

Estimation of joint income-wealth poverty: A sensitivity analysis

Sarah Kuypers & Ive Marx

Herman Deleeck Centre for Social Policy, University of Antwerp

Outline

1. Why include wealth in poverty measurement?
2. How include wealth in poverty measurement?
3. Purpose of the paper
4. Data & methods
5. Results & sensitivity analysis
6. Conclusion

Why include wealth in poverty measurement?

- Wealth contributes to well-being in a number of ways
 - Generate income flow (already included)
 - Short-term financial stability: precautionary saving
 - Life-cycle financial stability
 - Social & economic development
 - Social status & power
 - Intergenerational stability
- Wealth and income have independent impact on subjective well-being (Headey & Wooden, 2004) and satisfaction of life (D'Ambrosio et al., 2009).

Why include wealth in poverty measurement?

If people would be distributed similarly across income & wealth deciles no real need

		Disposable income deciles									
		1	2	3	4	5	6	7	8	9	10
Net wealth deciles	1	10									
	2		10								
	3			10							
	4				10						
	5					10					
	6						10				
	7							10			
	8								10		
	9									10	
	10										10

Why include wealth in poverty measurement?

In reality there is considerable reranking

		Disposable income deciles										± 18 %
		1	2	3	4	5	6	7	8	9	10	
Net wealth deciles	1	3.70	2.52	1.15	1.15	0.45	0.62	0.12	0.15	0.04	0.08	
	2	1.95	1.82	1.05	1.70	1.33	0.54	0.74	0.37	0.24	0.26	
	3	0.54	0.68	1.71	2.27	1.50	1.11	0.65	0.47	0.67	0.41	
	4	0.52	0.64	1.89	0.81	0.86	0.79	1.68	1.67	0.68	0.45	
	5	0.51	1.27	0.67	0.95	0.46	1.16	2.02	1.63	1.01	0.34	
	6	0.16	1.29	0.54	0.65	1.40	1.83	1.11	1.05	1.14	0.93	
	7	0.89	0.30	0.67	0.88	1.18	1.42	0.90	1.37	1.26	1.05	
	8	0.60	0.55	1.25	0.33	1.16	0.59	1.26	1.84	1.26	1.10	
	9	0.74	0.53	0.82	0.91	0.78	1.14	0.67	0.79	1.57	2.08	
	10	0.45	0.33	0.36	0.36	0.78	0.88	0.75	0.82	1.95	3.30	
												± 18 %

Why include wealth in poverty measurement?

- Income poverty measures
 - Ignore assets that do not generate income
 - Ignore other functions of wealth
 - Ignore negative resources: debt
- Material deprivation
 - Focus on actual consumption patterns
- Joint income-wealth indicators focus on consumption possibilities, taking into account all available resources

How include wealth in poverty measurement?

