Structural Challenges for the Farm Sector in Central and Eastern Europe

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IAEI
Innovation and competitiveness of the agrarian sector of the EU
Prague, September 17, 2012
Structure of presentation

• Market trends
  – Implications of recent price booms

• Sectoral trends
  – Increasing vertical integration and globalization
  – Tendency towards biological manufacturing

• Agriculture and the society
  – CAP after 2013
  – Public perception of farming

• Conclusions
Market trends

Wheat price development 2001 - 2012

Source: http://www.indexmundi.com/commodities/?commodity=wheat&months=120&currency=eur, own calculations
Market trends

• World demand for agricultural outputs strongly increased!
  – Increasing world population
  – Changing food patterns (more meat, more high-value and convenience products)
  – Increasing demand for bioenergy (driven by policies and energy prices)

• World production did not follow!
  – reduced growth rates of yields
  – limited land and water resources
  – still huge yield gaps and land abandonment, e.g. in Eastern Europe
Are there now fantastic perspectives for the agricultural sector?

– high volatility of prices, also of inputs
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- price frictions within the food chain (e.g. bullwhip effects)
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- high volatility of prices, also of inputs
- price frictions within the food chain (e.g. bullwhip effects)
- in the end, economic rents are capitalized in land prices
Sectoral trends

- Boehlje (1999)

  New dimensions of structural change in agriculture:
  - Vertical value chains (verticalization) in global dimension
  - Biological manufacturing
Verticalization and globalization

- Enormous and fast expansion of supermarkets worldwide (also in transitional, emerging and developing countries)
- Retail brands replace producer brands
  - trust of consumers in retailers
- Not companies compete but networks
  - vertical cooperation to realize efficiency gains
    - strict quality management via private standards (e.g. GLOBALGAP)
    - homogenous product qualities and quantities
- In general, in favor of larger farms
Verticalization and globalization

International structural change in the pork chain

• Denmark (2007)
  – 34 % of all pigs in facilities with more than 5000 pigs
  – 20 % of all pigs in facilities with more than 10000 pigs

• US pork production
  – ~ 50 % of all hogs grown under contract
  – > 60 % of all pigs in facilities with more than 5000 pigs
Verticalization and globalization

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• US pork production
  – ~ 50 % of all hogs grown under contract
  – > 60 % of all pigs in facilities with more the 5000 pigs
  – ~ 20 % of all sows held by the 10 largest enterprises

• Smithfield Foods
  – USA: ~ 1 mill. sows
  – Poland: about 83.000 sows, >1 mill. hogs in 2008 produced
  – Romania: investments in pork chain with capacity for 4 mill. hogs
Verticalization and globalization

Development of pork production in Hungary (2003-2008)

Source: KSH, AKI
**Verticalization and globalization**

Total revenues of German food industry (550,000 employees)

- **Share exports:** 17% (1998)
- **Share exports:** 30% (2011*)

Source: Stat. Bundesamt, BVE
Sectoral trends

- Boehlje (1999)
  New dimensions of structural change in agriculture:
  - Vertical value chains (verticalization) in global dimension
  - Biological manufacturing
    - "In essence, agricultural production is becoming more a science and less an art."
Increasing knowledge intensity of modern agriculture

- Example: farrowing / piglet production in Saxony
  - In 2006, average profit per sow 300 € higher for farms with more than 1000 sows compared to farms with less than 600 sows
  - Success factors
    - lower costs + higher revenues
    - strong positive correlation of number of sows and piglets per sow
### German Farm Accountancy Data 2005/06-2009/2010

<table>
<thead>
<tr>
<th></th>
<th>Size</th>
<th>Land*</th>
<th>Labour</th>
<th>Wheat yield *</th>
<th>Milk yield *</th>
<th>piglets *</th>
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<tbody>
<tr>
<td></td>
<td>ESU</td>
<td>ha</td>
<td>AWU/100ha</td>
<td>Dt/ha</td>
<td>Kg/cow</td>
<td>Per sow</td>
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<tr>
<td>Full-time Farms West</td>
<td>80</td>
<td>55</td>
<td>3,6</td>
<td>71</td>
<td>6 906</td>
<td>23</td>
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<tr>
<td>Full-time Farms East</td>
<td>148</td>
<td>192</td>
<td>1,6</td>
<td>63</td>
<td>7 456</td>
<td>25</td>
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<tr>
<td>Legal Persons (corporate farms)</td>
<td>1 805</td>
<td>1 240</td>
<td>1,9</td>
<td>65</td>
<td>8 615</td>
<td>26,5</td>
</tr>
<tr>
<td>&gt; 2000 ESU</td>
<td>3 059</td>
<td>2 684</td>
<td>2,3</td>
<td>70,3</td>
<td>8 976</td>
<td>26,9</td>
</tr>
</tbody>
</table>

BMVEL Buchführungsergebnisse der Testbetriebe, weighted averages, several years, own calculations
1 ESU: 1.200€ Standard Gross Margin; *2009/2010

