

Issues in Thailand's Agriculture

Lecture 12
Bhanupong

Main themes

- Declining agricultural terms of trade
- Agricultural growth and volatility
- Food security and grain dependency
- Agricultural export revenue
- Benefits and costs of the rice-mortgage scheme

Unfavorable and declining terms of trade

- The terms of trade refer to the relative price of exports / imports (P_x / P_m).
- A decline in the terms of trade means the price of exports falls relative to imports.
- A country will have lower living standards and less ability to import.
- If Thailand exports rice beans and imports manufactured goods. a decline in the terms of trade will mean Thailand will see the price of rice falls relative to manufactured goods.
- Thailand has to export relatively more rice to get the same quantity of manufactured goods (fertilizer).
- A prolonged fall in the terms of trade could be seen as a problem because it can lead to declining living standards and lower GDP.

Declining Terms of Trade and its volatility

Source: Mondi Index



Description: Monthly ratio of the price of Rice divided by the price of DAP fertilizer

Terms of trade movements and economic growth

- Terms of trade movements are a very important determinant of economic growth, with volatility in the terms of trade much more significant than the long term trends.
- This was particularly the case for developing nations whose exports are dominated by primary commodities.

Level of development and export composition

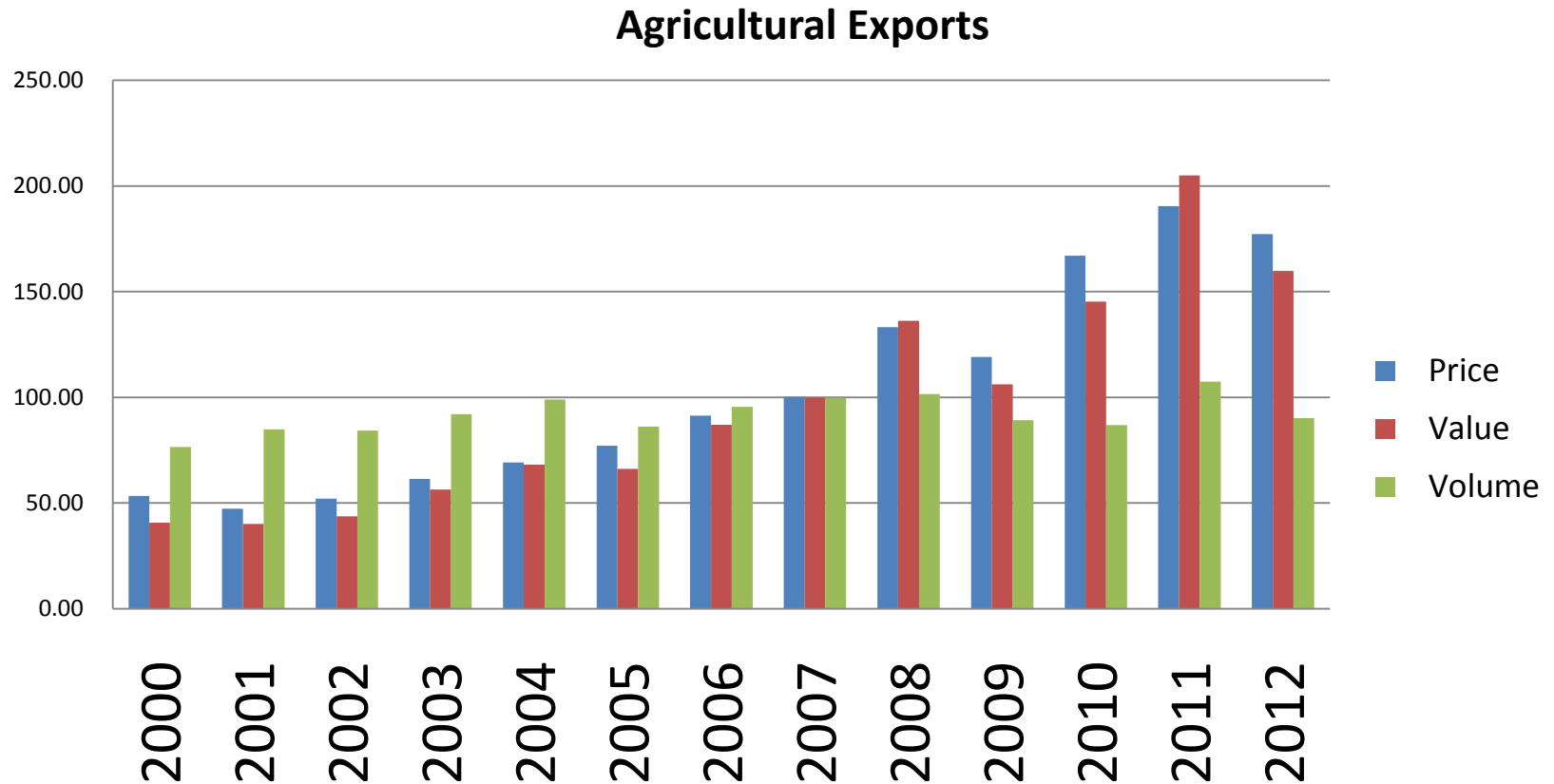
Industrialized nations, which are more likely to have a broader export structure, appeared to be significantly less affected by both the trend and volatility of the terms of trade.

But Thailand has undergone structural change in export pattern into manufactured products.

Total revenue from agricultural exports ($P_x Q$)

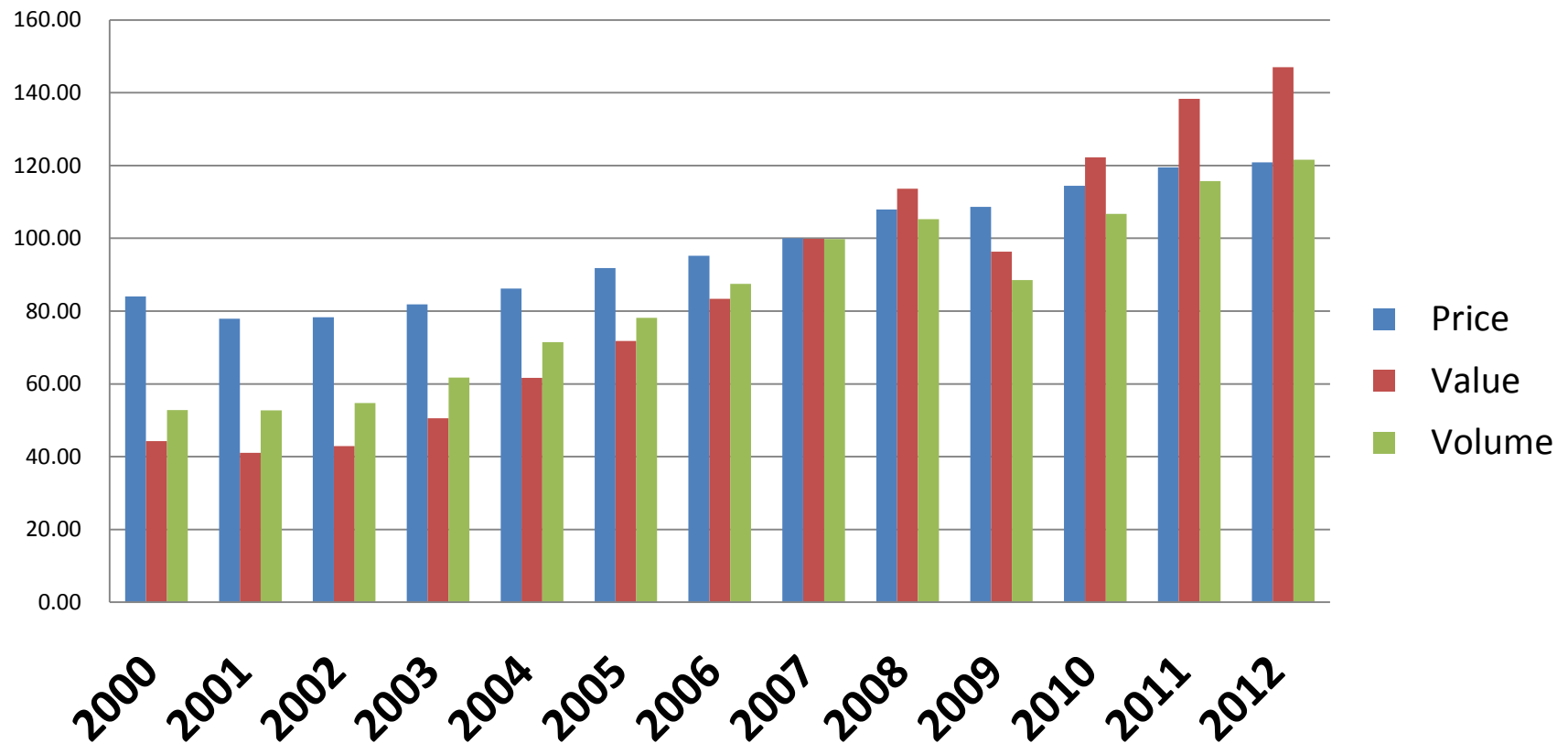
Price factor P_x dominates quantity (Q)

