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Workshop

Sustainable Ageing Societies: Indicators for Effective Policy-Making

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and pension systems

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Sustainable Old-Age Security Core Indicators

Agnieszka Chlon-Dominczak

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Monitoring sustainability of the pensions systems can be done from several perspectives. The first one is the individual vs. macroeconomic level. The second one is current vs. future outlook of the system. Finally, these can be indicators related to the demography and ones related to the pension systems themselves. Each of the perspectives is important to understand the situation of pensions systems in given countries.

Demography-related indicators

The first group of indicators, that are important for the pension schemes is related to the demography.

On macroeconomic level, the one that is most frequently used is the *old-age dependency ratio* defined as ratio of number of persons in post-working age (usually above 65) to these in working age (usually 20-64). This indicator can be used both monitoring current and future developments, based on the demographic projections.

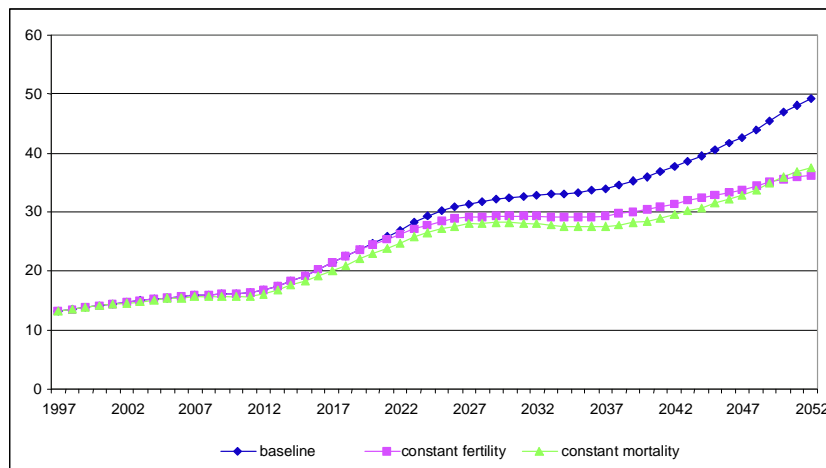
What is important from the perspective of the ageing process is not only the value of the dependency ratio, but also the relative change in time, that shows the dynamics of the ageing process. This change stems from two developments:

- changes fertility levels;
- changes in longevity;

Decomposition of these two elements is important to see, what has the most important effect on the ageing process.

Figure 1 below presents the projection of old-age dependency ratio for the Polish population in the baseline demographic scenario as well as assuming constant life expectancies and constant fertility rate (at the level of 2.2). As one can observe, in the Polish case, both changes in fertility and longevity will have similar impact on the old-age dependency level in the future.

Figure 1. Old-age dependency rates in Poland



Source: Chlon-Dominczak (2003)

On individual level, the appropriate measure is the *life expectancy* of a person at retirement Age (again, usually 65). Similarly to the previous one, this indicator can be taken both from current and future perspective.

The important feature of the demographic indicators is that these are relatively easily comparable internationally. However, when discussing the demographic indicators related to the ageing, the issue of the definitions of working vs. post-working age arises. The age limits are applied more or less arbitrarily and in the future it might happen that these can be revised. These can also differ across countries, based on the health level of the population – in some of the countries those aged 65 can still be fully productive, while in others – not.

Pension-system related indicators

The difficulty in discussing the pension system related indicators mainly lies in the difficulty to compare the pension systems existing in the countries. Though the main goal of the pension systems, i.e. to provide people with income after they reach post-productive age, is broadly shared, each of the countries has its unique way to fulfil this provision.

Comparability is relatively easier, when the indicators are related to the respective populations, these are more difficult when discussing the ones related to expenditure or levels of pensions.

The basic indicator on the macro level that should be mentioned here is the *system dependency ratio*, measuring the ratio of pensioners to the covered workers. As a rule, the system dependency ratio is higher than the demographic dependency ratio. The difference between the two can also be used as a measure of the systems' efficiency (the smaller the difference – the more effective the pension system).

Again, two basic developments influence such defined efficiency:

- the first one is the actual number of covered workers relative to the population in working age, measured by the employment rate;

- the second one is the actual number of pensioners relative to the population in post-working age.

