ANNEXES

ANNEX 1. Sustainability of general government finances in Lithuania and other Baltic countries

Introduction

The annex analyses the estimates of sustainability indicators of general government finances published by the European Commission, which show that the mid-to-long term risk to the sustainability of Lithuania’s general government finances is higher than the respective risk for Latvia or Estonia. The lower score results from the impact of ageing-related expenditure, the bulk of which goes towards pension benefits. The annex examines in detail the long-term changes in expenditure of the first pillar pension systems of the Baltic countries, specifically their expenditure on old-age pensions, and the factors underlying such changes. The analysis shows that the evolution of pension expenditure in Lithuania becomes more aligned with the expected developments in other Baltic countries when taking into account the changes to the Lithuanian state social insurance system that will come into effect in 2017 and 2018. Even though the situation of pension systems of all Baltic countries may look sustainable in the long term from a formal point of view, i.e. when measured in terms of financial flows (the ratio between pension expenditure and GDP will decrease by 2060), the key factor underlying sustainability, i.e. the decreasing ratio of the average pension to the average wage, raises serious doubts. This ratio implies a substantial future decrease in the generosity of the pension system and insufficient adequacy of old-age pensions. The assessment of fiscal sustainability, which disregards the adequacy of the pension system, is too narrow and limited. Low adequacy of old-age pensions constitutes a risk to the sustainability of general government finances as it paves the way for public authorities to take ad hoc decisions with a view to increasing pensions or looking for other ways to improve the situation of retirees, for instance, by way of support related to the provision of goods and services, etc. Such decisions would undermine fiscal sustainability. In a scenario which implies no change in the old-age pension replacement rate from its current level and which looks the most feasible due to political risks, Lithuania’s fiscal sustainability score is likely to be lower than estimated by the European Commission, which points to the need to take measures that could ensure fiscal and social sustainability.

1. Sustainability of public finances and projected old-age pension expenditure in the Baltic countries

Economic literature defines the sustainability of public finances (or fiscal sustainability) as solvency of the public sector in the mid-to-long term perspective, i.e. the situation where the discounted value of current and future expenditure does not exceed the discounted value of current and future income. This means essentially that fiscal policy implemented by the state can be maintained unchanged without fearing an indeterminate rise in public debt as a share of GDP in the long term. On the basis of this definition of fiscal sustainability, the European Commission calculates and publishes fiscal sustainability indicators S0, S1 and S2. Indicator S0, which covers major macroeconomic and financial indicators reflecting the state of public finances and the country’s competitiveness, is calculated in order to assess the short-term risks to the sustainability of public finances. S1 and S2 are defined as medium- and long-term fiscal sustainability indicators. Indicator S1 shows the cumulative scope of the required downward or upward adjustment to the structural primary balance of the general government over the next five years so as to reach a 60 per cent public debt-to-GDP ratio within the subsequent fifteen years (by 2031, given that 2016 is the first year of the forecast horizon). S1 below 0 indicates low risk to fiscal sustainability, between 0 and 2.5 – medium risk, and above 2.5 – high risk. Indicator S2 shows the required adjustment to the structural primary balance of the general government in order to stabilise the debt-to-GDP ratio over the infinite horizon. If S2 is lower than 2, the risk to fiscal sustainability is deemed low. If the indicator is between 2 and 6, the risk is considered medium and if it is greater than 6, the risk is seen as high. Both risk indicators also cover additional age-related revenue and expenditure (European Commission 2016).

The estimates of S0, S1 and S2 provided in the latest Debt Sustainability Monitor of the European Commission suggest that the mid-to-long term sustainability of Lithuania’s public finances is seen as worse than the respective indicator for Latvia or Estonia. The risks to the sustainability of Lithuania’s public finances over the mid-to-long term are deemed medium, whereas the respective risks for Latvia and Estonia are considered low. The poorer assessment mainly stems from an increase in ageing-related expenditure, which is expected to be more substantial in comparison to the neighbouring countries, and the resulting higher pressure on the social security system, mostly on pension expenditure. In the short term, public finances of the three Baltic countries should not face any sustainability challenges.

