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# Does community-based health insurance protect household assets?

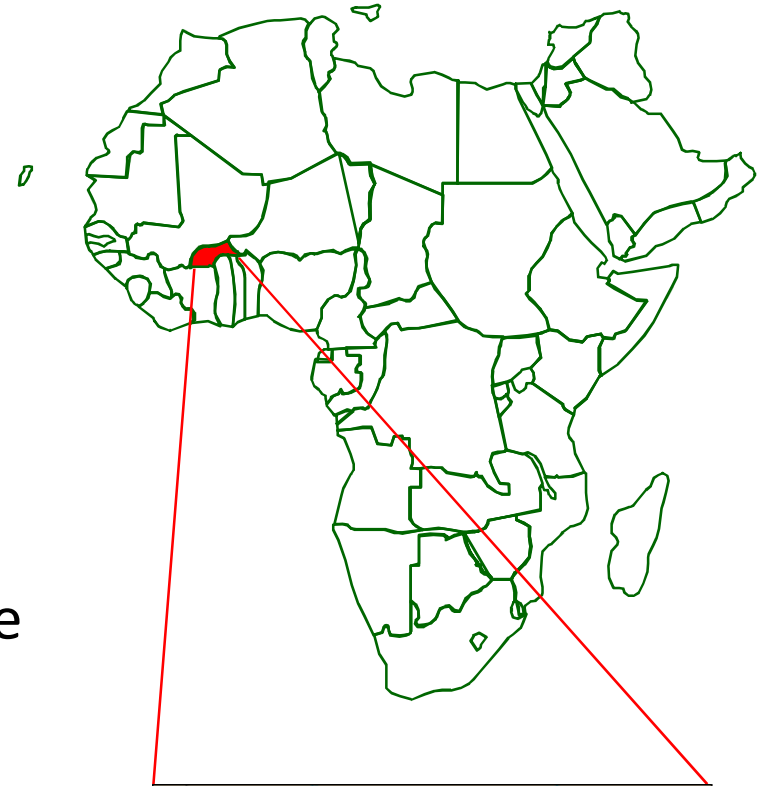
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# Burkina Faso