P_x is exogenously determined in the world market



Thailand cannot affect its own export prices of manufactured products

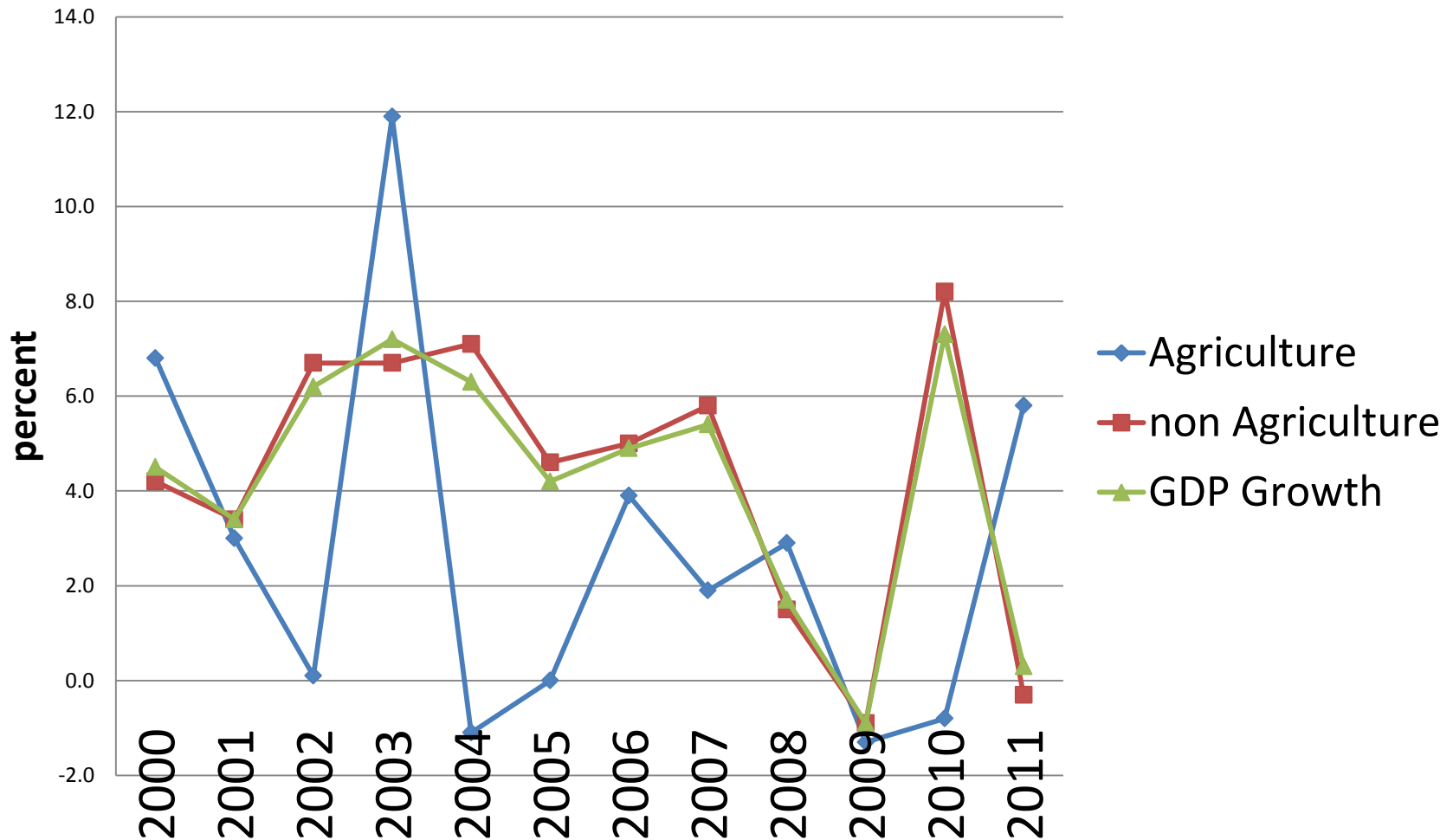
Manufactured exports



Correlation coefficients between export values (2000-2012)

	Price	volume
agriculture	.98	.62
manufacturing	.98	.99

Because of low output share, agricultural growth does not matter much for overall GDP Growth



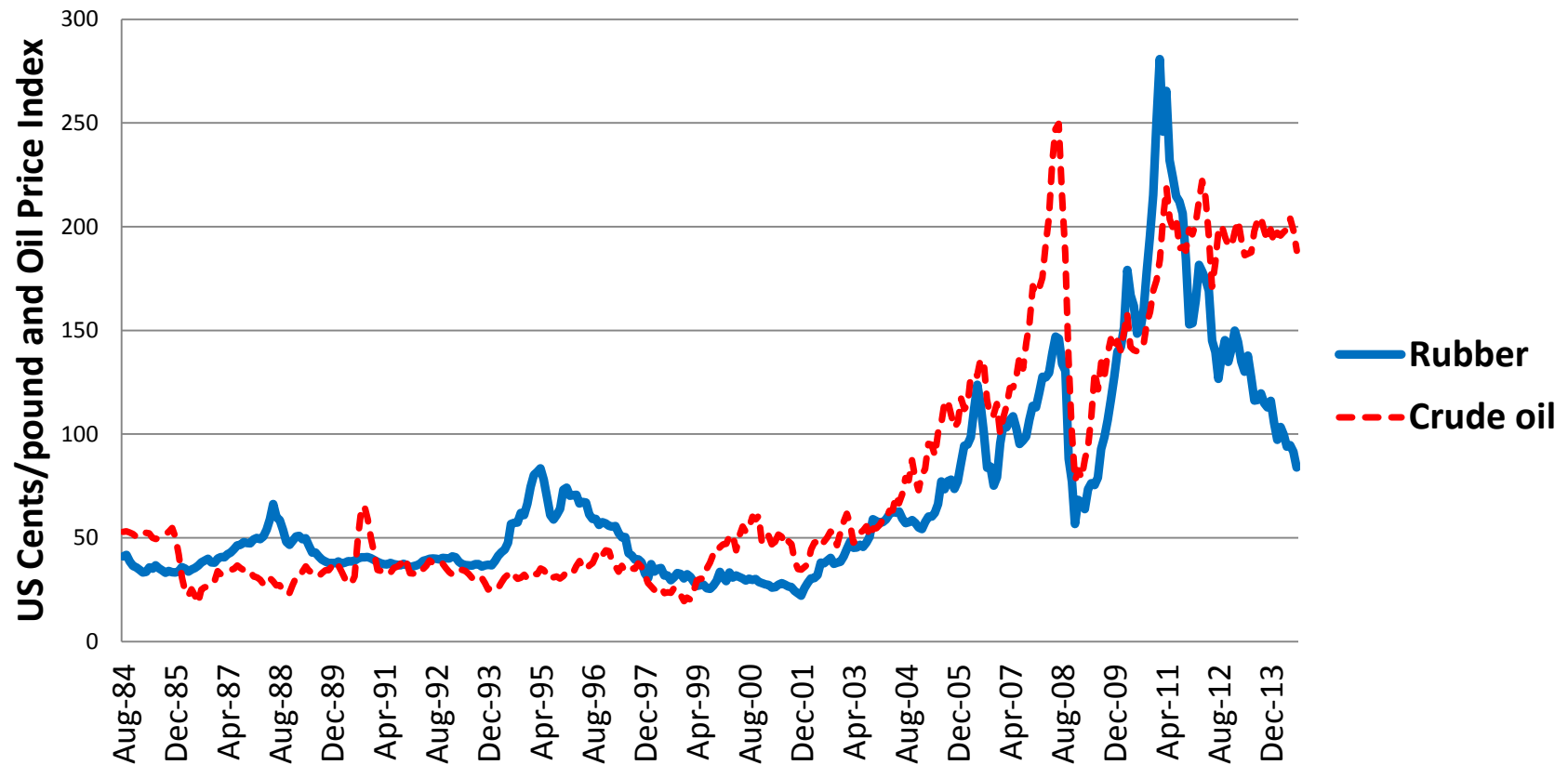
Sectoral Growth 2000-2011

	Stand Deviation	Mean	Coefficient of variation (STDV/Mean)
Agriculture	3.9	2.8	1.42
non Agriculture	2.9	4.3	0.67
GDP Growth	2.6	4.2	0.63

