

# The impact of price subsidies on child health care use

## Evaluation of the Indonesian healthcard

A photograph of four young girls standing in a row in front of a large wooden pillar at night. They are all wearing hijabs and traditional Indonesian clothing. From left to right: the first girl wears a white hijab and blue pants; the second wears a blue patterned hijab and matching dress; the third wears a light green patterned hijab and matching long-sleeved top and pants; the fourth wears a white hijab with pink lace trim and blue pants. The background is dark with some foliage and a warm light source on the left.

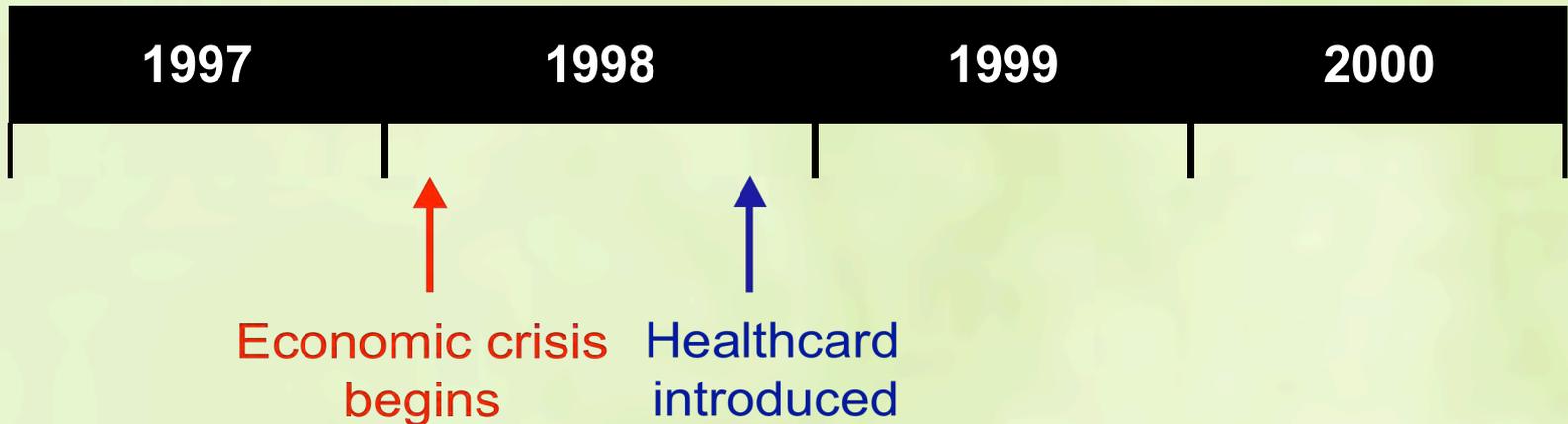
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\*Work done as part of doctoral dissertation submitted to Harvard University

# Indonesian healthcard

- ✿ Post-crisis health care “safety-net”
- ✿ Time line:



- ✿ Distributed to households based on *prosperity status*
- ✿ Free OP care and limited IP care at public facilities
- ✿ Share of population with healthcards:  
10.6% (1999) → 20% (2000)

