Factor income and rental prices of farmland in Germany

Regional evidence for dairy farms in Lower Saxony

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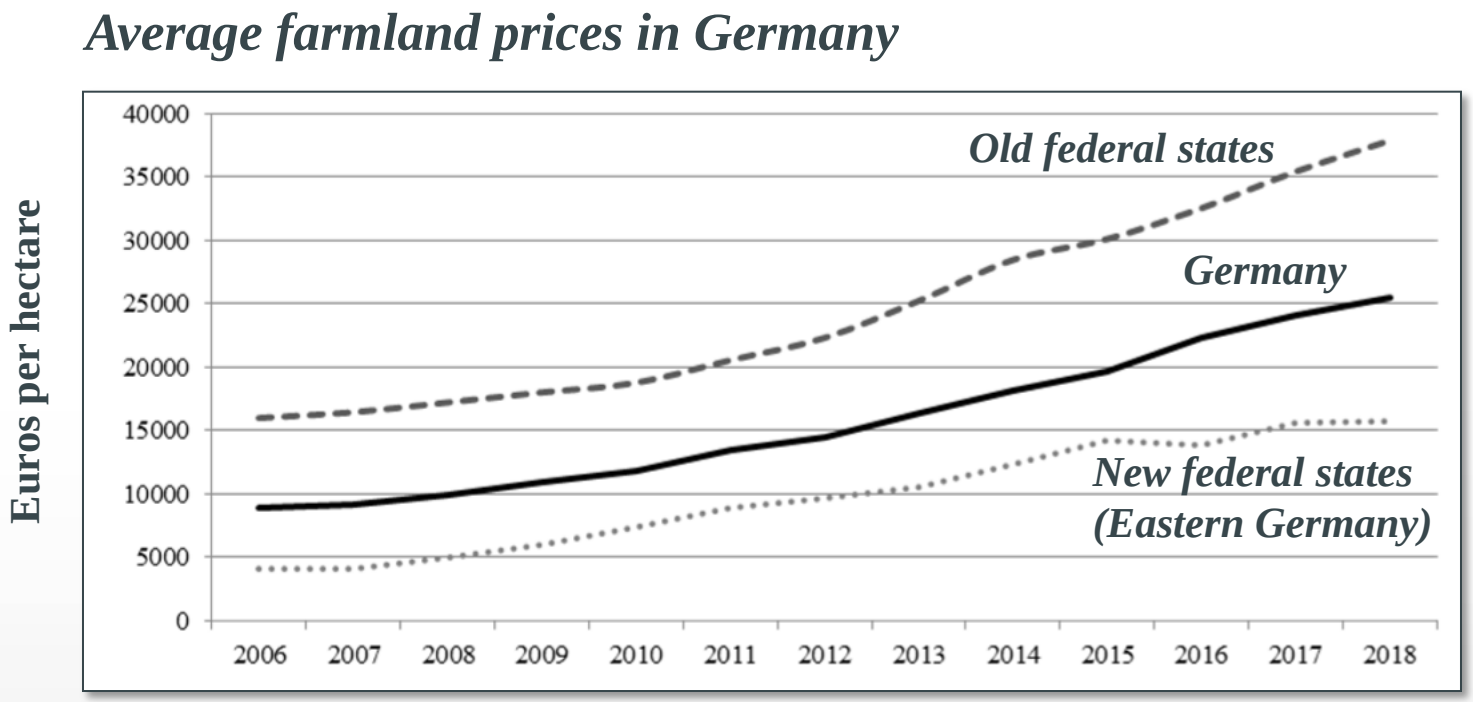


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Meeting of the OECD Network for Farm-Level Analysis

Paris
28-29 October 2019

Background and motivation



Source: *Modified from Agrarpolitischer Bericht der Bundesregierung 2019, page 74.*

Background and motivation

- ✓ German **land prices have increased (sharply)** over the past years.
- ✓ Farmland is a **key production factor** in agriculture
  … and the share of rented land in Germany is on average 60 percent.
- ✓ **Intense debate** about the need of political interventions and different views on (further and stricter) regulations on the land market.