The 2015 Ageing Report considered that the expenditure of Lithuania’s first pillar pension system would increase by 0.3 percentage points to 7.5 per cent of GDP by 2060 (from 7.2% in 2013). Meanwhile, pension expenditure in Latvia and Estonia is expected to decrease by 3.1 and 1.3 percentage points respectively, to 4.6 and 6.3 per cent of GDP, over the same time period (from 7.7 and 7.6% of GDP respectively, in 2013). The ratio of pension expenditure to GDP is envisaged to stand at 12.3 per cent of GDP in the euro area and is projected to decrease to 11.1 per cent of GDP, from 11.3 per cent, across the EU (European Commission 2015b). The analysis of the driving forces behind the developments of pension expenditure suggests that the decrease in the ratio of pension expenditure to GDP in Latvia and Estonia is driven by the diminishing ratio between the average pension and the average wage. In Lithuania, the ratio of the average pension to the average wage will decrease as well, but the decline will not be sufficient to offset the effect of ageing,
which is why the ratio of pension expenditure to GDP will increase slightly in the longer term.

However, the calculations made by the European Commission in 2015 do not take into account the changes to Lithuania’s state social insurance system, which were adopted in 2016 and will come into effect in 2017 and 2018, including the development that has the greatest impact on sustainability, i.e. the indexation of pensions to reflect wage bill developments.\(^{12}\) Given that Lithuania’s population and, consequently, employment will decrease in the long term, the wage bill will increase at a slower pace than wages. Therefore, the indexation of pensions in accordance with the developments of the entire wage bill will restrict their growth, which will have a positive impact on the sustainability of the first pillar pension system and, therefore, of general government finances. However, such indexation of pensions will lead to a decrease in the ratio of the average pension to the average wage, which might create issues regarding the adequacy of pensions in the future.

Long-term developments in the ratio of pension expenditure to GDP are driven by demographic factors, changes in the labour market, factors stemming from pension arrangements (such as the size of pension benefits, retirement duration, retirement age, etc.) as well as the country’s macroeconomic development. Factors affecting the development in the ratio of pension expenditure to GDP are defined by applying the following formula:

\[
\text{Ratio} = \frac{\text{Pension expenditure}}{\text{GDP}} = \frac{\text{Population aged 65+}}{\text{Population aged 20–64}} \cdot \frac{\text{Retiree population}}{\text{Population aged 65+}} \cdot \frac{\text{Average pension}}{\text{GDP}} \cdot \frac{\text{Population aged 20–64}}{\text{Hours worked}}
\]

where:

- **the dependency ratio**, calculated as the ratio between the population aged 65 and over and the population aged 20–64, shows demographic changes and the impact of ageing, in particular as the growth of the older cohort leads to higher pension expenditure;
- **the coverage ratio**, calculated as the ratio between the number of retirees and the population aged 65 and over, shows the impact of changes in the retiree population, which can result from changes to the retirement age, minimum pensionable service, required pensionable service, etc.;
- **the benefit ratio**, calculated as the average pension benefit relative to GDP divided by the number of hours worked, shows the impact of generosity of the pension system; the ratio of GDP to the number of hours worked is used as a proxy for wage. The impact of generosity of the pension system can also be measured using a replacement rate. In this annex, the replacement rate means an indicator calculated as the ratio between the average pension (net of taxes) and the net wage published by the statistical office of each Baltic country;
- **the labour market indicator**, calculated as the ratio of the population aged 20–64 to the number of hours worked, shows the impact of changes in employment and labour market activity.

Calculations made on the basis of the latest information available suggest that the ratio of pension expenditure to GDP will decrease in all Baltic countries in the long term (see Chart B). Between 2015 and 2060, the ratio of pension expenditure to GDP will decrease by 0.9 percentage points in Latvia, by 0.3 percentage points in Estonia, and by 0.3 percentage points in Lithuania to reach 6.1, 6.4 and 5.7 per cent of GDP respectively, at the end of the period. Hence pension expenditure in Lithuania should decrease in the long term, mainly on account of changes to the social insurance system approved in June 2016, whereas the country’s fiscal sustainability score should be similar to that of Latvia or Estonia. Population ageing-related factors will put upward pressure on pension expenditure in all three Baltic countries in the long term (which is implied by increasing dependency ratios). This impact, however, will be offset by decreasing benefit and coverage ratios as well as the labour market indicator. It

