



ABCDE 2016

Intra-household inequalities and Poverty in Senegal

Philippe De Vreyer and Sylvie Lambert


Intrahousehold allocation of resources

- Little is known on interpersonal inequality within households.
- In poor settings, unequal allocation of resources within households might bring some individuals at very low levels of welfare.
- Evidence of unequal vulnerability to shocks (Dercon & Krishnan 2000; Rose 1999)
- No existing consumption data at infra-household level.
- Collective household models give a basis to compute sharing rules (Dunbar et al 2013).
- But,
 - These estimations cannot be confronted to real data
 - Existing models of intra-household allocation of resources cannot account for complex household structures as the one encountered in West African countries.

Research question

- What is the extent of intra-household inequalities in Senegal ?
 - Gini index in 2011 is estimated to reach 40.3% (WDI)
- What are the consequences of such inequalities on the poverty diagnostic in a country where about half of the population lives below the poverty threshold?

PSF Survey

- « Pauvreté et Structure Familiale » (PSF) survey undertaken by Philippe De Vreyer, Sylvie Lambert, Abla Safir et Momar B. Sylla.
 - Conducted in Senegal in 2006/2007
 - Nationally representative sample of about 1800 households .
 -  1728 households with complete consumption information.
- Takes into account intra-household organization.
- Consumption data collected at the level of subgroups within the household (“cells”):
 - Partly autonomous in their budget management
 - With clearly defined responsibility in terms of who is paying for what (typically, the household head is responsible for food, lodging and health expenditures).
 - Information collected so as to record for each cell the consumption its members actually benefit from (and not expenditures they are paying for).

Subgroup division of the household composition

Subgroup 5

- Mamadou Fall, Head of household
- Modou Fall, his son, single, born from a previous marriage
- Aminata Fall, first wife of Mamadou
- Awa Fall, their daughter
- Elisabeth Fall, second wife of Mamadou
- Cissé Fall, married son of Mamadou and Aminata
- Mariama Fall, wife of Cissé
- Moktar Fall, son of Cissé and Mariama
- Awa Diop, fostered to Aminata Fall
- Viviane Diouf, resident house worker
- Momar Ndiaye, visiting.

Subgroup 3

Subgroup 4

Subgroup 2

Subgroup 1

PSF Survey – Consumption

- Consumption collected in 4 parts:
 - Common household expenditures
 - Food expenditures (taking into account meal arrangements)
 - Cell specific expenditures
 - Consumption shared with other cells but not common to the whole household.
- Consumption can then be computed at the cell level (summing the cell share of common expenditures and of expenditures shared with other cells— according to cell size and composition – and the cell specific component of expenditures)
- For each person, we construct 2 measures of consumption
 - **Per capita (per adult equivalent) household consumption:** assuming that total household resources are shared equally among members.
 - **Individual consumption = per capita (per adult equivalent) cell consumption:** assuming cell consumption to be equally shared among members

PSF Survey – Consumption






- Hence, consumption is collected from more than one respondent per household.
- Induces a higher recorded level of consumption than in traditional consumption surveys, in a context where individual income and expenditures are not common knowledge within the household (Boltz et al, 2016)
- Comparison of poverty estimates (ESPS results taken from Ndoye et al (2009))

	ESPS FGT(0)	PSF	ESPS FGT(1)	PSF
National	50.8	47.84	16.4	16.69
Dakar	32.5	29.07	8.3	8.18
Other urban areas	38.8	37.24	10.8	10.44
All urban areas		32.71		9.18
Rural areas	61.9	59.32	21.5	22.39

PSF Survey - Household Structure

- Large household size: 8 members on average.
- 23% of married men and 35% of married women are in polygamous unions.
- 31% of polygamous men have non-cohabiting wives.
- 29% of household members are neither the head, nor one of his wives or children.
- 67% of households include « extended » family members.

Global Inequality

	Gini	90/10	75/25	Mean log dev	Theil
Per capita Household consumption:					
Per capita household's total consumption	53.96	7.88	3.03	0.50	0.69
Per capita household's non-food consumption	71.60	20.46	5.07	1.02	1.33
Per capita household's food consumption	39.46	5.95	2.48	0.26	0.28
Individual consumption:					
Per capita cell's total consumption	56.39 	8.56 	3.09 	0.56 	0.82 
Per capita cell's non-food consumption	75.20	25.82	5.77	1.18	1.60
Per capita cell's food consumption	40.68	6.44	2.55	0.28	0.29

Note: Using sampling weights.

