

Copayments for Ambulatory Care in Germany: A Natural Experiment Using a Difference-in-Difference Approach

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Background

- Germany has 3rd highest health expenditures in the world; one reason: high physician visits per year (Germany: 10.0, EU-15: 6.8 in 2006)
- Since Jan 2004 as part of the Statutory Health Insurance Modernization Act a co-payment was introduced for outpatient doctor visits
- Apart from the pure financial effect, the introduction of copayments for ambulatory care aimed at tackling the moral hazard problem
- With other words it was intended to reduce unnecessary physician visits

The German co-payment scheme for ambulatory care

- Persons insured by the Statutory Health Insurance have to pay €10 per calendar quarter upon their first visit with a specialist's or GP's office
- Once they paid the €10 per quarter they can have as many outpatient visits as they want without paying €10 again
- But: they need a referral of the doctor who received the €10, otherwise they have to pay €10 for each visit without referral
- Exemption rules: certain preventive services are excluded e.g. vaccines, persons below 18 and those who already paid 2% (1% for the chronically ill) of their gross earnings (necessary for living) for other co-payments

Other natural experiments with ambulatory co-payments in Germany and elsewhere

Most studies find decline in physician visits:

- Cherkin et al (1990): co-payment of approximately US\$5 -> 14% decrease in physician visits
- Scitovsky and McCall (1977): 25% co-insurance -> 24% fewer physician visits
- Winkelmann (2004): increased copayments for prescription drugs (indirect effect) -> 10% reduction in physician visits

Substantial evidence that change in ambulatory copayments, if not carefully designed, can discourage vulnerable groups from seeking necessary care:

- Beck and Horne (1980) and Manning et al (1987): elderly and low-income individuals
- Elofsson et al (1998): persons with poor financial circumstances

