

The Impact of Insurance Literacy and Marketing Treatments on the Demand for Health Microinsurance in Senegal: a Randomized Evaluation

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Health shocks in developing countries

- Difficult to access to formal health care in developing countries, particularly for the poor: economic barriers
- Out-of-pocket payments for health: 34.5% of total health expenditure in Senegal, 10% in UK, 7% in France (WHO 2010)
- Health shocks:
 - are among the most important sources of risk for the poor (Dercon, 2004)
 - can have severe consequences on consumption, productivity and human capital building (Townsend 1995, Gertler and Gruber 2002), even in the long-term (Dercon and Haddinot 2004)
 - affect the poor the most (Morrison 2002)

Insuring against illness

- No universal social health protection systems
 - mandatory insurance in the formal sector (public or private)
 - state health insurance for the elderly (not working adequately)
- Private health insurance
- Informal ways to insure against illness:
 - Risk sharing networks (De Weerd and Dercon, 2006, Fafchamps and Lund, 2003)
 - Informal credit and saving groups (Dagnelie and Le-May Boucher, 2011)
- Mutual Health Organizations (MHOs)

Low MHO take-up

Research question

In spite the fact that

- High presence of informal and self-employment in developing countries ($>50\%$ in our sample)
- Positive aspects and benefits linked to microinsurance (well established, potential to reach poor people, increase in health-seeking behaviour)

Demand of microinsurance products is low (Gine et al., 2007a; Cole et al.2013, Dercon et al.2011).

In particular, MHO take-up rate in Thies region = 5% (Smith et al. 2008)

Research question:

Why is MHO take-up so low? What are the determinants? What is the role of literacy (information) and economic barriers?

Road map

- Introduction
- Empirical strategy
- Results
- Conclusions

Les mutuelles de santé

- Group-based non-profit institution: grassroots movement
- Voluntary participation, self organization and management, written rules
- Fixed payments of premiums (250-1000 FCFA, 0,40-1,5 EUR per capita, per month)
- Agreements with health centres and hospitals to cover:
 - 25 to 75% of consultation fees
 - 50 to 100% of medical exams, inpatient care and hospitalization fees
- Fixed entry fees (1000-3000FCFA/hh) and observation period (3 months). No other selection process
- Expansion of MHOs in Senegal: 13 (1993) to 140+ (2007)

Access to health providers in Senegal

Health system in Senegal:

- 1 health huts (staffed by community workers)
- 2 health posts (nurses and certified midwives): in line with WHO stds
- 3 health centres (with medical doctors, etc.): n. inhabitant per centre is 7 times greater than WHO stds

Thiès district has one regional public hospital and one mission hospital privately run

Even geographical distribution of health facility across neighbourhoods

Why low insurance take-up?

From our sample, people justified the lack of membership to MHOs as:

- 1 lack of information about the product offered and/or MHOs existence (55%)
- 2 lack of means (16%)
- 3 lack of interest (5%)
- 4 lack of trust (2%).

Why low insurance take-up?

- Lack of information:
 - Lack of understanding of the products (Giné et al.2007, Cole et al.2013); lack of financial literacy (Jutting 2003b)
- Liquidity constraints:
 - Poorer less likely to have health microinsurance (Jutting 2003a, Chankova et al.2008); credit constraints (Cole et al.2013)
- Lack of trust:
 - Limited credibility of the insurer (Dercon et al.2011); positive effect of third party endorsement (Cole et al.2013); lack of trust toward the government (Cai et al.2009)

Research question and experimental strategy

Impact evaluation of providing more information and lowering economic barriers on the demand of health microinsurance products delivered by MHOs

Method: Randomized Control Trial → design and implementation of two treatments

- 1 Insurance literacy module
- 2 Marketing discounts with 3 vouchers

Controls at baseline:

Socio-economic situation, health status, knowledge of insurance, trust behaviour, risk and time preferences

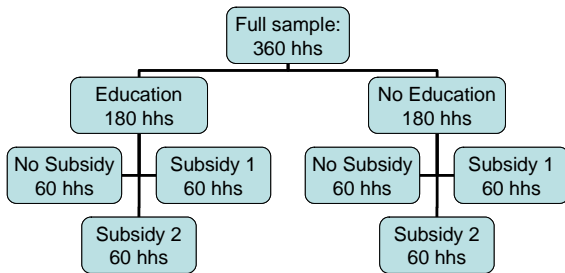
Data

- 360 random selected household (with indirect info on around 2500 people), June 2010
- Urban area of Thies (20 squaredKm), density-weighted sampling from districts

