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Does community-based health insurance protect household assets?

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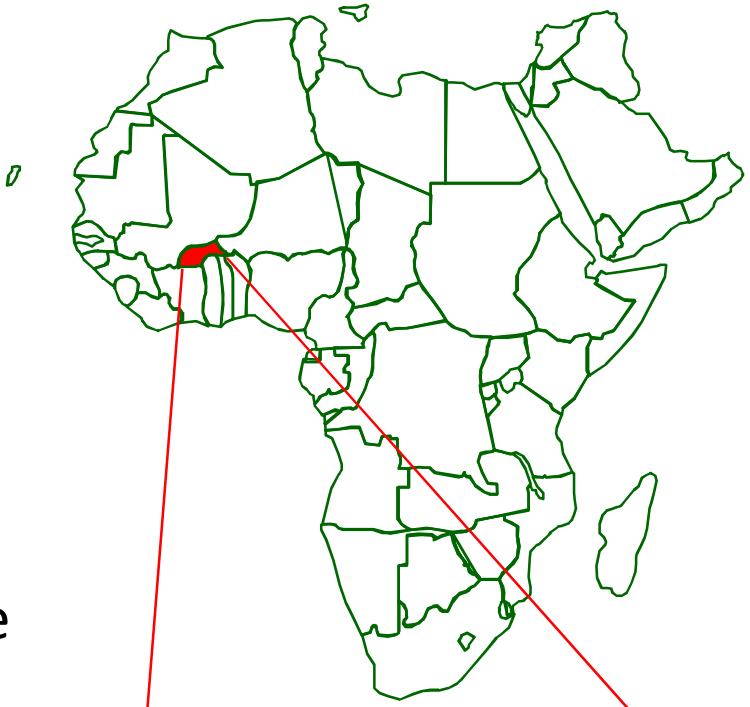
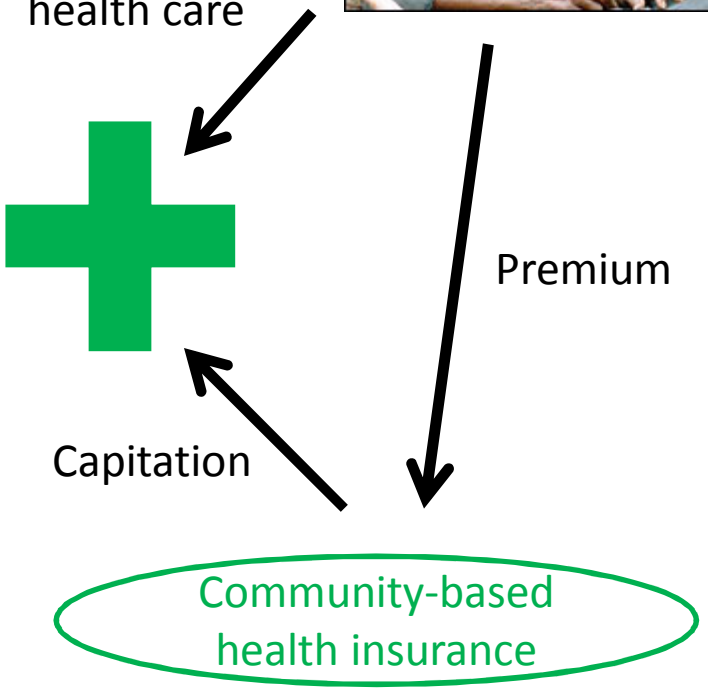
Burkina Faso

- Population: 14.4 million
- GNI per capita (PPP): $1,130 (207/228)
- Occupation: 90% engaged in agriculture
- Spending on health per person: $7
- Life expectancy m/f (years): 46/49 (199/228)
- Infant mortality rate: 85 /1000 live births
- No. of people per doctor: 33,333



Reference: WHO (2006)

Community-based health insurance



- Managed by the community
- Health risk-sharing and pooling of resources at community level
- Aims:
  - Facilitate access to care
  - Provide financial protection against the cost of illness

