Evaluating regional impacts of land consolidation projects

Evidence from Finland

Pauliina Krigsholm
10.11.2016, Symposium on Land Consolidation and Land Readjustment for Sustainable Development
Background

- Discussion about potential wider economic effects of land consolidation projects
- Increasing demand for evidence-based decision-making in public sector
- In previous literature, the emphasis has been on evaluating agricultural and ecological impacts of land consolidation projects
- No previous studies on regional impacts of land consolidations exists (at least with Finnish data)
Regional impacts in infrastructure projects

- CGE models
- Econometric studies
- Survey studies
- IO models (including total factor models)

- Total factor model in land consolidation
  - Direct economic effects
  - Direct and indirect multiplier effects

- Short-term
- Long-term
Land consolidation project and regional impacts

- Household consumption that follows from higher income level caused by costs of land consolidation project
- Costs of land consolidation project, i.e. purchases from firms
- Subcontracts by firms
- Further subcontracts and so on
Case study areas
Costs and benefits in IO calculations

- Costs and benefits must be allocated to industrial classes (construction, transportation, professional and scientific activities etc.)
- Sources of costs are divided into four main categories:
  - Underdrainage
  - Drainage
  - Roads
  - Cost of proceedings
- Two sources of benefits are included in the analysis: agricultural benefits and benefits related to operational preconditions
Results: Direct economic effects

- The IO model is not needed for the calculation of immediate effects.
- The cost structure as well as cost allocation of both projects is fairly similar.
- Construction and professional, scientific and technical activities form main part of the costs.
- Immediate effects of land consolidation benefits mainly stem from cost savings (i.e. more effective agricultural production).
## Results: Direct and indirect multiplier effects

<table>
<thead>
<tr>
<th>Type</th>
<th>Sievinkylä</th>
<th>Yli-Kannus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total regional impacts</strong></td>
<td>3 856 000</td>
<td>1 901 000</td>
</tr>
<tr>
<td><strong>Multiplier effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct</td>
<td>1 169 000</td>
<td>594 000</td>
</tr>
<tr>
<td>Indirect</td>
<td>442 000</td>
<td>288 000</td>
</tr>
<tr>
<td><strong>Amount of costs, government</strong></td>
<td>1 340 000</td>
<td>549 000</td>
</tr>
<tr>
<td><strong>Amount of costs, landowners</strong></td>
<td>905 000</td>
<td>470 000</td>
</tr>
</tbody>
</table>

*Regional impacts of costs summarized*
Results: Direct and indirect multiplier effects

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Sievinkylä</th>
<th>Yli-Kannus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Total regional impacts</td>
<td>209 000</td>
<td>2 688 000</td>
</tr>
<tr>
<td>Direct multiplier effects</td>
<td>74 000</td>
<td>956 000</td>
</tr>
<tr>
<td>Indirect multiplier effects</td>
<td>9 000</td>
<td>121 000</td>
</tr>
</tbody>
</table>

Regional impacts of benefits summarized
Discussion

- Regional impacts depend on two factors: regional input-output tables and the immediate effects of cadastral procedure
- Interpretation of regional impacts originating from land consolidation benefits is subject to uncertainties
- The current analysis presents a scenario in which all positive expectations are realized (hence the results can be overly positive)
- This methodology suits only for *ex post* analysis
Contact information: pauliina.krigsholm@nls.fi