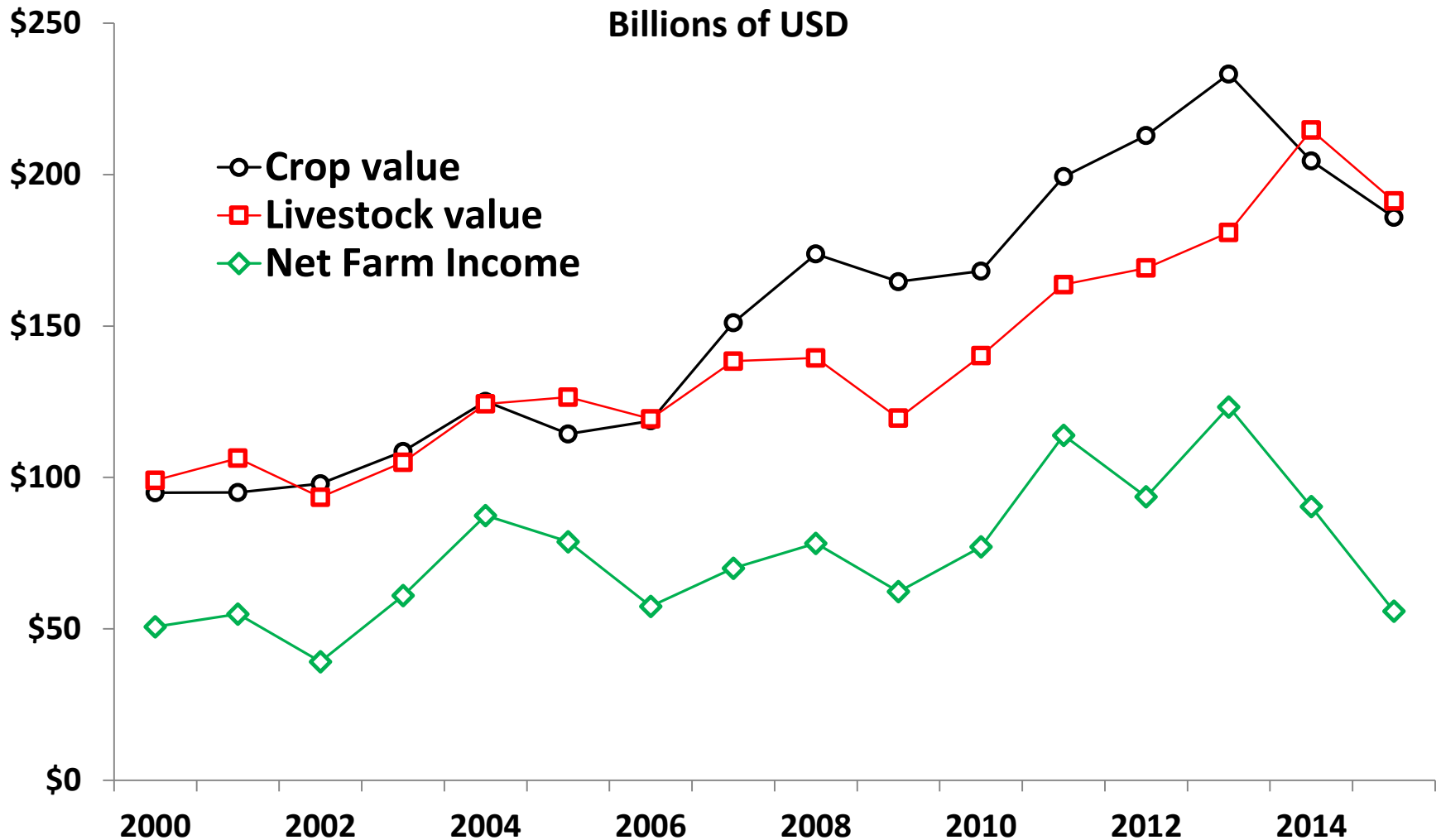


Is there a “crisis” in agriculture?

- **Earning less income**
 - Revenues
 - Expenses
- **Trend v. Cycle**
 - Reasonable expectations
 - Did the system really change?
- **Is insurance “mispriced”**
 - Compared to what
 - Sleeping with the government

Every number depends on which side you approach it from

Farm Sector Revenue and Income
Billions of USD



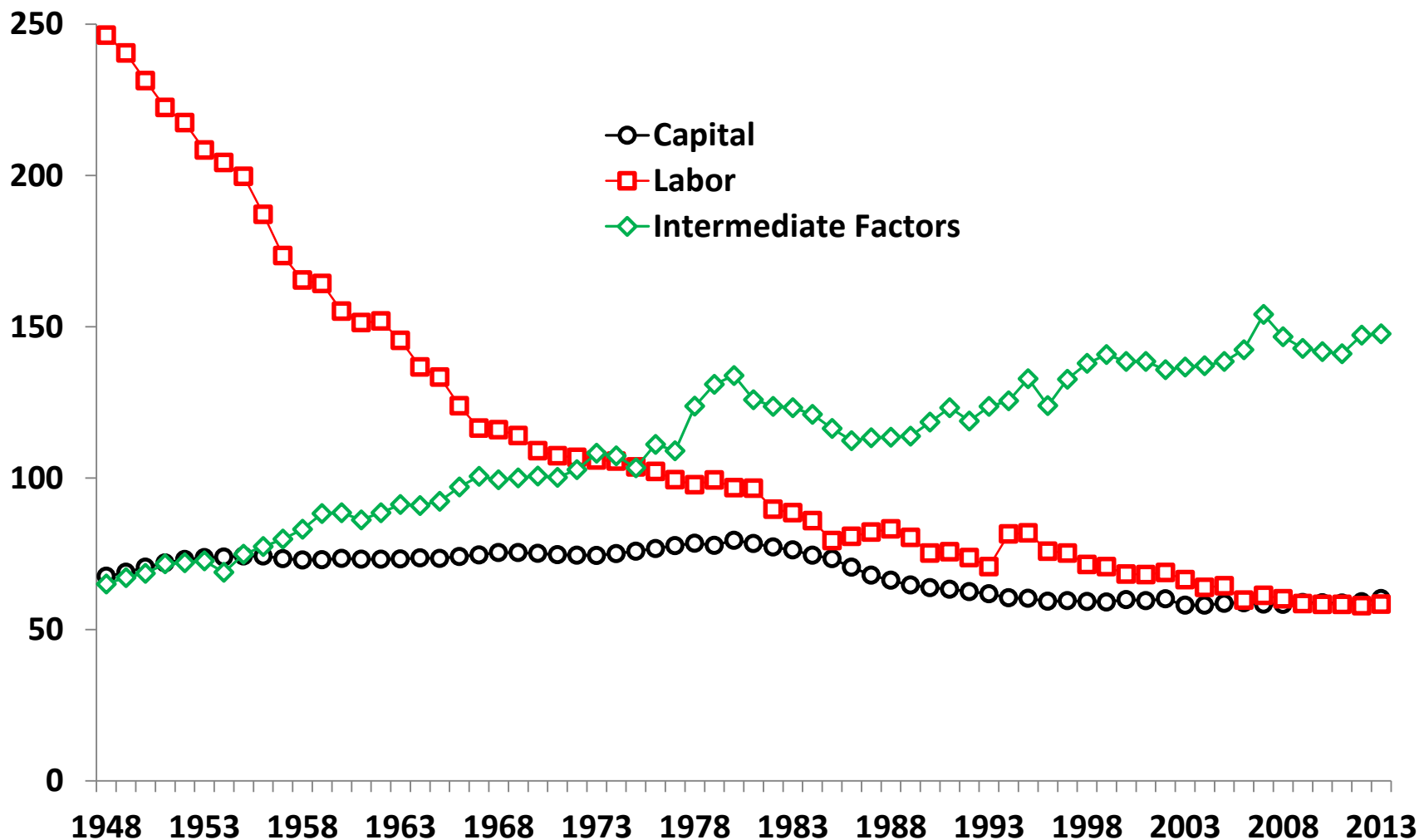
Who gets paid what?

Why do they get paid that?

Substituting technology for labor

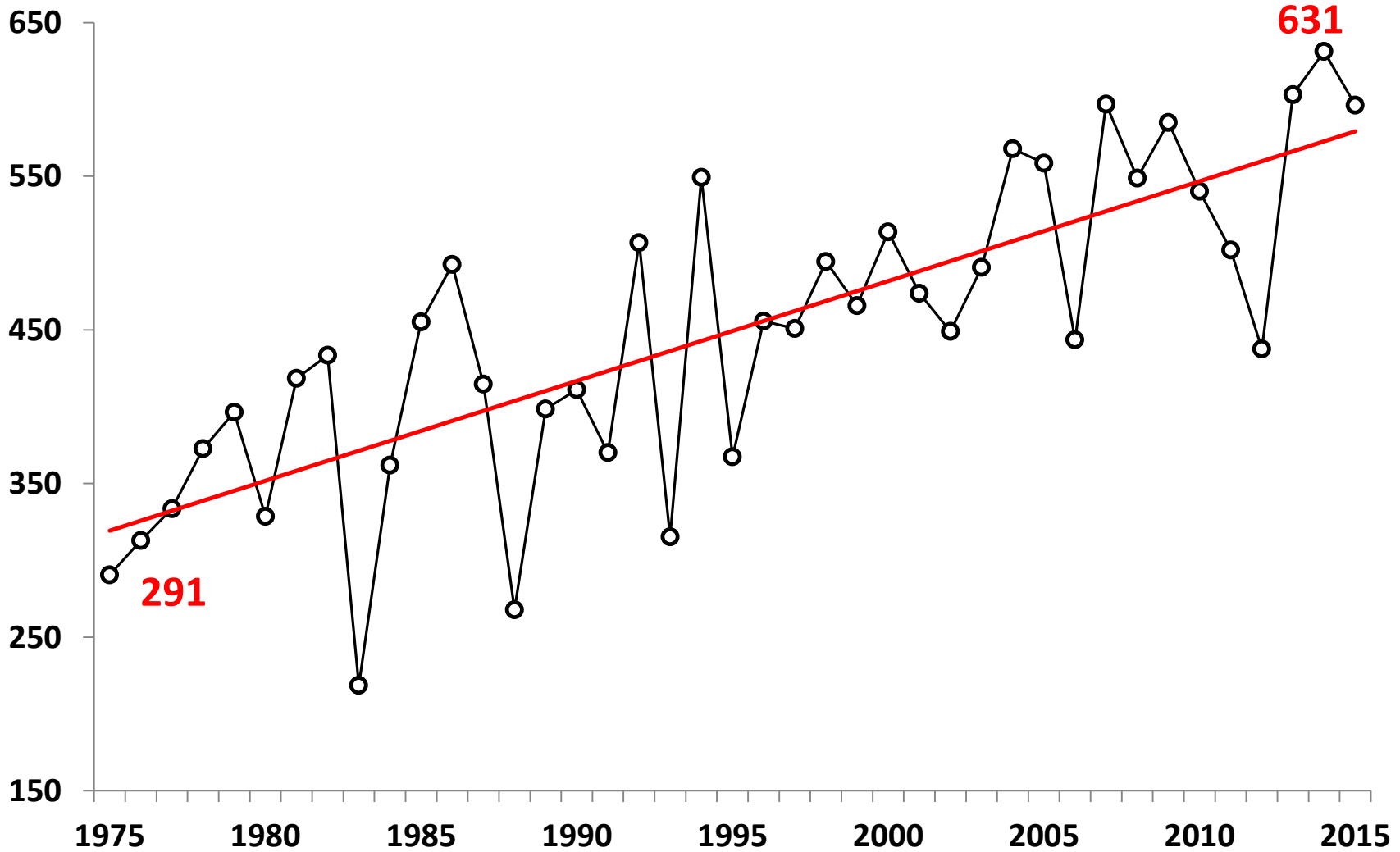
What Does Agriculture Use?

