Explore Government Support Measures and Implications of Crop Insurance from International Experiences

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• Conclusion
  ~ importance of crop insurance, sustainability, farm income safety net
Introduction

- Climate change → natural disaster → crop production risk → farmer income instability and reduction
- Protection policies: price support & inputs subsidy
- Uruguay Round Agreement on Agriculture (URAA): amber box v.s. green box
- Crop insurance prevails in the world.
  ~ USA and Japan (1938), Korea (2001), China (1980)
- Crop insurance v.s. commercial insurance
Introduction

- It needs public supports.
  - premium subsidy, reinsurance arrangement, risk transfer, agricultural insurance acts, technical assistant in loss assessment

- The purposes of this study are to overview crop insurance and explore some lessons from international experience for deriving policy implications for government.
In 2008, World Bank conducted a survey on agricultural insurance programs in 65 countries, which accounting 75 percent of total premium in the world.
### Agricultural Insurance Premiums, 2007

<table>
<thead>
<tr>
<th>Development status</th>
<th>Number of countries</th>
<th>Estimated crop premiums</th>
<th>Estimated livestock premiums</th>
<th>Estimated agricultural premiums</th>
<th>Percentage of global agricultural premiums</th>
</tr>
</thead>
<tbody>
<tr>
<td>unit</td>
<td>$ million</td>
<td>$ million</td>
<td>$ million</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>High-Income</td>
<td>21</td>
<td>11,869.0</td>
<td>1,192.3</td>
<td>13,061.3</td>
<td>86.5</td>
</tr>
<tr>
<td>U. Middle-Income</td>
<td>18</td>
<td>872.6</td>
<td>40.1</td>
<td>912.7</td>
<td>6.0</td>
</tr>
<tr>
<td>L. Middle-Income</td>
<td>20</td>
<td>789.3</td>
<td>334.1</td>
<td>1,123.5</td>
<td>7.4</td>
</tr>
<tr>
<td>Low-Income</td>
<td>6</td>
<td>0.2</td>
<td>4.8</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>All Countries</td>
<td>65</td>
<td>13,531.1</td>
<td>1,571.4</td>
<td>15,102.4</td>
<td>100</td>
</tr>
</tbody>
</table>
Agricultural Insurance Worldwide

Geographic Distribution of Agricultural Insurance Premiums

- USA & Canada, US$10,700 million (55.0%)
- Europe, US$3,900 million (20.1%)
- Asia, US$3,800 million (19.5%)
- Africa, US$90 million (0.5%)
- Latin America, US$780 million (4.0%)
- Oceania, US$170 million (0.9%)
Growth in Agricultural Insurance Premium
Asian Agricultural Insurance market

- In 2009, the major agricultural insurance markets in Asia by premium were China (50% of total premium), Japan (31%), India (11%), Australia (4%) and South Korea (3%), and overall these five markets accounted for over 98% of the total regional premium.

- In 2013, the agricultural insurance premium in China was estimated at US$ 5 billion.

- United States was US$ 12 billion.
Penetration of Agricultural and Non-Life Insurance, by Development Status, 2007

![Bar chart showing penetration rates for different income groups]

- High-income countries: 3.15% (Agricultural insurance) 1.99% (Non-life insurance)
- Upper middle-income countries: 1.89% (Non-life insurance)
- Lower middle-income countries: 1.14% (Non-life insurance)
- Low-income countries: 0.69% (Non-life insurance)
Crop Insurance Products

- Yield indemnity based
  - named peril crop insurance (NPCI): Europe
  - multiple peril crop insurance (MPCI): USA, Canada
- Revenue indemnity based: USA
- Weather index: India
Availability of Crop Insurance Products, by Development Status

Low-income countries
Low middle-income countries
Upper middle-income countries
High-income countries

0% 20% 40% 60% 80% 100%

Named-peril  MPCI  Index-based

12
Government Supports Measures

Government plays an important role in introducing crop insurance.

There appears to be a positive correlation between the level of public sector support and the penetration of crop insurance.

