





Quality of Fertility Measures in EU-SILC

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Motivation

- Harmonized and comparable variables for more than 30 European countries
- Cross-section and longitudinal database
- A large set of socio-economic variables, some demographic ones
- EU-SILC more and more popular in socio-economic and demographic research

Motivation

- Demographic information is used in
 - socio-economic research: control for family size, number of children...
 - demographic research: analysis of determinants and consequences of child birth
- So far no comprehensive analysis of the quality of fertility measures in EU-SILC
- We propose a systematic analysis of the quality of two fertility measures: completed fertility and total fertility rates

The data base



Source: Eurostat Guidelines for SILC, 2012

Comparison of fertility measures: SILC vs. HFDB



TFR: SILC CS 2011 - children born in 2010, against WB WDI 2010 CFR: SILC CS 2011 - cohorts 1967-1973, against HFDB 2012, cohort 1970

The number of children by age: SILC vs HFDB



Women of cohorts 1959 to 1994, year 2009, Sweden

Proportion of women with *n* children: SILC vs. HFD



0 children

1 child



3 or more children



Women of cohorts 1959 to 1994, year 2009, Sweden

Under-estimation of the number of children by age and birth order: SILC vs HFD



Women of cohorts 1959 to 1994, year 2009, Sweden

Averg. number of children out of the household by women's age (ERCV CS 2011)



The underestimation of completed fertility is little correlated with socio-economic characteristics

		Coef.	Std. Err.	t	P>t
Educo	ntion				
	Low education (pre-primary, primary, lower secondary)	0,004	0,019	0,190	0,847
	Middle education (upper secondary, post-secondary)	Ref.			\frown
	High education (tertiary)	-0,028	0,014	-2,030	0,042
Marit	al status				
	Married	Ref.			
	Cohabiting	0,086	0,016	5,530	0,000
	Single	0,004	0,018	0,200	0,841
1st no	ationality				
	France	Ref.			
	EU/OECD	0,005	0,040	0,130	0,894
	Other	0,079	0,039	2,020	0,043
Empl	pyment status				
	Full-time employment	Ref.			
	Part-time employment	-0,042	0,015	-2,770	0,006
	Full-time self employment	0,056	0,031	1,810	0,071
	Part-time self-employment	-0,052	0,051	-1,020	0,306
	Unemployed	0,004	0,028	0,140	0,887
	Student	-0,082	0,213	-0,380	0,702
	Disabled	0,044	0,032	1,370	0,171
	Inactive due to care and household work	-0,042	0,024	-1,770	0,077
	Other inactive	0,043	0,060	0,710	0,477
Constant		0,082	0,013	6,380	0,000
R²		0,050			
N		1154			
SRCV (CS 2011. women of cohorts 1967-1976				

How can the underestimation in TFR be explained?

- Unobserved children outside the household cannot be the main reason
- Hypotheses:
 - 1-Households with young people are under-represented in the sample
 - 2- Attrition of women who are 'at risk' of childbirth or who just had a child

Four-year follow-up rate of women with and without children



SILC LT 2009-2012, women aged 15 to 55, 3 year MA, Weighted average of 23 European countries

TFR measurement bias by age and birth order: SILC vs HFDB, ex: Norway



HFDB 2009, SILC CS 2012, TFR average for years 2008, 2009 and 2010.

Calculating TFR by year of CS database



Total fertility rates of the years 2008-2011 obtained with the SILC cross-sectional data bases of 2009-2012.

Calculated for *n-3*, the TFR in SILC is close to the TFR in HFDB



	4 years follow up	4 years follow up
	coefficient	proportion
Number of children		
0	ref	57%
1	0.0810*	63%
2	0.127***	65%
3+	0.0965*	65%
partner		
No	ref	56%
Yes	0.196***	64%
Age		
15-17	-0.0644	61%
18-21	-0.354***	55%
22-25	-0.422***	52%
26-29	-0.342***	54%
30-34	-0.131**	61%
35+	ref	65%
Tenure status		
Owner	ref	64%
rent at market rate	-0.439***	47%
rent at a reduced rate	-0.148**	56%
accommodation free	-0.0546	64%
Degree of urbanisation		
densely populated area	ref	58%
intermediate area	0.174***	60%
thinly populated area	0.355***	71%
student		
No	ref	62%
Yes	0.199***	57%
education		
low	-0.0671	59%
middle	ref	63%
high	-0.00376	62%
mother present		
No	ref	62%
Yes	0.0530	58%

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ISCO					
Legislators, senior officials and managers	-0.174*	62%			
Professionals	ref	64%			
Technicians and associate professionals	-0.0212	63%			
Clerks	-0.0597	61%			
Service workers and shop and market sales workers	-0.157**	59%			
Skilled agricultural and fishery workers	0.318**	79%			
Craft and related trades workers	-0.119	66%			
Plant and machine operators and assemblers	-0.111	64%			
Elementary occupations	-0.186**	59%			
Others	-0.135**	60%			
constant	0.488***				
country fixed effect					
Number of observations: 21094 /34501					
roc curve =0,68					

Attrition is little correlatec with socioeconomic characteristics

Perspectives

- EU-SILC is a unique data base due to its large country coverage and the variety of socio-economic measures
- EU-SILC is initially not conceived for demographic analysis:
 - No question on the number of children outside the household
 - Unclear in how far demographic information is taken into account by weights
- Socio-economic analysis risks being biased by missing information on children outside the household

Perspectives

- •The underestimation of the number of children outside the household is increasing with age
- Birth orders risk being attributed the wrong way
- Possibility of adding a question on the number of children outside the household to the <u>individual</u> questionnaire?
- Possibility of creating weights for birth events?

Country by country analysis: age from which on the number of child departures exceeds the number of child births



SILC LT 2009-2012





Fertility rates by age and birth order – comparison of cross-section and longitudinal samples in EU-SILC – without and with weights

First childbirth, women aged 15 to 50



Average number of child departures vs average number of child entries for women aged 25 to 60, weighted European average for 25 countries, SILC LT 2009-2012

