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**China's Agriculture and Policies:  
Challenges and Implications for Global Trade**

Jikun Huang

Contributed presentation at the 60th AARES Annual Conference,  
Canberra, ACT, 2-5 February 2016

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# **China's Agriculture and Policies: Challenges and Implications for Global Trade**

**Jikun Huang**

**School of Advanced Agricultural Sciences**

**Peking University**

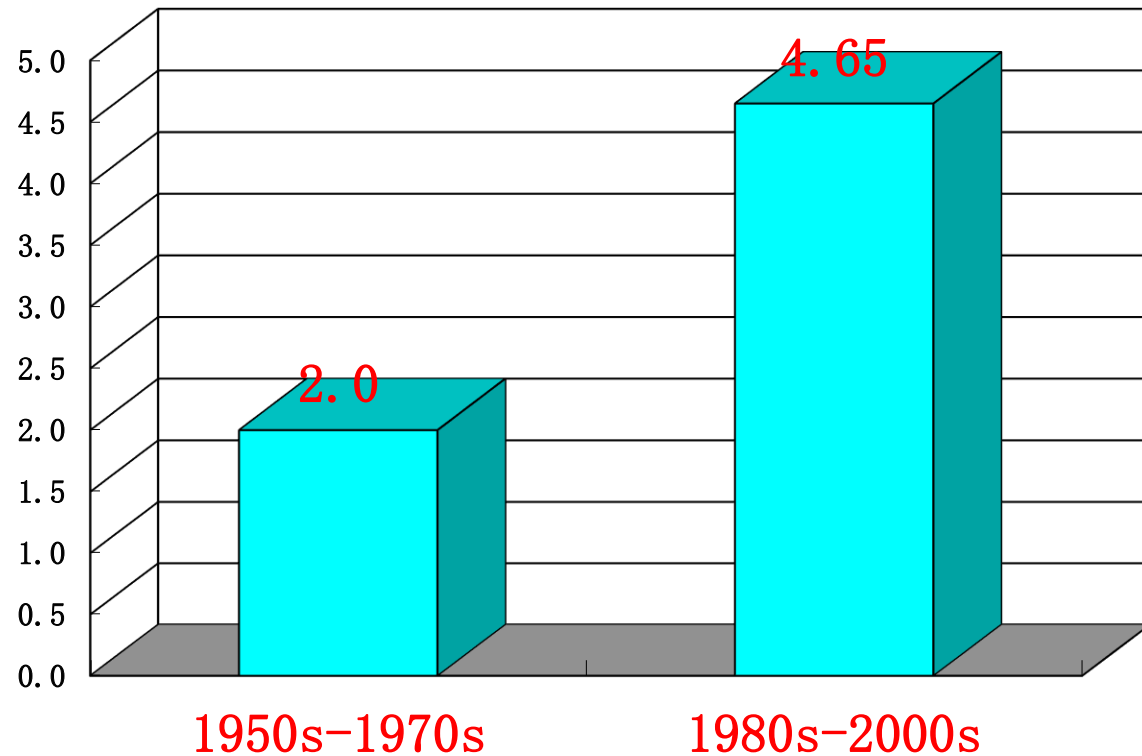
**and**

**Center for Chinese Agricultural Policy (CCAP), CAS**

## Annual growth of agricultural GDP

**The biggest challenges** of food supply in the past 6 decades were to meet increasing demand from:

- population growth in the first 3 decades
- rising income in the recent 3 decades



1950-1979

1980-2010

Population growth:

1.8%

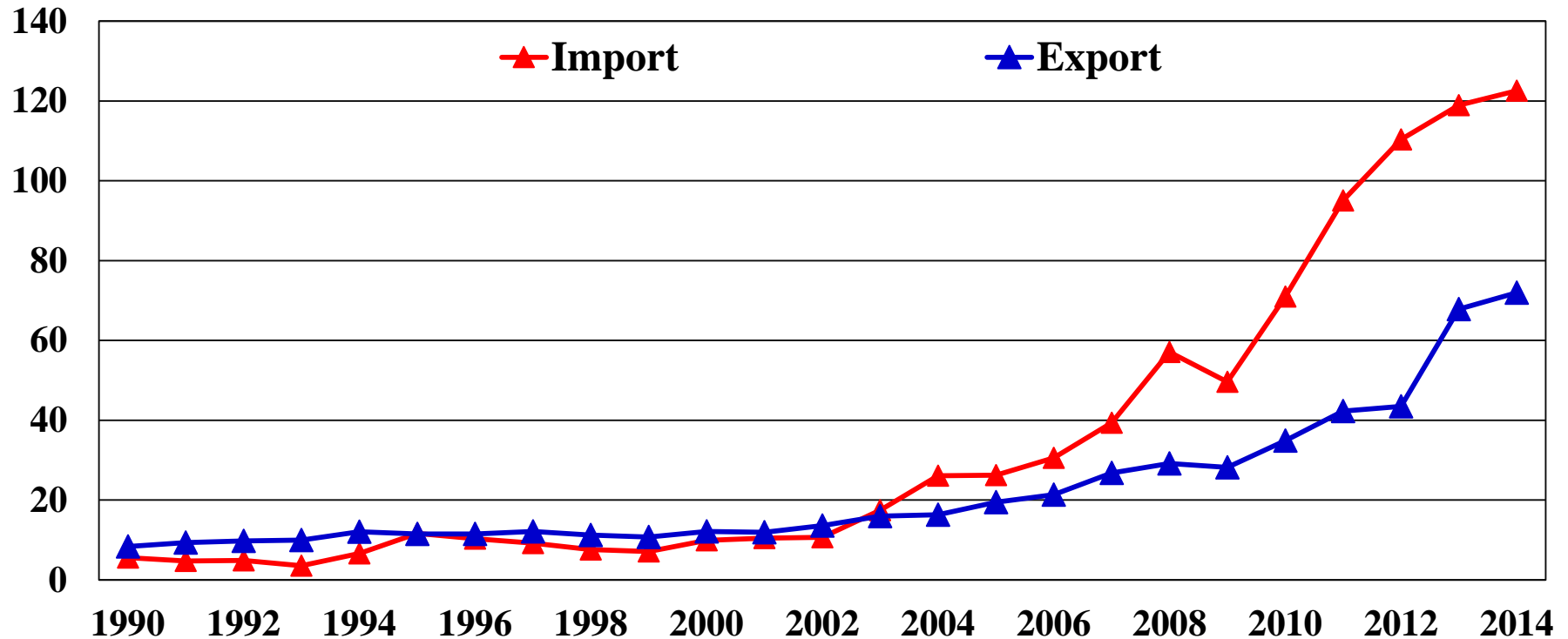
<1%

Per capita income growth:

2%

7%

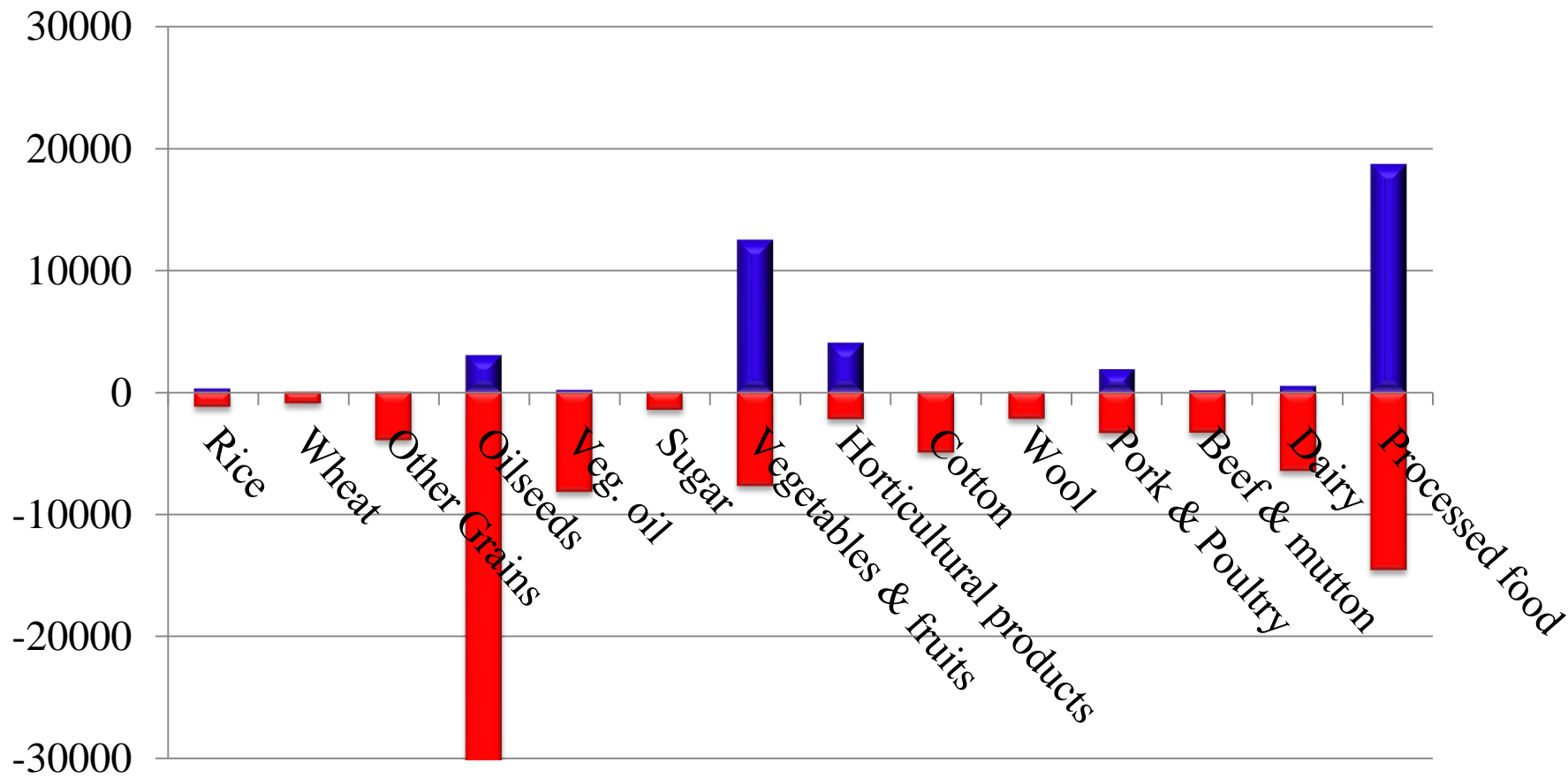
# China food trade: export and import (bil. US\$)