\(^{12}\) Starting from 2018, the general and individual parts of pensions in Lithuania will be indexed to the average 7-year change in the wage bill. The pension indexation rate applied in Latvia includes inflation and 50 per cent of real wage bill growth. Moreover, indexation is limited to the pension portion that does not exceed 50 per cent of the national average wage. In Estonia, the indexation rate applied to the basic pension and the individual pension part includes inflation, which accounts for one-fifth of the indexation rate, and the change in actual social contribution revenue, which accounts for the remaining part of the rate. Since 2007, Estonia has been applying different indexation rates to the basic and individual pensions in order to ensure a higher degree of redistribution within its pension system. In particular, the rate applied to the basic pension exceeds the actual indexation rate established for that particular year by 10 per cent, whereas the rate applied to the individual pension is 10 per cent lower.

![Chart A. Factors underlying changes in the pension expenditure-to-GDP ratio in 2013–2060, as assessed by the European Commission](image-url)
should be noted that differences in the results provided in Charts A and B are attributable to the facts that the calculations take into account the changes to the social insurance system in Lithuania that will come into effect in 2017 and 2018, and that they are limited to retirement pensions (whereas the calculations made by the European Commission cover all types of pensions). Account has also been taken of minor changes to the indexing rules in Latvia in 2017. Population projections have been based on the latest demographic forecasts published by Eurostat early in 2017. The medium-term macroeconomic assumptions for Estonia and Latvia have been based on the Commission’s spring 2017 forecast and for Lithuania – on the forecasts published by the Bank of Lithuania in June 2017. The retiree population and the average old-age pension for 2015 have been calculated from the data available in the Eurostat ESSPROS database.

The analysis of the expected path of the pension expenditure-to-GDP ratio throughout the forecast horizon (up to 2060) suggests that the respective ratio for Lithuania and Latvia would increase until 2040 and 2055 respectively, and would subsequently set out on a declining path. In Estonia, this ratio would only achieve a more significant increase around 2055–2056 and decrease at the end of the forecast horizon (see Chart C). Dependency ratios will put upward pressure on the pension expenditure-to-GDP ratio in all three Baltic countries throughout the forecast horizon. Other factors, on the contrary, will have a reducing effect in particular as the decreasing ratio of the retiree population to the older population (the coverage ratio) will constrain the growth of the pension expenditure-to-GDP ratio across the Baltic countries until 2025–2026 as a result of raising the retirement age. The growth of pension expenditure will also be limited by the tendency towards higher employment rate (the labour market indicator) and the downward trend in the benefit ratio.

Chart C. Annual contributions to the pension expenditure-to-GDP ratio in 2016–2060

2. Factors underlying changes in the ratio of pension expenditure to GDP in the Baltic countries

The evolution of the dependency ratio is mainly driven by demographic and population-ageing issues, which will be much more sensitive for Lithuania and Latvia than for Estonia, in particular between 2030 and 2060 (see Chart D). Based on 2016 data, the ratio of the retirement-age population to the working-age population in Estonia, Latvia and Lithuania stood at approximately 43 per cent, i.e. there were approximately 2.5 workers or jobseekers for every individual of retirement-age. This ratio is likely to start getting worse in all three countries around 2025, albeit at a different pace. In Lithuania and Latvia, it will deteriorate most rapidly and will be approximately twice as high around 2060 – at some 85 per cent in Latvia and 81 per cent in Lithuania. This implies that the retirement-age population will almost match the population of workers and jobseekers as there will only be approximately 1.2 workers or jobseekers for every individual of retirement-age. In Estonia, the ratio of the retirement-age population to the population of workers and jobseekers should also increase substantially. However, it should stand at approximately 68 per cent in 2060 (implying about 1.5 workers and jobseekers for every individual of retirement-age). The more advantageous ratio in Estonia will result from the country’s positive net migration level, as projected by Eurostat, as well as from its more favourable ratio of births to deaths, as
compared to the respective ratios in Latvia and Lithuania. It can thus be seen that demographic factors contribute to the differences in sustainability scores of public finances in Lithuania, Latvia and Estonia.

