
The impact of introduction of funded pension scheme on intra- and intergenerational inequality in Estonia

MoPAct WP4 Task 1

Andres Võrk, Magnus Piirits

Praxis Center for Policy Studies, Estonia



Netspar International Pension Workshop
27 January 2016



Outline

- Praxis and MOPACT WP4
- Estonian pension system
- Data and methods
- Results
- Policy impact of WP4

WP 4. Pension systems, savings and financial education

Task 1. Intragenerational equity

- How well are people in Europe prepared for retirement?
- Explore the distribution of total income of retirees
- What are the characteristics of vulnerable groups?
- What are the impacts of policy reforms?

Task 2. Intergenerational risk sharing

Task 3. Effective communication of pension risks

Praxis and WP 4

Võrk, Piirits, Jõgi (2015). The impact of introduction of funded pension schemes on intragenerational inequality in Estonia: A cohort microsimulation analysis. Netspar Discussion Papers. DP 06/2015-021

Contribution to: Määtanen, et al (2014) The Impact of Living and Working Longer on Pension Income in Five European Countries: Estonia, Finland, Hungary, the Netherlands and Poland, Netspar Discussion Paper No. 08/2014-036

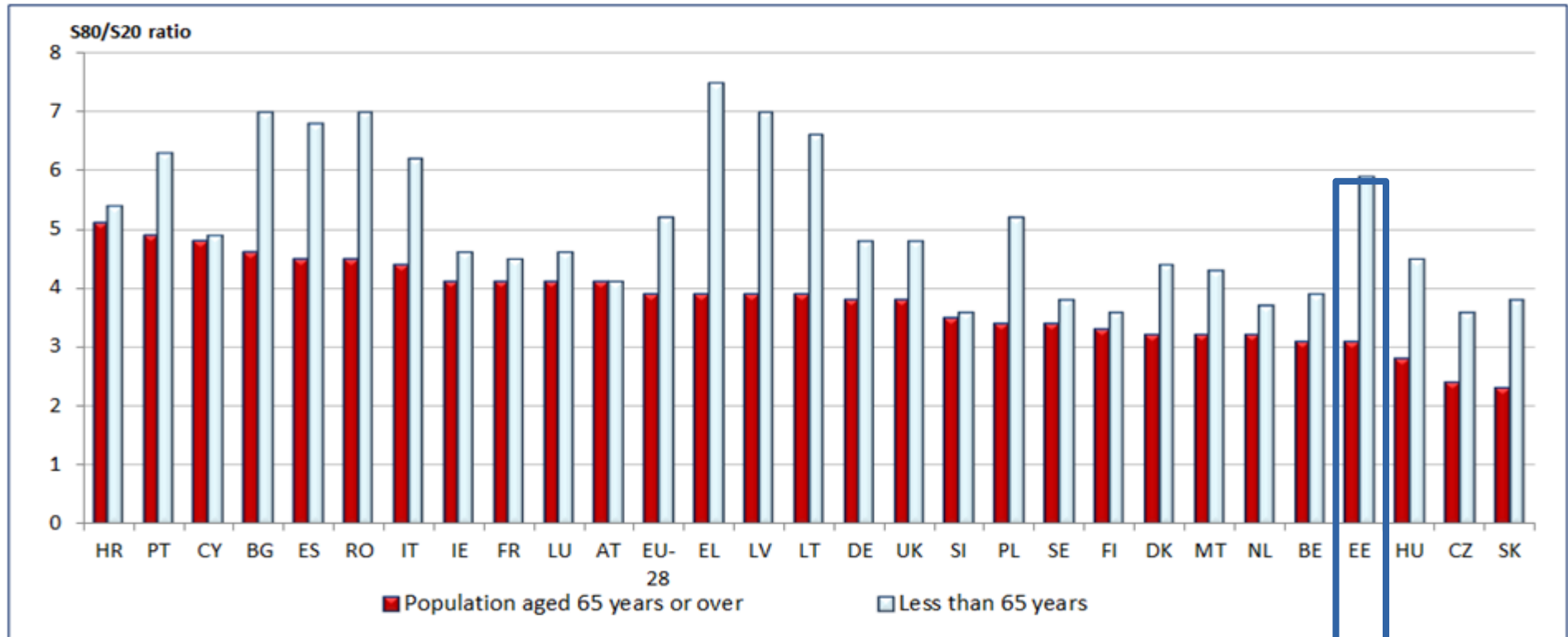
Contribution to: Nijman et al (2015) Analysis of the standardized Pan European Personal Pension (PEPP) product and its impact in four European countries: the Netherlands, Estonia, Finland and Hungary

Contribution to: Gal (2015) Pension microsimulation models in Estonia, Finland, Hungary, the Netherlands and Poland. Presentation in Netspar Pension Workshop 29. January 2015

Piirits, Võrk (in progress). The intergenerational impacts of introduction of funded pension schemes in Estonia: a simulation analysis

Motivation and aim

- In Estonia, currently (SILC 2013) inequality of pensioner's income is one of the lowest in Europe but it will change



- What is the effect of pension reforms on future inequality?
- What is the effect of pension reforms on different cohorts?

Estonian pension reforms

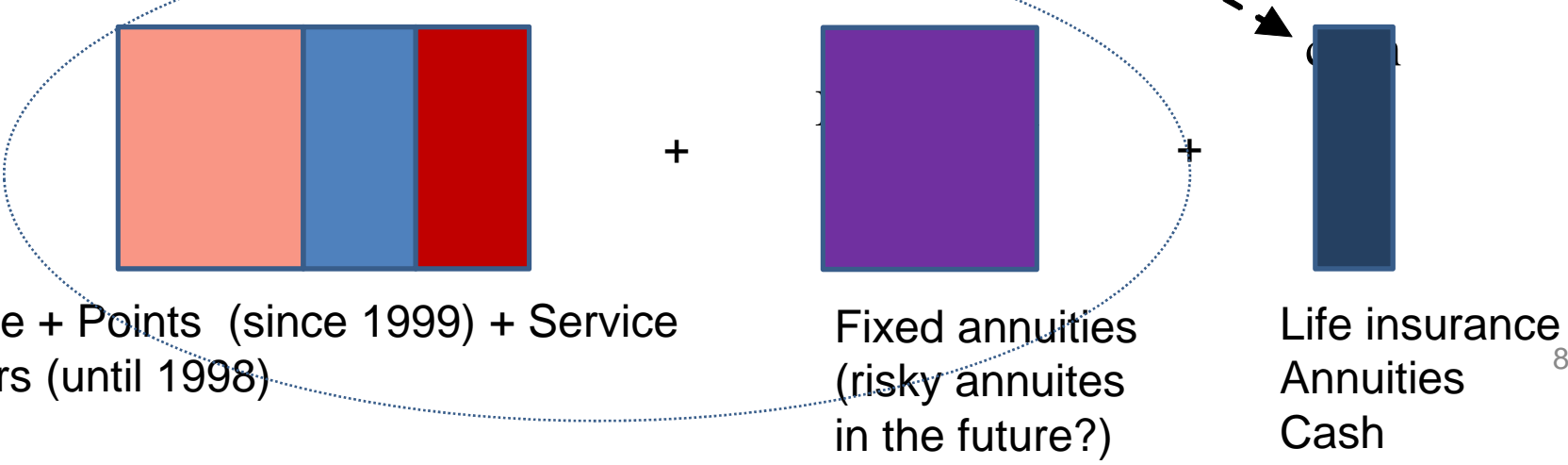
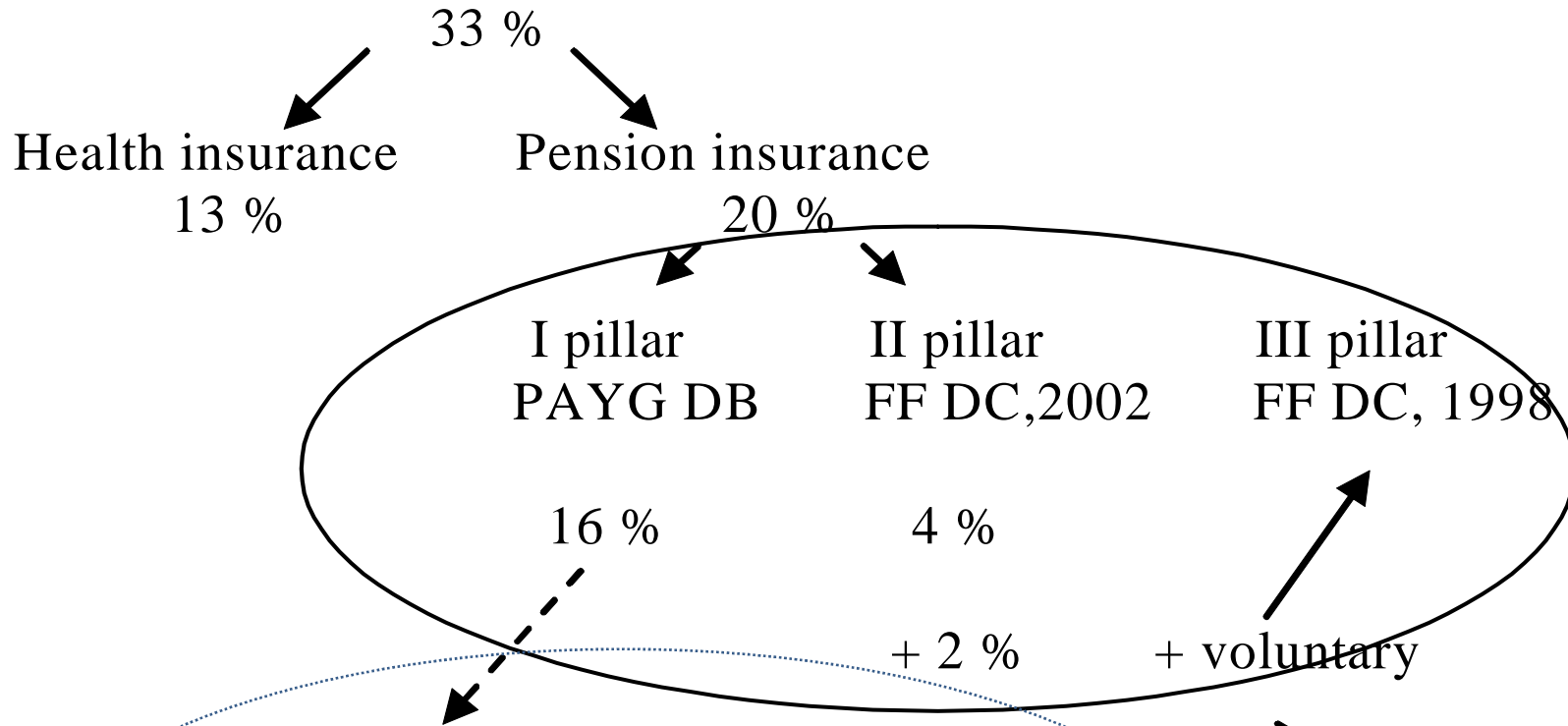
- Until 1998 – PAYG DB, pensions depended on contribution years and base component (I pillar)
- 1998 – voluntary pension scheme (DC, FF) – III pillar
- 1999 –personalised contributions in PAYG scheme (point system)
- 2002 – partial replacement of PAYG with compulsory FF DC scheme (II pillar)
- 2002 - Indexation of pensions (50%CPI + 50%SocTaxRev) in the I pillar
- Since 2007 – PAYG flat rate component increases faster, indexation 20%CPI + 80%SocTaxRev in the I pillar
- + Pension age increases since 1992 (Men 60-> 63 -> 65; Women 55->63->65)