Inputs billions of \$ indexed to 2005



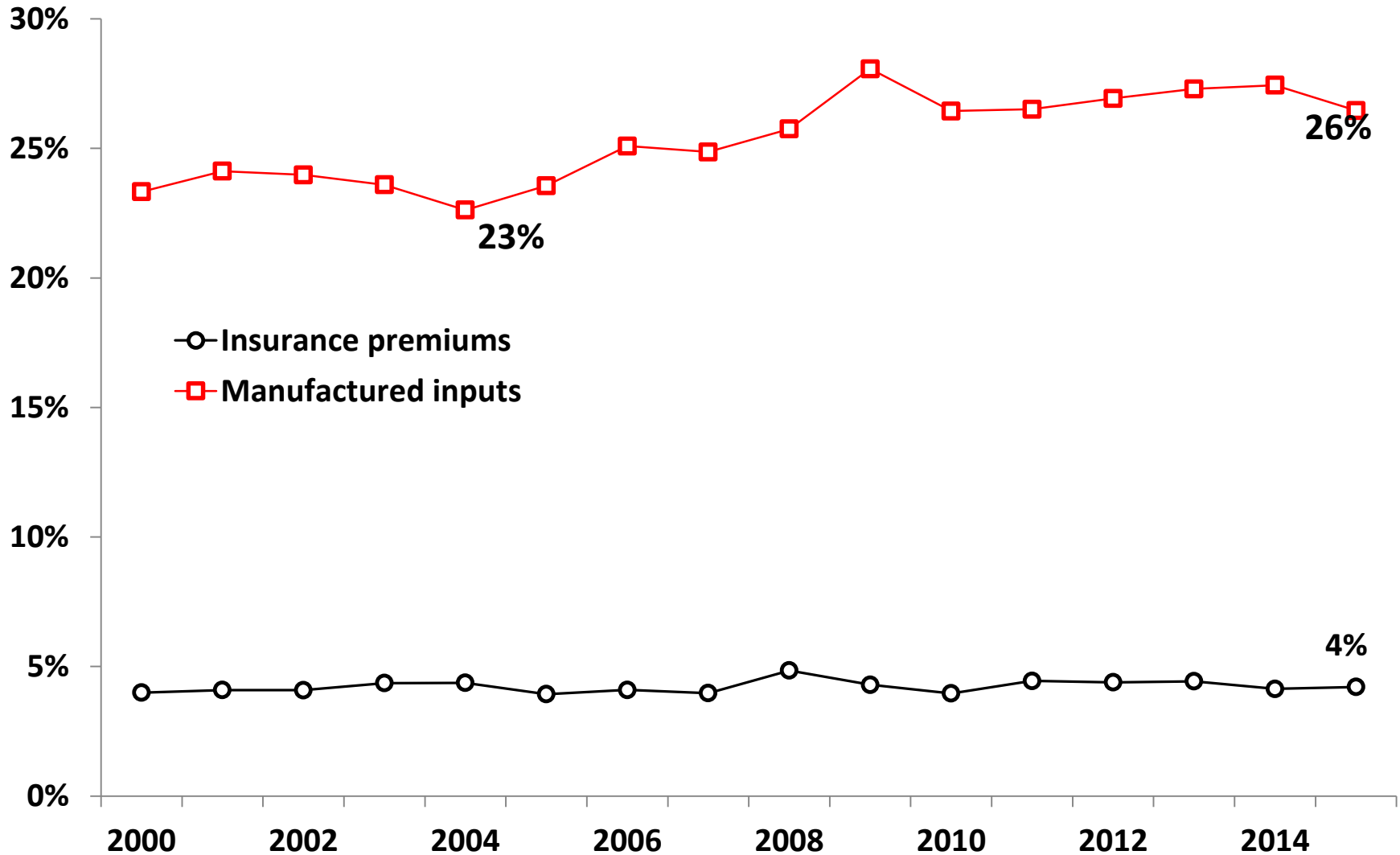
Technology is not constant

Ratio: Bushels Produced / Bushels of Seed Corn



You only get paid for what you brought to the transaction

Percent of Spending on Purchased Inputs



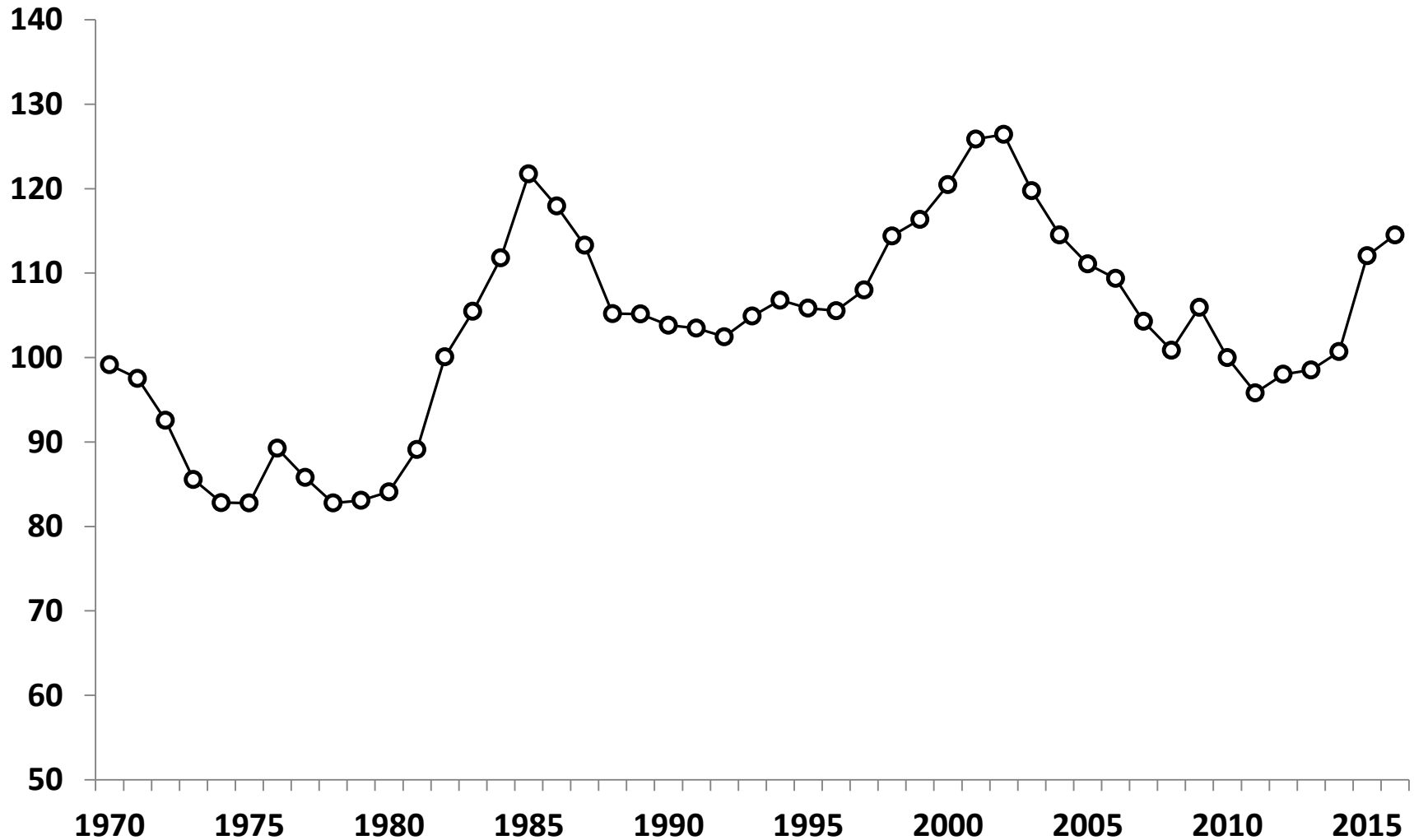
Three macro drivers to watch

- **Interest rates/exchange rates**
 - Key relationships
 - Relative growth
- **China growth**
 - Reasonable expectations
 - How much volatility should we expect?
- **Biofuels policy**
 - Energy pricing
 - Governmental policy

