

# Labor supply responses to health shocks in Senegal

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## Motivations

### Health in SSA

- ▶ Exposure to both communicable and non-communicable diseases
  - ▶ Increased exposure to non-communicable diseases (ex.: diabete; cancer; arterial pressure)
  - ▶ In part due to ageing (World Health Organization, 2008)
- ▶ Exposure to road accidents

### Health shocks are associated with (Alam et Mahal, 2014) :

- ▶ Direct costs : ↑ health care expenditures or non-medical expenses linked to the treatment
- ▶ Indirect costs : ↓ labor earnings (limitation in the ability to work for the ill person and the potential caregiver)

## Motivations: Coping with shocks in SSA

### Coping tools

- ▶ Limited access to formal individual insurance means (savings, credit, health insurance)
- ▶ Importance of alternative informal means to manage shocks (Skoufias and Quisumbing, 2005):
  - ▶  $\Delta$  household size : migration, child fostering
  - ▶ Dissaving, selling (productive) assets, borrowing
  - ▶ Support from their network
  - ▶ Put inactive members at work

### Efficiency?

- ▶ Short-term:  $\Delta$  of consumption *partially* mitigated
- ▶ Long-term: potential costs ( Islam et Mitra 2012; Robinson and Yeh,2011 ; Alam, 2015)

## Why are we interested in labor supply as a coping tool to health shocks in Senegal?

- ▶ Labor is often the only asset of the poor (Bhalotra, 2010) :
  - ▶ Do and how household members adjust their labor supply in response to shocks?
  - ▶ Changes may have long-term effects
    - ▶ Timing of entry and long-term consequences
    - ▶ Change of the gender composition of who earns an income in a household and long-term consequences
    - ▶ Short term: "double burden" issue for women
- ▶ Specificities of Senegal
  - ▶ Very low health insurance coverage (less than 6 % in 2011) despite recent SNPS
  - ▶ Social norms on gender roles
  - ▶ Extended household structure

## Our Focus and Research Questions

### **1. Individuals' labor supply response to other members' health shock?**

- ▶ Effect on all members : adult men/women and children boys/girls
- ▶ How this effect varies depending on the gender of the member who has become ill ?
- ▶ Heterogeneous effects

### **2. Substitution effects?**

- ▶ Between activities (work, domestic chores, schooling)
- ▶ Between members (by groups)

### **3. Sharing of the burden among healthy members within the household**

- ▶ How this effect varies depending on the tie that bounds the individual and the member who has become ill ? (extended family context)

## Data

“Pauvreté et Structure Familiale” (PSF) survey (2006/2007 and 2011/2012)

(De Vreyer, P., Lambert, S., Safir, A; Sylla, M.)

- ▶ Individual panel data: 14 000 individuals in baseline; re-contact rate: 85% ( Attrition: 15% migration; 25% death )
- ▶ Total sample : 7 307
- ▶ Adult sample (15-58) : N. Women = 2 797 and N. Men = 2 280
- ▶ Children sample (6-14) : N. girls =1 138 and N. boys=1 092

Independent variable of interest:

- ▶ Health shock: new handicap/ chronic disease between 2006 and 2011 (whatever the health status in baseline) ◀ precision

Outcomes of interest :

- ▶ Work dummy (retrospective data ◀ comparability issues )
- ▶ Domestic hours
- ▶ French / Franco-Arabic school enrollment

## Some descriptive statistics

Table 1: Health shocks occurrence between 2006 and 2011

Health shocks	Women		Men		Girls		Boys	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Own	0.084	0.278	0.037	0.189	0.038	0.191	0.018	0.134
At least one other member	0.290	0.454	0.313	0.464	0.332	0.471	0.325	0.469
At least one female member	0.206	0.404	0.244	0.430	0.247	0.431	0.254	0.435
At least one male member	0.141	0.348	0.131	0.337	0.159	0.366	0.136	0.343
Spouse	0.038	0.191	0.035	0.184	0.000	0.000	0.000	0.000
Cowife	0.018	0.134	0.000	0.000	0.000	0.000	0.000	0.000
Mother	0.036	0.187	0.066	0.248	0.086	0.281	0.090	0.286
Father	0.025	0.155	0.049	0.216	0.062	0.242	0.054	0.226
Daughter	0.027	0.162	0.016	0.126	0.000	0.000	0.000	0.000
Son	0.021	0.144	0.013	0.114	0.000	0.000	0.000	0.000
Mother's Co-wife	0.009	0.096	0.019	0.138	0.033	0.180	0.032	0.176
Mother-in-law	0.015	0.120	0.001	0.036	0.000	0.000	0.000	0.000
Father-in-law	0.004	0.063	0.002	0.042	0.000	0.000	0.000	0.000
Female member otherwise related	0.129	0.335	0.141	0.348	0.171	0.377	0.169	0.375
Male member otherwise related	0.067	0.250	0.077	0.267	0.105	0.307	0.091	0.287
	2 797		2 280		1 138		1 092	

Source: PFS surveys,2006-2011. Authors' calculation.

Shocks concern coresiding household members in 2006. Note that "Other shock" concern other members of the households, such as brothers and sisters. Women and men are aged between 15 and 58 in 2006, girls and boys are aged between 6 and 14 in 2006.

## Empirical specification

Linear model with individual fixed effects :

$$Y_{i,h,t} = \alpha_0 + \sum_k \beta_k HS_{h,t}^k + \delta_i + \gamma_d * \sigma_r * \theta_t + \omega_{m,t} + \varepsilon_{i,h,t}$$

subscripts  $i$ ,  $h$ , and  $t$  denote respectively individual, household, and survey round.

$Y$  : represents alternatively a work dummy, the number of domestic hours, French school enrollment

$HS$  : Health shock of member  $k$  in the baseline household

where  $k$  can be : individual herself, another member, a female member, a male member

$\delta_i$  : Individual fixed effect

$\gamma_d * \sigma_r * \theta_t$  are living area-department-time interaction terms

$\omega_{m,t}$  : Month of interview

Standard errors are clustered at the household level.



