

# The impact of subsidies on deductible choices in health insurance

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## Abstract

Low-income individuals respond to subsidies that constitute a combination of income effect and subsidy effect. This paper disentangles the two effects by exploring three variations in Switzerland. *First, I start by using the kinked relationship between prior earnings and subsidy levels to identify the effect of the subsidies using a regression-kink discontinuity design.* Empirically, I document that subsidies increase the demand for low-deductible insurance contracts. I find that 60 percent of subsidy recipients select the lowest deductible plan, compared to 40 percent in the non-subsidy high-income group. *Second, subsidies are dependent on the income generated two years previous.* I explore the lag of premium aid and present evidence that, in the absence of a subsidy, when high-income adults face subtle income decreases, they exhibit strong risk-averse behavior and select high coverage plans. I also examine individuals who receive subsidies but have increased income in the current year to explore the subsidy effect on deductible choice. *Third, subsidy levels are fixed coupon conditional on the lowest deductible plan (most generous plan).* Individuals face zero out-of-pocket premiums for higher deductible plans as subsidy levels increase. I explore discontinuities in the availability of zero-premium plans to examine the pricing effect (substitution effect) of subsidies on deductible choices.

## Motivation and research questions

### Motivation:

1. low-income individuals are not adequately covered by HI
2. govt. provide numerous subsidies: Swiss 12% GDP
3. dilemma:
  - low-incomes stay un-insured: liquidity issue
  - more subsidy benefits insurer instead of insured + sustainability issue HI

### research question and method:

1. what is the causal impact of subsidies on deductible choice?
  - explore the kinks in the subsidy schemes (RKD & RD)
2. what is the price sensitivity of health insurance for subsidy recipients?
  - subsidy is given conditional on the most generous plans
  - zero-premium plan effect
3. what is the demand for health insurance in the absence of subsidy?
  - subsidy is calculated based on income two years ago

### Swiss Health Insurance Market:

- Individual mandate, no opt out option
- community rating
- 6 options only differ in deductible levels, uniform network
- Uniform set of products offered across 26 cantons (states in the US) by private insurers, with different price

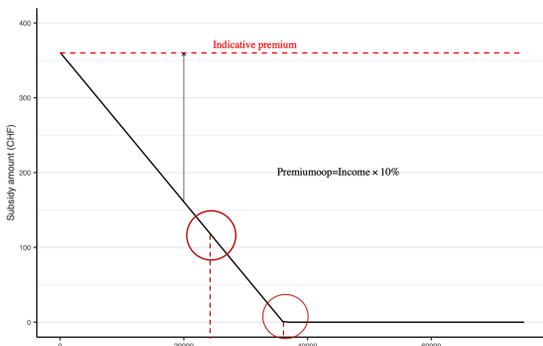
Table 1. choice menu offered in the market

Deductible	Co-insurance rate	Cap co-insurance	Premium (CHF)
CHF 300	10%	CHF 700	4,960
CHF 500	10%	CHF 700	$4,960 - (500 - 300) \times 70\% = 4,829$
CHF 1,000	10%	CHF 700	$4,960 - (1,000 - 300) \times 70\% = 4,479$
CHF 1,500	10%	CHF 700	$4,960 - (1,500 - 300) \times 70\% = 4,129$
CHF 2,000	10%	CHF 700	$4,960 - (2,000 - 300) \times 70\% = 3,779$
CHF 2,500	10%	CHF 700	$4,960 - (2,500 - 300) \times 70\% = 3,429$

### Subsidy:

- Income-linear (18 cantons) v.s. step-wise (8 cantons)
- Subsidy is a fixed-coupon conditional on most generous contract, CHF 2,500 contract will become zero-premium as the subsidy increases

Figure 1. Income-linear subsidy with kinks marked



## Data

1. Individual admin data
  - Swiss population (2017-2021)
  - HI choice, cost, subsidy info
2. Admin data linked with linked registered survey data
  - registered income and wealth
  - household info
  - Self-perceived health and living condition

	Person Lina		Person medline		Person Hana		
Deductible	Premium	Subsidy	Premium oop	Subsidy	Premium oop	Subsidy	Premium oop
CHF 2,000	3,750	3,400	350	3,500	250	3,700	50
CHF 2,500	3,400	3,400	0	3,500	0	3,700	0