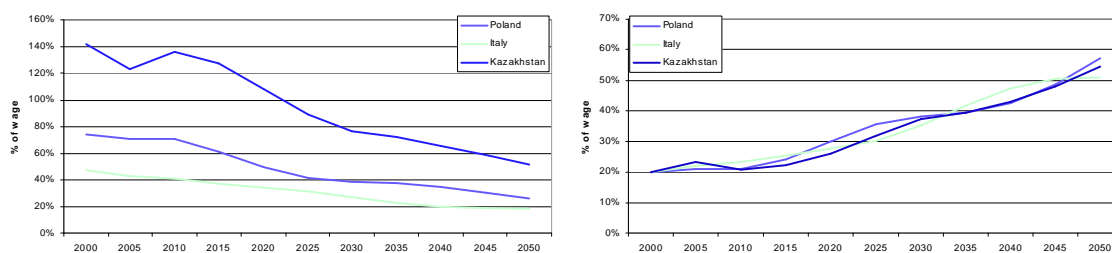
Similar indicator can also be derived on the individual level, measuring the relation between years spend by an individual on work (or contributing to the system) to the number of years spend receiving a pension. This measure, contrary to the previous one, does not take into account fluctuations resulted from the relative size of cohorts which are working or retired.

Taking into account pension expenditure, the most common indicator used is the **projected pension expenditure as per cent of GDP**. However, using such projections as indicator requires agreement on the methodology of the projections. Additionally, it is very difficult to agree upon the projection period, as everyone tends to focus on the last year of the projection. An alternative approach, though still controversial, is the calculation of the **pension debt**, measuring total liabilities of pension systems. The total pension debt consists of the implicit pension debt (for the pay-as-you-go systems) and explicit pension debt (for funded schemes). An approach to calculate implicit pension debt in comparable way can be viewed for example in Holzmann *et al.* (2002).

A simplified measure that allows for monitoring the impact of the ageing on the pension systems was suggested by Mikula and Settergren (2000).¹ Based on demographic projections, labour market participation rates and assumed replacement rate in the pension system, they calculate the **necessary contribution level** that would stabilise the pension system financially. This applies to the traditional defined-benefit systems. Such projection shows the burden on the wages of workers resulting from the existing pension promise. Similar methodology can also be used to monitor the level of **possible replacement rates**, under the assumption that contribution rates are kept constant.

Results of such exercise for a hypothetical pension system, with contribution rate at 20% of wages and balanced financially at the beginning of projection are presented in Figure 2. The simulation is prepared for three countries with different demographic situation – Italy, Poland and Kazakhstan, the first having the oldest population and the last having the youngest population. Simulations are based on the UN demographic projections. As one can see, the ageing process affects the possibility to finance current benefits without increasing contributions in all of the countries. If contribution rates are constant, the drop in replacement rates is necessary. And the other way round – in order to keep the current pension promise, contributions have to increase.

Figure 2. Replacement rates (right) and necessary contributions (left) to balance the pension systems



Source: Chlon-Dominczak (2004)

¹ A paper presented by Ole Settergren is distributed at the workshop.

What is interesting is the fact, that contribution rates increase with the dynamics of the ageing process (measured as increase of the dependency rate), rather than its absolute level.

Such simulations show the possible scope of adjustments in the pension systems, caused by the ageing process. On the one extreme, these include raising contribution revenues, on the other – reducing the pension transfers. The former can be done by increasing contribution rates or broadening contribution base (through increased employment or increased retirement age). The latter can be achieved by adjustments in pension formula, reducing the level of pension indexation or increase in the retirement age.

At the individual level, it is worth to look at the level of the current and future promised *replacement rates* in the system, which show what is the ratio between last wage and first pension received. However, again, international comparisons of such replacement rates should not be performed, due to different designs and functioning of the pension schemes. Recent work done in this field by the OECD and the EU shows that such an indicator can be developed for the future.

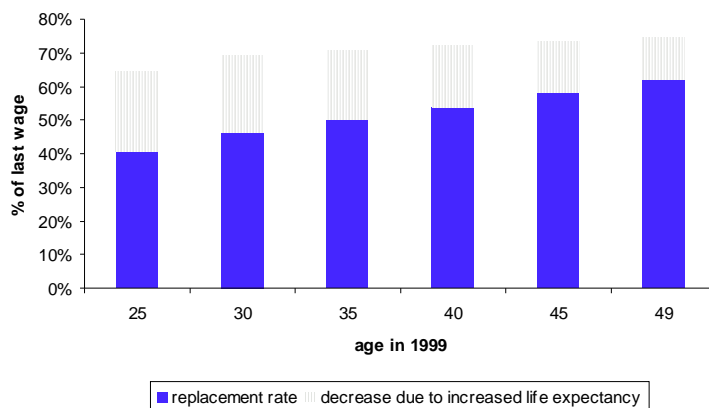
When analysing the level of replacement rates, it is worth to look at two aspects – the *impact of longevity* on future replacement rates and what are *incentives for retirement decision* (or disincentives) to postpone withdrawal from the labour force.