Source: FAOSTAT

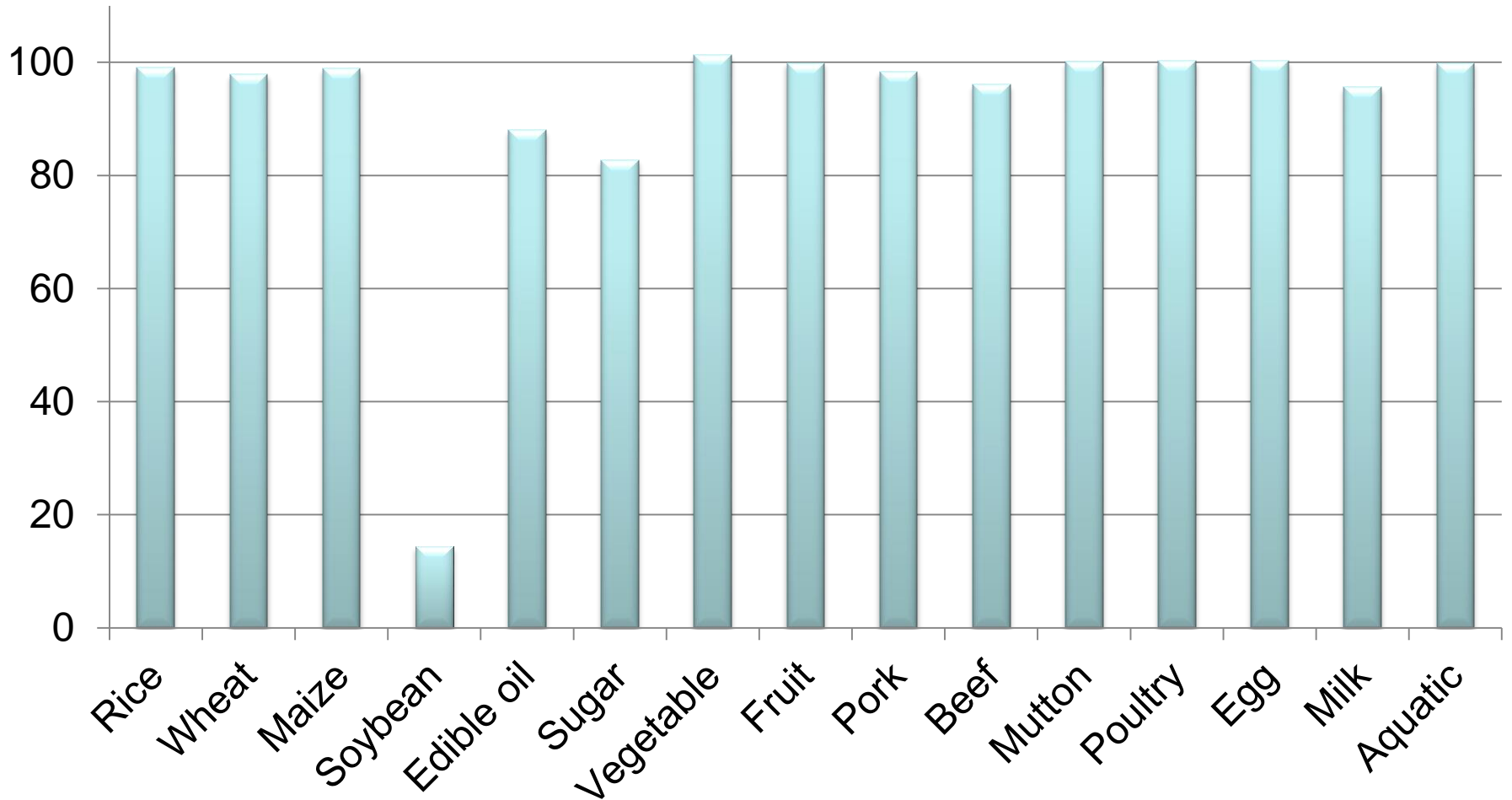
**Before the mid 2000s, China was a net food exporter. Although recent import > export, total food self-sufficient in 2014 reached 96%.**

# China's agricultural import and export in 2014 (million US\$)



Source: Calculated based on UNCOMTRADE data

# Except soybean, China achieved high level of food self-sufficiency in 2014



# Question

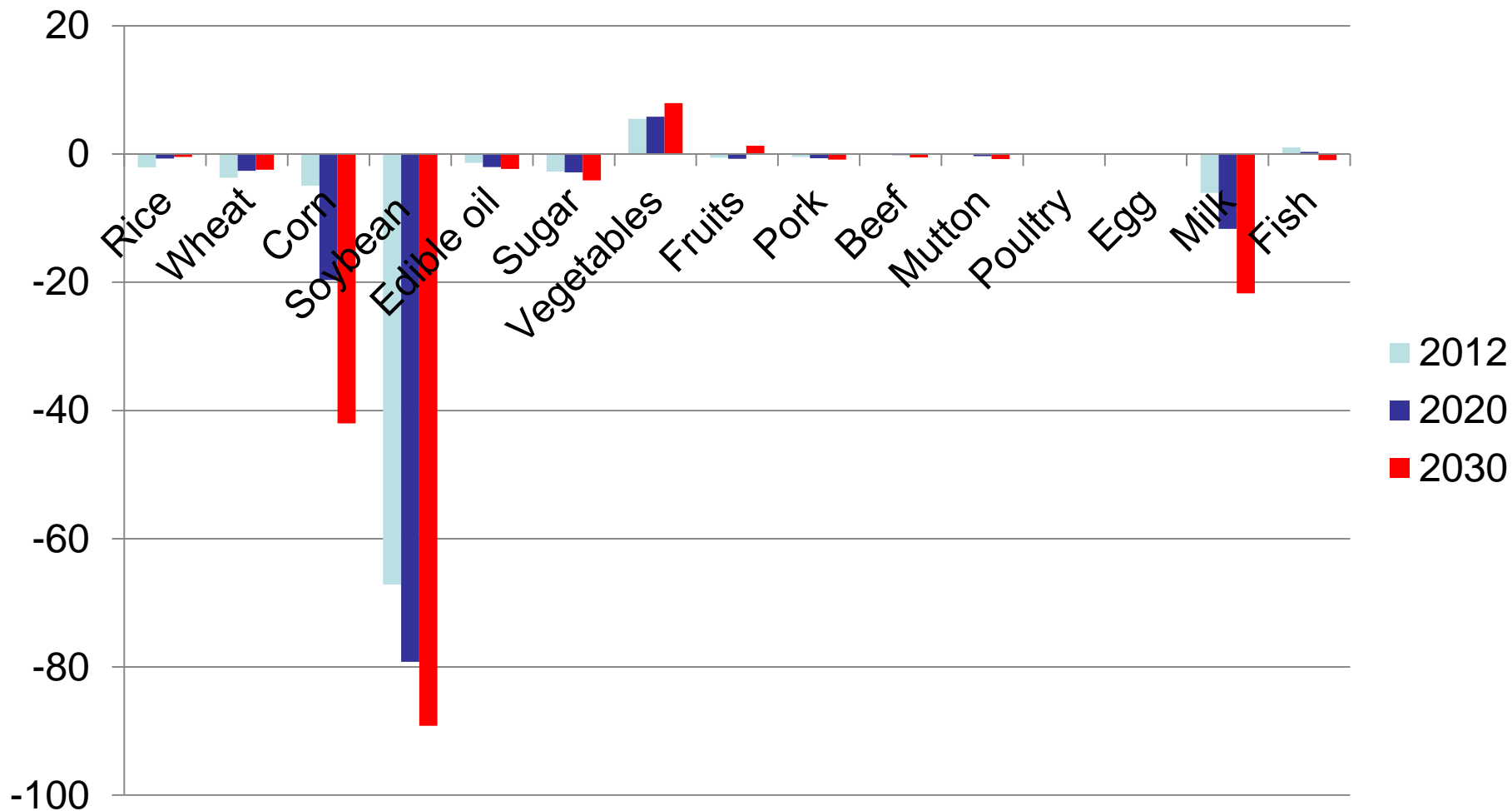
- **How China has been able to meet its growing demand for foods** (with 20% of world population but only 8% of world cultivated land) **in the past 3 decades?**



# Major drivers of agricultural growth

- **Institutional change (land):** 1978-1984
- **Technology innovation:** since the mid 1980s
- **Market reform:** since the early 1990s
- **Investment in agriculture:** since the late 1990s
- ...