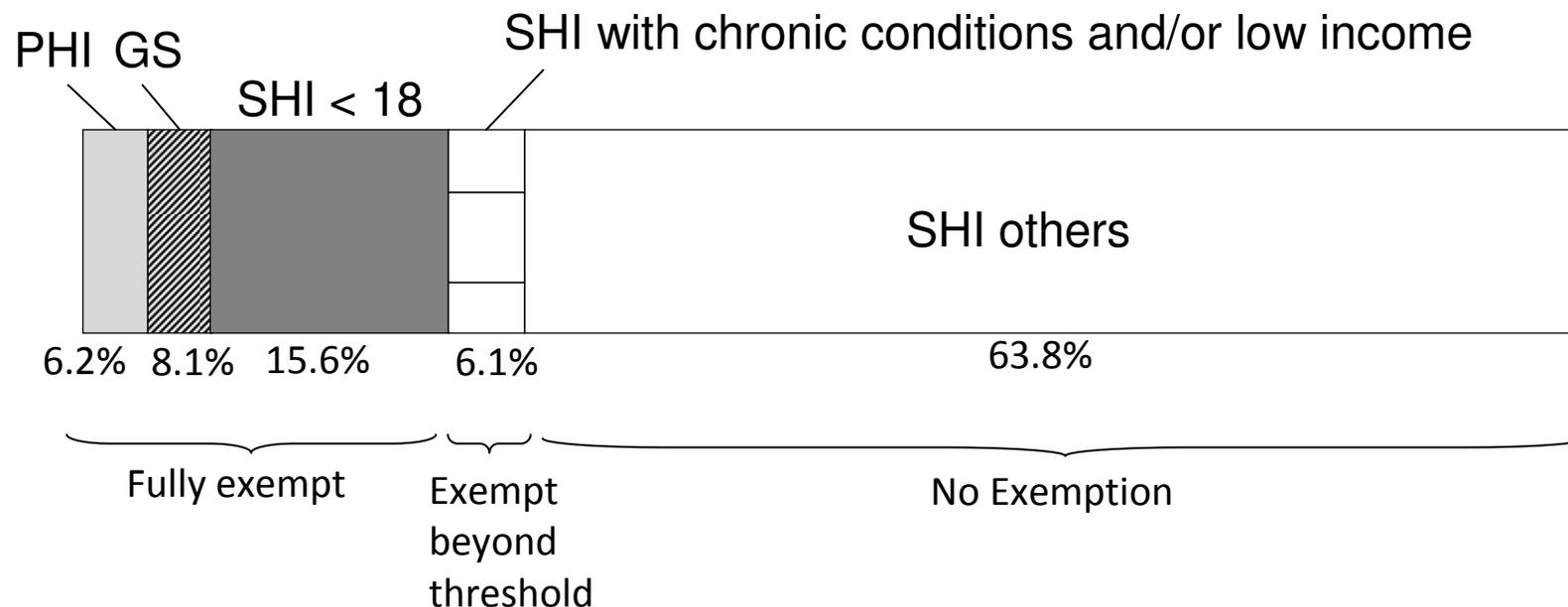
Objective

We want to examine whether the copayment

- 1) effectively reduced the overall demand for physician visits and whether they
- 2) acted as a deterrent to vulnerable groups such as persons with low income or chronic conditions.

Data (1)

- Data of the German Socio Economic Panel (SOEP): 2000-2006
- Because 2004 was the year of the intervention, we used data from the pre-intervention years 2000-2003 and the post-intervention years 2005-2006
- We excluded all individuals under the age of 18 and those covered by governmental schemes



Data (2)

- Dependent variable: number of physician visits during the past 3 months

Control variables for socio-economic characteristics:

- Gender
- Age
- Existence of children in household (i.e. implying additional time and effort when consulting a physician)
- Employment status (i.e. full-time, part-time, or unemployed)
- Self-employment
- Educational level
- Resident of former East or West Germany
- Active sports
- Smoker
- Household income in quintiles and
- Population at residence location
- Self-reported health based on the categories very good, good, fair, poor, and very poor
- Variables for years and months (temporal factors)

Methods (1)

- Pooled the data from the abovementioned 5 years (i.e. from 2000-2003 and 2005-2006)
- Reform can be regarded as a natural experiment, because privately insured individuals are fully exempt from the co-payments
- Estimated the effects of copayments by comparing the expected number of physician visits before and after the intervention using a difference-in-difference (DID) approach

$$y_{it} = \beta_0 + \beta_1 x_i + \beta_2 z_t + \beta_3(x_i \times z_t) + \beta_4 w_{it} + \varepsilon_{it}$$

x_i treatment vector indicating whether person i is subject to the increased copayment

z_t indicates the occurrence of the copayment in period t

w_{it} represents a variety of socio-economic characteristics

Methods (2)

We constructed 4 DID estimators, each of which was related to a pre-post change in physician visits:

- 1) Non-exempt SHI members vs. group of PHI members
- 2) SHI members with chronic conditions vs. group of PHI members
- 3) SHI members with the lowest income quintile vs. group of PHI members
- 4) All persons who received public welfare benefits vs. group of PHI members

Methods (3)