- 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

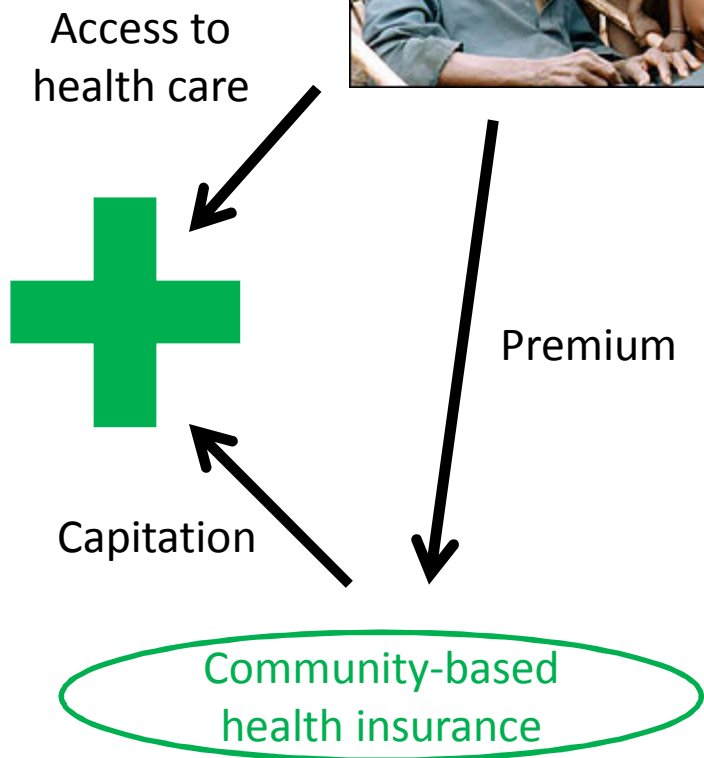


*Reference: WHO (2006)*



# 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*

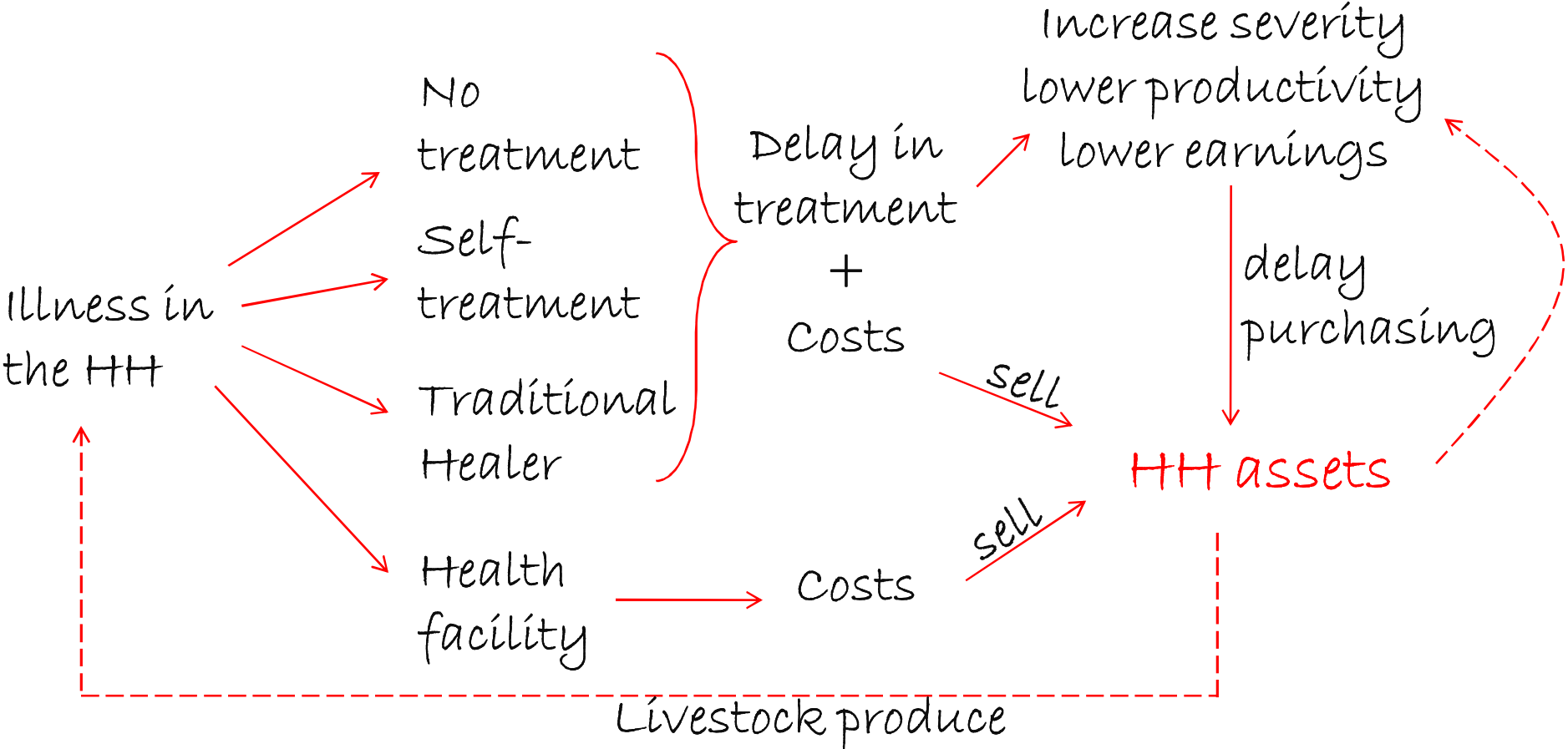
- Introduced in 2004
- Unit of enrolment is the household
- Premium: 1500 CFA (2.29€) adult  
500 CFA (0.76€) child

# Research Question

Does CBHI protect household assets in the Nouna Health District?

