Randomised Controlled Trials for the agri-environment measure "Refrain from silage"

Presented at the 2nd REECAP workshop
26-27 September 2018 in Vienna

Ulrich B. Morawetz[1], Christoph Tribl[2] and Andreas Reindl[2]

[1]University of Natural Resources and Life Sciences (BOKU), Vienna.
[2]Federal Institute of Agricultural Economics (AWI), Austria.

Methods to assess the CAP

Assessment methods of CAP in academia:

- **Econometric approaches** (e.g. previous presentation by Uehleke et al.)
- **Economic simulation models** (Kirchner, et al. 2015)
- **Case studies** (e.g. Mitter, et al. 2014)
- **Qualitative approaches** (e.g. Darnhofer et al., 2017)

Randomised Controlled Trials (RCTs)

RCTs so far **not** used for CAP measures even though:

- **RCT remove selection bias**: randomly select who must not participate in measure
  - Selection bias: particular sever problem in CAP because
    - measured are designed to fit certain farm types
    - Majority of these farms participate
- RCTs used intensively for evaluation in **labor and development economics**

In this presentation

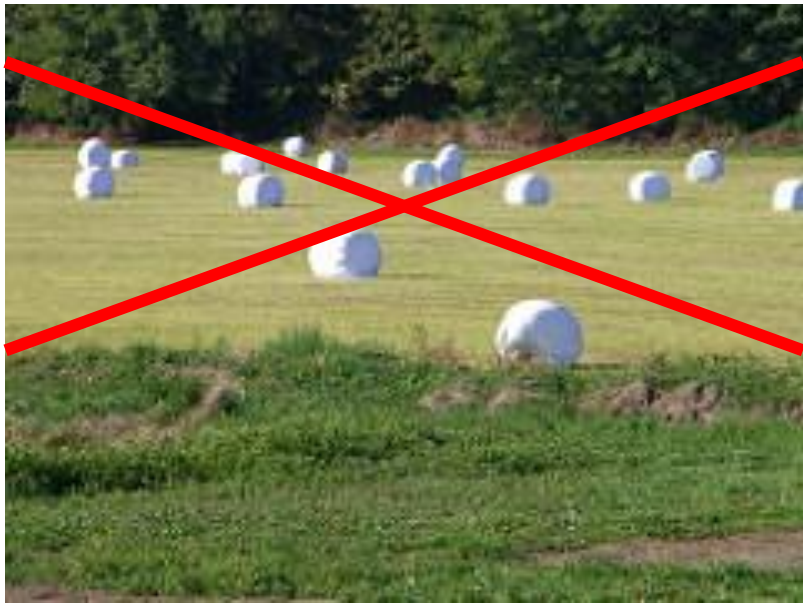
We use a survey to

- Compare acceptance of two versions of RCTs:
  - **RCT** and **upRCT** ("**u**nconditional **p**ayment **RCT**", Morawetz, 2014)
- We do not apply an (up)RCT

Survey among Austrian farms who participate in the agri-environment measure "refrain from silage"

Austrian agri-environment measure "Refrain from silage"

- Objective: Increase biodiversity and preserve traditional land management
- Condition: participants must **refrain from using silage**
- Compensation for additional costs and income forgone:
  - 150 Euro/ha if milk producers
  - 80 Euro/ha if cattle holders
  - 0 Euro/ha if no cattle



"Marshmallows!" (CC by 2.0) by floodllama

What is an RCT?

Among all eligible and applying farms **randomly select who must not take part** in “Refrain from using silage”

RCT

Randomly selected:

- May use/produce/… silage
- **No payment**

Compare use of silage among randomly selected and ordinary participants → Estimate of “additionality” or “dead weight loss”.

What is an RCT and an upRCT?

Among all eligible and applying farms **randomly select who must not take part** in "Refrain from using silage"

RCT

Randomly selected:

- May use/produce/… silage
- **No payment**

upRCT

Randomly selected:

- May use/produce/… silage
- **Unconditional payment**

Compare use of silage among randomly selected and ordinary participants → Estimate of "additionality" or "dead weight loss".

Would an RCT lead to same estimates as upRCT?

Need to test:

$E(y_0 | A = 0, P = 0) = E(y_0 | A = 0, P = 1)$

- y_0: % of **hay produced** of non-participant (randomly selected)
- A = 0 : farmer **not admitted** to measure (i.e. randomly selected)
- P = 1: **payment to farmer** (randomly selected in upRCT)
- P = 0: **No payment to farmer** (randomly selected in RCT)

Why could results differ?

