Understanding global agriculture through *agri benchmark*

Dr. Yelto Zimmer
Thünen Institute of Farm Economics

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1. Introduction

2. What is *agri benchmark*?

3. Case 1: Future of EU sugar beet production

4. Case 2: Perspectives of Latin American beef production

5. Conclusions
Commodity prices on the rise? (USD/t)

Compared to pre-boom period prices increased by 200+ %. FAPRI and others predict current prices will prevail in future.

Source: World Bank, pink sheets (2013), own calculations
Sky rocketing vegetable oil consumption (in 1,000 t)

Annual increase: +5.6%

Provided demand will continue to grow that fast: Where will the produce come from?

Source: FAPRI (2012), own compilation
Challenges for agricultural economists (and farmers, policy makers & investors)

1. Are we going to see high commodity prices „for ever“?

2. What regions in the world will produce additional commodities and how?

3. Note: many new players (e.g. RU, UA, CN & Africa) with extremely weak or even non-existent official economic data.
Data requirements for solid projections

1. Physical and economic production functions per site & crop - currently and potentially produced in future.

2. Quantified rotational effects between crops.
   ⇒ nutrient carry over
   ⇒ impact on soil quality
   ⇒ infection cycles from pest and diseases
   ⇒ changes labor and machinery use (winter vs. summer crops)

3. Risk (and other) preferences of producers.

Theoretically doable based on massive field trials and grower surveys.

But: It’s a „man-to-the-moon-project“
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What is *agri benchmark*?

Understanding global Agriculture

Production systems & cost of production analysis

Global non-profit network of production economists

Coordination by Thünen Institute (publicly funded) and DLG
A typical farm...
⇒ represents the origin of a major share of the national output in a given crop
⇒ is defined by a certain production system and a combination (if any) of enterprises
⇒ has certain structural features re. ownership of land as well as labor organization (family vs. hired)
⇒ is regularly being re-assessed to track changes

Data is jointly gathered from partners, regional advisors and growers. Basis: Standard operating procedure (SOP).
Branches in the agri benchmark Network

Cash Crop
- Cereals
- Oilseeds
- Sugar
- Other

Beef and Sheep
- Cow-calf
- Finishing
- Ewes
- Finishing

Pig and Poultry
- Under construction

Dairy (EDF)
- Under construction

Horticulture
- Under construction
  - Apple
  - Grapes

Organic
- Under construction
  - Wheat
  - Potatoes
  - Milk
  - Cow-calf
  - Coffee
  - Bananas
### Europe

- UK
- Italy
- France
- Denmark
- Sweden
- Ukraine
- Romania
- Bulgaria
- Hungary
- Czech Republic
- Poland
- Russia

### North America

- Canada
- USA / Iowa
- USA / Indiana
- USA / Kansas
## South America
- Brazil
- Argentina / Uruguay

## Asia
- China
- Malaysia
- Vietnam
- Kazakhstan
- Thailand
- Japan

## Africa
- Tunisia
- South Africa
- Algeria

## Transoceania
- Australia
Principles of the network

1. “Put your country in and get the world back”.

2. Partners remain owner of the data.

3. Annual conference to exchange ideas, validate data and explore new countries.

4. *agri benchmark* Center cooperates with companies and institutions to generate funds to run the network.

5. We are non-political.
Major clients & cooperations

GLOBAL AGENDA OF ACTION
IN SUPPORT OF SUSTAINABLE LIVESTOCK SECTOR DEVELOPMENT

Food and Agriculture Organization of the United Nations

European Commission

MLA

Bayer

John Deere
Present in all major countries and crops

Crop coverage:
- Corn
- Soybeans
- Wheat
- Sugar beet
- Rice
- Rapeseed
- Oats
- Rye
- (Malting) barley
- Sunflower
- Sorghum
- Cotton
- Peas
- Beans
- Palm oil
- Sugar Cane

Countries participating in *agri benchmark* Cash Crop

Countries to come online 2014

Priorities for new partnerships
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What are the case studies good for?

1. Illustrate the complexity of producers options and restrictions.

2. Demonstrate *agri benchmark*'s ability to handle this complexity and to generate meaningful results.

3. Illustrate lack of practical alternatives to *agri benchmark* – at least in crop production.
What drives EU sugar beet farm economics?