# Baseline: the net export of agricultural commodities in 2012-2030 (million tons)



Source: Simulation by CAPSiM model, Huang et al. (2012)

**However,**

The above baseline has not taken into consideration of the new challenges

Now China has reached a stage of agricultural development:

- previous challenges intensified
- new challenges emerged

# Previous challenges intensified

- **Increased food production has been at the expensive of environment and sustainable development**
  - **groundwater over-exploitation;**
  - **falling soil fertility;**
  - **rising non-point pollution;**
  - **rising concern on food safety;**
  - **...**

# Challenges and policy responses

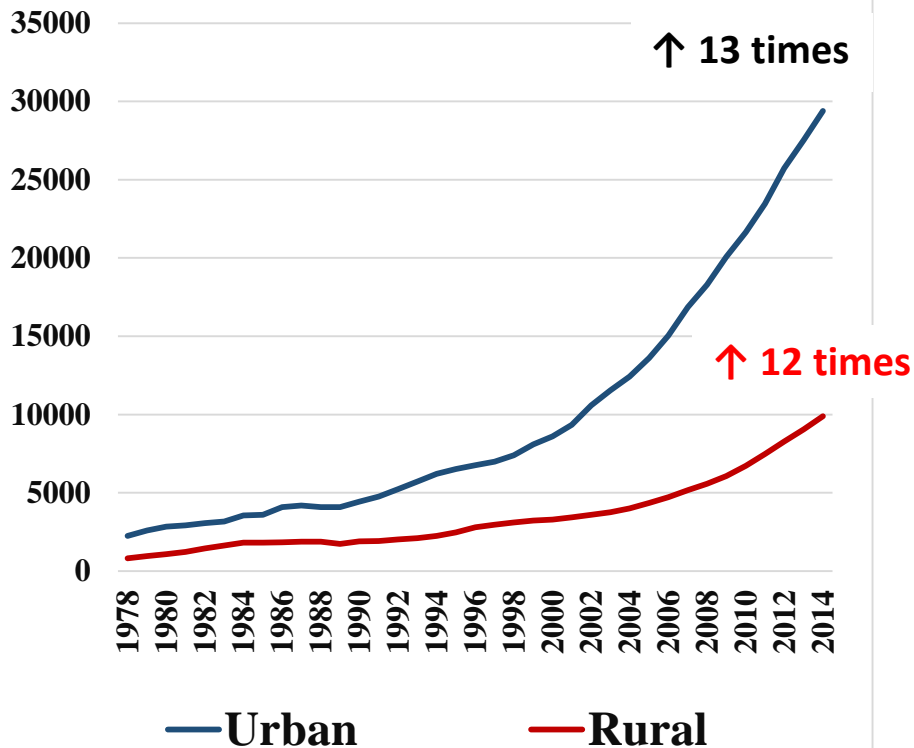
- **Previous challenges intensified:** water/land and sustainable development
- Decision in late 2000s: bring food safety to policy agenda
- Decision in 2011: Double investment in water conservancy (630 billion US\$) in 2012-2020
- **Decision in 2014: Plan to reduce chemical uses**
- **Decision in 2015: program to support “Grain +Cash crop +Forage/grass”**
- **Decision in 2015/16: emphasize on production capacity rather than actual...**

# New challenges emerged

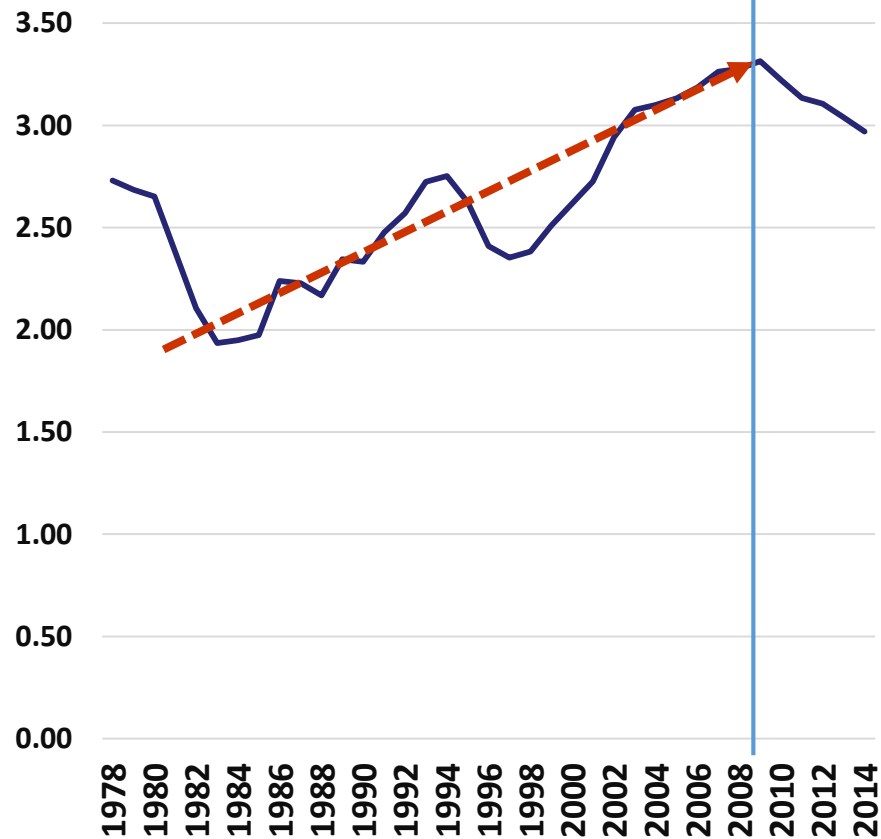
## Per capita income: rural vs urban

### Per capita income

(yuan in 2014 price; USD1=6.3 Yuan)