High Price correlation

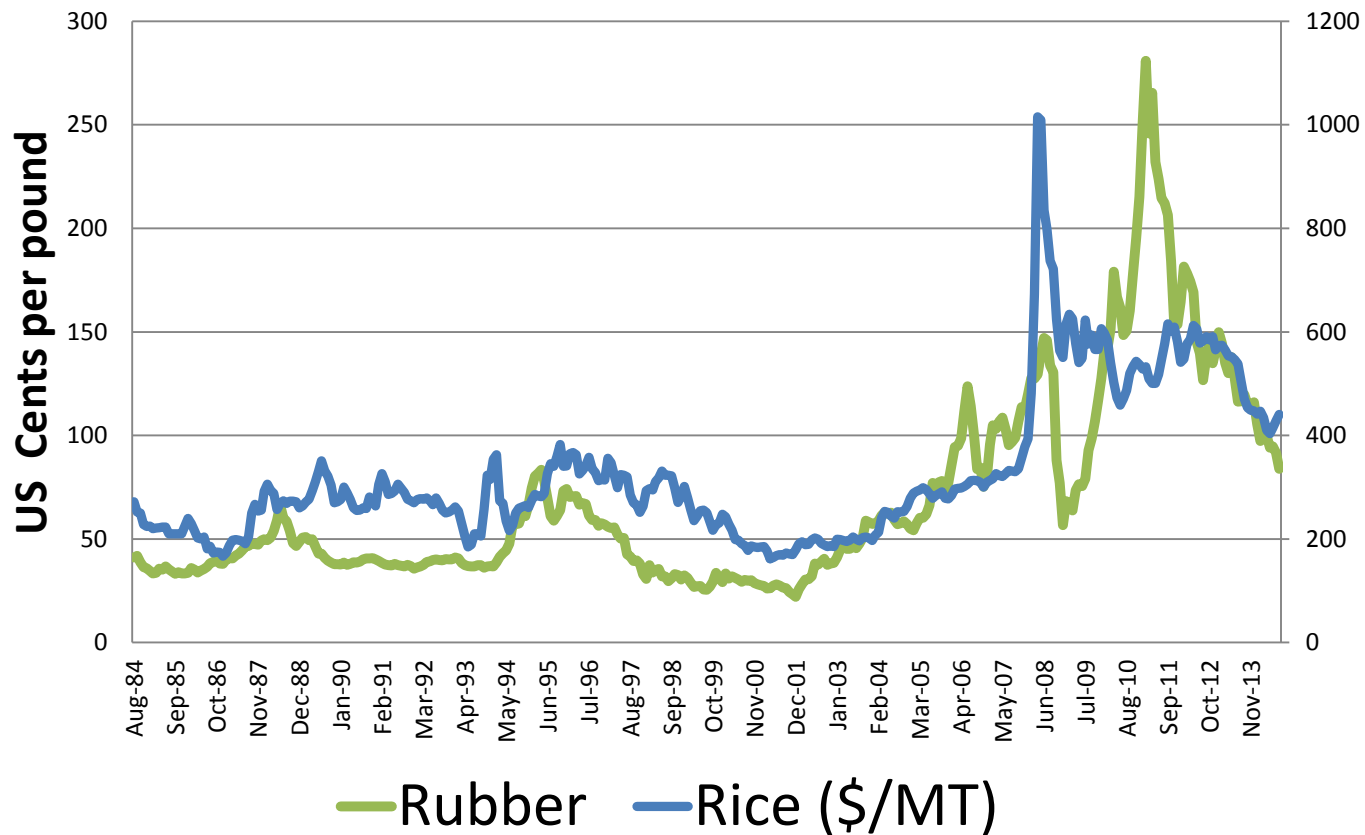
Synthetic rubber is a byproduct from oil refinery

Prices of natural rubber and crude oil

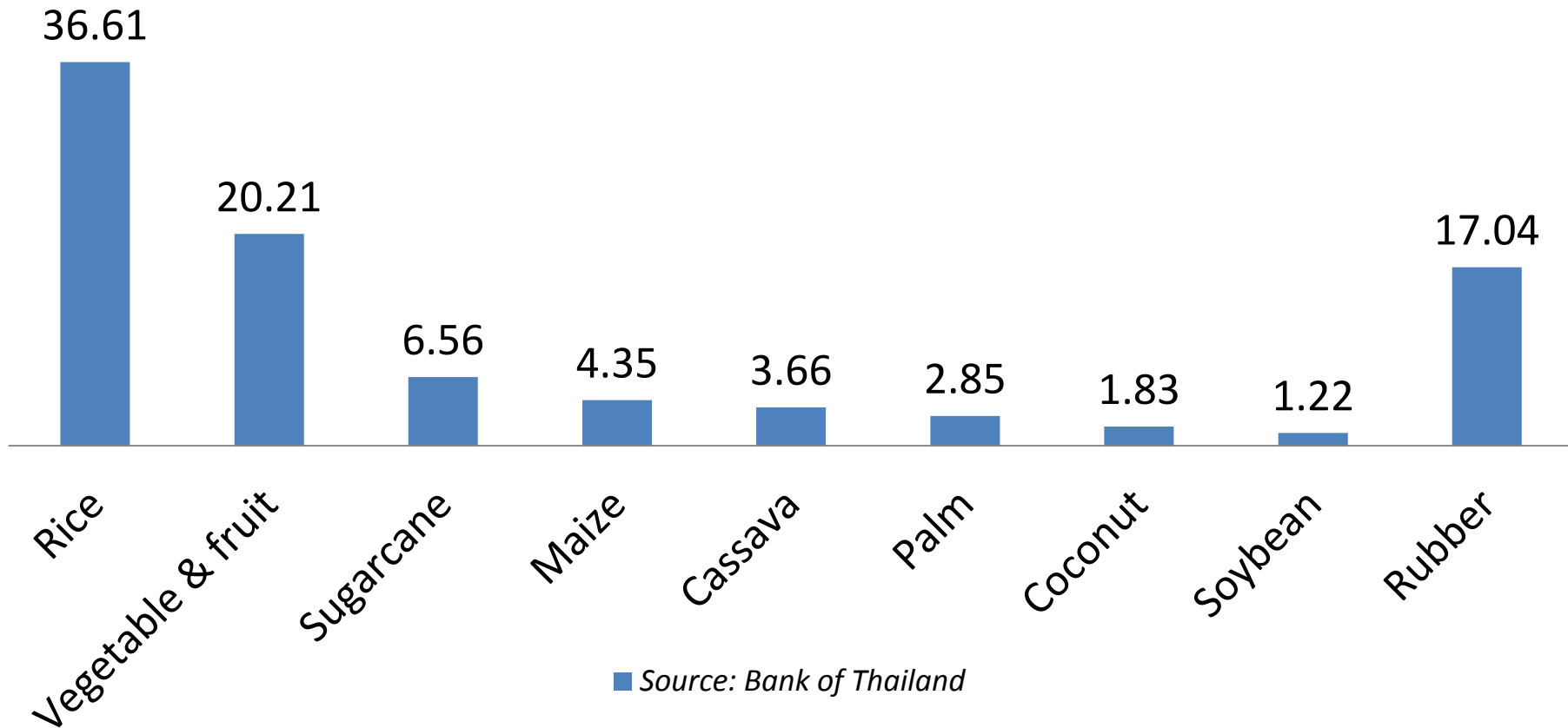


A long run relationship (co-integrated) between the two prices (correlation coefficient = 0.72)

