# Development of Scenarios for Health Expenditures in the Accession Economies:
## Bulgaria, Estonia, Hungary, Poland and Slovakia

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The main objective of the research is to discuss future development of healthcare system revenues and expenditures in selected CEE countries, now all new EU Member States[1]. The report's projections are based on the methodology adopted in the International Labour Organization (ILO) social budget model. The projections examine the impact of demographic changes and changes in health status on future health expenditures. Additionally, future changes in the countries' labour market participation as well as the impact on each healthcare system's revenues were also examined.

## Methodology

The ILO social budget model has been used for it is suitable for both middle and long-term projections of revenues and expenditures of major social welfare schemes and for the simulation of the impact of demographic, economic, and legislative changes on social welfare financing. The model can also be used for short-term evaluation of already existing schemes, as well as the simulation of future reforms of specific parts of the system.

The ILO social budget model takes demographic changes, such as the ageing of the population, into account. The model looks at four key factors 1.) Economic 2.) Governmental 3.) Demographic and labor market and finally 4.) Health status of the population, medical service utilization, and medical technologies for the purpose of projecting healthcare system revenues and expenditures.

The model applied in the AHEAD research was modified and slightly different from the original social budget model. One of the most significant modifications (in the cases of Hungary and Poland) was the introduction of per capita expenditures instead of average medical service utilization levels. This modification was due to greater availability of data on expenditure levels per capita, by gender and age than the data pertaining to average medical service utilization in these two countries. The healthcare budget model applied in the report's projections is not limited to health insurance in a given country, but covers the whole public financing of the healthcare sector. This implies that not only insurance revenues and expenditures, but also budgetary revenues and expenditures were included.

## Assumptions

Assumptions on future demographic changes in the countries under analysis were based on country sources, which include analytical research and projections prepared by national statistical offices and institutes of demography.

According to demographic projections, in the oncoming decades, countries included in the analysis will face trends similar to those in the EU-15: fertility decline, life expectancy increase, and an increase in the number of elderly (65+) in the population. The dynamics of those changes will be higher than in the EU-15 and thus will have a significant impact due to the fact that these demographic shifts are taking place in relatively poorer countries.
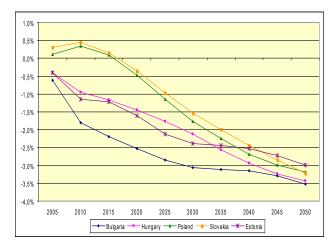
## Population

One major demographic shift that the countries of Central and Eastern Europe will face is a decline in their populations. According to country-based projections and the Eurostat, the New Member State (NMS) population will decrease by 12%. Although the rate and time that each country experiences a decline in population will vary, after 2015 the population of all of the countries under analysis will shrink. These changes in population are influenced by migration processes. Eurostat projections assume immigrants to the EU-15, also from the NMS, though the scale of immigration from the NMS will be lower than in the base projection

year, which in this study is 2005. The NMS also face emigration issues related to EU accession. It is assumed that the dynamics of migration will slow down after 2010, and a more positive migration balance (more immigrants than emigrants) is projected to take place after 2025.

## Total Fertility Rates (TFR)

Another major demographic shift that the NMS countries are experiencing is a decline in fertility rates. One explanation for this trend is the increase in the so called modernization or "westernization" of lifestyles during the NMS transition period.

*Graph 1. Size of population changes (5-year period)*

*Source: Gabos, Gal (2007), Golinowska, Kocot, Sowa (2007), Kvetan, Palenik, Mlynek, Radvansky (2007), Rangelova, Sariiski (2007), Roovali (2007), http://shop.ceps.eu/BooksList.php?category_id=17&*

These changes in lifestyle include changes in the family structure (marriage in older ages, increase in cohabitation, birth in older ages, more one-child families), increased costs related to raising children, changes in consumption goals, accessibility of childcare, as well as changes in family policies from universal to targeted benefits.