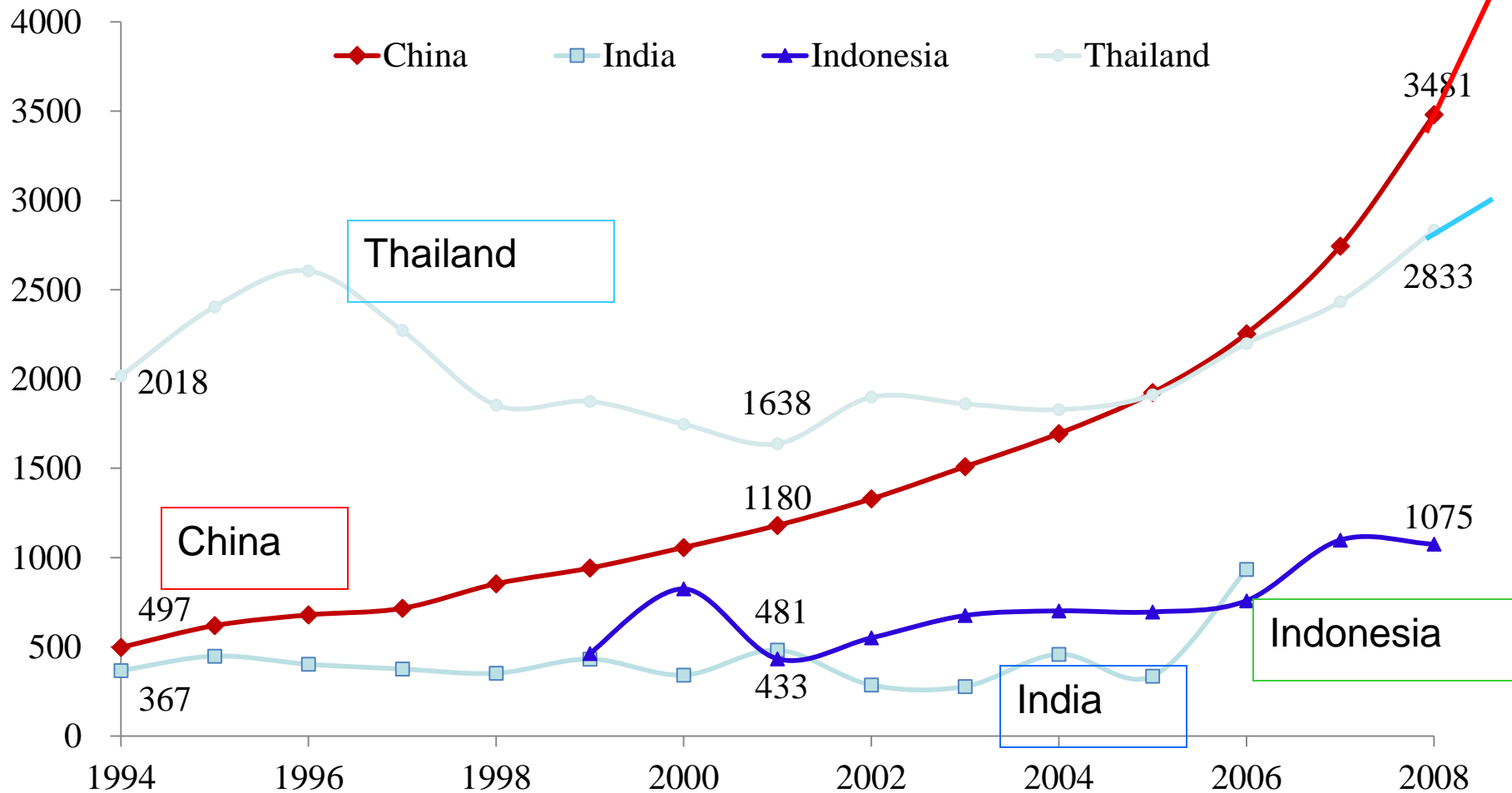


### Ratio of urban to rural income



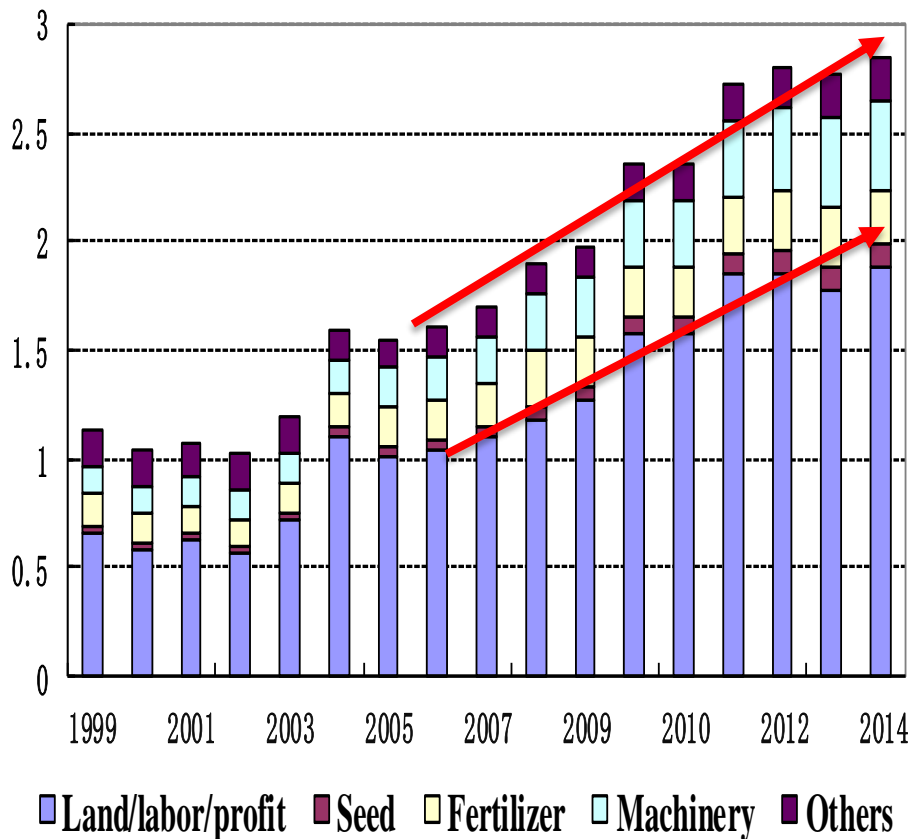
# Rising opportunity cost of farming labor

## Manufacturing wages 1994-2008 (USD/year)

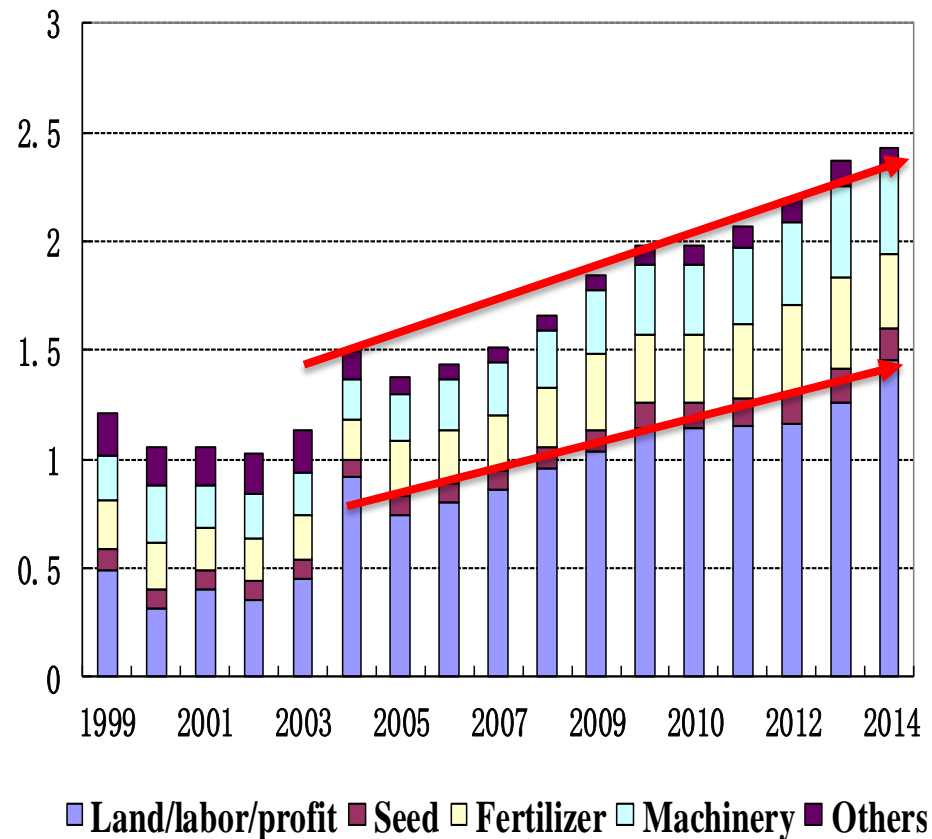


# Composition of farm gate price (yuan/kg)

## Rice

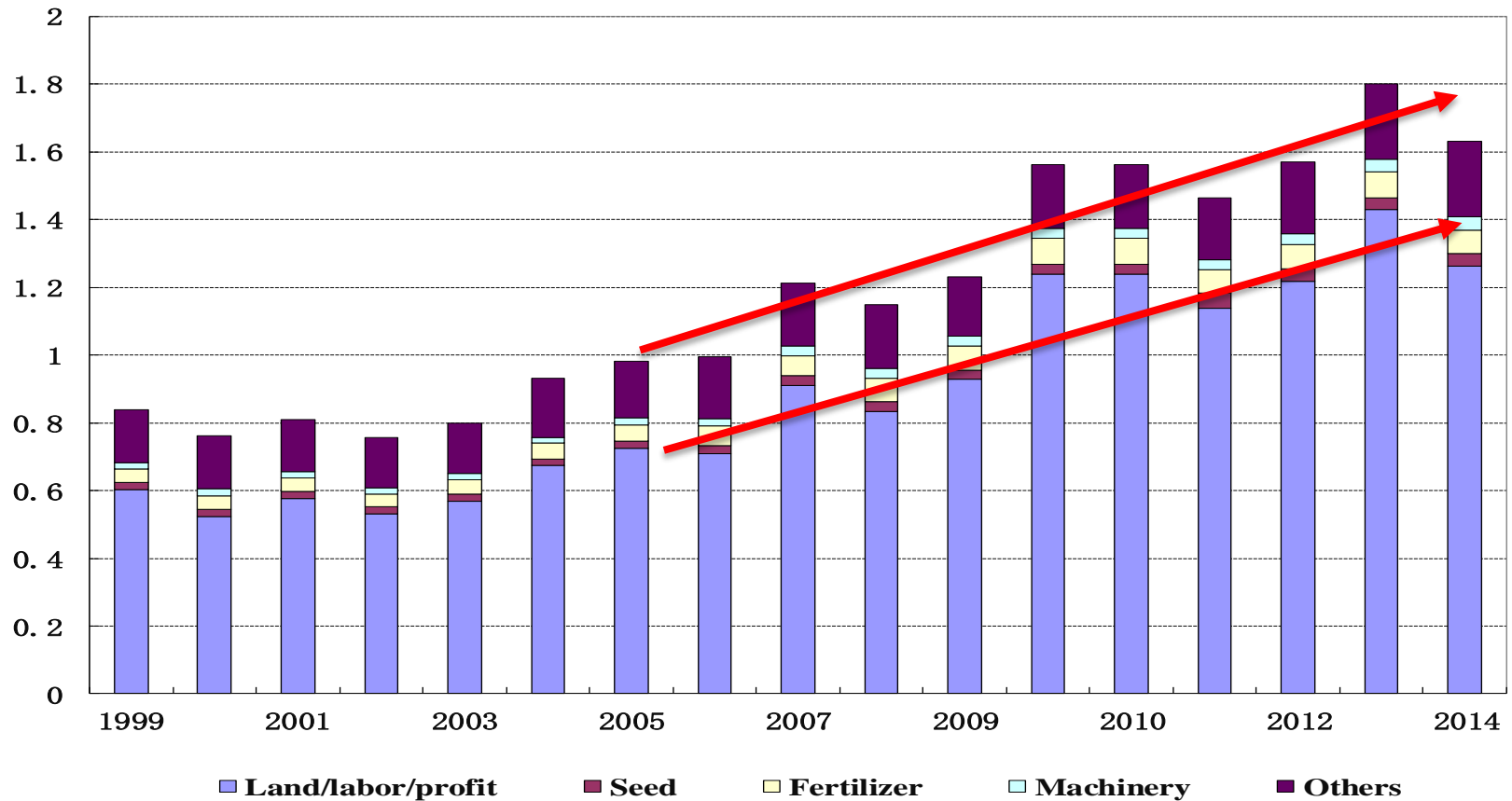


## Wheat





# Composition of farm gate price: vegetable (yuan/kg)



## CCAP survey:

- 2005-2013: **8%** of annual growth rate of real **labor** cost
- 2008-2013: **10%** of annual growth rate of real land **rent** cost

# New challenges emerged

- **Concerns on farmers' income: large income gap between urban and rural**
- **Rising labor and land costs (rising food price) vs falling global food prices: less competitive**



