



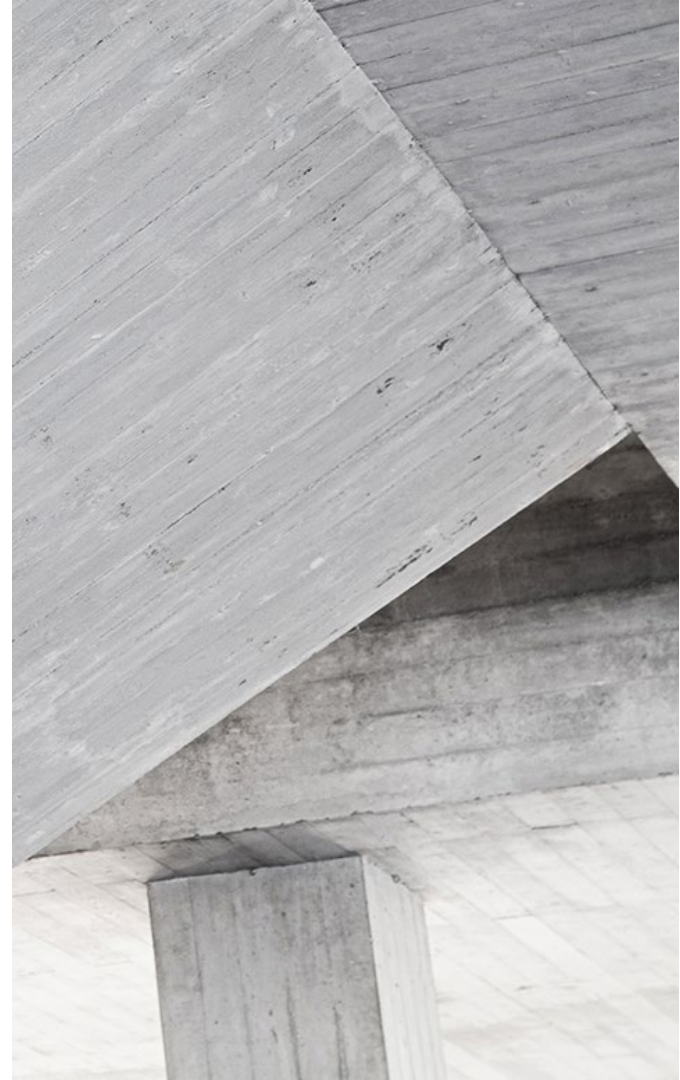
Universität St.Gallen

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What happens after exceeding the deductible? Investigating demand-side financial incentives using claims data from Switzerland

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Introduction

Background | Compulsory healthcare insurance in Switzerland entails a deductible system

- In Switzerland, all insurees older than 25 co-pay the costs of their annual treatments up to a chosen deductible (CHF 300, 500, 1000, 1500, 2000 or 2500)
- The higher the deductible, the lower the insurance premium
- After reaching the deductible, the insuree pays only 10% of the treatment costs up to a threshold of CHF 700
- Afterwards, the insuree will not share any further treatment costs for the rest of the year

Background | The deductible system can generate demand-side financial incentives for the consumption of healthcare resources

- Deductible-based insurance contracts lead to discrete price jumps generating time-varying incentives
 - Potentially **useful** tool to increase efficiency through cost sharing (Baicker & Goldman, 2011)
 - Potentially **harmful** to social welfare due to:
 - Incentive to delay care for (potential) health problems (Davis et al., 2005)
 - Incentive to use services that are not beneficial in the individual context (Zweifel & Manning, 2000)
 - Incentive to shift beneficial healthcare consumption from the upcoming calendar year (Zabrodina, 2022)
- Supply side structures could facilitate this effect (Léonard et al., 2009)

Literature | On price sensitivity with different health insurance contracts

- Price sensitivity to spot price and **reduction in healthcare consumption when below** the (high) deductible (Brot-Goldberg et al., 2017; Beeuwkes Buntin et al., 2011; Lo Sasso et al., 2010)
- Highest **price sensitivity for physiotherapy visits and general practitioner** visits (Van Vliet René, 2001)
- RAND Health Insurance Experiment (US): **reduction in services** induced by cost sharing but no adverse effect on participants' health (Newhouse, 1993; Aron-Dine et al., 2013)
- Evidence suggests that while patients do respond to financial incentives, **cost-sharing does not uniformly improve value** (Baicker & Goldman, 2011; Huckfeldt et al., 2015)