Global Inequality

- Recording consumption at the cell level leads to higher total household consumption for households with several income earners.
- It affects the measure of consumption mainly for non-poor households.
- As a result, global inequalities are higher than what has been estimated from other data bases.
- We obtain a Gini index higher than 0.53 (as opposed to the 0.40 given in the povcal database)
- Further, taking into account intra-household inequality, by using individual consumption measure, we further reevaluate inequality.
- We need to explore sensitivity to measurement errors.

Inequality decomposition

- Using individual consumption, inequality can be decomposed in inequality within households and between households.

	Theil within	Theil between	share within
Individual consumption	0.13	0.69	15.77
Individual non-food consumption	0.27	1.33	16.86
Individual food consumption	0.02	0.28	6.17

- Up to 15% of total inequality is within households inequality.

Within household inequality

- An other measure of intra-household inequality is simply the ratio of the consumption of the richest cell in the household to that of the poorest.

	N	Mean	p25	p50	p75
Max/min	1,399	2.42	1.15	1.43	2.08
Low inequality: Max/min \leq 1.25	1,399	0.36			
Very high inequality: Max/min \geq 2	1,399	0.27			

Correlates of within Household inequality.

VARIABLES	Type of household	Log of within household Theil
Other urban areas	-0.233*** (0.0781)	-0.594*** (0.196)
Rural	-0.195** (0.0912)	-0.373* (0.191)
Polygamous hhold head	0.196*** (0.0745)	0.308** (0.147)
Hhold with ext. family members	-0.0233 (0.0148)	-0.0556* (0.0295)
Hhold size	0.0447*** (0.0169)	0.0942*** (0.0338)
Uneducated hhold head	-0.180** (0.0748)	-0.343** (0.135)
Log per cap. hhold expenditures.	0.230*** (0.0483)	0.501*** (0.111)
Nb of children 0-5 y.o.	0.130*** (0.0261)	0.258*** (0.0529)
Nb of children 5-15 y.o	0.0233 (0.0268)	-0.0125 (0.0492)
Nb of elderly 66+ y.o	0.0599 (0.0622)	0.00412 (0.141)
Constant cut1	2.952*** (0.661)	
Constant cut2	4.032*** (0.665)	
Constant		-11.76*** (1.516)
R-squared		0.118
Observations	1,399	1,393

(1) Ordered probit estimates : The type of household varies from 1 to 3, 1 being the most equal and 3 the most unequal. (2): OLS estimates. Additional controls: ethnic group of the household head and religion. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Who are the households with highly unequal resource allocation?

- To sum up, more unequal households
 - Have a specific household structure
 - Large
 - Polygamous
 - With more young children
 - Are richer
 - More likely to live in Dakar
 - More educated
 - A higher consumption level

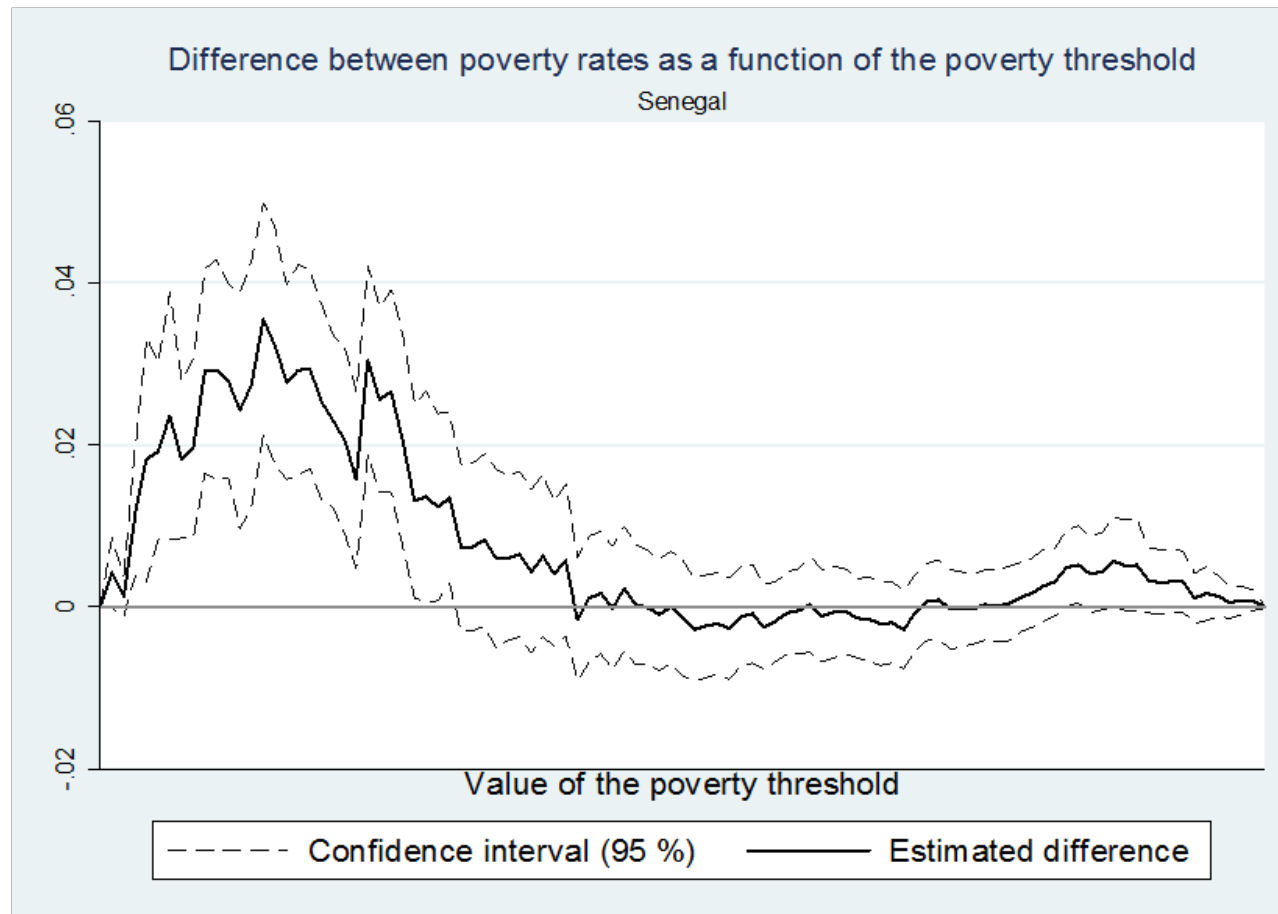
Comparing poverty estimates with different consumption measures.