Farmers'  
income



Food  
security

# New challenges and policy responses

- **New challenges emerged:**

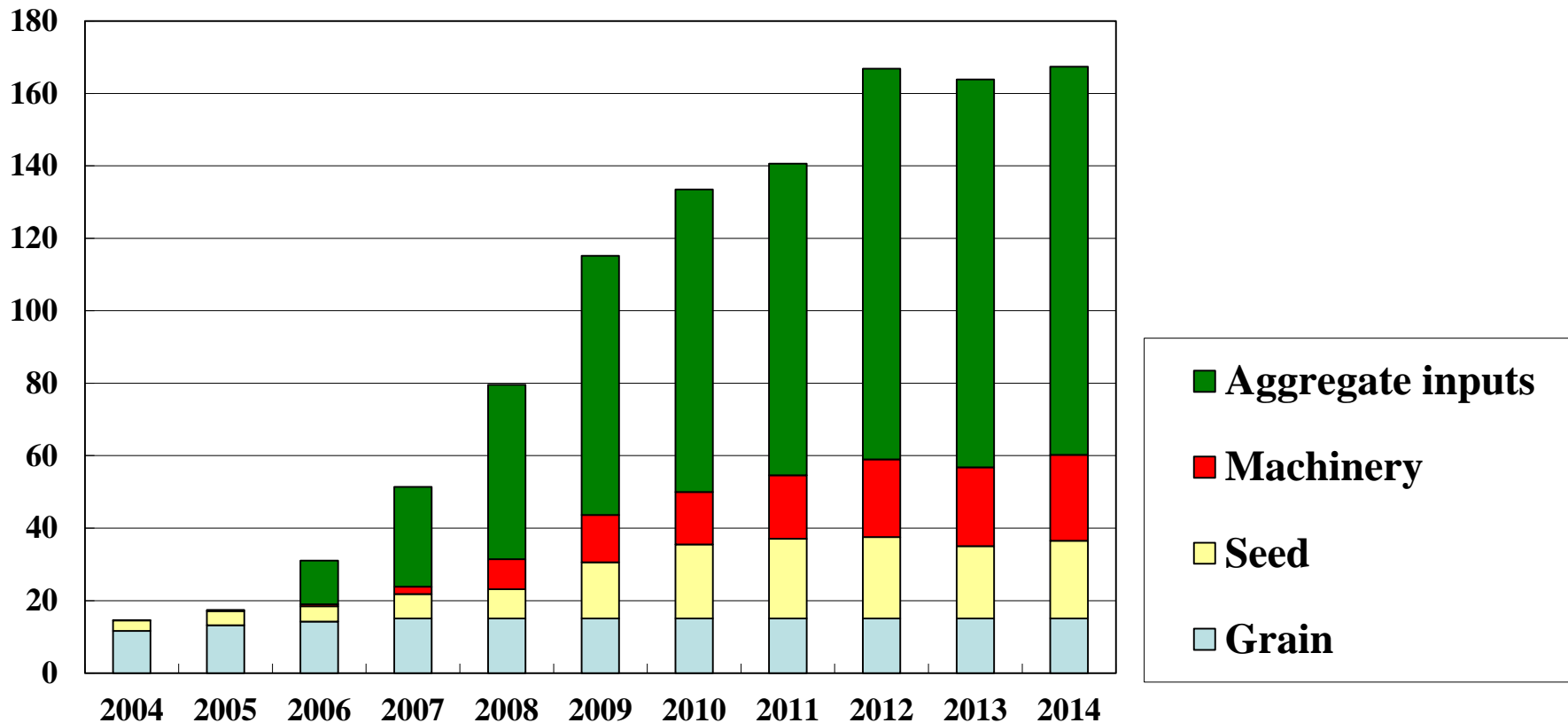
- **Concern on farmers' income**
- **Rising price, less competitive, food insecurity**

- **Agricultural subsidy**

- **Price interventions**

- rice and wheat
- maize and cotton,
- soybean and rapeseed

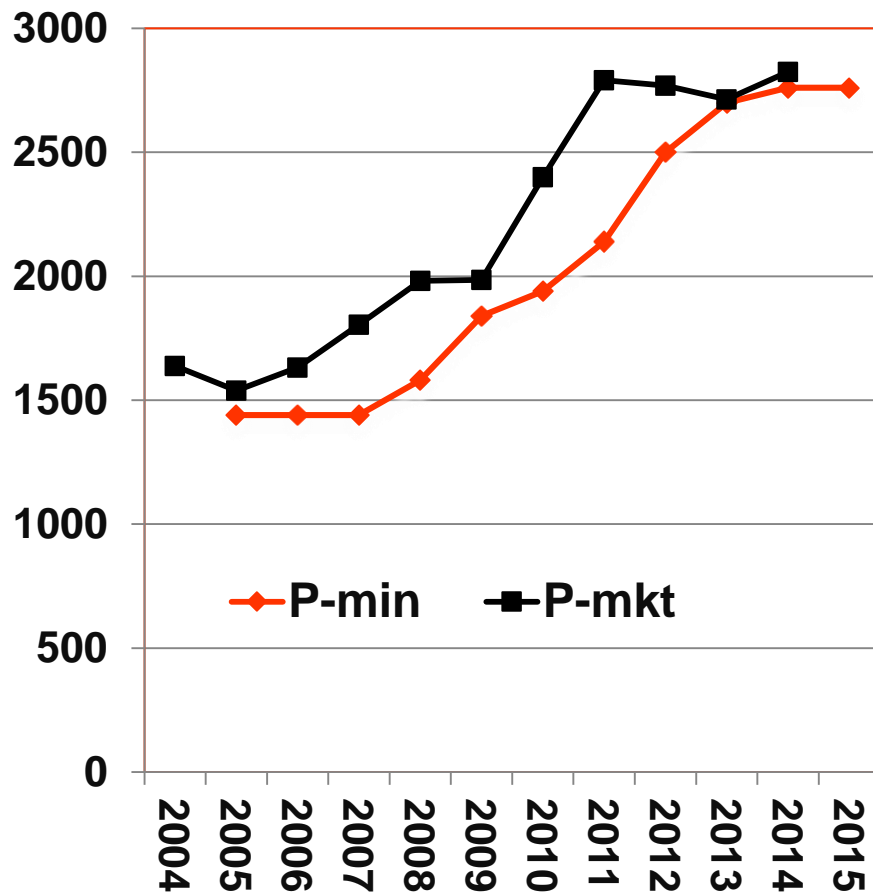
# Agricultural subsidies (billion yuan)



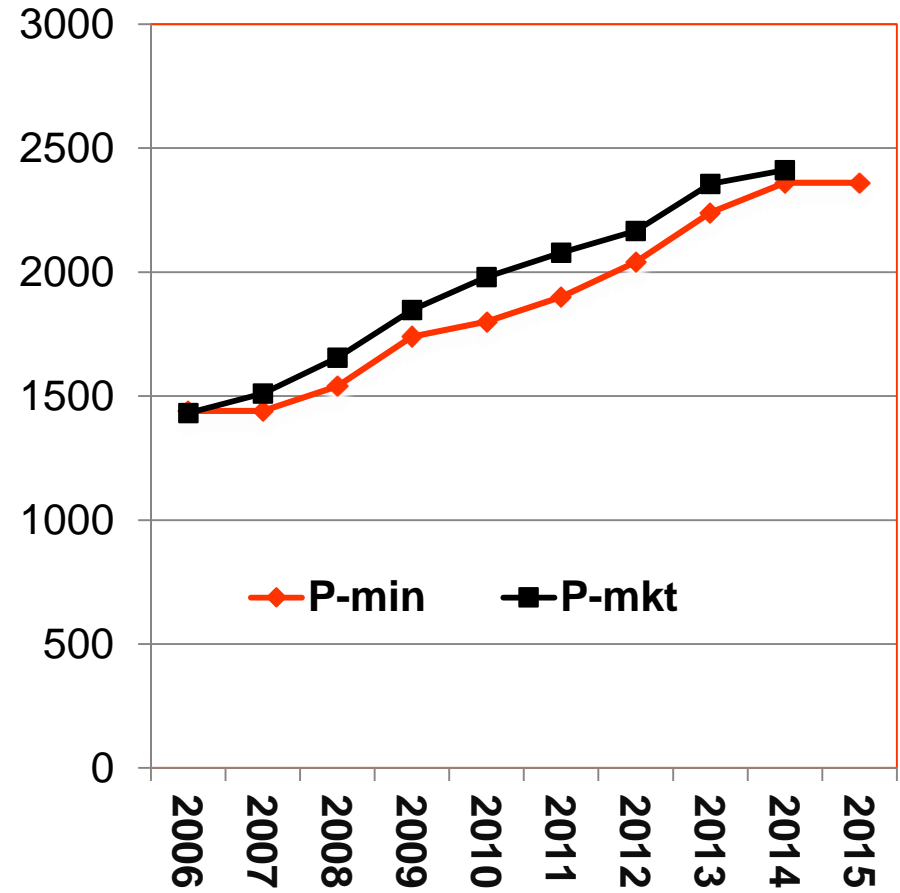
**Total subsidy in 2012 was 164.3 billion yuan (26.1 billion US\$), about 3.13% of agricultural GDP. However, most are decoupled and have no impact on production (Huang et al., 2011 and 2013)**