**Table 2:** Effect of a health shock on household members' labor supply - Linear probability model with individual fixed effects

	Women		Men		Girls		Boys	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Own health shock	-0.044 (0.032)	-0.045 (0.032)	-0.135*** (0.045)	-0.137*** (0.045)	-0.074 (0.066)	-0.085 (0.066)	-0.123 (0.083)	-0.121 (0.086)
At least one other health shock	0.012 (0.019)		0.040** (0.018)		0.005 (0.024)		0.063** (0.028)	
Male member health shock		0.018 (0.023)		-0.002 (0.026)		0.069** (0.035)		-0.039 (0.037)
Female member health shock		0.018 (0.021)		0.049** (0.021)		-0.035 (0.026)		0.091*** (0.032)
Constant	0.483*** (0.013)	0.483*** (0.013)	0.753*** (0.011)	0.753*** (0.012)	0.114*** (0.015)	0.115*** (0.015)	0.206*** (0.017)	0.206*** (0.017)
Observations	5,594	5,594	4,560	4,560	2,276	2,276	2,184	2,184
R-squared	0.069	0.070	0.089	0.089	0.223	0.227	0.265	0.268
Number of individuals	2,797	2,797	2,280	2,280	1,138	1,138	1,092	1,092
Department*rural*time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-58 years old individuals. Dependent variable is a dummy equal to 1 if individual  $i$  worked at period  $t$ .

Clustered robust standard errors at the household level in brackets.

Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

▶ **Summary of findings 1. Individual work trajectories**

Health shocks	Women	Men	Girls	Boys
Own		-13.7		
At least another member		+ 4		+ 6.3
Male member			+ 6.9	
Female member		+ 4.9		+ 9.1

▶ **Exploring the nature of transitions : entries or exits?**

◀ transitions

- ▶ Men : more entries if a women gets ill
- ▶ Women : No reaction
  - ▶ *Domestic duties constraints/social norms?*
  - ▶ *Heterogeneous effects?*
- ▶ Boys and Girls : more entries if opposite sex member
  - ▶ *How is their education affected?*

**Our identifying strategy so far**, allows to control for :

- ▶ Observed and unobserved time-invariant characteristics associated work and systematic measurement error
- ▶ Department/living area level shocks

Results rely on a strong identifying assumption, but they are **robust to**:

- ▶ Conditional parallel trend : Semi-parametric DID (Abadie, 2005) [◀ tables](#)
- ▶ Alternative specification including time varying controls [◀ tables](#)
- ▶ Conditional logit specification [◀ tables](#)
- ▶ Attrition + missing variables (Heckman's 2 step correction) [◀ tables](#)

## ▶ **Some additional results on heterogeneous responses to other members' health shocks:** [◀ tables](#)

- ▶ Men's response to women health shocks :
  - ▶ Those in wealthier households + if women
  - ▶ Rural - : job opportunities? other coping tools?
  - ▶ Married - : harder to adjust upwards with an already high participation
  - ▶ Educated + : can enter more easily
  - ▶ Younger +
- ▶ Women :
  - ▶ Education + (men) / - (women)
  - ▶ Older - (men)
- ▶ Boys :
  - ▶ Eldest ones work significantly more if they gets ill but less if another male member gets ill
  - ▶ Enrolled in School at baseline -
- ▶ Girls :
  - ▶ Larger Household head network -
  - ▶ Older - in case of a woman HS

- ▶ **Potential consequences of forced entries** : ↑ Vulnerability risks
  - ▶ Domestic work burden? Effect on education ? Early leaving of school, low quality jobs, (i.e. for young men)
- ▶ **Summary findings 2a. Substitution effects : Domestic hours**

◀ tables

Health shocks	Women	Men	Girls	Boys
Own			+8.7	
At least another member	+ 7			+ 1.7
Male member				
Female member	+ 8			+ 2.3

- ▶ Women and boys : significantly increase their number of domestic hours if another women gets ill
  - ▶ Men : no reaction (expected given the context)
  - ▶ Girls : increase if they suffer themselves from a health shock
- ▶ **Summary findings 2b. Substitution effects : Children's French school enrollment**

◀ tables

    - ▶ No negative effect on school enrollment

- ▶ **Summary findings : 3. Sharing of the burden within the household** ⇒ Does the link to the ill member matter? [◀ tables](#)

<b>Labor supply</b>	<b>Women</b>	<b>Men</b>	<b>Girls</b>	<b>Boys</b>
Spouse	+8.2			
Daughter	+11.9			
Son		+11.9		
Mother	-7.9			+ 14.8
Other women	-6.9	+ 8.4		

<b>Domestic hours</b>	<b>Women</b>	<b>Men</b>	<b>Girls</b>	<b>Boys</b>
Son	-13.5			
Mother's Co-wife	+ 23.2	-6.2		
Parents-in-law	+ 21			
Father				-4.1
Other women	+ 8			

⇒ Evidence of differentiated effects depending on the identity of the ill member

# Conclusion and Discussion

So far, some elements of responses to our research questions :

## 1. Who respond to other members' health shock by increasing their labor supply?

- ▶ Men + Boys
- ▶ No reaction from women
  - ▶ Time constraints? Social norms? How to disentangle the channel?

## 2. Does the sex of the ill one matters?

- ▶ Work : reaction to opposite sex (?) substitution or responsibilities?
- ▶ Domestic : reaction to women only

## 2. Substitution effects?

- ▶ Women increase their domestic hours
  - ▶ Women and boys as Substitutes for ill women to perform domestic duties
- ▶ No detrimental effect on school enrollment but what about the quality of learning (in progress)?

## Conclusion and Discussion

### **3. Sharing of the burden within the household: Does the link of the ill one matters?**

⇒ Labor supply

- ▶ Women + their spouse, girls but - if another women of mother
- ▶ Men + their son or another women
- ▶ Boys + their mother

⇒ Domestic chores

- ▶ Women : + Mother's co-wives, parents-in-law
- ▶ Men : - Mother's co-wife
- ▶ Boys : - Father + other women



## Next Steps

To be investigated :

- ▶ multiple shocks
- ▶ Refine the interpretation of some of the observed effects
- ▶ Investigate the quality of learning (school progression) for children and quality of jobs for those who take a job
- ▶ Add the missing links to the ill member
- ▶ Additional robustness checks : measurement issues, problem of self declaration + gender declaration, alternative measures of health shocks and work, anticipation
- ▶ Other estimation model?
- ▶ Investigate alternative coping strategies : remittances, assets, divorce, migration, marriage for other women
- ▶ Timing of the reaction and Long term persistence of the effect

Thank you for your attention!