RCT could be different from upRCT because:

- **Budget constraint differs** because of unconditional payment
- **Moral obligation** of recipients of unconditional payment

Additionally challenge **if measure is not new:** contracts or investments already done in expectation of payments.

Online Survey

- 11,021 participated in “refrain from silage” in 2017 in Austria
- 5,570 were contacted via email
- 1250 (23%) completed the survey

Survey: respondents' characteristics

Respondents have significantly …

- more agricultural area …
- more livestock units …
- higher agri-environment and "refrain from silage" payments …

… than non-respondents and those with unknown email

- → Survey not representative, but:
  - using survey weights hardly changes the estimates
  - main conclusion robust to deviations by a couple of percentage points

Results: acceptance

Survey question: Imagine you get a letter:

- Acceptance of upRCT > RCT
- Nudging increases acceptance

Dear Mr/Ms …,
we want to evaluate "Refrain from silage". You have been randomly selected. This means you cannot participate in the measure for one year.
You don't get any payment/ get uncoditional payment.

Would you accept?

	RCT presented first	upRCT presented first	All
Acceptance RCT	26% (n = 610)	18% (n = 636)	22% (n = 1,246)
Acceptance upRCT	51% (n = 590)	31% (n = 625)	41% (n = 1,215)

Note: The number of observations (n) differs because some respondents did not finish the survey

Results: % hay production

Survey question: How much hay would you produce if you were randomly selected in an RCT/upRCT?

RCT	
Mean	92%
Median	100%
25th percentile	100%
upRCT	
Mean	94%
Median	100%
25th percentile	100%
Difference upRCT-RCT	
Mean	2.0 ***

- Difference between RCT and upRCT small
- Because acceptance of upRCT higher, upRCT preferred

Results: Influence of unconditional payment

- **Budget constraint:** 11% of respondents state to produce more hay in the upRCT than in the RCT. Unconditional payment might allow a change in production technique (e.g. employ more labor)
- **Moral obligation:** 7% said they felt morally obliged to produce hay in the upRCT

→upRCT not suitable for these farms

Results: Choice limiting constraints

Responding **farms have already been participating** in “refrain from silage”

- 60% have existing **hay-milk delivery contracts**
- 51% **lack silos** or silage bale wrappers silage
- 32% have **limited knowledge** about silage production

→79% of respondents **limited in short run management decision**.

RCT&upRCT only suitable if:

- Measure is new OR
- no major management change necessary (i.e. investments) OR
- evaluation period is long

Conclusions

- Comparing upRCT and RCT
  - Acceptance of upRCT up to 50%, RCT up to 26%.
  - % hay produced in random sample upRCT and RCT about equal

    →upRCT is preferred

But: (up)RCTs only suitable:

- for newly introduced measures OR
- if no substantial management change necessary OR
- (up)RCT runs for long period.

Discussion

- Many **CAP measures run for years**, which limits applicability of (up)RCTs
- **Strategic behavior of farms** might become an issue unless there is **support & understanding for using upRCTs**

Currently lack of knowledge about:

- **Costs of RCTs**
- **Legal questions**

General consideration on evaluation

Some farmers have **intrinsic motivations** to provide **positive external effects**.

- As they would provide positive effects even without financial support, **evaluation classifies payments as dead weight loss**
- This means **punishing intrinsic motivations**!
- The issue **gets more pressing**, **the better evaluation methods become**

References

- Darnhofer, I., Schermer, M., Steinbacher, M., Gabillet, M., & Daugstad, K. (2017). Preserving permanent mountain grasslands in Western Europe: Why are promising approaches not implemented more widely? *Land Use Policy*, *68*(Supplement C), 306–315. https://doi.org/10.1016/j.landusepol.2017.08.005
- Kirchner, M., Schmidt, J., Kindermann, G., Kulmer, V., Mitter, H., Prettenthaler, F., … Schmid, E. (2015). Ecosystem services and economic development in Austrian agricultural landscapes - The impact of policy and climate change scenarios on trade-offs and synergies. *Ecological Economics*, *109*, 161–174. https://doi.org/10.1016/j.ecolecon.2014.11.005
- Mitter, H., Kirchner, M., Schmid, E., & Schönhart, M. (2014). The participation of agricultural stakeholders in assessing regional vulnerability of cropland to soil water erosion in Austria. *Regional Environmental Change*, *14*(1), 385–400. https://doi.org/10.1007/s10113-013-0506-7
- Morawetz, U. B. (2014). A concept for a randomized evaluation of agri-environment measures. In E. Schmid & S. Vogel (Eds.), The Common Agricultural Policy in the 21st Century (pp. 113–130). Vienna, Austria: facultas.wuv.