It is not about us so don't take it personal

US Agricultural Export Dollar Index: USDA

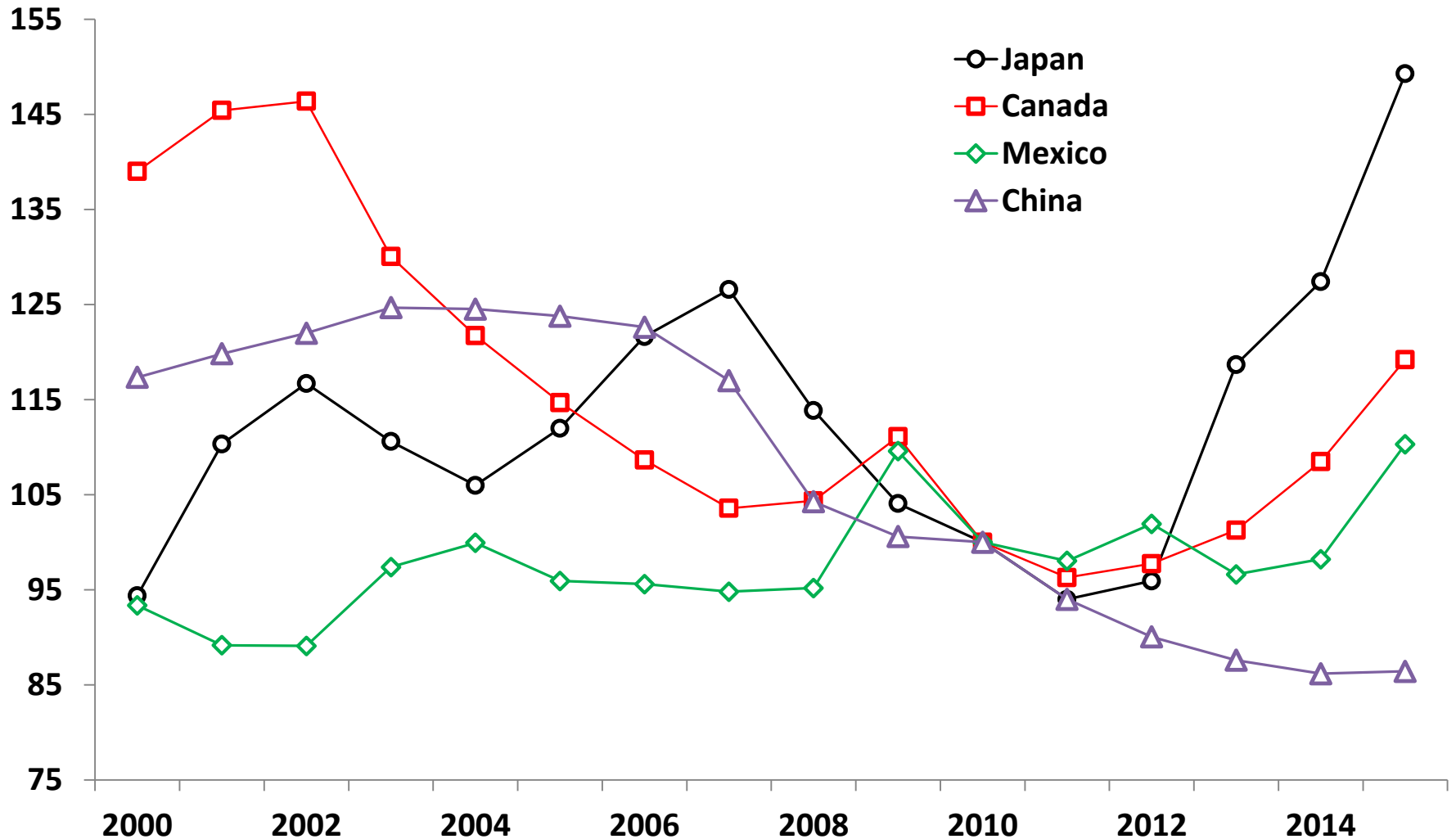
2010=100



Top Four Account for 55% of all exports

Top Four Agricultural Trade Partners

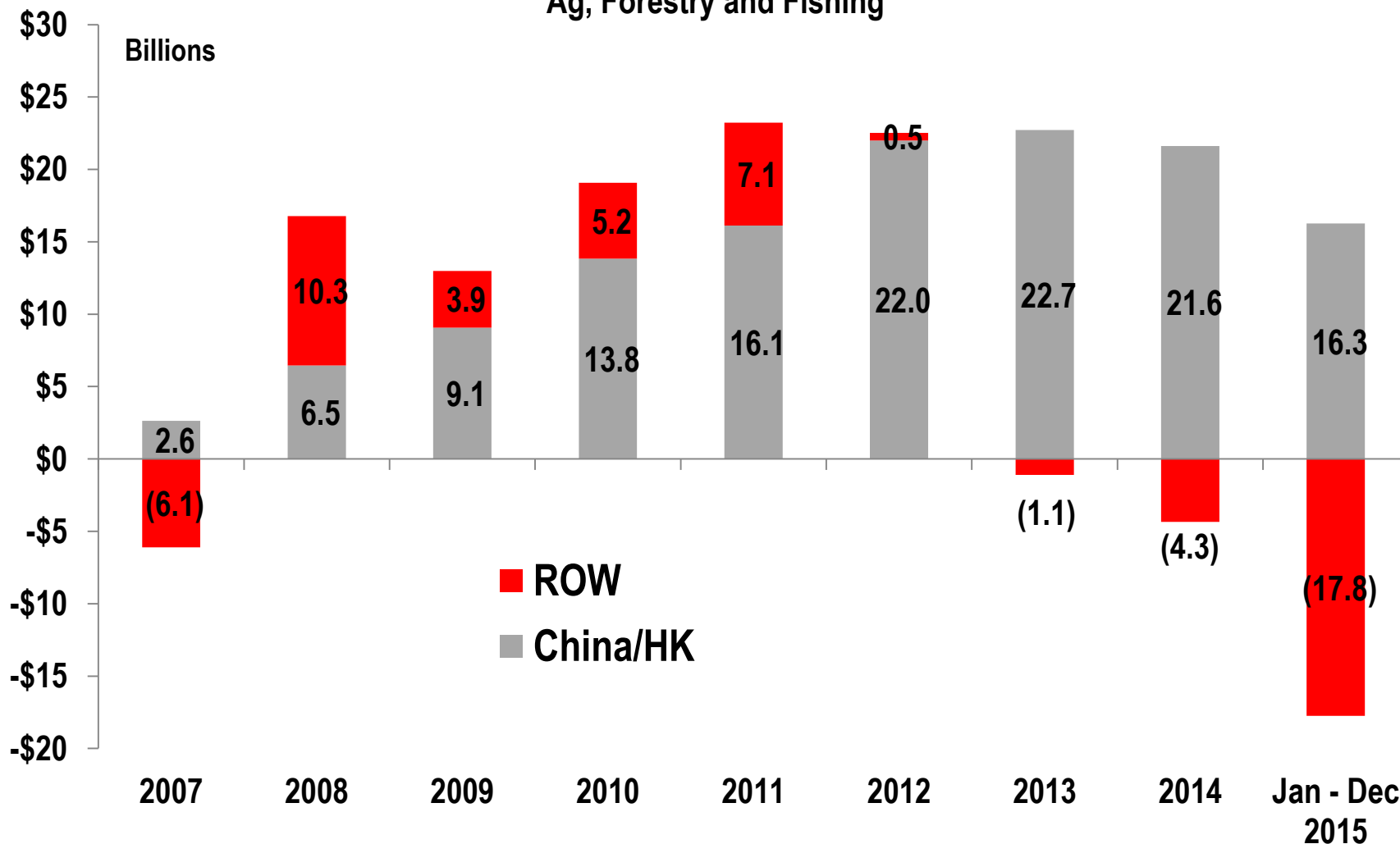
2012=100 on index



Relative growth and exchange rates

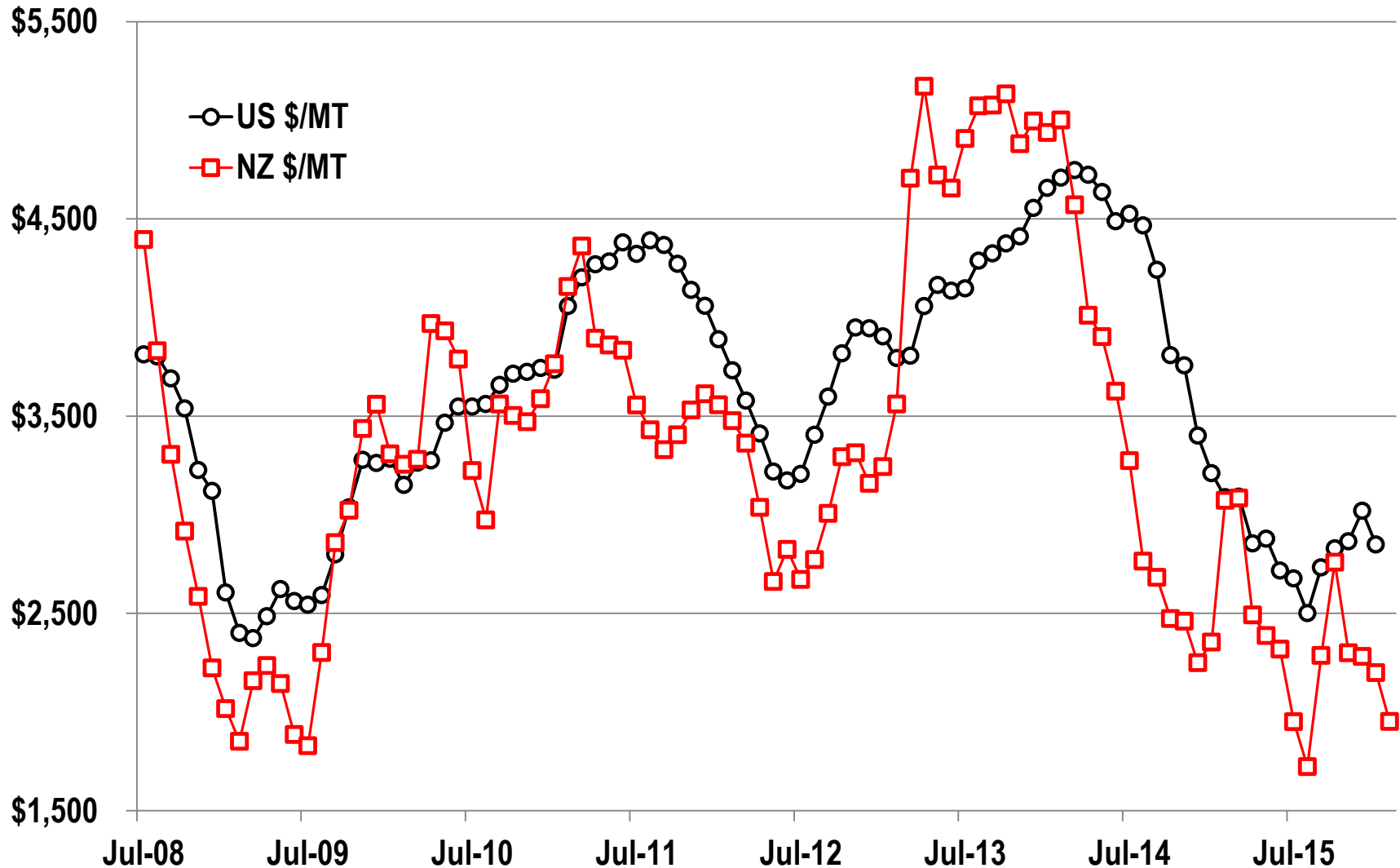
Net Trade Balance

Ag, Forestry and Fishing



Global markets will move together

Whole Milk Powder Pricing

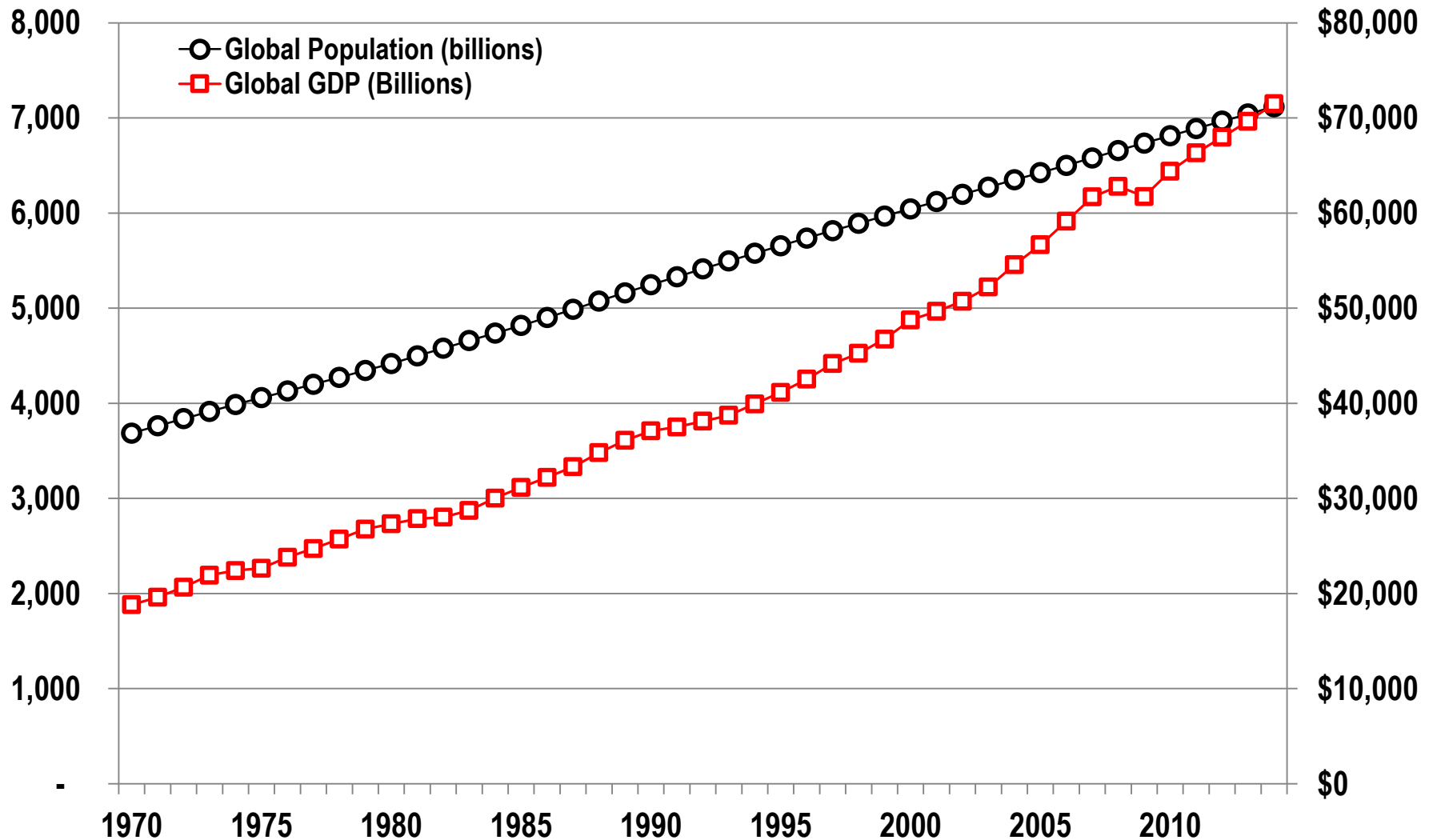


China and Global Demand

- **What happened to my happy ending?**
 - Population and GDP
 - We did not ask about their response
- **Did relative competitiveness change?**
 - North America remains dominant
 - Pricing is always relative
- **Technological change**

