Food Security: What Does It Mean for Canadian Food and Agricultural Policy?

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Why Food Security? Why Now?

- Global demand for food will continue to rise
  - Growth in population and, more importantly, income
  - Migration of people from rural to urban areas
- Growth in the supply of food is slowing
  - Degradation of key resources (e.g., water, land) needed for food production
  - Slowdown in research expenditures on agricultural technology
- Climate change also adds considerable uncertainty to the production situation
- The major issue of concern is the price of food
Food Security – A Brief History

- Food security first emerged as a major issue in the early 1970s as a result of the food crisis in 1972-74 (brought about by a dramatic increase in the price of oil).

- The events of the mid 1980s – a famine in Africa in 1984-85, the impact of structural adjustment policies on the provision of basic needs in developing countries – consolidated the issue as one of major concern.

- Over this time period, the focus of attention shifted from adequate food supplies at the national and international level to concerns about the ability of individuals and households to access sufficient food.
Food Security – Two Separate Issues

(1) A sufficient supply of food to meet people’s caloric requirements for an active and healthy life

(2) Ensuring an individual’s access to that food supply in a secure and timely fashion

Access to food has at least three dimensions

- An entitlement to access (e.g., to produce, purchase or exchange food)
- The degree of access security (or, alternatively, riskiness)
- The timeliness of access (i.e., access that is neither chronic nor cyclical)
Supply Sufficiency

- Emerging as a major issue because the growth in the productivity of the global food system threatens to decline just as the demands on the system because of higher population and income are becoming greater.
- Instead of taking fewer and fewer inputs to produce an ever increasing output, as has been the case in agriculture for the last 100 plus years, the growth in output per input is slowing.
- Many reasons for slowdown in productivity:
  - Resource degradation
  - Less investment in agricultural research
  - Poor coordination of activities across geographical regions and parts of the supply chain
- The result: Higher prices
### Table 3.4. Global growth in agricultural land and labour productivity, 1961-2005

Average annual growth rate by period (%)

<table>
<thead>
<tr>
<th></th>
<th>Land productivity</th>
<th>Labour productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>2.03</td>
<td>1.82</td>
</tr>
<tr>
<td>- excluding China</td>
<td>1.90</td>
<td>1.19</td>
</tr>
<tr>
<td>Latin America</td>
<td>2.17</td>
<td>2.83</td>
</tr>
<tr>
<td>Asia</td>
<td>2.56</td>
<td>3.01</td>
</tr>
<tr>
<td>- excluding China</td>
<td>2.45</td>
<td>1.83</td>
</tr>
<tr>
<td>- China</td>
<td>2.81</td>
<td>4.50</td>
</tr>
<tr>
<td>Africa</td>
<td>2.18</td>
<td>2.21</td>
</tr>
<tr>
<td>Per capita income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>2.00</td>
<td>2.39</td>
</tr>
<tr>
<td>Middle</td>
<td>2.35</td>
<td>2.30</td>
</tr>
<tr>
<td>Low</td>
<td>1.61</td>
<td>0.72</td>
</tr>
<tr>
<td>Top 20 producers</td>
<td>2.11</td>
<td>2.16</td>
</tr>
<tr>
<td>- excluding China</td>
<td>1.98</td>
<td>1.38</td>
</tr>
</tbody>
</table>

*Source: Table 3.6 in Chapter 3 of Alston et al. (2010).*
Table 3.5. Global yield growth rates for selected crops, 1961-2007

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>2.2</td>
<td>1.77</td>
<td>2.95</td>
<td>0.52</td>
<td>2.19</td>
<td>0.96</td>
<td>1.79</td>
</tr>
<tr>
<td>North America</td>
<td>2.2</td>
<td>1.4</td>
<td>2.23</td>
<td>0.01</td>
<td>1.67</td>
<td>1.54</td>
<td>1.05</td>
</tr>
<tr>
<td>Western Europe</td>
<td>3.3</td>
<td>1.81</td>
<td>3.31</td>
<td>0.63</td>
<td>0.38</td>
<td>0.55</td>
<td>1.64</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>1.91</td>
<td>0.97</td>
<td>3.18</td>
<td>-1.69</td>
<td>-0.41</td>
<td>1.07</td>
<td>1.9</td>
</tr>
<tr>
<td>Per capita income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>2.34</td>
<td>1.48</td>
<td>2.47</td>
<td>0.06</td>
<td>1.07</td>
<td>0.54</td>
<td>1.14</td>
</tr>
<tr>
<td>Middle</td>
<td>2.41</td>
<td>2.12</td>
<td>3.23</td>
<td>0.85</td>
<td>2.54</td>
<td>0.81</td>
<td>3.21</td>
</tr>
<tr>
<td>Low</td>
<td>1.07</td>
<td>0.65</td>
<td>1.32</td>
<td>2.15</td>
<td>1.46</td>
<td>2.16</td>
<td>2.63</td>
</tr>
</tbody>
</table>