## Definition of health shock

- ▶ i suffered himself from a health shock : no difficulty
- ▶ i has a household member j who had a health shock:
  - ▶ j belong to his baseline household but not necessarily to his household in 2011
  - ▶ both i and j are in the panel => we omit health shock affecting a new household member (although info available)
  - ▶ death as a health shock is excluded (j is alive in 2011)

## Comparability issues

Table 3: Work variables comparability (6-58)

Data 2006	Retrospective data	
	No Work	Work
No work	75.84	24.16
Work	40.22	59.78
<i>Number of women/girls : 3 898</i>	<i>2 461</i>	<i>1 437</i>
No work	69394	30.06
Work	15.59	84.41
<i>Number of men/boys : 3 317</i>	<i>1 354</i>	<i>1 953</i>

Source: PFS surveys,2006-2011. Authors' calculation. Sample 6 -58 individuals.

**Table 4:** Effect of a health shock on household members' labor supply - Linear probability model individual fixed effects - Interactions with gender

	Adults				Children			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Own health shock	-0.075*** (0.025)	-0.144*** (0.045)	-0.075*** (0.026)	-0.144*** (0.045)	-0.083* (0.048)	-0.099 (0.081)	-0.085* (0.048)	-0.092 (0.081)
At least one other health shock	0.027** (0.013)	0.034** (0.017)			0.028 (0.020)	0.069** (0.027)		
Own health shock * Female		0.095* (0.055)		0.092* (0.055)		0.026 (0.102)		0.014 (0.103)
At least one other health shock * Female		-0.013 (0.020)				-0.080*** (0.029)		
Male sex member health shock			0.013 (0.018)	-0.012 (0.025)			0.010 (0.027)	-0.028 (0.037)
Female sex member health shock			0.033** (0.015)	0.049** (0.020)			0.028 (0.023)	0.095*** (0.032)
Male sex member health shock* Female				0.039 (0.029)				0.075 (0.046)
Female sex member health shock * Female				-0.027 (0.026)				-0.134*** (0.035)
Constant	0.608*** (0.009)	0.608*** (0.009)	0.608*** (0.009)	0.608*** (0.009)	0.156*** (0.012)	0.156*** (0.012)	0.156*** (0.012)	0.156*** (0.012)
Observations	10,448	10,448	10,448	10,448	4,678	4,678	4,678	4,678
R-squared	0.065	0.066	0.066	0.067	0.191	0.194	0.191	0.197
Number of individuals	5,224	5,224	5,224	5,224	2,339	2,339	2,339	2,339
Department*rural*time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-58 years old individuals. Dependent variable is a dummy equal to 1 if individual  $i$  worked at period  $t$ .

Clustered robust standard errors at the household level in brackets.

Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table 5: Heterogeneous effects of health shocks on men's labor supply - Linear probability model - individual FE

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	No interaction	Consumption	Rural	Network HH head	Married	School	Age
Own health shock	-0.137*** (0.045)	0.209 (0.446)	-0.160** (0.063)	-0.151* (0.085)	-0.102 (0.090)	-0.237*** (0.066)	0.019 (0.090)
Male member health shock	-0.002 (0.026)	0.752** (0.344)	0.026 (0.037)	0.013 (0.048)	-0.007 (0.035)	0.019 (0.040)	-0.029 (0.041)
Female member health shock	0.049** (0.021)	-0.586** (0.294)	0.085*** (0.027)	0.070* (0.037)	0.115*** (0.029)	-0.013 (0.029)	0.166*** (0.036)
Own health shock * Log consumption		-0.028 (0.036)					
Male member health shock * Log consumption		-0.061** (0.028)					
Female member health shock * Log consumption		0.051** (0.024)					
Rural * Own health shock			0.040 (0.089)				
Rural * Male member			-0.067 (0.051)				
Rural * Female member			-0.108*** (0.040)				
Own health shock * Household head siblings				0.002 (0.007)			
Male member health shock * Household head siblings				-0.002 (0.005)			
Female member health shock * Household head siblings				-0.003 (0.004)			
Married * Own health shock					-0.019 (0.101)		
Married * Male member					-0.017 (0.040)		
Married * Female member					-0.163*** (0.036)		
Ever been enrolled in French school * Own health shock						0.185** (0.083)	
Ever been enrolled in French school * Male member						-0.035 (0.044)	
Ever been enrolled in French school * Female member						0.105*** (0.039)	
25-34 (Ref. 15-24) * Own health shock							-0.122 (0.106)
35-49 * Own health shock							-0.177 (0.117)
49 and more * Own health shock							-0.181 (0.125)
25-34 (Ref. 15-24) * Male member							0.048 (0.050)
35-49 * Male member							-0.024 (0.047)
49 and more * Male member							0.072 (0.089)
25-34 (Ref. 15-24) * Female member							-0.139*** (0.048)
35-49 * Female member							-0.238*** (0.046)
49 and more * Female member							-0.272*** (0.059)
Constant	0.753*** (0.012)	0.753*** (0.011)	0.752*** (0.011)	0.753*** (0.012)	0.752*** (0.011)	0.754*** (0.012)	0.752*** (0.011)
Observations	4,560	4,560	4,560	4,560	4,560	4,560	4,560
R-squared	0,089	0,094	0,094	0,090	0,101	0,097	0,113