# Research questions and hypotheses

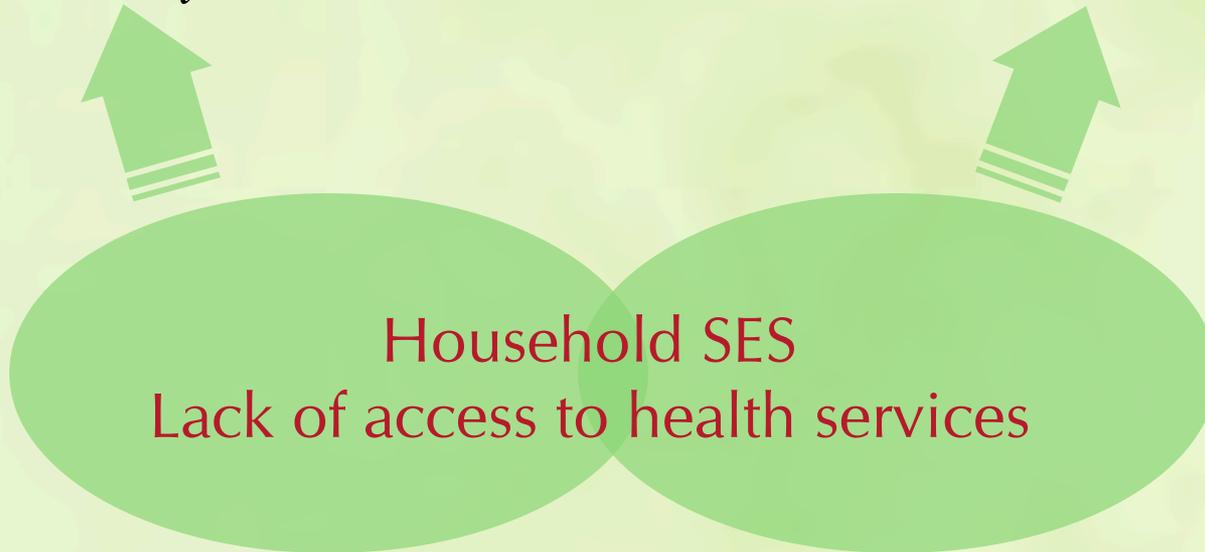
- ✿ What was the impact of the healthcard (HC) on use of child health services?
- ✿ Hypotheses
  - 1) Use of public sector services (all, outpatient contact rate and frequency) declined less for children with HC than others
  - 2) HC had no impact on use of private sector services
  - 3) Children with HC were less likely to resort to self-treatment than others

# Indonesia Family Life Survey (IFLS)

- ✿ Longitudinal survey of 10,574 households
- ✿ Three waves: 1993, 1997 and 2000.
  - ✿ >90% of households followed up in each round
- ✿ Detailed child health care use module:
  - ✿ Outpatient care and OTC use during past month (type of provider, frequency of visits)

# Estimation problem (1): non-random allocation

$$\Delta y_i = \alpha_0 + \mathbf{X}_i \alpha_1 + \alpha_2 HC_i + \varepsilon_i$$