Despite negative tendencies in the last 15-20 years, in all countries under analysis the assumption of fertility increase is adopted. In the next 25 years, the scale of foreseen Total Fertility Rate (TFR) improvement is smaller than in the EU-15, while in the following period the value of the fertility indicator is closer to the projected EU-15 level. Notwithstanding the positive trend in fertility development projection, fertility is not sufficiently high to offset the systematic decrease in the size of the population in the analyzed countries[2].

## Life Expectancy

The assumption of a systematic growth of life expectancy is based on historical tendencies observed in the EU-15 countries, as well as the positive impact of certain factors that determine longevity. These include changes in dietary habits, a decrease in smoking, changes in the consumption of alcohol, and an increase of physical activity. All of these factors lead to a decrease in mortality, which previously was caused by cardiovascular diseases, the main reason of high mortality in the CEEC. In addition, access to pharmaceuticals and new technologies has improved, which allows for faster and more effective response time when the disease occurs.

**Increase of elderly and decrease of labour active age populations**
A decrease in the share of the labour market active population can be observed after 2010, when baby boomers begin to retire at age 65. In the NMS countries the drop in the share of active age population is rapid (27%) and it is projected to continue dynamically until 2050. Labour market activity development is similar in Eastern and Western Europe, although the dynamics are higher in the NMS countries. The decrease in the labour market activity rate is the main reason for policies of employment promotion as well as new labour market programs at the EU-level. It also may lead to future immigration policy changes within the enlarged EU, as the potential of Eastern Europe as a source of migration to Western Europe will diminish.

**Labour Market Projection**
The employment rate is one indicator that has deteriorated for the countries of Central and Eastern Europe, especially during transition. In Bulgaria and Poland, only half of the population in labour market active age is currently employed. Assumptions regarding the development of employment rate in all the countries are quite optimistic, but they are coherent with the national action plans on employment and convergence strategies adopted by selected New Member States (NMS) after EU accession.
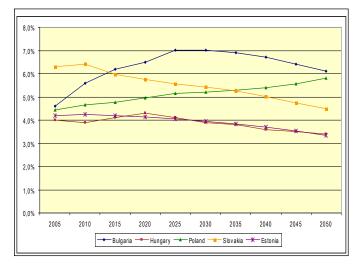In general, labour market indicators projected by the EPC and European Commission  are less favorable for nearly all the NMS in comparison to the EU-15. Most likely, this is a result of the demographic situation in the NMS and its impact on the labour market activity level. However, significant improvements in the economic situation of the NMS countries in recent years seems to indicate that there are grounds for more optimistic employment assumptions than those included in the EPC prognosis.

**Projection Results**
Projections pertaining to the public funding of the healthcare sector (revenues, expenditures and financial balances) were prepared according to several scenarios.

**Baseline Scenario Revenue side**
The picture of healthcare sector revenues in relation to GDP is strongly differentiated. In the first projection period (2003-2024) the trend of increasing revenues was observed.  This trend is very strong in Bulgaria, in Poland it is observed to be weaker, in Hungary, the trend is non-linear, and in Slovakia it begins to decrease as early as 2010. In the second projection period (2025-2050), the increasing trend is reversed and one observes a drop in the level of healthcare revenues in relation to GDP. Only in Poland do revenues grow almost continuously.

*Graph 2. Total public health care revenues as a share of GDP*



*Source:  as in Graph 1*

**Expenditure Side**
At the beginning of the projection period, countries under analysis were characterized by a low share of public expenditure on the healthcare sector in relation to its GDP. Only in Hungary did the share of expenditures exceed 5% of GDP. In the first projection period the relative increase in expenditures is slow in each country except Bulgaria, while in the

second phase public expenditures on heath systematically increase in relative terms, up to the level of 7% of GDP.

**Balance surplus/deficit**
Public funding surplus/deficit indicators in the healthcare sector in relation to GDP illustrate the scale of financial balance/imbalance and reflect financial tensions in the sector. In the base year (2005) the healthcare sector is in balance only in Slovakia, due primarily to previous reforms, such as the introduction of co-payment for services provided in the public sector. After the year 2020 projections indicate that the deficit increases with the highest slope, reaching a level of 3.4% of GDP in Estonia and Hungary in 2050.