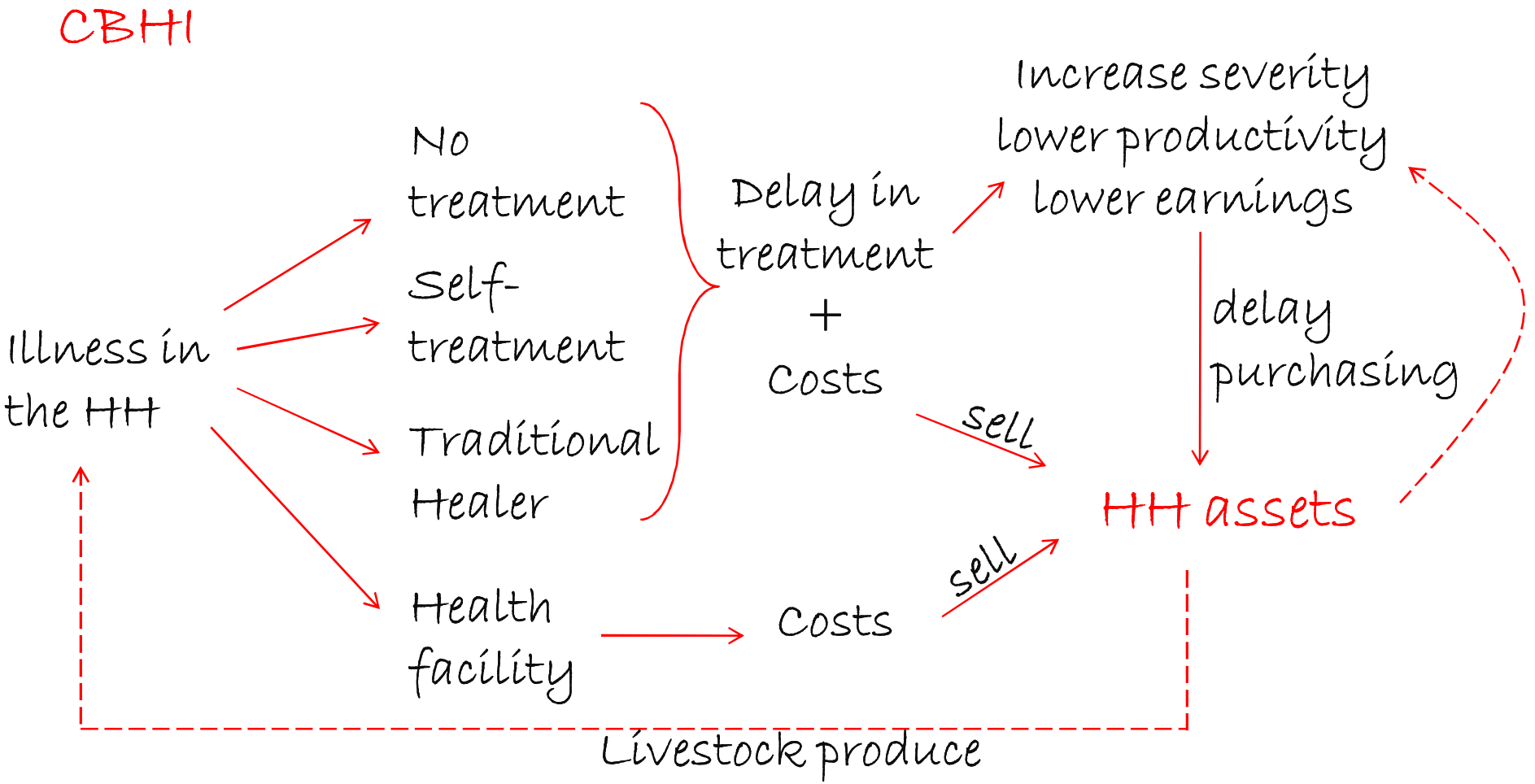
Affordable - does not cover the cost of providing insurance/health care

- Introduced in 2004
- Unit of enrolment is the household
- Premium: 1500 CFA (2.29€) adult
  500 CFA (0.76€)child

Research Question

Does CBHI protect household assets in the Nouna Health District?