- Using individual consumption measures leads to revise poverty estimates upwards.

	Food poverty line		National poverty line	
	FGT(0)	FGT(1)	FGT(0)	FGT(1)
Per adult eq. household consumption:				
National	17.95	4.61	47.84	16.69
Dakar	1.58	0.34	29.07	8.18
Other urban areas	7.74	1.44	37.24	10.44
Rural areas	28.29	7.48	59.32	22.39
Individual consumption:				
National	20.03	5.57	51.61	18.74
Dakar	1.92	0.46	34.63	10.29
Other urban areas	9.85	2.15	40.48	11.95
Rural areas	31.10	8.88	62.51	24.59

Comparing poverty estimates with different consumption measures

The difference depends on the choice of the poverty line



Invisible Poor

Because of within household inequality, some poor individual might be unnoticed:
12.5% of the poor live in non-poor households (and 17% of the food-poor).

	Households		Cells		Individuals	
	N	%	N	%	N	%
National poverty line:						
Poor in non-poor household	85	4.92	223	5.30	856	6.25
Poor in poor household	608	35.19	1,600	38.04	5,953	43.45
Non-poor in poor household	31	1.79	172	4.09	317	2.31
Non-poor in non-poor hhold.	1,004	58.10	2,211	52.57	6,576	47.99
Food poverty line:						
Poor in non-poor household	37	2.14	110	2.62	406	2.96
Poor in poor household	190	11.00	517	12.29	1,970	14.38
Non-poor in poor household	10	0.58	85	2.02	173	1.26
Non-poor in non-poor hhold.	1,491	86.28	3,494	83.07	11,153	81.40

- The poorest cells are large and not headed by the households head or one of his wives.
- The poor living in non-poor households are less poor than other poor.

	Food poverty line			National poverty line		
	All poor	Poor with some NP	NP with some poor	All poor	Poor with some NP	NP with some poor
National	31.86	27.27	15.86	41.33	32.22	15.54
Dakar	31.77	28.66	10.22	34.98	28.33	17.78
Other urban areas	25.77	25.00	13.13	34.56	28.28	12.09
Rural areas	32.37	27.46	16.71	43.65	34.56	15.41

Conclusion

- Collecting consumption data at the sub-group level rather than at the household level leads to reevaluate consumption levels, in particular for the non poor.
- As a result, it describes a more uneven consumption distribution.
- Further, it allows to uncover within household inequality (15% of total inequality).
- This within household inequality implies that some poor might be invisible to the policy maker and hence missed by targeted policies. We estimate the share of « invisible » poor to be 12.5%
- The problem is mitigated by the fact that the intensity of poverty is lower for them than for other poor.
- A general message is that global inequalities are likely to be underestimated by measures based on standard consumption survey, and that the extent of underestimation is probably related to household size and complexity of household structure.