# Market Price vs Minimal Price: Rice and Wheat (yuan/ton)

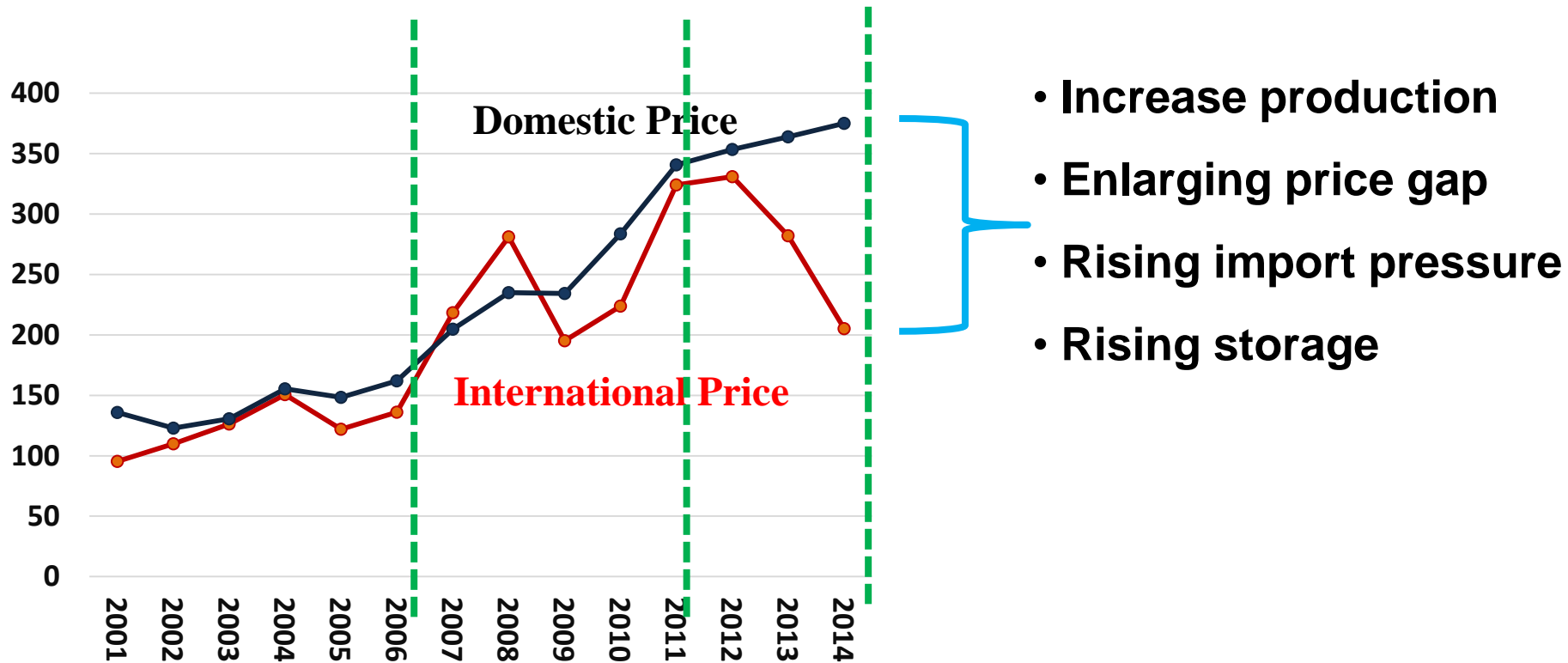
## Late indica rice



## Wheat

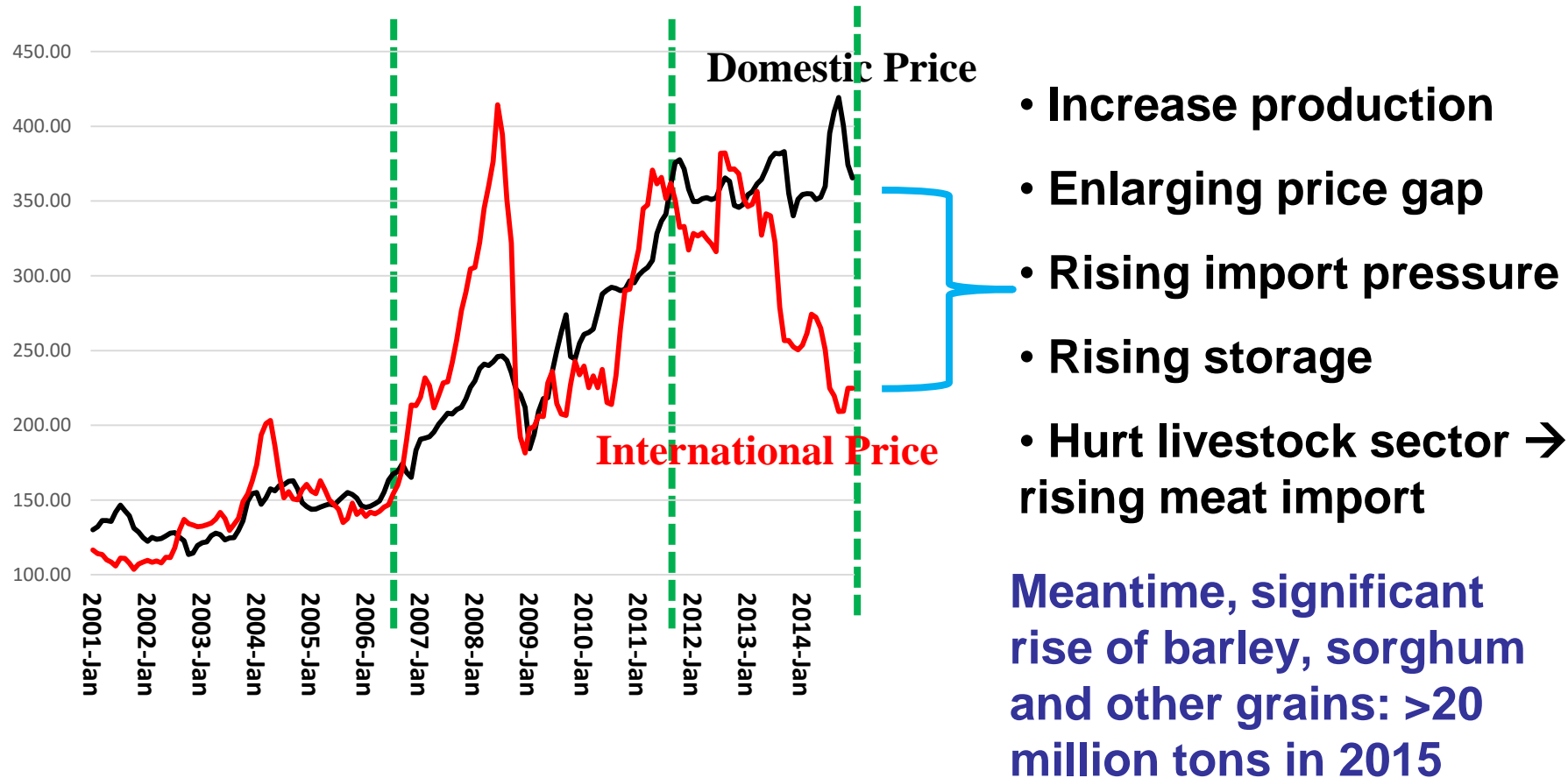


# Consequences: Wheat (US\$/Ton)



Note: The international price refers to No.1 Hard Red Winter Wheat, Kansas City (IMF) .  
Domestic wholesale price refers to Zhengzhou wholesale market No.3 white wheat.

# Consequences: Maize (US\$/Ton)



Note: Maize international price refers to the U.S. No.2 Yellow Maize price, FOB, Gulf of Mexico plus freight cost; International Monetary Fund (2015). The domestic markets price refers to Zhengzhou wholesale market No.2 Yellow Maize.

# WTO Commitments

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	<b>TRQ (mmt)</b>	<b>Out-of- quota tariff (%)</b>
<b>Wheat</b>	<b>9.30</b>	<b>65</b>
<b>Maize</b>	<b>7.20</b>	<b>65</b>
<b>Rice</b>	<b>5.30</b>	<b>65</b>
<b>Sugar</b>	<b>1.94</b>	<b>38</b>
<b>Cotton</b>	<b>0.89</b>	<b>50</b>
<b>Wool</b>	<b>0.29</b>	<b>38</b>

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	<b>Tariff only (%)</b>
<b>Soybean</b>	<b>3</b>
<b>Fruits</b>	<b>12</b>
<b>Meats</b>	<b>10-12</b>
<b>Dairy</b>	<b>11</b>
<b>Tobacco</b>	<b>10</b>
<b>Others</b>	<b>&lt;10</b>

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# New challenges and policy responses

- **New challenges emerged:**

- **Concern on farmers' income**
- **Rising price, less competitive, food insecurity**