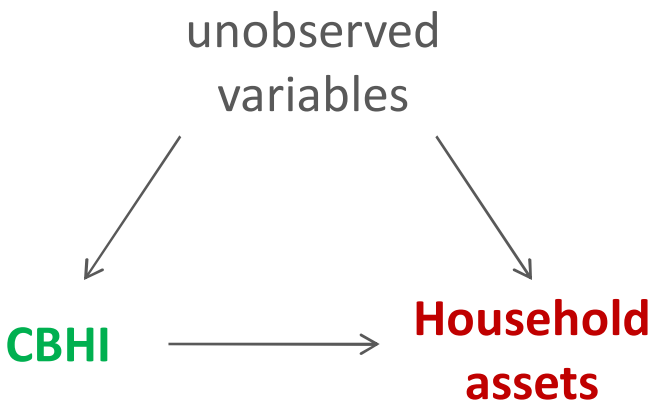
Livestock + household goods



Observational data

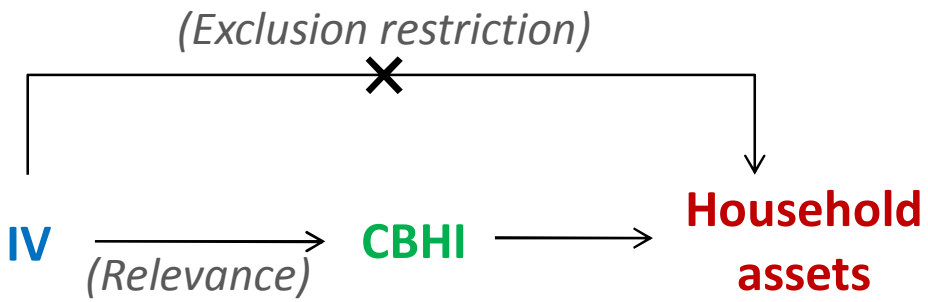
Unlike randomized trials, in observational studies the intervention (CBHI) is <u>not</u> randomized…

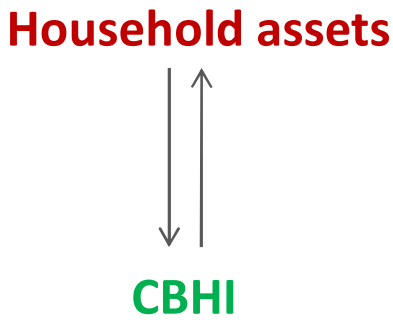
Enrolment for CBHI is voluntary: we cannot assume that the insured (cases) and uninsured (controls) are similar



Selection bias

Instrumental variable (IV)



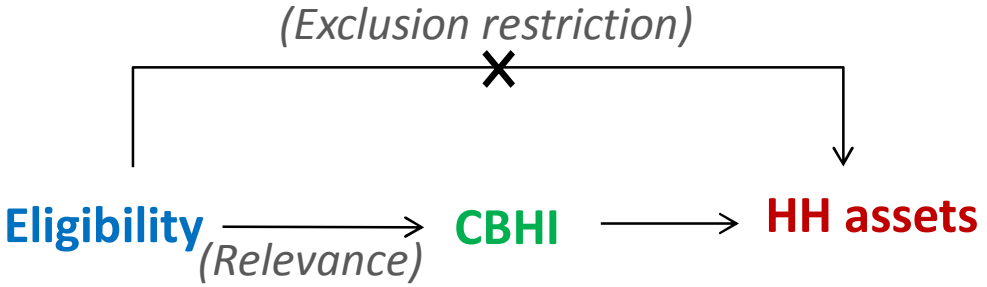


Reverse (2-way) causation

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)

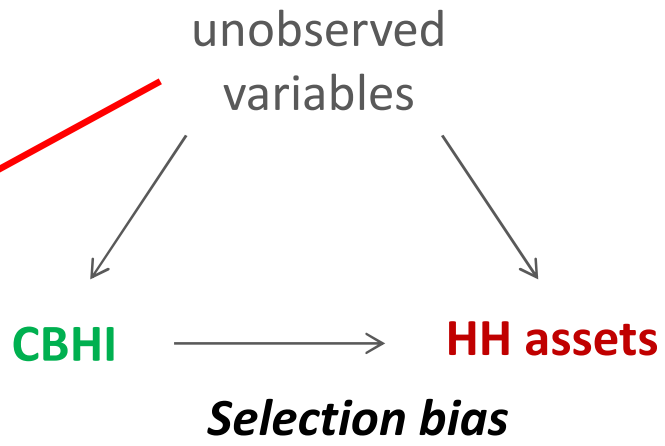


Controls for both self-selection + 2-way causation

2. Fixed Effects (FE) Model

- Entire period: 2004-2007
- Does not control for 2-way causality

Controls for self-selection only due to time invariant variables – ethnicity, religion, etc