Livestock + household goods

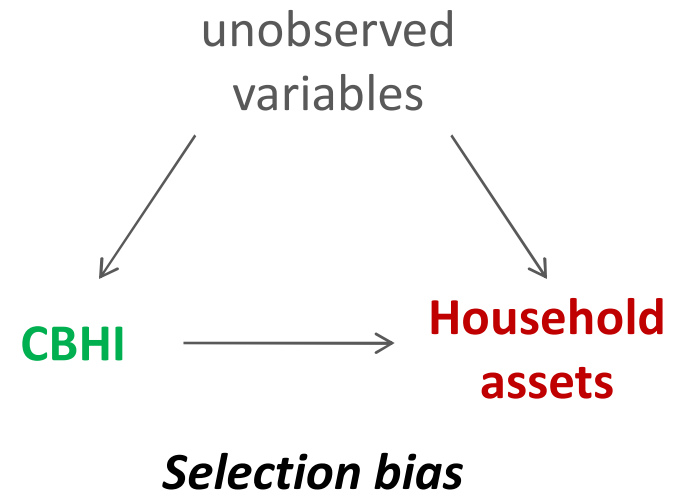
CBHI



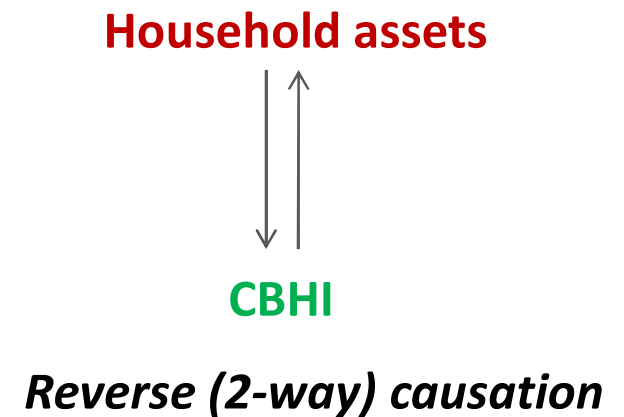
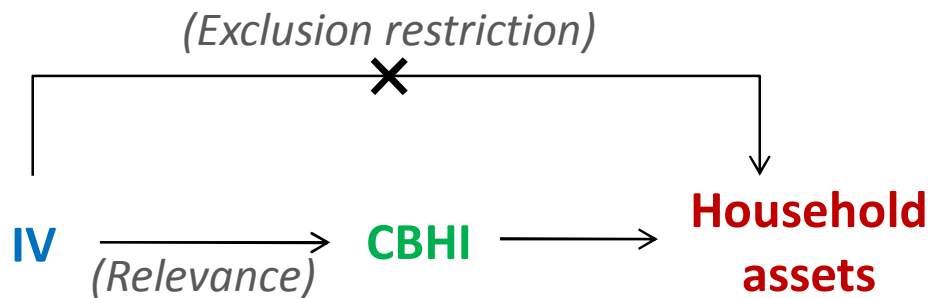
# Observational data

Unlike randomized trials, in observational studies the intervention (CBHI) is not randomized...

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



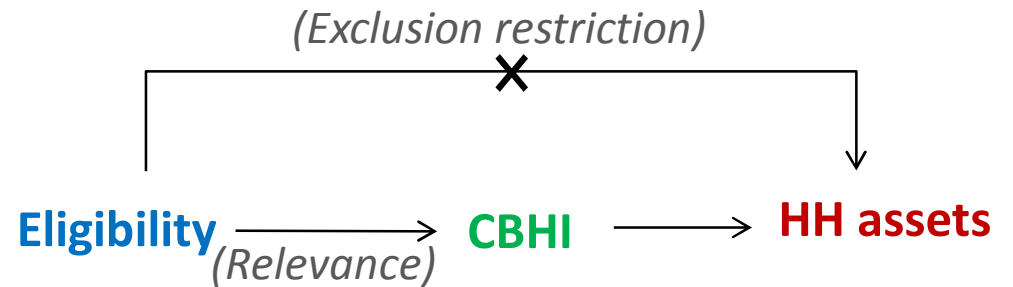
## Instrumental variable (IV)



