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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

Increase in the # of CBHI Schemes in West Africa

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

Increase severity
- lower productivity
- lower earnings

Delay in treatment + Costs

Costs -> sell

Livestock produce

Health facility

Health facility

Delay in treatment

Livestock produce

Increase severity

Increase severity
Link between CBHI and household assets

(Livestock + household goods)

CBHI

Illness in the HH

No treatment
Self-treatment
Traditional Healer
Health facility

Delay in treatment + Costs
Increase severity
Delay purchasing
Lower productivity
Lower earnings

Costs

Livestock produce

HH assets

Health facility

Sell

Livestock

Sell

Household goods

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

\[ \text{HH assets}_{it+1} = Z_i \cdot \beta_1 + X_{it} \cdot \beta_2 + \text{CBHI}_{it} \cdot \beta_3 + u_i + \epsilon_{it} + \delta_t \]

**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

\( \text{CBHI}_{it} \): number of insured people in the household

\( u_i \): unobservable time-invariant factors e.g. ability

\( \epsilon_{it} \): household-specific time shock e.g. death in the household

\( \delta_t \): year shocks

Reverse causality

Selection bias
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

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=835</td>
<td>50,000</td>
<td>60,000</td>
<td>65,000</td>
<td>70,000</td>
</tr>
<tr>
<td></td>
<td>N=782</td>
<td>55,000</td>
<td>60,000</td>
<td>65,000</td>
<td>70,000</td>
</tr>
<tr>
<td></td>
<td>N=776</td>
<td>50,000</td>
<td>55,000</td>
<td>60,000</td>
<td>65,000</td>
</tr>
<tr>
<td></td>
<td>N=751</td>
<td>45,000</td>
<td>50,000</td>
<td>55,000</td>
<td>60,000</td>
</tr>
</tbody>
</table>

- Drought & locust invasion
- High prices
- Subsidy to poor
# 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>0.220</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)

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

\textit{IV is relevant}
## Results: Fixed Effects (FE) 2004-2007

<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>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>
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<tr>
<td>Year_2006</td>
<td>-0.085</td>
<td>0.031</td>
<td>0.006</td>
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<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></td>
<td>IV: 24.6%</td>
</tr>
<tr>
<td>2005</td>
<td>782</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>776</td>
<td></td>
<td>FE: 1%</td>
</tr>
<tr>
<td>2007</td>
<td>751</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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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