OECD FARM-LEVEL NETWORK AFTER TEN YEARS: ACHIEVEMENTS AND WAY FORWARD

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21st meeting of the OECD Farm-Level Analysis Network
Oslo, 4-5 June 2018

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Increasing need for farm-level analysis

- Policy developments towards more targeting
- Structural developments affect policy effectiveness
- Thus the need for farm-level information and analysis for policy evaluation
- To complement aggregate analysis
- Specific challenges for OECD:
  - access to national data,
  - cross-country comparison (EU vs non-EU)

Network approach

- OECD set up a farm-level analysis network, which meets twice a year since 2008, to promote farm-level analysis by:
  - exchanging experience in using farm-level data to develop indicators and analyse policy issues
  - Undertaking common projects allowing for cross-country comparison: ToR defines common definition of population, farm categories (e.g. size, type), and variables (e.g. income).
- Website: www.oecd.org/agriculture/farm-level-analysis-network/

Working methods

- The networks meets twice a year
- To discuss common projects: objective, ToR, data availability, timing, progress, results of analysis, etc.
- In most cases, countries provide data and OECD makes the analysis and draws policy conclusions
- To discuss data developments (e.g. EU FLINT project to collect additional data to evaluate new aspects, e.g. agri-environmental performance)
- and analysis done in countries
- Contact persons nominated by government, and experts invited on an ad hoc basis, including consultants

List of published studies

- Bokusheva, R. and L. Čechura (2017), "Evaluating dynamics, sources and drivers of productivity growth at the farm level", OECD Food, Agriculture and Fisheries Papers, No. 106, http://dx.doi.org/10.1787/5f2d0601-en
- Sauer, J. (2017), "Estimating the link between farm productivity and innovation in the Netherlands", OECD Food, Agriculture and Fisheries Papers, No. 102, http://dx.doi.org/10.1787/2224dad0-en.
- Bokusheva, R. and S. Kimura (2016), "Cross-Country Comparison of Farm Size Distribution", OECD Food, Agriculture and Fisheries Papers, No. 94, http://dx.doi.org/10.1787/5jlv81sclr35-en
- Kimura, S. and J. Sauer (2015), "Dynamics of dairy farm productivity growth: Cross-country comparison", OECD Food, Agriculture and Fisheries Papers, No. 87, http://dx.doi.org/10.1787/5jrw8ffbzf7l-en
- Kimura, S. and C. Le Thi (2013), "Cross Country Analysis of Farm Economic Performance", OECD Food, Agriculture and Fisheries Papers, No. 60, http://dx.doi.org/10.1787/5k46ds9ljxkj-en
- Kimura, S. and C. Le Thi (2011), "Farm Level Analysis of Risk and Risk Management Strategies and Policies: Technical Note", OECD Food, Agriculture and Fisheries Papers, No. 48, http://dx.doi.org/10.1787/5kg6z83f0s34-en Part of wider project and country case studies
- Moreddu, C. (2011), "Distribution of Support and Income in Agriculture", OECD Food, Agriculture and Fisheries Papers, No. 46, OECD Publishing, Paris. http://dx.doi.org/10.1787/5kgch21wkmbx-en

Additional outcomes

- TFP calculations in Korean and Swedish reviews
- EuroChoices articles
- Other?

Dynamics of dairy productivity: method (Kimura and Sauer, 2015)

- Dynamics of productivity growth in the dairy farm sector of England-Wales, Estonia, the Netherlands (by farm size)
- Box on Germany, by region and farm size
- TFP measured at sector and farm level using a non-parametric method (Fisher index); sample weights applied to output and inputs;
- Unbalanced panel of FADN farms 2000-12
- Decomposition of TFP growth between farm-level TFP, resource reallocation between farms, entry-exit
- Impact of farm characteristics (by productivity class) on farm-level TFP estimated using censored regression model (Tobit) in a random effect specification (dummy for quota reform in 2008).