Dominant trends masking cycles

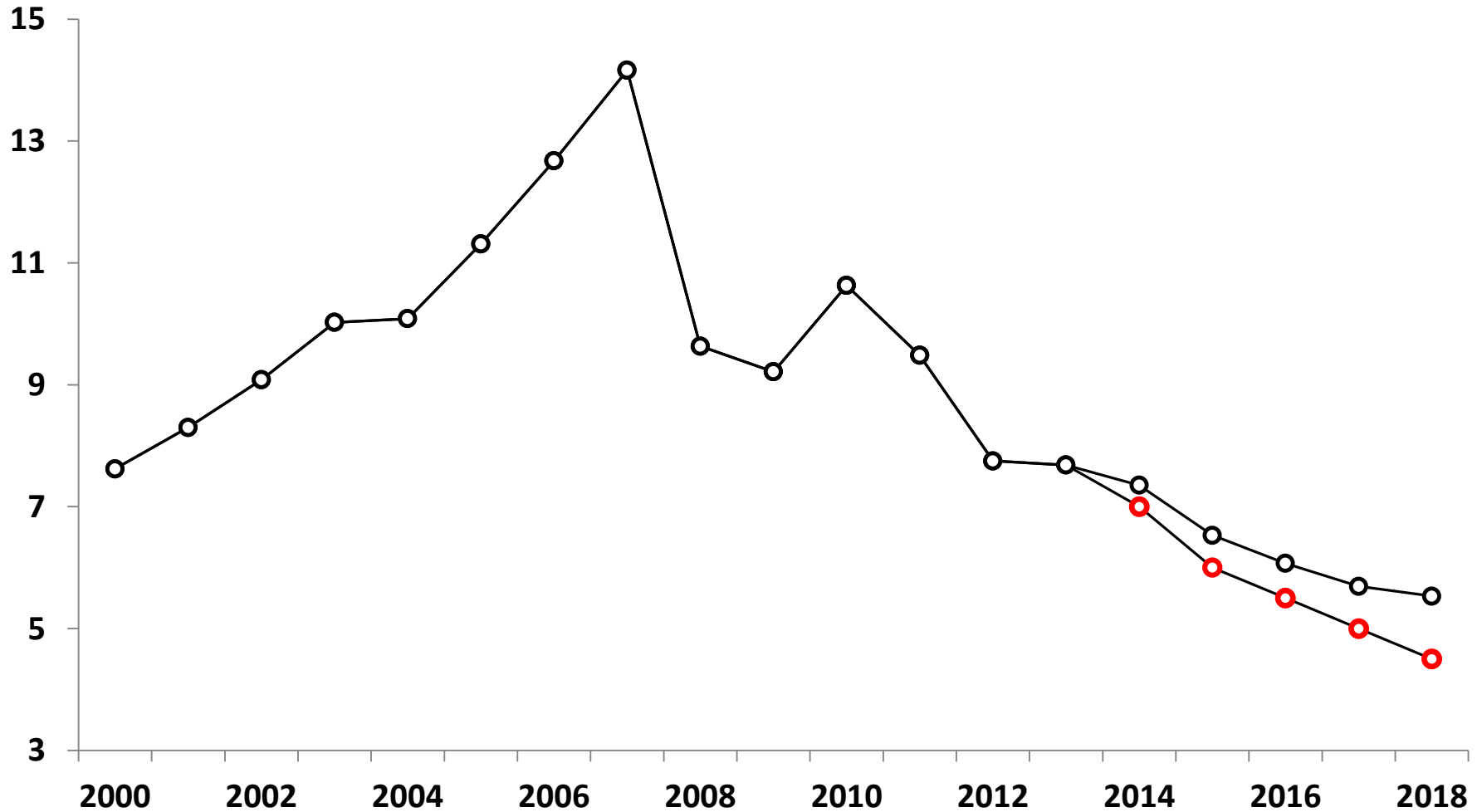
Global Trend Factors



Smooth landing or tough sledding

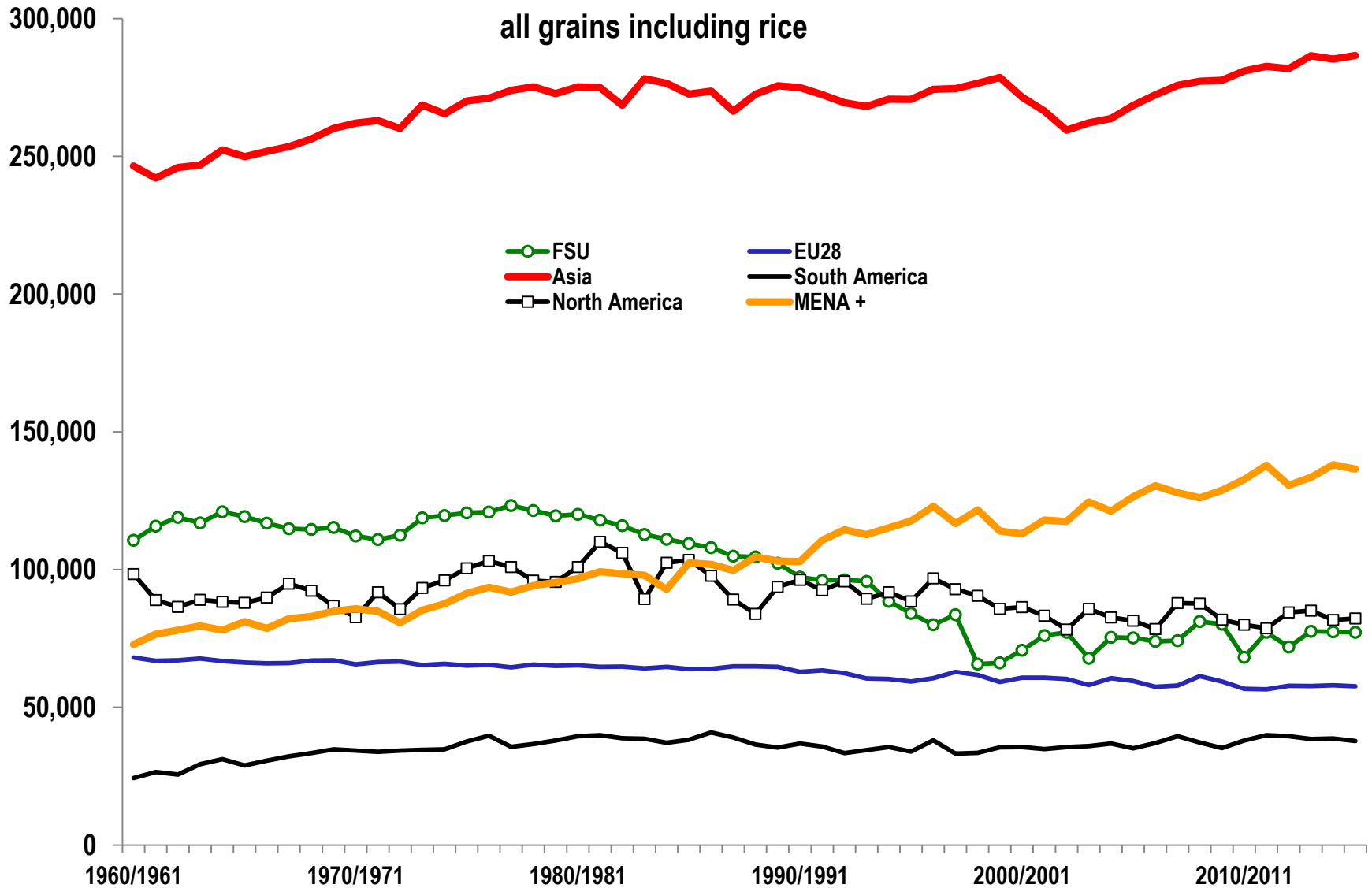
Chinese GDP Change

Year over Year Real Pct Chg



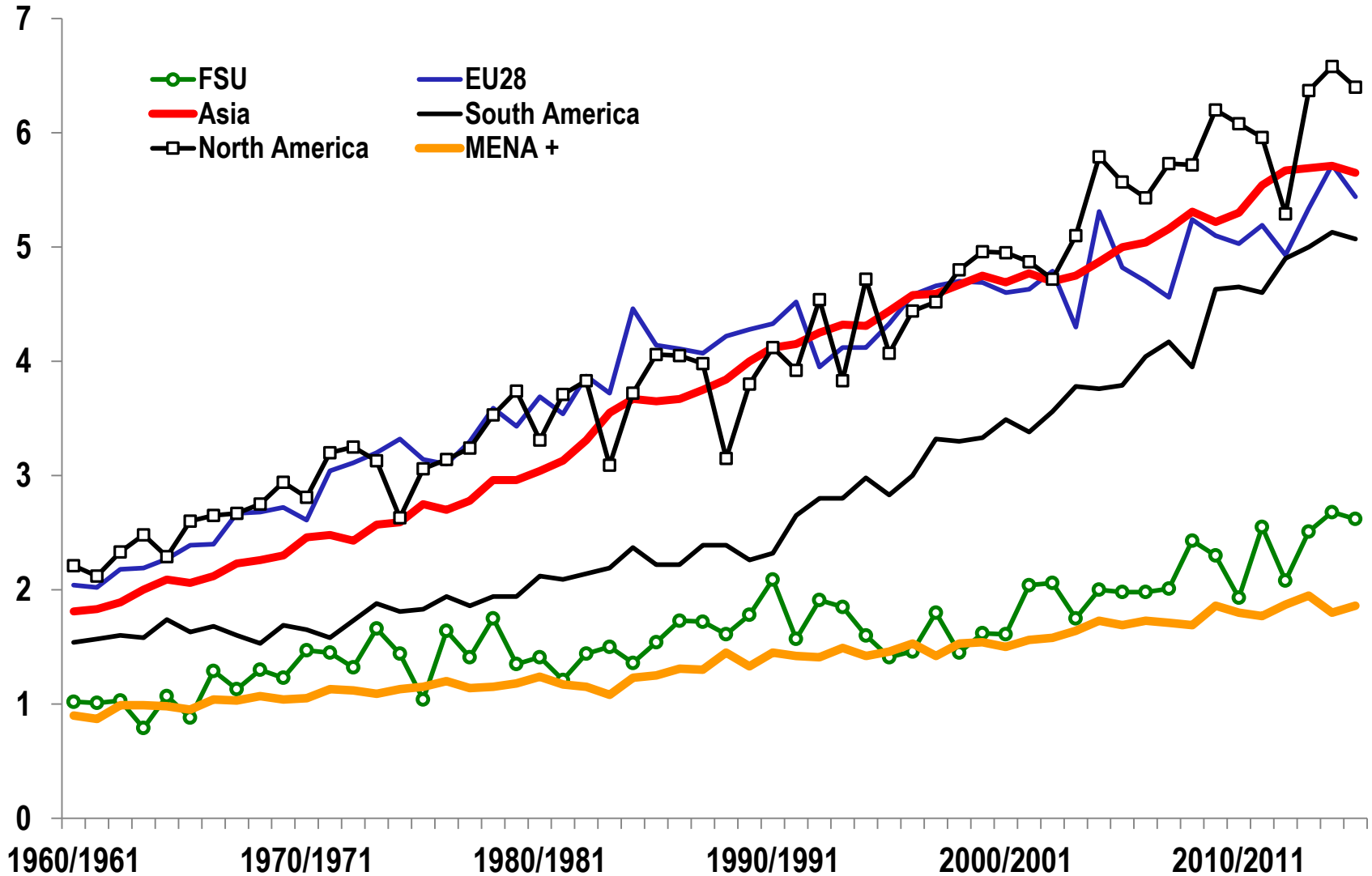
It was the FSU who lost the battle