1. What is the relevant alternative crop to beets?

2. Impact of alternative crop compared to beets on subsequent crop?
   - yield effects due to soil quality, date of seeding.
   - changes in tillage operations

3. Alternative crops move to better soils when no beets are grown (≈ + 0.5 rapeseed t/ha).

4. In case alternative crop is winter crop: additional labor and machinery cost from moving from spring crop to winter crop.

Focus groups with scientists, growers and advisors develop answers to these questions.
Indifference prices sugar beets - with and w/o rotational effects (€/t)

Source: Albrecht (2013)
FADN based sugar beet cost estimates (€/ha)

Source: Gocht et al (2012)

- 800 €/ha
  in one year

- 40 %
  in one year

- 50 %
  in one year
Findings and conclusions re. EU sugar beets

1. Considering rotational effects dramatically alters the farm economics of sugar beets.

2. Strong regional spread in indifference prices ⇒ Much room for regional re-allocation of beet production.

3. Sugar beets much less competitive than expected „on paper“.

4. FADN based cost estimates yields questionable results.
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Strong increase in world market beef prices (US cent/kg) — strong incentive to boost output!

Brazil & Argentina: A lot of land is available! Convert it to pasture and produce more beef?!

Source: World Bank, pink sheets (2013), own calculations
### Productivity gain: Moving from pasture to feedlot

<table>
<thead>
<tr>
<th></th>
<th>Pasture</th>
<th>Feedlot</th>
<th>Mix</th>
<th>Mix vs. Pasture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight at start (kg LW)</td>
<td>190</td>
<td>414</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>Weight at end (kg LW)</td>
<td>495</td>
<td>577</td>
<td>577</td>
<td></td>
</tr>
<tr>
<td>Finishing period (days)</td>
<td>730</td>
<td>100</td>
<td>636</td>
<td>- 13 %</td>
</tr>
<tr>
<td>Daily weight gain (g/day)</td>
<td>418</td>
<td>1630</td>
<td>609</td>
<td>+ 45 %</td>
</tr>
<tr>
<td>Dressing %</td>
<td>53%</td>
<td>57%</td>
<td>57%</td>
<td>+ 8%</td>
</tr>
<tr>
<td>Carcass weight (kg)</td>
<td>262</td>
<td>329</td>
<td>329</td>
<td>+ 25 %</td>
</tr>
</tbody>
</table>
CoP beef for *agri benchmark* farms in Argentina and Brazil (2011, USD per 100 kg carcass weight)

In a feedlot system feed and animal purchase are the key drivers!

**Pasture**

**Feedlot**

Source: DEBLTIZ ET AL. (2012)
Findings & conclusions: future beef in Latin America

1. Change of production function is a viable option.

2. Disclosure through in-depth farm level analysis in cooperation with producers and advisors.

3. Projections based on historical data will be misleading.

4. Feedlots generate a “new” output – higher prices. 
   ⇒ Just looking at cost is totally misleading.

5. Strong increases in productivity.
   ⇒ not necessarily long term increase in CoP (and beef prices).

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Conclusions

1. *agri benchmark* approach leads to a significant improvement in understanding dynamics of ag production at reasonable cost.

2. Key strength of *agri benchmark*:
   - production systems based
   - global network of production economists
   - integrated with growers and advisors
   - globally harmonized data base

3. Global projections can not be made by *agri benchmark* alone, cooperation with market modeling is highly advisable.
Thank you for your interest in *agri benchmark*.

We are interested in additional partnerships.

Dr. Yelto Zimmer  
- Head of *agri benchmark* Cash Crop team -  
Thünen Institute of Farm Economics  
Bundesallee 50, 38116 Braunschweig  
Germany  
phone  +49 - 531-596-5155  
mobile  +49 - 173-5722723  
e-mail  yelto.zimmer@ti.bund.de  
internet  www.agribenchmark.org  
www.ti.bund.de
Move to feedlots is a reality!

Argentina
An estimated 40% of beef is feedlot finished (Ostrowski, 2011)

Cattle in feedlots – Brazil

<table>
<thead>
<tr>
<th>Region</th>
<th>'000 Head</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steers</td>
<td>3,039</td>
<td>5.1%</td>
</tr>
<tr>
<td>Other cattle</td>
<td>426</td>
<td>1.4%</td>
</tr>
<tr>
<td>Total</td>
<td>3,465</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

Source: CEPEA, ASSOCON and IBGE
Data on cropping systems –
Example: Sugar beet on German farm DE1300MB
Difference between indifference prices sugar beets - with and w/o rotational effects (in %)