Source: OECD: *Fostering Productivity and Competitiveness in Agriculture* (2011)
Productivity of the Food System

- Focus of agricultural policy – and economic analysis – has been on the productivity of primary agriculture.
- Yet, increasingly, the issue is the productivity of the entire value chain.
- Focus on the productivity of the entire value chain raises at least two points:
  - Different parts of the value chain have different rates of growth.
  - Different governance systems are needed for different parts of the value chain.
Differential Productivity

- Baumol (1993) differentiates between *progressive* sectors and *stagnant* sectors.
- Stagnant sectors – such as health care and education – appear poised to take up ever increasing amounts of total expenditures.
- In agriculture, primary agriculture is clearly a progressive sector – i.e., it has seen large productivity gains.
- Food processing and retailing are much more stagnant sectors – there is much less growth in productivity.
Proposition: Improving Overall Productivity Requires A Transfer of Resources From Primary Agriculture to Other Parts of the Value Chain
Corollary: New Governance Models Will Be Required

- To what extent is low productivity in other sectors of agriculture driving agricultural price increases?
- As Baumol suggests, solution to rising costs is to transfer resources from the progressive sectors to the stagnant sectors
- Of course, this cannot be done by fiat. What is needed are the appropriate governance and incentive structures
- The structures must be incentive compatible – i.e., the incentives must be set up in such a way that those involved find it desirable to make the necessary reallocations
Differential Governance
One Size Does Not Fill All

- Herbert Simon differentiates between systems that are nearly decomposable and those that are not.
- Nearly decomposable systems – the different parts of the system are relatively independent from each other.
- Nickerson and Zenger (2004) argue that different systems require different governance structures for optimal performance.
- Nearly decomposable systems benefit from more independent market-oriented structures.
- Systems that are not nearly decomposable benefit from a consensus-based hierarchy (e.g., more co-operative structures).
Proposition: The Food System is Becoming Less and Less Nearly Decomposable
Corollary: New Governance Models Will Be Required

- One reason for near decomposability is that resource constraints are not binding
- In economic terms, there is no shadow value
- However, as water and land become binding constraints, the various parts of the system can no longer be treated separately
- Near decomposability also less likely when measures of human well-being are expanded to include things other than GDP
- Optimization of the system requires consideration of a shadow value – namely, an understanding of the impact that decisions in one subsystem have on outcomes in other subsystems
Food Access and Entitlements

- Access to Food Requires
  - An entitlement to access (e.g., to produce, purchase or exchange food)
  - The degree of access security (or, alternatively, riskiness)
  - The timeliness of access (i.e., access that is neither chronic nor cyclical)

- As Sen (1983) argues, focusing on entitlements – the commodity bundles a person can command – provides a much better way of examining economic development than focusing on output
Proposition: Agricultural Policy Does Not Deal with Entitlements

- Agricultural policy has almost exclusively focused on production and productivity.
- Entitlements are a “wicked problem” – lack of agreement about desirable outcomes.
- Entitlements are the result of:
  - Structure of the economic and political system (e.g., democratic versus authoritarian regimes).
  - The assignment of property rights and how they are enforced.
  - The extent to which a civil society has developed.
  - The scale of corruption.
  - The nature of cultural norms.
  - In short, how economic, social and political power are created and maintained.
Proposition: Canada Has a Food Security Problem
Corollary: Part of the Solution Will be New Governance Models

- While entitlement has traditionally been used in the context of developing countries, it is also relevant to Canada.
- At the risk of oversimplifying, many of the problems facing the urban poor and Aboriginals (both on and off reserves) can be viewed in terms of entitlements.
- Until entitlement issues can be addressed in these populations, food security in Canada will remain an issue.
- New governance models are needed to deal with the social, political and economic issues raised above.
Summary of the Main Points

- Food security has emerged as a major problem
- Two components – food sufficiency and food access
- Food sufficiency has emerged as an issue because the productive capacity of the world’s land and water resources is not sufficient to provide an adequate supply of food to match the growing demand
- Food access remains a problem because many people in the world lack appropriate entitlements
- Solutions to both of these problems will require new governance models, albeit in very different contexts
Thank You