Prices of rice and rubber smoked sheets: 30 years



Relative importance of major crop products: Weight (%) in Crops Production index

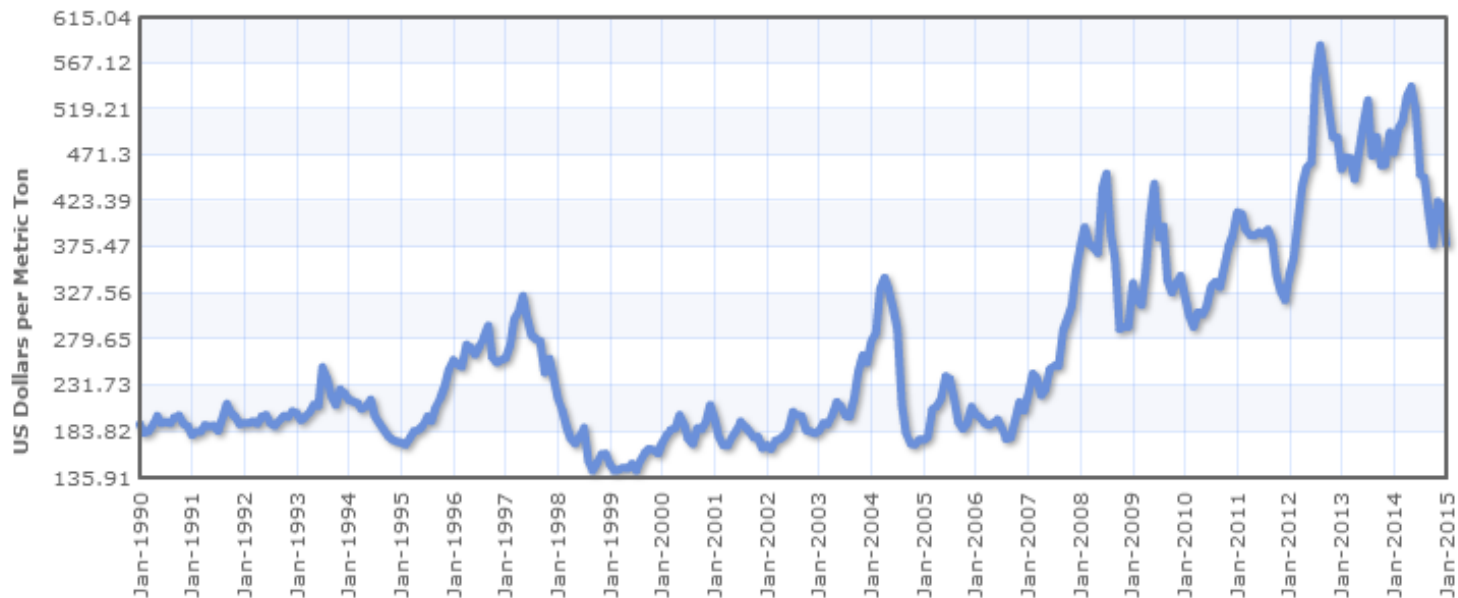


Soybean meal Price

Soybean Meal Monthly Price - US Dollars per Metric Ton

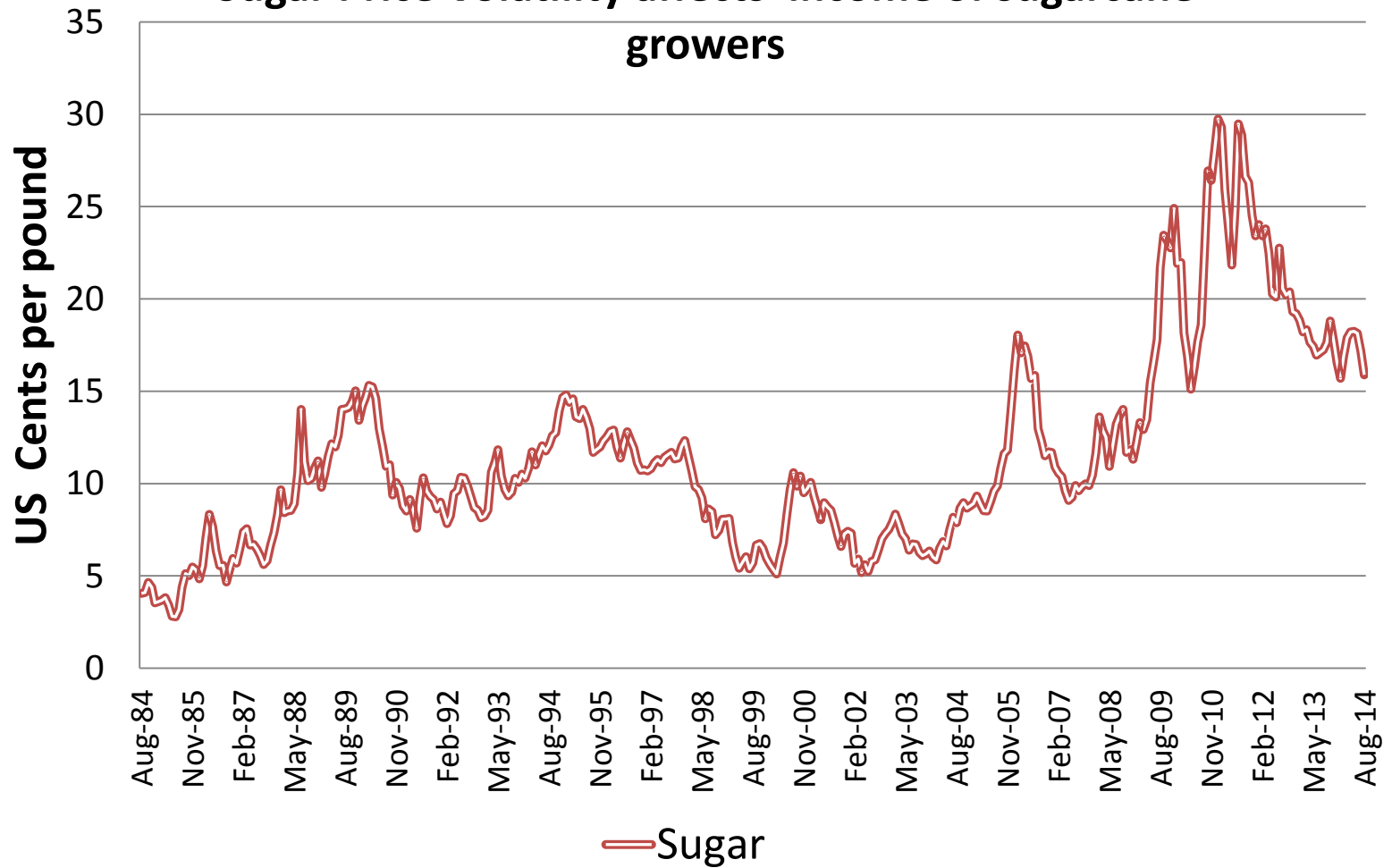
Range 6m 1y 5y 10y 15y 20y 25y 30y

Jan 1990 - Jan 2015: 187.730 (98.13 %)



Description: Soybean Meal, Chicago Soybean Meal Futures (first contract forward) Minimum 48 percent protein, US Dollars per Metric Ton

Sugar Price Volatility affects income of sugarcane growers



Maize Price

Maize (corn) Daily Price

168.90

Maize (corn), U.S. No. 2 Yellow, FOB Gulf of Mexico, U.S. price, US\$ per metric ton