Estonian pension system (2)

Pillar	Participation	Financing	Admin	Risks covered
I	Compulsory	PAYG, earmarked social tax + additional transfers from state budget	State	Old-age, disability, survivor's + special pensions
II	Compulsory, (window) (82% of 18-63)	FF, transferred social tax + additional contributions	State/ Private (5 fund managers, ca 20 funds)	Old-age Survivor's (inheritable)
III	Voluntary (12% of 18-63)	FF, tax incentives in contribution and pay-out phase	Private (5 fund managers, 5 insurance companies)	Old-age, disability

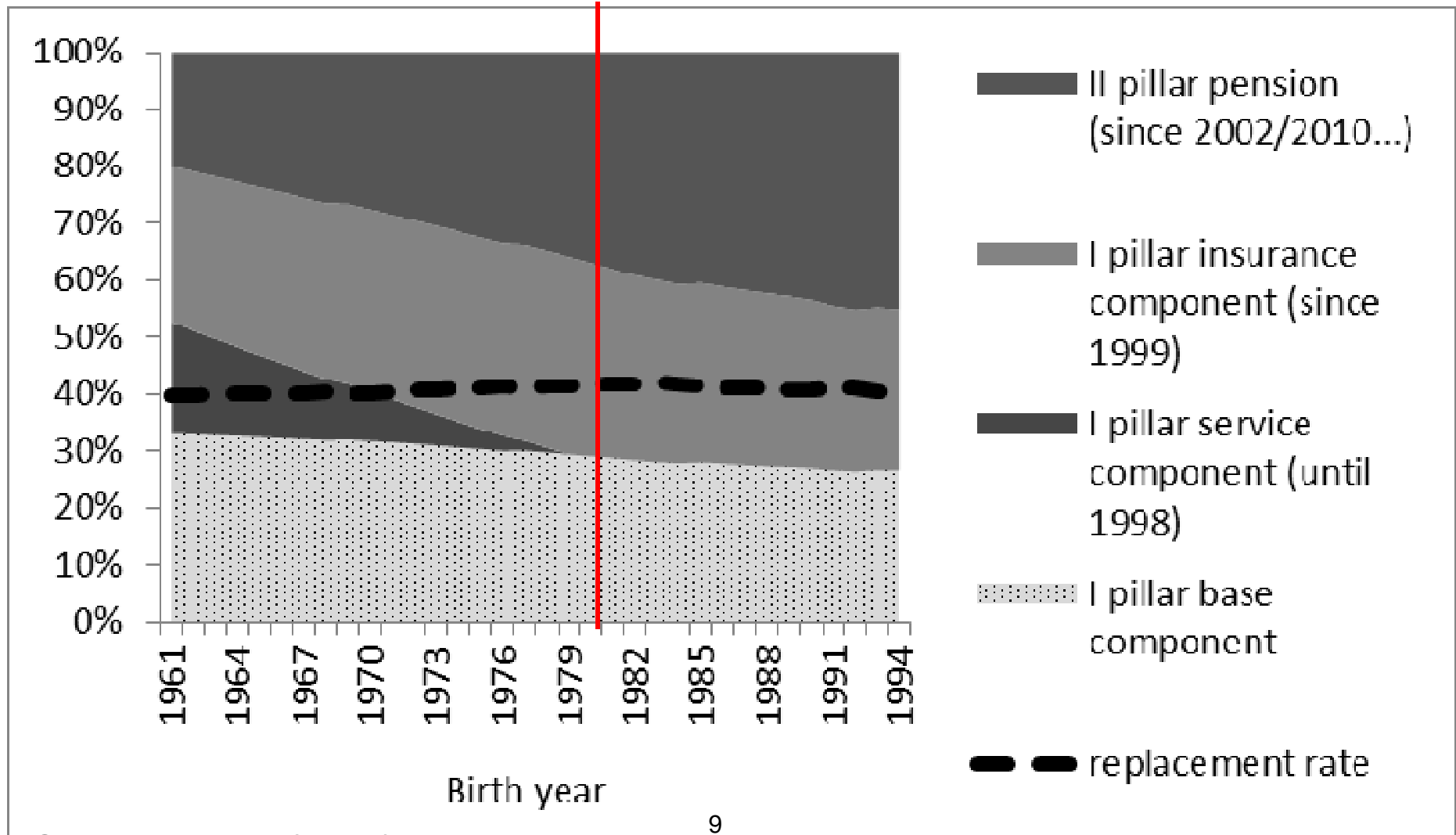
Estonian pension system in 2015

Social tax paid by employers on wage bill



Structure of average old-age pension for a typical new pensioner from the I and II pillar (40 years of working with average wage)

Additional contributions to II pillar compensate population ageing but no more



Source: Praxis (2014)

Simulated reforms

Description	Actual years	Base amount	Length of service component	Insurance component (point system)	Indexation formula (CPI + social tax)	Mandatory funded scheme
1. PAYG+ service component	...–1998	Yes	Yes	No	50/50	No
2. Introduction of the insurance component into PAYG	1999–2002	Yes	No	Yes	50/50	No
3. Introduction of the II pillar	2002–2008	Yes	No	Yes	50/50	Yes
4. Change in indexation in the PAYG scheme	2008–...	Yes	No	Yes	quicker indexation of the base; 20/80	Yes

