What Drives Supply Chain Formation in Eastern Europe?

Johan F.M. Swinnen

The World Bank
Washington DC, Dec 15, 2005
Key Issues / Questions

- How important / general is this process?
- Which models?
- Which conditions are required?
- Efficiency effects (income, productivity, ...)?
- Equity effects: who gets the benefits?
- What about small farmers?
- Which role does FDI play?
- Implications for government policy and international organizations?
Presentation focus:

What Drives Supply Chain Formation in Eastern Europe?

Or:

What Drives Supply Chain “Re-Formation” in Eastern Europe?
Presentation based on

- The World Bank, 2005, The Dynamics of Vertical Coordination in the Agri-food Supply Chains of Eastern Europe and Central Asia
- Swinnen (ed.) “Case Studies on Vertical Coordination in the Agri-food Supply Chains of Eastern Europe and Central Asia”, forthcoming
- Swinnen et al., 2005, “Farmers, Supermarkets, and the Restructuring of Dairy Supply Chains in Eastern Europe”, LICOS working paper
The Short Answer

- The combination of
  - A demand for high quality/standard products
  - Major constraints in input and output markets
Demand for high quality/standard products

- Either from domestic or international markets/consumers
Demand for high quality/standard products

- **Removal of barriers to (existing) high demand consumers**
  - International agreements
    - including WTO, EU accession, Eurepgap ...
  - Economic & institutional reforms
  - Trade & investment liberalization

- **Domestic increases in income (e.g., Russia since 1998)**
Demand for high quality/standard products

- Quality demand is “transferred” to the farm-level by investments in the processing/marketing industry (Foreign & domestic).

- These (in turn) strongly affected by:
  - International agreements on trade and investment
  - Economic & institutional reforms
  - Trade & investment liberalization
FDI in ECA agri-food sector

- Sugar and brewery sectors are mostly foreign owned
- Major investments in confectionary, oilseeds, dairy, etc
- ....
- Most recently, major investments in food retail sector
Agri-food FDI “waves” in Russia

**Confectionery 91-99:**
- Mars
- Nestle
- Cadbury
- Bolshevik
- Wrigleys
- Dirol
- Chupa Chups

**Beer 95-01:**
- Baltika
- EFES
- SAB
- Sun-Interbrew

**Dairy 97-01:**
- Wimm-Bill-Dann
- Ehrmann
- Campina
- Danone

**Edible oil 99-04:**
- Yug Russi
- Sloboda
- Louis Dreyfus
- Others?

**Packaging 99-07:**
- PLM
- Huhtamaki

**Retail 98-09:**
- Migma
- Metro
- Others?

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“The Supermarket Revolution”
Share of foreign retailers in top 50 retail in Czech and Slovak
2004 Top FDI Destinations of Global Retail Chains

1. Russia
2. India
3. China
4. Slovenia
5. Latvia
6. Croatia

- Central Europe is “already mature”
- Food retail is top investment area
Income and Growth of Supermarkets

R Sq. = 0.82
Reforms and Retail Investments

![Graph showing the relationship between EBRD Reform Index and the share of modern retail in total. The graph includes data points for 1998 and 2002, with an R Squared value of 0.79.](image)
The Second Factor: Supply Constraints

- The demand for high quality/standard products is **NOT met by a supply** of high quality/standard products because

  - Major constraints in input and output markets
The Basic Problem

- Processors face lack of supplies, because farms
  - Do not want to supply (no trust in payment)
  - Are not able to supply (inputs, working capital, ...)
  - Are not able to supply quality (quality inputs, technology, management, ...)

- Solution requires some form of contracting:
  - Contract with on-time payments
  - Input assistance
  - Technology and management assistance
Vertical Coordination in Agri-Food Supply Chains

- Rapidly growing in transition countries
- Contracting and vertical coordination to overcome obstacles that farms and processors face in producing high quality products
- Processes have been an engine of growth in most countries.
Farm assistance by agribusiness companies – Examples:

- Input supply programs
- Trade credit
- Investment assistance program
- Bank loan guarantee programs
- Extension services (technology and management)
- .....
Development of Supply Chains