Price in US\$ per bushel: 4.29

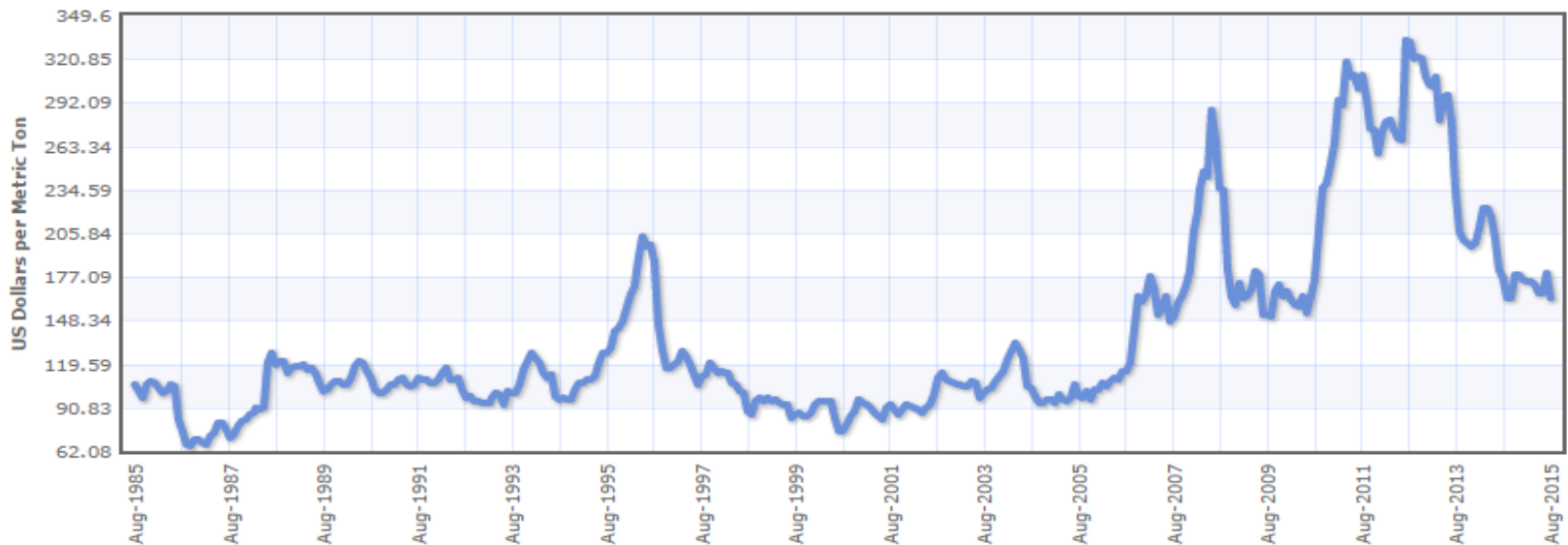
As of: Friday, September 25, 2015

Source: USDA Market News

Maize (corn) Monthly Price - US Dollars per Metric Ton

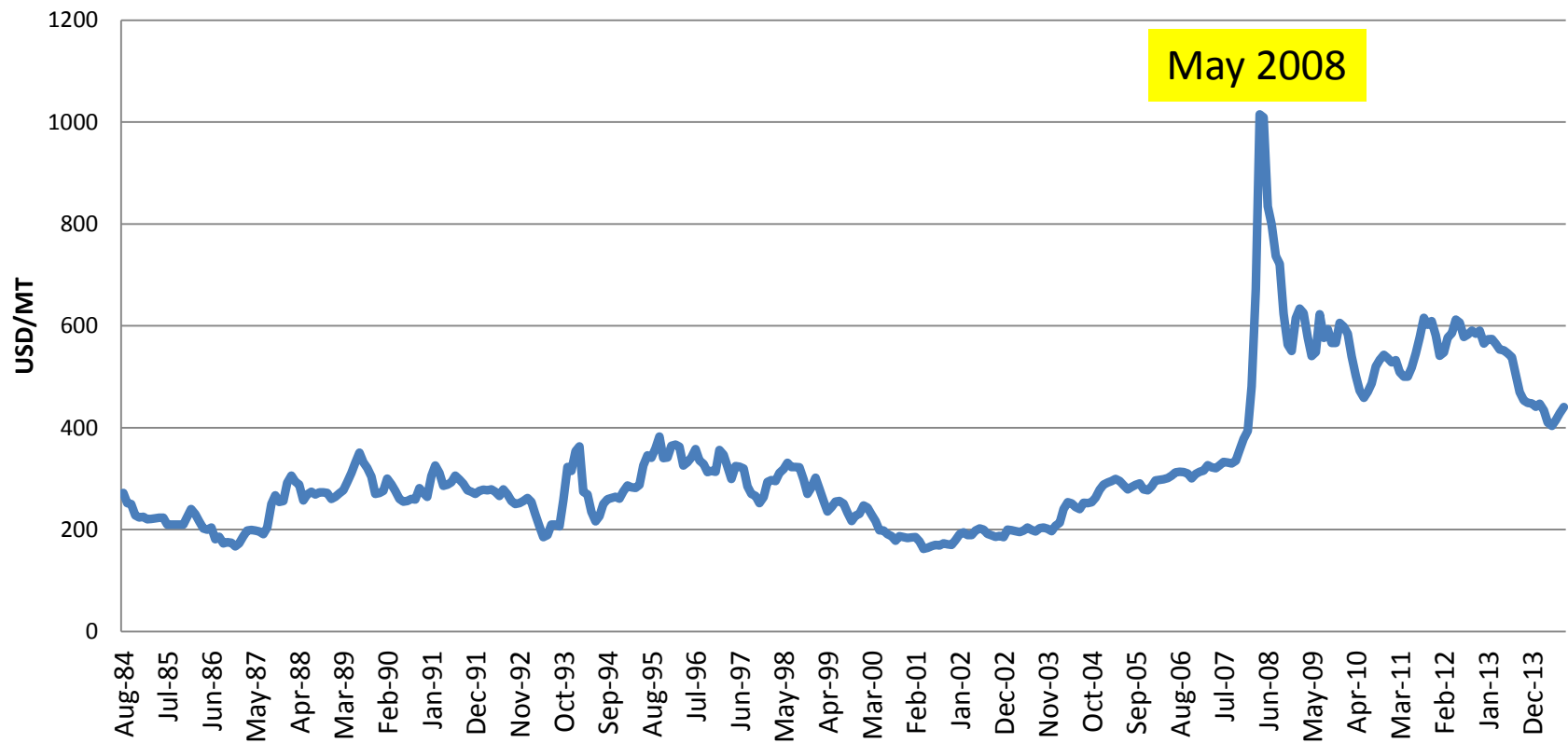
Range

Aug 1985 - Aug 2015: 57.230 (54.24 %)