Model

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

FE model

Per capita HH assets$_{it+1}$:Monetary value of livestock and goods/HH size

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

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

nCBHI$_{it}$: number of insured people in the household

u_i: unobservable time-invariant factors e.g. ability, preference

ε_{it}: household-specific time shock e.g. death in the household

δ_t: sample-specific time shock e.g. drought that effects everyone

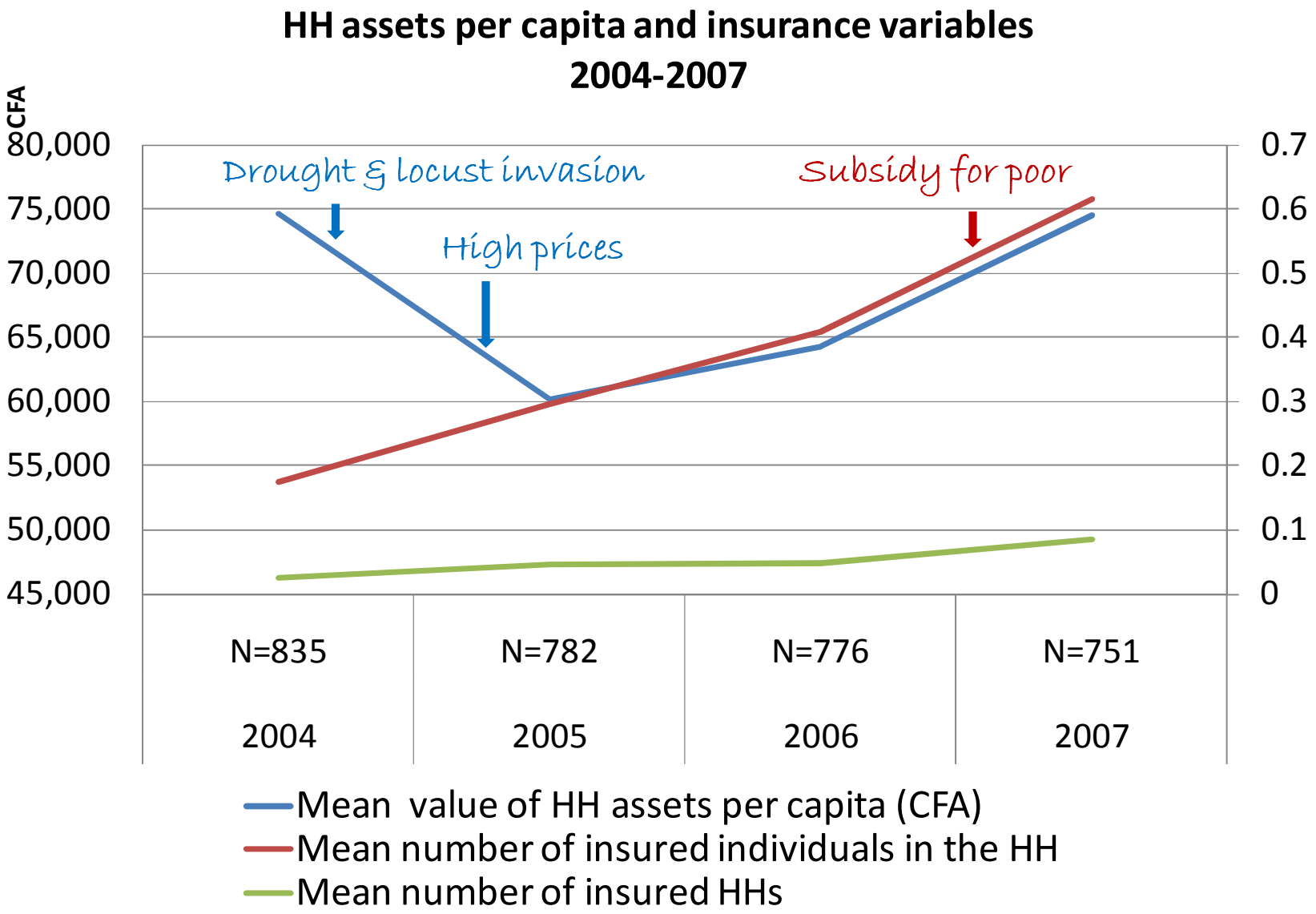
Data sources

1. Nouna Health District Household Survey (NHDHS)
   - DSS region: 41 villages & Nouna town
   - 15% of the population (Total population:67,262)
   - Panel survey (same households interviewed every year)
   - Conducted every year since 2000

(0) Socio-demographic: ethnicity, religion, housing conditions, education…
(1) Socio-economic: ownership of household goods and livestock…
(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…

RESULTS

Descriptive statistics



Results: Instrumental Variable (IV) Model for 2004-2005

Variables	Co-efficient	Robust SE	P-value
Insurance	0.222	0.121	0.070
Education	0.273	0.082	0.001
Male	-0.374	0.106	0.000
Year_2005	-0.192	0.035	0.000
No. of clusters	31		
No. of observations	1,588		
Angrist-Pischke 1st stage chi^2	17.33 (p=0.0000)		
Angrist-Pischke 1st stage F statistic	16.47 (p=0.0003)		

24.6%

IV is relevant

Notes:

1. Only variables significant at less than 10% significant level are shown here
2. Model controls for
   - -Household head characteristics: Ethnicity, Education, Gender, Age, Occupation,
   - -Household characteristics: Size, Chronic, Eligible
   - -Village characteristics: Town, Literacy, Water source, Distance, Health facility
   - -Year dummies

Results: Fixed Effects (FE) Model for 2004-2007

Variables	Co-efficient	Robust SE	P-value
Insurance	0.009	0.005	0.082
Size	-0.125	0.049	0.010
Year_2005	-0.157	0.027	0.000
Year_2006	-0.085	0.031	0.006
Year_2007	0.124	0.034	0.000
No. of clusters		890	
No. of observations		3,144	

