The impact of introduction of funded pension scheme on intragenerational inequality in Estonia:

a cohort based analysis

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Outline

• Our paper and MOPACT
• Background
• Reform of the Estonian pension system
• Data and method
• Results
• Discussion
WP 4. Pensions

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?

=> This paper focuses on reforms in the Estonian pension system
Estonian pension reforms

- Until 1998 – PAYG DB, pensions depended on contribution years
- 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
- 2002 - Indexation of pensions (50%CPI-50%SocTaxRev),
- Since 2007 – PAYG flat rate component increases faster, indexation 20-80
Estonian pension system in 2015

Social tax paid by employers on wage bill
33 %

Health insurance
13 %

Pension insurance
20 %

I pillar
PAYG DB
16 %

II pillar
FF DC, 2002
4 %

III pillar
FF DC, 1998
+ 2 %

+ voluntary

points
cash

Individual
Structure of average old-age pension for a typical new pensioner (40 years of working with average wage)

Source: Praxis
## Simulated reforms

<table>
<thead>
<tr>
<th>Description</th>
<th>Actual years</th>
<th>Base amount</th>
<th>Length of service component</th>
<th>Insurance component (point system)</th>
<th>Indexation formula (CPI+ social tax)</th>
<th>Mandatory funded scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PAYG+ service component</td>
<td>...–1998</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>50/50</td>
<td>No</td>
</tr>
<tr>
<td>2. Introduction of the insurance component into PAYG</td>
<td>1999–2002</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>50/50</td>
<td>No</td>
</tr>
<tr>
<td>3. Introduction of the II pillar</td>
<td>2002–2008</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>50/50</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Change in indexation in the PAYG scheme</td>
<td>2008–...</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td><strong>20/80</strong></td>
<td>Yes</td>
</tr>
</tbody>
</table>
Data and method

Data

• Pension register (contributions to the I and II pillar in 1999—2010)
• Men born in 1980: 10286 men, earnings 1999-2010

Method

• A cohort microsimulation
• Assume that all men alive in 2010 live until age 65
• Assume wage path until retirement 2045
  a) Constant position in the wage distribution 2006-2010 => upper bound of inequality in future pensions
  b) Markov process estimated over 2006-2010 => lower bound
• Macroeconomic background information until 2045 from Min of Finance
• Uniform rate of return for FF pension scheme
Results (1) – static wage distribution

PAYG with service component

Gini 0.108

PAYG with insurance component

Gini 0.290

PAYG with insurance component + Funded pension scheme

Gini 0.354

Current system

Gini 0.326

National pension
Results (2) – dynamic wage distribution

PAYG with service component
Gini 0.104

PAYG with insurance component
Gini 0.191

PAYG with insurance component + Funded pension scheme
Gini 0.246

Current system
Gini 0.221
Results (3) – dynamic wage distribution

PAYG with insurance coefficients

Source: Own calculations

2008 + system

Source: Own calculations
Results (3) – distribution of IRR and ind. replacement rate

2008 + system

Mean 4.3%
Median 4.1%

Median 45%

Source: Own calculations
## Results: Gini of pension

<table>
<thead>
<tr>
<th>Description</th>
<th>Static wage distribution (upper bound)</th>
<th>Dynamic wage distribution (lower bound)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I pillar pension</td>
<td>II pillar pension</td>
</tr>
<tr>
<td>(1) PAYG with service component (until 1998 system)</td>
<td>0.108</td>
<td>0.108</td>
</tr>
<tr>
<td>(2) PAYG with insurance component (1999-2002 system)</td>
<td>0.290</td>
<td>0.290</td>
</tr>
<tr>
<td>(3) PAYG with insurance component and funded pension scheme (2002-2007 system)</td>
<td>0.271</td>
<td>0.437</td>
</tr>
<tr>
<td>(4) Current system PAYG with insurance component, with changed indexation, and funded pension scheme</td>
<td>0.246</td>
<td>0.437</td>
</tr>
<tr>
<td>(5) Gini of average wages over 2006-2045</td>
<td>0.306</td>
<td></td>
</tr>
<tr>
<td>(6) Gini of wages in 2045</td>
<td>0.522</td>
<td></td>
</tr>
</tbody>
</table>
### Results: average replacement rates to lifetime average wages

