

SUSTAINABILITY OF SOCIAL SECURITY SCHEMES AND PENSION SYSTEMS

Macroeconomic level

1. *Fiscal gap*
(L.Kotlikoff proposal, applied in the US)

$$G = C + D - B - A^*$$

C – present value of government purchases

D – official net liabilities

B – present value of net tax payments of current generations

A* - tax burden facing future where no generational imbalance

2. *Total pension debt (TPD)*
 - by pension schemes (including public and private schemes)
 - defined as present value of all future pension transfers over defined period of time (70 years plus)

3. *Total pension assets (TPA)*
 - by pension schemes (including public and private schemes), including
 - financial assets (non-public)
 - public explicit liabilities (explicit debt)
 - contribution assets – present value of future contribution flow over defined period of time (70 years plus)

4. *Balance ratio*
(based on Swedish experience)

BR = TPD / TPA => system is stable when BR higher or equal to 1

5. *Supporting indicators*
(based on Swedish experience):
 - change in TPD due to changes in life expectancy
 - change in TPD due to inheritance gain

6. *Pension spending as % of GDP*
(used for example in the open method of co-ordination on pensions)
 - projected for defined period of time (70 years plus)
 - decomposition of pension spending by changes in:
 - dependency
 - employment
 - eligibility
 - benefits
 - sensitivity tests:
 - increased retirement age
 - increased participation rate
 - actuarial adjustment reform (D.Wise proposal)

7. *Tax gap indicators*

(used in the open method of co-ordination on pensions)

T1 – difference between current tax ratio and constant tax ratio necessary for balanced budget over projected period

T3 – change needed in tax revenues that equates the present value of revenues and expenditures over infinite time horizon

8. *Necessary contribution level*

To balance pension expenditure according to current promise (projected for 70 years plus)

Necessary pension adjustment

Relative change in pension level (compared to average wage) necessary to balance the pension system under constant contribution scenario (projected for 70 years plus)

9. *System dependency ratio (SDR)*

$SDR = \text{number of pensioners} / \text{number of insured workers}$

- difference between SDR and old-age dependency ratio – as system's efficiency measure

10. *Unused productive capacity of older workers (55-64)*

By gender

Microeconomic level

11. *Cohort dependency ratio*

$CDR = \text{time receiving pension} / \text{time of employment per each cohort}$

12. *Replacement rates*

- by gender and by wage profiles
- current and prospective

useful work done by Indicators Sub-group and by the OECD

a. *first pension / last wage*

measuring incentive to retire

b. *average lifetime pension / average lifetime earnings*

measuring actual generosity of the system as well as redistribution (while comparing results for various wage profiles)

c. *Impact of longevity increases on replacement rate (assuming appropriate adjustment)*

d. *Replacement rate at*

- *legal retirement age,*
- *retirement age – 5,*
- *retirement age + 5*

compared to the actuarially fair level

Useful modelling tools:

Macroeconomic long-term projection including projected expenditure on:

- old-age pensions
- other pensions (disability and survivor)
- health care
- long-term care

Microeconomic model

- simulating various demographic scenarios
- simulating various employment scenarios