The Key Role of the Milk Quota in the Reform of the Swiss Agricultural Policy

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Introduction

- Pareto superiority of the agricultural policy reform?
- Second-best economy
  - Lump-sum transfers not necessarily Pareto superior to supply control (Chambers, 1995)
- Computational general equilibrium model
  - MacSharry reform of CAP (Folmer et al., 1995)
  - Economic impact of the Uruguay Round (WBDP 307, 1995)
- Explicit modelling of agricultural policies
  - Weyerbrock (1998) : Common agricultural policy
  - Kilkenny (1991) : US agricultural policy
- Multifunctionality : public good concept
The Reform of the Swiss Agricultural Policy

- **Background**
  - Price and market guarantees
    - Great degree of self-sufficiency (72% in 1985)
    - High production costs
  - Uruguay Round Agreement on Agriculture (URAA)

- **Objective**: multifunctionality of agriculture (art. 104)

- **Strategy**: splitting up price and income policy

- **Implementation**
  - Multifunctional aspect remunerated by direct payments
  - Abolishing price and market guarantees
  - Conversion of non-tariff barriers into tariff rate quotas
  - Tariffs and export subsidies in line with URAA
Modelling the Multifunctionality

- Aims of the agricultural policy
  - Food security
  - Protection of natural resources
  - Maintenance of the landscape
  - Decentralized inhabitation
- Direct payments
  - Public service remuneration
  - Decoupled from production
- Public service achievement
  - Production constraints
  - Environmental constraints

Decoupled direct payments \textit{conditional} on a friendly farming regime
The CGE Model

- 22 production sectors: agricultural (10) - food (4) - industrial (4) - service (4)
- 22 private goods: sector specific good
- 3 primary factors: labour - capital - land
- 1 public good: multifunctionality of agriculture
- 2 representative agents: farm - nonfarm households
- Government
- Investment
- Foreign trade
Schematic Representation of the Economy

- 22 sectors of production
- 3 primary factors
- 2 representative agents
  - Farm household
  - Nonfarm household
Producer Behaviour

- **Agricultural sector**
  - Output = CET(public good, private good)
    - Private good = CET(domestic, exported)
  - Input = LT(value added, intermediate goods)
    - Value added = CES(labour, capital, land)
    - Intermediate goods = CES(domestic, imported)

- **Food/Industrial/Service sector**
  - Output = CET(domestic, exported)
  - Input = LT(value added, intermediate goods)
    - Value added = CES(labour, capital)
    - Intermediate goods = CES(domestic, imported)
Consumer Behaviour

- Utility = CES(leisure, composite consumption good)
  - Consumption good = CES(public good, comp. private good)
    - Composite private good = CES(private goods)
      - Private good = CES(domestic, imported)

- Sluggish factor (land) : CET function
- Labour/capital markets : farm - nonfarm migration
- Income
  - Net factor income and rents on production/tariff quotas
    - Private expenditure
    - Exogenous investment demand (savings)
    - Exogenous net trade surplus and net transfer to Gov
- Public good : consumption ≤ production
Government

- Regulation of the public good market
  - Production purchase (direct payments)
    - Price: DP rate (incentive degree to produce PG)
    - Quantity: degree of ecological farming (share of the country’s agricultural land farmed in an ecological way)
  - Set exogenously by the Government

- Income
  - Net taxes (VAT, direct taxes, input/output net subsidies, tariffs, export subsidies)
  - Exogenous net transfer from household
    - Public good expenditure
    - Exogenous investment demand (savings)
    - Fixed expenditures (public administration & social security)
Closure Rules

- **Government**
  - Balanced budget: VAT on industrial goods and services

- **Investment**
  - Output = LT(Intermediate goods)
    - Intermediate goods = CES(domestic, imported)
  - Exogenous investment = fixed aggregate savings

- **Foreign trade**
  - Small country assumption \(\rightarrow\) exogenous world prices
  - Imperfect substitutes (exports and imports)
  - Balance-of-payments equilibrium: exogenous capital outflow
Explicit Modelling of Agricultural Policies

- **Domestic policies**
  - Decoupled direct payments (public good value)
  - Endogenous input subsidies (on labour and capital)
  - Endogenous output subsidies
  - Output quota on raw milk (rent to farmers)

- **Trade policies**
  - Exogenous/endogenous export subsidies
  - Tariffs
  - Tariff rate quotas (rents to nonfarm household)
Data and Calibration (Benchmark year : 1995)

- Primary data (Grether and Mueller, 1999)
  - Update of the 1990 SAM (OFS, DGD)
  - 1996 tariff equivalents and VAT
- Additional data
  - Direct taxes and transfers (OFS)
  - Direct payments and agricultural subsidies (OFAG)
  - Quota rents : (Lehmann et al., 2000)
  - TRQ rents : tariff equivalents (OECD) – customs duty
- PG personalized valuation : proportional to income
- SAM balancing : cross entropy principle
- Elasticities from literature
- Leisure-labour ratio : 43 hours a week over 16 a day
Simulation

Reform components

» Domestic policies
  • Agriculture competitiveness: fall in production subsidies
  • Sustainable agriculture: increase in direct payments

» Trade policies (URAA)
  • Export competition: -36% (from 1986-90 levels)
  • Market access: -15% (min. reduction from 86-88 base)

Reform package (AP 2002) (in mio.)

