

Technical Efficiency of Czech Farms (organic and conventional) - The Analysis of Farms Productivity Developments Based on Malmquist Production Indices.

► Methodology

- **DEA Malmquist** - MPI index of TFP changes (DEAP 2.1, Coelli T.J.)
- **Output variables** (related to FADN standard results):
 - Total output (**SE131**),
 - Crop output (**SE135**),
 - Livestock output (**SE206**)
- **Input variables:**
 - Land input (**SE025** - Total Utilized Agricultural Area),
 - Livestock input (**SE080** - Total Livestock Unit),
 - Labour input (**SE010** – Average Working Units),
 - Intermediate consumption (**SE275**)

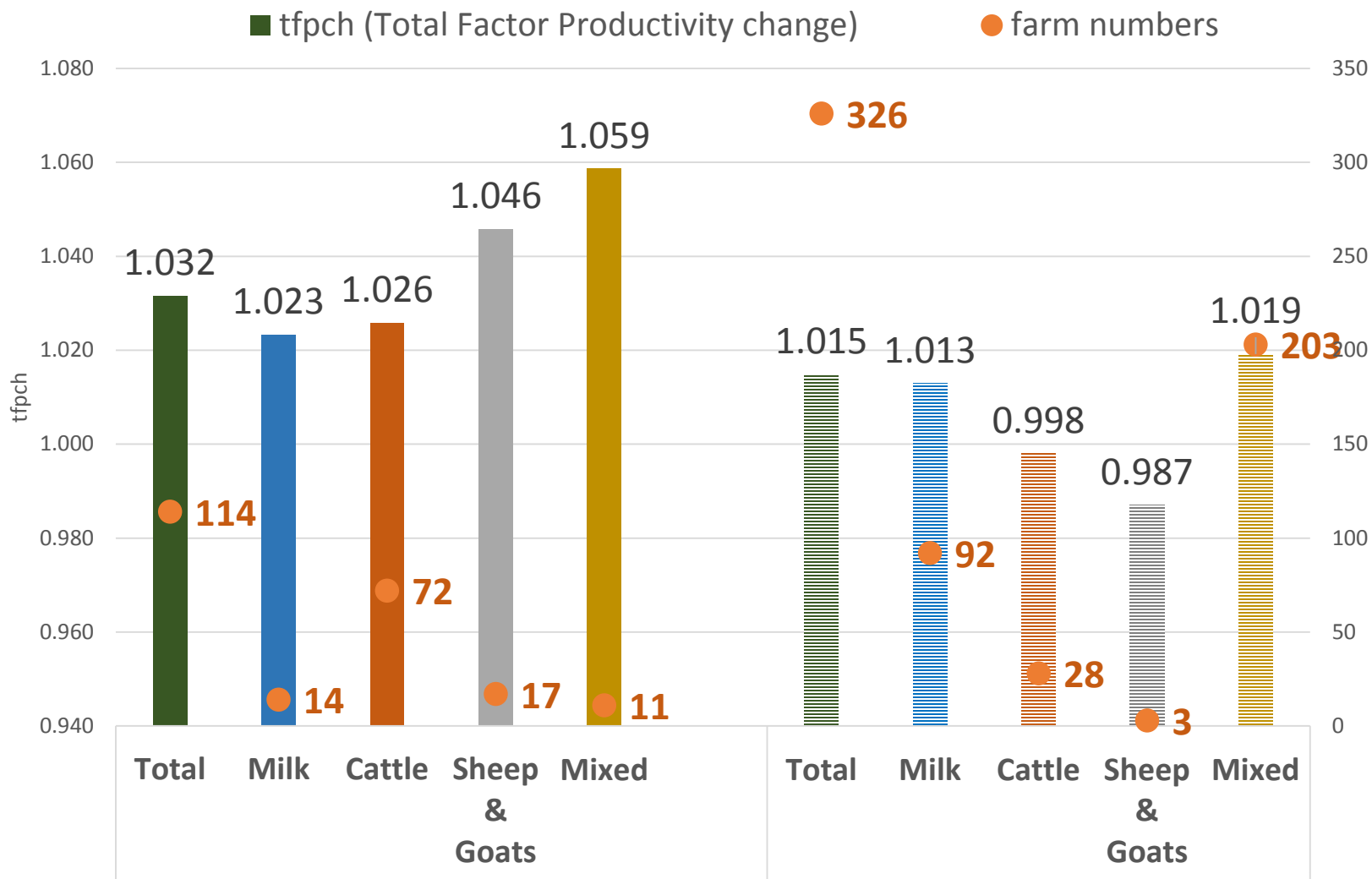
► Results – Malmquist index summary of annual means

Year		tfpch
2	2011/2012	1,043
3	2012/2013	1,016
4	2013/2014	1,079
5	2014/2015	0,983
geometric means (2011-2015), all farms		1,019

Organic farms / Period		tfpch
2 OF	2011/2012	1,043
3 OF	2012/2013	1,016
4 OF	2013/2014	1,055
5 OF	2014/2015	1,012
geometric means OF		1,032
-	Num.of farms with decline (<1)	35
+	Num.of farms with growth (>1)	79

Conventional farms / Period		tfpch
2 CF	2011/2012	1,043
3 CF	2012/2013	1,016
4 CF	2013/2014	1,087
5 CF	2014/2015	0,976
geometric means CF		1,015
-	Num.of farms with decline (<1)	134
+	Num.of farms with growth (>1)	192

► Results – Total Factor Productivity changes by type of farming in OF, CF



► Factors affecting technical efficiency

All farms

Highly statistically significant ($\alpha = 0.01$)

Utilized Agricultural Area (ha/farm)

Total of Livestock Units (LU/farm)

Total Intermediate Consumption (CZK/LU)

Total of Current Subsidies (CZK/ha)

Farm Net Value Added (CZK/AWU)

Statistically significant ($\alpha = 0.05$)

Total output per AWU

Livestock output (CZK/ha)

Organic farms

Highly statistically significant ($\alpha = 0.01$)

Utilized Agricultural Area (ha/farm) ► Total output per hectare
Farm Net Value Added (CZK/ha)

Statistically significant ($\alpha = 0.05$)

Total output per AWU,
Total of Current Subsidies (CZK/ha)

► Factors affecting technical efficiency

All farms

Highly statistically significant ($\alpha = 0.01$)

Utilized Agricultural Area (ha/farm),
Total of Livestock Units (LU/farm),
Total Intermediate Consumption (CZK/LU),
Total of Current Subsidies (CZK/ha),
Farm Net Value Added (CZK/AWU)

Statistically significant ($\alpha = 0.05$)

Total output per AWU
Livestock output (CZK/ha)

Organic farms

Highly statistically significant ($\alpha = 0.01$)

Utilized Agricultural Area (ha/farm)

Total output per hectare

Farm Net Value Added (CZK/ha)

Statistically significant ($\alpha = 0.05$)

Total output per AWU,

Total of Current Subsidies (CZK/ha)

► Conclusions

- **Narrow difference in technical performance** between compared groups of farms and the relatively non significant changes in time.
- Estimated TFP does **not indicate fundamentally significant growth or significant differentiation between holdings.**
- Principles of organic farming prefer environment are friendly approaches to sustainability and other non-productive functions.
- **Differences between the group of farms** with positive and negative TFP developments are given by values of **total utilized agricultural area, total production, livestock production, subsidies** and by value of **FNVA / AWU.**
- Results are a contribution to discussions on the development of the competitiveness of organic agriculture and as a complement of submitted and presented the FADN survey results.

Thank you for your attention