- **Agricultural subsidy**

- **Huge budget, capping in 2012**

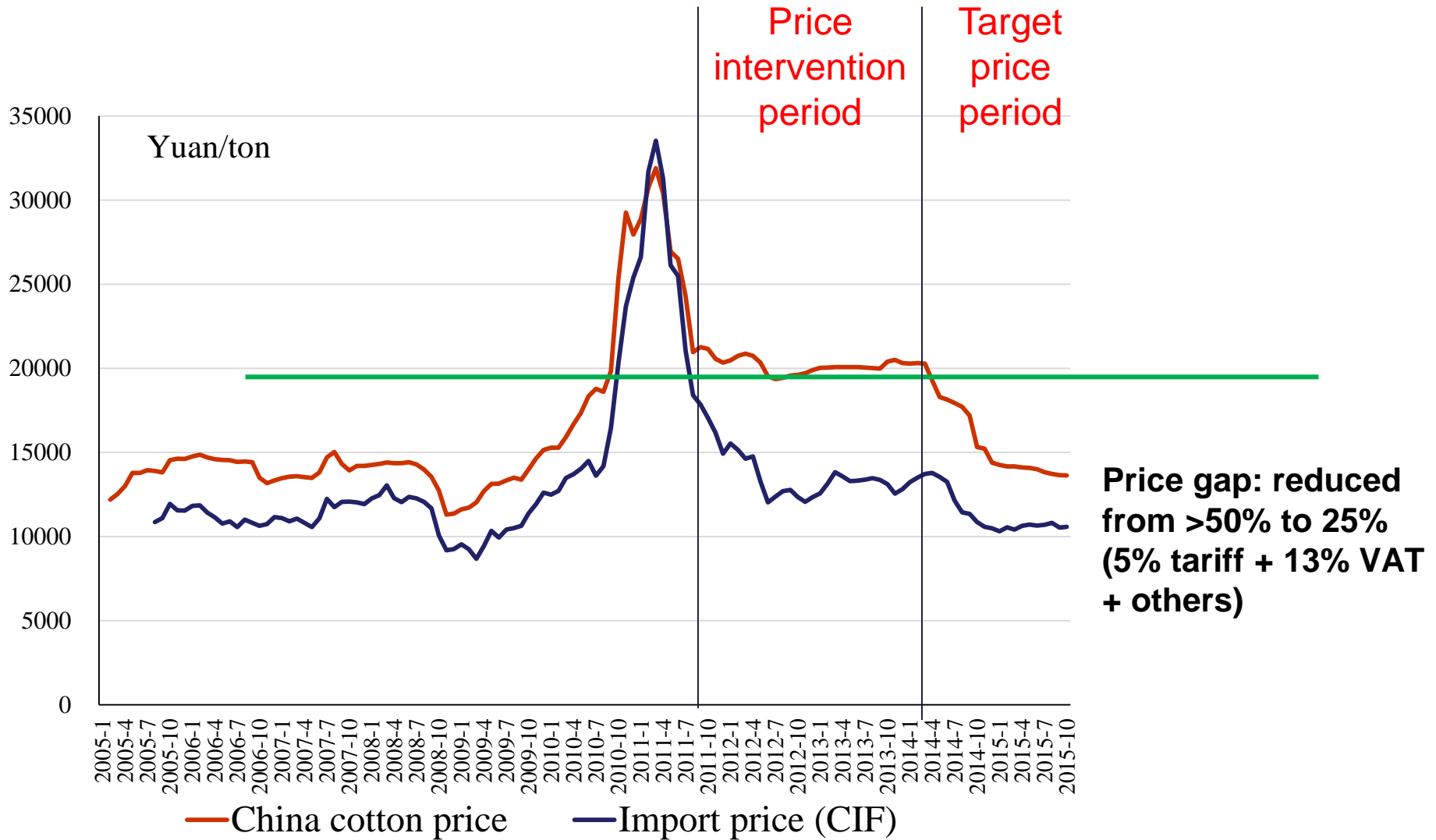
- **Price interventions**

- **Huge storage/costing**

- **??? → Target price**

- **Pilot in cotton in XJ**
- **Pilot in soybean in part of NE China**

# Target price policy in cotton since 2014



Source: China National Cotton Exchange (CNCE)

# Target price policy

- **Target price = production cost + profit**
- **New challenges:**
  - **New budget implications**
  - **Huge implementation costs**
    - **200+ million small-scale farms**

# New challenges and policy responses

- **New challenges/  
concerns emerged:**

- Rising food price, less competitive, and food insecurity
- Concern on farmers' income

- **Agricultural subsidy**

- Huge budget, tapping in 2012
- **First cut in 2015**

- ~~**Price interventions**~~

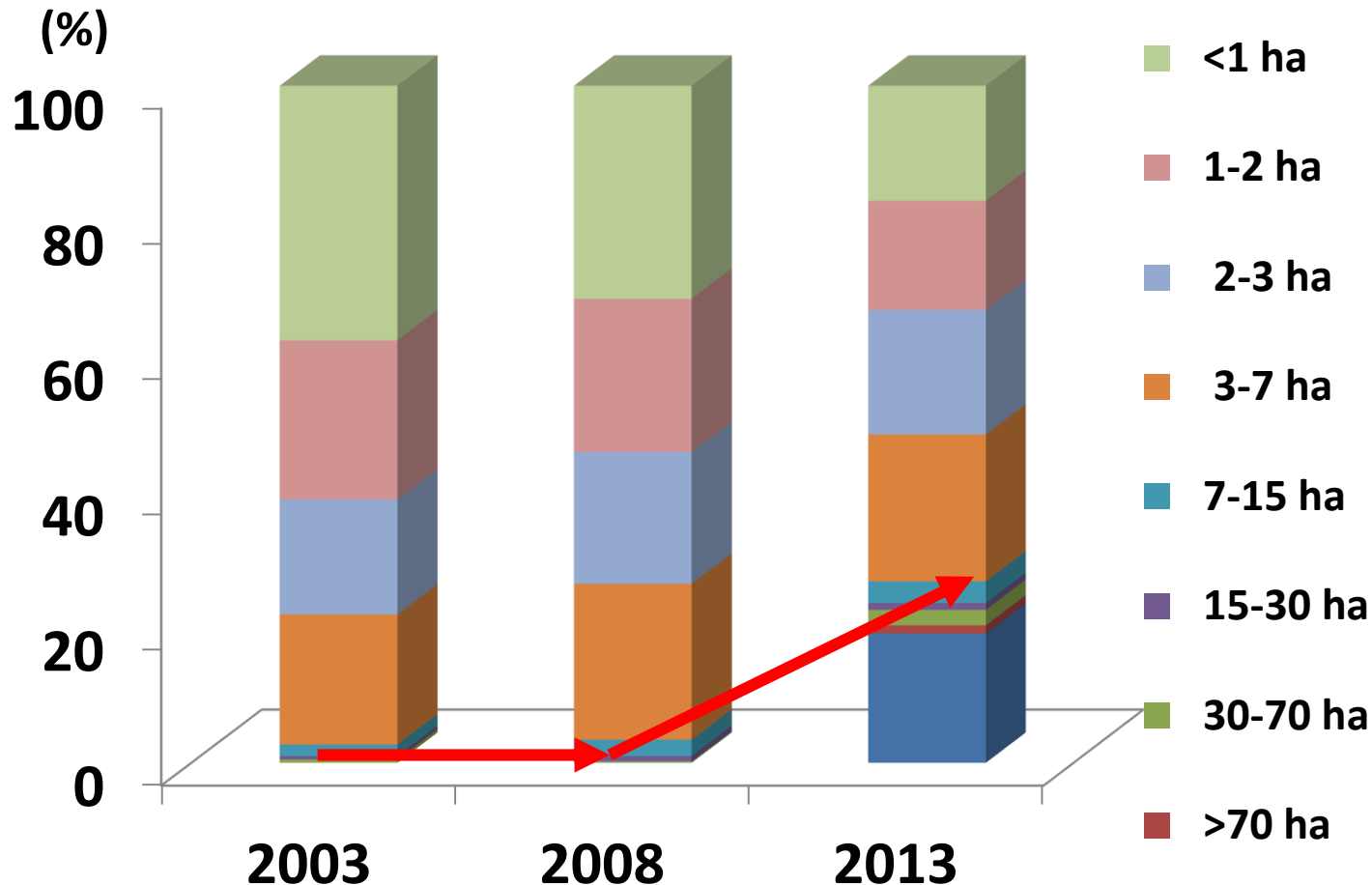
- **Reduced price in 2015**
- **Try to separate price & income support in/after 2016**

- **Target price policy?**

- **Land consolidation**

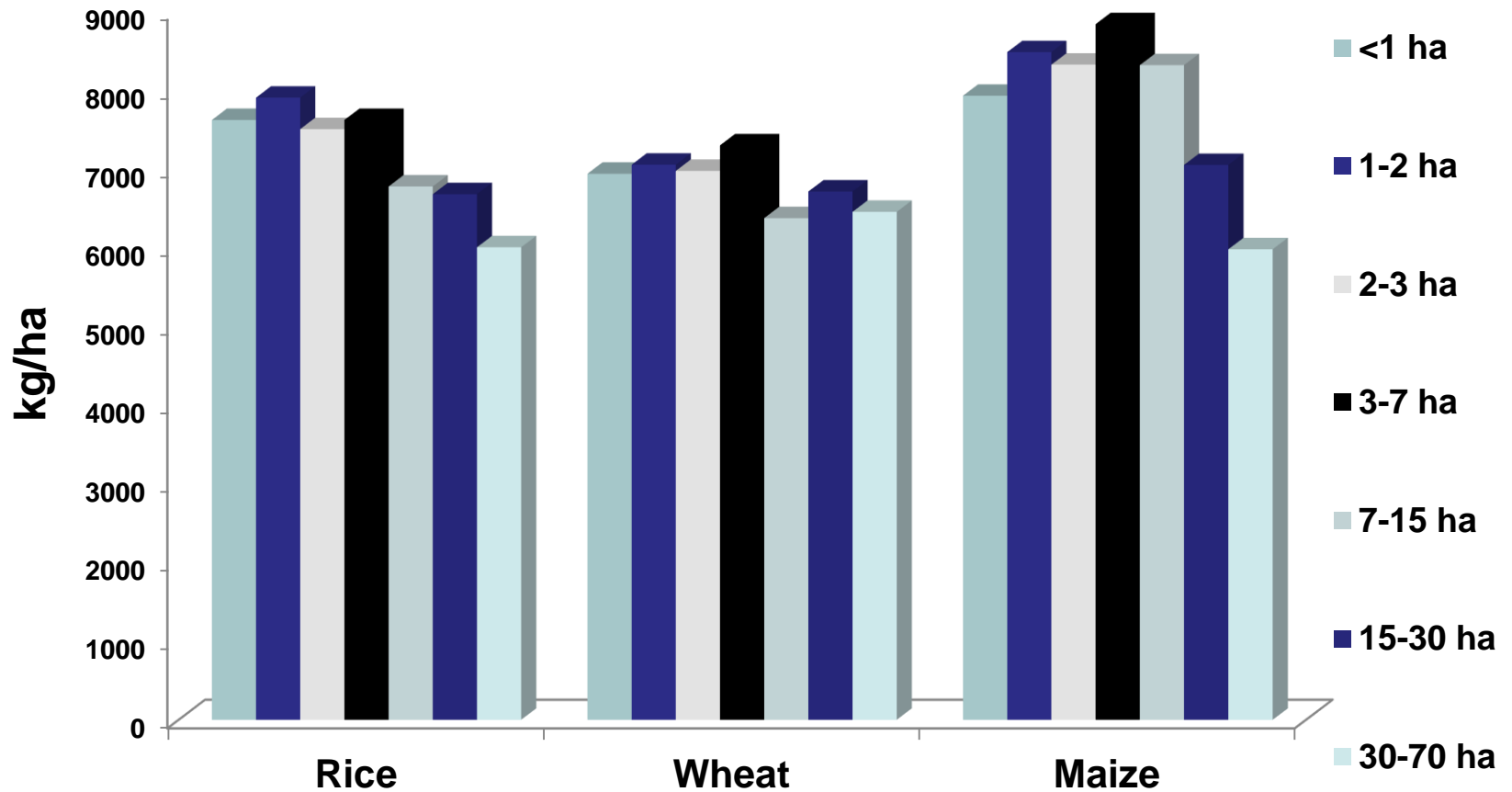
- **Rental market (✓)**
- **Subsidize large farms (?)**

