The Impact of the Uruguay Round on World Agriculture

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Outline

- The impact of the Uruguay Round (UR) on
  - agricultural production
  - agricultural trade
  - food security in exporter and importer of agricultural products.
- Geographic Information System (GIS)
  - the GIS mapping by simulation results.
  - the GIS mapping by actual changes in agriculture.
- Food Security
  - Net Food Importing Developing Countries
  - A key function of agriculture
Model

- Multi-regional CGE model
  - quantitative analyses of policy issues on a global basis
  - bilateral trade through bilateral tariff rates reduction
- Constant Elasticity of Substitution (CES) Function
  - between domestics and imports
  - elasticity of substitution
- Constant Elasticity of Transformation (CET) Function
  - between domestics and exports
  - elasticity of transformation
Data

- GTAP Database (1992)
  - on the basis of their regions of origin and destination
  - on the basis of the agents
  - disaggregated into 24 regions, with 22 production sectors in each region.

- World Bank (WB) tariff data
  - based on the Integrated Data Base (IDB) of the GATT Secretariat
  - provided by Glenn Harrison, Thomas F. Rutherford and David Tarr.
  - the various elasticities of substitution and transformation
    - the elasticities of transformation are 0.9-3.9
    - the elasticities of substitution are 1.9-5.2
Scenario

- Constant Returns To Scale (CRTS) static model
- UR agreement on Agriculture
  - reduction of import tariff and export subsidies by 36% for developed countries and 24% for developing countries.
  - reduction of the Aggregate Measure of Support to agriculture by 20% for developed countries (16.8% for EU) and 13% for developing countries.
- the UR implementation period
  - developed countries is six-year period, 1995-2000
  - developing countries is 10-year period, 1995-2004.
  - This study used the period, 1995-2000, as a period of the UR implementation
The simulation results
- A negative impact of the UR on world agricultural production, at least in the aggregate.
- The effect, however, differs from commodity to commodity and region to region.
- While grain production rises in exporting countries, the effect is not sufficient to cover the fall in production in importing countries.
- This is primarily because the importing countries reduce protections that have relatively higher tariffs and export subsidies in importing countries.
Impact of the UR on agricultural production
(1992 US $billion)

<table>
<thead>
<tr>
<th></th>
<th>Grains</th>
<th>Non-grain crops</th>
<th>Milk products</th>
<th>Meat products and livestock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exporting Countries</td>
<td>0.85</td>
<td>4.31</td>
<td>-0.17</td>
<td>2.26</td>
</tr>
<tr>
<td>Importing Countries</td>
<td>-4.96</td>
<td>-21.40</td>
<td>-2.95</td>
<td>-16.66</td>
</tr>
<tr>
<td>World</td>
<td>-3.72</td>
<td>-10.19</td>
<td>-2.91</td>
<td>-12.95</td>
</tr>
</tbody>
</table>
Impact of the UR on agricultural trade

- The impact of the UR on imports is positive in the aggregate.
- Exports in the exporters increase because the importers of agricultural products face reduced tariffs.
- However, Exports in the importers decrease because of export subsidies reduction.
- Compared with grains and milk products, non-grain crops and meat products are sharply increasing in agricultural trade.
- This is primarily because the import demand for high-value products rises as a result of increasing factor income.
## Impact of the UR on agricultural export

(1992 US $billion)

<table>
<thead>
<tr>
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<th>Meat products and livestock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exporting Countries</td>
<td>0.90</td>
<td>4.80</td>
<td>0.60</td>
<td>3.34</td>
</tr>
<tr>
<td>Importing Countries</td>
<td>-1.24</td>
<td>-1.61</td>
<td>-1.31</td>
<td>-0.93</td>
</tr>
<tr>
<td>World</td>
<td>-0.23</td>
<td>8.43</td>
<td>-0.62</td>
<td>2.88</td>
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</table>
## Impact of the UR on agricultural import
(1992 US $billion)

<table>
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<th>Meat products and livestock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exporting Countries</td>
<td>-0.01</td>
<td>1.32</td>
<td>0.10</td>
<td>0.17</td>
</tr>
<tr>
<td>Importing Countries</td>
<td>3.27</td>
<td>14.17</td>
<td>1.49</td>
<td>11.20</td>
</tr>
<tr>
<td>World</td>
<td>2.95</td>
<td>14.52</td>
<td>1.01</td>
<td>10.80</td>
</tr>
</tbody>
</table>
The ratio of total exports to food imports is an indicator of the ability of different countries to finance their food imports out of total export revenues (Diaz-Bonilla, E., M. Thomas, and S. Robinson, 2000).

As the ratio of total exports to food imports increases, food security in that country becomes unstable.

The simulation results show that the ratio of total exports to food imports increase slightly in the exporting countries, while the one increases sharply in the importing countries.

Therefore, world food security has become more unstable since the UR implementation.
Major changes in real world agricultural production

- Cereal production is increasing in the exporting countries and the EU, while production is decreasing in the importing countries such as South Korea and Japan and the Least Developed Countries (LDCs) such as Sub-Saharan Africa.
- The real state of cereal production and the simulation results evaluated by this CGE model are almost the same in major importing countries such as South Korea and Japan.
- There are considerably differences between the real state and the simulation results in some countries such as the EU and Canada.
- This is primarily from the differences from country to country in agricultural policies corresponding to the UR.
Major changes in real world agricultural trade

- The trade of agricultural products, however, differed from the exporting to the importing countries: (1) imports is increasing in the exporters and the importers of agricultural products; (2) exports is increasing in the exporters of agricultural products; and (3) exports is decreasing in the importing countries such as South Korea and Japan.

- There are many similarities between trade of agricultural products in real state and the results evaluated by this CGE model.

- However, there are several differences in some countries because of different agricultural policies corresponding to the UR.
Summary and Conclusions

World agricultural production has decreased by US $29.8 billion by this model. The total value of agricultural production in the exporting countries has increased by US $7.3 billion, while the value of agricultural production in the importing countries has decreased by US $46 billion.

This study finds that the UR implementation results in more trade. Total exports of agricultural products in the exporting countries have increased by $9.6 billion, while exports of agricultural products in the importing countries have decreased by $5.1 billion.

As far as food security is concerned, food security has become unstable in the importing countries by the UR implementation.
Summary and Conclusions

It seems that in spite of increasing world agricultural trade, the liberalization of agricultural trade in the UR implementation has brought regional bias in world agricultural production as well as world food insecurity and consequently aggravated the unemployment of the world subsistent farmers who have no opportunity to get other jobs.

If the WTO is really to be a useful international organization for promoting the welfare of global society, it must make justifiable rules to strengthen the world food security and the world poor farmers’ right to live.