

The distributional effects of the pension system reform in Poland

A. Ruzik-Sierdzińska, E. Jarocińska

Plan

- Aim and methodology
- Polish pension system and its reform in 1999
- Data and model
- Results

Aim of the study

- Analysis of the distributional effects (intragenerational equality) of the Polish 1999 pension reform

Literature

- The impact of pension systems on the income distribution of the elderly (e.g. Knoef et al. 2012; van Vliet et al. 2012; Vork et al. 2015)
- Simulations of future pension benefits for a hypothetical worker or cohorts (e.g. Määttänen et al. 2014; EC 2012; OECD 2013), and focus on intergenerational differences (Jabłonowski and Müller 2013; Egert 2012; Leifels et al. 2010)
- Studies using microsimulations and Polish pension system rules (Lachowska and Myck 2015, Chłoń-Domińczak and Strzelecki, 2013)
- Our text is one of the first that focuses on intragenerational inequalities in the Polish pension system

Pension system reform in 1999

Pension benefits in the old pension system were calculated according to the DB formula:

$$\textit{Pension benefit} = \textit{Base amount} * [0.24 + \textit{IB} * (0.013 * \textit{CY} + 0.007 * \textit{NCY})]$$

The new DC pension formula encompasses all contributions paid during professional life and life expectancy at retirement:

$$\textit{Pension benefit} = \textit{Pension assets} / \textit{LE (retirement age)}$$

Initial capital

- For people who worked before 1999, social security institution estimated the so-called 'initial capital' in order to account for accrued pension rights in the previous system

$$p = \sqrt{\frac{\text{age on 31 Dec. 1998} - 18}{65 - 18} * \frac{\text{tenure on 31 Dec. 1998}}{25}}$$