Chart D. Retirement-age population as a share of the working-age population in the Baltic countries

Chart E. Evolution of replacement rates in the Baltic countries in 2015-2060

Even though the expected decrease in pension expenditure contributes to obtaining a better fiscal sustainability score, such a result is only achieved in technical terms, thanks to a decrease in benefit ratios, which, in turn, leads to questions about the adequacy of future pensions. A pension system is deemed adequate where it contributes to ensuring smooth consumption throughout the life cycle for the majority of the population and safeguards older sections of the population against poverty (Holzmann et al. 2008). According to current assumptions, replacement rates related to the first pillar pension insurance in the Baltic countries will decrease by approximately one-half by 2060 (see Chart E). This decrease will be partly offset by benefits from the second pillar pension insurance funds. The analysis carried out by the Bank of Lithuania shows a significant positive impact of the second pillar on replacement rates in particular as the pension replacement rate could be higher by up to 15 percentage points thanks to benefits from the second pillar funds (Lietuvos bankas 2017b). However, even in this scenario, the aggregate ratio (capturing both the first and the second pillars) of the average pension to the average wage, measured by the current model of the pension system, is likely to be lower than it is today. This creates an evident risk that the assessment of fiscal sustainability, which disregards the adequacy of the pension system, is too narrow and limited. Firstly, the system would not be sustainable as, due to the decrease in pension replacement rates and the ever increasing relative population of retirees, the authorities would eventually end up seeking resources to improve the situation of retirees, for instance, by taking ad hoc decisions on pension increases, indirect financing (through higher subsidies for the supply of heat, medicines, etc.), material support related to the provision of goods (food, etc.) or services. The failure to take advantage of the option to reallocate expenditure, i.e. the option to increase pension expenditure through the redistribution of funds from other areas, would lead to an increase of general government expenditure and, therefore, to a deterioration in the fiscal sustainability score. Secondly, the relatively weak link between the level of social security contributions and the level of benefits, coupled with a replacement rate that is too low, might act as a deterrent to participation in the social insurance system for an increasing proportion of the population. This would lead to a decrease in the amount of social contributions and the ensuing deterioration in the fiscal sustainability score.

3. Analysis of Alternative Scenarios

Demography is one of the key factors underlying changes in pension expenditure in the long term. Under the Eurostat's baseline scenario, Lithuania's population will decrease by more than one-third (by 37% to 1.8 million) between 2015 and 2060. In the opinion of the Bank of Lithuania, such a scenario is rather pessimistic given that the Eurostat’s view of Lithuania’s net migration is too negative (Lietuvos bankas 2017a). Population forecasts compiled by the Bank of Lithuania are based on a more favourable assumption of net migration as it is presumed that the increase in emigration from Lithuania in 2015 through 2017 was driven by other factors than economic reasons. For instance, the tightening of the rules governing the issue of permits in 2015 led to an increase in emigration of third-country nationals from Lithuania. In 2016 and early in 2017, intensified efforts to encourage residents to check whether their compulsory health insurance premiums are in arrears have led to an increase in the number of people declaring emigration, even though they might have actually moved out of the country at a much earlier time. The flow of emigration from Lithuania should decrease once the effect of such factors fades away.

Changes in the ratio of pension expenditure to GDP in 2015 through 2060 and their underlying factors, which are provided below in Chart F, have been established on the basis of a demographic scenario worked out by the Bank of Lithuania as well as various alternative demographic scenarios developed by Eurostat, including the scenarios of lower fertility,

lower mortality, a more favourable net migration trend, a more pessimistic net migration trend as well as zero net migration. Calculations made on the basis of alternative population forecasts have shown that the ratio of pension expenditure to GDP in Lithuania may change within the range of –0.8 to 0.6 percentage points in the long-term period between 2015 and 2060, which implies that it might decrease or increase. The magnitude of the change in the ratio will largely depend on migration trends. Chart F shows the potential evolution of replacement rates under various demographic scenarios. The important point here is that in the long term the ratio of the average pension to the average wage will decrease irrespective of the demographic scenario chosen. However, the replacement rate would decline at a slower pace if demographic trends turned out to be more favourable. Given that pensions in Lithuania are indexed to wage bill growth, more favourable demographic assumptions would lead to higher employment, which would promote the growth of the wage bill and, simultaneously, of pensions. Calculations made on the basis of alternative demographic assumptions suggest that pension replacement rates in the first pillar would range between 20 and 35 per cent in the long term (up to 2060).