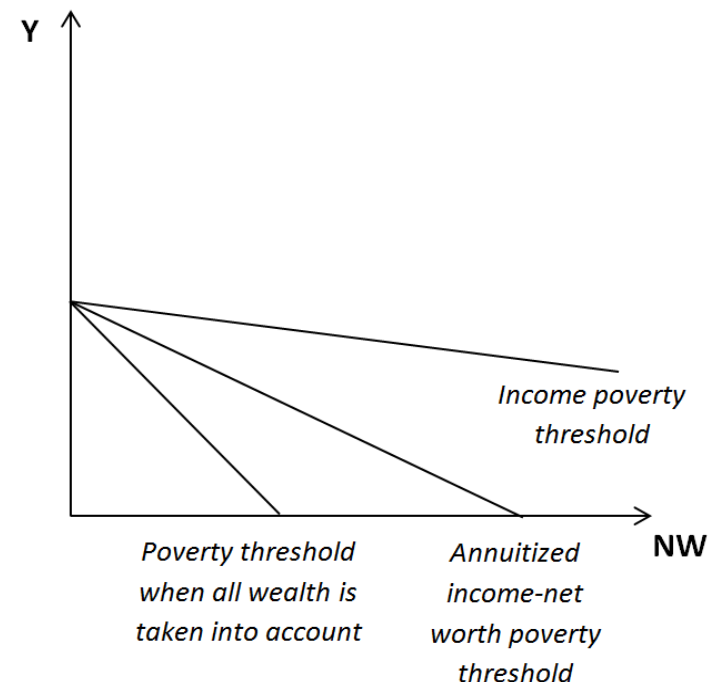
1. Unidimensional approach

- Sum of income and wealth using annual annuities (Weisbrod & Hansen, 1968)
- See among others Brandolini et al. (2010), Short and Ruggels (2005), Zagorsky (2005), Van den Bosch (1998)

$$AY_{\downarrow t} = Y_{\downarrow t} + [\rho / 1 - (1 + \rho)^{\uparrow - n}]$$

$n = T$ for unmarried,

$T_{\downarrow 1} + (T - T_{\downarrow 1})b$ for married



How include wealth in poverty measurement?

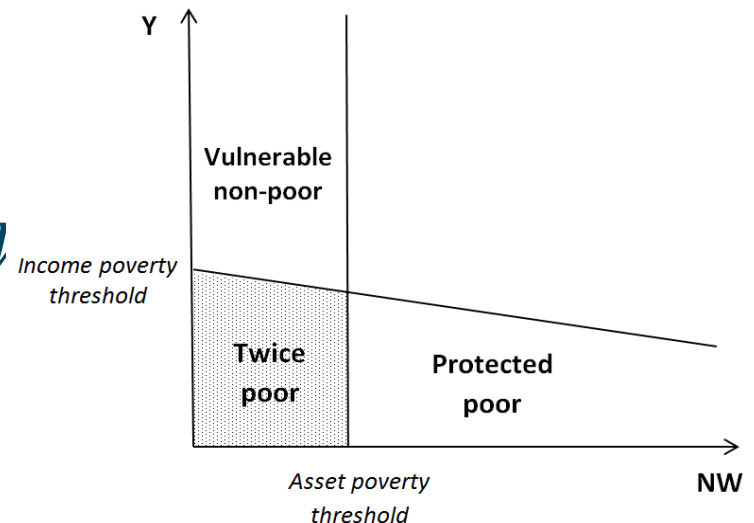
2. Two-dimensional approach

- Developing separate poverty lines for income and wealth
- Allows analysing intermediate positions in income and wealth poverty
- See among others Azpitarte (2012, 2011), Heady (2008), Haveman and Wolff (2004), Caner and Wolff (2004)

Asset poverty: $NW_{t-1} < \zeta Z_{t-1}$

Income poverty: $Y_{t-1} < Z - r_{t-1} NW_{t-1}$

(b) Two-dimensional poverty index



Purpose of the paper

- Conclusion of the literature so far:

When wealth is included in poverty measurement:

- Poverty figures are considerably lower, especially when main residence is taken into account
 - Poverty risk shifts from the elderly to the young
- “We need to better understand the properties of these alternative indicators and assess their sensitivity to different assumptions” (Brandolini et al., 2010, p.281).
- Assess how robust conclusions are to a range of measurement aspects, comparing Belgium and Germany

Data

- 1st wave of Eurosystem Household Finance and Consumption Survey (HFCS)
- Income 2009, wealth 2010
- Belgium: 2,327 HH Germany: 3,565 HH
- Net worth = (real + financial assets) – (mortgage + non-mortgage debt)
- Gross HFCS incomes have been converted into disposable incomes using the EUROMOD tax-benefit simulation model (Kuypers, Figari & Verbist, 2016)

Case studies: BE & DE

- Very similar economic models and social security systems
- Very similar in terms of income distribution
- Largely different in terms of wealth distribution
- Correlation income-wealth stronger in DE

	Belgium	Germany
Median equivalised disposable income	€19,313	€18,586
At-risk-of-poverty rate	14.6%	15.5%
Median net wealth	€206,000	€51,000
Home-ownership rate	69.6%	44.2%