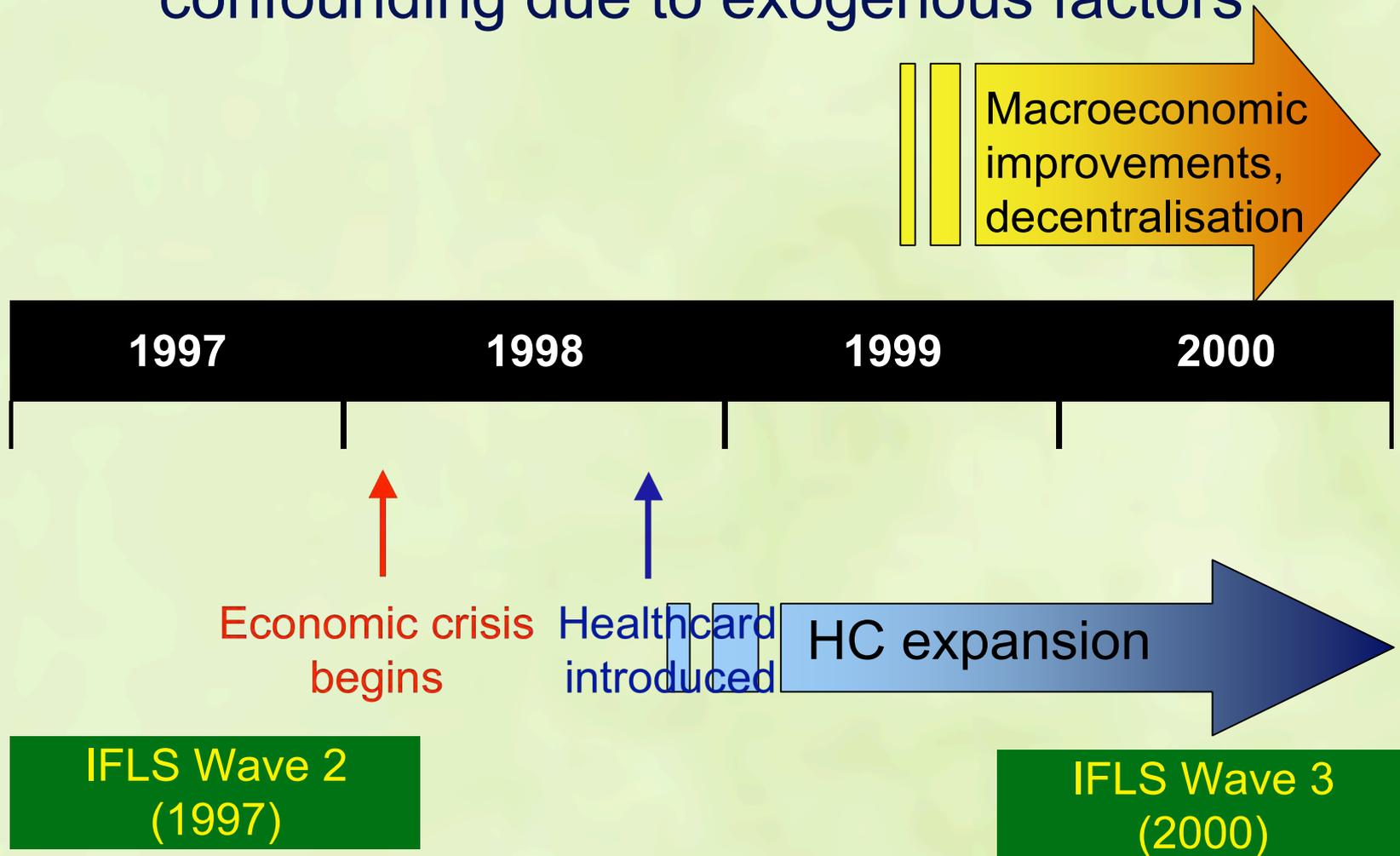


$$\rightarrow Cov(HC_i, \varepsilon_i) \neq 0 \quad \rightarrow E(\hat{\alpha}_2) \neq \alpha_2$$

# Controlling for non-random health card allocation: propensity score matching

- ✿ Create a synthetic control group using propensity score matching
- ✿ Propensity score based on observable characteristics of households in the pre-intervention period (1997)
- ✿ Advantages of propensity scores

## Estimation problem (2): confounding due to exogenous factors



# Estimation method

Change in utilisation for **healthcard owners, H**:

$$\Delta Y_{it}^H = \Delta Y_{it}^* + HC_{it} + \Delta \theta_t + \Delta \varepsilon_{it}$$

Change in utilisation for **matched control group, M**:

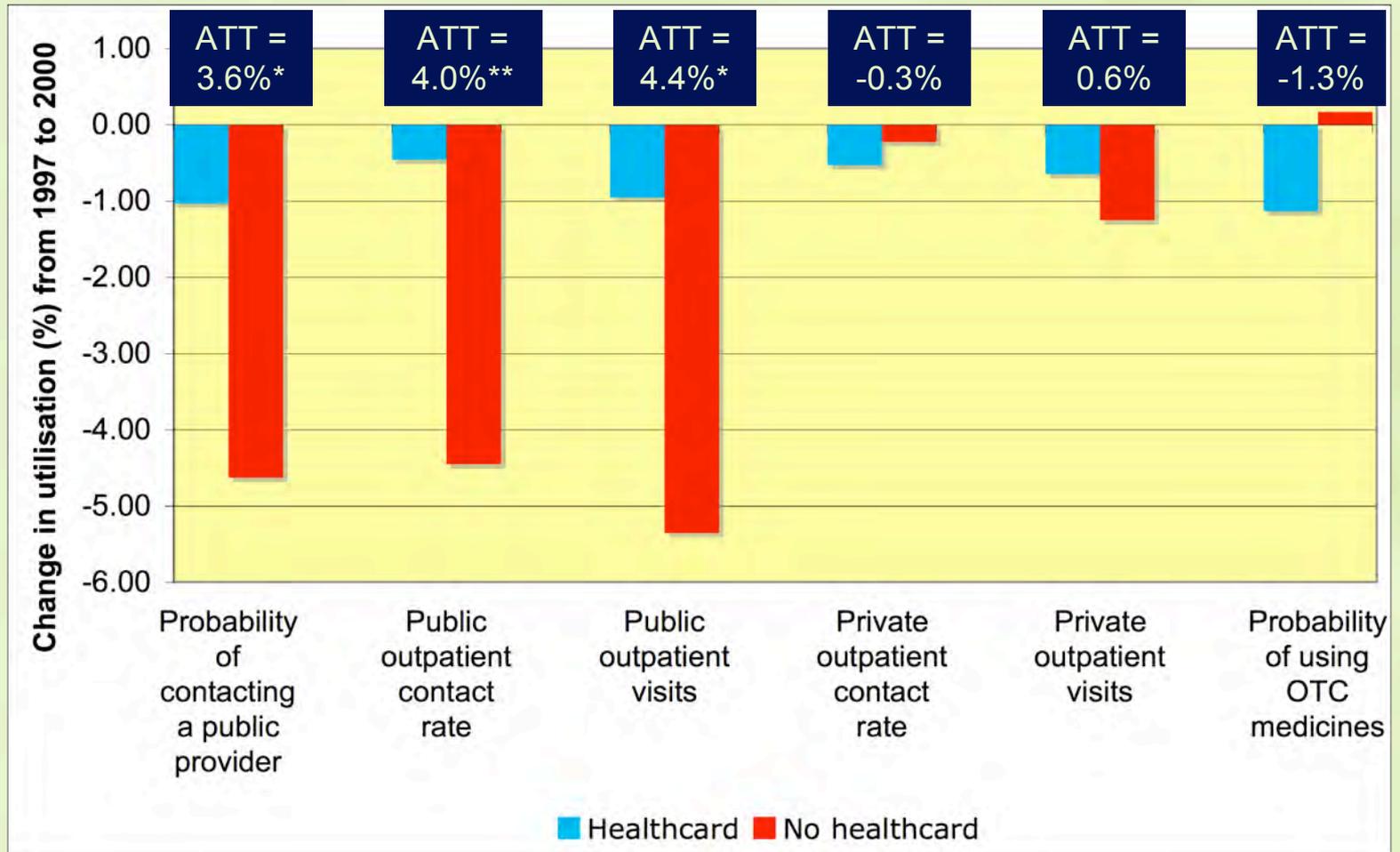
$$\Delta Y_{it}^M = \Delta Y_{it}^* + \Delta \theta_t + \Delta \mu_{it}$$