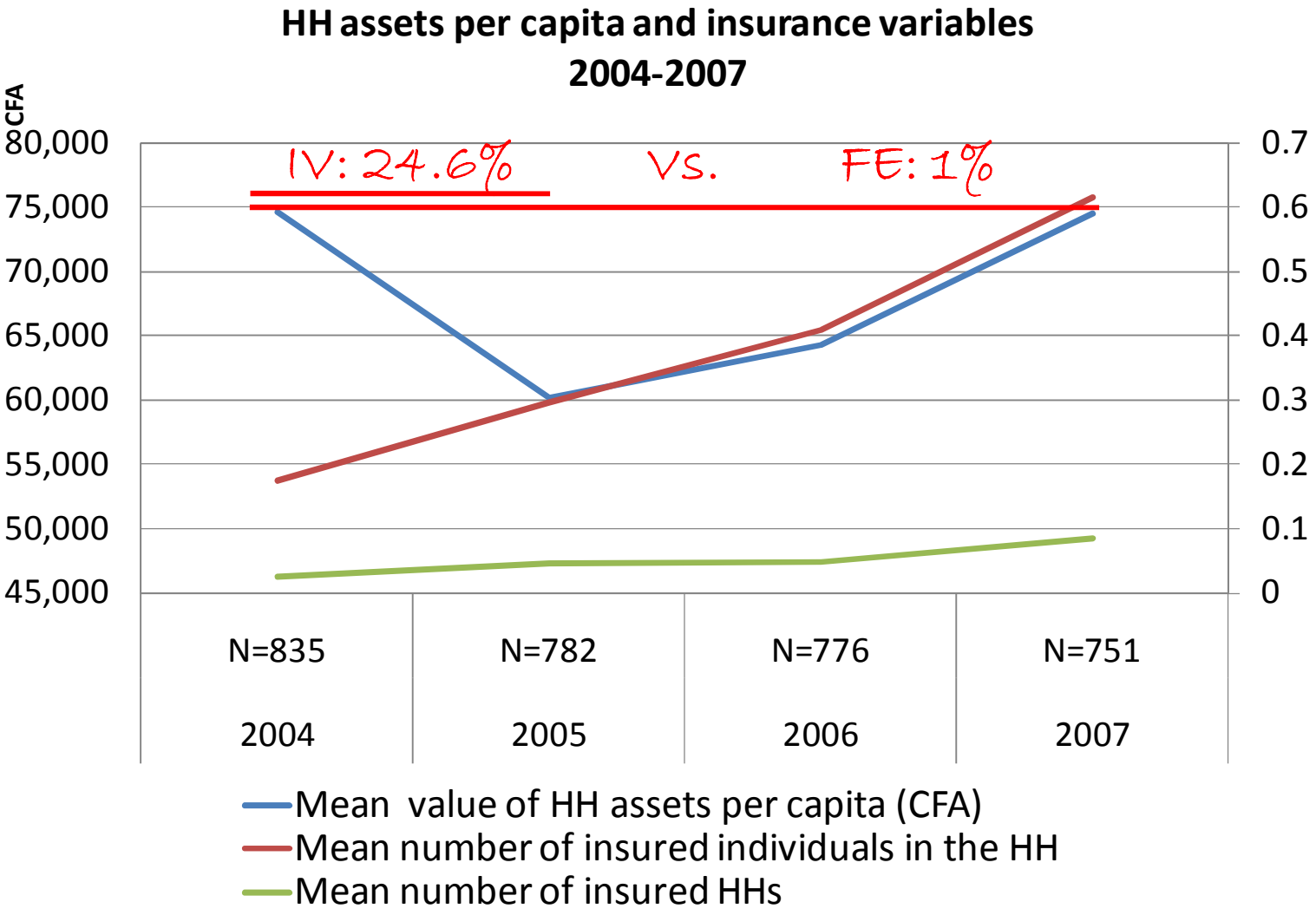
1%

Notes:

1. Only variables significant at less than 10% significant level 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



