



Swiss Parks as model regions for a sustainable development – An economic success story for farmers?

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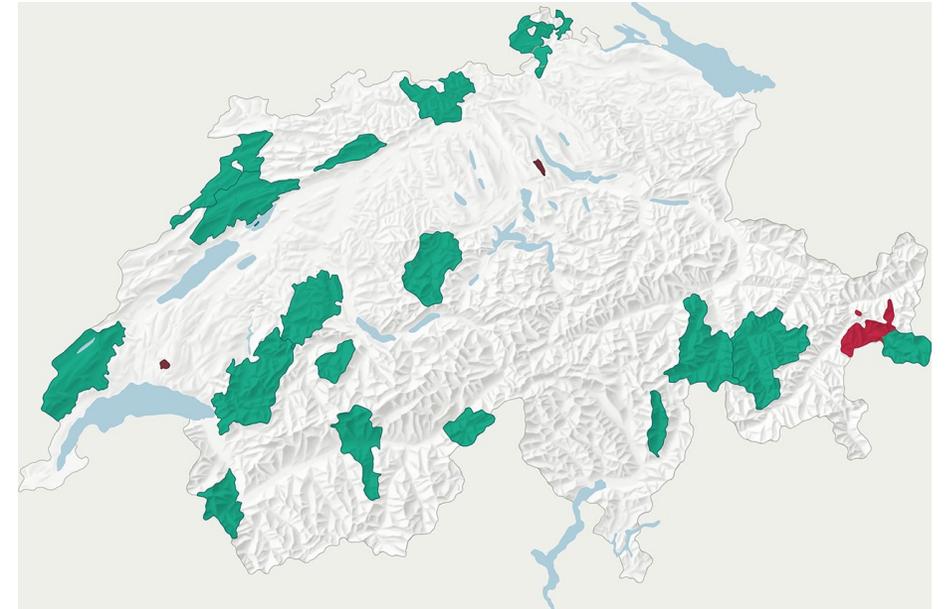
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Swiss Parks of national importance



- The network Swiss Parks (of national importance) consists of 17 regional Nature Parks
- Mainly located in the alps/pre-alps and Jurabogen
- Model regions for a sustainable development
- Beside tourism and forestry, agricultural sector plays an important role in economic performance





Aim of the study and hypotheses

- Aim of the study
 - Estimate the effect of park status on economic indicators of farms (i.e., direct payments, income and revenues)

- Hypotheses
 - H1: Park status negatively affects the economic indicators of farms due to stricter environmental regulations
 - H2: Park status creates additional economic benefits for farmers inside the park due to improved marketing potential



Data basis and selection of parks

- Accounting data of Swiss farms (2003 – 2019)
 - Sample 1: 2003 – 2015
 - Sample 2: 2015 – 2019