Most of the systems do not adjust to changes in the longevity automatically, which means that further adjustments would have to be made ex-post. Some of the pension systems, based on the notional defined contribution concept (existing for example in Sweden or Poland) adjust automatically. That is also one of the reasons why comparing the level of replacement rates between countries is difficult.

Figure 3 shows the results of the simulation of the replacement rates for Poland in the case of a person retiring at age 65 under the scenario when life expectancy at age 65 increases by a quarter of the year each year (i.e. linearly following past years' trend). Not surprisingly, the 'demographic price' is highest for youngest cohorts – for those aged 25 in 1999 the pension size might be lower by more than a third, compared to the scenario with constant mortality.

This simulation shows how strongly changes in mortality and longer lives on retirement affect the pension systems. Under the traditional DB schemes, adjustment to mortality changes is a subject to political decision on changing some of the parameters of the pension formula, otherwise increases in contribution rate are necessary. Under DC scheme, this shows that in the future the working lives need to be extended in order to offset the demographic improvements.

Figure 3. Change in pension value due to increases in life expectancy

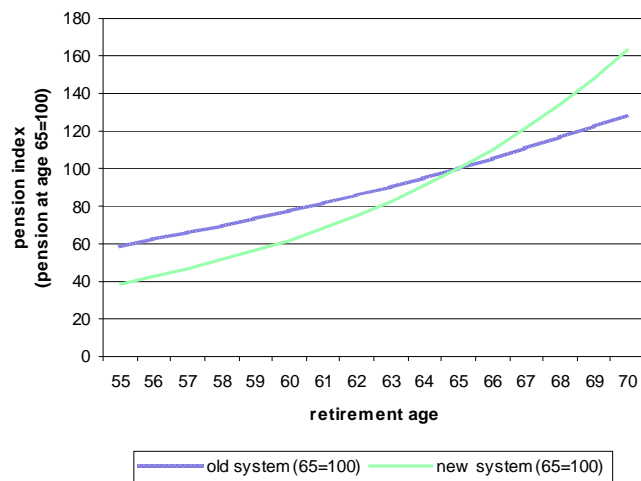


Note: Simulations for average wage earner starting work at the age 25 retiring at age 65, and assuming average real wage growth of 3% p.a., notional rate of return equal to 100% of wage bill growth, funded tier rate of return of 4% p.a. and up-front fee on funded system at 5% and assuming constant employment level (i.e. average wage growth = wage bill growth), assuming increases in life expectancy of one quarter of a year each year. Replacement rate calculated net of social security contributions.

Source: Chlon-Dominczak and Gora (forthcoming)

As far as incentives to retire earlier or postpone retirement decision, it is worth to compare the level of replacement rate (standardised for selected age, for example 65) to the actuarially neutral level. Such comparison for selected ages shows, whether the pension system has built-in appropriate incentives. Again, an example of the Polish old (DB) and new (DC) pension systems can be offered to illustrate this comparison. Figure 4 shows such a comparison for ages 55-70. As one can observe, the incentives to retire as early as possible were quite strong in the old system, compared to the new one (which is close to actuarial neutrality). Not surprisingly, the actual level of retirement age in Poland (some 56 for women and 59 for men) is lower than the legal one (60 for women and 65 for men). In the future, achieving sustainability of pension systems has to lead to elimination of such disincentives.

Figure 4. Relative level of pensions under the new and old pension systems



Source: Chlon-Dominczak (2003)

To summarise, the set of indicators that assesses the sustainability of the old-age pension systems needs to be diversified. Indicators should be forward looking and taking into account not only the actual or projected performance of the pension systems, but also incentives that exist in the pension system as far as retirement decisions and the burden that the systems impose on the generations. A sustainable pension system needs to reach a balance between providing adequate income to the pensioners and imposing a financing burden to the working generation.

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