**Table 6:** Heterogeneous effects of health shocks on women's labor supply - Linear probability model - individual FE

	No interaction	Consumption	Rural	Network HH head	Married	School	Age
Own health shock	-0.045 (0.032)	-0.131 (0.361)	-0.052 (0.043)	0.007 (0.051)	-0.038 (0.073)	-0.026 (0.041)	-0.064 (0.074)
Male member health shock	0.018 (0.023)	-0.212 (0.269)	0.045 (0.033)	-0.015 (0.038)	0.028 (0.040)	-0.015 (0.029)	0.017 (0.033)
Female member health shock	0.018 (0.021)	0.149 (0.281)	0.017 (0.027)	0.044 (0.032)	-0.010 (0.033)	0.052* (0.028)	0.018 (0.028)
Own health shock * Log consumption		0.007 (0.028)					
Male member health shock * Log consumption		0.019 (0.022)					
Female member health shock * Log consumption		-0.011 (0.023)					
Rural * Own health shock			0.017 (0.064)				
Rural * Male member			-0.056 (0.045)				
Rural * Female member			0.000 (0.042)				
Own health shock * Household head siblings				-0.008 (0.005)			
Male member health shock * Household head siblings				0.005 (0.004)			
Female member health shock * Household head siblings				-0.004 (0.003)			
Married * Own health shock					-0.011 (0.078)		
Married * Male member					-0.015 (0.048)		
Married * Female member					0.049 (0.041)		
Ever been enrolled in French school * Own health shock						-0.049 (0.063)	
Ever been enrolled in French school * Male member						0.078* (0.043)	
Ever been enrolled in French school * Female member						-0.072* (0.038)	
25-34 (Ref. 15-24) * Own health shock							-0.005 (0.109)
35-49 * Own health shock							0.068 (0.085)
49 and more * Own health shock							-0.024 (0.092)
25-34 (Ref. 15-24) * Male member							0.098 (0.065)
35-49 * Male member							-0.038 (0.046)
49 and more * Male member							-0.116* (0.066)
25-34 (Ref. 15-24) * Female member							0.022 (0.048)
35-49 * Female member							-0.023 (0.044)
49 and more * Female member							-0.022 (0.062)
Constant	0.483*** (0.013)	0.483*** (0.013)	0.483*** (0.013)	0.483*** (0.013)	0.483*** (0.013)	0.483*** (0.013)	0.484*** (0.013)

**Table 7: Heterogeneous effects of health shocks on girls' labor supply - Linear probability model - individual FE**

	No interaction	Consumption	Rural	Network HH head	Eldest child	School	Age
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Own health shock	-0.085 (0.066)	0.778 (0.974)	0.093 (0.090)	-0.142 (0.098)	-0.112 (0.072)	-0.045 (0.127)	-0.072 (0.080)
Male member health shock	0.069** (0.035)	-0.117 (0.396)	0.066* (0.036)	0.154*** (0.057)	0.065* (0.038)	0.083 (0.053)	0.096 (0.061)
Female member health shock	-0.035 (0.026)	-0.297 (0.336)	-0.023 (0.026)	-0.038 (0.036)	-0.045 (0.029)	-0.053 (0.043)	0.015 (0.035)
Own health shock * Log consumption		-0.070 (0.077)					
Male member health shock * Log consumption		0.015 (0.032)					
Female member health shock * Log consumption		0.021 (0.027)					
Rural * Own health shock			-0.424*** (0.120)				
Rural * Male member			0.002 (0.066)				
Rural * Female member			-0.028 (0.049)				
Own health shock * Household head siblings				0.008 (0.010)			
Male member health shock * Household head siblings				-0.013** (0.006)			
Female member health shock * Household head siblings				0.001 (0.004)			
Eldest child * Own health shock					0.158 (0.190)		
Eldest child * Male member					0.020 (0.069)		
Eldest child * Female member					0.039 (0.051)		
Was enrolled in French school in 2006 * Own health shock						-0.068 (0.144)	
Was enrolled in French school in 2006 * Male member						-0.027 (0.067)	
Was enrolled in French school in 2006 * Female member						0.030 (0.046)	
11-14 (Ref. 6-10) * Own health shock							-0.019 (0.116)
11-14 (Ref. 6-10) * Male member							-0.037 (0.073)
11-14 (Ref. 6-10) * Female member							-0.084** (0.043)
Constant	0.115*** (0.015)	0.114*** (0.015)	0.114*** (0.015)	0.113*** (0.015)	0.114*** (0.015)	0.115*** (0.015)	0.115*** (0.015)
Observations	2,276	2,276	2,276	2,276	2,276	2,276	2,276
R-squared	0.227	0.229	0.238	0.231	0.229	0.228	0.232
Number of individuals	1,138	1,138	1,138	1,138	1,138	1,138	1,138
Department*rural*time	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-15 years old girls. Dependent variable is a dummy equal to 1 if individual  $i$  worked at period  $t$ .



**Table 8:** Heterogeneous effects of health shocks on boys' labor supply - Linear probability model - individual FE

	No interaction	Consumption	Rural	Network HH head	Eldest child	School	Age
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Own health shock	-0.121 (0.086)	-0.968 (1.222)	0.024 (0.141)	0.023 (0.192)	-0.240*** (0.084)	0.069 (0.239)	0.068 (0.172)
Male member health shock	-0.039 (0.037)	-0.714 (0.584)	-0.015 (0.047)	-0.008 (0.064)	-0.014 (0.041)	0.065 (0.065)	-0.056 (0.051)
Female member health shock	0.091*** (0.032)	0.563 (0.488)	0.067* (0.036)	0.054 (0.050)	0.099*** (0.036)	0.132*** (0.048)	0.122*** (0.041)
Own health shock * Log consumption		0.069 (0.099)					
Male member health shock * Log consumption		0.055 (0.048)					
Female member health shock * Log consumption		-0.039 (0.040)					
Rural * Own health shock			-0.245 (0.171)				
Rural * Male member			-0.041 (0.073)				
Rural * Female member			0.047 (0.063)				
Own health shock * Household head siblings				-0.019 (0.018)			
Male member health shock * Household head siblings				-0.005 (0.008)			
Female member health shock * Household head siblings				0.006 (0.005)			
Eldest child * Own health shock					0.462** (0.216)		
Eldest child * Male member					-0.118* (0.067)		
Eldest child * Female member					-0.038 (0.059)		
Was enrolled in French school in 2006 * Own health shock						-0.237 (0.241)	
Was enrolled in French school in 2006 * Male member						-0.175** (0.072)	
Was enrolled in French school in 2006 * Female member						-0.080 (0.058)	
11-14 (Ref. 6-10) * Own health shock							-0.259 (0.193)
11-14 (Ref. 6-10) * Male member							0.028 (0.076)
11-14 (Ref. 6-10) * Female member							-0.056 (0.054)
Constant	0.206*** (0.017)	0.205*** (0.017)	0.205*** (0.017)	0.205*** (0.017)	0.206*** (0.017)	0.205*** (0.017)	0.204*** (0.017)
Observations	2,184	2,184	2,184	2,184	2,184	2,184	2,184
R-squared	0.268	0.269	0.269	0.269	0.272	0.277	0.270
Number of individuals	1,092	1,092	1,092	1,092	1,092	1,092	1,092
Department*rural*time	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-15 years old boys. Dependent variable is a dummy equal to 1 if individual  $i$  worked at period  $t$ .