Difference-in-difference effect = HC effect:

$$E[\Delta Y_{it}^H - \Delta Y_{it}^M] = E[HC_{it}]$$

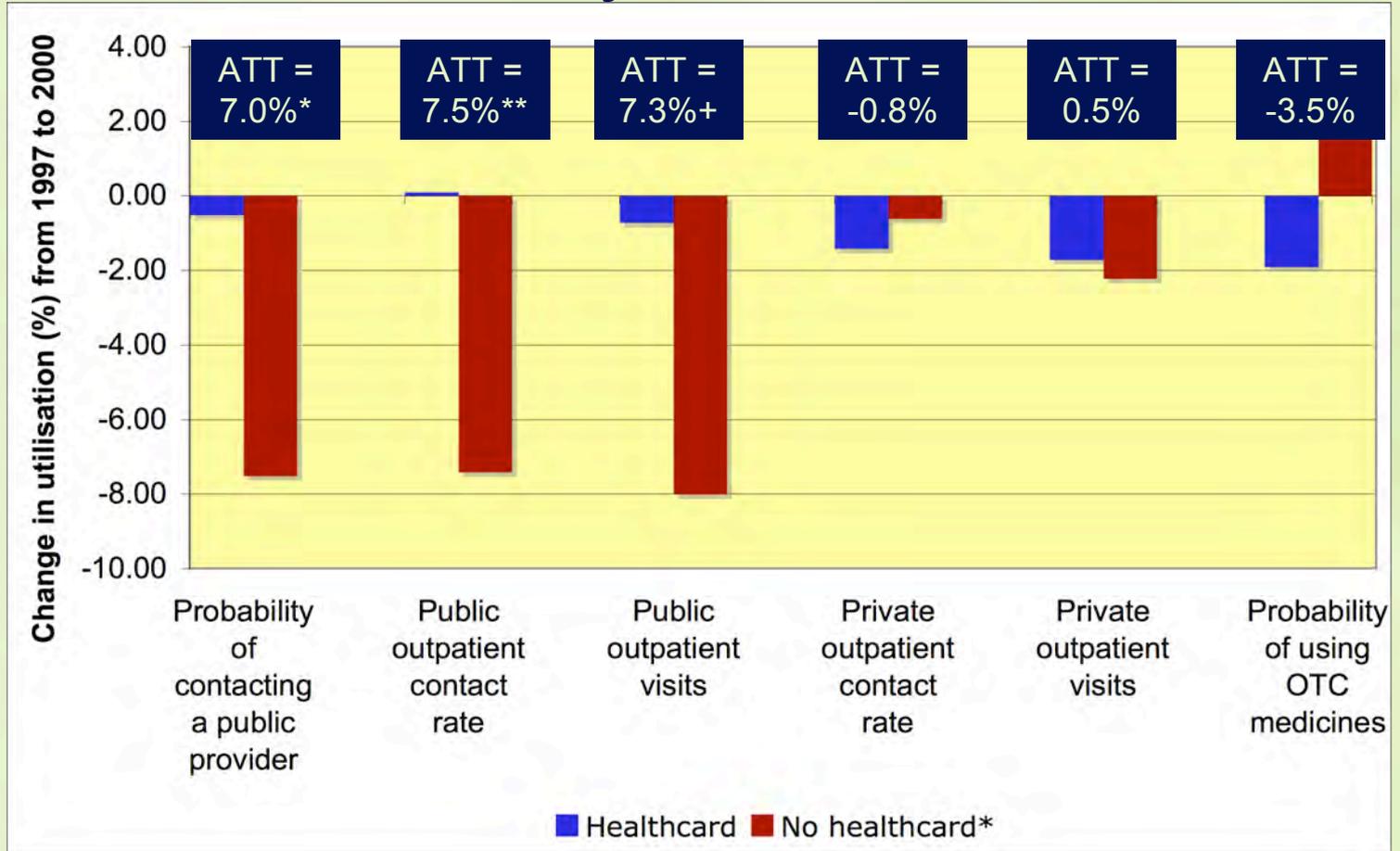
under the assumption:  $\mu_{it} \sim N(0, \sigma_{\mu_{it}}^2), \varepsilon_{it} \sim N(0, \sigma_{\varepsilon_{it}}^2)$

