Direct Payments in Germany - Income and Distributional Effects of the 2013 CAP Reform

Frank Offermann

Thünen-Institute of Farm Economics

European Evaluation Helpdesk Good Practice Workshop

How to assess direct payment interventions in the new CAP

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Motivation: Redistribution of DP was an important objective of 2013 CAP Reform

EU Regulation 1307/2013:

- „The distribution of direct income support among farmers is characterised by the allocation of disproportionate amounts of payments to a rather small number of large beneficiaries.

  "objective of a more balanced distribution of payments between small and large beneficiaries"

- "Larger beneficiaries, due to their ability to exploit economies of size, do not require the same level of unitary support in order for the objective of income support to be efficiently achieved."

  "in order to achieve the objective of income support effectively, Member States should be allowed to redistribute direct support between farmers by granting them an extra payment for the first hectares."

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Objectives and context of the case study

- **To what extent has the 2013 CAP reform contributed to the postulated distributional aims in Germany?**
- **What role do the different new direct payments schemes play in this?**

Reference: Pre-reform CAP

- 2013 DP scheme (Regional model, fully decoupled)
- Modulation (size-dependent reduction of direct payments)

Scenario: National Implementation of 2013 CAP reform

- Redistribution from first to second pillar (4.5%)
- Basic payment (national flat-rate)
- Greening payment
- Support for young farmers
- Redistributive payment (higher rates for 'first hectares')

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Data

- German FADN
- 3-year averages to reduce the impact of income variability
- Sample selection → full-time family farms (N = 7731)

Methodological approach

1. **Establish farm income under scenario (ex-ante analysis)**
   - Simple static simulation of new DP schemes
   - ➢ Assumption: (Marginal) change in DP component has no market effects (constant input and output prices, no production impacts)

   Additional study: To account for farm and market adjustments:
   - Agri-economics models: Farm Model (FARMIS) + EU Market Model (ESIM)

2. **Measure income inequality and contribution of different income sources**
   - Decomposition of the **Gini coefficient** by income / direct payment component
   - Widely used
     e.g. Severini and Tantari 2013 (IT), Ciliberti and Frascarelli 2018 (IT), Antonella et al. 2019 (IT), Keeney 2000 (IR), El Benni 2012 (CH)
   - Other approaches/measures available
     see e.g. Allanson 2006ff (Sc), Piet and Desjieux 2021 (FR)

Distributional analysis using the Gini coefficient (G)

The Gini coefficient

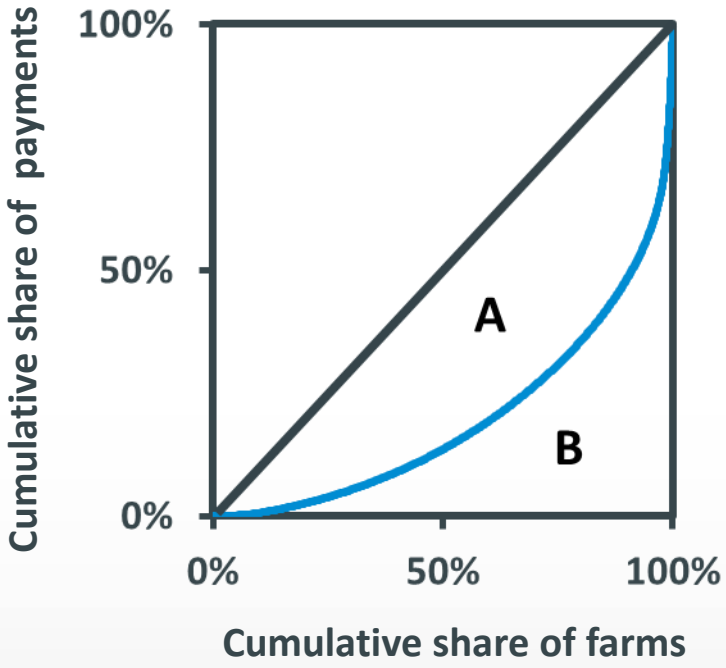
- distributional measure
- calculated as

$$\frac{\text{Area A}}{\text{Area A + Area B}}$$

- values range from 0 to 1

  G = 0 indicates equal distribution

  G = 1 indicates maximal concentration



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Gini coefficient (G), its decomposition and the Gini income elasticity

$$G = \sum_{k=1}^{K} S_k \times G_k \times R_k$$

Component *k* 's share in total income | **Gini coefficient of income component *k*** | **Gini correlation between total income and component *k***

Gini income elasticity ε_k **measures the impact of a marginal proportional change in an income component on the Gini index of income inequality**
e.g., if $\varepsilon_k > 0$*, then a proportional increase of component k increase income inequality*

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Selected results

	Share % (S_k)	Gini coefficient (G_k)	Elasticity ε_k
Pre-2013 DP system			
Farm income		0.463	
First pillar payments	47.7	0.438	-0.263
2013 CAP reform			
Farm income		0.473	
First pillar payments	44.9	0.423	-0.288
Basic payment	27.5	0.449	-0.169
Greening payment	13.5	0.449	-0.082
First hectares payment	3.7	0.166	-0.034
Support to young farmers	0.3	0.963	-0.002

small reduction in inequality of DP

but no reduction in inequality of distribution of incomes

First hectares support is almost equally distributed, however

Low "leverage" due to limited financial magnitude

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Outlook: ‘Fair(er)’ distribution of DP remains an important objective of the current CAP

EU Regulation 2021/2115:

- “to ensure a fairer distribution and more effective and efficient targeting of income support”
  - “to promote a more balanced distribution of support”
  - “to provide for a targeted distribution of direct payments and to reinforce income support for those who need it most.”
- Impact Indicator I.26 A fairer CAP: Distribution of CAP support

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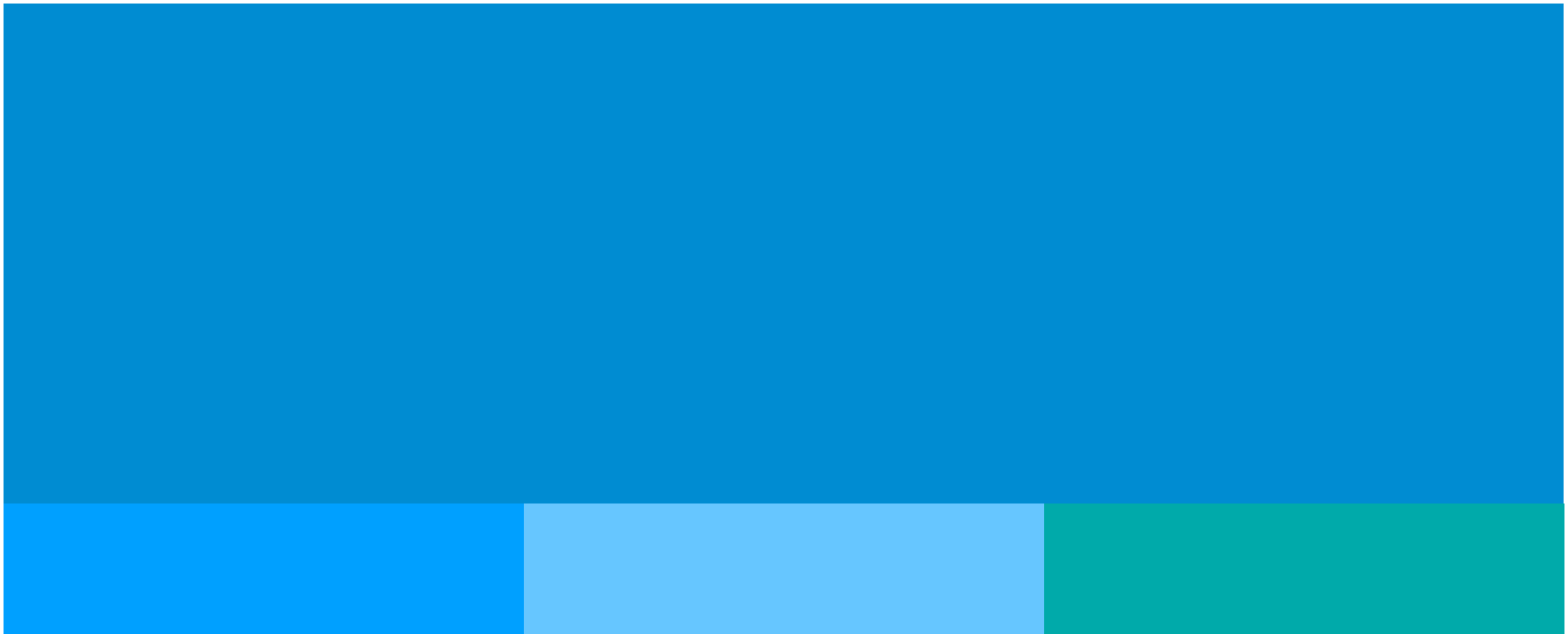
Challenges – and potential solutions

How to deal with negative income values?	• common approach is simply disregarding farms with negative incomes… • Averaging over years helps
Choosing the reference: • 'Pre-reform' • or 'No DP' or 'ideal DP' ?	depends on the focus of the evaluation • is it getting better? • is it effective and efficient?
Accounting for market effects • Necessary? • Price and production effects • Land price transmission	• "While their inclusion generally does not affect the direction of distributional effects, it may have considerable impact on their magnitude" Deppermann et al., 2014 • model at EU level • account for at MS/regional level
How to define "fairness" in the distribution of support? • Absolute vs Relative Measures?	

Thank you for your attention!

frank.offermann@thuenen.de
Thünen Institute of Farm Economics



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Concentration coefficient C_k

measures how income from each source is transferred across a population ranked with respect to the level of total income received

$C_k < G$: component k reduces overall income inequality

Gini income elasticity ε_k **measures the impact of a marginal proportional change in an income component on the Gini index of income inequality**

e.g., if $\varepsilon_k > 0$, then a proportional increase of component k increase income inequality

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Gini coefficient (G), its decomposition and the Gini elasticity

$$G = \frac{2\sum_{k=1}^{K}\left[cov\left(Y_k, r(Y)\right)\right]}{N\mu(Y)}$$

$$G = \sum_{k=1}^{K} \underbrace{\frac{\mu(Y_k)}{\mu(Y)}}_{S_k} \times \underbrace{\frac{2cov\left(Y_k, r(Y_k)\right)}{N\mu(Y_k)}}_{G_k} \times \underbrace{\frac{cov\left(Y_k, r(Y)\right)}{cov\left(Y_k, r(Y_k)\right)}}_{R_k}$$

S_k: Component *k*'s share in total income

G_k: Gini coefficient of income component *k*

R_k: Gini correlation between total income and component *k*

Gini elasticity $\longrightarrow$ $$\varepsilon_k = \frac{\partial G}{G} \times \frac{\mu(Y_k)}{\partial\mu(Y_k)} = \frac{R_k \times G_k \times S_k}{G} - S_k$$

Source: Following Lerman and Yitzhaki 1985, p. 152 and Podder 1993, p. 54

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