- Identification of farms inside and outside parks based on park perimeters

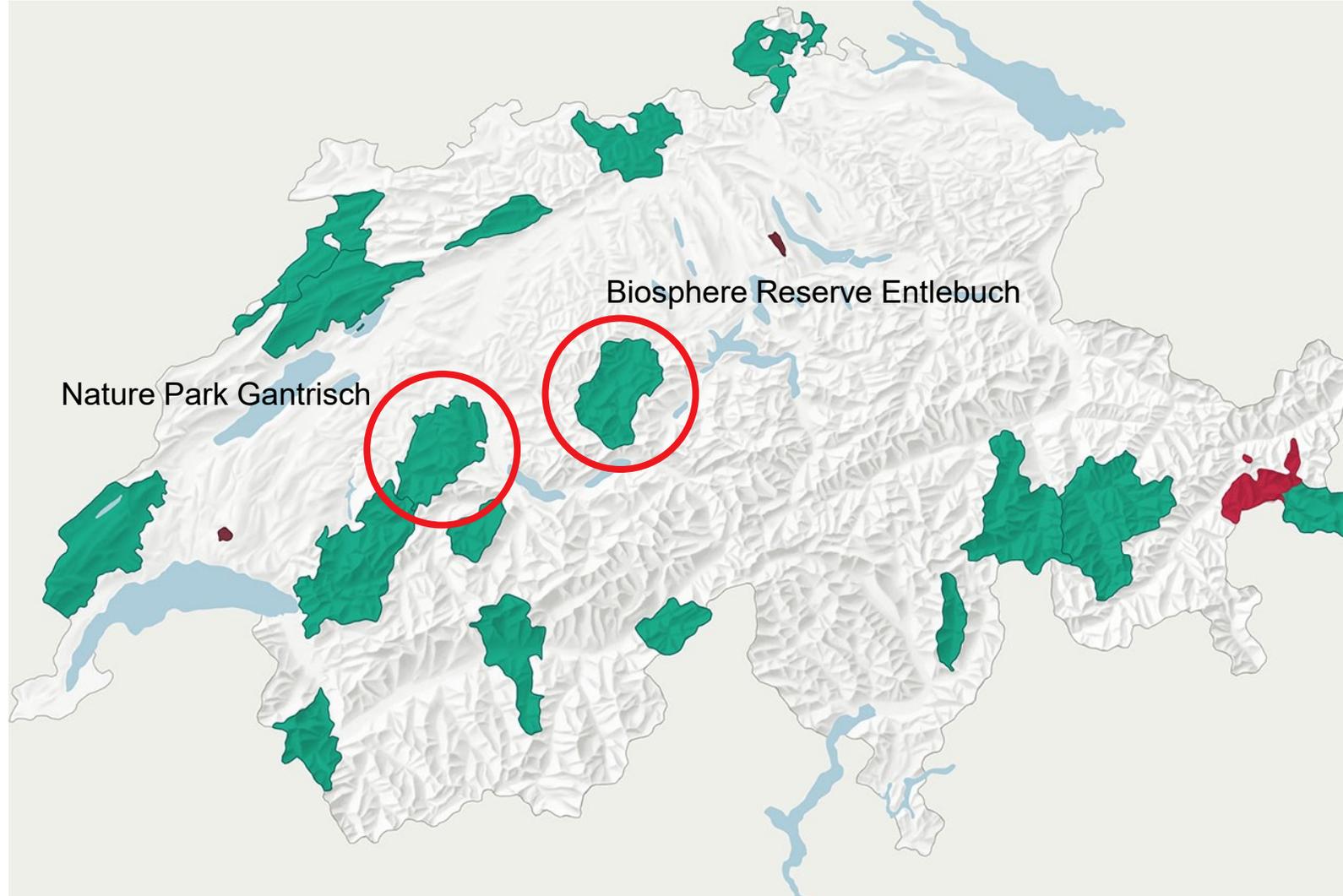
- Farms outside the park selected based on distance (in km) to the park border

- UNESCO Entlebuch Biosphere Reserve (Status: 2008) and Nature Park Gantrisch (Status: 2012)

- Period analyzed (five years before and five years after park status)
 - Biosphere Entlebuch: 2003 – 2013
 - Nature Park Gantrisch: 2007 – 2017



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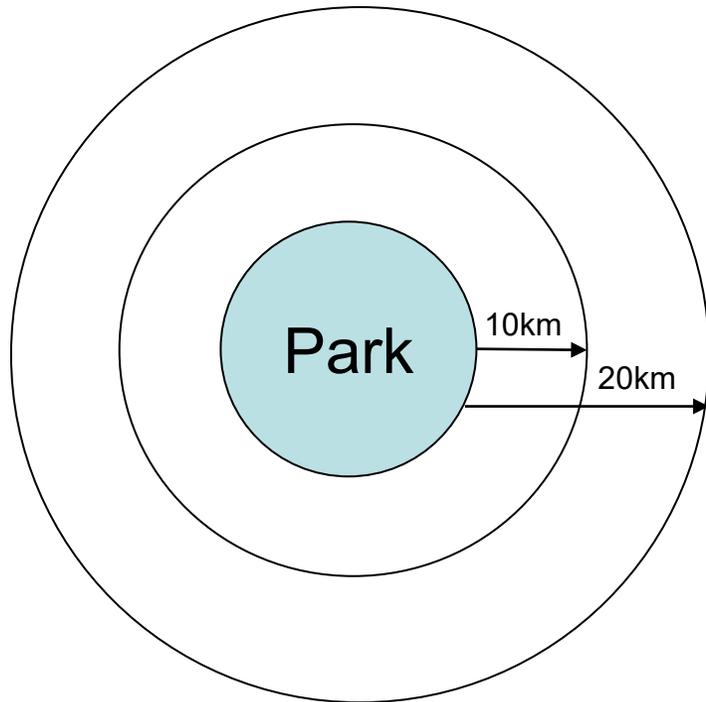


Methods

- Quasi-experiment
 - Self-selection of regions, but no self-selection of farms
 - Park status / treatment is given exogenously
- Counterfactual state
 - How would economic farm indicators have developed if the region had *not* gained park status?
- Matching (synthetic control method) based on economic indicator (outcome), socio-demographic characteristics farm manager and farm characteristics + difference-in-differences estimator



Methods



Farms inside park (treatment group) are compared with two control groups:

1. Farms with a max. 10 km distance to park border (Panel 1)
2. Farms with a max. 10 km distance + farms with a distance 10 km to 20 km to park border (Panel 2)



