Does community-based health insurance protect household assets?

Evidence from rural Burkina Faso, Africa

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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

Delay in treatment + Costs

Increase severity
lower productivity
lower earnings
delay purchasing

HH assets

Livestock produce

sell

Costs

sell

sell
Link between CBHI and household assets

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CBHI

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Burkina Faso

- Population: 15.8 million
- GDP per capita (PPP): $1200
- Occupation: 90% engaged in subsistance 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

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

**HH assets}_{i,t+1}**: ln(Monetary value of livestock and HH goods)

\(Z_i\) : observable time-invariant factors e.g. religion, education

\(X_{i,t}\) : observable time varying factors e.g. age, HH size, chronic

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

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

\(\epsilon_{i,t}\) : 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

Diagram:
- Eligibility (Relevance) → CBHI → HH assets
- (Exclusion restriction)
Descriptive statistics

HH assets and CBHI enrolment

2004-2007

Mean value of HH assets (CFA) and Enrolment rate

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

2004
2005
2006
2007

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>
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<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>
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<tr>
<td>Year_2005</td>
<td>-0.192</td>
<td>0.035</td>
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</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) \textcolor{red}{IV is relevant}

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
### Results: Fixed Effects (FE) 2004-2007

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<tr>
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<td>0.005</td>
<td>0.082</td>
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<tr>
<td>Size</td>
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<td>Year_2005</td>
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<tr>
<td>Year_2006</td>
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<td>0.031</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

Mean value of HH assets (CFA) and enrolment rate over the years 2004 to 2007. The IV model shows a consistent enrolment rate of 24.6%, while the FE model shows a lower enrolment rate of 1%. The mean value of household assets (CFA) shows a slight decrease over the years.
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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