Literature | On price sensitivity with different health insurance contracts

- Mixed evidence from the literature on the presence of price sensitivity for healthcare consumption
- Limited literature on the effect of exceeding the deductible on healthcare consumption afterwards
- No such study has been conducted for Switzerland

→ Addressing the **research gap**

Aim | Three research questions

- ① Are insurees price-sensitive with regards to healthcare consumption after exceeding their deductible in Switzerland?
- ② Does price sensitivity differ for healthcare services that are more prone to overuse?
- ③ Do healthcare supply-side structures influence this change in healthcare consumption?

Data & Methods

Dataset | Insurees exceeding their deductible in 2018

- Data from one Swiss health insurer on all insurees from the highest deductible group who exceeded their deductible in 2018
 - Included variables: age, nationality, place of living, deductible group, premium reduction, pharmaceutical cost groups, healthcare expenses, tariff type, treatment date, receipt date
 - Exclusion criteria:
 - Younger than 25
 - Pregnant or giving birth
- Insuree-level information on expenses and deductible group in 2017
- Data on number of medical specialists per 3-digits postal code

Empirical strategy | Three-step approach

1. Run Fixed effects models
 - Input:
 - Dependent Variable: Weekly Healthcare expenses
 - Independent Variables: Constant Variables and Time-varying variables
 - Output: Residuals
2. Run Regression Discontinuity in Time (RDiT) models
 - Input: Residuals on insuree-level
 - Output: RDiT parameters for each insuree
3. Aggregate the results by simple mean
 - Input: RDiT parameters from all insurees
 - Output: Mean RDiT parameters

Empirical strategy | We ran a fixed effects model with time-varying and constant variables

Dep. var: Weekly healthcare expenses in 2018

$$\begin{aligned}
 Y_t = & \overset{\text{Premium reduction}}{\beta_R R_t} + \overset{\text{Interaction of R and L}}{\beta_{RL} R_t L_t} + \\
 & \overset{\text{Weekly exp. in 2017}}{\beta_{Y_{t17}} Y_{t17}} + \overset{\text{Lagged weekly exp. in 2018}}{Y_{t-1}} + \\
 \hline
 & \overset{\text{Age}}{\beta_A A} + \overset{\text{Swiss/Foreign}}{\beta_N N} + \overset{\text{Premium region}}{\beta_L L} + \\
 & \overset{\text{Deductible in 2017}}{\beta_{F_{17}} F_{17}} + \overset{\text{Deductible change}}{\beta_{\Delta F} \Delta F} + \\
 & \overset{\text{Tot. expenses in 2017}}{\beta_{Y_{17}} Y_{17}} + \overset{\text{Reached deductible in 2017}}{\beta_{D_{17}} D_{17}} + \\
 & \overset{\text{PCGs in 2017}}{\beta_{P_{17}} P_{17}} + \overset{\text{PCGs in 2018}}{\beta_{P_{18}} P_{18}} + \\
 \hline
 & \epsilon_t
 \end{aligned}$$

Time varying variables

Constant variables

Residuals

Empirical strategy | We ran a regression discontinuity in time model on the unexplained cost variation by the fixed effects model