- ✓ Following the German law on renting land (LPachtVG) lease agreements
  - must be indicated at the competent authority,
  - can be complained, among others, if …

    *the land rent paid is not in an **appropriate balance** to the economic returns, that can be **generated sustainably** in the case of **proper management**.*

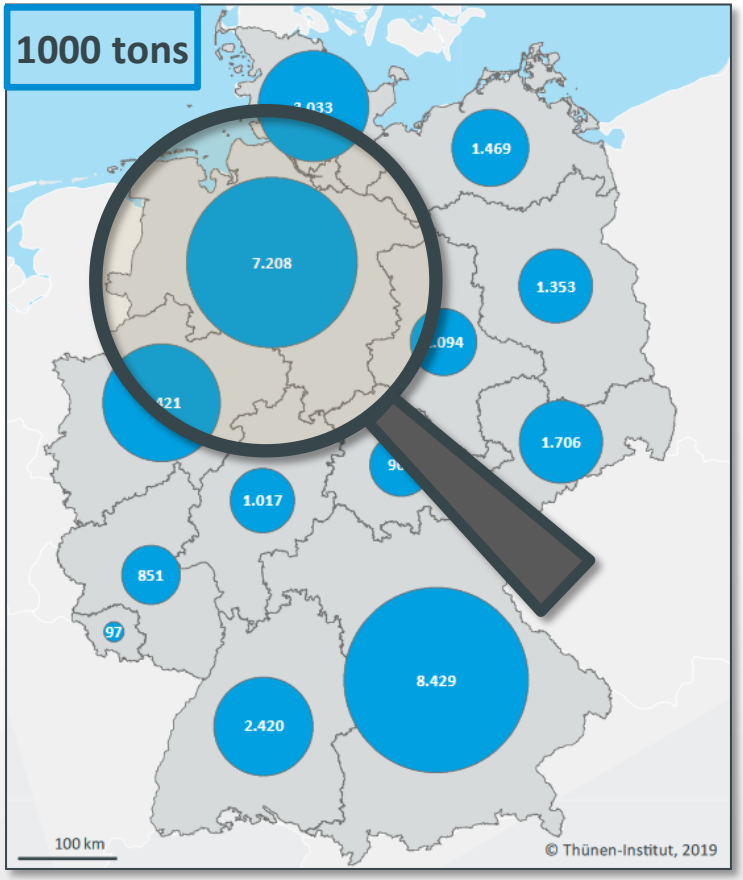
Source: *Federal Ministry of Food and Agriculture (2019) and LPachtVG.*

Outline

1. **Background and motivation**
   → *Are farmland rental prices too high to pay?*
2. **Study region and farm types analysed**
   → *Lower Saxony with a focus on dairy farms*
3. **Methodological approach**
   → *Calculating the factor income of farmland*
4. **Empirical results for dairy farms**
   → *in Lower Saxony and compared to other farm types*
5. **Summary and conclusions**

Study region and farm types analysed
→ *Lower Saxony with a focus on dairy farms*

German milk production in 2018



Source: *www.milchtrends.de (2019), own compilation.*

- About one fifth of the German milk is produced and one fith of the cattle is kept in Lower Saxony.
- Average herd size in Lower Saxony is 92 cows (Bavaria: 40; Eastern Germany: 194; Germany: 65).
- Federal State with a high stocking density and key regions of granivores farms:
- About one third of the pigs and laying hens, and two thirds of the broilers in Germany are kept in Lower Saxony.

Methodological approach

- ✓ Factor income of farmland is a proxy for the maximum willingness/ability to pay for this resource based on the farmer's productive capacity.
- ✓ This factor income consists, in theory, of the (i.) intensity rent, (ii.) quality rent and (ii.) location rent.
- ✓ It is calculated (here) as the residual amount of farm income less than factor incomes of labour and capital:

Factor income of farmland per hectare =

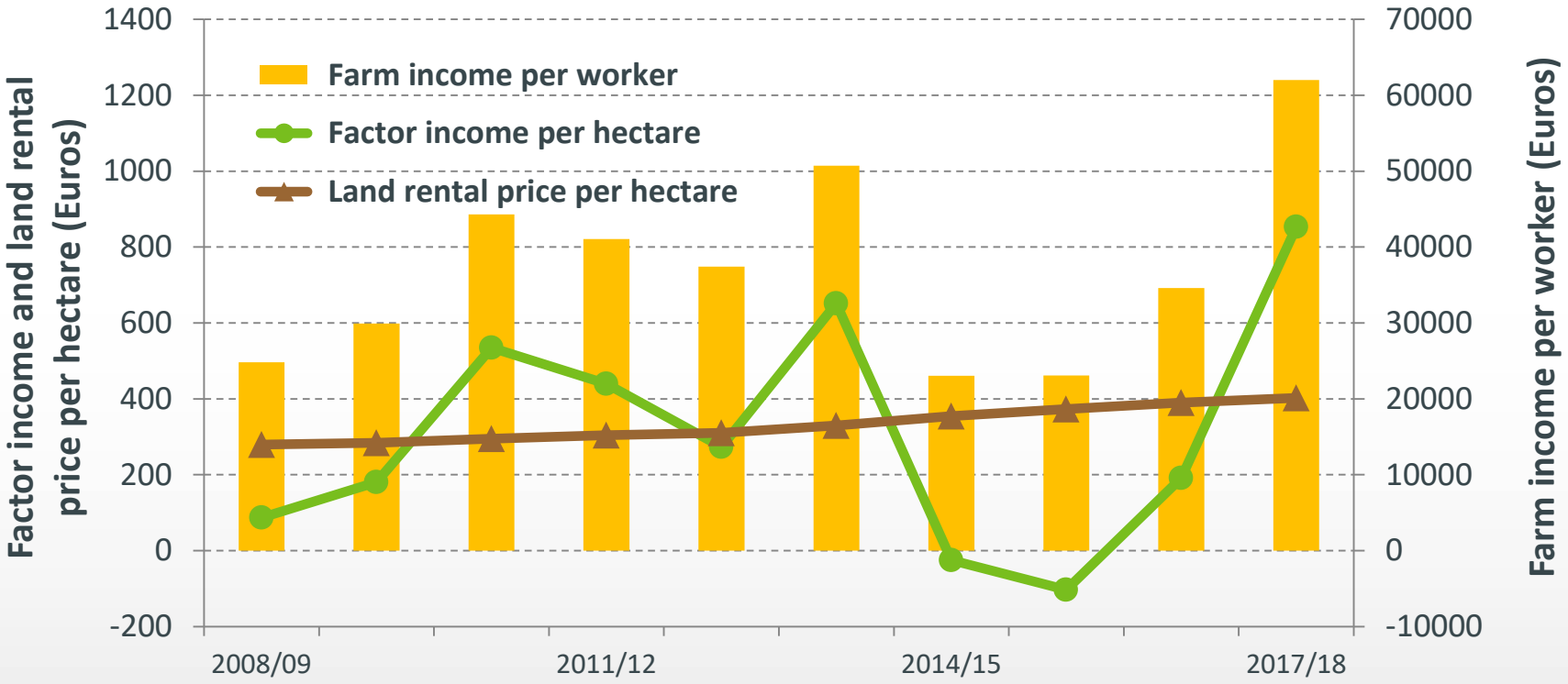
$$\left[\begin{array}{l} \textit{Farm income} \\ + \textit{ costs for renting land} \\ - \textit{ imputed costs for family labour}\ ^{1} \\ - \textit{ imputed costs for equity capital}\ ^{2} \end{array}\right] \div \textit{Utilised agricultural area (hectare)}$$

[1] **Reference values from the German Farm Accountancy Data Network**
[2] **Assumed return on capital of 2 %**

Source: *Koester and von Cramon Taubadel (2019), Sievers and Rust (2015), own compilation.*