# Domestic hours

← Back

**Table 9:** Effect of a health shock on household members' domestic hours - OLS model with individual fixed effects

	Women		Men		Girls		Boys	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Own health shock	-4.022 (2.768)	-3.738 (2.790)	1.172 (1.889)	1.137 (1.902)	8.776* (4.901)	8.333* (4.914)	1.655 (2.024)	1.515 (1.955)
At least one other health shock	7.126*** (1.867)		-1.027 (0.960)		0.245 (1.589)		1.676* (0.909)	
Male member health shock		-0.701 (2.370)		-0.854 (1.354)		2.774 (2.001)		0.099 (1.293)
Female member health shock		8.057*** (2.140)		-0.882 (1.000)		-1.057 (1.842)		2.306** (0.995)
Constant	37.763*** (1.211)	37.810*** (1.209)	8.708*** (0.472)	8.691*** (0.468)	9.272*** (1.021)	9.295*** (1.017)	4.779*** (0.549)	4.793*** (0.551)
Observations	5,594	5,594	4,560	4,560	2,276	2,276	2,184	2,184
R-squared	0.080	0.080	0.117	0.117	0.173	0.175	0.104	0.106
Number of individuals	2,797	2,797	2,280	2,280	1,138	1,138	1,092	1,092
Department*rural*time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-58 years old individuals. Dependent variable is the number of domestic hours performed by individual  $i$  at period  $t$ .

Clustered robust standard errors at the household level in brackets.

Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

# Schooling

**Table 10:** Effect of a health shock on girls and boys' school enrollment - Linear probability model with individual fixed effects

	Girls		Boys	
	(1)	(2)	(3)	(4)
Own health shock	-0.092 (0.071)	-0.101 (0.071)	-0.125 (0.078)	-0.132* (0.080)
Male member health shock		0.055 (0.044)		0.005 (0.043)
Female member health shock		0.002 (0.034)		0.049 (0.037)
At least one other health shock	0.022 (0.033)		0.024 (0.034)	
Constant	0.586*** (0.020)	0.587*** (0.020)	0.623*** (0.025)	0.623*** (0.025)
Observations	2,276	2,276	2,184	2,184
R-squared	0.059	0.060	0.073	0.074
Number of individuals	1,138	1,138	1,092	1,092
Department*rural*time	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-14 years old individuals. Dependent variable is a dummy equal to 1 if the child is enrolled in French school at period t.

Clustered robust standard errors at the household level in brackets.

Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

# Robustness check : controls

← Back

**Table 11:** Effect of a health shock on household members' labor supply - Linear probability model with individual fixed effects and time varying controls

	Women		Men		Girls		Boys	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Own health shock	-0.046 (0.032)	-0.047 (0.032)	-0.131*** (0.045)	-0.132*** (0.045)	-0.073 (0.065)	-0.084 (0.066)	-0.119 (0.081)	-0.116 (0.083)
At least one other health shock	0.014 (0.018)		0.036** (0.018)		0.005 (0.024)		0.061** (0.028)	
Male member health shock		0.021 (0.023)		-0.001 (0.026)		0.068** (0.034)		-0.040 (0.037)
Female member health shock		0.019 (0.021)		0.044** (0.021)		-0.034 (0.025)		0.088*** (0.032)
Household size	-0.002* (0.001)	-0.002* (0.001)	-0.004** (0.002)	-0.004** (0.002)	-0.000 (0.002)	-0.000 (0.002)	-0.002 (0.003)	-0.002 (0.003)
Migration	-0.003 (0.019)	-0.003 (0.019)	0.027 (0.024)	0.026 (0.024)	-0.026 (0.032)	-0.024 (0.031)	-0.014 (0.035)	-0.015 (0.035)
Bad crops	-0.056*** (0.022)	-0.057*** (0.022)	-0.061*** (0.022)	-0.063*** (0.022)	-0.025 (0.038)	-0.021 (0.038)	0.046 (0.044)	0.044 (0.045)
Death	0.024 (0.048)	0.024 (0.048)	0.078** (0.037)	0.078** (0.037)	-0.000 (0.050)	0.004 (0.051)	0.039 (0.057)	0.033 (0.056)
Own new birth	-0.011 (0.016)	-0.011 (0.016)			-0.043 (0.067)	-0.042 (0.067)		
Other birth in the household	-0.023 (0.016)	-0.024 (0.016)	0.019 (0.017)	0.018 (0.017)	0.010 (0.021)	0.011 (0.021)	0.045 (0.028)	0.045 (0.028)
Constant	0.509*** (0.021)	0.509*** (0.021)	0.793*** (0.023)	0.791*** (0.023)	0.114*** (0.031)	0.115*** (0.030)	0.237*** (0.035)	0.236*** (0.035)
Observations	5,594	5,594	4,560	4,560	2,276	2,276	2,184	2,184
R-squared	0.073	0.074	0.098	0.098	0.224	0.229	0.269	0.271
Number of individuals	2,797	2,797	2,280	2,280	1,138	1,138	1,092	1,092
Department*rural*time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-58 years old individuals. Dependent variable is a dummy equal to 1 if individual  $i$  worked at period  $t$ .

Clustered robust standard errors at the household level in brackets.

Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## Robustness check : Conditional logit

← Back

**Table 12:** Effect of a health shock on women and men's labor supply - Conditional logit model with individual fixed effects

	Women		Men		Girls		Boys	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Own health shock	-0.751** (0.373)	-0.746** (0.372)	-2.987*** (0.631)	-3.013*** (0.627)	-0.432 (0.895)	-0.834 (0.887)	20.494*** (0.956)	19.126*** (1.001)
Male member health shock		0.179 (0.329)		0.196 (0.590)		2.423** (1.017)		1.431 (1.106)
Female member health shock		0.044 (0.283)		0.922** (0.426)		0.474 (0.926)		1.773** (0.893)
At least one other health shock	-0.020 (0.251)		0.809** (0.389)		1.269 (0.908)		1.720** (0.774)	
Observations	878	878	608	608	302	302	456	456
Region*time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-58 years old individuals. Dependent variable is a work dummy at period  $t$ . Note that we use departmental dummies interacted with time and living areas interacted with time separately for convergence purpose (instead of a triple interaction as in the linear probability model).

Clustered robust standard errors at the household level in brackets.

Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 13:** Baseline characteristics of household members depending on the occurrence of a health shock in the household (2006)

	At least another health shock			
	No		Yes	
	Mean	Mean	Mean	P-value
<b>Women (15-58)</b>				
Age	31.58	29.94	1.63 **	3.24
Ever been enrolled in French school	0.41	0.45	-0.05 **	-2.30
Ever been enrolled in Koranic school	0.14	0.17	-0.03 *	-1.91
Married	0.05	0.63	0.04 **	2.13
Work	0.46	0.51	-0.05 **	-2.43
Ill	0.07	0.09	-0.01	-0.97
Domestic hours	38.57	34.77	3.80 **	2.64
Female Household head	0.25	0.22	0.03 *	1.80
Household size	10.31	13.57	-3.26 ***	-10.78
Number of female members	5.62	7.62	-2.01 ***	-11.30
Number of male members	4.69	5.95	-1.26 ***	-8.00
Number of children under 6	1.86	2.41	-0.55 ***	-6.44
Log consumption	12.46	12.40	0.06	1.64
Rural	0.49	0.44	0.05 **	2.33
Household head network (siblings)	7.14	6.71	0.43 **	1.98
Observations	1 986	811	2 797	
<b>Men (15-58)</b>				
Age	31.24	29.24	2.00 ***	3.66
Ever been enrolled in French school	0.55	0.60	-0.06 **	-2.53
Ever been enrolled in Koranic school	0.23	0.23	-0.00	-0.03
Married	0.46	0.37	0.09 ***	4.03
Work	0.76	0.75	0.01	0.50
Ill	0.06	0.05	0.01	0.71
Domestic hours	7.54	8.57	-1.03	-1.36
Female Household head	0.15	0.21	-0.06 **	-3.14
Household size	10.33	13.53	-3.20 ***	-9.77
Number of female members	4.94	6.69	-1.76 ***	-9.32
Number of male members	5.40	6.84	-1.44 ***	-8.47
Number of children under 6	1.79	2.21	-0.42 ***	-4.85
Log consumption	12.46	12.38	0.08 **	1.96
Rural	0.44	0.37	0.08 ***	3.51
Household head network (siblings)	7.40	7.23	0.16	0.67
Observations	1 567	713	2 280	

	At least another health shock			
	No		Yes	
	Mean	Mean	Mean	P-value
<b>Girls (6-14)</b>				
Age	9.75	10.02	-0.27 *	-1.69
Ever been enrolled in French school	0.68	0.68	-0.00	-0.08
Ever been enrolled in Koranic school	0.11	0.12	-0.01	-0.36
Currently enrolled in French sch.	0.61	0.59	0.02	0.54
Married	0.01	0.00	0.01	1.26
Work	0.08	0.18	-0.10 ***	-4.67
Ill	0.02	0.03	-0.01	-1.22
Domestic hours	7.97	8.88	-0.91	-0.90
Female Household head	0.20	0.17	0.03	1.16
Household size	10.86	14.38	-3.52 ***	-7.64
Number of female members	6.24	8.27	-2.03 ***	-7.67
Number of male members	4.62	6.11	-1.49 ***	-6.20
Number of children under 6	1.96	2.56	-0.60 ***	-4.64
Log consumption	12.30	12.23	0.06	1.14
Rural	0.56	0.55	0.01	0.33
Household head network (siblings)	7.19	6.28	0.91 **	3.02
Observations	760	378	1 138	
<b>Boys (6-14)</b>				
Age	9.89	10.01	-0.12	-0.74
Ever been enrolled in French school	0.68	0.62	0.06 **	2.07
Ever been enrolled in Koranic school	0.12	0.16	-0.04 *	-1.92
Currently enrolled in French sch.	0.64	0.56	0.07 **	2.30
Married	0.00	0.01	-0.01	-1.40
Work	0.20	0.27	-0.06 **	-2.25
Ill	0.02	0.02	0.00	0.19
Domestic hours	4.05	5.30	-1.25	-1.53
Female Household head	0.17	0.17	0.01	0.25
Household size	11.20	14.01	-2.81 ***	-5.73
Number of female members	5.28	7.04	-1.76 ***	-5.90
Number of male members	5.92	6.97	-1.06 ***	-4.39
Number of children under 6	1.97	2.40	-0.44 ***	-3.37
Log consumption	12.25	12.16	0.09 *	1.77
Rural	0.57	0.52	0.06 *	1.81
Household head network (siblings)	6.99	6.63	0.36	1.09
Observations	737	355	1 092	

# Robustness check : Semi-parametric DID

◀ Back

Table 14: Semi parametric difference in difference (Abadie 2005) - Labor supply results

	Semi-parametric DID			LPM model with Fixed Effect		
	All	Women	Men	All	Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)
Own health shock	-0.046* (0.024)	-0.022 (0.029)	-0.104*** (0.040)	-0.065** -0.026	-0.045 (0.032)	-0.137*** (0.045)
Male member	0.007 (0.016)	0.015 (0.023)	-0.007 (0.022)	0.012 (0.018)	0.018 (0.023)	-0.002 (0.035)
Female member	0.026* (0.014)	0.016 (0.021)	0.037* (0.020)	0.032** (0.015)	0.018 (0.021)	0.049** (0.026)
Observations	5,077	2,797	2,280	5,077	2,797	2,280
	All	Girls	Boys	All	Girls	Boys
	(7)	(8)	(9)	(10)	(11)	(12)
Own health shock	-0.085* (0.048)	-0.091 (0.062)	-0.091 (0.076)	-0.074 (0.051)	-0.085 (0.066)	-0.121 (0.086)
Male member	0.025 (0.024)	0.056* (0.034)	-0.012 (0.034)	0.012 (0.028)	0.069** (0.035)	-0.039 (0.037)
Female member	0.034* (0.020)	-0.004 (0.026)	0.067** (0.031)	0.029 (0.022)	-0.035 (0.066)	0.091*** (0.037)
Observations	2,230	1,138	1,092	2,230	1,138	1,092

Source: PFS surveys 2006-2011. Sample is restricted to 6-58 years old individuals in 2006.

Standard errors in brackets.

The ATT is computed from the absdid command in Stata (see [?] for more details on the command).

LPM model estimation are computed on the subsamples of men and women separately.

Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Variables : age, Ever been to French school, to Koranic School, marital status, health status, ethnic group, number of female members, male members, nb of girls/boys, log consumption

# Robustness check : semi parametric DID

◀ Back

**Table 15:** Semi parametric difference in difference (Abadie 2005) - Domestic hours results

	Semi-parametric DID			LPM model with Fixed Effect		
	All	Women	Men	All	Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)
Own health shock	1.290 (1.968)	0.753 (2.690)	2.501 (1.689)	-2.087 (2.046)	-3.738 (2.790)	1.137 (1.902)
Male member	-0.354 (1.345)	-0.341 (2.188)	-0.169 (1.164)	-0.774 (1.554)	-0.151 (2.284)	-0.976 (1.332)
Female member	3.289*** (1.112)	5.952*** (1.933)	0.104 (0.865)	3.821*** (1.298)	8.185*** (2.122)	-0.715 (0.983)
Observations	5,077	2,797	2,280	5,077	2,797	2,280
	All	Girls	Boys	All	Girls	Boys
Own health shock	6.230* (3.301)	6.348 (4.695)	1.223 (1.394)	7.305** (3.596)	8.333* (1.902)	1.515 (1.902)
Male member	1.635 (1.261)	1.382 (2.232)	0.477 (1.109)	1.317 (1.162)	2.778 (1.942)	0.207 (1.256)
Female member	0.678 (1.000)	-0.281 (1.661)	2.289** (1.005)	0.713 (1.071)	-0.924 (1.790)	2.502** (1.009)
Observations	2,230	1,138	1,092	2,230	1,138	1,092

Source: PFS surveys 2006-2011. Sample is restricted to 6-58 years old individuals in 2006.

Standard errors in brackets.

The ATT is computed from the `absdid` command in Stata (see [?]) for more details on the command).

LPM model estimation are computed on the subsamples of men and women separately.

Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .



# Robustness check : Attrition and non missing variables

◀ Back

Table 16: Determinants of attrition

	Women		Men		Girls		Boys	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age	(0.095)	(0.102)	(0.110)	(0.115)	(0.306)	(0.310)	(0.273)	(0.309)
	-0.020	-0.020	0.018	0.002	-0.121	-0.020	0.076	0.045
age_06_2	(0.013)	(0.013)	(0.013)	(0.014)	(0.126)	(0.137)	(0.125)	(0.137)
	0.000	0.000	-0.000*	-0.000	0.009	0.004	-0.004	-0.003
Ever been enrolled in French school	(0.000)	(0.000)	(0.000)	(0.000)	(0.006)	(0.007)	(0.006)	(0.007)
	-0.101	-0.028	-0.065	-0.048	-0.548***	-0.630***	-0.169	-0.222*
Ever been enrolled in Koranic school	(0.063)	(0.064)	(0.079)	(0.080)	(0.115)	(0.124)	(0.117)	(0.120)
	-0.064	-0.058	-0.005	-0.008	-0.256	-0.319**	0.041	0.088
Ethnic Group : Serere (Ref. Wolof)	(0.083)	(0.088)	(0.089)	(0.091)	(0.158)	(0.154)	(0.143)	(0.152)
	0.256***	0.237**	-0.065	-0.172	0.179	0.136	-0.562***	-0.695***
Ethnic Group : Poular	(0.096)	(0.100)	(0.107)	(0.113)	(0.151)	(0.164)	(0.169)	(0.195)
	0.142*	0.070	-0.037	-0.107	0.073	0.028	-0.090	-0.186
Ethnic Group : Diola	(0.079)	(0.076)	(0.082)	(0.081)	(0.144)	(0.141)	(0.134)	(0.145)
	-0.201	-0.119	-0.238	-0.061	0.037	0.206	-0.261	-0.349
Ethnic Group : Others	(0.162)	(0.177)	(0.154)	(0.147)	(0.268)	(0.297)	(0.290)	(0.317)
	0.055	-0.013	0.081	-0.116	0.183	0.028	-0.168	-0.314
At least one other health shock 2006	(0.093)	(0.106)	(0.101)	(0.107)	(0.161)	(0.170)	(0.170)	(0.193)
	-0.110*	-0.094	-0.040	-0.003	0.033	0.053	-0.051	-0.008
Ill	(0.063)	(0.062)	(0.064)	(0.065)	(0.104)	(0.106)	(0.098)	(0.104)
	0.021	0.075	-0.046	-0.057	-0.394	-0.256	0.030	0.008
Number of children under 6	(0.027)	(0.025)	(0.024)	(0.021)	(0.035)	(0.037)	(0.032)	(0.034)
	0.005	-0.025	-0.004	-0.029	0.000	-0.027	0.128***	0.094***
Number of female members	(0.013)	(0.012)	(0.012)	(0.012)	(0.017)	(0.019)	(0.018)	(0.019)
	-0.007	0.010	-0.024*	-0.006	-0.004	0.029	-0.034*	-0.017
Number of male members	(0.013)	(0.013)	(0.012)	(0.012)	(0.018)	(0.019)	(0.019)	(0.020)
	-0.012	0.006	0.006	0.028**	-0.006	-0.008	-0.056***	-0.031
Log consumption	(0.013)	(0.013)	(0.012)	(0.012)	(0.018)	(0.019)	(0.019)	(0.020)
	0.093**	0.057	0.111***	0.062	0.072	0.041	-0.047	-0.007
	(0.038)	(0.038)	(0.040)	(0.040)	(0.069)	(0.070)	(0.059)	(0.063)
Test of joint significance of interviewers dummies								
chi2		265.24		349.09		157.03		118.88
Prob > chi2		0.000		0.000		0.000		0.000
Constant	-1.160*	-1.193*	-1.579**	-1.805**	-1.676	-1.867	-0.125	-0.571
	(0.682)	(0.672)	(0.701)	(0.722)	(1.207)	(1.330)	(1.169)	(1.321)
Observations	3,844	3,833	3,268	3,259	1,470	1,451	1,443	1,359
Department*rural fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interviewers dummies		Yes		Yes		Yes		Yes

Source: PSF surveys 2006-2011. Sample is composed of 6-58 years old individuals. Dependent variable is a dummy equal to 1 if individual  $i$  was not found in the second round (conditionally on being interviewed in 2006).

Clustered robust standard errors at the household level in brackets.