Baseline poverty indicators

Results for BE & DE using standard measurement choices

Poverty measure	All		Elderly (65-84)		Non-elderly (-64)	
	Belgium	Germany	Belgium	Germany	Belgium	Germany
Income poverty	17.1	18.5	14.2	16.6	18.1	19.2
Unidimensional	11.4	16.3	3.5	11.9	14.1	18.0
Two-dimensional						
Income & asset poor	6.2	9.7	1.4	5.7	7.9	11.3
Only income poor	10.9	8.7	12.8	10.9	10.2	7.9
Only asset poor	5.6	11.1	4.2	6.0	6.1	13.0

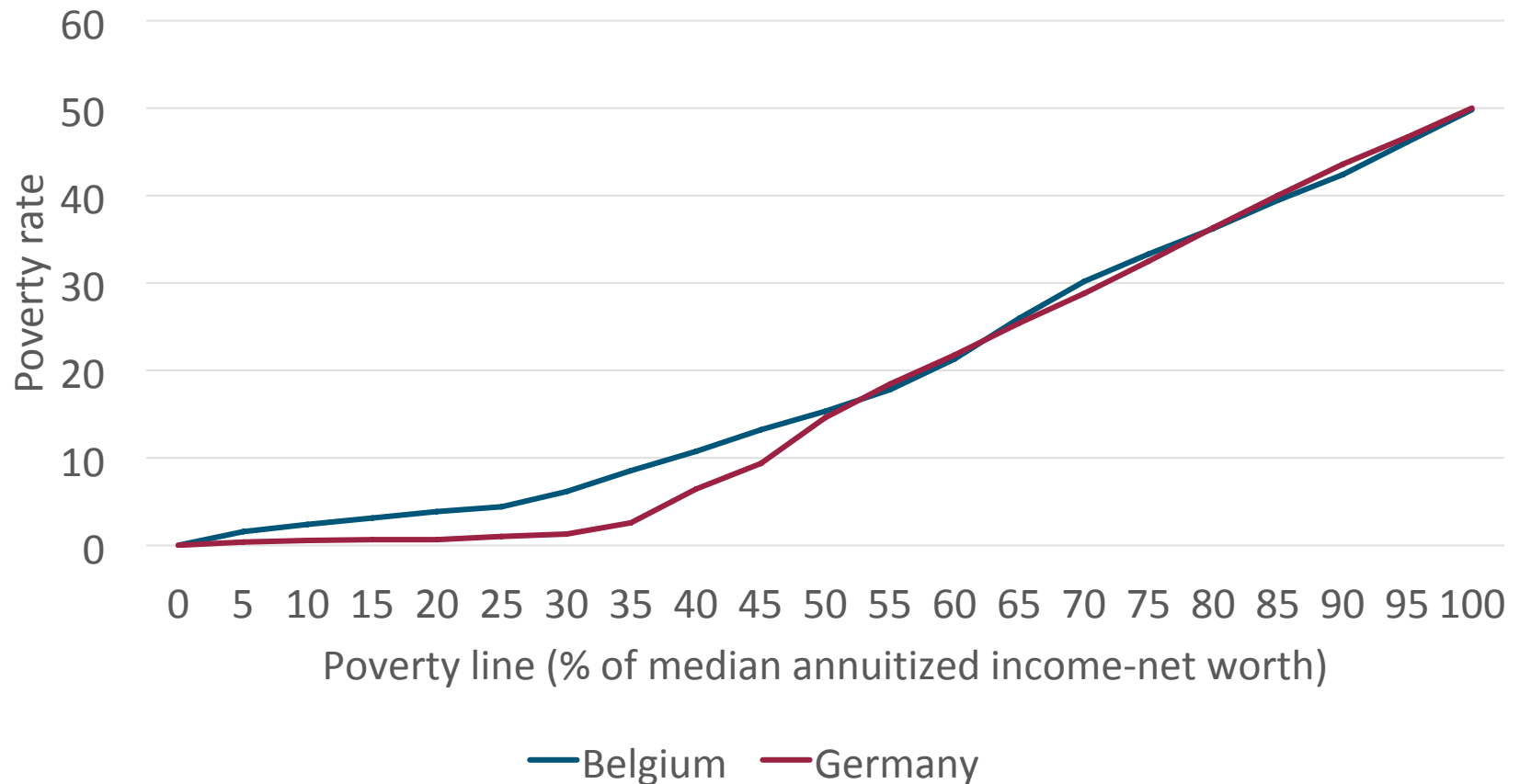
Sensitivity analysis: poverty line

1. Unidimensional approach

- Literature: poverty line is kept at 60% of median equivalised income (see baseline indicator)
- Does current poverty line reflect true resources needed for an acceptable living standard?
- Here: adaptation of poverty line: in terms of median equivalised income-net worth
- Is more consistent with fully relative approach (Brandolini et al., 2010)