Note: All scenarios have retirement age 65

Intragenerational inequality analysis

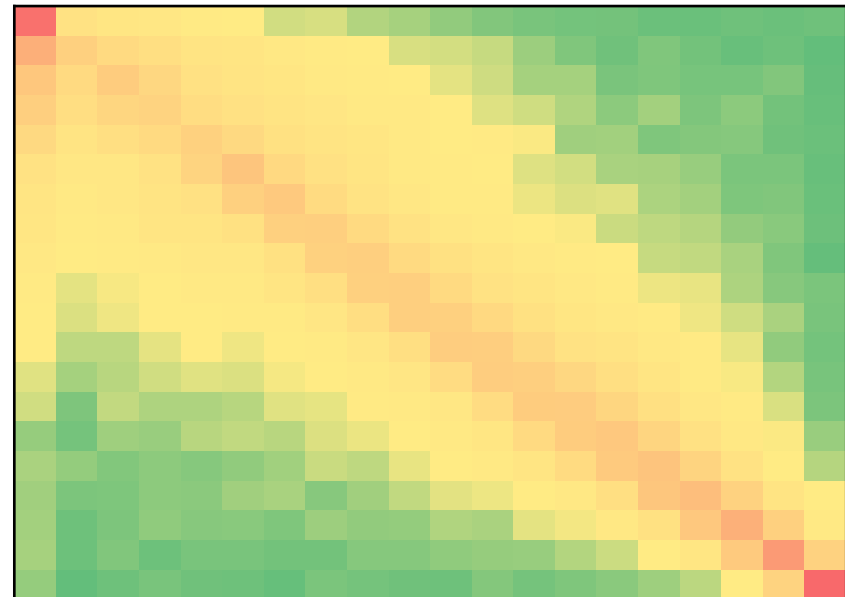
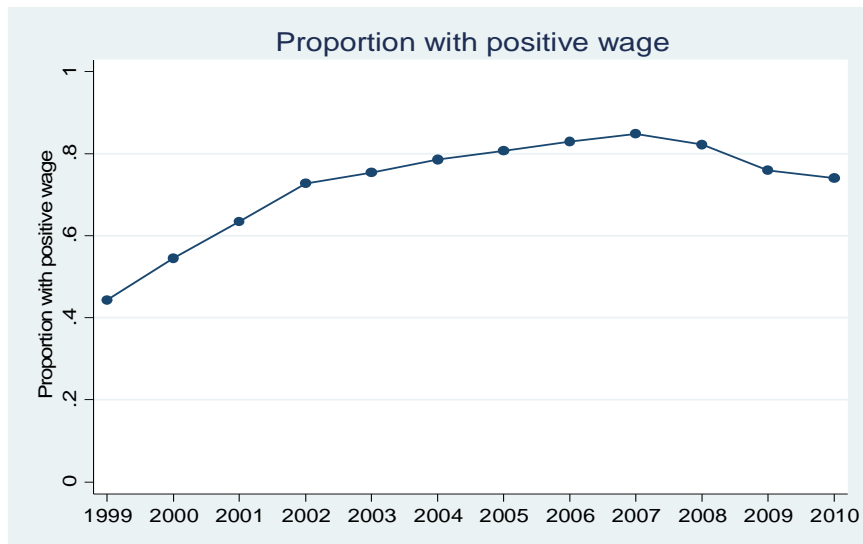
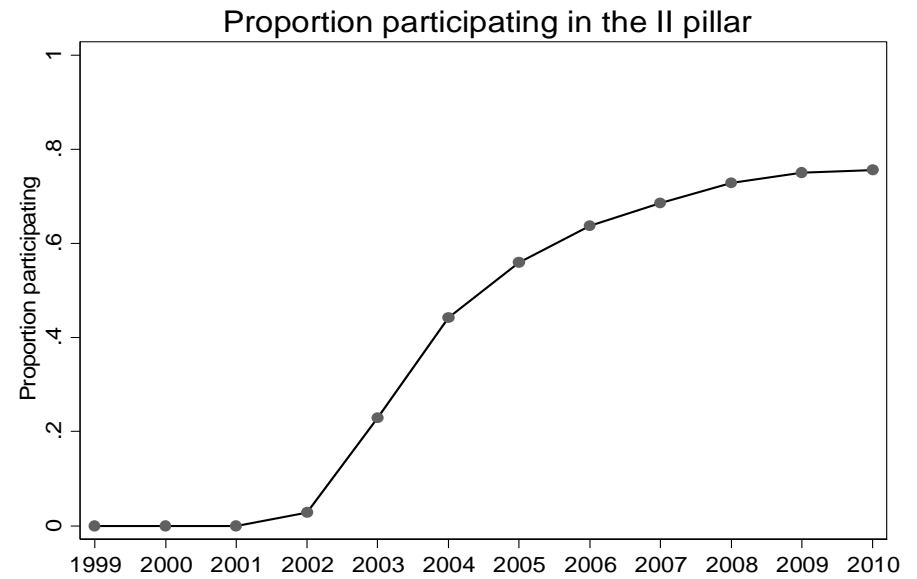
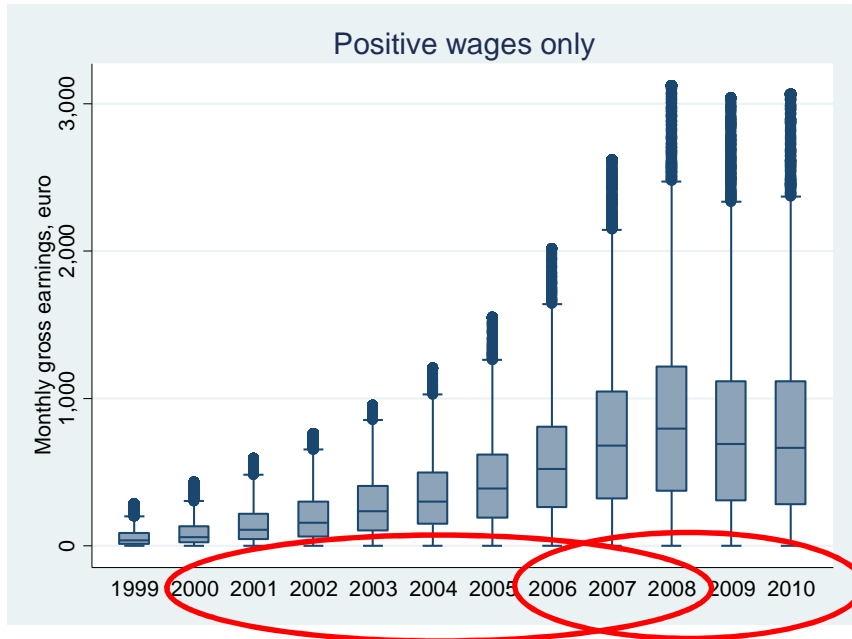
Data

- Pension register data (contributions to the I and II pillar in 1999—2010)
- 10,286 men born in 1980

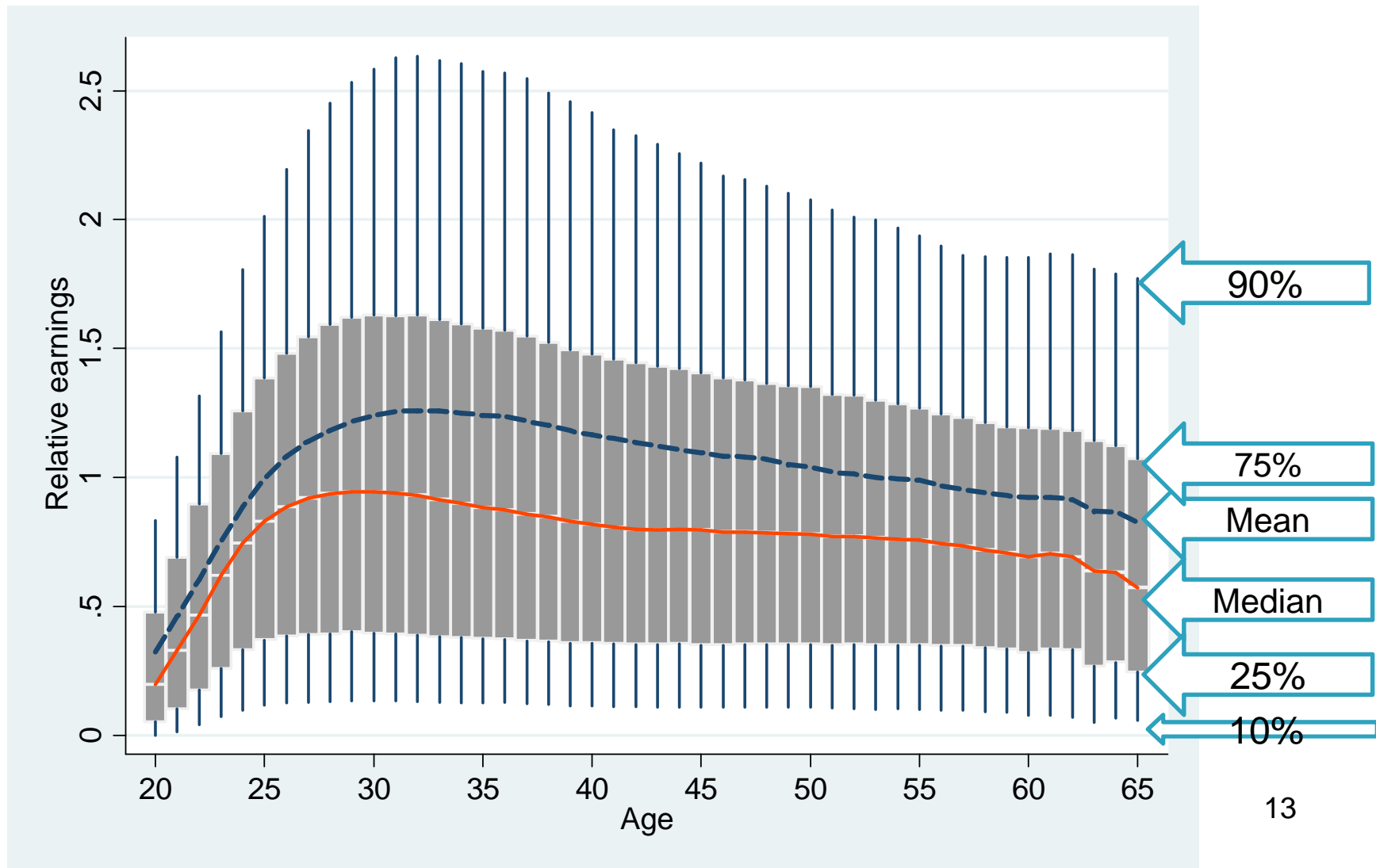
Method

- A cohort microsimulation model
- Assume that all men alive in 2010 will live until age 65
- Assume wage path until retirement 2045
 - a) Constant position in the wage distribution 2006-2010
 - b) Markov process estimated over 2000-2008 by age
- Assume 20 years of retirement time
- Macroeconomic background information from Min of Finance (2014 spring)
- Uniform rate of return for FF pension scheme (2.5% + CPI)