# Change in utilisation for healthcard owners and matched controls, 1997-2000



\*\* significant at 1%; \* significant at 5%

# Change in utilisation, 1997-2000: 0-5 year olds



\*\* significant at 1%; \* significant at 5%; + significant at 10%

# Healthcard treatment effects (ATT) %: 6-15 year-olds

	6-10 years	11-15 years
Probability of contacting a public provider	-0.90	0.00
	(2.60)	(4.20)
Public outpatient contact rate	0.00	-1.80
	(2.90)	(4.00)
Public outpatient visits	0.20	-2.50
	(2.90)	(4.80)
Private outpatient contact rate	1.60	3.10
	(1.40)	(3.40)
Private outpatient visits	2.60	3.70
	(2.10)	(3.20)
Probability of using OTC medicines	-2.50	5.80
	(4.30)	(10.10)

Standard errors in parantheses; all standard errors bootstrapped with 100 replications

# Interpretations

- ✿ HC succeeded in preventing sharp decline in public sector use for one of its main target groups: very young children
- ✿ No evidence of any substitution from private to public outpatient care
- ✿ Without HC, more households may have had to resort to OTC for children
- ✿ Distributional results

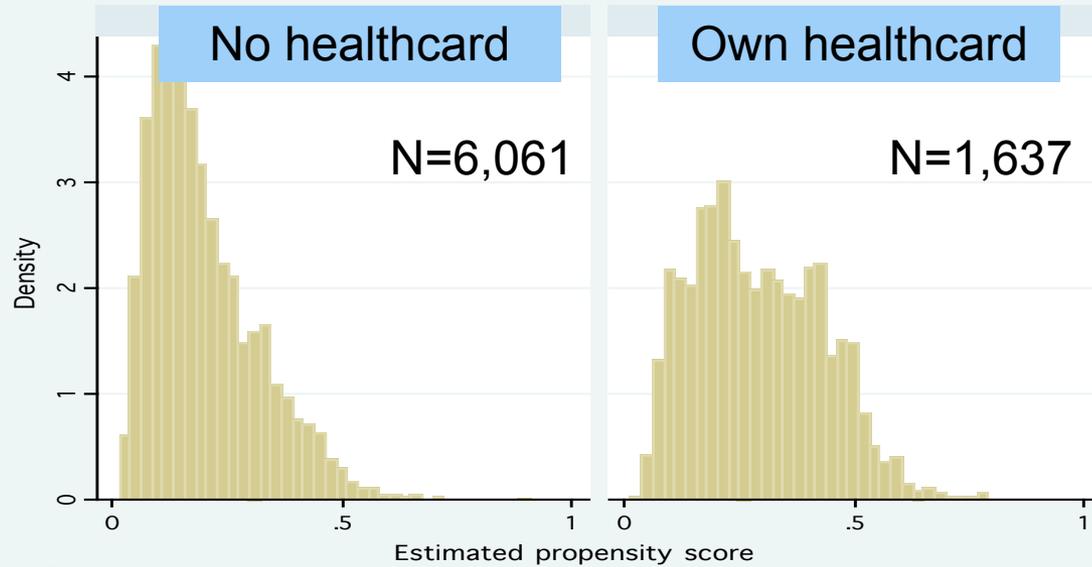
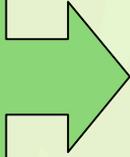
# Contributions to policy

