The Determinants of Complementary Health Insurance (CHI) in France :

The predominant role of the level of Income

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Outline

- Context
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- Data
- Analysis of CHI affordability
- Analysis of the determinants of CHI demand
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Context

- Important role of CHI alongside the public scheme in France
  - *75% of health expenditures are covered by the French public health insurance and out-of-pocket payments may be insured by CHI*
- Several studies have shown a strong impact of CHI coverage on health expenditures
  - *Buchmueller et al. (2004): important effect on dental care and specialist care*
  - *Raynaud (2005) : CHI induces a 29% increase in ambulatory care*
  - *Kambia-Chopin et al. (2008): Lack of CHI constitutes financial barriers to access to health care particularly among the poorest : 32% of people without CHI report forgone care*

Context

- In order to reduce difficulties to access to care of the poorest , two measures have been implemented
  - *«Couverture Maladie Universelle Complémentaire» (CMUC) :*
    - 7% of the poorest French population benefit from this free health insurance for most of out-of-pocket payments (Arnould and Vidal, 2008)
    - The CMUC induced an increase in health care use of patients without CHI before the implementation (Grignon et al., 2008)
  - *«Aide à l'acquisition d'une Complémentaire Santé» (ACS) : subsidized health insurance*
    - Only 1% of the French population benefit from this voucher (Arnould and Vidal, 2008)
- However 7% of individuals are not covered by CHI (Arnould and Vidal, 2008)

Context

- Why 7% of the French population remains without CHI?
  - Is CHI non affordable for these individuals?
  - Is non CHI coverage a rational choice explained by lower risks or different preferences ?
  - Has income an influence on the choice of CHI quality ?

- Important question for the design of public health policies:

  universal coverage or subsided health CHI vs private one

- Need for new researches on the determinants of complementary health insurance demand and particularly on the role of income

Aim: Analyzing the demand for CHI

1. Descriptive analysis of CHI status in France
   - Who is covered through his employer ?
   - Who is freely covered through the CMUC ?
   - Who is covered by an individual contract of CHI ?
   - Who is not covered ?

   Individual choice

2. Descriptive analysis of the affordability of non-group CHI

3. Determinants of the Demand for non-group CHI
   i. To opt for an individual contract of CHI
   ii. To choose the level of coverage

   ► Model with a two-stage decision process

Data

- A French Survey on National Expenditures : « *Budget des Familles 2006* »
  - Five-year study conducted by INSEE
  - All household resources and expenditures are included
  - 10 240 households; 25 364 individuals
- Strenghts of this survey to studying health insurance demand
  - Precise measure of health insurance expenditures
  - Precise measure of every types of resource which allows a good approximate of CMUC eligibity
  - Another data source than ESPS data (robustness check)
- Limits :
  - Measurement at the household level and not at the individual level
  - Poor assessment of health status: we know for each household member if the person "is disabled or limited in daily activities"

CHI expenditures and CHI status

- Respondents are not asked to report their CHI status
- However CHI status can be derived from household CHI expenditures