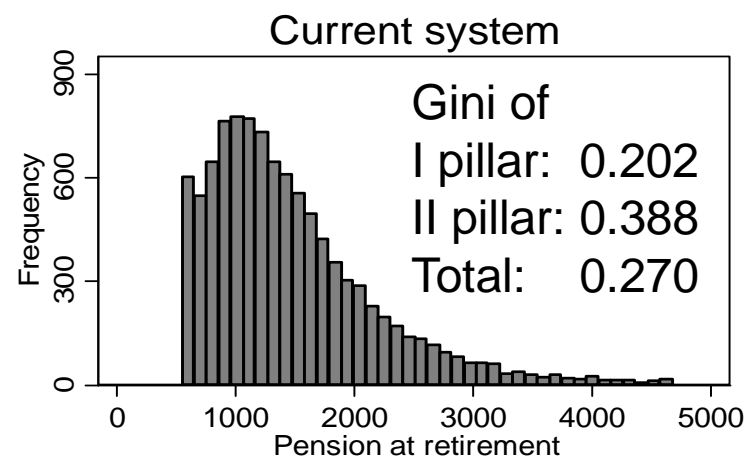
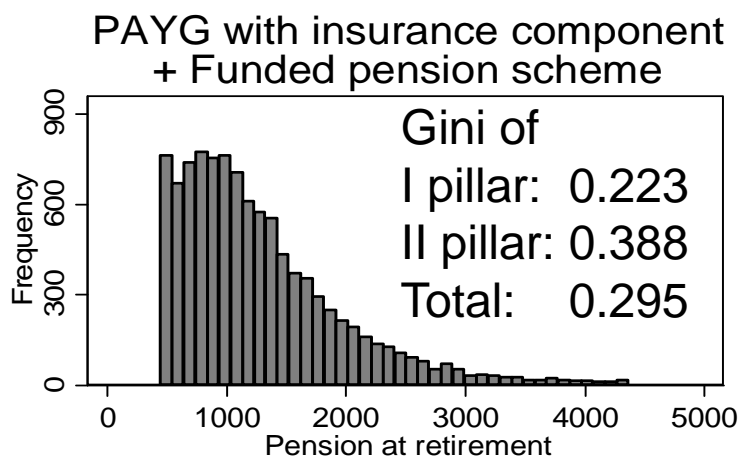
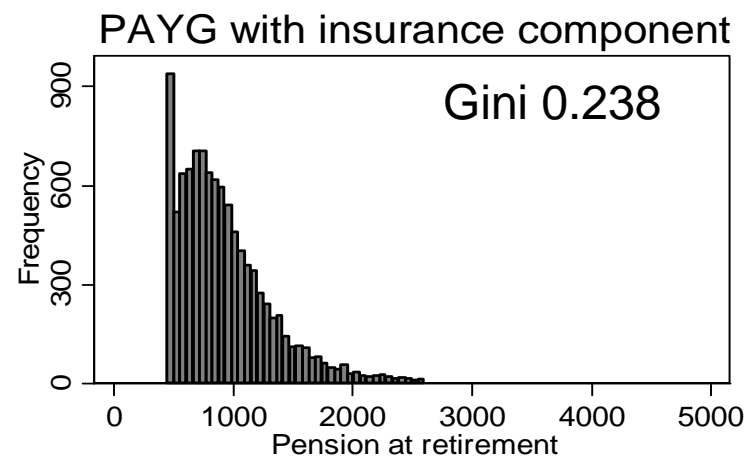
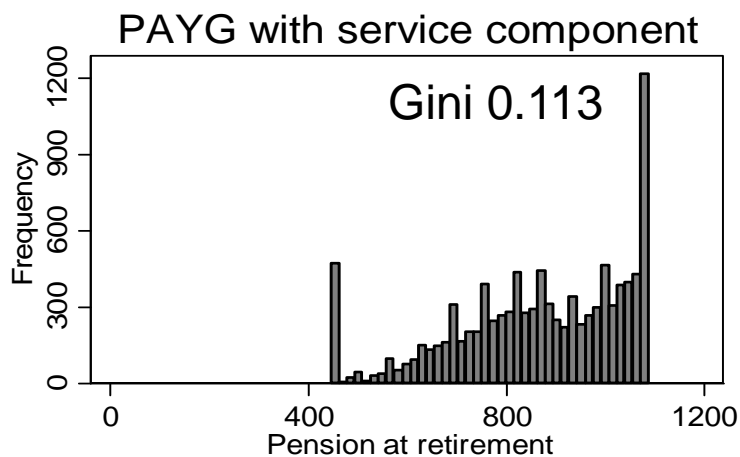
Descriptive statistics



Descriptive statistics – wage distribution of all Estonian men (2000–2008)



Results: distribution of future pensions (wage follows Markov process)



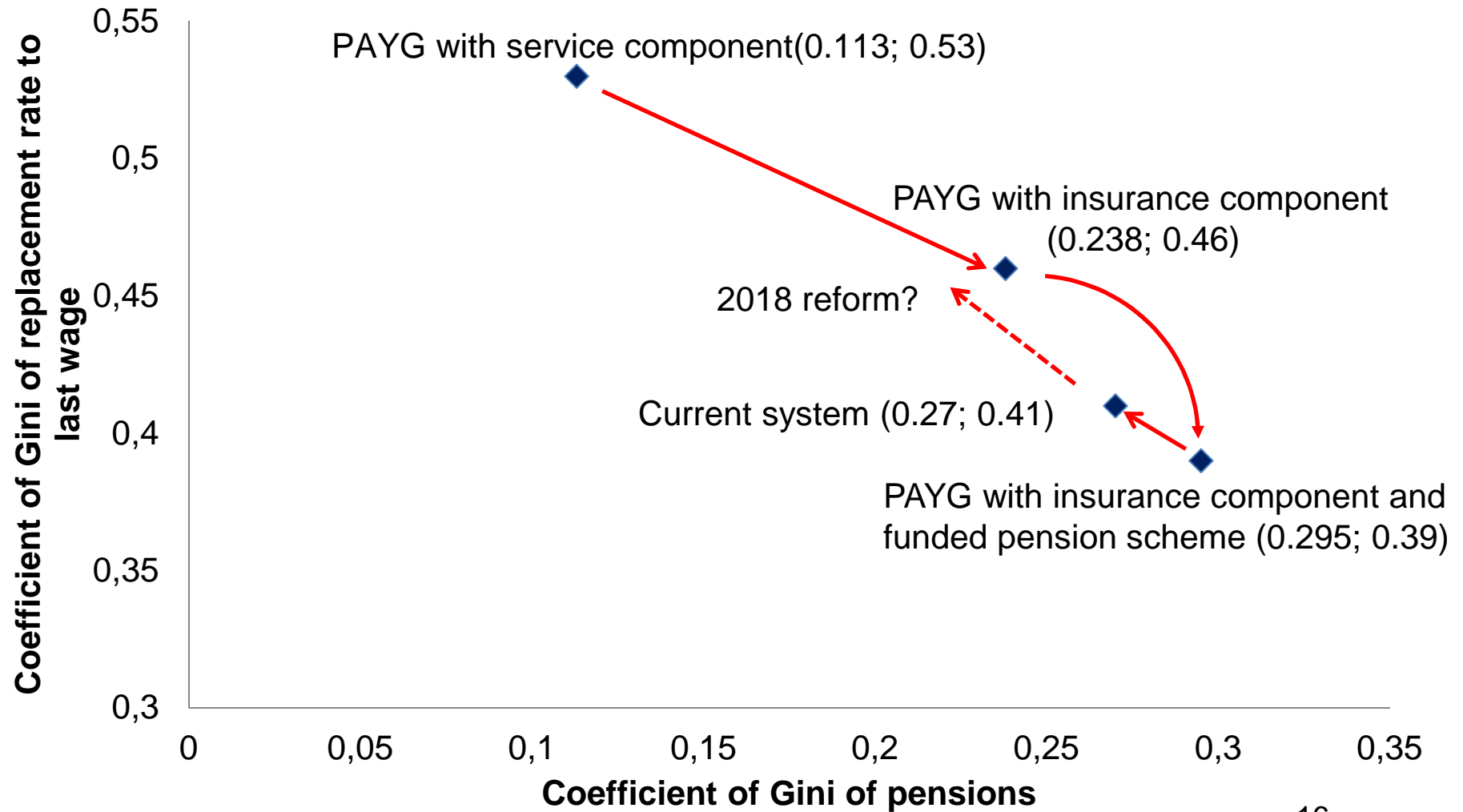
Gini of average wages over 2006–2044: 0.375

