China’s Agriculture and Policies: Challenges and Implications for Global Trade

Jikun Huang

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China’s Agriculture and Policies: Challenges and Implications for Global Trade

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Peking University
and
Center for Chinese Agricultural Policy (CCAP), CAS
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

<table>
<thead>
<tr>
<th></th>
<th>1950-1979</th>
<th>1980-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population growth:</td>
<td>1.8%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Per capita income growth:</td>
<td>2%</td>
<td>7%</td>
</tr>
</tbody>
</table>
Before the mid 2000s, China was a net food exporter. Although recent import > export, total food self-sufficient in 2014 reached 96%.

Source: FAOSTAT
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

- 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

↑ 13 times
↑ 12 times
Rising opportunity cost of farming labor

Manufacturing wages 1994-2008 (USD/year)

- China
- India
- Indonesia
- Thailand

Li et al (2012)
Composition of farm gate price (yuan/kg)

Rice

Wheat

- Land/labor/profit
- Seed
- Fertilizer
- Machinery
- Others
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
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
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

P-min P-mkt
Consequences: Wheat (US$/Ton)

- Increase production
- Enlarging price gap
- Rising import pressure
- Rising storage

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)

- Increase production
- Enlarging price gap
- Rising import pressure
- Rising storage
- Hurt livestock sector → rising meat import

Meantime, significant rise of barley, sorghum and other grains: >20 million tons in 2015

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

<table>
<thead>
<tr>
<th></th>
<th>TRQ (mmt)</th>
<th>Out-of-quota tariff (%)</th>
<th>Tariff only (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>9.30</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Maize</td>
<td>7.20</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Rice</td>
<td>5.30</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td>1.94</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td>0.89</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Wool</td>
<td>0.29</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Soybean</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Meats</td>
<td></td>
<td></td>
<td>10-12</td>
</tr>
<tr>
<td>Dairy</td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Tobacco</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td>&lt;10</td>
</tr>
</tbody>
</table>
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

Price intervention period
Target price period

Price gap: reduced from >50% to 25%
(5% tariff + 13% VAT + others)

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

Source: Huang and Ding, 2015
Farm size (15亩 = 1 ha) and production cost (yuan/kg) in 2013

Northeast China

North China

Rice

Maize

Wheat

Maize
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

### Table

<table>
<thead>
<tr>
<th>Location</th>
<th>Year</th>
<th>Dataset</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaanxi</td>
<td>2008</td>
<td>Dataset 1</td>
<td>37.5</td>
</tr>
<tr>
<td>Shanxi</td>
<td>2009</td>
<td>Dataset 2</td>
<td>31.6</td>
</tr>
<tr>
<td>Gansu</td>
<td>2010</td>
<td>Dataset 3</td>
<td>31.2</td>
</tr>
<tr>
<td>Qinghai</td>
<td>2009</td>
<td>Dataset 4</td>
<td>51.1</td>
</tr>
<tr>
<td>Ningxia</td>
<td>2009</td>
<td>Dataset 5</td>
<td>25.4</td>
</tr>
<tr>
<td>Sichuan</td>
<td>2010</td>
<td>Dataset 6</td>
<td>24.8</td>
</tr>
<tr>
<td>Guizhou</td>
<td>2010</td>
<td>Dataset 7</td>
<td>33.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>33.7</strong></td>
</tr>
</tbody>
</table>

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 depend on how the recent policies be implemented in the coming years.
Thanks