Dynamics of dairy productivity: results (Kimura and Sauer, 2015)

Annual TFP growth	Sector	Farm level un-weighted	Farm-level weighted	Large farms	Middle	Small
Estonia	-0.2	0.48	0.85	-0.11	-0.41	-1.25
NLD	1.3	1.18	1.17	0.79	1.23	1.70
England-Wales	0	0.32	-0.26	-0.36	0.05	0.75
Germany	0.5			0.4	0.4	0.9

- TFP growth results from higher land and labour productivity, but lower productivity of capital (especially in Estonia, where input use also increases)
- Reduction of TFP gap across farms (except in Estonia)
- Part-time farms have lower TFP
- Large farms have higher TFP (and stocking density)
- Positive effect of quota reform in the Netherlands and Estonia

Link between farm productivity and innovation in the Netherlands: Method (Sauer, 2017)

- Dairy and crop farms in the Netherlands 2004-14
- Farm survey including innovation
- Structural multi-stage model linking innovation and productivity
  - Decision to innovation [0-1]
  - Decision on intensity of innovation [expenditure]
  - Output of innovation [0-1]
  - Impact of innovation: productivity change

Link between farm productivity and innovation in the Netherlands: Results (Sauer, 2017)

- Regulations and standards create a demand-pull for innovation
- Cooperation with knowledge institutions improves success
- Other positive factors include: farm own product and process-related development activities, farm size, age of operator, confidence in business and sector developments

Sources and drivers of productivity growth at farm level: Method (Bokusheva and Cechura, 2017)

- Crop farms from EU FADN 1995-2003 and 2004-13
- 6 EU MS: France, England Germany(E-W), Czech R., Hungary, Poland
- TFP measured and decomposed based on parameters of a stochastic input distance function (IDF).
- Translog functional form, with 3 outputs (cereals, other crops, other outputs) and 4 inputs (land, labour, capital, materials).
- Decomposition: technological change, technical efficiency change and scale effect, also distinguishes transient and persistent (in)efficiency; economies of scope and flexibility
- Effect of policy on TFP estimated using a random effect Tobit model. Policy parameters are payments per ha or output - all, coupled and decoupled.

Sources and drivers of productivity growth at farm level: Results (Bokusheva and Cechura, 2017)

- TFP growth similar in Western countries during 1995-2003: 0.7% in France and West-Germany (due to technological progress), 0.9% in the UK (scale effect).
- Higher technological change in 2004-13 in France and the UK than 1995-2003 and other countries. TFP decreased in Germany (negative TC) and Hungarian farms, close to zero in Poland
- Technology favours large scale, yet economies of scale not fully realised.
- Payments have a negative influence on TFP growth and efficiency in input use, but decoupled payments almost no effect
- Positive effect of investment
- Large differences in transient and persistent (in)efficiency: sample farms could reduce theirs input costs from 6 to 27% to produce the same output. Transient TE not significant in France
- No significant economies of scope, even diseconomies in Germany and Poland.
- Allocative inefficiencies in variable input use were reduced , but crop farms are over-capitalised (sharing?)

Analytical findings on drivers of productivity growth

- Farm size +
- Education +
- Age not clear
- Removal of quotas +
- Regulations drive innovation
- Investment +
- Payments - (LFA effect needs to be removed)
- Link multiple criteria in future work

Lessons so far on process

- Link to OECD programme of work: topic, timing, policy relevance?
- Approach
  - Cross-country successful with simple approaches (index, pre-defined farm groups)
  - Model-based, estimation approaches limit the number of participants and comparability
  - Diversity of approaches needed to improve robustness of results
- Output: good quality
- Communication

Links with other networks

- PACIOLI
- Participation in ERS-USDA TFP network
- New OECD Network on Agricultural Total Factor Productivity and the Environment
  - Back to back meetings
  - Improve macro-micro consistency

Network effect

- Exchange of knowledge
- Diversity of topics and approaches
- Identification of common interest
- Bilateral projects?
- Other?

Way forward

- Frequency of meetings-joint seminars?
- Broad or narrow focus?
- Video-conference?
- Joint publications?
- Synthesis?
- Type of joint seminars? Different types, mix of policy and technical
- Attracting new participants: countries, researchers, delegates, OECD colleagues?
- Alternative locations to involve more countries
- Other? Make methodology available

For more information

- Visit our website: **www.oecd.org/agriculture**

www.oecd.org/agriculture/policies/innovation

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