Gini of wages in 2044: 0.741 (half of people not working before retirement)

Results (2): pension replacement rates to the lifetime average wage with dynamic wages

	Scenario	Average (%)	Median (%)	Standard deviation	Gini index
(1)	PAYG with service component (until 1998 system)	34.1	27.9	23.0	0.53
(2)	PAYG with insurance component (1999-2002 system)	31.8	26.9	17.1	0.46
(3)	PAYG with insurance component and funded pension scheme (2002-2007 system)	41.1	37.3	17.8	0.39
(4)	Current system PAYG with insurance component, with changed indexation, and funded pension scheme	48.4	42.9	22.4	0.41

Results: Coefficient of Gini of pensions and replacement rates



Conclusions so far

- Shift from PAYG to FFS has introduced considerable inequality of future pensions in Estonia
- The point system in the PAYG scheme causes as much inequality as the FFS scheme.
 - Risk of impoverishment of future pensioners increases
 - Wage distribution is not seen as fair (e.g. teachers, nurses) and hence their low future pensions are
- Solutions: less differentiation in the PAYG scheme

Conclusions

- Shift from PAYG to FFS has introduced considerable inequality of future pensions in Estonia (from 0.1 to 0.27)
- Gini from the pension replacement rate of last wage will decrease from 0.53 to 0.41
- Mean and median pension replacement rate will increase 14–15 pp
- The point system in the PAYG scheme causes as much inequality as the FF scheme.
 - Risk of impoverishment of future pensioners increases
 - Wage distribution is not seen as fair (e.g. teachers, nurses) and hence they will have low pension in the future.

Intergenerational inequality (work in progress)

Method and assumptions

Method:

- A typical agent model; (partial analysis, no macroeconomic effects, does not take into account how deficit is financed)
- Birth years 1957- 1993 with 6-year steps

Pension indicators

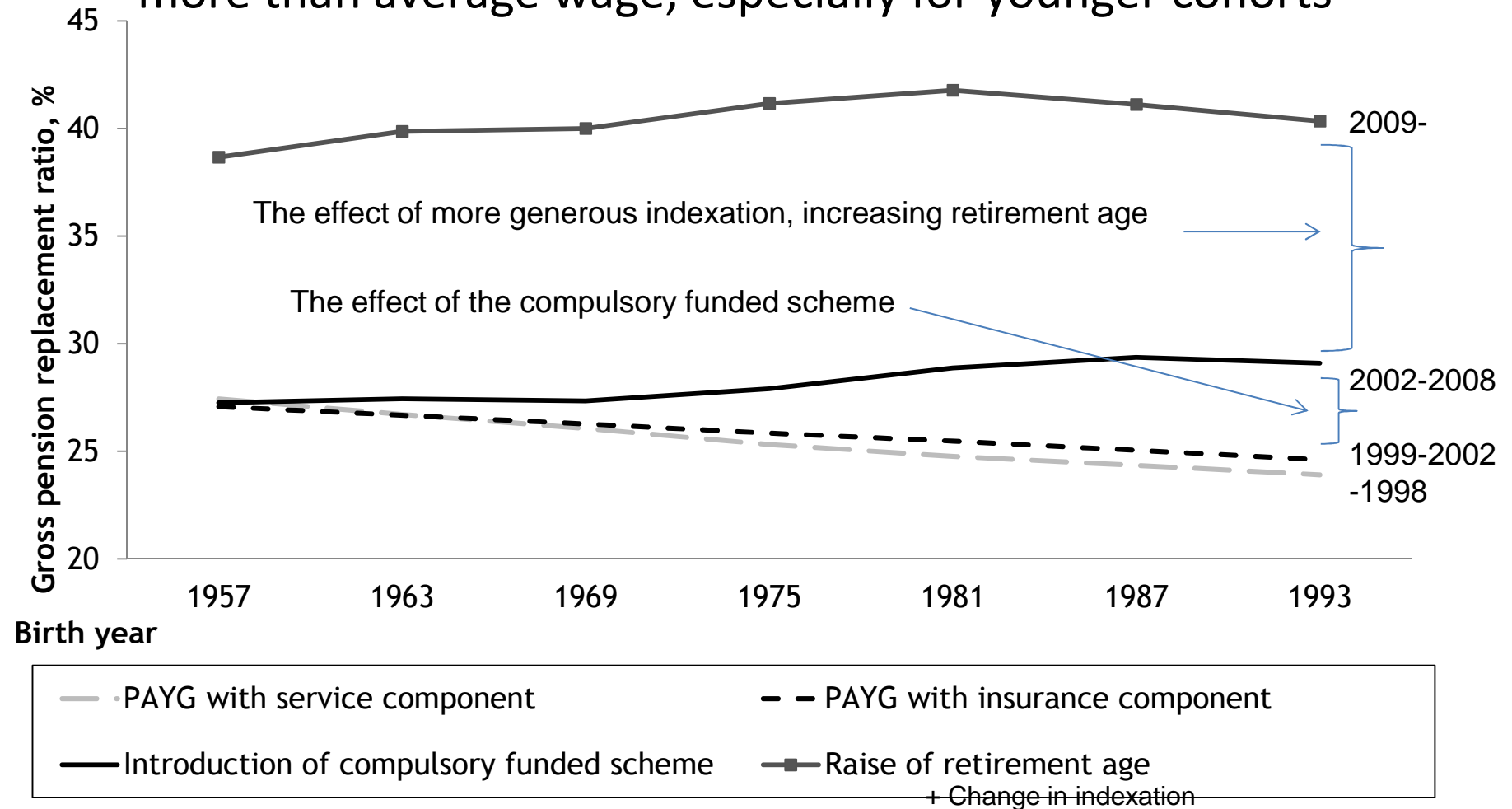
- Six types of replacement rates;
- Gross and net pension wealth;
- Internal rate of return;
- Net present value ratio.

Assumptions:

- No periods of unemployment;
- Macroeconomic background information from Min of Finance
- Uniform rate of return for FF pension scheme (2.5% + CPI)
- 3% of nominal interest rate of annuity.

Results: Gross theoretical replacement rate to the economy-wide average wage

=> reforms have increased RR for all cohorts only if earnings more than average wage, especially for younger cohorts