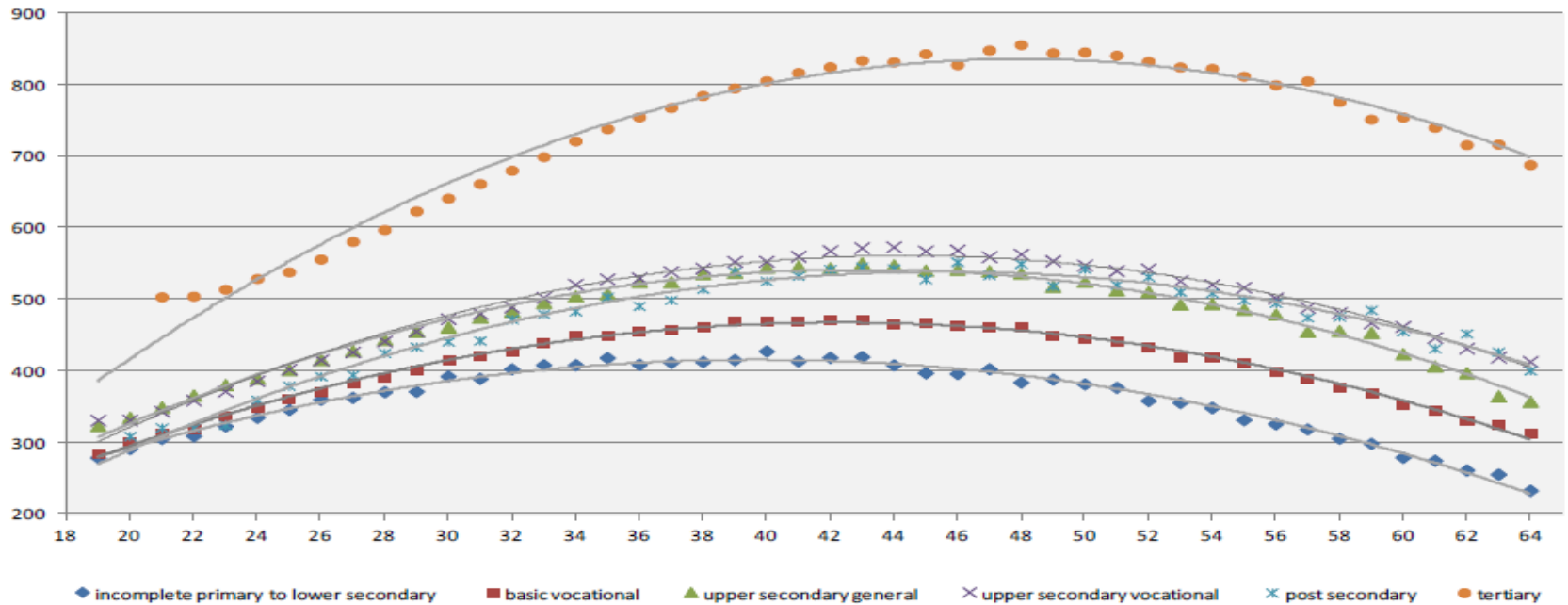
Data

- 2012 Household Budget Survey
- Ca 16.7 thous. observations for men aged 18-64 - estimation of age-earnings profiles
- Pension and replacement rates simulations for 5353 men born in years 1969-1979

Step 1. Age-earnings profiles

- Mincer equation (Heckman et al. 2003; Lemieux 2006),
- Log monthly wage
- Variables: tenure, tenure², education, (5 groups), NUTS2 (województwo)
- Tenure= age – 7 – yrs in formal education

The observed and predicted age-earnings profiles for men by education level (net wage in euro)



Step 2. Model

- Microsimulation model assuming no change in the pension system rules
- Unemployment probability dependent on education treated as non-contributory periods
- Future life expectancies at 65 and 67 based on the EUROPOP2010 demographic projections

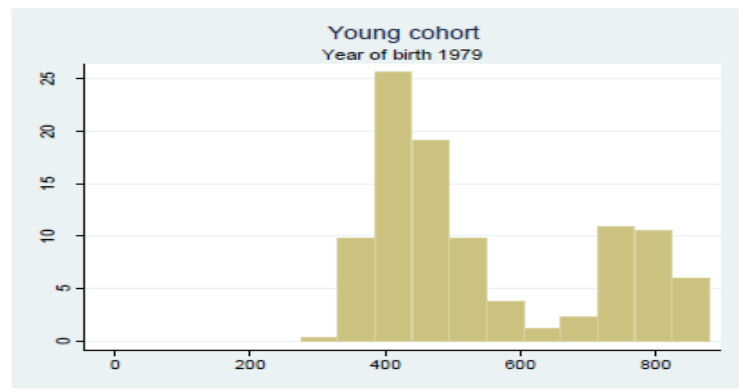
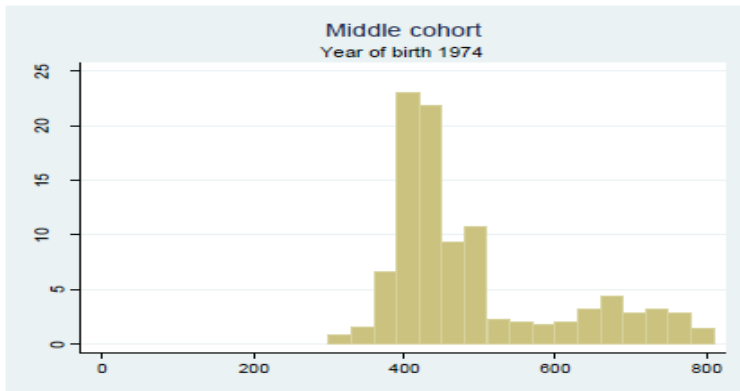
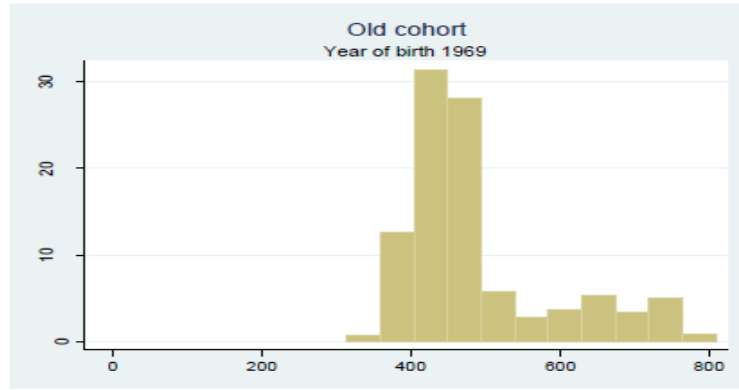
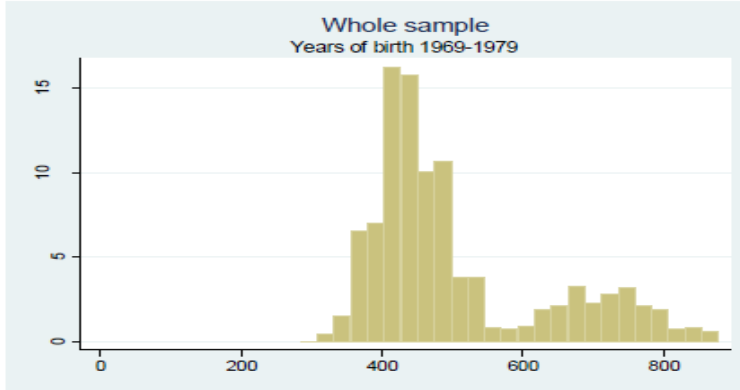
Results: predicted net monthly pension benefits at 67 in euro