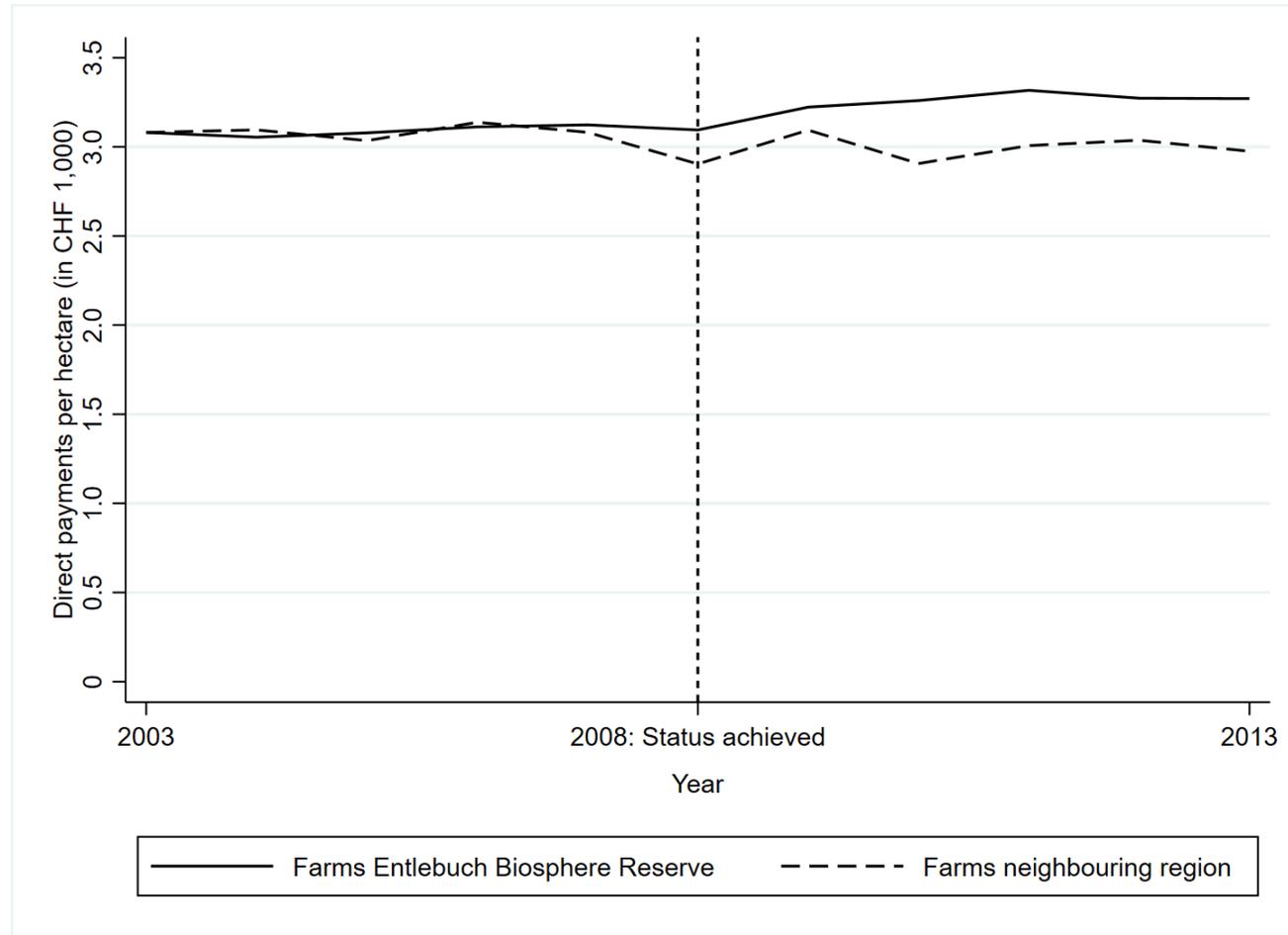
Matching results for Entlebuch based on panel 1

Matching before treatment (park status) in 2008

	Farms Entlebuch	Synthetic farms
Direct payments per hectare (in CHF)	3'089	3'086
Age (Years)	45.2	45.1
Education (Level)	2.2	2.2
Share organic farms (in %)	31.3	23.2
Utilized agricultural area (in hectares)	19.1	19.8
Livestock units	23.1	23.1
Labor (units)	1.5	1.5



Matching results for Entlebuch based on panel 1





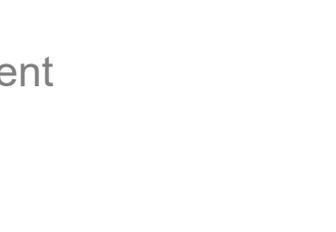
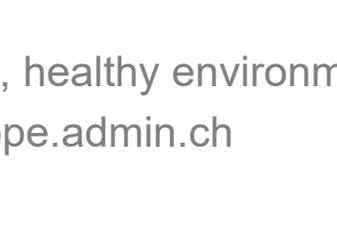
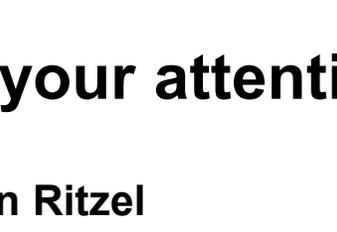
Treatment effects based on panel 1