## Results

Figure 2. take up rate of CHF2,500 contract

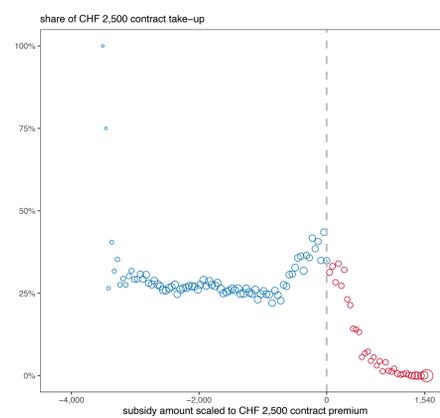
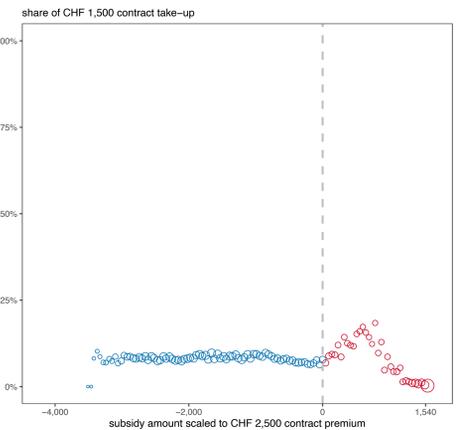
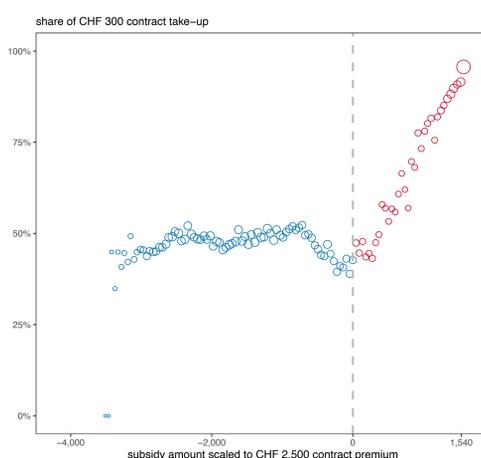


Figure 3. take up rate of CHF1,500 contract



- x = 0, is when the CHF 2,500 contract become zero-premium;
- The average number of observations equals 5,120 in the figures

Figure 4. take up rate of CHF 300 contract



## Discussion

1. When the CHF 2,500 premium gets close to zero premium, the take-up rate of the CHF 2,500 deductible increases, as shown in Figure 2.
2. The take-up rate of the next zero-premium is CHF 1,500, as shown in Figure 3. People do not respond to CHF 2,000 deductible contract when it becomes zero-premium
3. Figure 4 shows the take-up rate of the most generous plan

- Subsidy is calculated based on income two year's ago

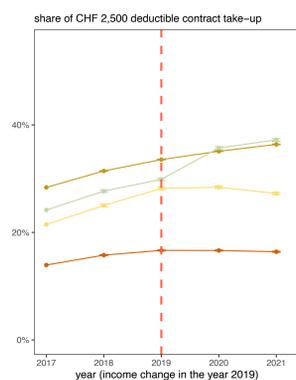


Figure 5. take up rate of CHF 300 contract

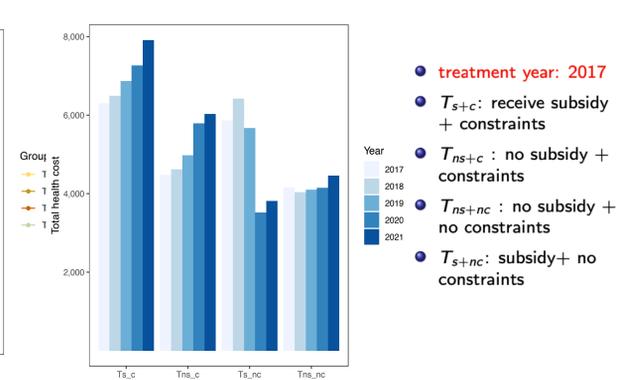


Figure 6. cost for different groups

## Conclusions

1. In the absence of subsidy, low-income individuals raise the demand for high insurance coverage by 6 % point.
2. When taking the subsidies, subsidy recipients are 20 % more likely to take the CHF 300 deductible plan than those in the high-income group.
3. Individuals respond to the zero-premium significantly. When the highest deductible, CHF 2,500 deductible contract, becomes zero-premium, individuals switch to the zero-premium.
4. The zero-premium effect is strong in two boundary deductibles and the intermediate plan, such as CHF 1,500 and CHF 1,000.

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