Phases

- 1 Baseline survey to random selected households
- 2 Invitation to an educational module on health microinsurance, MHOs and concepts of risk and insurance (a random half of the sample)
- 3 Random assignment of three marketing treatments (120 hhs each)
 - Voucher 1: invitation to GRAIM
 - Voucher 2: fixed membership fees,
 - Voucher 3: fixed membership fees+observation period (max. 3000 FCFA)
- 4 Control of the hhs which subscribed to any MHOs

Treatments and subsamples



The model to estimate

$$y_i = \mathbf{x}_i' \boldsymbol{\beta} + \alpha E_i + \delta Voucher_i + \varepsilon_i$$

y takes value 1 if hh subscribes to a MHO following our treatments, E takes value 1 if hh was invited to educational module $Voucher$ takes value 1 if hh was given either voucher 2 or 3

- δ measures ATE of vouchers
- α measures ITT of invitation to the educational session
- Imperfect compliance (58%): self-selection of participants
- We compute TTE, using IV (participation is instrumented by invitation)

Table 1. Summary Statistics

	Mean	s.d.
Head is male	0.733	0.443
Head lives in couple	0.817	0.387
Head attended primary school	0.2	0.401
Head attended secondary school or more	0.461	0.499
Household size	6.731	3.212
Already insured	0.325	0.469
Insurance score	2.250	2.440
Head is public employed	0.197	0.398
Head is self employed	0.428	0.495
Durables	6.597	3.109
Saving device	0.569	0.496
Reported sickness	0.669	0.471
Strongly risk averse	0.561	0.497
Patient	0.414	0.493
N	360	

risk preferences

time preferences

Table 2. Random Assignment of Treatments

	Not Invited		Invited		Difference	Voucher 1		Voucher 2		Voucher 3		F-test*
	Mean	s.d.	Mean	s.d.		Mean	s.d.	Mean	s.d.	Mean	s.d.	
Head is male	0.750	0.434	0.717	0.452	0.033	0.758	0.430	0.700	0.460	0.748	0.436	0.510
Head lives in couple	0.844	0.363	0.789	0.409	0.056	0.792	0.408	0.825	0.382	0.840	0.368	0.650
Head attended primary school	0.2	0.401	0.2	0.401	0	0.166	0.374	0.215	0.412	0.218	0.415	0.62
Head attended sec. school or more	0.489	0.501	0.433	0.497	0.056	0.517	0.502	0.400	0.492	0.471	0.501	1.560
Household size	6.533	2.903	6.928	3.490	-0.394	7.100	3.460	6.350	3.143	6.748	3.009	1.610
Already insured	0.406	0.492	0.244	0.431	0.161**	0.358	0.482	0.300	0.460	0.319	0.468	0.430
Insurance score	2.550	2.529	1.950	2.317	0.600**	2.417	2.410	2.067	2.445	2.286	2.474	0.570
Head is public employed	0.233	0.424	0.161	0.369	0.072*	0.208	0.408	0.200	0.402	0.185	0.390	0.090
Head is self employed	0.433	0.497	0.422	0.495	0.011	0.425	0.496	0.413	0.494	0.445	0.499	0.13
Durables	7.078	3.262	6.117	2.878	0.961***	6.717	3.131	6.358	2.961	6.731	3.251	0.530
1st Income quintile	0.139	0.347	0.283	0.452	-0.144***	0.208	0.408	0.217	0.414	0.202	0.403	0.150
2 nd Income quintile	0.244	0.431	0.239	0.428	0.006	0.233	0.425	0.242	0.430	0.244	0.431	0.000
3rd Income quintile	0.161	0.369	0.178	0.383	-0.017	0.142	0.350	0.167	0.374	0.202	0.403	0.670
4 th Income quintile	0.222	0.417	0.133	0.341	0.089**	0.217	0.414	0.167	0.374	0.160	0.368	0.730
5 th Income quintile	0.233	0.424	0.167	0.374	0.067	0.200	0.402	0.208	0.408	0.193	0.397	0.040
Saving device	0.617	0.488	0.522	0.501	0.094*	0.600	0.492	0.525	0.501	0.588	0.494	0.730
Reported sickness	0.700	0.460	0.639	0.482	0.061	0.675	0.470	0.658	0.476	0.681	0.468	0.070
Strongly risk averse	0.567	0.497	0.555	0.498	0.011	0.608	0.490	0.479	0.502	0.596	0.493	2.50*
Patient	0.383	0.487	0.444	0.498	-0.061	0.391	0.490	0.463	0.501	0.386	0.489	0.90
N	180		180			120		121		119		