Factor income of farmland and rental prices
→ *for dairy farms in Lower Saxony*

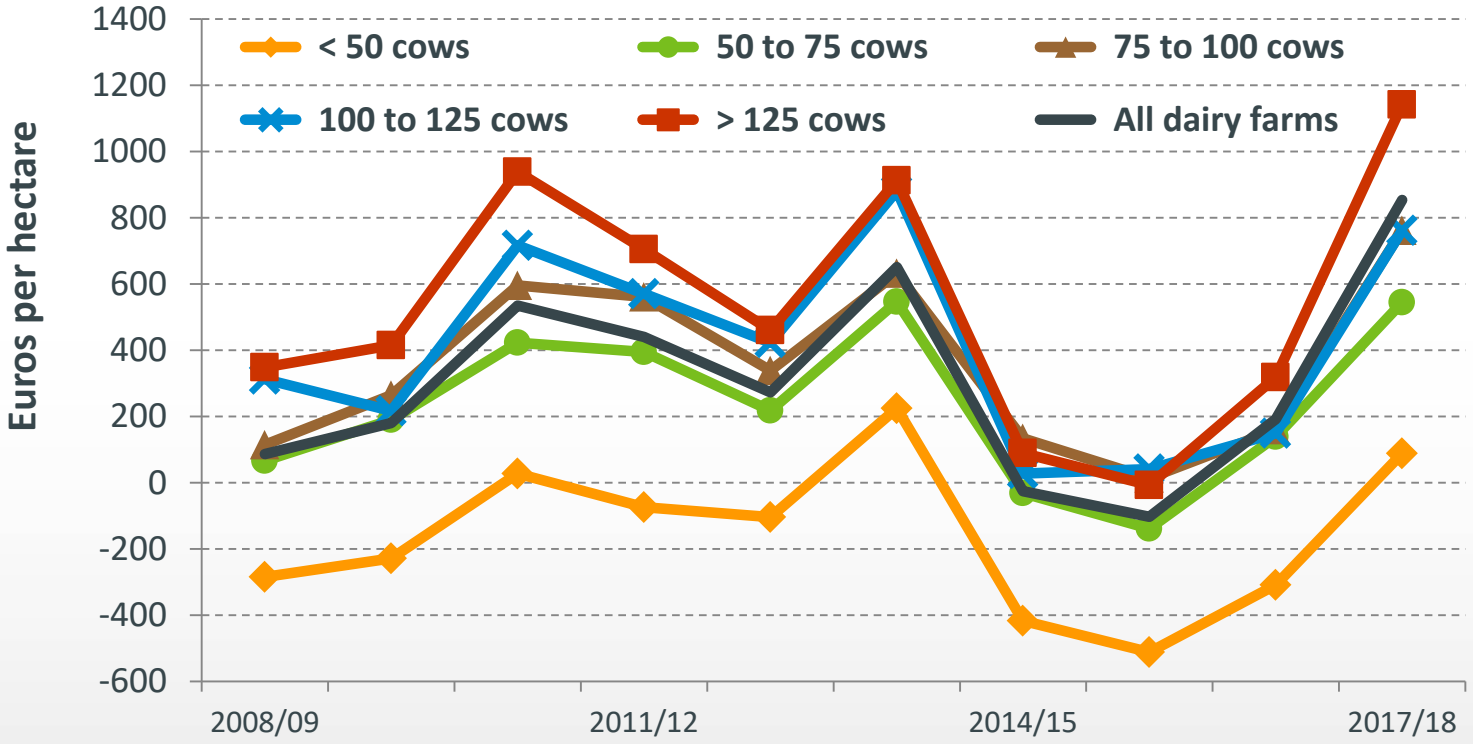
- ✓ ***Strong fluctuations in factor income of farmland over time***
- ✓ ***Steadily rising rental prices of farmland***



