Experiences from Switzerland

Markus Lips

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Zürich area, plain region
Sonnenberg, plain region
Goms, mountain region
Saas-Grund, mountain region
Vineyard, Lake Biel/Bienne
Relevance

• Obviously, land fragmentation is a topic in Swiss agriculture.

• However it is not addressed:
  • Not a topic in the agricultural policy debate
  • Not a topic for farm advice services (cooperation is a topic)
  • No research questions for Agroscope
## Structure of Swiss Agriculture

<table>
<thead>
<tr>
<th></th>
<th>Situation 2016</th>
<th>Annual change 1998-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of farms</td>
<td>44651</td>
<td>-1.75%</td>
</tr>
<tr>
<td>Arable land</td>
<td>25.3 ha</td>
<td>+1.88 %</td>
</tr>
<tr>
<td>Livestock Units</td>
<td>33.3 LU</td>
<td>+1.93 %</td>
</tr>
<tr>
<td>Labour forces</td>
<td>1.88 full time</td>
<td>+0.46 %</td>
</tr>
</tbody>
</table>

Source: Agroscope, several years
Economies of scale in milk production (standard costs)

Source: Gazzarin et al., 2005
# Income statement for dairy, actual costs per livestock unit, mountain region

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Cost share (%)</th>
<th>Worst quarter</th>
<th>Best quarter</th>
<th>Difference</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>941</td>
<td></td>
<td>211</td>
<td>209</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Earnings</strong></td>
<td>7323</td>
<td>7067</td>
<td>7574</td>
<td>507</td>
<td>** 0.003</td>
<td></td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td>9979</td>
<td>100</td>
<td>11827</td>
<td>8056</td>
<td>-3771</td>
<td>*** 0.000</td>
</tr>
<tr>
<td><strong>Direct costs</strong></td>
<td>1804</td>
<td>18</td>
<td>2007</td>
<td>1646</td>
<td>-361</td>
<td>*** 0.000</td>
</tr>
<tr>
<td>Feed</td>
<td>1046</td>
<td>11</td>
<td>1175</td>
<td>945</td>
<td>-231</td>
<td>*** 0.000</td>
</tr>
<tr>
<td><strong>Indirect costs</strong></td>
<td>7827</td>
<td>78</td>
<td>9479</td>
<td>6061</td>
<td>-3418</td>
<td>*** 0.000</td>
</tr>
<tr>
<td>Labour</td>
<td>4764</td>
<td>48</td>
<td>5721</td>
<td>3493</td>
<td>-2228</td>
<td>*** 0.000</td>
</tr>
<tr>
<td>Machine</td>
<td>1502</td>
<td>15</td>
<td>1852</td>
<td>1246</td>
<td>-606</td>
<td>*** 0.000</td>
</tr>
<tr>
<td>Building</td>
<td>1050</td>
<td>11</td>
<td>1297</td>
<td>891</td>
<td>-406</td>
<td>*** 0.000</td>
</tr>
<tr>
<td>Profit/loss</td>
<td>-2656</td>
<td>-4760</td>
<td>-482</td>
<td>4278</td>
<td>*** 0.000</td>
<td></td>
</tr>
<tr>
<td>Real wage rate [CHF/h]</td>
<td>10.0</td>
<td>3.8</td>
<td>19.5</td>
<td>15.7</td>
<td>*** 0.000</td>
<td></td>
</tr>
<tr>
<td>Farmland in ha</td>
<td>25.3</td>
<td></td>
<td>19.3</td>
<td>33.1</td>
<td>13.9</td>
<td>*** 0.000</td>
</tr>
<tr>
<td>Milk yield [kg/cow/year]</td>
<td>6388</td>
<td></td>
<td>6236</td>
<td>6573</td>
<td>337</td>
<td>** 0.002</td>
</tr>
</tbody>
</table>