Table 3. Uptake Distribution across Treatments

	N	Number of Uptakers
Educational treatment		
Invited to Educational Session	180	41
Attendants	105	24
of which already insured	27	6
Non-Attendants	74	17
of which already insured	17	4
Not Invited to Educational Session	180	50
of which already insured	73	11
Marketing treatments		
Voucher 1	120	2
of which already insured	43	0
Voucher 2	121	38
of which already insured	36	8
Voucher 3	119	51
of which already insured	38	13
Voucher 2+3	240	89
of which already insured	74	21
N	360	91

Determinants of insurance take-up

Dependent variable =1 if MHO Subscription	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) IV	(7) IV
Invited to the education session	-0.0500 (0.0424)	-0.0494 (0.0422)	-0.0699 (0.0447)	-0.0700 (0.0453)	-0.0702 (0.0453)		
Present at the education session						-0.124 (0.0786)	-0.124 (0.0784)
Voucher	0.354*** (0.0334)		0.361*** (0.0346)	0.364*** (0.0352)		0.357*** (0.0351)	
Voucher 2		0.298*** (0.0439)			0.313*** (0.0465)		0.305*** (0.0468)
Voucher 3		0.412*** (0.0471)			0.412*** (0.0476)		0.408*** (0.0462)
Basic controles	No	No	Yes	Yes	Yes	Yes	Yes
Risk and time preferences	No	No	No	Yes	Yes	Yes	Yes
Observations	360	360	360	360	360	360	360
R-squared	0.151	0.162	0.209	0.212	0.220	0.197	0.206

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Dependent variable =1 if MHO Subscription	(3) OLS	(4) OLS	(5) OLS	(6) IV	(7) IV
Gender (Male=1)	0.0984* (0.0517)	0.0973* (0.0525)	0.0941* (0.0516)	0.0935* (0.0513)	0.0901* (0.0503)
Head attended primary school	-0.0320 (0.0619)	-0.0325 (0.0618)	-0.0366 (0.0613)	-0.0310 (0.0612)	-0.0353 (0.0606)
Head attended secondary school or more	-0.0464 (0.0616)	-0.0440 (0.0623)	-0.0508 (0.0622)	-0.0491 (0.0606)	-0.0561 (0.0603)
Household size	0.0124* (0.00641)	0.0116* (0.00644)	0.0111* (0.00648)	0.0114* (0.00626)	0.0109* (0.00629)
Already insured	-0.0902 (0.0608)	-0.0947 (0.0603)	-0.0932 (0.0595)	-0.0866 (0.0582)	-0.0851 (0.0572)
Knowledge of insurance principle	0.0142 (0.0102)	0.0144 (0.0103)	0.0134 (0.0103)	0.0122 (0.0103)	0.0112 (0.0104)
Head is public Employed	0.0974 (0.0662)	0.0939 (0.0662)	0.0975 (0.0668)	0.0942 (0.0641)	0.0980 (0.0646)
Head is self employed	0.0615 (0.0490)	0.0632 (0.0500)	0.0595 (0.0500)	0.0610 (0.0491)	0.0572 (0.0491)
Durables	0.00533 (0.00804)	0.00409 (0.00821)	0.00371 (0.00819)	0.00602 (0.00793)	0.00563 (0.00792)
1st income quintile	0.232*** (0.0794)	0.229*** (0.0795)	0.223*** (0.0795)	0.254*** (0.0820)	0.248*** (0.0820)
2nd income quintile	0.241*** (0.0707)	0.238*** (0.0709)	0.231*** (0.0709)	0.245*** (0.0696)	0.238*** (0.0697)
3rd income quintile	0.189*** (0.0710)	0.193*** (0.0711)	0.184** (0.0719)	0.204*** (0.0692)	0.194*** (0.0699)
4th income quintile	0.152** (0.0627)	0.156** (0.0631)	0.154** (0.0625)	0.159** (0.0619)	0.157** (0.0612)
Saving device	0.0238 (0.0510)	0.0283 (0.0513)	0.0240 (0.0511)	0.0331 (0.0503)	0.0287 (0.0499)
Reported sickness over the year	-0.0404 (0.0454)	-0.0368 (0.0456)	-0.0372 (0.0455)	-0.0407 (0.0449)	-0.0411 (0.0448)
Strongly risk averse		0.0422 (0.0438)	0.0331 (0.0440)	0.0367 (0.0433)	0.0272 (0.0437)
Impatient		0.00474 (0.0457)	0.0106 (0.0456)	0.0112 (0.0460)	0.0173 (0.0460)
Constant	-0.316*** (0.115)	-0.335*** (0.118)	-0.308*** (0.118)	-0.342*** (0.116)	-0.314*** (0.116)