Source: *Own calculations based on the German Farm Accountancy Data Network.*

Factor income of farmland
→ *for dairy farms in Lower Saxony by herd size*

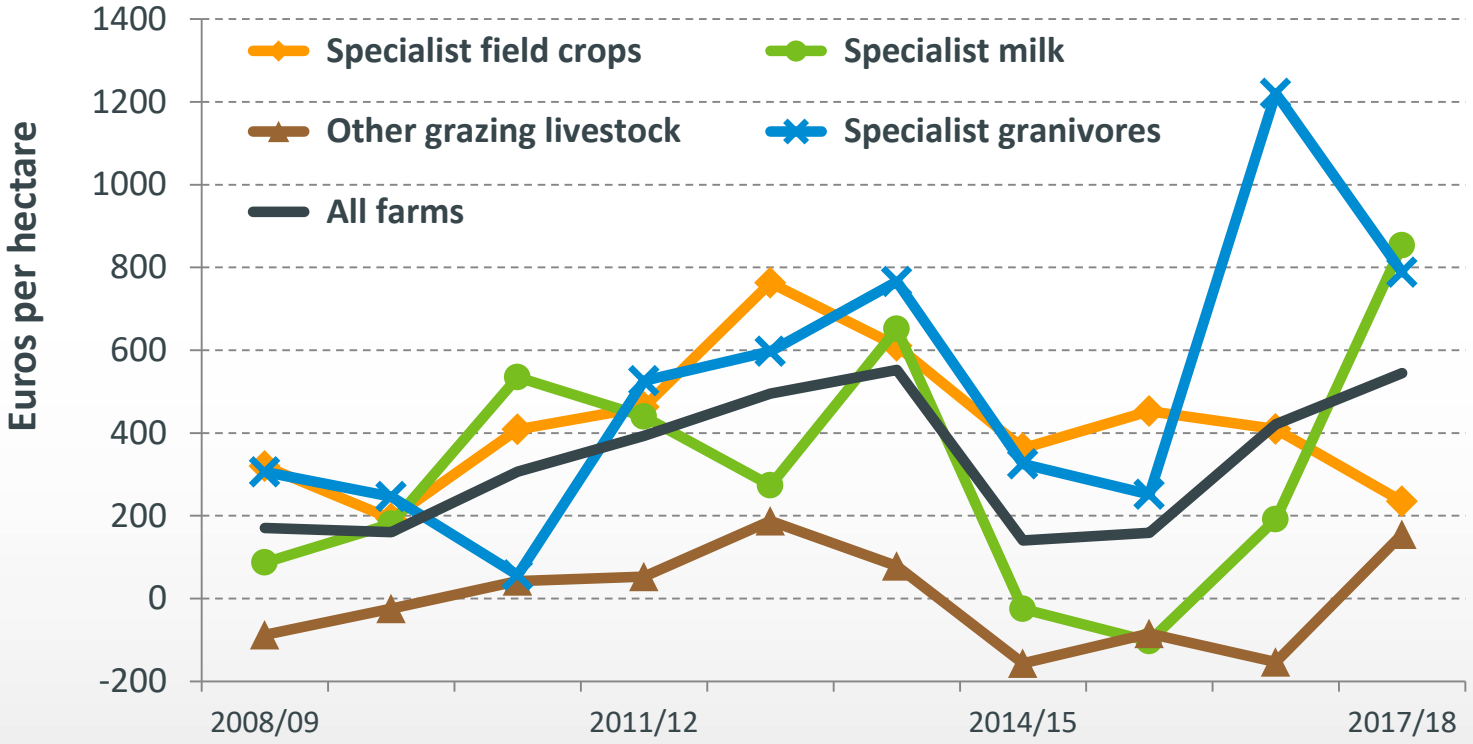
- ✓ ***The larger the dairy farm, the higher the factor income of farmland***
- ✓ ***Small dairy farms with a negative factor income on average (last ten years)***