- The demand for quality supplies in the face of supply constraints has major impacts on:
  - **Structure** of the supply system (which farms, which products, under which conditions, ...)
  - **Technology** adoption (need for investments to enhance quality and safety)
  - **Vertical integration** in the chain
## Farms selling on contract in Central Europe (% of all)

<table>
<thead>
<tr>
<th>Farm Comp</th>
<th>Family Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hungary</td>
<td>94</td>
</tr>
<tr>
<td>1997</td>
<td>17</td>
</tr>
<tr>
<td>Czech</td>
<td>98</td>
</tr>
<tr>
<td>1999</td>
<td>46</td>
</tr>
<tr>
<td>Slovak</td>
<td>96</td>
</tr>
<tr>
<td>1999</td>
<td>35</td>
</tr>
</tbody>
</table>
**Use of contract relationships to source raw materials**

Armenia, Georgia, Moldova, Russia, & Ukraine

<table>
<thead>
<tr>
<th>Contract Relationship</th>
<th>% in 1997</th>
<th>% in 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>With all farmers</td>
<td>41</td>
<td>77</td>
</tr>
<tr>
<td>With small farmers</td>
<td>36</td>
<td>49</td>
</tr>
<tr>
<td>With larger farmers</td>
<td>37</td>
<td>74</td>
</tr>
<tr>
<td>Own farms</td>
<td>6</td>
<td>26</td>
</tr>
<tr>
<td>Other agents</td>
<td>17</td>
<td>49</td>
</tr>
</tbody>
</table>
## Dairy in Bulgaria, Slovakia, Poland

<table>
<thead>
<tr>
<th>Year</th>
<th>Credit</th>
<th>Inputs</th>
<th>Extension</th>
<th>Vet.</th>
<th>Bank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PL</td>
<td>SK</td>
<td>BG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>50</td>
<td>0</td>
<td>9</td>
<td>50</td>
<td>50</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>67</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>83</td>
<td>9</td>
<td>0</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
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<tr>
<td>1998</td>
<td>83</td>
<td>17</td>
<td>45</td>
<td>17</td>
<td>17</td>
<td>73</td>
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<td></td>
<td>100</td>
<td>17</td>
<td>64</td>
<td>17</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>83</td>
<td>83</td>
<td>18</td>
<td>17</td>
<td>33</td>
<td></td>
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<tr>
<td></td>
<td>17</td>
<td>33</td>
<td>18</td>
<td>18</td>
<td>33</td>
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<tr>
<td>2002</td>
<td>83</td>
<td>100</td>
<td>82</td>
<td>17</td>
<td>50</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>33</td>
<td>91</td>
<td>17</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td></td>
<td>83</td>
<td>83</td>
<td>73</td>
<td>18</td>
<td>57</td>
<td></td>
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<tr>
<td></td>
<td>17</td>
<td>18</td>
<td>36</td>
<td>18</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>
# Contracted Farm Support Measures in CIS-5

<table>
<thead>
<tr>
<th>Service</th>
<th>% of firms</th>
<th>% of farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit</td>
<td>43</td>
<td>51</td>
</tr>
<tr>
<td>Prompt payments</td>
<td>42</td>
<td>87</td>
</tr>
<tr>
<td>Physical inputs</td>
<td>36</td>
<td>53</td>
</tr>
<tr>
<td>Quality control</td>
<td>34</td>
<td>78</td>
</tr>
<tr>
<td>Agronomic Support</td>
<td>21</td>
<td>81</td>
</tr>
<tr>
<td>Farm loan guarantees</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>Investment loans</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

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Cotton in Central Asia

- Vertical coordination is important in all Central Asia

- Kazakhstan survey: 71% of cotton farmers contracts with ginner, with assistance packages
Q17: Do You Get the Following Resources from the Ginnery?