## Cultivated land share by farm size in Northeast and North China in 2003, 2008 and 2013

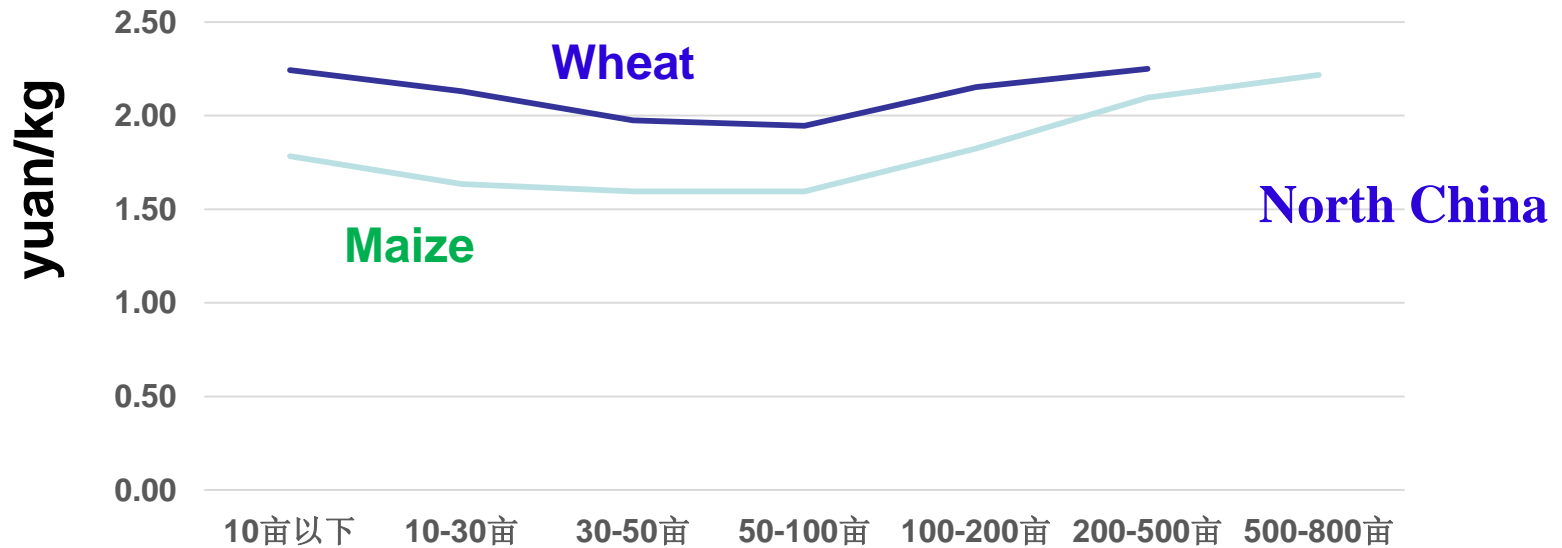
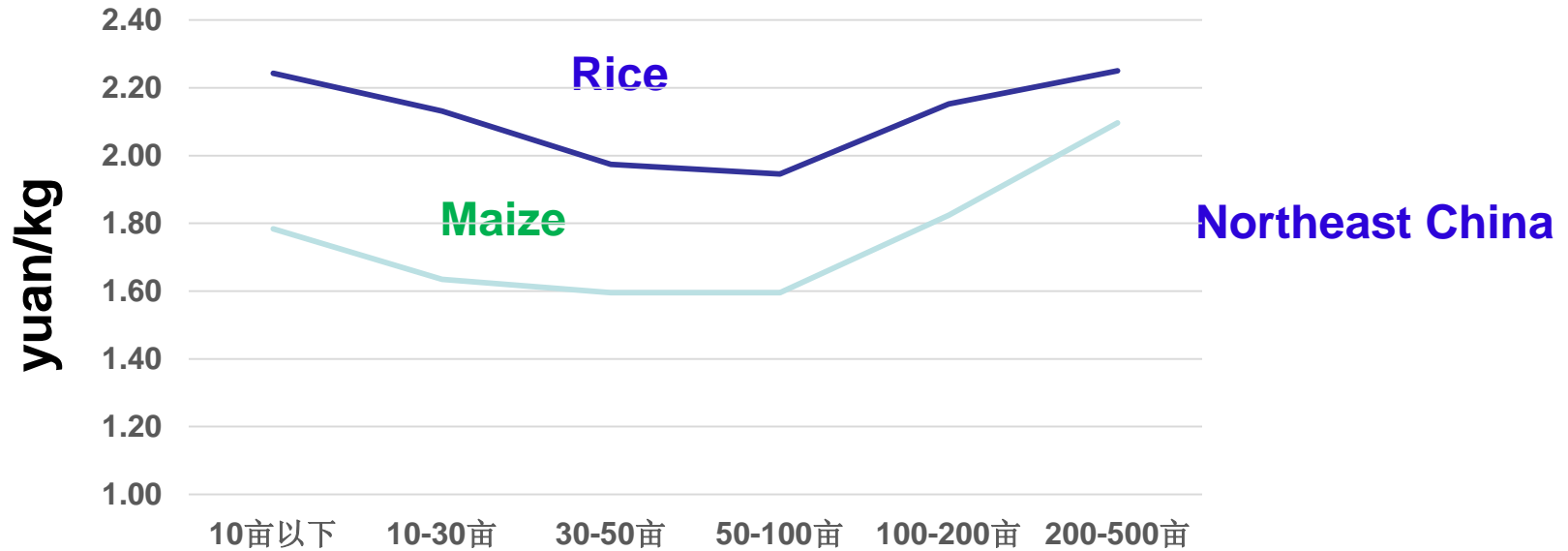


**Farm size more than 7 ha in 2013:  
0.9% of farms; 27% of cultivated land**

# The relationship between farm size and crop yield in NE and NC in 2013



# Farm size (15亩mu=1 ha) and production cost (yuan/kg) in 2013



**However,**

**The discussions so far are just about our traditional food security and policy story...**

Nutrition issues have been largely neglected by policy makers: **Malnutrition population in China 151 million**



# Childhood Anemia (persisting through school age) in the Western China

	Total
Total	33.7
Shaanxi—2008 (Dataset 1)	37.5
Shanxi—2009 (Dataset 2)	31.6
Gansu—2010 (Dataset 3)	31.2
Qinghai—2009 (Dataset 4)	51.1
Ningxia—2009 (Dataset 5)	25.4
Sichuan—2010 (Dataset 6)	24.8
Guizhou—2010 (Dataset 7)	33.1

Source: CCAP's survey

# **Concluding remarks: Successful and challenges**

**In the past , China has been able to largely meet its growing demand for foods with 20% of world population but only 8% of world cultivated land.**

**China's experience has showed that incentives to farmers (land & market), technology and investment are crucial to agricultural growth and ensuring food security in 1980s-2000s.**

**However, agri. intensification has challenged its sustainability; rising wage and land rental cost further challenge food supply; there is concern on farmer's income and malnutrition in the poor areas.**

# **Concluding remarks: Policies and trade implications**

**Policies to increase farmer income and grain production through subsidy and price support are unable to resolve current challenges; new adjustments in these policies have important grain storage and food trade implications in both short run and long run.**

**Recent policies focused on environment, production capacity, land consolidation and investment are encouraging; each of these policies will have significant impacts on China's food import: both positive and negative**

# **Concluding remarks: Policies and trade implications**

**China is expected to increase its imports of many agricultural commodities** such as feed, edible oils, cotton, sugar, animal products (beef/mutton/milk);

**But its role in the global trade will highly depends on how the recent policies be implemented in the coming years.**

**Thanks**