<table>
<thead>
<tr>
<th>Instruments</th>
<th>1995 account</th>
<th>2002 fin. plan</th>
<th>Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production subsidies</td>
<td>1'417</td>
<td>682</td>
<td>-735</td>
</tr>
<tr>
<td>Direct payments</td>
<td>1'522</td>
<td>2'482</td>
<td>+960</td>
</tr>
<tr>
<td>Export subsidy ceiling</td>
<td>514</td>
<td>440</td>
<td>-74</td>
</tr>
<tr>
<td>Tariffs - TRQs</td>
<td>645</td>
<td>1'049</td>
<td>-15%</td>
</tr>
</tbody>
</table>
Impact Analysis of Splitting up Price and Income Policy

<table>
<thead>
<tr>
<th></th>
<th>Benchmark (1995, fr.)</th>
<th>AP 2002 (% change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume of public good (mio.)</td>
<td>1'522</td>
<td>47.66</td>
</tr>
<tr>
<td>Producer price of public good</td>
<td>1.00</td>
<td>10.60</td>
</tr>
<tr>
<td>Producer price of agricultural goods</td>
<td>1.05</td>
<td>-0.81</td>
</tr>
<tr>
<td>Market price of agricultural goods</td>
<td>1.00</td>
<td>0.91</td>
</tr>
</tbody>
</table>

- **Increase in direct payments**
  - Good incentive scheme to public good production (+48%)
  - 95% of agricultural useful area farmed in an ecological way (44% en 1995)

- **Reduction of production subsidies**
  - Downward pressure of production prices
  - Upward pressure of market prices
URAA Impact Analysis

<table>
<thead>
<tr>
<th></th>
<th>Benchmark (1995, mio.)</th>
<th>Without URAA</th>
<th>Only URAA</th>
<th>With URAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social welfare</td>
<td>454’111</td>
<td>-0.05</td>
<td>0.15</td>
<td>0.10</td>
</tr>
<tr>
<td>VAT rate (industrial goods &amp; services)</td>
<td>6.18%</td>
<td>2.43</td>
<td>-5.08</td>
<td>-2.42</td>
</tr>
<tr>
<td>Volume of agr. prod. (domestic use)</td>
<td>11’712</td>
<td>-1.43</td>
<td>-1.77</td>
<td>-3.14</td>
</tr>
<tr>
<td>Volume of agricultural exports</td>
<td>376</td>
<td>-2.99</td>
<td>-1.15</td>
<td>-3.03</td>
</tr>
<tr>
<td>Volume of agricultural imports</td>
<td>3’399</td>
<td>1.95</td>
<td>4.92</td>
<td>7.02</td>
</tr>
</tbody>
</table>

- Social welfare gains
- Decline of the VAT rate
- Volume on agricultural markets
  - Decrease of production (domestic market and exports)
  - Increase in imports
Welfare Analysis

<table>
<thead>
<tr>
<th></th>
<th>Benchmark (1995, mio.)</th>
<th>AP 2002 (% change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welfare of the farm household</td>
<td>8'672</td>
<td>-4.43</td>
</tr>
<tr>
<td>Welfare of the nonfarm household</td>
<td>445'439</td>
<td>0.19</td>
</tr>
<tr>
<td>Social welfare (mio.)</td>
<td>454'111</td>
<td>444</td>
</tr>
<tr>
<td>Raw milk quota rent</td>
<td>608</td>
<td>-76.40</td>
</tr>
</tbody>
</table>

- Increase in social welfare
  - Farmers: welfare loss
    - Fall in raw milk quota rent
  - Nonfarm households: welfare gains
    - Reduction of production subsidies
    - Liberalization of agricultural trade

- Small impact of the reform (< 500 mio.)
Raw Milk Market Analysis
Conclusion

- Aims of the reform: competitive/sustainable agriculture
- Modelling issues
  - Multifunctionality: public good remunerated through decoupled direct payments
  - Explicit agricultural policies
  - Farm and nonfarm households
- Implications of the agricultural policy reform
  - Direct payments: effective incentive to multifunctionality
  - Competitiveness: decrease of production and import prices
  - Social welfare gains: 450 mio.
- Reconciliation of competitiveness/sustainability notions