Sensitivity analysis: poverty line

1. Unidimensional approach



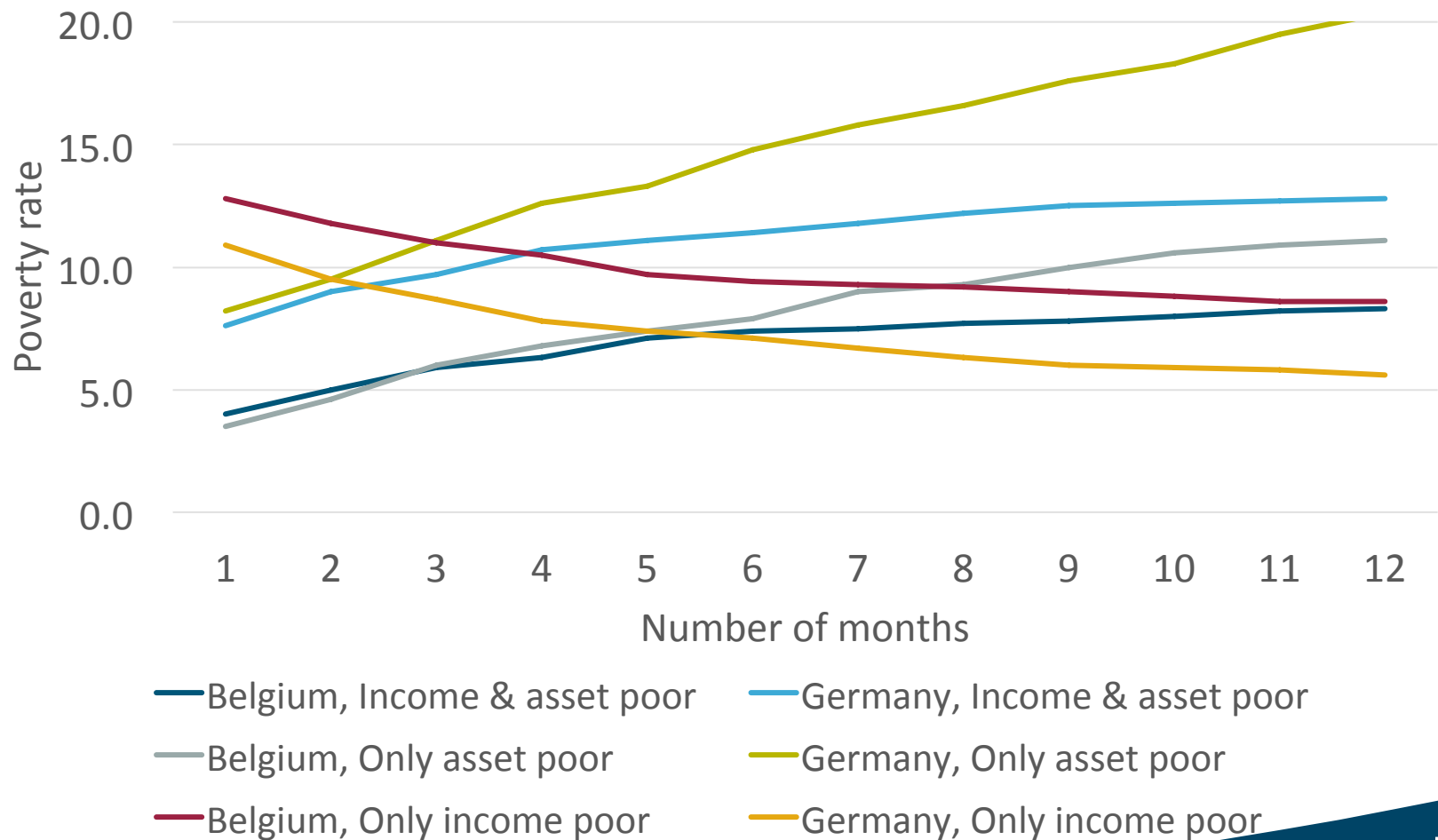
Sensitivity analysis: poverty line

2. Two-dimensional approach

- Relative vs absolute
- Asset poverty line = time period households are supposed to sustain themselves at the official income poverty line
- Literature: 3 months (1/4 of income poverty line)
- $\approx$ average expected duration of unemployment in the US prior to the crisis
- Unemployment duration longer in Europe and after the crisis

Sensitivity analysis: poverty line

2. Two-dimensional approach



Sensitivity analysis: wealth concept

Net worth	Non-housing wealth	Liquid assets
+ Household main residence	+ Other real estate property	+ Deposits
+ Other real estate property	+ Vehicles (cars & other)	+ Mutual funds
+ Vehicles (cars & other)	+ Valuables	+ Bonds
+ Valuables	+ Self-employment business wealth	+ Publicly traded shares
+ Self-employment business wealth	+ Deposits	+ Non-self-employment business wealth
+ Deposits	+ Mutual funds	+ Managed accounts
+ Mutual funds	+ Bonds	
+ Bonds	+ Publicly traded shares	
+ Publicly traded shares	+ Non-self-employment business wealth	
+ Non-self-employment business wealth	+ Managed accounts	
+ Managed accounts	+ Money owed to the household	
+ Money owed to the household	+ Private pensions/whole life insurance	
+ Private pensions/whole life insurance	+ Other financial assets	
+ Other financial assets		
- Household main residence mortgage	- Other property mortgage	
- Other property mortgage	- Credit line/ bank overdraft debt	
- Credit line/ bank overdraft debt	- Credit card debt	