*Table 1. Deficit / surplus as a share of GDP*

|          | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|----------|------|------|------|------|------|------|------|------|------|------|
| Bulgaria | -0.5 | 0.1  | 0.4  | 0.4  | 0.6  | 0.4  | 0.0  | -0.3 | -0.7 | -1.0 |
| Estonia  | 0,2  | 0,0  | -0,3 | -0,6 | -0,9 | -1,3 | -1,8 | -2,3 | -2,8 | -3,4 |
| Hungary  | -1.5 | -1.6 | -1.5 | -1.5 | -1.8 | -2.2 | -2.5 | -2.8 | -3.1 | -3.4 |
| Poland   | -0.2 | -0.3 | -0.4 | -0.6 | -0.7 | -1.0 | -1.3 | -1.4 | -1.4 | -1.3 |
| Slovakia | 1.5  | 1.4  | 0.8  | 0.4  | 0.0  | -0.4 | -0.9 | -1.4 | -1.9 | -2.3 |

*Source: as in Graph 1*

**Scenario of increased expenditures in the last year of life**
From the beginning of the 1990's, numerous analyses were conducted to examine the relation between  per capita expenditures on health and the time left until death. Research findings result in two main conclusions:
1)The majority of per capita expenditures on health is incurred in the last years (months) of an indivudual's life (death-related costs), and the increase in  per capita expenditures on the elderly is caused not only by the impact of age, but also by the fact that the elderly face the highest probability of death.
2)The indicator that describes the relation of costs generated by an individual in the final stage of life to costs generated by an individual in the same age group but not in the final stage of life is very high, though it has a tendency to decrease with age.
Results of public health expenditures projection, including the analysis of increased expenditures in the last year of life. The case of Hungary and Poland.
In the case of Hungary, estimations are based on total health expenditures, while in the case of Poland they are based on insurance expenditures. During the analysis population groups were split into two, the deceased and the survivors. This did not affect projected revenues, but only impacted projected expenditures, and as a result the size of the financial deficit. In both countries, together with the introduction of diversified levels of average per capita expenditures depending on individual status, projected expenditure increase is slowed down and as a result projected financial deficit in the healthcare system is reduced. When differences in average per capita expenditures for the survivors and the deceased are taken into account, projected health expenditures in Poland decrease by 0.92% and in Hungary by 1.14% already in 2010. The gap between the baseline scenario and death-related costs scenario broadens in years, amounting to 5.41% for Poland and 8.23% for Hungary at the end of the projection period.
Overall the results of this scenario confirm the findings presented in earlier publications  and indicate that when one takes increased health expenditures in the last year of life into account, it has a significant impact on projection results and decreases the projected level of expenditures.

**Diverse longevity scenarios**
Scenarios allowing for different longevity development patterns were prepared for each country under analysis. In  general, faster life expectancy improvement leads to deeper deficit, but the extent of that effect is rather insignificant. A faster increase in life expectancy (LE) affects both sides of healthcare funding, expenditures as well as revenues. For example, there are more elderly individuals to take care of due to increased mortality, but on the other hand increased life expectancy among a population can also have a positive influence in the form of an increased employment rate. Overall, expenditures grow

faster than revenues so the deficit is higher. Slower life expectancy improvement has the opposite effect.

## Diversified wage growth scenarios

The main source of revenues for a social and health insurance system is the pay-roll tax or insurance contributions. Therefore, wage development has a significant influence on the revenue side of healthcare sector financing. In the case of higher dynamics of real wage growth (in Bulgaria, 0.6 percentage points higher in 2025 and the same value in 2050, 1.5 percentage points higher in Slovakia, and in Hungary 3 percentage points higher over the whole period) during the projection period, the healthcare sector deficit will be lower by at least 1 percentage point of the share of GDP. Although higher average wage growth has an impact on the increase of health expenditures, by expanding labour costs, this effect is smaller than the effect of revenue increases. Thus, the impact on the health sector financial balance is positive. Slower wage growth scenarios yield the opposite result - higher deficits compared to the baseline scenario, and twice as high in comparison to the high wage scenario.