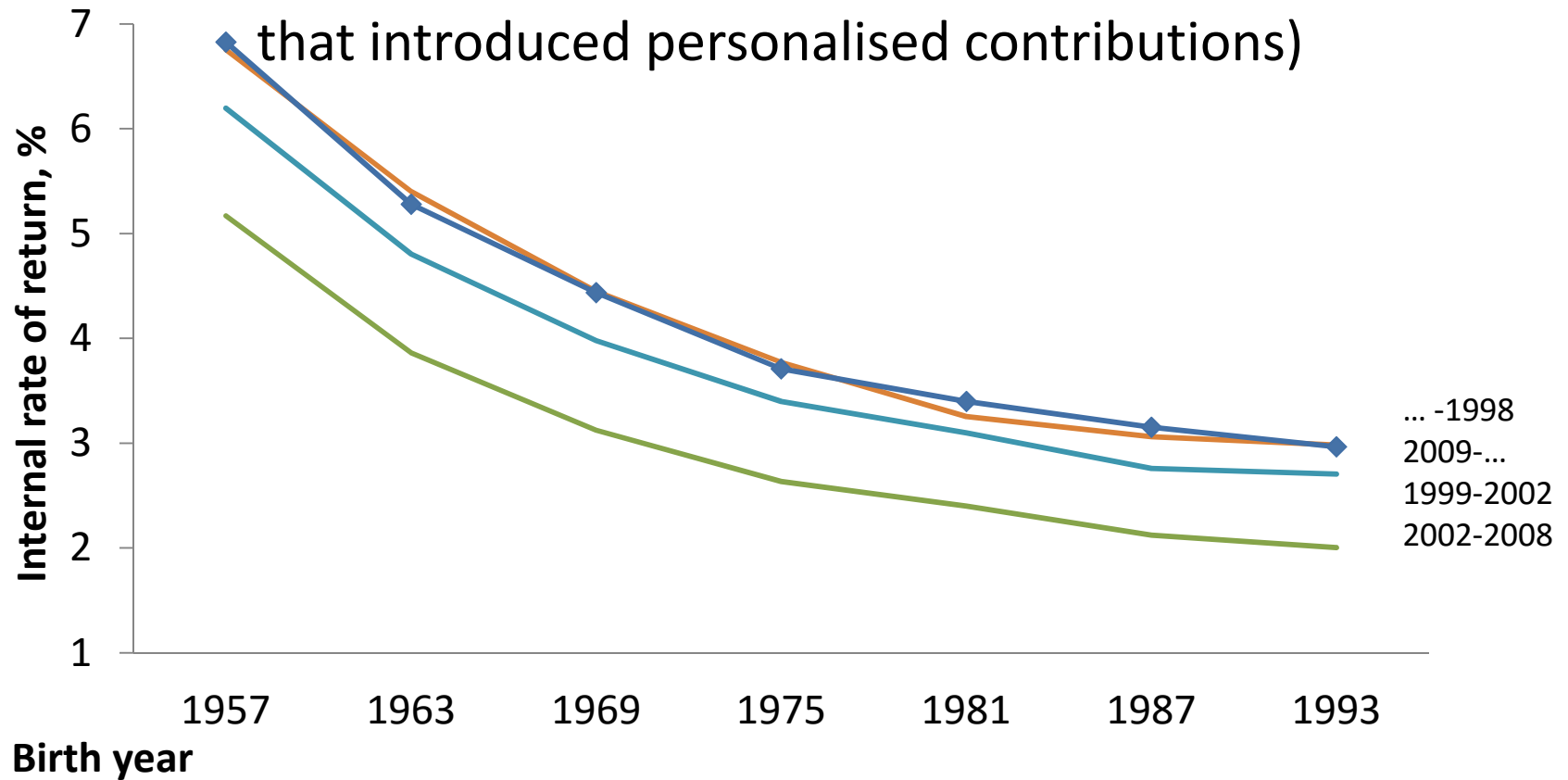
Note: average wage earner

Results: Internal rate of return for different cohorts

younger cohorts are worse off compared to older cohorts

Reforms have changed relative position of cohorts

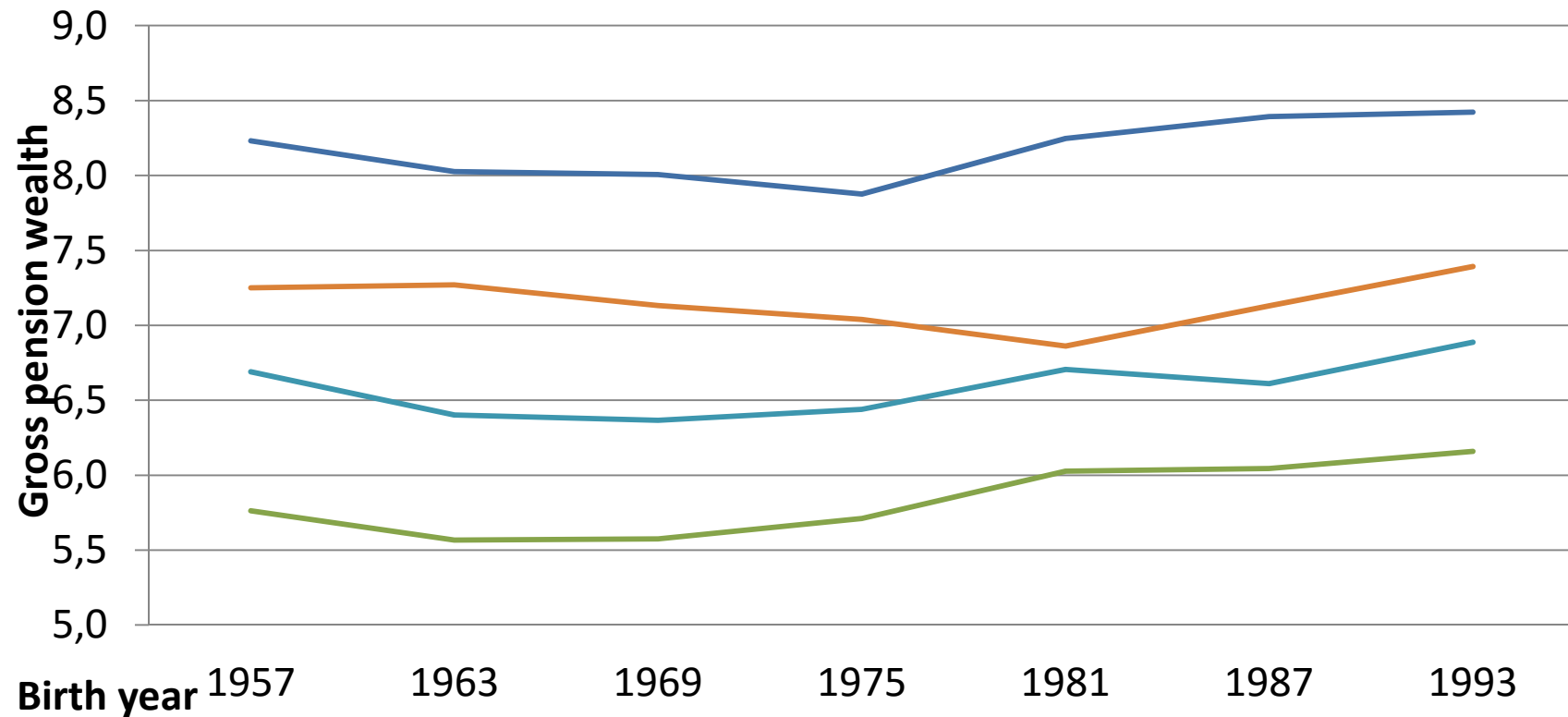
(Low-wage earners have higher IRRs, but lost more due to reforms



- PAYG with service component
- PAYG with insurance component
- Introduction of compulsory funded scheme
- ◆ Raise of retirement age

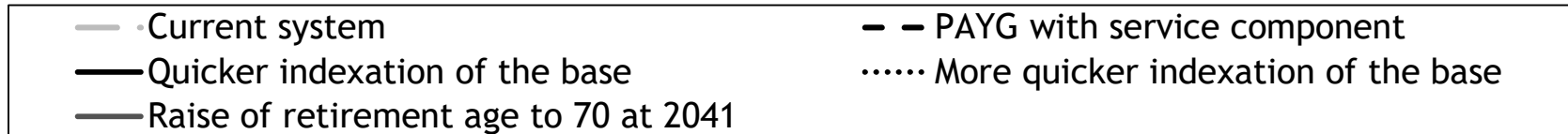
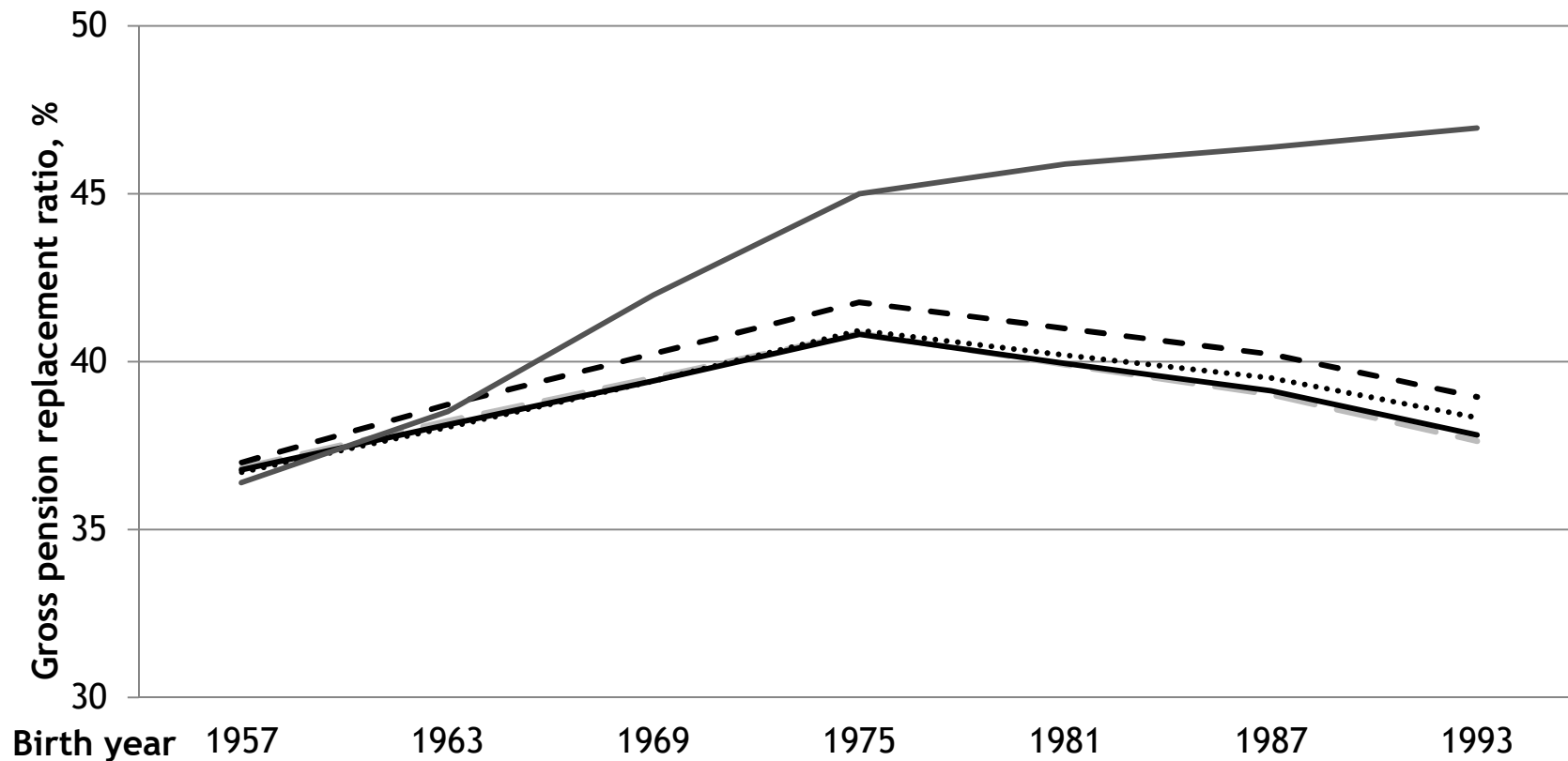
+ Change in indexation, 63->65