- Credit card debt	- Non-mortgage loans	
- Non-mortgage loans		

Sensitivity analysis: wealth concept

Poverty measure	Net worth		Non-housing wealth		Liquid assets	
	Belgium	Germany	Belgium	Germany	Belgium	Germany
Unidimensional	21.3	21.8	19.2	20.6	18.4	18.9
Two-dimensional						
Income & asset poor	6.2	9.7	7.5	10.2	10.3	12.4
Only income poor	10.9	8.7	9.6	8.3	6.8	6.1
Only asset poor	5.6	11.1	10.4	13.5	22.2	24.2

Sensitivity analysis: other

Equivalence scales

- No agreement on equivalence scales for wealth
- Supporting current vs future well-being

Interest rate of the annuity (ρ)

- Literature: real and nominal, mostly 2%
- Belgium: real average return on wealth of households between 1961 and 1988 = 2.34% (Vuchelen, 1991)
- Interest rate has significant impact on the weight that is given to wealth (Radner, 1990)
- Both have only small effect on results

Sensitivity analysis: other

Length of the annuity (n)

- Literature: expressed in terms of life expectancies by country, age and gender
- Wealth and life expectancy are correlated
- No theoretically satisfying alternative
- Assumes no bequests
- Bequests are important motivation for wealth accumulation

Conclusion

- Imperfect correlation between income and wealth
- Affects incidence and age structure of poverty
- Wealth measures complement existing EU social indicators
- Conclusions of the literature largely depend on specific measurement choices
- Most important: poverty line
 - Existing vs fully relative
 - Poverty may increase or decrease
 - May affect cross-country rankings

Thank you!



sarah.kuypers@uantwerpen.be