Source: *Own calculations based on the German Farm Accountancy Data Network.*

Factor income of farmland
→ *in Lower Saxony by farm type*

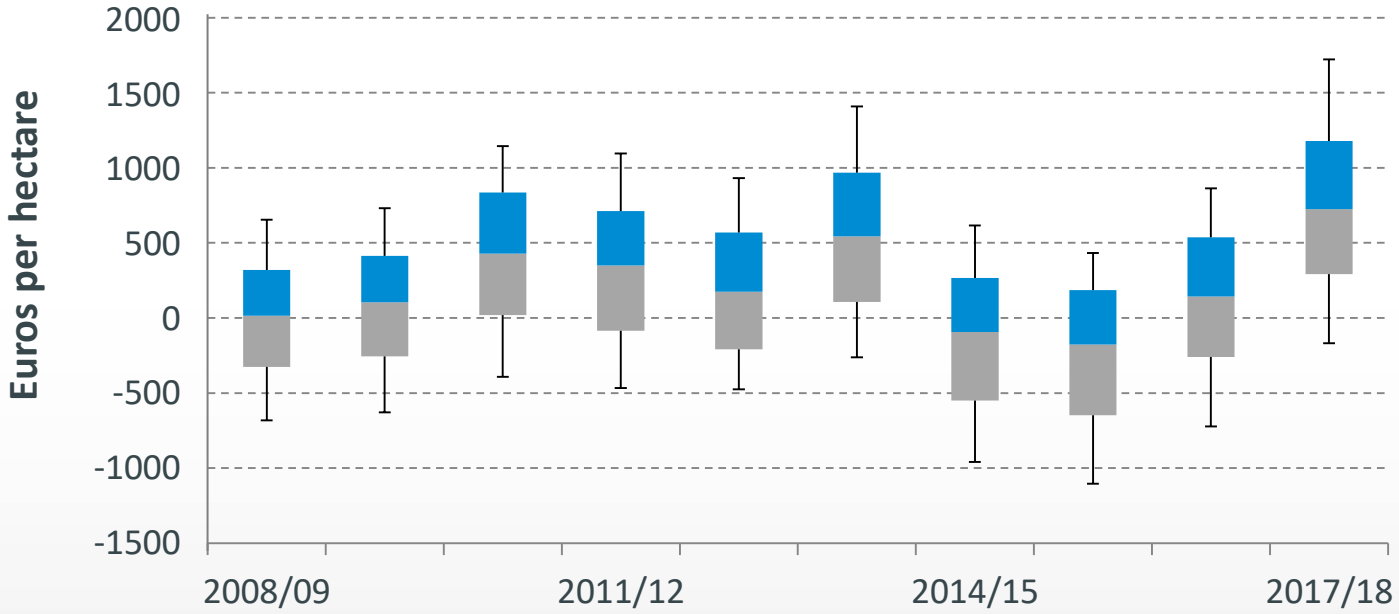
✓ ***Specialist granivores farms with the highest factor income of farmland … and other grazing livestock farms with the lowest (on average)***



Source: *Own calculations based on the German Farm Accountancy Data Network.*

Distribution of factor income of farmland
→ *for dairy farms in Lower Saxony*

- ✓ ***Factor income of farmland with a wide dispersion across dairy farms***
- ✓ ***Increasing inter-quartile range over the past ten years***