1 CHF = 8.2 NOK = 0.86 EUR
Source: Hoop et al., 2017
Growth

• Survey on dairy farms in Eastern Switzerland in 2006/7 (end of quota removal: 2009)
• Only 17% had no growth intention (base: farms intending to stay in dairy at least at medium term)
• Obstacles for growth (base: farms intending to stay in dairy at long term):
  • 21% no obstacles
  • 39% no land available
  • 17% costs for growth are too high
  • 10% full barn
  • 13% other obstacles

Source: Gazzarin et al., 2008
Cooperation

• Swiss farmers are involved in cooperation:
  • 53% hire contractor
  • 36% have common machines
  • 27% carry out machine services for others
  • 18% are involved in machine cooperatives
  • 5.4% are involved in enterprise/production branch cooperation
  • 4.2% are involved in farming collective (full cooperation)

Source: Lips et al., 2009
Recent development of cooperation

Source: Office of Agriculture
Crop rotation cooperation

• Background: A balanced crop rotation is a precondition for direct payments (e.g. wheat, maize grain, beans).
• In a crop rotation cooperation all farmers
  • bring their arable land in.
  • may merge small field to larger fields.
  • establish together a crop rotation.
• Crop rotation cooperation are both relatively easy to establish and relatively easy to resolve.
• Nevertheless, they are seldom applied.
Image of cooperation

• Survey about attitudes towards cooperation
  • 347 farm manager
  • 132 apprentices (agriculture)

• Weakness of cooperation
  • Fear of interpersonal conflicts
    • Farmers involved in farming collectives show above average communication skills.
  • Dependency/ Loss of independence
  • Risk of failure
  • Potential gaps in cooperation contract
  • Too complicated

Source: Pulfer, 2007
Job preferences of dairy farmers

• Research question: Do dairy farmers have non-pecuniary or non-financial job preferences?
• The survey on dairy farms in Eastern Switzerland in 2006/7 included also a discrete choice experiment.
• 300 complete data sets are available.
• Estimation of a random utility function by means of a mixed effects-logit model

Source: Lips et al., 2016
## Discrete Choice Experiment

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Levels</th>
</tr>
</thead>
</table>
| Work content                | • Dairy production *(status quo)*  
                          | • Suckler cow husbandry plus additional employment  
                          | • Farming without cattle  
                          | • Outside agriculture   |
| Terms of employment         | • Self-employed *(status quo)*  
                          | • Employed               |
| Leisure time                | • Hardly a weekend or hardly a week’s holiday  
                          | • 12 weekends or 2 weeks  
                          | • 52 weekends or 4 weeks |
| Variation in income per year| • CHF −6,000.-  
                          | • CHF 0.- *(status quo)*  
                          | • CHF +15,000.-  
                          | • CHF +30,000.-       |

1 CHF = 8.2 NOK = 0.86 EUR  
Source: Lips et al., 2016
# Results

<table>
<thead>
<tr>
<th>Levels</th>
<th>in CHF</th>
<th>Standard Error</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suckler cow + add. emp.</td>
<td>52,864</td>
<td>5,537</td>
<td>42,012 - 63,715</td>
</tr>
<tr>
<td>Without cattle</td>
<td>45,755</td>
<td>4,926</td>
<td>36,100 - 55,410</td>
</tr>
<tr>
<td>Outside agriculture</td>
<td>53,807</td>
<td>5,318</td>
<td>43,384 - 64,230</td>
</tr>
<tr>
<td>Employed</td>
<td>32,340</td>
<td>4,809</td>
<td>22,915 - 41,765</td>
</tr>
<tr>
<td>Holidays, 1 week</td>
<td>-7,369</td>
<td>1,029</td>
<td>-9,386 - -5,352</td>
</tr>
</tbody>
</table>

- Annual on-farm income of a full-time family work unit: CHF 34’500.-
- The preference of being self-employed or independent has the same size as the annual income.

1 CHF = 8.2 NOK = 0.86 EUR  
Source: Lips et al., 2016
Independence: Livestock buildings
Independence: Machines (hydraulic loaders)
Thank you for your attention
Literature

• Agroscope, several years. Grundlagenbericht, Ettenhausen.