- ✿ Provides new evidence on demand response to price subsidies:
  - ✿ Introduced under difficult circumstances
  - ✿ Helped maintain public sector use
  - ✿ Justification for continuation of programme
- ✿ Highlights need to review HC targeting mechanisms
- ✿ Examines both use of formal health services and purchase of OTC medicines

# Contributions to research

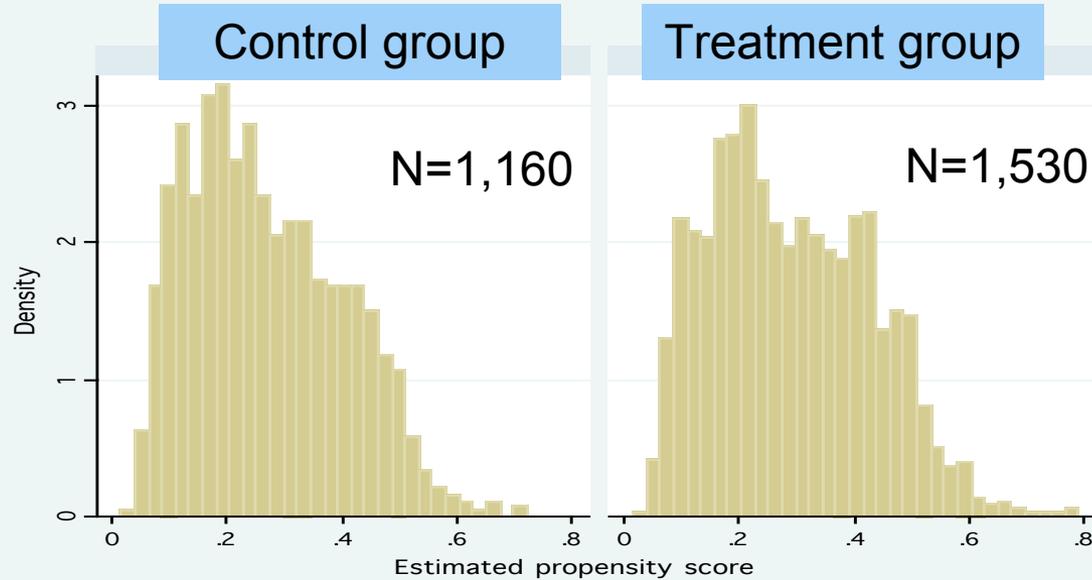
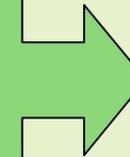
- ✿ Main challenge: establishing causality without experimental data
- ✿ Combination of propensity scores with double-difference estimator eliminates:
  - ✿ Selection bias
  - ✿ Time-invariant unobservables
- ✿ Avoids estimation of parametric model of health care use

Before propensity score matching



Graphs by healthcard

After propensity score matching



Graphs by treat

# Gaps in the evidence base

- ✿ Evidence on impact of price subsidies on child health care use is limited:
  - ✿ Simulation-based health care demand models rely on out-of-sample predictions
  - ✿ Ex-post studies face problems of selection bias
- ✿ Pradhan et al (2003) assess HC impact
  - ✿ Do not examine impact on child health care use
  - ✿ One-period analysis; does not look at behaviour change over time
  - ✿ Analysis limited to first 9 months of the programme