5 percent broken milled white rice

Rice Price



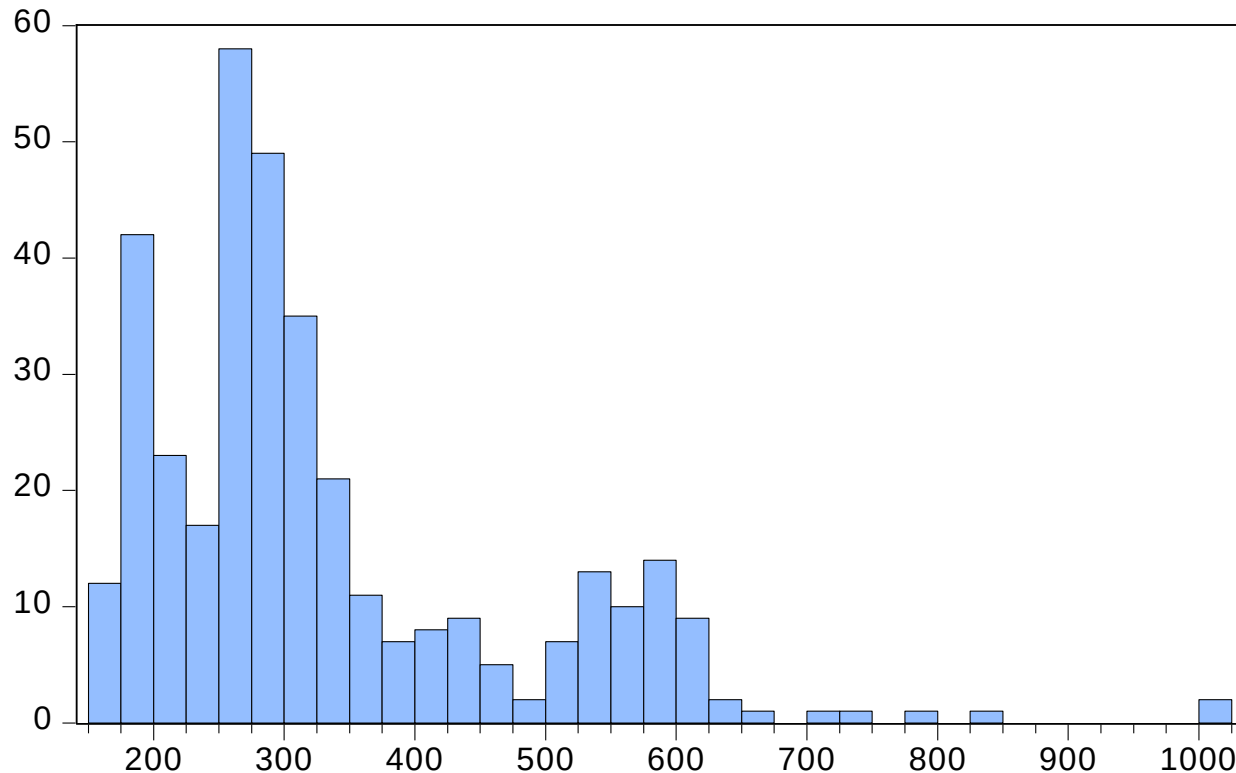
The lucky year: 2008

- Thai rice farmers only managed to get good prices in 2008 because the other main rice-producing countries, such as Vietnam and India, had to cope with natural disasters such as droughts and flooding.
- But when there are no natural disasters in other countries, Thai farmers are not able to compete with others in terms of price, because..

Fat tailed distribution of rice price

August 2015: \$375

August 1985: \$210



Series: RICEPRICE
Sample 1985M08 2015M08
Observations 361

Mean	332.9270
Median	288.3800
Maximum	1015.210
Minimum	162.1000
Std. Dev.	142.5566
Skewness	1.476983
Kurtosis	5.561379

Jarque-Bera	229.9356
Probability	0.000000

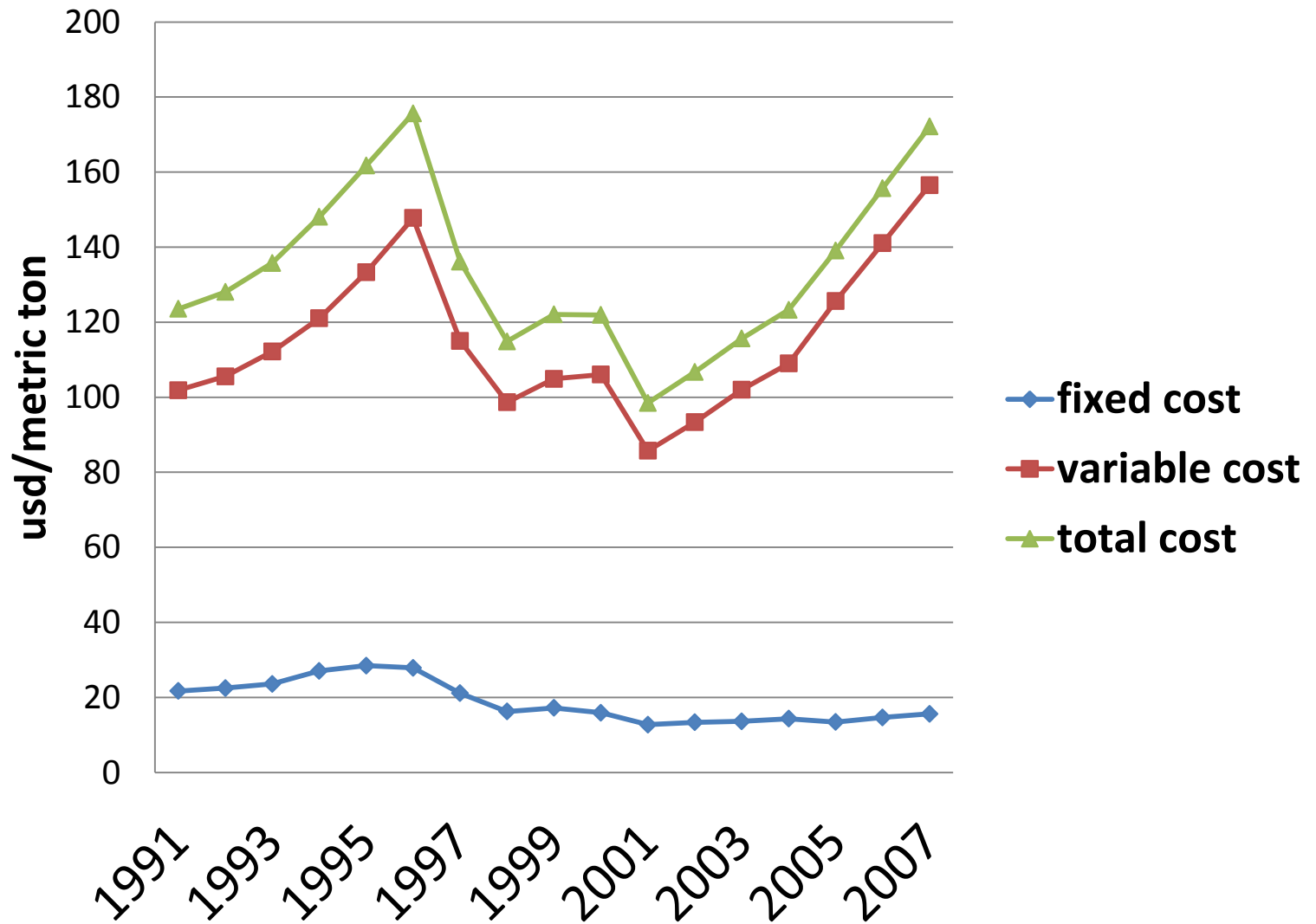
Agflation

- A wide range of factors has been blamed for the food price increases.
- Culprits include slowing agricultural productivity, climatic and weather-related factors, rising demand from China and India, higher oil prices and demand for bio-fuels, speculative behavior in financial markets, hoarding, falling stocks, dollar depreciation, low interest rates, among others.

From boom to bust

- But from the second half of 2008, global attention shifted again.
- The eruption of the global financial crisis and slide of the global economy into recession raised fears that the world economy would plunge into another Great Depression.
- One consequence of the global recession has been a fall in world commodity prices that has also affected food commodity prices.
- This fall in food prices (and the fall in oil prices) has mitigated immediate concerns about large-scale food insecurity.
- Our focus should be on cost control.

Cost of paddy production in Thailand





In this 2012 file photo farmers spray pesticide over a paddy field in Ayutthaya province, Thailand.
REUTERS/Sukree Sukplang

Cost of chemical farming (baht /rai)

Fertilizer	900-1000
Pesticides, insecticides	550-1000
Rice seeds	600-750
Fuel	300
Labor	200
Harvester rental	500
Land rental	1500
Farm management fee	2400
Total cost	7450-8150

Weeding in organic farm (Kyoto 2014)

no fertilizer, no insecticides



Disappearing buffaloes



Dwindling number of Thai buffaloes and how to stop its decline

- From the last decade, the number of buffaloes declined from 1.5 million to 840,000 heads, representing 56 % decline from 2004.
- Disappearing animal farm land, smuggling, and slaughtering of mother buffaloes for meat consumption.
- Department of livestock proposed 5.6 billion baht budget for raising buffaloes to 1 million heads within 10 years.

Two-wheeled walking tractor



Imported John Deere



Supply and demand analysis

- Price elasticity of supply depends on local conditions: shifting between rice and other crops as price changes
- Price elasticity of demand depends on its substitutes
- With increasing number of new competitors, the demand for Thai rice becomes more elastic.
- Thailand can no longer enjoy the monopoly power in world rice markets.

Jasmine vs. jazzman

- **Jasmine rice exports will soon run into fierce competition in the United States, which has successfully grown and registered a new type of fragrant rice called "Jazzman".**
- Louisiana State University's Agricultural Centre have come up with a new variety of aromatic rice, known as LA2125 , with a very similar fragrance, soft grain and quality as Thai jasmine rice.
- Consumers and Asian restaurants in the US may shift to serving Jazzman rice as it tastes the same but is cheaper.
- Another challenge is the yield: up to **1260 kilograms** per rai of Jazzman rice can be grown, compared to **400 kilograms** of Thai jasmine rice production.