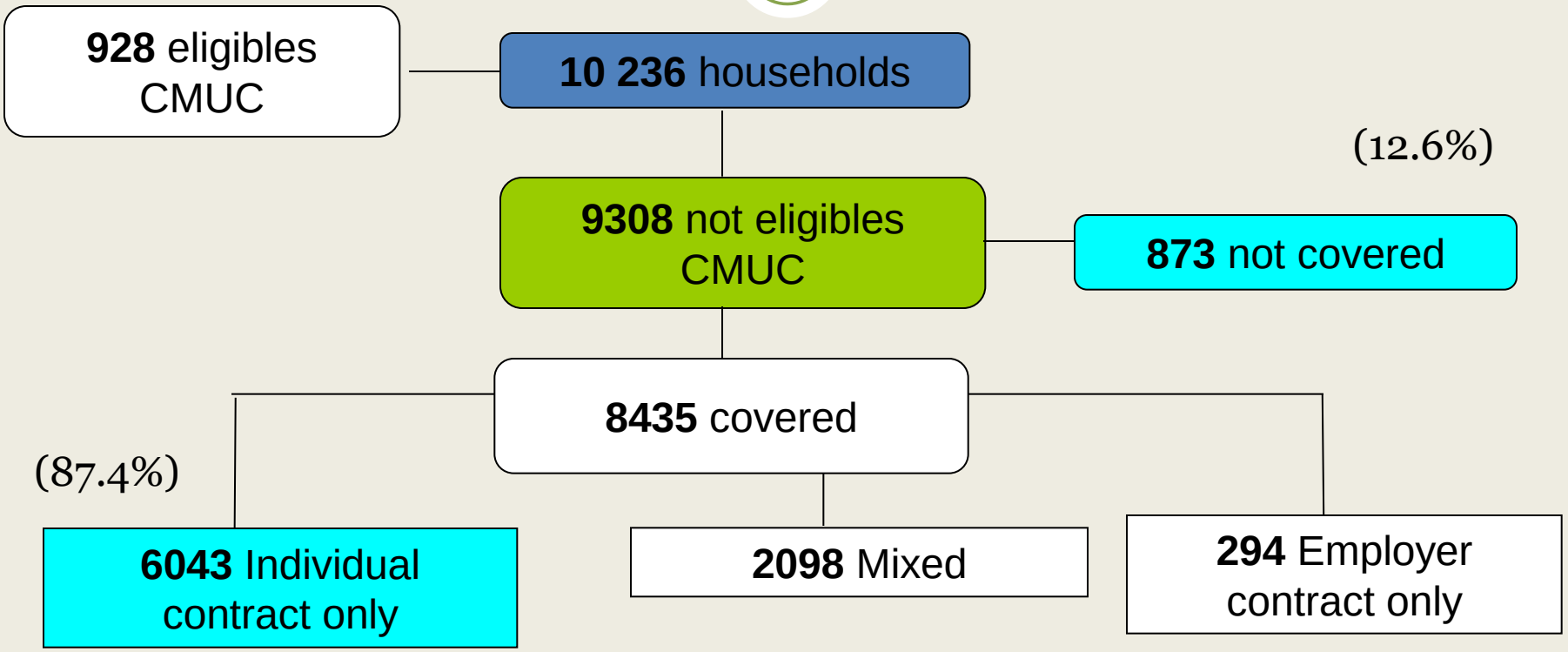
- Two types of CHI expenditures are reported:
  - Deduction at source from the employer (measured at the *individual* level for every household member in employment)
  - Direct payment of the *household* to health insurance companies (mutual insurance, private insurance, provident society)

- CHI status is assessed at the household level:
  - A covered household is defined as an household with non-zero health insurance expenditure (direct or through wage deduction)
  - All household eligible to CMUC are supposed to be covered through the CMUC: residents in France, resources lower than threshold varying according to composition of the household (594€ per month for a single)
  - Every member of an covered household are supposed to be covered