## Robustness check : Attrition and non missing variables

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Table 17: Effect of a health shock on household members' labor supply - Linear probability model with individual fixed effects, corrected for attrition and missing variables

	Women		Men		Girls		Boys	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Own health shock	-0.044 (0.032)	-0.045 (0.032)	-0.132*** (0.045)	-0.135*** (0.045)	-0.076 (0.068)	-0.087 (0.068)	-0.052 (0.101)	-0.048 (0.104)
Male member health shock		0.019 (0.023)		-0.004 (0.026)		0.072** (0.036)		-0.026 (0.040)
Female member health shock		0.018 (0.021)		0.049** (0.021)		-0.036 (0.027)		0.095*** (0.034)
At least one other health shock	0.013 (0.018)		0.039** (0.018)		0.006 (0.025)		0.068** (0.030)	
IMRf_06t	-0.010 (0.008)	-0.010 (0.008)						
IMRh_06t			0.032* (0.019)	0.033* (0.018)				
IMRg_06t					-0.013 (0.018)	-0.015 (0.019)		
IMRb_06t							0.106* (0.057)	0.101* (0.058)
Constant	0.483*** (0.013)	0.484*** (0.013)	0.755*** (0.012)	0.756*** (0.012)	0.118*** (0.016)	0.119*** (0.015)	0.207*** (0.019)	0.207*** (0.018)
Observations	5,572	5,572	4,544	4,544	2,208	2,208	2,020	2,020
R-squared	0.067	0.068	0.090	0.090	0.223	0.228	0.261	0.264
Number of individuals	2,786	2,786	2,272	2,272	1,104	1,104	1,010	1,010
Department*rural*time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: PSF surveys 2006-2011. Sample is composed of 6-58 years old individuals. Dependent variable is a dummy equal to 1 if individual  $i$  worked at period  $t$ .

Clustered robust standard errors at the household level in brackets.

Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## Within-household Analysis

**Table 18:** Effect of a health shock on household member's labor supply - Decomposition by link to the ill member - Linear probability model with household fixed effects

	Women	Men	Girls	Boys
	(1)	(2)	(3)	(4)
Spouse health shock	0.082* (0.050)	-0.035 (0.034)		
Daughter health shock	0.119** (0.058)	0.033 (0.040)		
Son health shock	0.060 (0.046)	0.119* (0.068)		
Mother health shock	-0.079* (0.047)	0.019 (0.034)	-0.014 (0.038)	0.148*** (0.053)
Father health shock	0.003 (0.055)	-0.009 (0.045)	0.030 (0.046)	-0.039 (0.053)
Cowife health shock	0.074 (0.069)			
Mother's Co-wife health shock	-0.131 (0.135)	0.019 (0.067)	-0.092 (0.065)	0.008 (0.087)
Parents-in-law health shock	0.097 (0.075)			
Other female health shock <sup>1</sup>	-0.069** (0.028)	0.084** (0.041)	-0.018 (0.029)	0.002 (0.033)
Other male health shock <sup>1</sup>	-0.016 (0.031)	-0.023 (0.036)	0.049 (0.047)	-0.024 (0.049)
Constant	0.481*** (0.014)	0.755*** (0.012)	0.107*** (0.016)	0.207*** (0.018)
Observations	5,358	4,475	2,233	2,164
R-squared	0.028	0.035	0.161	0.172
Number of households	1,294	1,149	710	674
Department*rural*time	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-58 years old individuals. Dependent variable is a dummy equal to 1 if the child is enrolled in French school at period  $t$ . Clustered robust standard errors at the household level in brackets.

Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

# Within-household Analysis

**Table 19:** Effect of a health shock on household member's domestic hours - Decomposition by link to the ill member - OLS model with household fixed effects

	Women	Men	Girls	Boys
	(1)	(2)	(3)	(4)
Spouse health shock	-4.516 (4.473)	-1.984 (2.250)		
Daughter health shock	-2.805 (4.322)	-0.467 (3.068)		
Son health shock	-13.516** (5.418)	-1.415 (3.666)		
Mother health shock	6.368 (4.060)	-0.761 (1.382)	2.826 (2.530)	0.536 (1.591)
Father health shock	5.169 (4.593)	0.155 (2.415)	2.804 (3.126)	-4.141** (2.076)
Cowife health shock	-0.538 (7.136)			
Mother's Co-wife health shock	23.288** (9.278)	-6.273** (2.907)	-1.097 (4.238)	5.103 (3.680)
Parents-in-law health shock	20.996*** (6.651)			
Other male health shock *	-4.622 (3.184)	-0.257 (2.036)	0.310 (2.478)	0.850 (1.678)
Other female health shock *	8.834*** (2.531)	0.528 (2.232)	-1.818 (1.827)	1.562 (1.073)
Constant	37.778*** (1.244)	8.675*** (0.461)	8.763*** (1.042)	4.753*** (0.556)
Observations	5,358	4,475	2,233	2,164
R-squared	0.059	0.090	0.110	0.086
Number of households	1,294	1,149	710	674
Department*rural*time	Yes	Yes	Yes	Yes
Dummies months of interview	Yes	Yes	Yes	Yes

Source: PFS surveys 2006-2011. Sample is composed of 6-58 years old individuals. Dependent variable is a dummy equal to 1 if the child is enrolled in French school at period  $t$ . Clustered robust standard errors at the household level in brackets. Significance level : \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## Some descriptive statistics

Table 20: Work transitions of adults and children

	Own Health Shock				Own Health Shock			
	Yes		No		Yes		No	
	Women	Men	Women	Men	Girls	Boys	Girls	Boys
<b>No other health shock</b>								
No work - No work	29.10	7.32	43.63	15.14	57.14	100.00	82.14	61.80
No work - Work	13.43	4.88	11.61	9.17	14.29	0	10.55	17.60
Work - No work	8.21	12.2	2.97	2.82	9.52	0	1.22	2.32
Work - Work	49.21	75.6	41.97	72.87	19.05	0.00	6.09	18.28
Nb. Individuals	134	41	1 852	1 526	21	4	739	733
<b>At least another health shock</b>								
No work - No work	24.51	6.82	38.08	12.26	50.00	25.00	68.54	52.21
No work - Work	9.80	4.55	13.40	13.60	13.64	18.75	14.33	22.42
Work - No work	5.88	11.36	4.09	2.39	0	0	1.40	0.85
Work - Work	59.80	77.27	44.43	71.75	36.36	56.25	15.73	24.48
Nb. Individuals	102	44	709	669	22	16	356	339

## Global picture of transitions

- ▶ Members who experienced themselves a shock are more likely to reduce their labor supply
- ▶ All members are more likely to enter when a baseline household member had a health shock (Men  $>$  Women) and less likely to stay out of work
  - ▶ Attenuated effect : women/girls also slightly exit more