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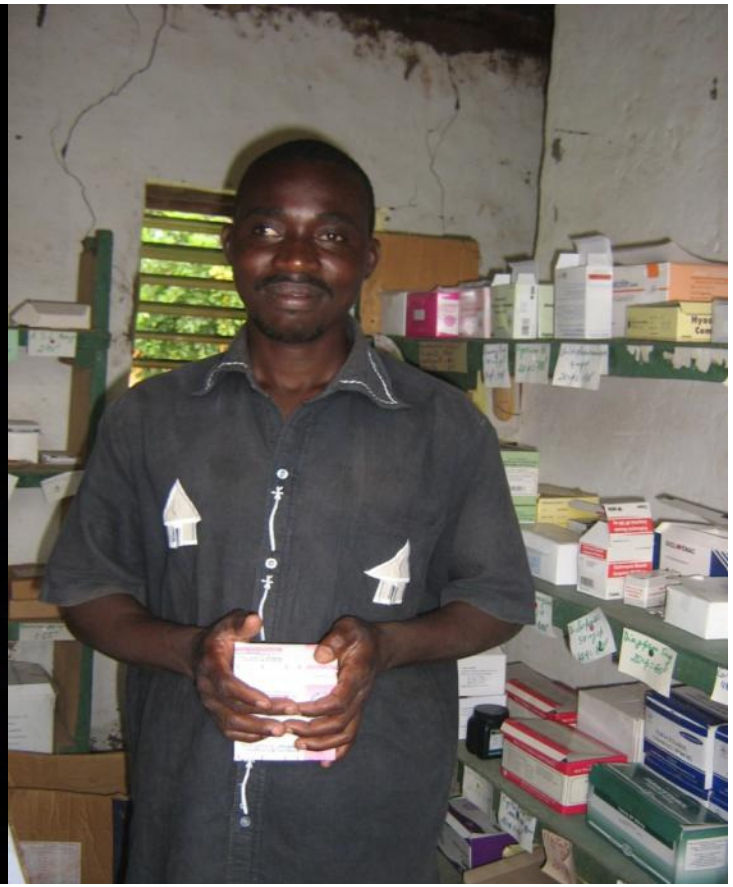
Any questions, comments …