Potential determinants of CHI

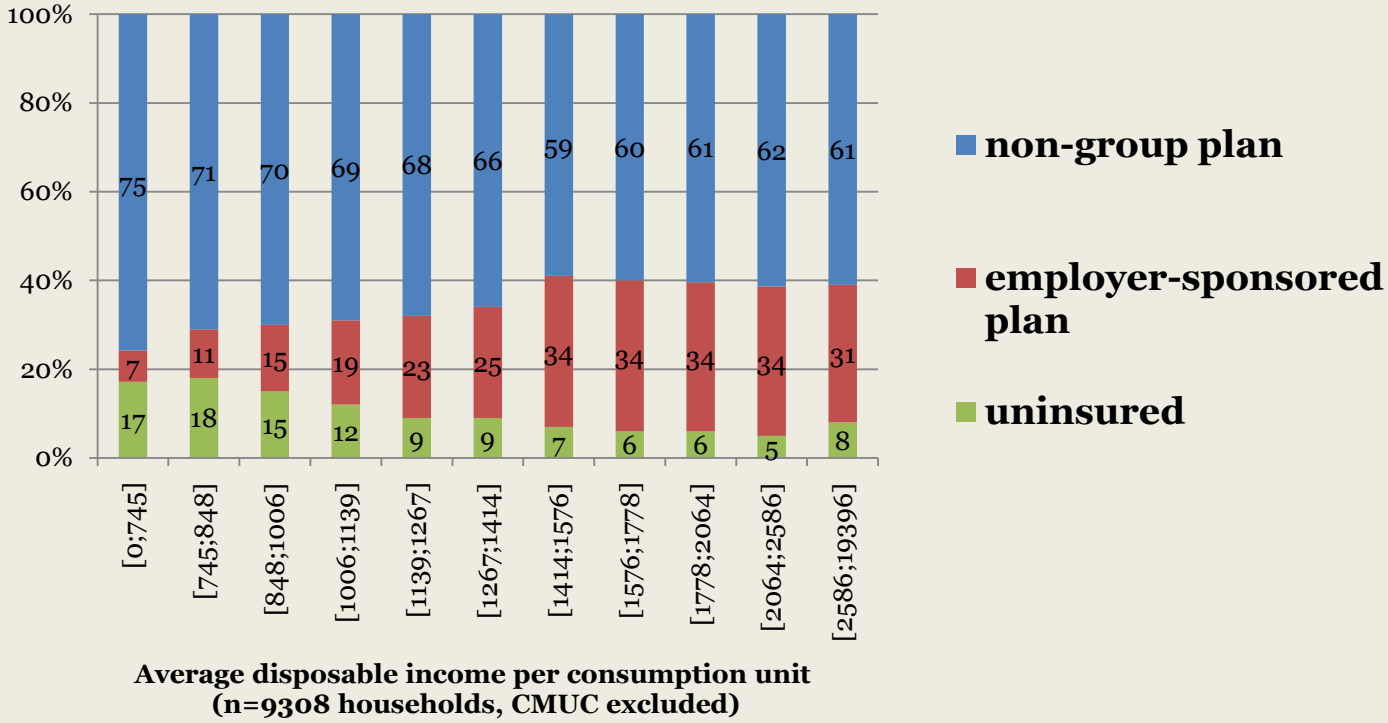
- Household income: total amount of household resources divided by OCDE equivalent scale (wage and social support less taxes)
- Household composition: single / single parent family / couple without children / couple with children and other family
- Household risk: at least one household member disable or limited in daily activities *vs* none
- Household head characteristics:
  - Age, sex
  - Educational level: Primary school / Secondary 1/ Secondary 2 / university degree
  - Employment status: employed, unemployed, student, retired, housewife, other inactives
  - Occupation: Farmer / Craftmen / Manager / Associate professional / Office worker/ Elementary jobs / Inactive
- Location of the residence: rural areas / cities < 20 000 inhabitants / cities 20-100 000 / cities > 100 000 / Paris

Distribution of CHI status



- 9.1% of households are eligible to CMUC
- 8.5% of households are non covered, 9.4% among non eligibles to CMUC, 12.6% among those who are non eligible to CMUC and non covered at least by their employer

Distribution of CHI plan according to available income



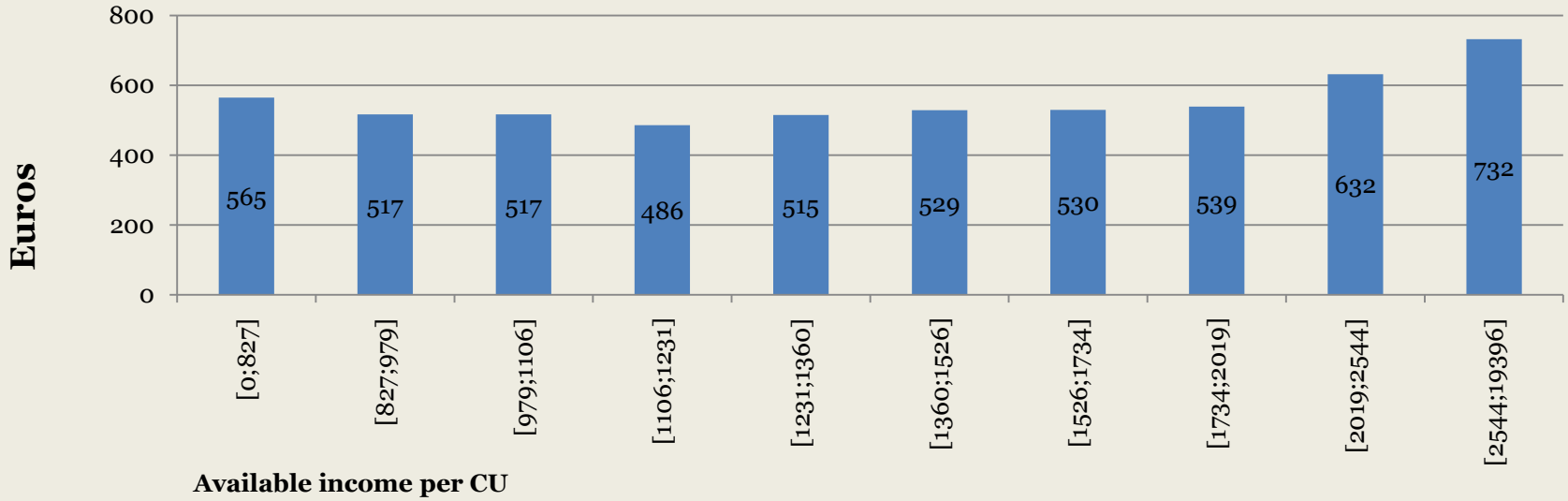
➢ The proportion of non covered is double in first income quintile than in the highest income quintile.