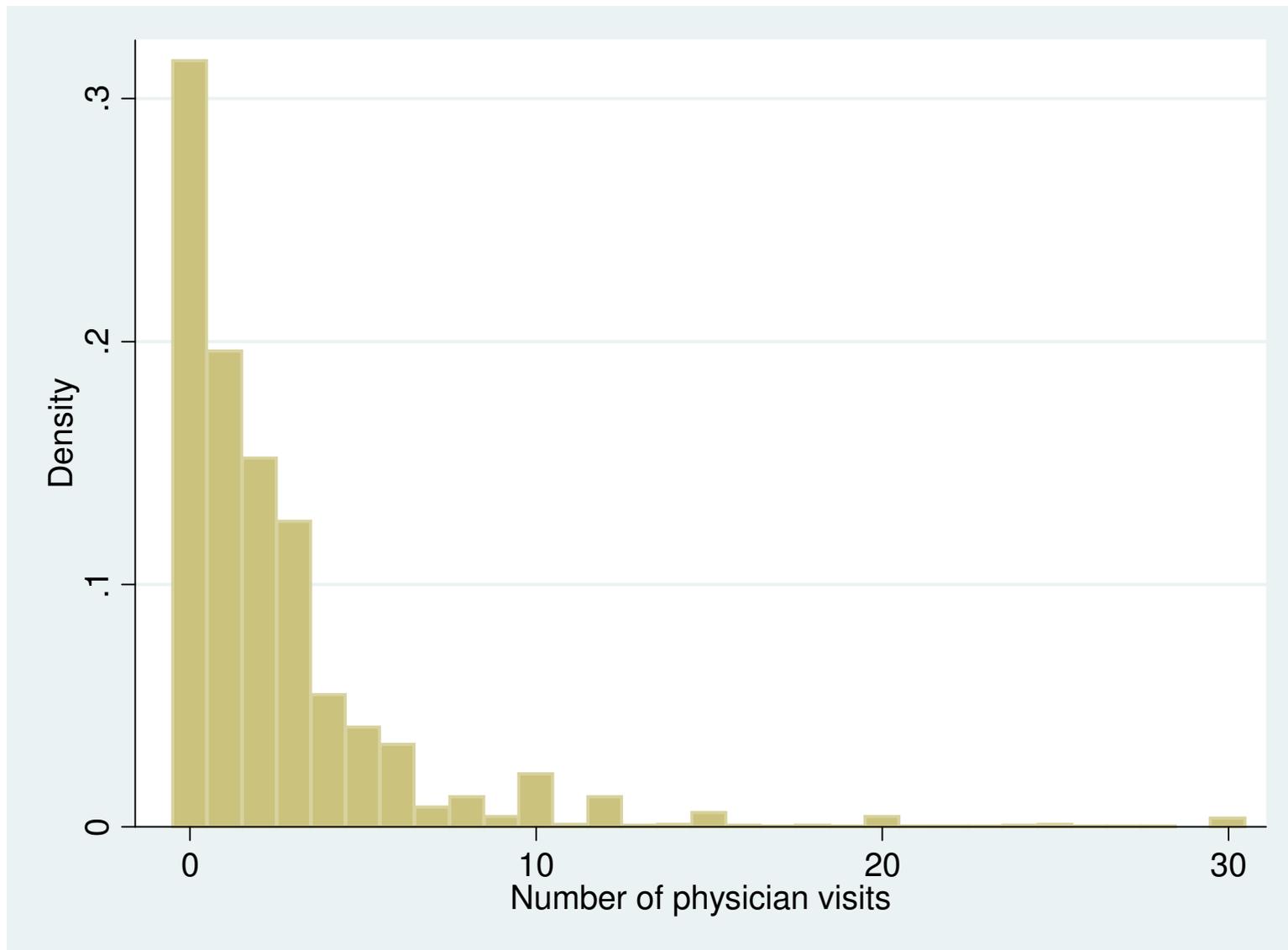
- 1) Probit model: outcome variable takes the value of 1 if the person has visited a physician and 0 if not

-> has the probability of visiting a physician decreased following the introduction of copayments?