- Treatment effects for Entlebuch (diff-in-diff estimator)
 - **Direct payments: +249 CHF (significant)**
 - Income: +1'513 CHF (non-significant)
 - Revenues: +96 CHF (non-significant)
- Treatment effects for Gantrisch (diff-in-diff estimator)
 - Direct payments: -149 CHF (non-significant)
 - Income: - 5'255 CHF (non-significant)
 - **Revenues: +672 CHF (significant)**



Conclusion

- Park status had no negative effect on economic performance of farms
- Entlebuch: higher direct payments than similar farms outside the park
- Gantrisch: higher revenues than similar farms outside the park
- Regarding trade-off between ecological and economic pillars of sustainability, results can be considered as good news
- Fostering biodiversity conservation does not necessarily cause adverse effects on farms' economic indicators



Thank you for your attention

Christian Ritzel

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Treatment effects based on panel 2

- Treatment effects for Entlebuch (diff-in-diff estimator)
 - Direct payments: +97 CHF (non-significant)
 - Income: +739 CHF (non-significant)
 - Revenues: -301 CHF (non-significant)
- Treatment effects for Gantrisch (diff-in-diff estimator)
 - Direct payments: - 44 CHF (non-significant)
 - Income: -3'196 CHF (non-significant)
 - **Revenues: +1'097 CHF (significant)**



Steps for gaining the status

1. Feasibility study & management plan
 - Region must have high natural & scenic value
 - Inhabitants & authorities have to provide commitment

2. Establishment
 - Implementation of measures & provision of park charta
 - Establishment takes up to four to eight years
 - Regions receive candidate label

3. Operation
 - Majority of inhabitants must vote «yes»
 - FOEN verifies whether park meets the requirements
 - Park must implement sociocultural, ecological & economic projects



Matching Entlebuch panel 1

Variable	(a) Direct payments			(b) Income			(c) Revenues		
	Treatment group	Synthetic park	Unmatched pool of farms (basis for synthetic parks)	Treatment group	Synthetic park	Unmatched pool of farms (basis for synthetic parks)	Treatment group	Synthetic park	Unmatched pool of farms (basis for synthetic parks)
Economic indicators	3,090	3,086	3,072	29,620	29,928	36,170	9,810	9,775	10,825
Age	45.2	45.1	45.5	45.2	43.7	45.5	45.2	45.1	45.5
Education	2.2	2.2	2.2	2.2	2.0	2.2	2.2	2.1	2.2
Organic	31.3	23.2	18.1	31.3	27.3	18.1	31.3	24.6	18.1
Farm size	19.1	19.8	17.9	19.1	17.6	17.9	19.1	18.6	17.9
Livestock	23.1	23.1	24.5	23.1	20.9	24.5	23.1	23.1	24.5
Labor	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.5

Treatment group: Farms in a park.

Synthetic parks: Matched farms based on a SCM located within 10 km of the park.

Unmatched pool of farms (basis for synthetic parks): Unmatched farms located within 10 km of the park.



Matching Gantrisch Panel 1

Variable	(a) Direct payments			(b) Income			(c) Revenues		
	Treatment group	Synthetic park	Unmatched pool of farms (basis for synthetic parks)	Treatment group	Synthetic park	Unmatched pool of farms (basis for synthetic parks)	Treatment group	Synthetic park	Unmatched pool of farms (basis for synthetic parks)
Economic indicators	2,767	2,767	2,594	40,572	40,356	49,175	12,075	12,076	12,485
Age	47.5	47.1	45.7	47.5	46.4	45.7	47.5	47.3	45.7
Education	2.5	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.5
Organic	9.8	4.1	3.4	9.8	5.7	3.4	9.8	2.1	3.4
Farm size	20.0	22.5	24.8	20.0	21.7	24.8	20.0	22.4	24.8
Livestock	28.2	42.3	37.7	28.2	37.4	37.7	28.2	32.0	37.7
Labor	1.7	1.8	1.8	1.7	1.7	1.8	1.7	1.8	1.8

Treatment group: Farms inside the park.

Synthetic parks: Matched farms based on a SCM located within 10 km of the park.

Unmatched pool of farms (basis for synthetic farms): Unmatched farms located 10 km of the park.



Trends outcome Entlebuch & Gantrisch panel 1

