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Does community-based health insurance protect household assets?

Evidence from rural Burkina Faso, Africa

Divya Parmar, Steffen Reinhold, Aurélia Souares, Germain Savadogo, Rainer Sauerborn
Health financing through Community-based health insurance (CBHI)

Four major types of health financing

• Tax-based financing
  Taxes on financial transactions

• Social health insurance
  Workers, govt. employees etc

• Private health insurance
  E.g. CBHI

• Medical saving accounts
  Individual saving accounts

References: WHO

Source: www.concertation.org
Link between CBHI and household assets

(Livestock + household goods)

Illness in the HH

- No treatment
- Self-treatment
- Traditional Healer
- Health facility

Costs

Delay in treatment + Costs

Increase severity lower productivity

Increase lower earnings

Delay purchasing

HH assets

Livestock produce

sell

Health facility
Link between CBHI and household assets

(Livestock + household goods)

CBHI

Illness in the HH

- No treatment
- Self-treatment
- Traditional Healer
- Health facility

No treatment
Self-treatment
Traditional Healer
Health facility

Delay in treatment + Costs

Increase severity
lower productivity
lower earnings
delay purchasing

HH assets

Costs

Livestock produce

sell

sell

sell
Burkina Faso

- Population: 15.8 million
- GDP per capita (PPP): $1200
- Occupation: 90% engaged in subsistence agriculture
- Literacy: 30% (men), 15% (females)
- Life expectancy: 53 years
- Infant mortality rate: 85 /1000 live births

Reference: https://www.cia.gov
The CBHI scheme in Nouna

- Introduced in 2004
- 41 villages and Nouna town (i.e. 7762 households)
- Benefit package:
  Consultation fee, essential and generic drugs, lab tests, hospital stay, x-rays, emergency surgery, ambulance transport
- Unit of enrolment: household
- Premium: 1500 CFA (2.29€) adult, 500 CFA (0.76€) child p.a.
Data: Household Panel Survey (2004-07)

- 41 villages & Nouna town
- 15% of the population
  (Total population: 67,262)
- Panel survey
  (same households interviewed every year)
- Conducted every year

(0) Socio-demographic: ethnicity, religion, housing conditions, education...
(1) Socio-economic: ownership of livestock, goods...
(2) Self-reported morbidity: illness episodes, health-seeking behaviour...
(3) Preventive care
(4) Risk-sharing & perceptions on quality of health care
(5) CBHI: enrolment decisions, reasons for enrolling...
Model

$$HH \text{ assets}_{it+1} = Z_i \beta_1 + X_{it} \beta_2 + CBHI_{it} \beta_3 + u_i + \varepsilon_{it} + \delta_t$$

**HH assets_{it+1}**: ln(Monetary value of livestock and HH goods)

**Z_i**: observable time-invariant factors e.g. religion, education

**X_{it}**: observable time varying factors e.g. age, HH size, chronic

**CBHI_{it}**: number of insured people in the household

**u_i**: unobservable time-invariant factors e.g. ability

**\varepsilon_{it}**: household-specific time shock e.g. death in the household

**\delta_t**: year shocks
Models

1. Instrumental Variable (IV) Model

- Study area divided into 31 clusters
- CBHI offered randomly
  - 2004: 11 clusters
  - 2005: +9 clusters (11+9=20)
  - 2006: +11 clusters (20+11=31)

Controls for both selection bias + reverse causation

2. Fixed Effects (FE) Model

- Does not control for 2-way causality

Controls for selection bias only due to time constant variables e.g. ethnicity, religion
RESULTS
Descriptive statistics

HH assets and CBHI enrolment
2004-2007

Mean value of HH assets (CFA)
Enrolment rate

Drought & locust invasion
High prices
Subsidy to poor

N=835  N=782  N=776  N=751

2004  2005  2006  2007
## Results: Instrumental Variable (IV)  
**2004-2005**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Co-efficient</th>
<th>Robust SE</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBHI</td>
<td><strong>0.220</strong></td>
<td>0.121</td>
<td>0.070</td>
</tr>
<tr>
<td>Literate</td>
<td>0.273</td>
<td>0.082</td>
<td>0.001</td>
</tr>
<tr>
<td>Male</td>
<td>-0.374</td>
<td>0.106</td>
<td>0.000</td>
</tr>
<tr>
<td>Year_2005</td>
<td>-0.192</td>
<td>0.035</td>
<td>0.000</td>
</tr>
</tbody>
</table>

- **No. of clusters**: 31
- **No. of observations**: 1,588

**Angrist-Pischke 1\textsuperscript{st} stage chi\textsuperscript{2}**: 17.33 (p=0.00)

**Angrist-Pischke 1\textsuperscript{st} stage F statistic**: 16.47 (p=0.00)  \(\text{ iv is relevant}\)

### Notes:
1. Only variables significant at 10% significant or less are shown here
2. Model controls for
   - Household head characteristics: Ethnicity, Literate, Gender, Age, Occupation
   - Household characteristics: Size, Chronic, Eligible
   - Village characteristics: Town, Literacy, Water source, Distance, Health facility
   - Year dummies
## Results: Fixed Effects (FE) 2004-2007

<table>
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<tr>
<td>CBHI</td>
<td>0.009</td>
<td>0.005</td>
<td>0.082</td>
</tr>
<tr>
<td>Size</td>
<td>-0.125</td>
<td>0.049</td>
<td>0.010</td>
</tr>
<tr>
<td>Year_2005</td>
<td>-0.157</td>
<td>0.027</td>
<td>0.000</td>
</tr>
<tr>
<td>Year_2006</td>
<td>-0.085</td>
<td>0.031</td>
<td>0.006</td>
</tr>
<tr>
<td>Year_2007</td>
<td>0.124</td>
<td>0.034</td>
<td>0.000</td>
</tr>
</tbody>
</table>

No. of clusters 890  
No. of observations 3,144

Notes:  
1. Only variables significant at 10% significant or less are shown here  
2. Only time varying variables are included  
   - Household head characteristics: Age  
   - Household characteristics: Size, Chronic  
   - Village characteristics: Town, Water source, Distance  
   - Year dummies
Conclusion

Both models: CBHI protects household assets

**HH assets and CBHI enrolment**
2004-2007

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>Mean value of HH assets (CFA)</th>
<th>Enrolment rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>835</td>
<td>45,000</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>782</td>
<td>50,000</td>
<td>3%</td>
</tr>
<tr>
<td>2006</td>
<td>776</td>
<td>55,000</td>
<td>4%</td>
</tr>
<tr>
<td>2007</td>
<td>751</td>
<td>60,000</td>
<td>5%</td>
</tr>
</tbody>
</table>

**IV: 24.6%** | **FE: 1%**
Main Conclusions

• CBHI has the potential to protect household assets
• CBHI, in some circumstances, can also increase household assets by breaking the cycle of ill health and poverty – poverty reduction tool
• Depends on local context – the scheme, benefit package, quality of care, trust....
• Shift from small-scale CBHI towards universal SHI?
• CBHI - an interim solution
• Sustainability?
Thank you

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