Thousands of Hectares Harvested
all grains including rice



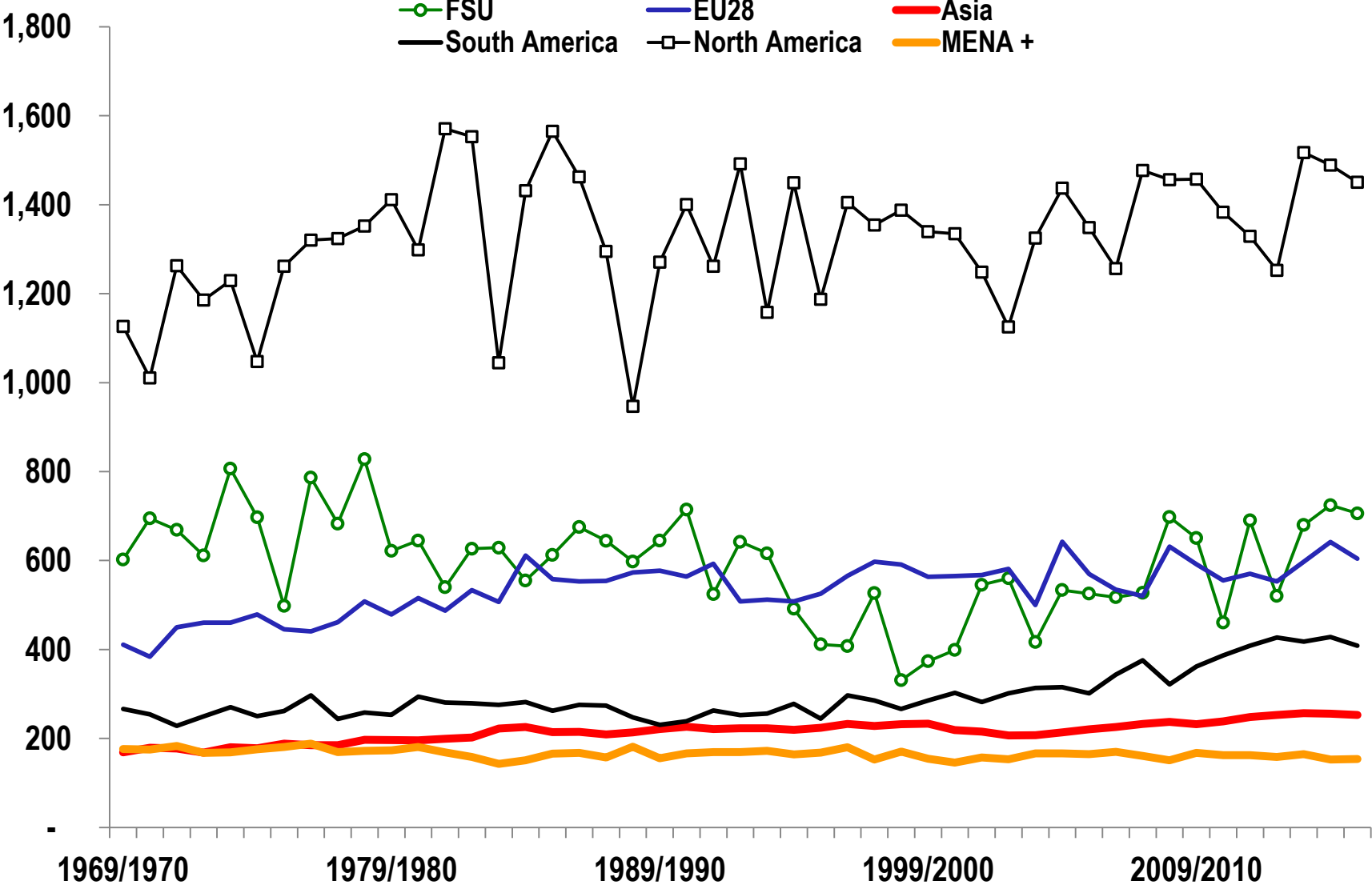
You compete on yield – South America leads the change

Yield: MT/HA for all grains including rice



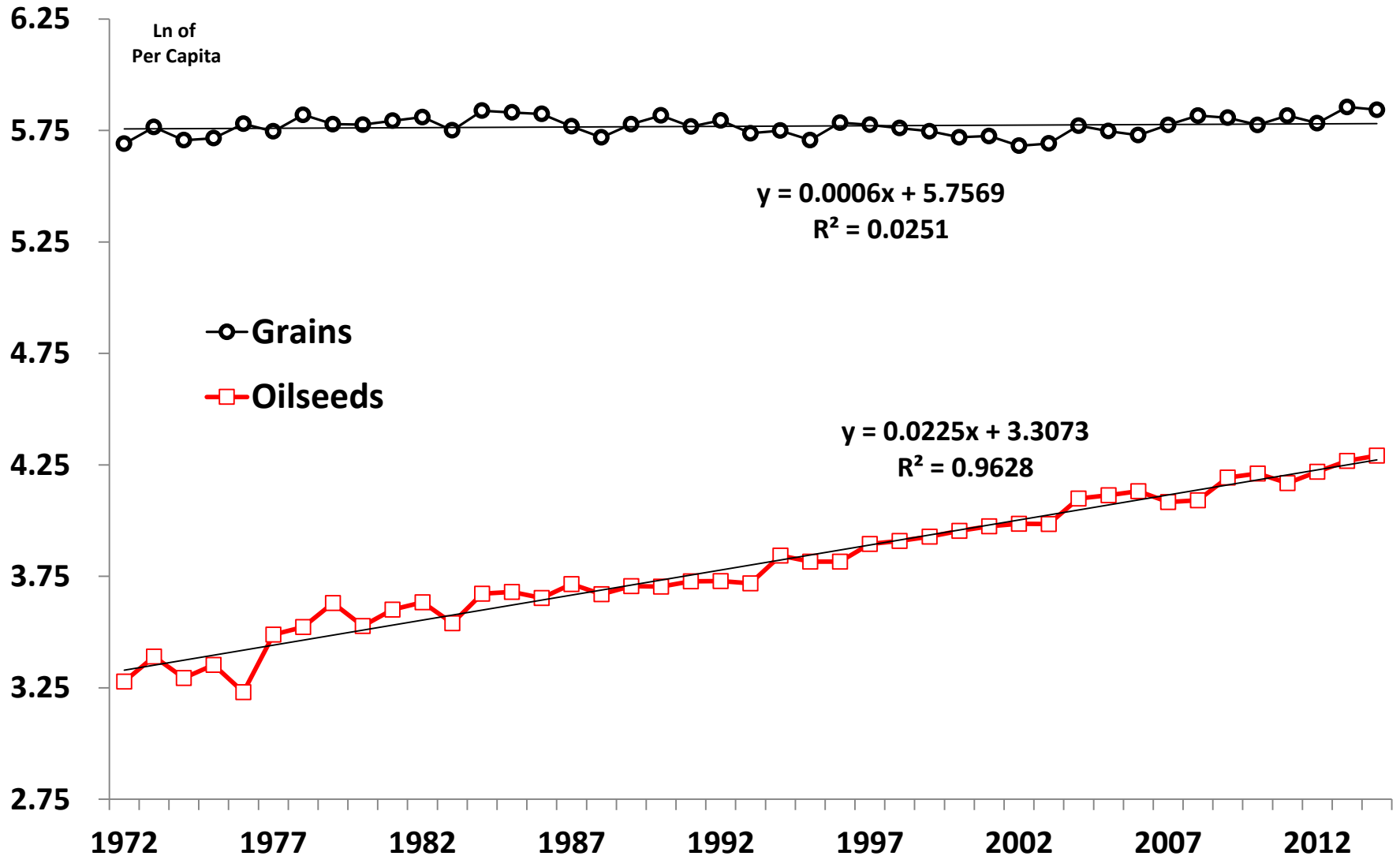
Does the world want more grain?