Innovation and competition

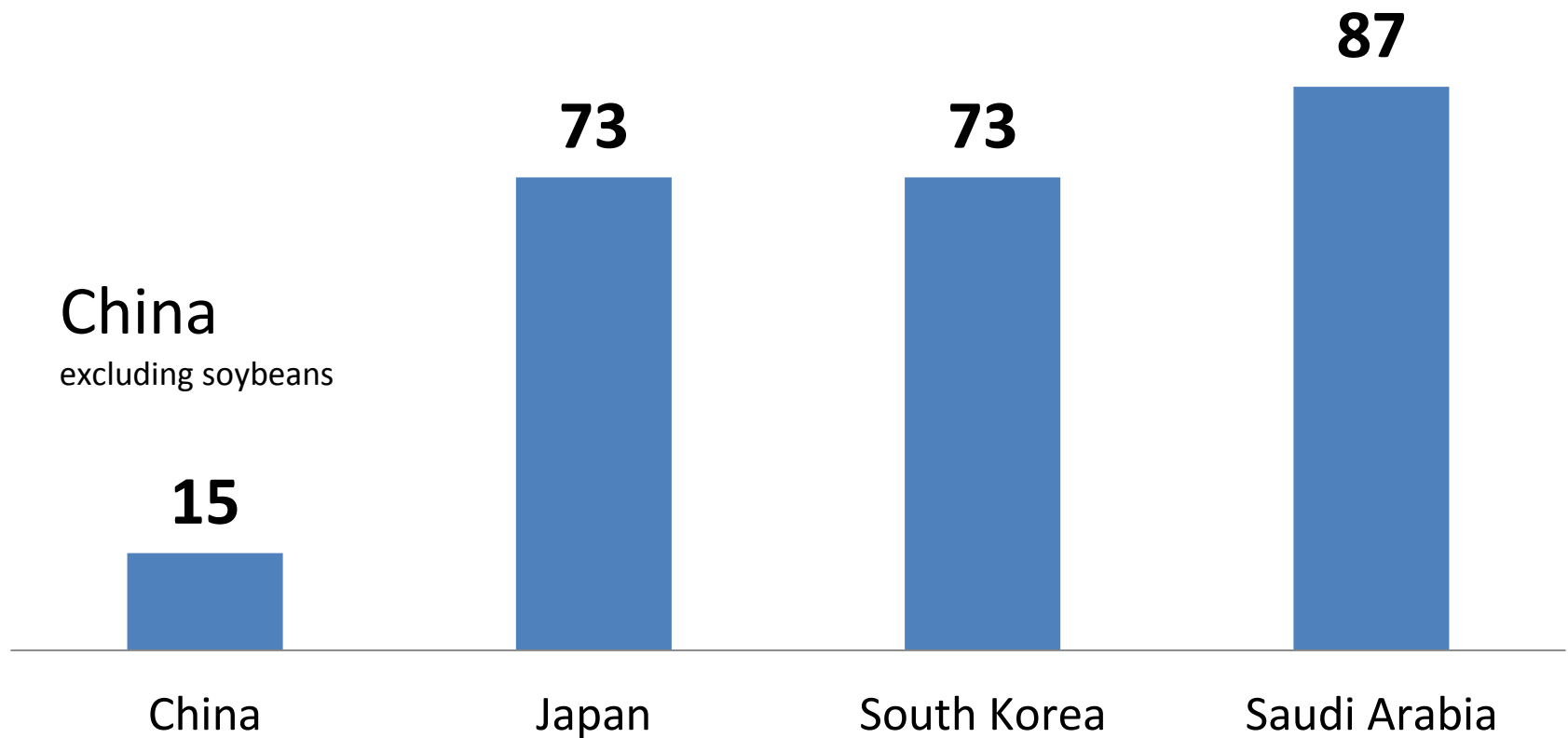
- The LSU rice breeder who developed the variety said the project required 12 years of work to obtain a long-grain rice with good milling quality, high yield and the correct aroma and flavor.
- Consumers and Asian restaurants in the US may shift to serving Jazzman rice as it tastes the same but is cheaper.

Jasmine rice from Vietnam and Cambodia

- Vietnam has already come up with rice that tastes similar to Jasmine.
- It is now on sales in supermarkets in London at 1,000 baht for 20 kg bag, compared with 1,500 baht Jasmine rice from Thailand.
- The recent dong devaluation has enabled Vietnam to offer 50% lower price than Thailand.
- In 2014, because of cheap jasmine rice from Cambodia, the share of Thai jasmine rice in Hong Kong dropped from 90% to 45 %.

Grain Dependency

■ % of imports in domestic consumption



China's self-sufficient policy

- In the early 1960s, even as tens of millions of Chinese starved in a brutal famine, Mao Zedong was reluctant to import grain.
- Now China is deeply integrated into global commodity markets.
- China calls for 95% of grain demand to be met by domestic production.

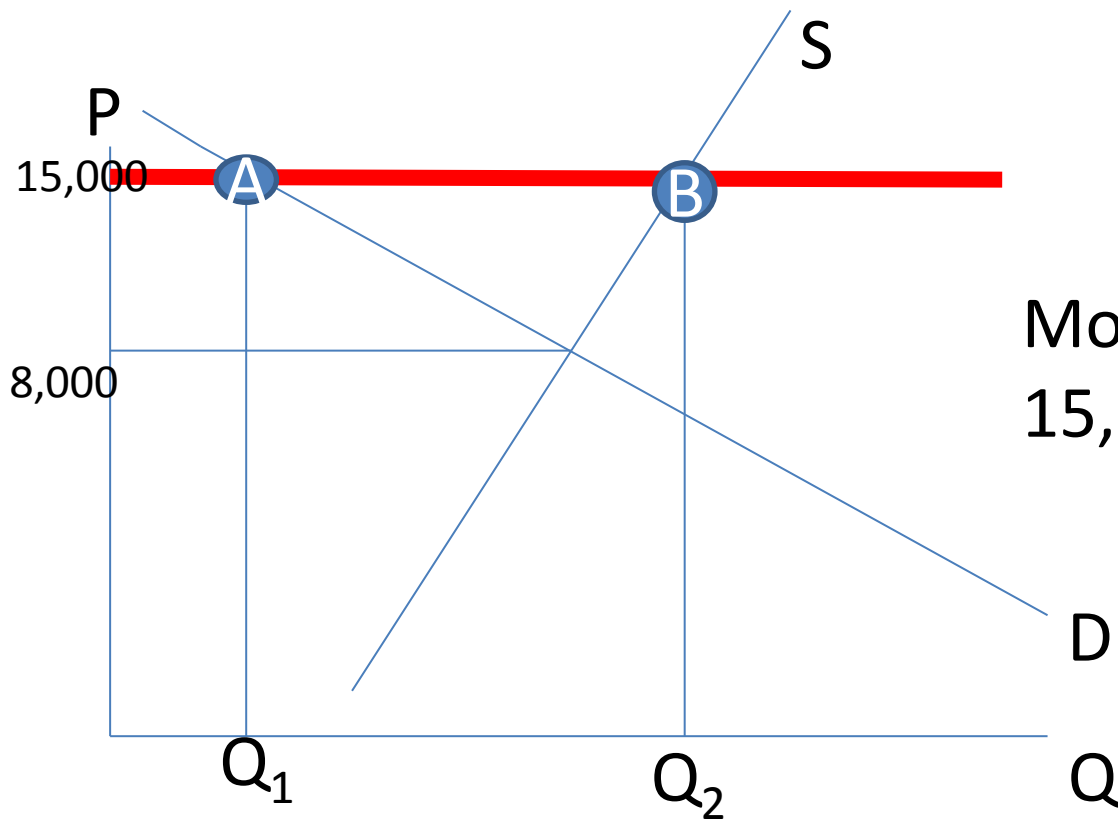
Redefine self-sufficiency

- In 1961, China would have needed 25 % of total export revenues to meet domestic grain shortfalls through imports.
- Today, that proportion is at most 2 %.
- China should import more of its food rather than dedicate limited land and water resources to growing it all.
- Earning enough foreign exchange through exports to import whatever grain you need could be described as self-sufficiency.