- Insurance legislation,
- Premium subsidies,
- Administrative and operational subsidies,
- Loss assessment subsidies,
- Reinsurance,
- Promotion
- Other support (R&D, training),
Agricultural Insurance Legislation (Laws)

Making legislation is the first step to implement crop insurance. It is a symbol to show the determination of government.

- **Canada**: Crop Insurance Act (1959)
- **China**: Agricultural Insurance Regulations (2013)
- **Japan**: Crop Insurance Act (1938)
  ~ compulsory or voluntary basis
- **South Korea**: Crop Insurance Program (2001)
- **USA**: Federal Crop Insurance Act (1938)
  ~ Federal Crop Insurance Corporation, Risk Management Agency, Farm Bill, Agricultural Risk Protection Plan
## Countries with Crop Insurance Premium Subsidies

<table>
<thead>
<tr>
<th>Development status/region</th>
<th>Countries with premium subsidies</th>
<th>Countries without premium subsidies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of countries</td>
<td>Premium volumes ($ million)</td>
</tr>
<tr>
<td>High-income</td>
<td>14</td>
<td>11,035.7</td>
</tr>
<tr>
<td>U. Middle-income</td>
<td>10</td>
<td>595.1</td>
</tr>
<tr>
<td>L. Middle-income</td>
<td>14</td>
<td>786.2</td>
</tr>
<tr>
<td>Low-income</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>12,416.9</td>
</tr>
<tr>
<td>Countries</td>
<td>Premium volumes ($ million)</td>
<td>Premium subsidies ($ million)</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>United States</td>
<td>8,508</td>
<td>3,823</td>
</tr>
<tr>
<td>Canada</td>
<td>1,090</td>
<td>546</td>
</tr>
<tr>
<td>Spain</td>
<td>514</td>
<td>362</td>
</tr>
<tr>
<td>Japan</td>
<td>446</td>
<td>229</td>
</tr>
<tr>
<td>China</td>
<td>423</td>
<td>132</td>
</tr>
<tr>
<td>Italy</td>
<td>381</td>
<td>280</td>
</tr>
<tr>
<td>Russian</td>
<td>315</td>
<td>156</td>
</tr>
<tr>
<td>Iran</td>
<td>167</td>
<td>82</td>
</tr>
<tr>
<td>Mexico</td>
<td>123</td>
<td>53</td>
</tr>
<tr>
<td>South Korea</td>
<td>59</td>
<td>17</td>
</tr>
<tr>
<td><strong>Top 10 Countries</strong></td>
<td><strong>12,023</strong></td>
<td><strong>5,680</strong></td>
</tr>
</tbody>
</table>
## Crop Insurance Administration and Operating Expense Subsidies

<table>
<thead>
<tr>
<th>Countries</th>
<th>Premium volumes ($ million)</th>
<th>A &amp; O expense subsidies ($ million)</th>
<th>Subsidy as percentage of total premiums (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>8,508</td>
<td>1,458.0</td>
<td>17</td>
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<tr>
<td>China</td>
<td>423</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>South Korea</td>
<td>59</td>
<td>16.1</td>
<td>27</td>
</tr>
</tbody>
</table>
Agricultural risk layering
Agricultural reinsurance

- **Japan**: three tiers of mutual relief and risk transfer (local 20%, prefectural federation 30%, national government 50%)
- **South Korea**: NACF is reinsured on a quota-share basis with local reinsurers.
  - loss ratio <110%: local reinsurers, 110%< loss ratio <150%: international reinsurer, loss ratio>150%: government acts as a reinsurer of last resort
- **China**: national reinsurer, provincial governments may also act as reinsurer or co-reinsurer of last resort for specific programs
- **USA**: Standard Reinsurance Agreement (SRA) is cooperative reinsurance agreements between the FCIC and insurance companies.
  - Government set up catastrophe funds to cover effectively catastrophe loss risk.
## Operational Systems of Crop Insurance