# 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)

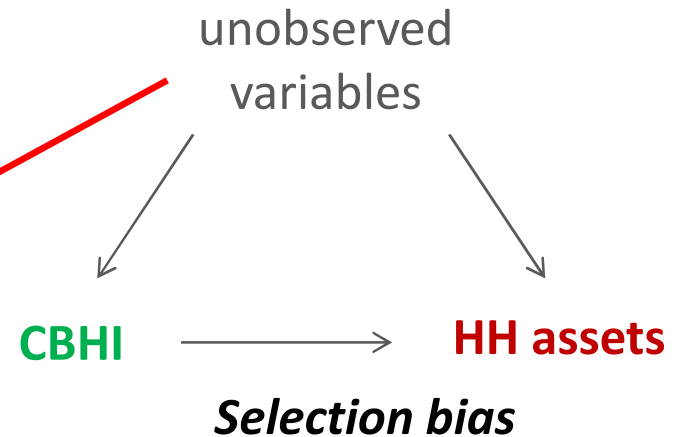


*Controls for both self-selection + 2-way causation*

## 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

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

~~FE~~ model

**Per capita HH assets**<sub>it+1</sub>: Monetary value of livestock and goods/HH size

**Z<sub>i</sub>**: observable time-invariant factors e.g. religion, education

**X<sub>it</sub>**: observable time varying factors e.g. age, HH size, chronic

**nCBHI<sub>it</sub>**: number of insured people in the household

**u<sub>i</sub>**: unobservable time-invariant factors e.g. ability, preference

**ε<sub>it</sub>**: household-specific time shock e.g. death in the household

**δ<sub>t</sub>**: 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

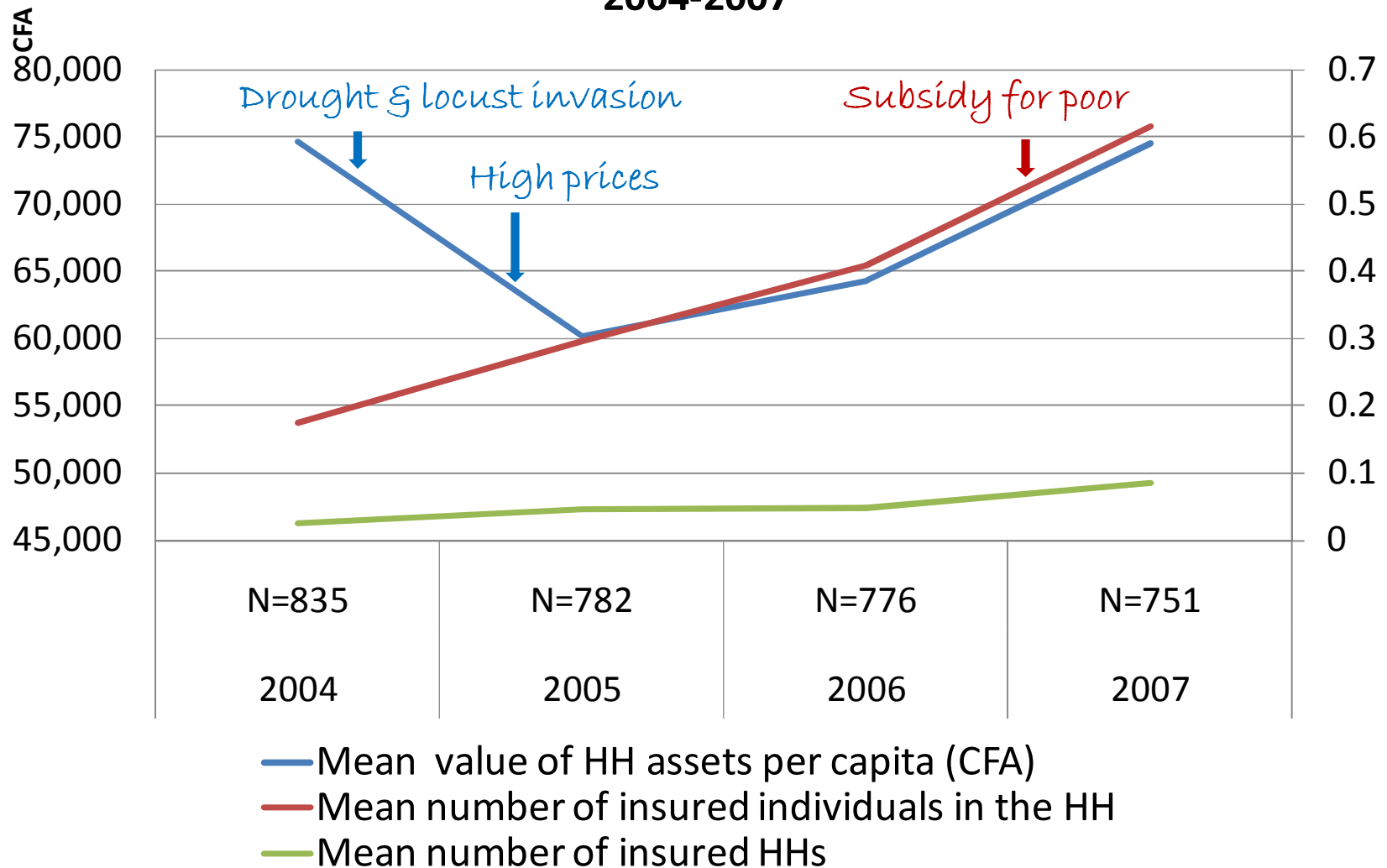


- (0) Socio-demographic: ethnicity, religion, housing conditions, education...*
- (1) Socio-economic: ownership of household goods and livestock...*
- (2) Self-reported morbidity: illness episodes, health-seeking behaviour...*
- (3) Preventive care*
- (4) Risk-sharing & perceptions on quality of health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