- Finance: 89% yes, 11% no
- Seeds: 65% yes, 35% no
- Fertilizer: 40% yes, 60% no
- Agrochemistry: 73% yes, 27% no
- Water: 80% yes, 20% no
- Fuel: 96% yes, 4% no
- Agroconsulting: 96% yes, 4% no
Sometimes Very Complex Contracting Models
Contract Enforcement and Macro-economic stability is essential for ANY model

- Crucial to make VC sustainable
- Not obvious: Many cases and stories of failures
- Private enforcement mechanisms can be more important than public institutions
- Still, policies (environment) matters a lot
Reforms and Vertical Coordination
(% farm assistance programs in dairy)

\[ R^2 = 0.9309 \]
The Role of Supermarkets

- Retail investments have followed rather than lead this process in most of Eastern Europe. E.g.:
  - **Dairy** sector: EU accession (public) and dairy processing investments (private) were the main drivers of supply chains
  - **Barley-brewing**: supermarkets play no role
  - **Sugar**: idem
  - **Grain** in Kazak and Russia : idem
  - **Cotton** in Central Asia : idem
  - ...
The Role of Supermarkets

- Exceptions:
  - FFV -- where retailer is “first processor”
  - Other cases, e.g.
    - Russian outer regions, where supermarkets are moving ahead of dairy processors
The Role of Supermarkets

- Retail investments are one part of a much broader process of agribusiness investments.

- The “Supermarket revolution” is playing an important policy-role by focusing the attention and the debate.
Proces./Retail – guaranteed supplier loans: JUHOSUKOR in Slovakia & KONZUM in Croatia

- Retailer/processor provides loan guarantees for bank loans to suppliers
Lending with distributed risk: RABOBANK - SPVs

- Financial institution is foreign investor
- Special purpose vehicle (SPV) to distribute risk equally among partners
- Ex. where group of small farmers formed cooperative to participate in SPV
Leasing dairy equipment by joint project
Wimm Bill Dann -- De Laval in Russia

Diagram:
- Processor
- Project
- Equipment Seller
- Farm
Dairy Processor Becomes Financial Institution: DANONE in Romania

- Processor takes on banking function:
  - provides loans to farms
  - based on business plans
  - takes collateral

- Provides payment guarantee for input suppliers
Integrating Multiple Stages: Brewing / Malting Companies

- Core business = brewing
- Forced to vertically integrate all the way to seed supply to ensure quality malt-barley-seed
- General strategy applied differently in countries b/c of local conditions
- Bring in co-foreign investors to assist with non-core activities and set up farm assistance programs
  Programs interlink markets
Change in Quality
Dairy in North Poland 1996-2001

Share of Extra Class Milk in Total (%)

Mlekpol
Mleczarnia
Kurpie
Mazowsze
ICC Paslek
Warmia Dairy


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## Impact on LOANS and Investment
Small farms in Polish Dairy sector

<table>
<thead>
<tr>
<th>Size (# of cows)</th>
<th>Invests (% of total)</th>
<th>Uses loan to invest (% of A)</th>
<th>Uses dairy loan (% of B)</th>
<th>Uses bank loan (% of B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>52</td>
<td>54</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>6-10</td>
<td>78</td>
<td>51</td>
<td>43</td>
<td>70</td>
</tr>
<tr>
<td>&gt;10</td>
<td>92</td>
<td>74</td>
<td>43</td>
<td>75</td>
</tr>
<tr>
<td>ALL</td>
<td>76</td>
<td>58</td>
<td>43</td>
<td>69</td>
</tr>
</tbody>
</table>
Effect on INVESTMENT:
On farm cooling equipment in Poland 1995-2003
## Cotton Central Asia
### Annual Growth Rate (%)

<table>
<thead>
<tr>
<th></th>
<th>Kazakh</th>
<th>Kyrgyz</th>
<th>Uzbek</th>
<th>Tajik</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Harvested Area (Ha)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993 – 1998</td>
<td>12.3</td>
<td>6.0</td>
<td>-1.7</td>
<td>3.7</td>
</tr>
<tr>
<td>1993 - 2003</td>
<td>5.8</td>
<td>7.6</td>
<td>-1.7</td>
<td>-0.1</td>
</tr>
<tr>
<td><strong>Baled Cotton Production (1000 MTs)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993 – 1998</td>
<td>12.6</td>
<td>20.4</td>
<td>-2.7</td>
<td>0.4</td>
</tr>
<tr>
<td>1993 - 2003</td>
<td>5.4</td>
<td>25.9</td>
<td>-2.6</td>
<td>-3.5</td>
</tr>
<tr>
<td><strong>Cotton Price</strong></td>
<td>$550</td>
<td>$450</td>
<td>$200</td>
<td>$165</td>
</tr>
</tbody>
</table>