Supply: KG/Per Capita for all grains including rice



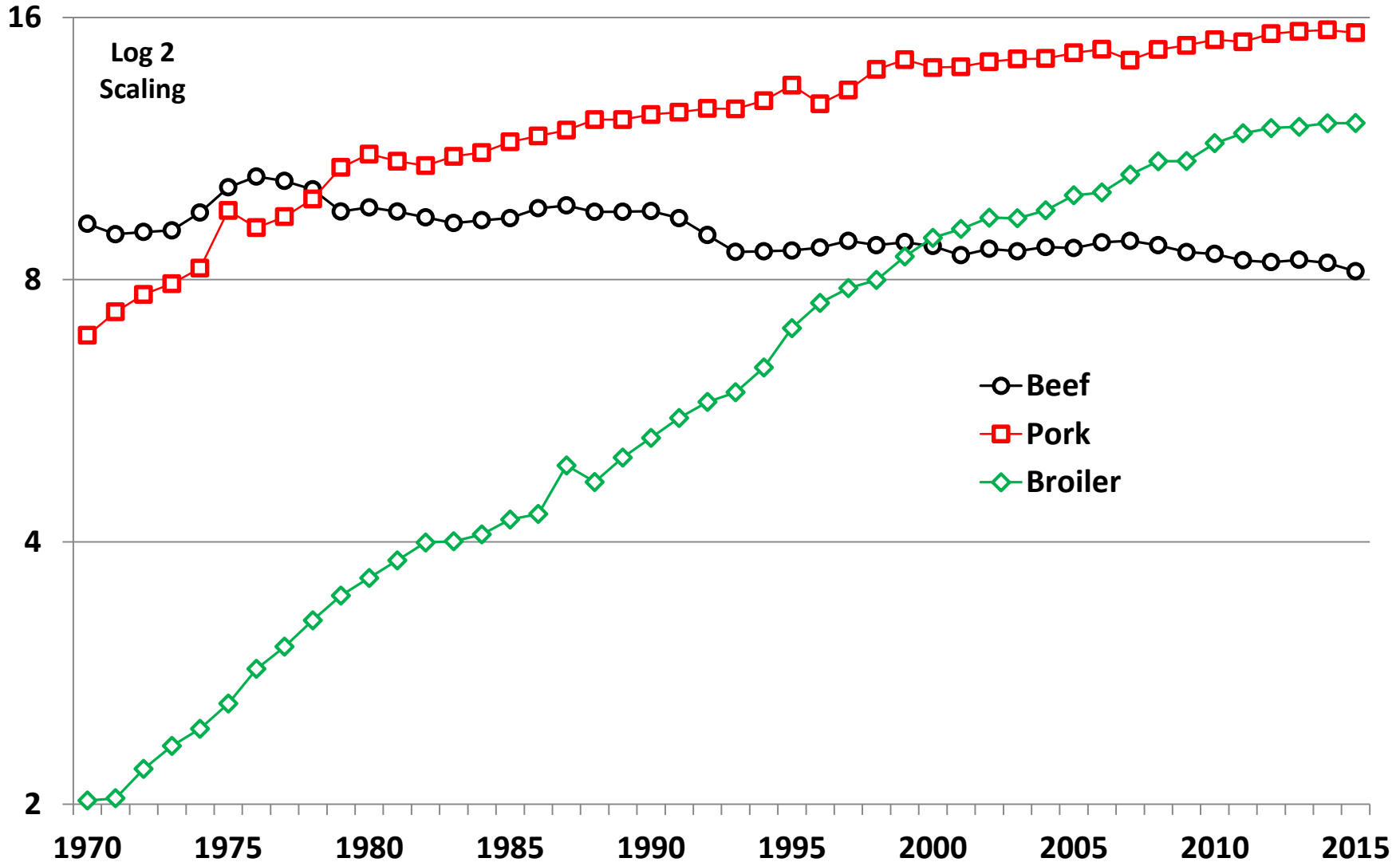
Evidently they want more oilseeds

Global Supplies Per Capita



Never forget the technological change rate

Per Capita Supply in Kilograms

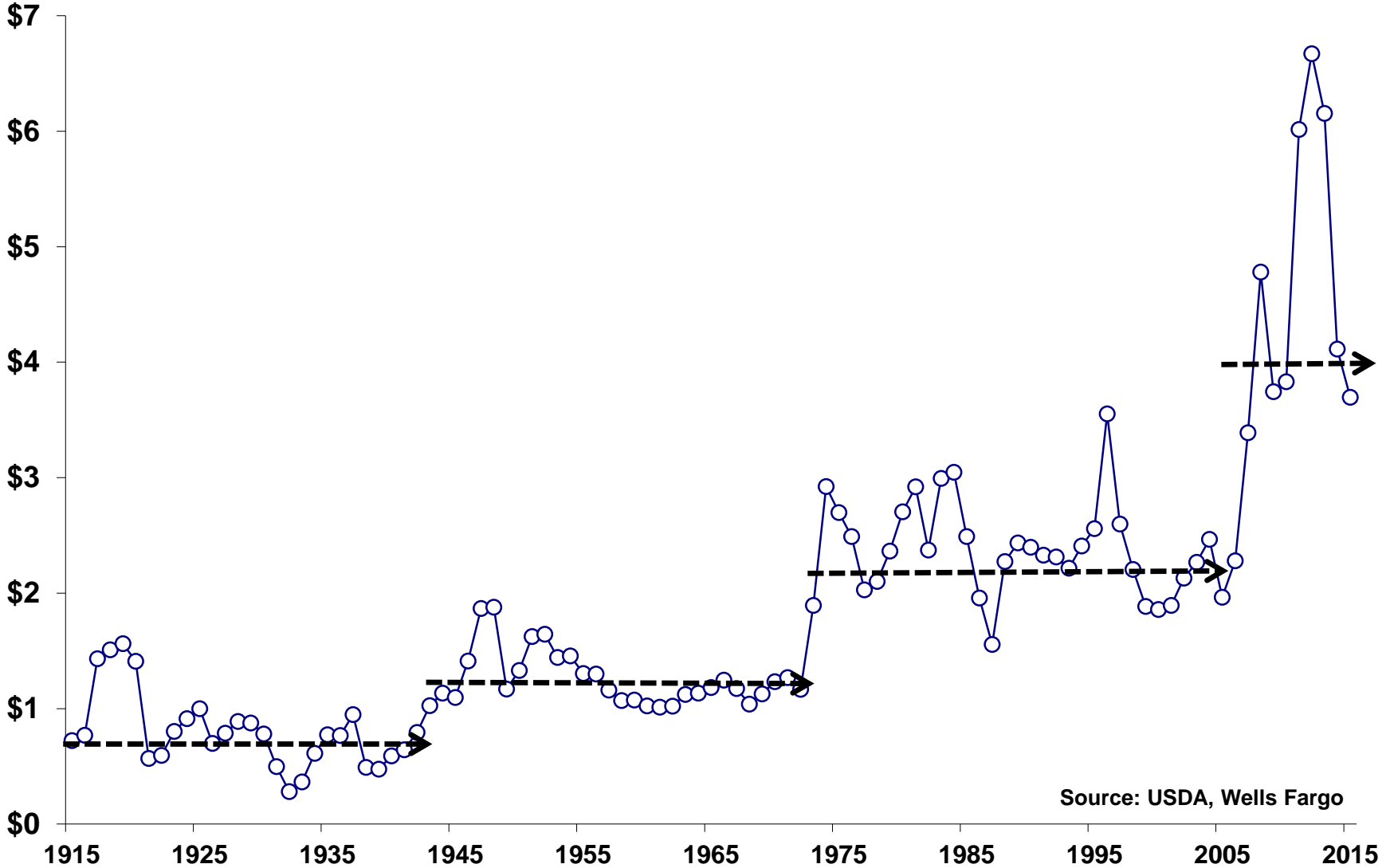


Biofuels Changed Our World

- **What is happening in ethanol?**
 - Economic growth promotes recovery
 - Their alternative pricing is dire
- **They will be slow to respond**
 - Record profits in 2014 and most of 2015
 - Mixed models
 - Energy companies
 - Farmer cooperatives
- **Technological change**