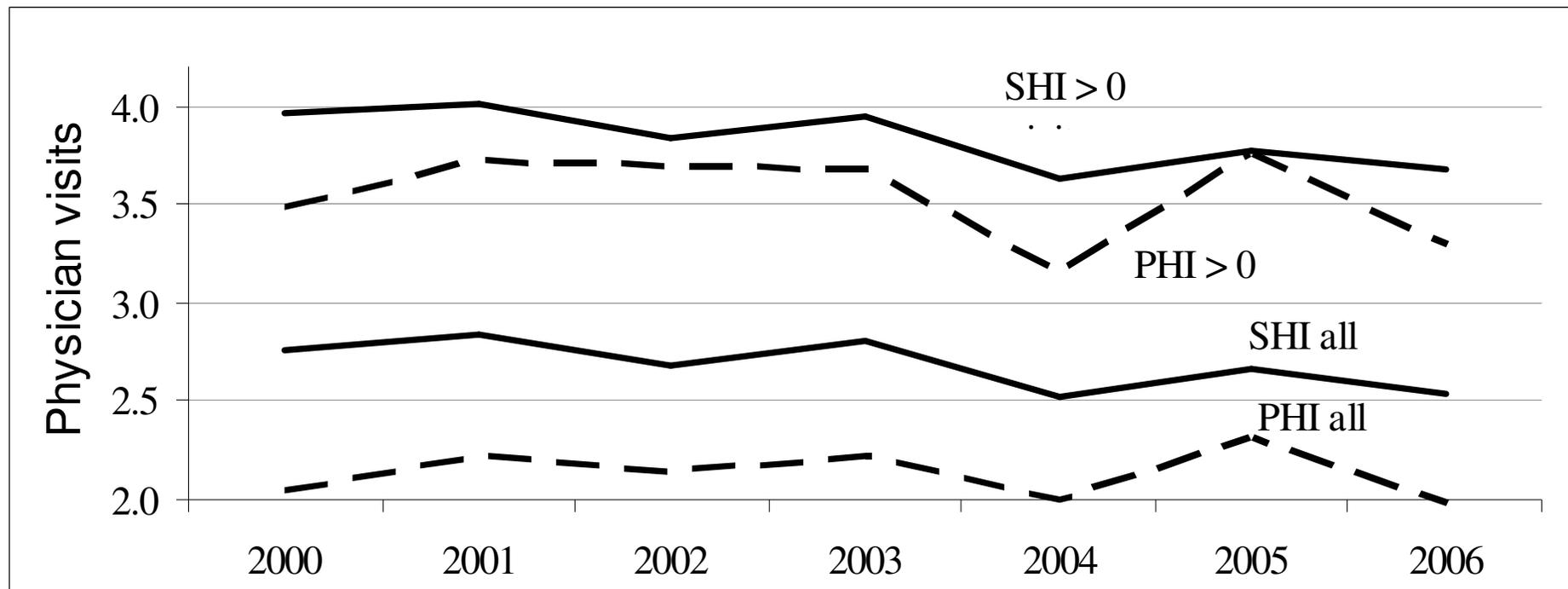
- 2) Negative Binomial Model and Zero-Inflated Negative Binomial Model (excess zeros -> Vuong-Test favours ZINB)

-> has the number of physician visits declined after the introduction of copayments?

Methods (4)



Number of physician visits for PHI members and non-exempt SHI members



Source: SOEP, years 2000-2003 and 2005-2006.

DID estimates for the probit models

Treatment group vs. PHI as control group	Probit Model
Model	Marg. Eff.
<i>SHI w./o. exemption</i>	
SHI	0.122***
DiD SHI	0.019
<i>SHI w. chronic conditions</i>	
Chronic	0.879***
DiD Chronic	0.099
<i>SHI-lowest income quintile</i>	
Lowest income quintile	0.023
DiD Lowest income quintile	-0.079
<i>SHI-public welfare</i>	
Public assistance	0.063
DiD Public assistance	0.007

***P<0.01, **P<0.05, *P<0.1

DID estimates for the count data models and the zero-inflated count data models

Treatment group vs. PHI as control group	Negative Binomial Model	Zero-Inflated Negative Binomial Model
Model	Marg. Eff.	Marg. Eff.
<i>SHI w./o. exemption</i>		
SHI	0.133***	-0.001
DiD SHI	-0.023	-0.055
<i>SHI w. chronic condition</i>		
Chronic	0.620***	0.947
DiD Chronic	-0.061**	0.100
<i>SHI-lowest income quintile</i>		
Lowest income quintile	0.130*	-0.128
DiD Lowest income quintile	-0.086**	-0.015
<i>SHI-public welfare</i>		
Public assistance	0.108	-0.019
DiD Public assistance	-0.065	-0.049

***P<0.01, **P<0.05, *P<0.1

Conclusion

- Copayment has had only a transitory effect and has failed to reduce the demand for physician visits
 - > most likely due to design: copayment is low and has to be paid only for the first visit per quarter and not for each visit
- No evidence that the copayment decreased the probability that persons with chronic conditions or low income will visit a physician
 - > may be due either to the low amount of the copayment or the effectiveness of the income thresholds.
- Limitation: exclusion of non-prescription drugs as part of the Statutory Health Insurance Modernization Act may have contributed to the reduction
- Imposing copayments for each physician visit might be more effective e.g. \$5 per physician visit for HMO enrollees in Washington state led to a significant decrease in physician visits