CHI affordability

- The report of non-group CHI premium allows analyzing CHI affordability

- Three descriptive analyses:
  - Average non-group CHI expenditures by income decile
  - Effort devoted to non-group CHI expenditure by income decile
  - Affordability of CHI according to Bundorf and Pauly's definition

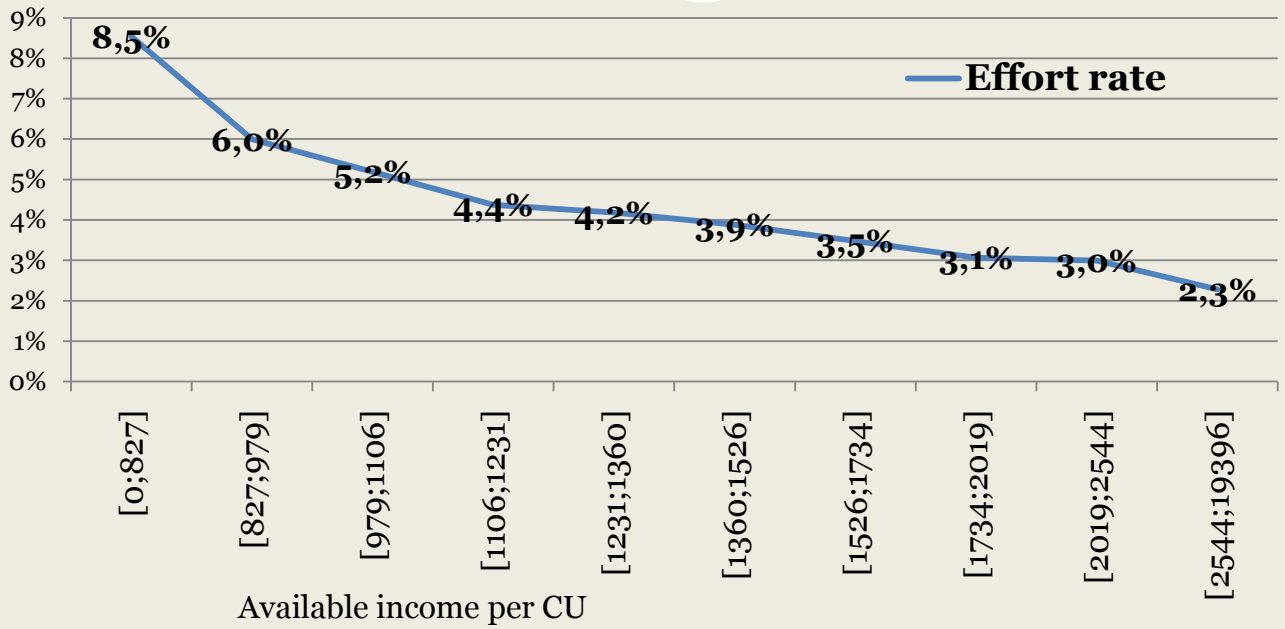
Average individual health insurance premium per capita according to available income