<table>
<thead>
<tr>
<th>System</th>
<th>Advantage</th>
<th>Disadvantage</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>State controlled systems</td>
<td>high penetration</td>
<td>Bad financial performance and service</td>
<td>India, Philippine</td>
</tr>
<tr>
<td>Pure market systems</td>
<td>skills, expertise, and innovation</td>
<td>low penetration and risk diversification</td>
<td>Australia, New Zealand</td>
</tr>
<tr>
<td>Public-Private Partnerships systems (PPPs)</td>
<td>high penetration and a good diversified portfolio</td>
<td>sound underwriting procedures, better pricing of risk, lower administrative costs, lower loss ratio</td>
<td>USA, China</td>
</tr>
<tr>
<td></td>
<td></td>
<td>improve the efficient operation and financial performance of government support agricultural insurance programs</td>
<td></td>
</tr>
</tbody>
</table>
Policy Implications

- Instead of AMS,
- Complementary to public disaster assistance programs,
- Technical improvement,
- Reasonable Indemnity,
- Establish databases,
- Insurance supply meets demand,
- Crop insurance is not everything,
- Penetration rate,
- Subsidy is not an effective measure in the long-run,
- Revenue insurance
Instead of AMS

Amber box: AMS

Green box: Crop insurance
Complementary to public disaster relief programs

- Farm safety net
- Crop insurance
- Natural disaster relief programs
Technical improvement

- Procedures of underwriting,
- Loss assessment
- Risk management practices
Reasonable Indemnity

Policy goal

• Improve farmers’ income

Insurance market
gap

• Underestimate the value of crops and loss assessment
Establish databases: public goods

Weather observation station and database
- Time series with area panel data about rainfall, temperature, and wind speed,

Production database
- Time series with area panel data about crops yield, cost, and planted area

Natural hazard disasters database
- Time series with area panel data about all types of natural hazard disasters and loss
Insurance supply meets demand

Supply

MPCI, NPCI, weather index

Demand

Key peril, location, farm size, data availability, deduction
Crop insurance is not everything.

- Crop insurance is one of risk management tools.
- Government should systematically assess supply chain risk from production to consumption.
- Supply chain risk includes weather related risks, natural disasters, biological and environmental risks, market related risks, logistical and infrastructural risks, management and operational risks, and policy and institutional risks.
Increase penetration rate

The key factor of sustainability of crop insurance is to increase penetration rate.

- Premium subsidy
- Compulsory
- Link with credit system
- Link with qualification for natural disaster relief
- Design demand-oriented insurance policy: risk cover, deduction, premium, indemnity
- Distribution channels
- Education and promotion
Premium subsidy is not an effective measure in the long-run.

- Premium subsidy is a market distortion measure to promote insurance.
- World Bank (2009) recommended that governments should exercise extreme caution about offering open-ended premium subsidy.
- FAO (2011) showed that many of subsidized crop insurance schemes continued to perform very poorly at present.
- Government should consider decrease premium subsidy while penetration increase for insurance sustainability.
Introduce revenue insurance

- Farmer’s revenue = \( P \times Q \)
- Crop insurance only covers production risk in quantity loss.
- Most farmers are still exposed to the price risk, which is not covered by MPCI.
- Crop insurance should further expand to cover price risk and introduce the experience of revenue insurance in the United States.
Conclusion

- Because of climate change and eliminating domestic support measures under URAA, most countries around the world have realized that crop insurance is an important instrument to protect farmers’ income and manage production risk since the 1990s.
- It might cause severe financial burden for government subsidy on insurance premium to impede crop insurance being realized, such as the policy considerations in Taiwan.
- We can figure out shifting government expenditures from domestic support programs to crop insurance premium subsidy.
Conclusion

- To avoid overlapped payments and risk covers, crop insurance schemes can be complementary relationship with income support programs and public disaster assistance programs. It will further establish a farm income safety net.

- Scaling up crop insurance is another key factor to ensure sustainable and cost-effective operation in crop insurance. Premium subsidy is not the only way to increase penetration rates. There are many ways to promote crop insurance.
Conclusion

- Crop insurances in fact can be used as an effective tool for risk management and protect farmers’ income from disaster losses.
- In Taiwan, there is no crop insurance until 2015. However, the pilot crop insurance only covers one fruit. We have to learn much lessons from international experience.
Thanks for your attention.