- High productivity of large corporate farms
Biological manufacturing

U.S. Pigs per Litter
By Size of Operation, March-May 2010

Number Head

<table>
<thead>
<tr>
<th>Size of Operation</th>
<th>Number of Pigs</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>9.81</td>
</tr>
<tr>
<td>1-99</td>
<td>7.70</td>
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<tr>
<td>100-499</td>
<td>8.40</td>
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<td>500-999</td>
<td>8.60</td>
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<tr>
<td>1000-1999</td>
<td>9.40</td>
</tr>
<tr>
<td>2000-4999</td>
<td>9.70</td>
</tr>
<tr>
<td>5000+</td>
<td>9.90</td>
</tr>
</tbody>
</table>

USDA-NASS
06-25-10
Efficiency of crop farms in Ukraine 2010

Efficiency not just a matter of size!
Modern farming is knowledge-based

- Thesis: Economies of size result from better managing human capital and know how rather than from decreasing average costs for larger facilities

  - competent managers
  - high skilled employees
  - knowledge transfer through supply chain
Modern farming is capital-based

- Financial demands to create one job in livestock production in Germany
  - hog feeding: 1 125 000 €
    - facility per 2500 places at 350 € each, current assets 100 € per place
  - farrowing: 675 000 €
    - facility per 250 sows at 2300 € each, current assets 400 € per place
  - dairy farming: 300 000 €
    - facility per 50 cows at 4000 € each, current assets 2000 € per place
Modern farming is capital-based

- Machine costs often higher than labor costs
- High labor quality more important than wage level!
- Importance of investments in human capital!

Quelle: Zimmer et al. (2010)
Modern farming is capital-based
- Machine costs often higher than labor costs
- High financial demands!
  - Venture capital necessary!
  - Agro-holdings an option!? 

Quelle: Zimmer et al. (2010)
Biological manufacturing

Independent farms versus agro-holding members (Russia)

Source: Hahlbrock et al. (2011, 2012)
Agriculture and the society

EC proposal for CAP after 2013

- Indirect reduction of direct payments (if greening is taken serious)
- Switch towards social goals
  - support of small farmers
  - capping of direct payments for large recipients
“20 % of the farms receive 80 % of subsidies!”

Agriculture and the society

“20 % of the farms receive 80 % of subsidies!”
Agriculture and the society

“20 % of the farms receive 80 % of subsidies!”

➢ “Pareto-principle”
  – 20 % richest own 80 % of the wealth almost everywhere and everytime
  – some kind of “natural law”

http://www.gametheory.net/dictionary/People/VilfredoPareto.html
Agriculture and the society

Agricultural land shares of farm size classes in Germany (2007)

Source: BMELV, own calculations
Agriculture and the society

“20 % of farms receive 80 % of subsidies!”

or should one argue:

“20 % of the farms provide 80 % of value!”

➤ Who/what wants policy to address?

- The farmers?
- The farming sector?
Impacts of capping proposal on the Altmark region in East Germany

- Almost no impact on payments (because of farm adjustments)
- Higher impact on profits of large farms
- Highest impact on economics land rents (factor price distortions)
- Effects increase over time! (inefficient structural adjustments)

Source: Sahrbacher et al. (2012), Analysis based on simulations with AgriPoliS
Agriculture and the society

Public perception of farming

• Some stylized facts
  – romantic view: "natural" farming
  – little knowledge of farming practices and technologies
  – concerns against large farms
  – concerns against international farms
  – concerns against investments in facilities for intensive livestock production
  – assumptions that farmers need subsidies and suffer from low income
    (broad coalition between environmental groups and small farmers associations)

➤ C.-A. Bartmer (President of DLG) (05.09.2012):
  – "The agricultural sector did not include the public in its modernization process."
  – "(The public) is not aware that we can contribute with modern technology and
    newest scientific and practical insights to increase the productivity of scarce
    resources to its benefit and to the benefit of landscapes and biodiversity."
Agriculture and the society

Public perception of farming

- What are the reasons for divergence
  - Agriculture and agribusiness supported idealistic views
    - Heterogeneity within the sector (80/20 problem)
    - … but all wanted a positive image!
    - … and all wanted subsidies!
  - No serious interest of the public in real production
    (particularly not in meat production)
  - Lack of communication
    - by farmers
    - by agribusiness
    - by scientists

➢ Public discussion rather ideological than analysis and fact-based!
Conclusions

• Structural change will continue internationally at high speed
  – Verticalization and globalization: consumer driven
  – Biological manufacturing: producer driven, resource driven
    • need for venture capital
    • need for know how transfer and human resource development

➢ New role for economies of size
Conclusions

• Question:
  – How to achieve a proper institutional environment?
    • Policies which are able to support production needs while considering environmental, animal-welfare and health issues!
    • Complementary policies which address social needs!
      ➢ Angela Merkel (04.09.2012):
        "The primary goal of the CAP is an effective and sustainable agriculture!"
      ➢ Need to de-ideologize political debate!