Paddy Mortgage Policy

- Rice exports declined after the government of Prime Minister Yingluck Shinawatra introduced a price support program in October, 2011.
- The government bought the grain from farmers above market rates to boost domestic prices and lift rural incomes.

Analytical diagram



Mortgage expenditure:
 $15,000 \times (Q_2 - Q_1)$

In 2012 Thailand rice exports hit 12-year low

- Rice exports from Thailand plunged 37 per cent to the lowest in more than a decade, plunging the nation from first in the world to third place.
- In 2012 Thailand sold 6.73 million (metric) tonnes with a value of \$4.63 billion
- Because of high cost of rice mortgage, Thai rice cannot compete with India and Vietnam.
- India became the largest supplier in 2011, selling 10.3 million tonnes, according to the USDA.
- Vietnam, world number two exporter, exported 8 million tonnes in 2011.

Impact of the mortgage scheme: Stocking up problems

- The government spent 689 billion baht in 2011 and 2012 buying rice from farmers at prices that were as much as 76 % higher than market rates.
- The government rice inventories reached 14.7 million tonnes in 2014, compared with 6.1 million in 2010.
- Storage cost and steep depreciation rate
- Smuggled rice from neighboring countries in to Thailand to get higher prices
- Loss of international competitiveness

Supply and Demand for grains

- Supply = beginning stocks + domestic production + imports.
- Uses = domestic consumption + exports + ending stocks.
- Domestic consumption = all possible uses of the commodity: food, feed, seed, waste, and industrial processing.

Disruption of the world market

- But whether the actual amount will match with the purchase figures will only be known when the rice is actually sold to exporters or sold by the government in government-to-government deals (Indonesia and the Philippines).
- The huge stockpile posed a real problem with the arrival of new harvests when warehouse space is needed to store new rice to be bought under the scheme.

Disruption of the world market

- Depreciation: the rice quality will drop if the grains are kept for too long and they will fetch much lower prices.
- Pressed with these dual problems, the government may be forced to sell cheap.
- There is no doubt the government will suffer a loss if it wants to dispose of the massive rice stockpile to make room for the arrival of new rice purchases.

An alternative

- The government has good intentions in helping farmers earn more from their crops even though it also expects to win their votes during the election.
- The loss burden from the rice mortgage scheme may be acceptable if the farmers are the only real beneficiaries of the scheme.
- However, others have benefited much more than the farmers, such as millers, brokers, corrupt politicians and officials.

Rice is a political commodity

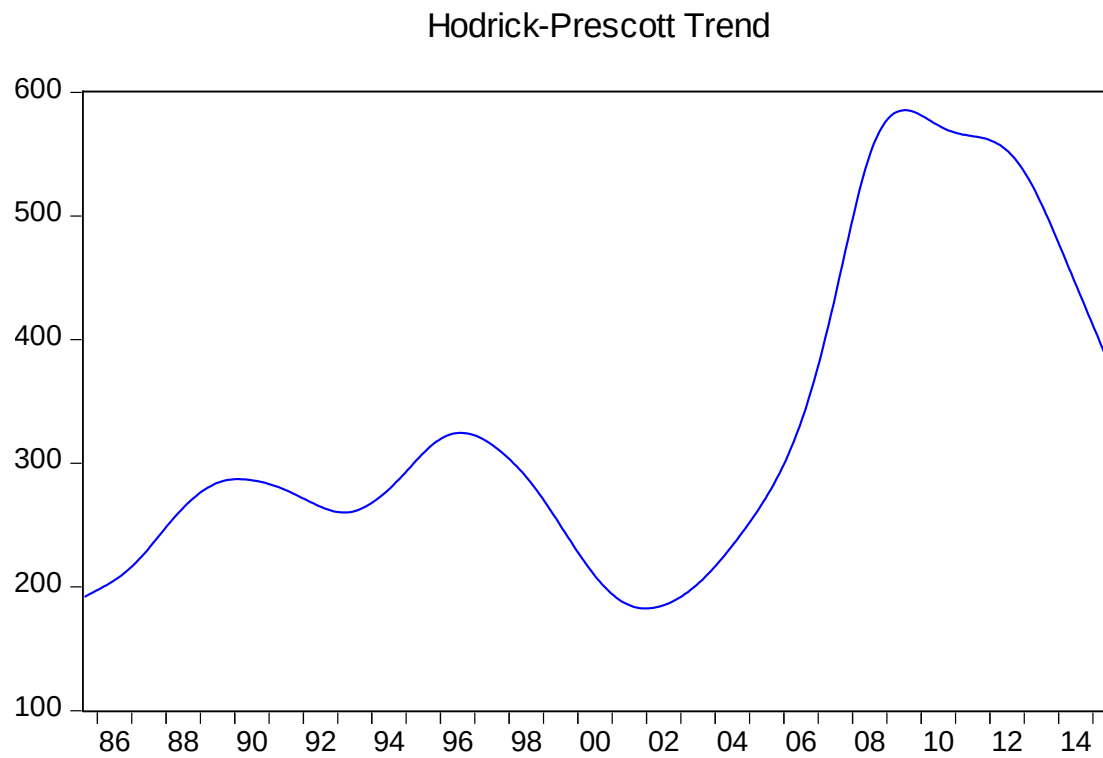
Rice mortgage budget



*You must pay
682 billion baht
For the damage*

Rice farmers
Warehouses
Rice traders
Fertilizer and insecticide
merchants

Long-term trend of rice prices



How the rice mortgage system works

- Farmers kept their rice in their own granary and got money from the Bank of Agriculture (BAAC) at low interest.
- If the price rose, the farmers could sell their rice and return the money with interest to BAAC.
- Yingluck Government could not to pay farmers as it would be in breach of the constitution to borrow money while being a caretaker government.
- Then came the 2014 military coup...

From The Nation: February 20, 2015

- Public prosecutors indicted ex-PM [Yingluck](#) Shinawatra on February 19, 2015 for negligence and filed criminal charges at the Supreme Court, in a case that could result in a jail term of up to 10 years.
- The charges stem from the [Yingluck](#) government's controversial rice-pledging scheme, which caused Bt600 billion losses to the state.

"We have indicted former prime minister [Yingluck](#) Shinawatra for dereliction of duty," director-general of the Office of the Attorney-General's Special Litigation Department.

In filing the case, public prosecutors submitted 20 boxes of documents relating to the case.

The Supreme Court's Criminal Division for Holders of Political Positions accepted this case for trial.

How to subsidize: Military Government

- In January 2015, the cabinet approved 2,760 million baht to subsidize 3 % interest rate for BAAC's 50,000 baht loan for each farmers who postpones harvesting in order to push up the price to 2.80 baht/kg at the beginning harvest season.
- The interest subsidy at 3% also goes to processing factories, exporters, and ethanol producers to purchase tapioca at the high supply seasons to shore up the price and to farmers who adopt the water dripping system and sand and soil- separated screening system for clean and high quality tapioca.

Combatting draught: July 2015



Nicolas Asfour / AFP

A Thai farmer walks on a dried out field in Bang Pla Ma district, Suphanburi province, a two-hour drive north of Bangkok, July 2, 2015 (AFP Photo/Nicolas Asfour)

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Thai government sets \$240 million budget to combat drought

Source: Reuters - Wed, 18 Feb 2015

- Thailand's cabinet has approved a 7.8 billion baht (\$240 million) budget to alleviate drought in the country and tackle "water emergencies"

The worst draught in more than a decade

- Thailand is battling drought in eight of its 76 provinces.
- The cabinet approved a 7.8 billion baht budget to be disbursed for 1,712 projects and to be used for water emergencies
- The funds would be used to provide mobile water tanks and to install water pumps in affected areas,

Paddy output will fall by 30%

- According to the Office of Agricultural Economics, drought will cut the off-season crop in top exporter Thailand by more than 30 percent.
- **Off-season** rice is grown between November and April after the main crop is harvested. It needs irrigation as there is little rain during that period in many parts of the country.
- Aid for drought-hit areas would focus on the agricultural north and northeast. Thailand will enter its hot season in March.

Questions

- Discuss the costs and benefits of the rice-mortgage program in short-run and long-run impact on the Thai economy.
- Should the government intervene to support commodity prices such as tapioca?
- How should the government subsidize rice farmers' purchases of farm inputs?