Celebrating 100 years of wrong forecasts

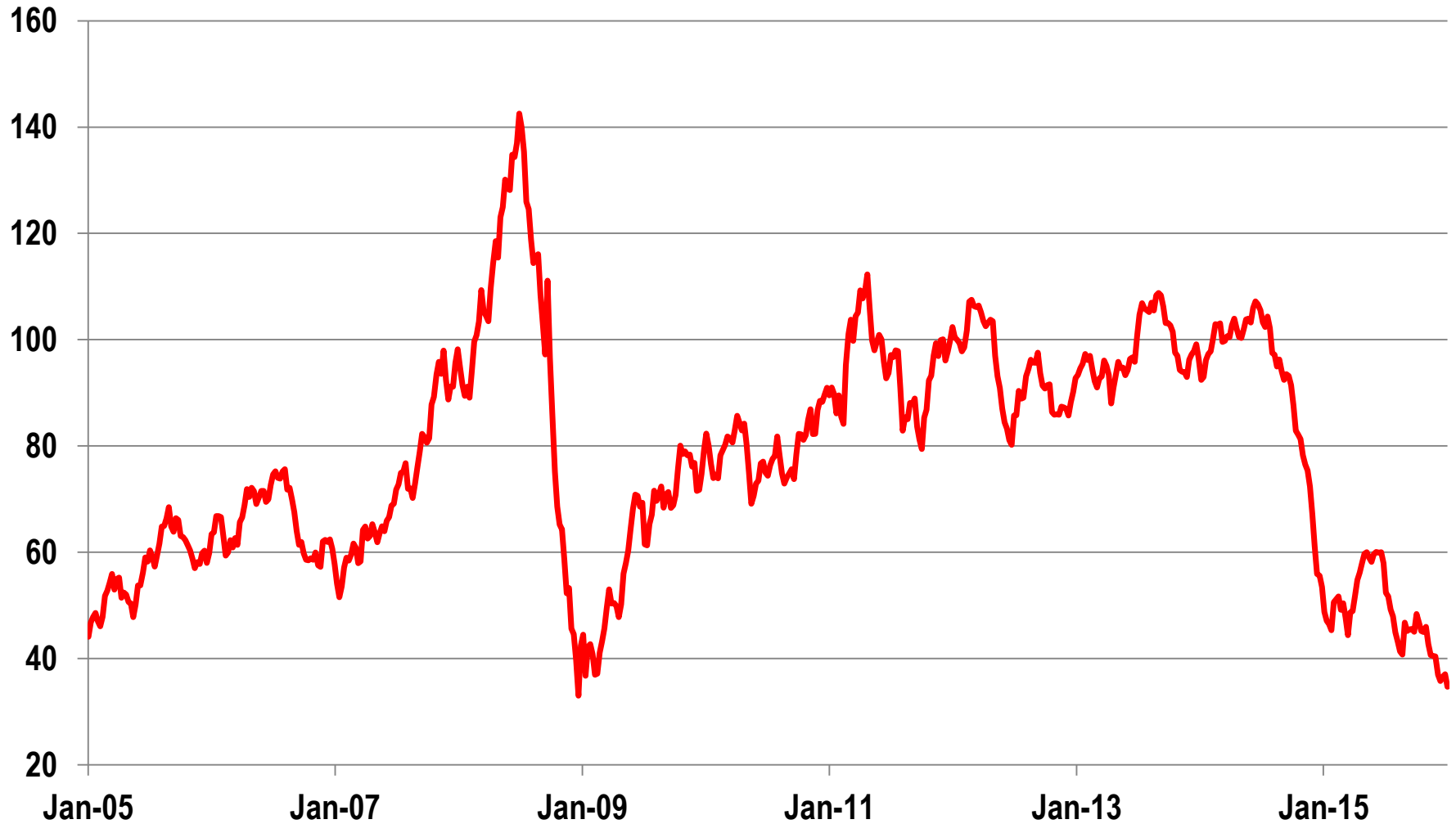
Annual Corn Prices



Source: USDA, Wells Fargo

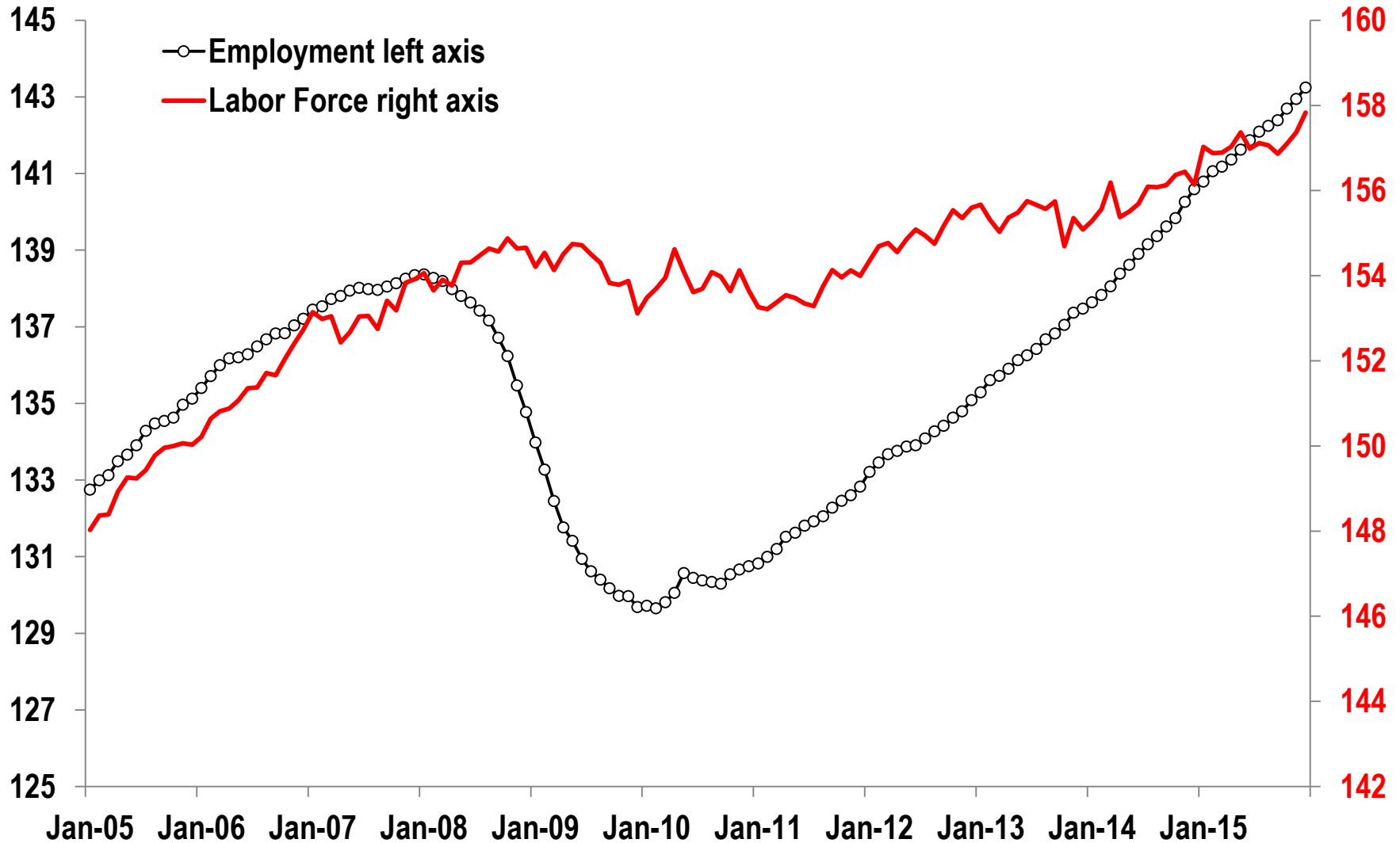
An exercise in humility

West Texas Intermediate Dollars per barrel



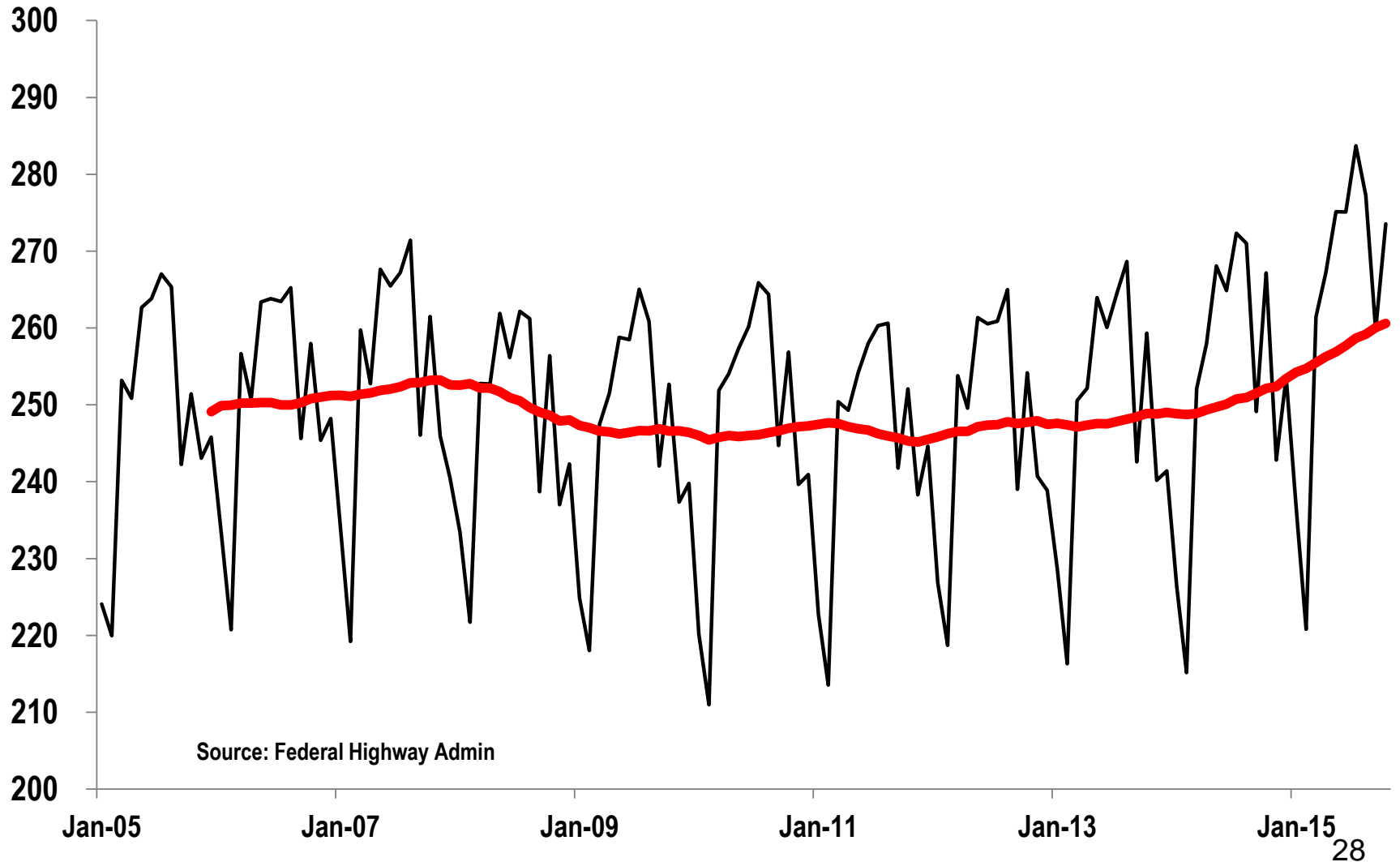
Employment creates demand

Employment v. Labor Force



Real gains after a decade pause

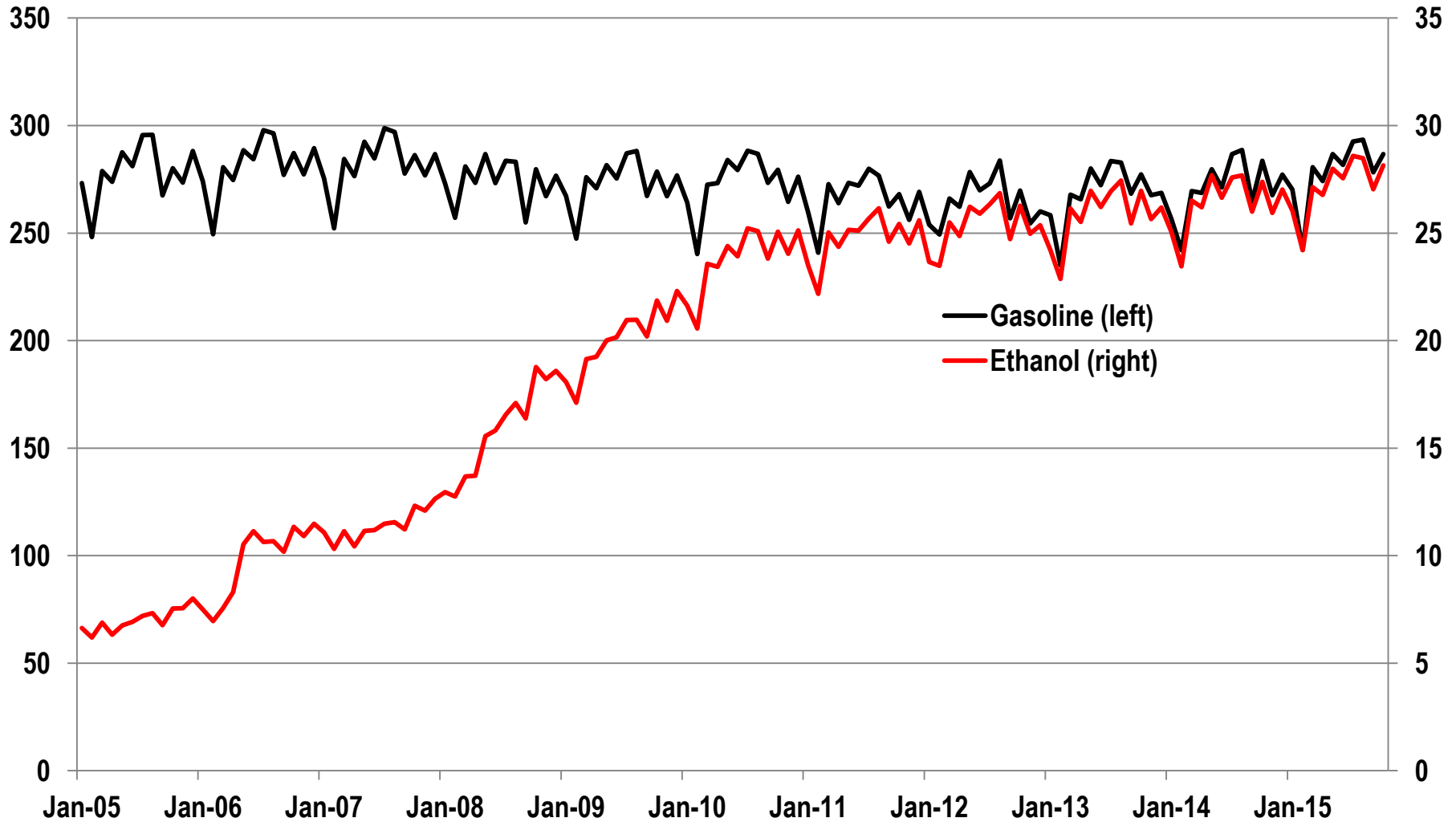
Billions of miles Driven



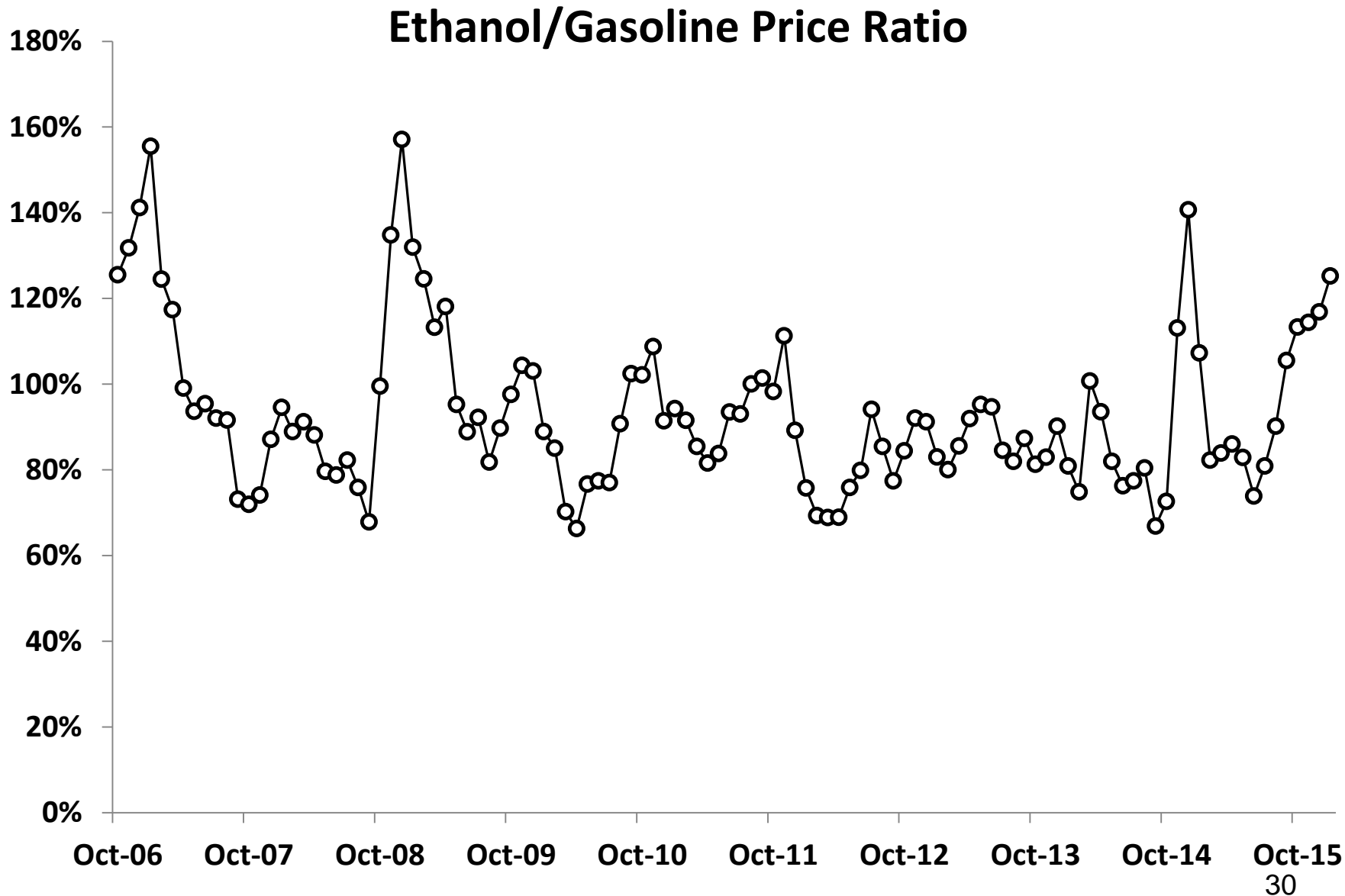
The blend wall exists