Even though various demographic scenarios imply a substantial future decrease in the ratio of the average pension to the average wage, this is, however, highly unlikely due to political reasons (as mentioned above, the authorities would most probably look for ways to increase pensions if these were too small). Hence the sustainability of Lithuania’s pension system is likely to be worse than suggested by the fiscal sustainability estimates made by the European Commission. If the benefit ratio remained unchanged at its 2015 level throughout the forecast horizon, the ratio of pension expenditure to GDP in Lithuania would increase by some 3 percentage points between 2015 and 2060, to reach approximately 9 per cent (see Chart F). Such a scenario looks more feasible in particular as replacement rates in Lithuania currently lag behind the euro area average, which is likely to encourage the authorities to look for ways to prevent their further decrease. Even though the 3 per cent increase in the ratio of pension expenditure to GDP looks rather substantial and would require additional financial resources, the ratio would come closer to the average rate of the euro area countries (at 10.8% of GDP in 2015). Hence the analysis of the evolution of the ratio of the average pension to the average wage, calculated on the basis of the existing pension system model, reveals obvious risks stemming from economic, social and political unsustainability of the existing pension system model. This is why solutions to improve the pension system will most likely be sought after in the future.

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A higher retirement age, might be one way to achieve a replacement rate that would be higher than envisaged in the baseline scenario. Given the changes in the age structure of the population, the raising of the retirement age would help mitigate the effects of population ageing. It should be noted, however, that such an option would necessitate efforts to ensure employment for people approaching the retirement age. Calculations made under the assumption that, after 2026, the retirement age in Lithuania would be increased by 3 months each year until it reached 70 years by 2046, suggest that the ratio of pension expenditure to GDP in Lithuania in 2060 would be approximately 0.9 percentage points lower than under the scenario of no change in the retirement age after 2026 (see Chart H). Nevertheless, if this scenario were to occur, political considerations would most probably prevent a decrease in the ratio of pension expenditure to GDP, whereas additional resources would be spent on the raising of pensions. If, hypothetically, the retirement age were to be increased and the ratio of pension expenditure to GDP were to be stable, the replacement rate could exceed the rate established under the demographic scenario of the Bank of Lithuania by approximately 11.2 percentage points (see Chart I).

Stronger activity in the labour market could also contribute to greater sustainability of the pension system in the long term. The rates of employment in the Baltic countries have been at the higher end of the EU scale. However, some of the countries outside of the EU have employment levels well above the EU average.\textsuperscript{14} For instance, Iceland had the employment rate of 81.3 per cent and Switzerland – of 71.8 per cent in 2016, as opposed to the EU average rate of 58.9 per cent. If the level of employment in Lithuania were to increase in the long term,\textsuperscript{15} the ratio of pension expenditure to GDP in the country would not decrease substantially in 2060 as it would only decline by approximately 0.1 percentage points (see Chart H). However, similar to the scenario implying the raising of retirement age, it is likely that political considerations would once again act as an incentive to preclude a decrease in the ratio of pension expenditure to GDP and additional resources would be allocated for pension increases. Assuming that the ratio of pension expenditure to GDP is stable, the replacement rate could exceed the rate established under the demographic scenario of the Bank of Lithuania by approximately 3.9 percentage points (see Chart I).

In the long term, greater sustainability of the pension system could also be ensured by other measures, such as a more flexible retirement mechanism, increased transparency in ensuring a stronger link between contributions and benefits, stepped-up voluntary saving for retirement, etc. The more flexible retirement mechanism could facilitate access to a partial pension and an opportunity to work full- or part-time. It is important to realise that saving for retirement must be sufficient in order for the savings to be adequate and meet future costs in retirement. The current level of voluntary saving for retirement is too low, which highlights the need for solutions as to how this could be improved. The Bank of Lithuania has also made other suggestions for a future reform of the country’s pension system (Lietuvos bankas 2017b).

\textsuperscript{14} The 15–74 age cohort.
\textsuperscript{15} It is assumed that, by 2060, employment rate in each age cohort (of 15–24, 25–54, 55–64 and 65–74 years) will reach the average rate calculated for the three European countries that had the highest rates of employment in 2016.
References