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Average</th>
<th>Median</th>
<th>Standard deviation</th>
<th>Coefficient of variance</th>
<th>Gini index</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) PAYG with service component (until 1998 system)</td>
<td>35.0</td>
<td>29.4</td>
<td>20.8</td>
<td>0.59</td>
<td>0.49</td>
</tr>
<tr>
<td>(2) PAYG with insurance component (1999-2002 system)</td>
<td>34.2</td>
<td>29.2</td>
<td>16.3</td>
<td>0.48</td>
<td>0.44</td>
</tr>
<tr>
<td>(3) PAYG with insurance component and funded pension scheme (2002-2007 system)</td>
<td>43.1</td>
<td>39.1</td>
<td>16.8</td>
<td>0.39</td>
<td>0.38</td>
</tr>
<tr>
<td>(4) Current system PAYG with insurance component, with changed indexation, and funded pension scheme</td>
<td>51.3</td>
<td>45.3</td>
<td>21.7</td>
<td>0.42</td>
<td>0.40</td>
</tr>
</tbody>
</table>
## Results: sensitivity wrt assumptions

<table>
<thead>
<tr>
<th></th>
<th>Unchanged Baseline dynamic wage distribution</th>
<th>Lower real rate of return of funded pensions (from 2.5% -&gt; 0.5%)</th>
<th>Longer life expectancy at retirement (from 20 -&gt; 25 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I pillar pension</td>
<td>II pillar pension</td>
<td>I + II pillar pension</td>
<td>II pillar pension</td>
</tr>
<tr>
<td>PAYG with insurance component and funded pension scheme (2002-2007 system)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of II pillar pensions in total pension</td>
<td>0.179</td>
<td>0.347</td>
<td>0.354</td>
</tr>
<tr>
<td></td>
<td>30.3%</td>
<td>23.5%</td>
<td>27.1%</td>
</tr>
<tr>
<td>Current system PAYG with insurance component, with changed indexation, and funded pension scheme</td>
<td>0.159</td>
<td>0.347</td>
<td>0.354</td>
</tr>
<tr>
<td>Proportion of II pillar pensions in total pension</td>
<td>0.221</td>
<td>0.204</td>
<td>0.212</td>
</tr>
<tr>
<td></td>
<td>26.1%</td>
<td>20.0%</td>
<td>23.3%</td>
</tr>
</tbody>
</table>
Conclusions so far

• Shift from PAYG to FFS has introduced considerable inequality of future pensions in Estonia

• The lifetime 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 neither their low future pensions

• Solutions: less differentiation in the PAYG scheme (?)
Impact of MOPACT

Future pension inequality addressed in the main newspaper yesterday 28.01.2015 and brought to the debate of ongoing parliamentary election campaign
Annexes
Funding of the Estonian pension system

Other state budget

Additional transfers (ca 1/5)

Pension insurance part of social tax, 20% of wage

16%

I pillar

Compulsory II pillar (600 thousand joined)

2%

Voluntary III pillar (50-100 thousand joined)

94 000

Work incapacity pensioners

303 000

Old pensions, special pensions

Survivor’s pensions

7000 families

Employed (ca 620000)

Other taxpayers

303 000

94 000

7000 families

Other taxes

Funded pension scheme
Increase in the retirement age

Increase in retirement age

- Blue line represents Men
- Green line represents Women

Graph showing the increase in retirement age from 1992 to 2028.
Schematic composition of labour cost (2007 numbers)

- **Health insurance (13%)**
- **Pension insurance (20%)**
- **Employer’s UI contributions (0.3%)**
- **Employee’s UI contribution (0.6%)**
- **Contribution to II pillar (2%)**
- **Income tax** (marginal tax rate 22%, basic allowance 2,000 EEK)
- **After-tax wage**

**Social tax**

**Contributions to unemployment insurance fund**

**Gross wage** (Tax base for social tax and UI contributions)

**Tax base for withholding income tax**