Among individually insured household:

- The average health insurance premium per capita is 536€ per year.
- CHI premiums are higher in the highest two deciles

Average effort rate for individual health insurance plan according to available income



Effort rate is defined for each household as the share of total household income devoted to CHI expenditures

- Effort rate decreases with disposable income
- CHI expenditures correspond to 8.5% of total income in the first income

Affordability of non-group CHI plan

Bundorf and Pauly (2006) define affordability based on socially acceptable levels of consumption of a particular good and the resources left for remaining consumption

A particular good x is affordable if:

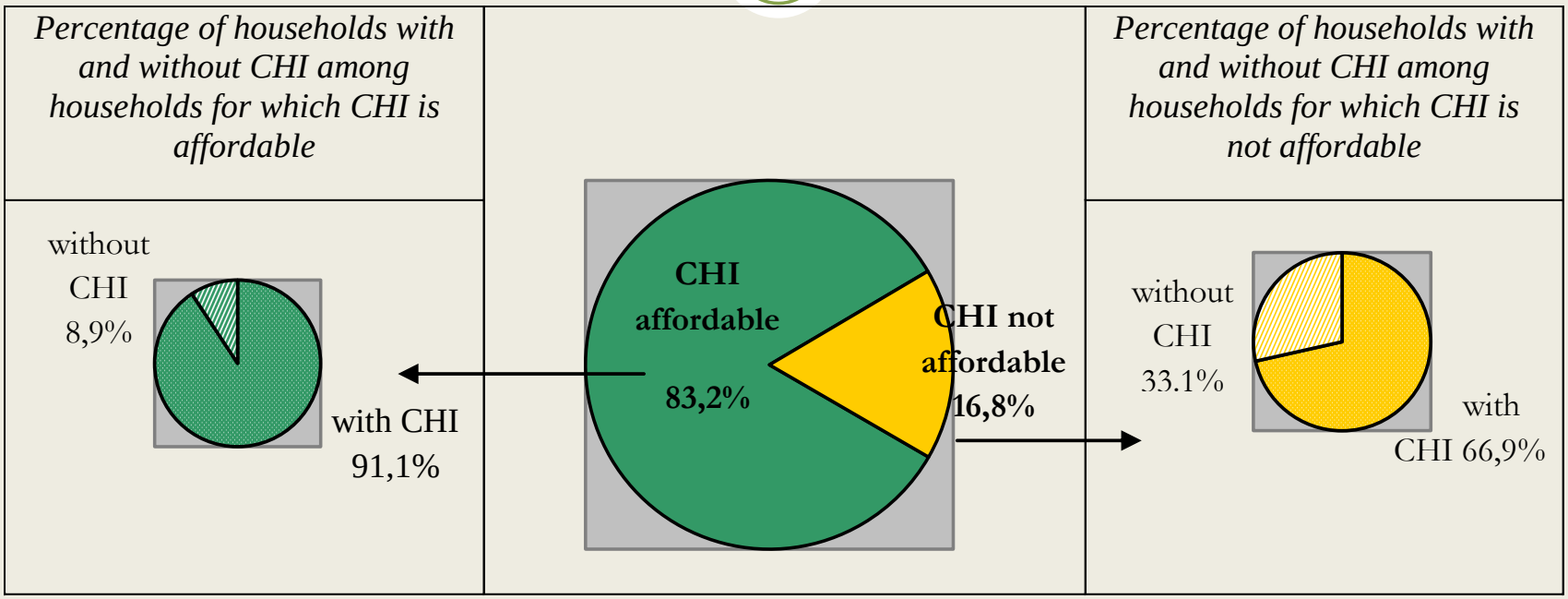
$$Y - p.x^* > G^*$$

where Y is available income (before x expenditures)
x^* is the socially defined minimum quantity of the special good (here CHI)
p is the unitary price of the good x
G^* is the socially defined minimum level of spending on all other goods

- Average non-group CHI premium by type of household is used as a measure of $p.x^*$
- G^* is defined as a poverty line equal to 60% of median disposable income (848€ per month per CU)