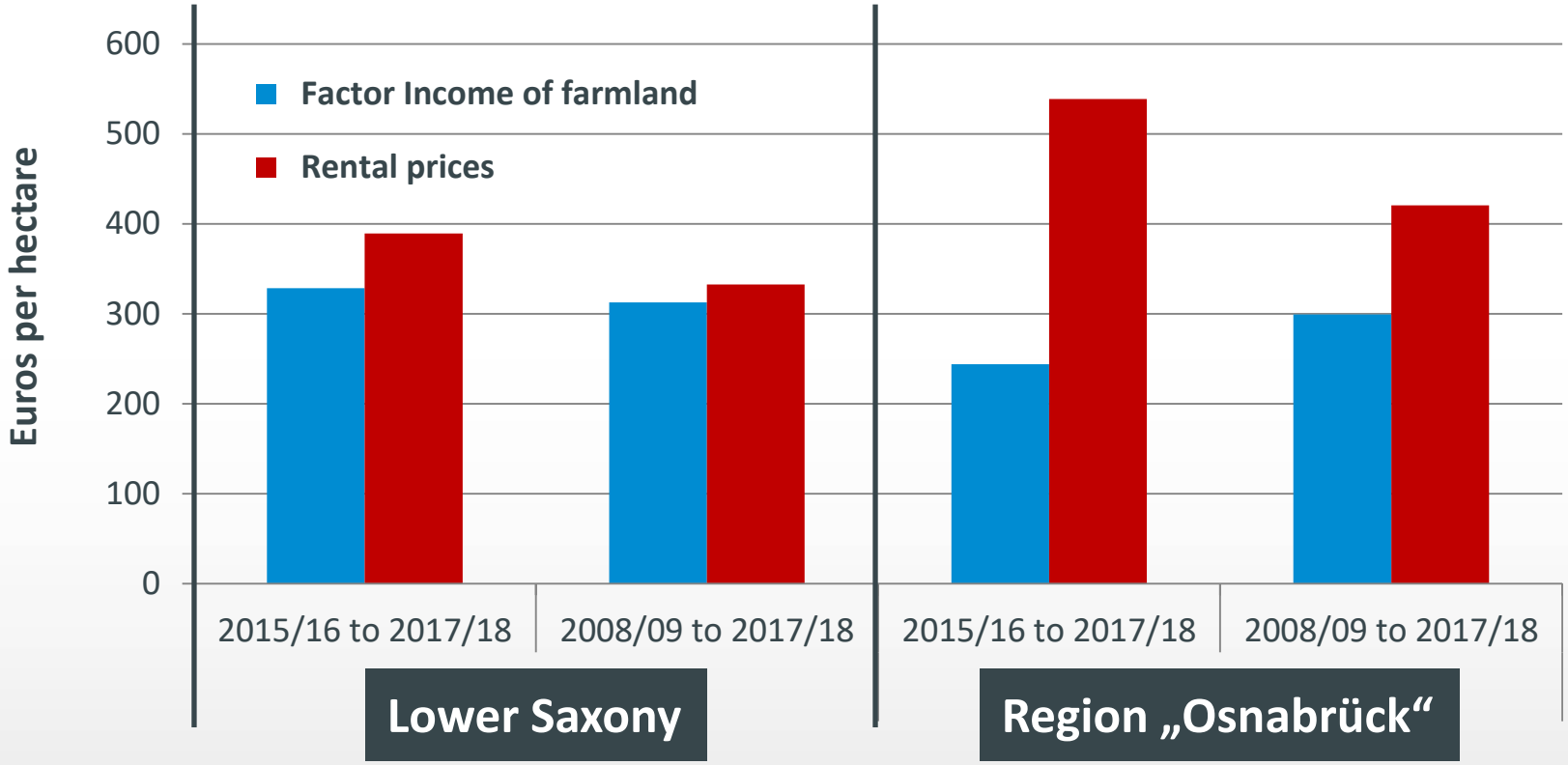


Note: *The inter-quartile range (between 25 and 75 % of the dairy farms) is indicated by the blue and grey box, respectively. The limits of 10 and 90 % of the farms is shown by the end of the lines (whiskers).*

Source: *Own calculations based on the German Farm Accountancy Data Network.*

Factor income of farmland and rental prices for dairy farms in Lower Saxony and the region “Osnabrück”

✓ ***Higher rental prices for dairy farms in regions with a high animal density, … and larger discrepancies between the factor income of farmland***



Source: *Own calculations based on the German Farm Accountancy Data Network.*

Sensitivity of the results in respect to the imputed costs for unpaid labour and equity capital

- ✓ *Assumptions on the imputed costs with a large impact on the results*
- ✓ *The lower the imputed remuneration of unpaid labour and equity capital, the higher is the "farm performance" on the rental market*