## Labour market indicators diversified development scenario

Different values of indicators pertaining to the labour market (employment and unemployment rate) do impact projection results, but the scale of the change is smaller than in the case of wage growth. The Hungarian healthcare system could not expect an improvement of its currently expected financial problems solely from increasing employment rates. By the same token, employment rate diversification in projections made for Poland and Slovakia exerts only slight influence on the financial balance of the healthcare sector, and none on healthcare expenditures. Overall it seems that the unemployment rate indicator is not sufficient to illustrate the problems connected with the labour market in the context of healthcare sector budget projections.

## Conclusions and Policy Recommendations

The healthcare sector balance projection shows that basic trends in the development of future revenues and expenditures are shaped by the impact of external factors, those outside of the heathcare system, such as demography, economy, and medical service utilization. In additon, variables pertaining to population ageing were especially important. These included the increasing share of the elderly population, the decreasing share of the labour market active population, as well as the decreasing labour supply and changing trends in labour productivity.

Results show that due to various demographic pressures healthcare expenditures for these New Member States (NMS) will increase in the next 40 years, thus hindering each country's healthcare system with deficits. Moreover health revenues, expenditures, and deficit/surplus are slightly sensitive to possible labour market changes. Healthcare system reforms are required in order to balance the disequilibrium of revenues and expenditures caused by external factors, both demographic and economic, and decrease the premium needed to cover expenditures. Long-term recommendations for the healthcare sector can be well targeted depending on the element of the healthcare sector that each of the variables addresses. If the labour market activity rate stongly affects healthcare sector revenues, thereby decreasing the deficit in the public healthcare sector, recommendations should address labour market policy and economy. If, on the other hand, longevity has a strong impact on increasing expenditures, policies should be targeted towards expenditure decrease, which is a less effective policy. There is a strong correlation between longer economic activity and the health of the population. Only healthy and more active populations can stay active in the the labour market for a longer period of time. This will lead to the increase in health expenditures, particularly public health expenditures.

From a social and political perspective, decisions regarding healthcare financing are particularly sensitive due to higher healthcare needs. Changes are also necessary due to the high costs of the healthcare system in the NMS. One of the most crucial cost drivers in the healthcare sector, new medical technology, was not isolated and accounted for in this analysis.

The ILO social budget model also allows for the calculation of the insurance premium needed to balance healthcare system revenues and expenditures. Results indicate that an increase of the health insurance rate is unavoidable, though the scale of this change is subject to policy discussion. Healthcare system reforms are required to balance the disequilibrium of revenues and expenditures caused by external factors and decrease the premium needed to cover expenditures. Such reforms should lead to the rationing of medical services covered by public resources as well as the generation of more effective governance and management of the sector.

Overall, the hypothesis that new social problems will arise, the demand for social care will increase, and that new financing mechanisms will be needed in the face of an ageing population has been confirmed. Other reasons that support healthcare sector reform in the NMS include rapid economic development as well as modernization processes. Thus, rationalization of future healthcare expenditures becomes a necessity for the countries of Central and Eastern Europe as well as building the capability for new taxes and perhaps even increased private financing of the sector.

For more information as well as access to the full report on health expenditures in the accession economies, please see CASE Network Report series No. 77. Available at www.case-research.eu.

## References:

1 The research on the development of scenarios for the future of health expenditures in specific Central and Eastern European countries stems from a previous study conducted by the Ageing, Health Status and Determinants of Health Expenditure (AHEAD) project. The project was performed by the ENEPRI -European Network of Economic Policy Research Institutes (on the network see www.enepri.org) and coordinated by the Centre for European Policy Studies (CEPS). CASE has been a member of the research consortium.

2 Simple replacement level is assured when TFR equals at least 2.1

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