CHI is considered has unaffordable if after deduction of average CHI premium to the total available income, the household is below the poverty line

Affordability of non-group CHI plan



- 15.4% of the households are initially bellow the poverty line
- CHI is not affordable for 16.8% for the sample : CHI expenditures would lead 1.4% of the households below the poverty line

Analysis of the determinants of the demand for non-group CHI

- How to model the probability of take-up and the amount of CHI expenditures?
  - Two stage decision process
  - A lot of zero expenditure (13% of sample) and a not normal distribution

Two stages Heckman Sample Selection Model

Model (1)

- The consumer has a sequential behavior:

1. The individual decides to subscribe or not to a CHI contract

$$Y_{1i}^{*} > 0 : \textit{Individual decides to subscribe and } y_{1i} = 1$$
$$\textit{Otherwise } y_{1i} = 0$$

2. If so, he decides the amount devoted to purchase a CHI

$$\text{Log}(m_i) = y_{2i} = y_{2i}^{*} \text{ if } y_{1i}^{*} > 0$$
$$0, \text{ otherwise}$$

Model (2)

- Definition of the model:

$E(u_{1i}, u_{2i}) = \sigma_{12} = \rho\sigma_1\sigma_2$

$Y_{2i} = y_{2i}^*$ if $y_{1i}^* > 0$ and $Y_{1i}^* = x'_{1i}\beta_1 + u_{1i}$

0 otherwise $Y_{2i}^* = x'_{2i}\beta_2 + u_{2i}$

We take into account the dependence between the two decisions through the fact that the residuals of the two equations are correlated.

- Independent variables:

Age, gender, educational level, employment status, income level*, composition of the household and location of the residence, *acs*.

*specified as a piecwise linear function

Variable	Probability	Expenditures
Constant	**0.95 *****	**5.92 *****
Age= 50-59 years	**Ref**	**Ref**
18-29 years	**- 0.47 *****	**- 0.33 *****
30-39 years	**- 0.14 ****	**- 0.33 *****
40-49 years	**- 0.16 ****	**- 0.19 *****
60-69 years	**0.32 *****	**0.13 *****
70-79 years	**0.27 *****	**0.13 *****
80 and +	**0.11**	**0.21 *****
Income		
V0	**0.17 ***	**- 0.15**
V1	**0.49 ****	**- 0.10**
V2	**0.24**	**0.19 ***
V3	**0.22**	**0.01**
V4	**0.04 ***	**0.06 *****

Variable	Probability	Expenditures
Comp. f Households= Couple with children	**Ref**	**Ref**
Single	-0.35***	0.67***
Single-parent family	-0.41***	0.20***
Couple without children	0.01	0.38***
Other	-0.28**	-0.01
Sex=Man	**Ref**	**Ref**
Woman	**0.23 *****	**- 0.03**
Community= 20000<people<100000	**Ref**	**Ref**
Rural	0.26***	-0.01
<20000	0.19***	-0.03
>100000	0.20***	-0.02
Paris	-0.13**	0.08***
ACS= not eligible acs	**Ref**	**Ref**
Eligible acs	-0.22***	0.01
Mmils		-0.87***