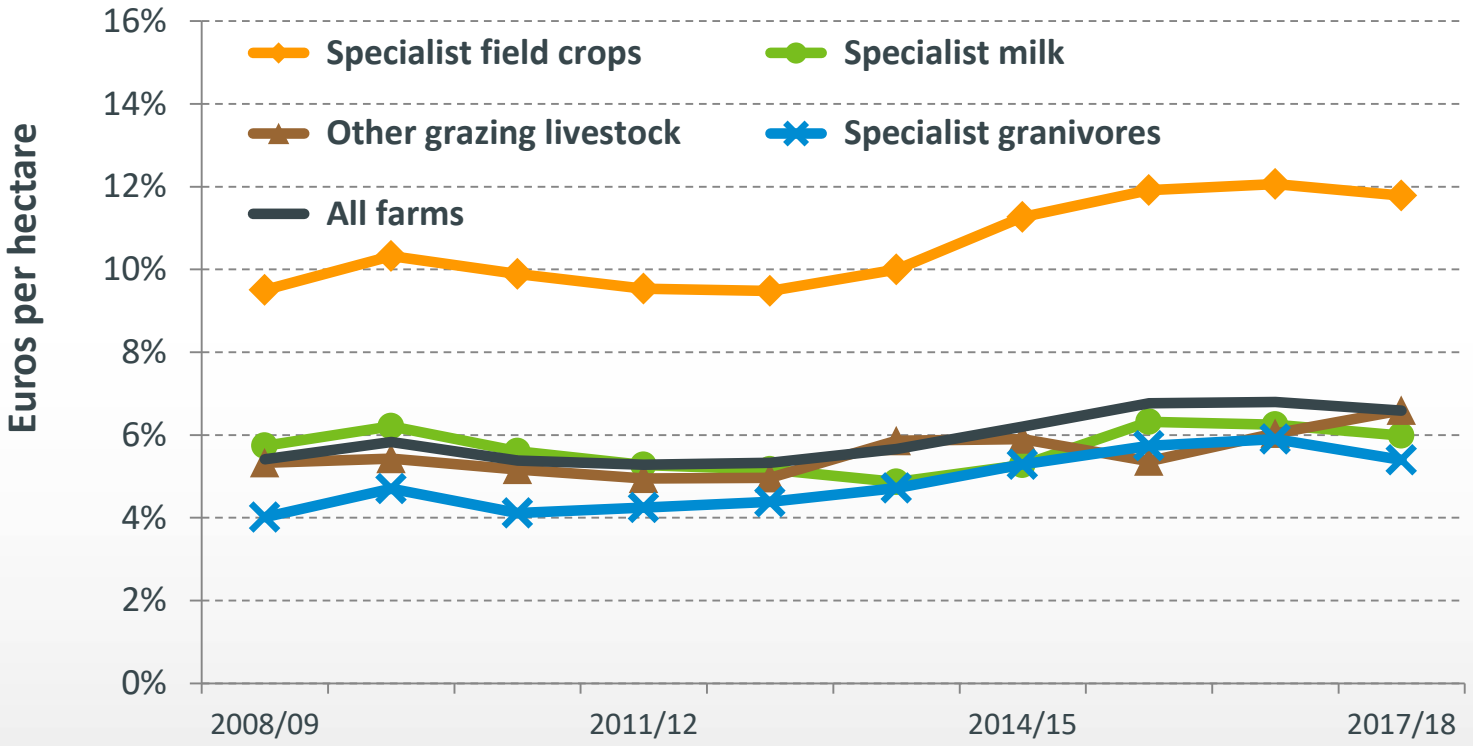
Imputed costs for unpaid labour (% of reference value) *and* **equity capital costs (%)** *…*



Source: *Own calculations based on the German Farm Accountancy Data Network.*

Share of costs for renting land in total expenditures → *in Lower Saxony by farm type*

✓ ***Increasing share of costs for renting land in total expenditures over time***
… but, on average, relatively low importance of this cost component



Source: *Own calculations based on the German Farm Accountancy Data Network.*

Summary and conclusions (I)

- ✓ Strong fluctuations in factor income of farmland over time and large differences across farm types and between dairy farms.
- ✓ During the period analysed the rental price of farmland (slightly) exceeds on average its factor income for dairy farms in Lower Saxony.
- ✓ However, top 25 percent of these dairy farms generate a factor income of farmland that is twice as high as its rental price.
- ✓ Land (rental) prices are shaped by the more successful (dairy) farms, while less successful or competitive farms disappear.
- ✓ Non-agricultural income and/or farm household income can have a considerable impact on the ability and willingness to pay for farmland, but is not taken into account in the present analysis (lack of data).

Summary and conclusions (II)

- ✓ Assumptions on the imputed costs for unpaid labour and equity capital are crucial and have a strong impact on the results.
- ✓ High and increasing land (rental) prices indicate generally a high profitability and competitiveness of the farming sector.
- ✓ However, increasing land prices are accompanied by higher costs for renting land, … but its share in total expenditures is relatively low.
- ✓ Higher (rental) prices for farmland have expanded the assets of the farm as the value of owned land increases.
- ✓ This results in two opposing impacts on farms and structural change: (i.) less successful farms have better/more attractive exit options, (ii.) increasing value of owned land improves access to finance.

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