Results (3): Gross pension wealth

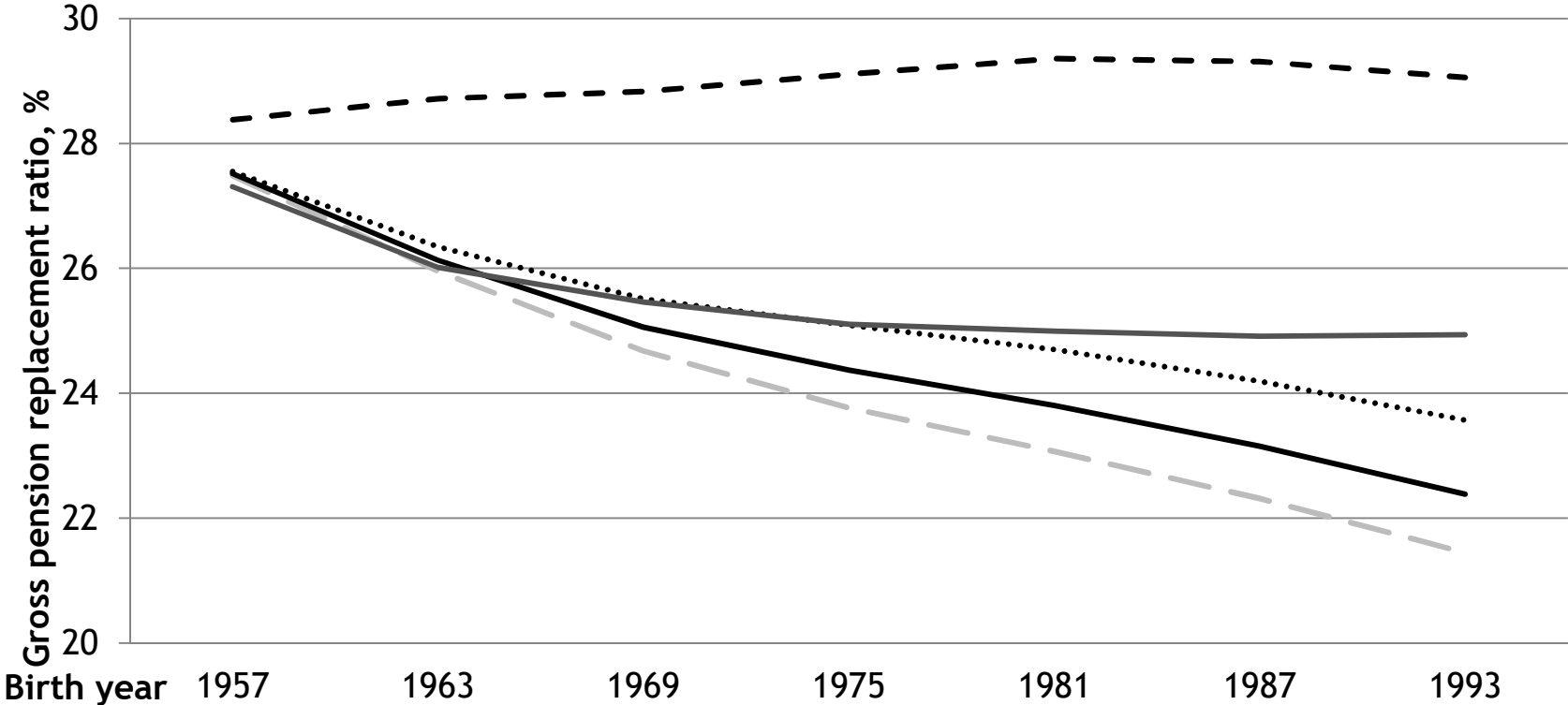


- PAYG with service component
- PAYG with insurance component
- Introduction of compulsory funded scheme

Results (4): Ideas of pension reforms from 2018. Gross theoretical replacement rate

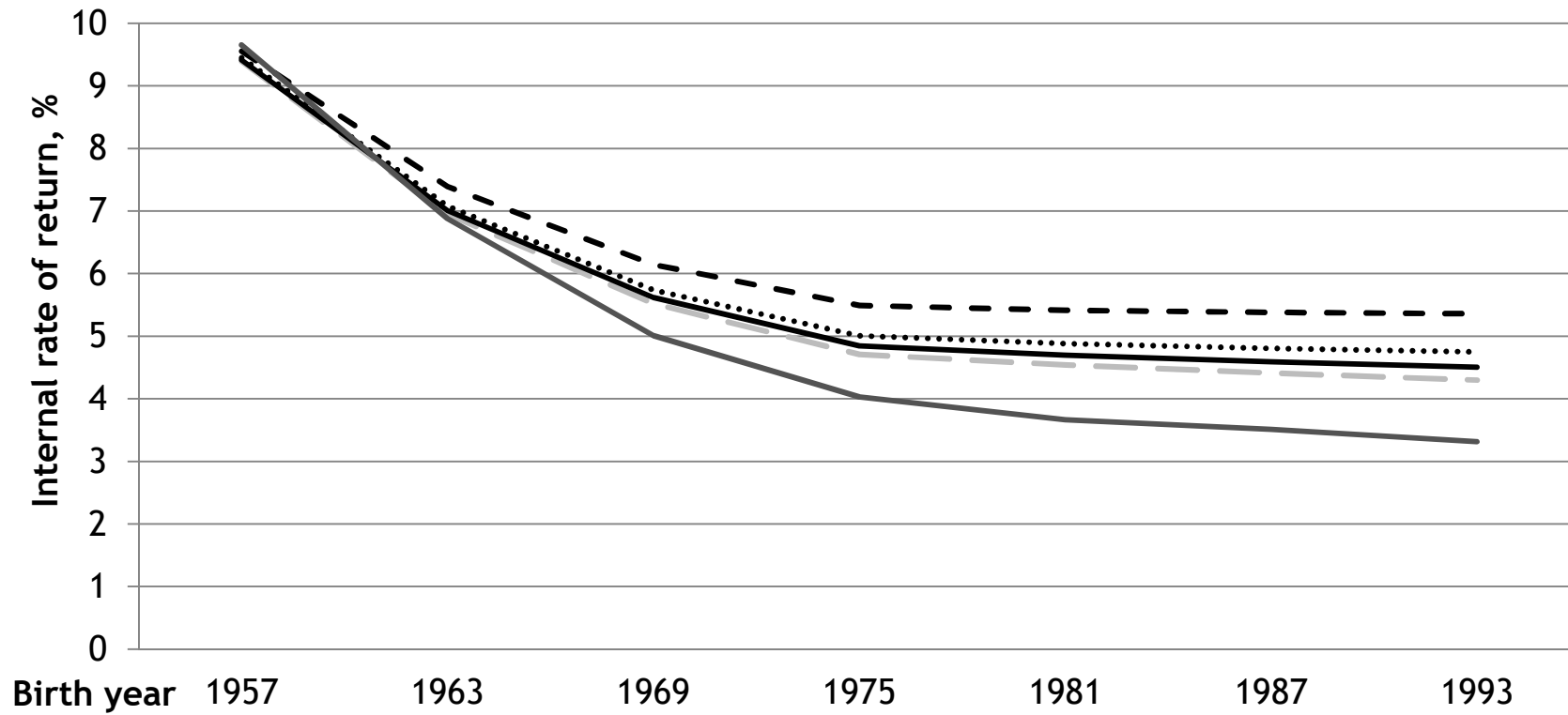


Results (5): Gross theoretical replacement rate to the economy-wide average wage of person who earns 40% from average wage



- Current system
- — PAYG with service component
- Quicker indexation of the base
- More quicker indexation of the base
- Raise of retirement age to 70 at 2041

Results (6): Internal rate of return of person who earns 40% from average wage



Summary (1)

On intragenerational equality

- Shift from PAYG to FFS has introduced considerable inequality of future pensions in Estonia (Gini 0.1 -> 0.27)
- However, inequality of replacement rates will decrease (Gini 0.53 -> 0.41)
- The point system in the PAYG scheme causes as much rise in inequality as the FF scheme.