Results

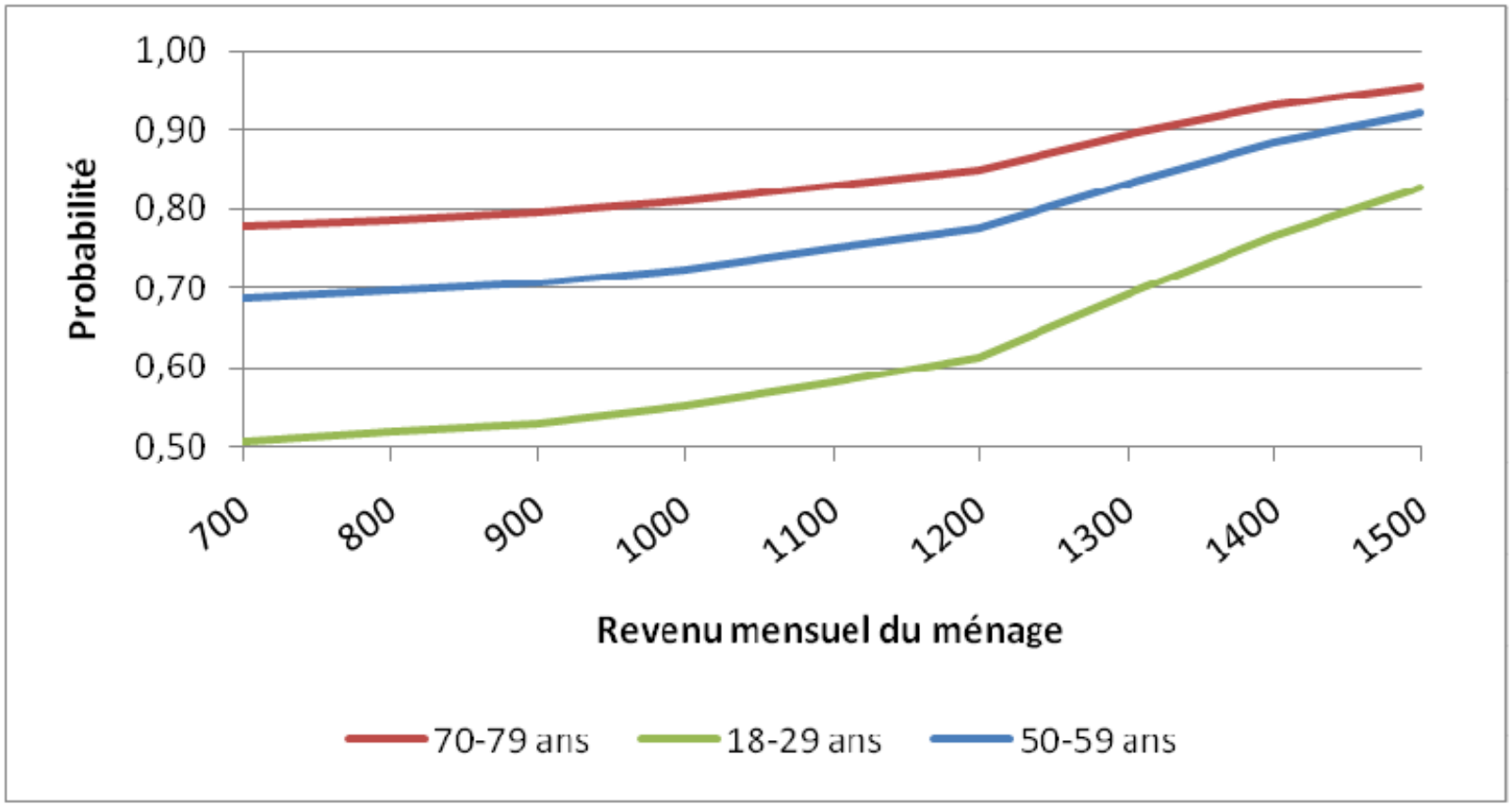
- Validation of the Model (mmils)

- Income is the main determinant of the decision to take-up a CHI

- <u>2 categories of explicatives variables:</u>
  1. Some explain the probability to be covered but not the expenditures involved : gender and acs
  2. Some explain the two stages of the decision: Income, composition of the household, location of the residence.

We found no effect of health status of the household on health insurance demand but no information on ALD

Estimated probability to be covered by CHI according to available income



Conclusion

- This study highlights financial difficulties in access to CHI in France
  - The poorest are more frequently not covered by CHI
  - Non group CHI expenditures correpond to 8.5% of available income in the first quintile
  - CHI is not affordable for 16.8% of French household non eligible to CMUC and not covered by their employer

- Consistently with previous studies, the analyse of determinant of CHI demand shows predominant role of income
  - in the access to CHI coverage
  - in the quality of CHI

- Our results raise the issue of equity in the access to CHI and finally, to health care

Bibliography (1)