# RESULTS

# Descriptive statistics

## HH assets per capita and insurance variables 2004-2007



# 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 1 <sup>st</sup> stage chi <sup>2</sup>		17.33 (p=0.0000)	} IV is relevant
Angrist-Pischke 1 <sup>st</sup> stage F statistic		16.47 (p=0.0003)	

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

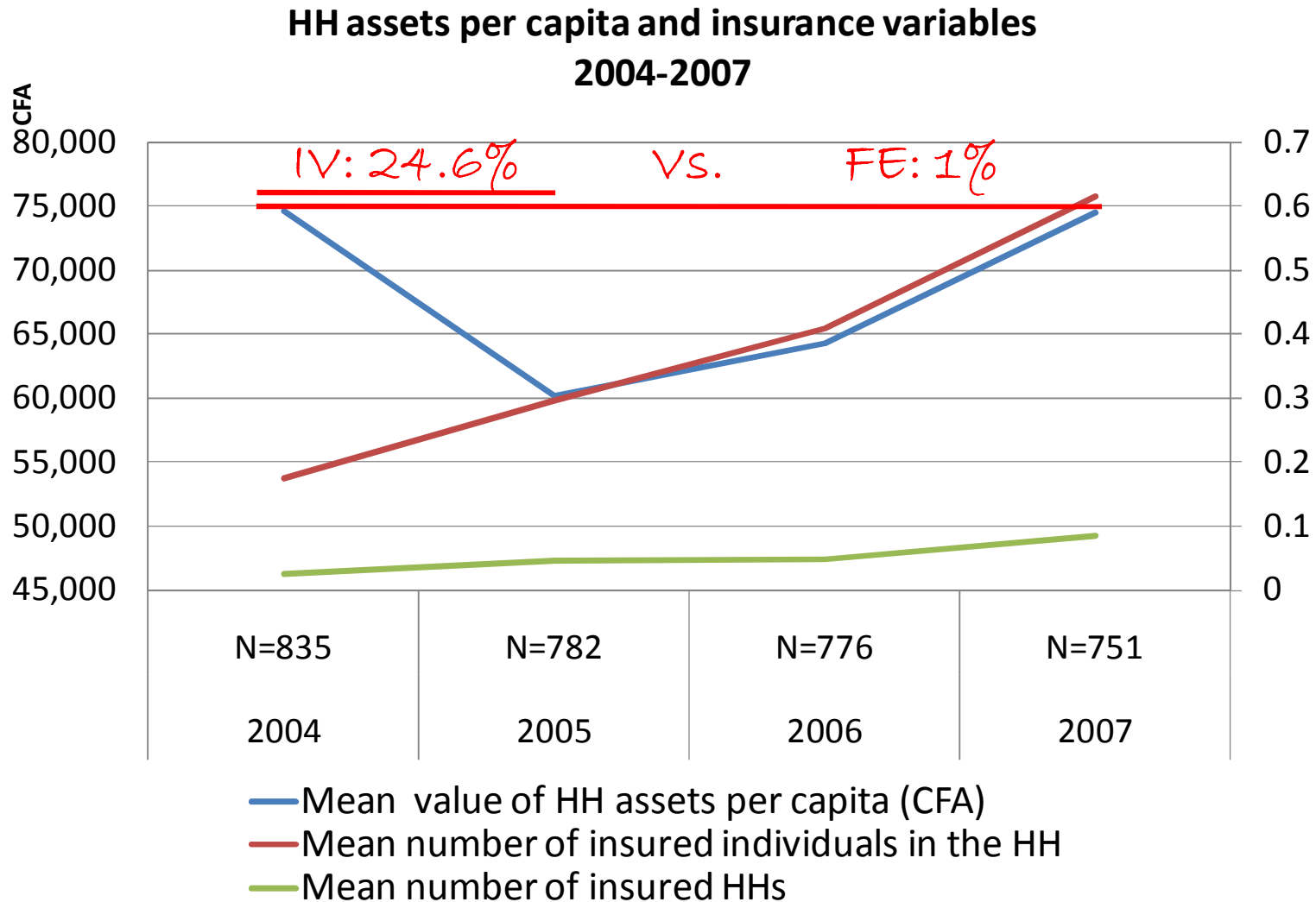
Variables	Co-efficient	Robust SE	P-value
Insurance	0.009	0.005	0.082
Size	-0.125	0.049	0.010
Year_2005	-0.157	0.027	0.000
Year_2006	-0.085	0.031	0.006
Year_2007	0.124	0.034	0.000
No. of clusters		890	
No. of observations		3,144	

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



***Thank you***

***Any questions, comments ...***