Rok ur.	Średnia	p10	p50	p90	p90/p10	p90/p50	p10/p50	Gini
1969	€ 489	€ 399	€ 453	€ 669	1.68	1.48	0.88	0.106
1970	€ 477	€ 385	€ 449	€ 639	1.66	1.42	0.86	0.099
1971	€ 489	€ 386	€ 450	€ 673	1.74	1.50	0.86	0.113
1972	€ 489	€ 393	€ 448	€ 675	1.72	1.51	0.88	0.112
1973	€ 484	€ 376	€ 447	€ 673	1.79	1.51	0.84	0.118
1974	€ 491	€ 393	€ 446	€ 690	1.76	1.55	0.88	0.122
1975	€ 499	€ 380	€ 458	€ 710	1.87	1.55	0.83	0.130
1976	€ 505	€ 373	€ 458	€ 734	1.97	1.60	0.81	0.140
1977	€ 523	€ 395	€ 468	€ 755	1.91	1.61	0.84	0.144
1978	€ 539	€ 390	€ 470	€ 781	2.01	1.66	0.83	0.157
1979	€ 549	€ 383	€ 480	€ 799	2.08	1.66	0.80	0.164

Results: predicted individual replacement rates at 67

Rok ur.	N	Średnia	SD	p10	p90
1969	433	62%	9.83	46%	71%
1970	417	60%	9.02	45%	69%
1971	447	58%	9.14	45%	67%
1972	469	57%	8.93	44%	66%
1973	475	56%	8.73	43%	64%
1974	495	54%	8.03	42%	62%
1975	503	53%	7.31	41%	61%
1976	535	52%	6.93	43%	59%
1977	486	50%	5.96	43%	58%
1978	545	50%	5.36	42%	56%
1979	547	49%	4.67	43%	55%

Distributions of predicted monthly pension benefits at 67



Results - pensions

- Apart from a decrease in pensions or replacement rates, we found that inequality of predicted first pension benefits will increase within younger cohorts
- One of the reasons – decreasing importance of an initial capital for younger persons
- Comparison of p10/p50 and p90/p50 ratios show that inequalities will increase mainly in the upper part of the future pension distribution

Results – replacement rates

- Inequality in replacement rates will decrease due to a stronger link between contributions and pensions.
- But – replacement rates are less diversified in the upper part of the rr distribution (which could be partially explained by our Mincer equation)

Conclusions

Transition from the DB to the DC pension system will cause:

- Lower intragenerational diversification of replacement rates (due to a stronger link between pension levels and life-time contributions)

and

- Higher inequality in pension benefits (reflecting differences in wages and tenure)

Thank you