- **ARNOUD M-L, VIDAL G**. (2008), "Typologie des contrats les plus souscrits auprès des complémentaires en 2006 », Etudes et Résultats, 663.
- **ARROW.K** (1974) *Essays in the Theory of Risk-Bearing*. Amsterdam, North Holland.
- **AUERBACH.D, OHRI.S** (2006) « Price and Demand for Non-Group Health Insurance », *Inquiry* 43: 122-134.
- **BOCOGNANO.A, COUFFINHAL.A, DUMESNIL.S, and GRIGNON.M** (2000) « La complémentaire maladie en France : qui bénéficie de quels remboursements ». Résultats de l'enquête Santé Protection Sociale 1998 ». CREDES Rapport n°1317.
- **BUCHMUELLER.T, COUFFINHAL.A** (2004) « Private Health Insurance in France ». OCDE Document de travail n°12.
- **BUCHMUELLER.T, COUFFINHAL.A, GRIGNON M., PERRONNIN M. (2004), «** Access to physician services: does supplemental insurance matter? Evidence from France », Health Economics, 13, 7 : 669-687.
- **BUNDORF.K, PAULY.M** (2006) « Is Health Insurance Affordable for the Uninsured ? » *Journal Of Health Economics,* 25(4): 650-673.
- **COLOMBO.F, TAPAY.N** (2004) « Private Health Insurance in OECD Countries : The Benefits and Costs for Individuals and Health Systems » OECD Working Papers.
- **FRANC.C, PERRONNIN.M** (2007) « Aide à l'acquisition d'une assurance maladie complémentaire : une première évaluation de dispositif ACS » *Question d'économie de la santé.* IRDES n°121.
- **FRIEDMAN.M, SAVAGE.L** (1948) « The Utility Analysis of Choice Involving Risk », *Political Economy,* 56: 279-304.
- **GRIGNON.M, KAMBIA-CHOPIN.B** (2009) « Income and the Demand for Complementary health Insurance in France » Document de travail IRDES.
- **GRIGNON.M, PERRONNIN M., LAVIS J.N (2008),** "Does free complementary health insurance help the poor to access health care? Evidence from France.", Health Economics, 17, 2: 203-219.

Bibliography (2)

- **GRUBER.J, POTERBA.J** (1994) « Tax Incentives and the Decision to Purchase Health Insurance : Evidence from the Self-Employed », *The Quaterly Journal of Economics,* 109 (3): 701-733.
- **KAMBIA-CHOPIN.B, PERRONNIN.M, DOURGNON.P, ROCHEREAU.T** (2008) « Les contrats complémentaires individuels : quels poids dans le budget des ménages ? », in ALLONIER.C, DOURGNON.P, ROCHEREAU.T, *Enquête sur la Santé et la Protection Sociale 2006,* Rapport IRDES n°1701.
- **KAMBIA-CHOPIN B., PERRONNIN M., PIERRE A., ROCHEREAU T.** (2008), "La complémentaire santé en France en 2006 : un accès qui reste inégalitaire Résultats de l'Enquête Santé Protection Sociale 2006 (ESPS 2006) ", Questions d'économie de la santé, 132.
- **LEVY.H, DELEIRE.T** (2003) « What do People Buy When they don't Buy Health Insurance and What does that Say about Why they are Uninsured ? », *National Bureau of Economic research,* Working paper 9826.
- **MARICAL.F, SAINT-POL (de).T** (2007), « La complémentaire santé : une généralisation qui n'efface pas les inégalités », *INSEE Première,* INSEE n°1142.
- **MARQUIS.S, LONG.H** (1995) « Worker Demand for Health Insurance in the Non-Group Market », *Journal Of Health Economics* n°14: 47-63.
- **MARQUIS.S, BUNTIN.M, ESCARCE.J, KAPUR.K, YEGIAN.J** (2004) « Subsidies and the Demand for Individual Health Insurance in California », *Health Service Research,* 39(5): 1547-1570.
- **RAYNAUD.D** (2005) « Les déterminants individuels des dépenses de santé : l'influence de la catégorie sociale et de l'assurance maladie complémentaire », *Etudes et résultats* n°378.
- **SALIBA.B, VENTELOU.B (**2007) « Complementary Health Insurance in France: Who pays? Why? Who will suffer from public disengagement? », *Health policy n°81*: 166-182.
- **THOMAS.K** (1995) « Are subsidies enough to encourage the uninsured to purchase health insurance ? », *Inquiry* n°31: 415-424.