=> Policy has shifted back to reduce inequality in the PAYG system

Summary (2)

On intergenerational equality

- Reforms have not increased intergenerational inequality for average wage earners
- Internal rate of return is lower for younger cohorts both before and after reforms
- Reforms have increased replacement rates for all cohorts only if earnings are more than average wage, especially for younger cohorts
- Low-wage earners in younger cohorts lost relatively more in terms of replacement rates than low-wage earners in older cohorts due to reforms

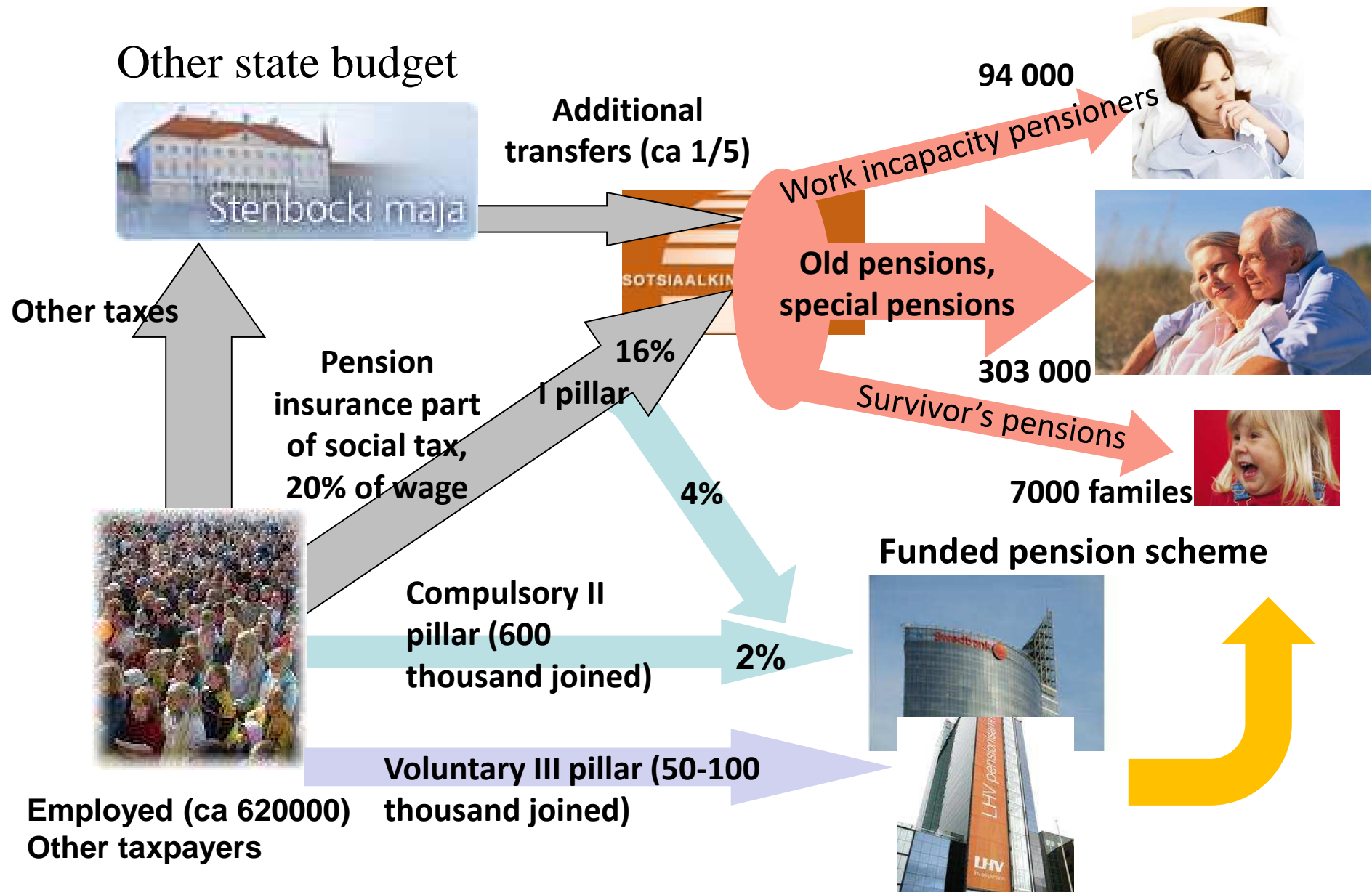
Impact of WP4 in Estonia

- First model of predicting intragenerational inequality of future pensions
 - Continue to work on full dynamic microsimulation model
- Publishing results in local media and in the Journal of the Estonian Parliament
- Participation in the work of the pension reform committee
 - Proposals to the government how to reduce inequality in the I pillar by March 2016

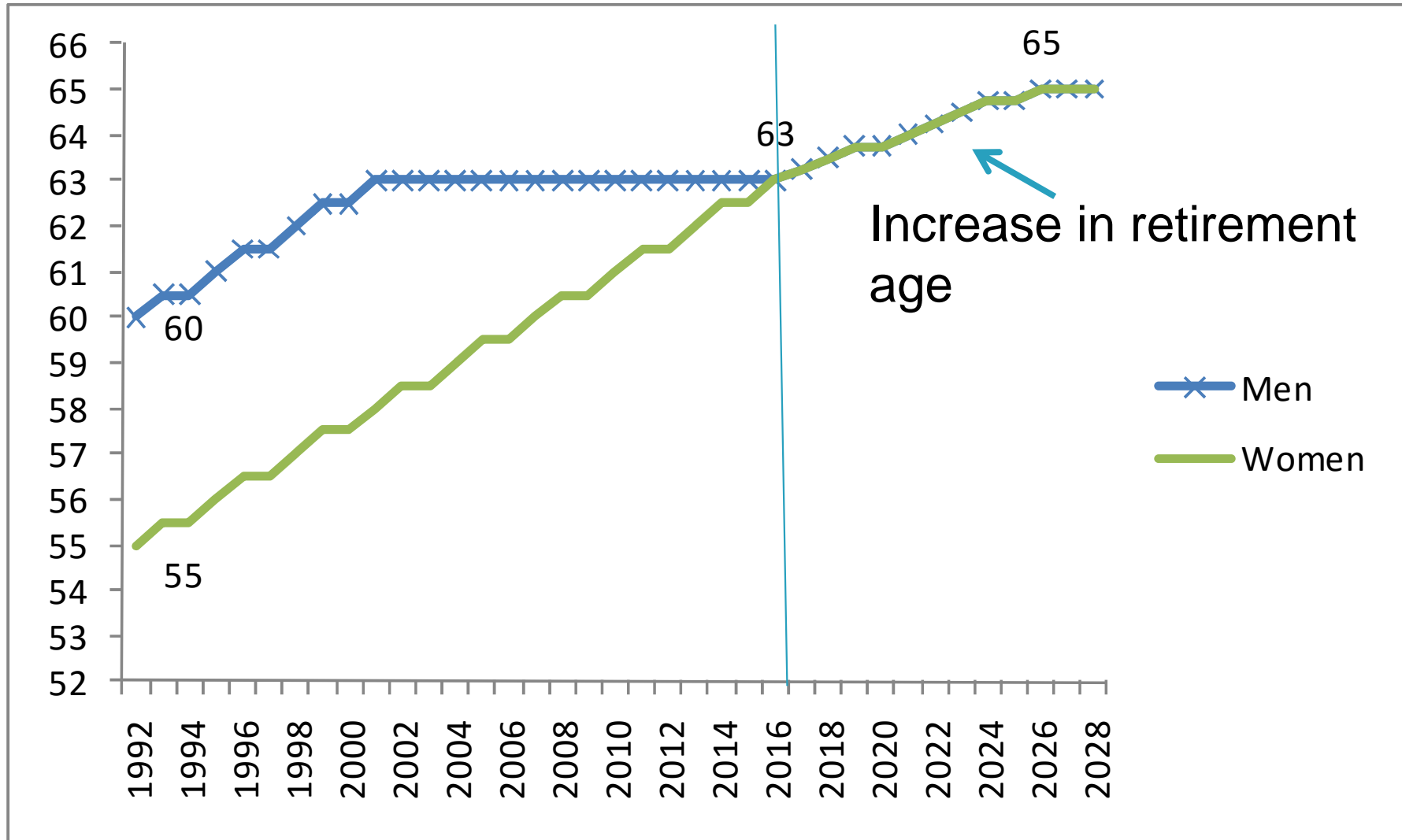
Thank you!

Annexes

Funding of the Estonian pension system



Increase in the retirement age



Schematic composition of labour cost (2007 numbers)