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Heterogeneous effects

Dependent variable =1 if MHO Subscription	(1) OLS	(2) OLS	(3) OLS
Invited to the education session	-0.0637 (0.0455)	-0.0668 (0.0451)	-0.0614 (0.0454)
Voucher	0.199*** (0.0603)	0.315*** (0.0466)	0.162** (0.0673)
1st income quintile * Voucher	0.249*** (0.0954)		0.235** (0.0951)
2nd income quintile * Voucher	0.258*** (0.0890)		0.253*** (0.0888)
3rd income quintile * Voucher	0.155 (0.118)		0.155 (0.118)
4th income quintile * Voucher	0.146 (0.106)		0.123 (0.106)
Head is self employed * Voucher		0.115* (0.0672)	0.108 (0.0660)
Baseline controls	Yes	Yes	Yes
Observations	360	360	360
R-squared	0.222	0.215	0.221

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Cost-effectiveness analysis

- Invitation and delivery of informational sessions: estimated cost of 1600 FCFA/hh
- Distribution and delivery of voucher 2: estimated cost of 1850 FCFA/hh
- Impact of voucher 2 is more than twice the absolute value of the informational sessions: more cost-effective

Why no effect of information?

- Representative present at the session (not being the head)
- Health insurance is a simple product (relative to rainfall insurance)
- Quality of our module delivery
- Overly optimistic expectations about the product
- Lack of power
- Unbalanced randomization
- Determinants of participation to the module [table](#)

What results from other randomized evaluations?

- Health microinsurance (no MHO) demand
 - Dercon et al. (2011): insurance literacy training is ineffective; economic incentives matter
 - Thornton (2010): negative effect of informational brochure
- Rainfall insurance demand
 - Gaurav et al (2011): positive effect of educational module; little impact from marketing treatments
 - Cole et al. (2013): no impact of insurance educational module
- Bank saving account:
 - Cole et al. (2011): positive effect of financial subsidies, no effect of financial literacy module
- Low take up of subsidized preventive health products:
 - Cohen and Dupas (2010) for anti-malaria bednets

Conclusions

- Literacy module on insurance principles and MHOs has no significant impact on the demand of microinsurance, need to be more targeted
- Marketing treatments have strong positive effect on the take-up (35% increase): liquidity constraints matter
- The effect of marketing treatments is higher on the poor

Risk preferences

'Strongly risk averse' takes value 1 if always opted for the certain outcome 'A' when presented with (Voors et al. (2012):

Montant sûr A		Probabilité	Montant risqué B	Préférences?	
1-4)	200	1/4	1000	A	B
1-5)	250	1/4	1000	A	B
1-6)	300	1/4	1000	A	B
1-7)	2000	1/4	10000	A	B
1-8)	2500	1/4	10000	A	B
1-9)	3000	1/4	10000	A	B

back

Time preferences

We elicit discount factors at one month of: 5%, 10%, 25%, 50%, 75%, 100%, 150%, 200%. (Voors et al. (2012))

Dummy "patient" equals one if head is in more patient half of our sample

	A	B	A ou B?
	Somme aujourd'hui	Somme dans 1 mois	
1	10000	10000	
2	10000	10500	
3	10000	11000	
4	10000	12500	
5	10000	15000	
6	10000	17500	
7	10000	20000	
8	10000	25000	
9	10000	30000	

Table 6. Determinants of participation to the educational module

	(1) OLS	(2) Probit
Gender (Male=1)	-0.0529 (0.0921)	-0.0556 (0.0967)
Head attended primary school	-0.0153 (0.105)	-0.0158 (0.111)
Head attended secondary school or more	-0.0913 (0.106)	-0.101 (0.110)
Household size	-0.00257 (0.0116)	-0.00174 (0.0123)
Already insured	0.141 (0.108)	0.141 (0.108)
Insurance score (0-7)	-0.0330* (0.0187)	-0.0346* (0.0199)
Head is public Employed	0.00877 (0.121)	0.00316 (0.123)
Head is self employed	-0.0311 (0.0895)	-0.0345 (0.0916)
Durables	0.0304** (0.0137)	0.0356** (0.0162)
1st income quintile	0.320** (0.129)	0.337*** (0.110)
2nd income quintile	0.0940 (0.142)	0.111 (0.137)
3rd income quintile	0.117 (0.134)	0.133 (0.127)
4th income quintile	0.0122 (0.144)	0.0241 (0.141)
Saving device	0.0764 (0.0807)	0.0913 (0.0856)
Reported sickness over the year	-0.0742 (0.0792)	-0.0869 (0.0818)
Strongly risk averse	-0.0609 (0.0737)	-0.0733 (0.0771)
Impatient	0.0895 (0.0773)	0.0973 (0.0792)
Constant	0.403* (0.220)	
Observations	180	180
R-squared/ Log pseudolikelihood	0,08125	-110.8771

Marginal effects of probit are shown

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, p<0.