Gasoline and Ethanol Utilization

Millions of barrels

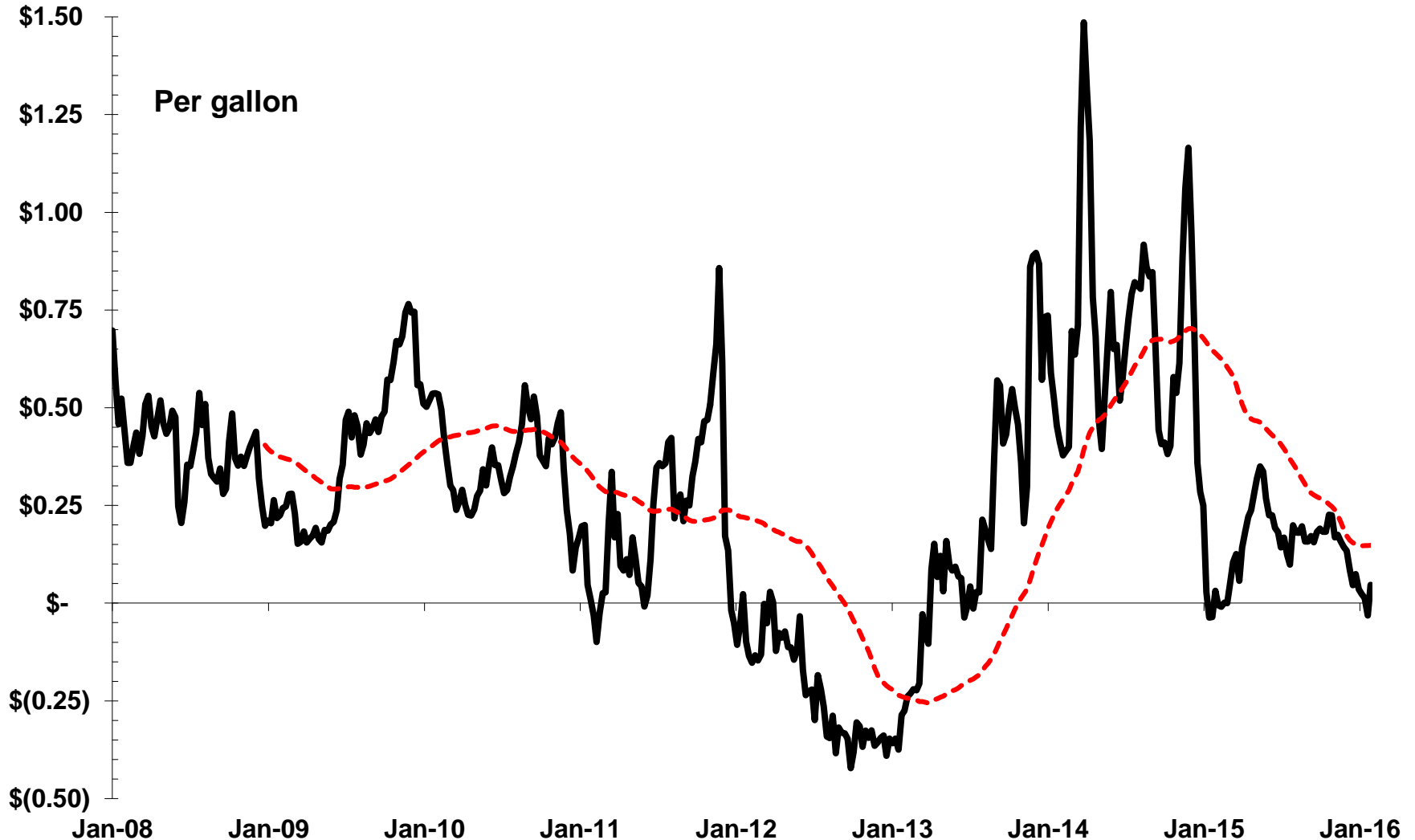


Ethanol has too much of a premium



No discipline till the cash runs out

Iowa Spot ethanol less spot corn 20 lbs.



Oil → Gas → Ethanol → Corn → You

- **Corn is trapped by low oil**
 - The RFS mandate becomes problematic
 - Low corn prices support low protein
- **Protein exports hampered by the US dollar**
 - Too much supply for domestic growth
 - Retail and wholesale will benefit
- **Battery technology will kill ethanol (someday)**