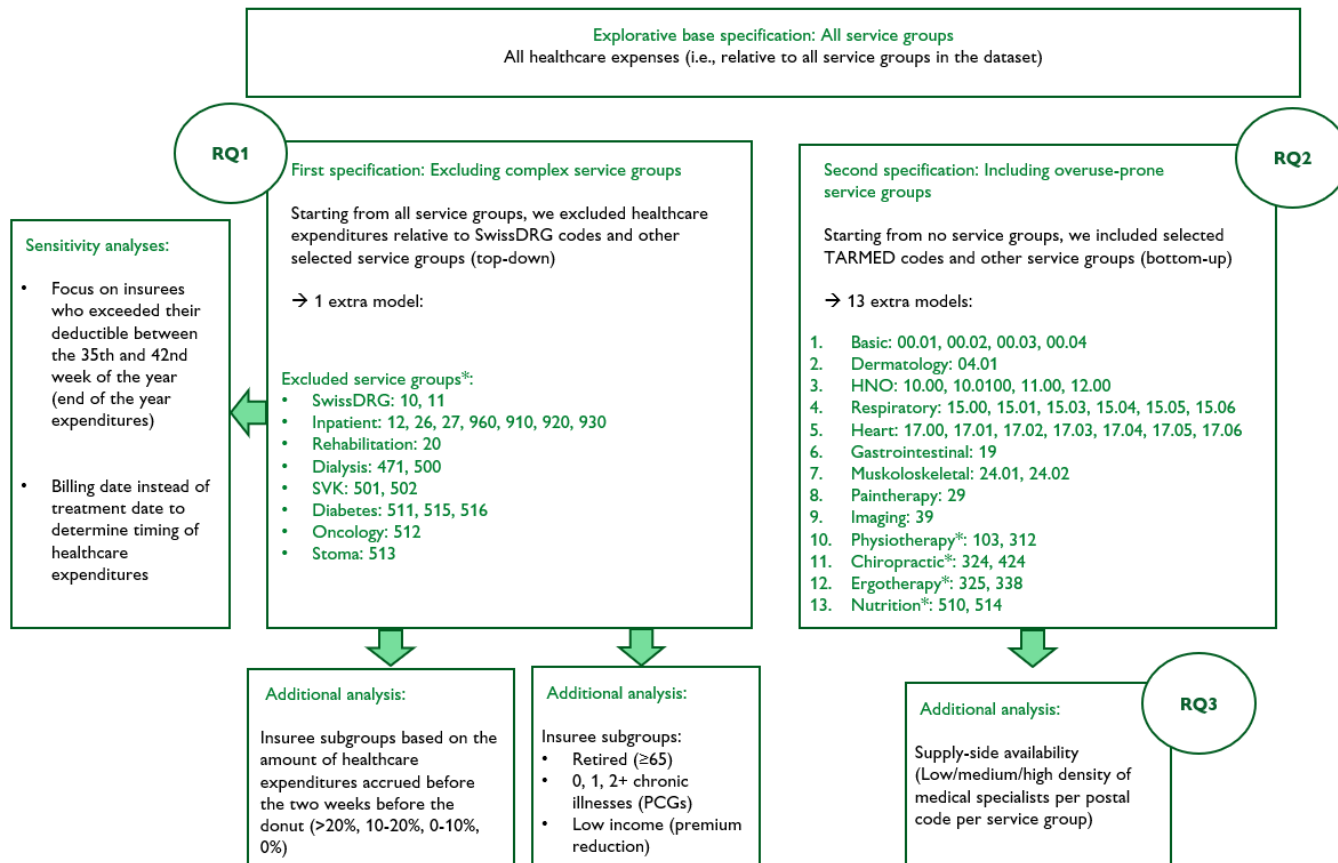
1. Fixed effects model:

$$Y_t = \beta_R R_t + \beta_{RL} R_t L + \beta_{Y_{t17}} Y_{t17} + Y_{t-1} + \beta_A A + \beta_N N + \beta_L L + \beta_{F_{17}} F_{17} + \beta_{\Delta F} \Delta F + \beta_{Y_{17}} Y_{17} + \beta_{D_{17}} D_{17} + \beta_{P_{17}} P_{17} + \beta_{P_{18}} P_{18} + \epsilon_t$$

2. Regression discontinuity in time model:

$$\epsilon_t = \tau_0 \mathbb{1}_{\{0 \leq t - T \leq 12\}} + u_t$$

Empirical strategy | We specified the dependent variable in different ways



Additional analysis:

Insuree subgroups based on the amount of healthcare expenditures accrued before the two weeks before the donut (>20%, 10-20%, 0-10%, 0%)

Additional analysis:

Insuree subgroups:

- Retired (≥65)
- 0, 1, 2+ chronic illnesses (PCGs)
- Low income (premium reduction)

RQ3

Additional analysis:

Supply-side availability (Low/medium/high density of medical specialists per postal code per service group)

Results

Discussion

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Thank you!

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