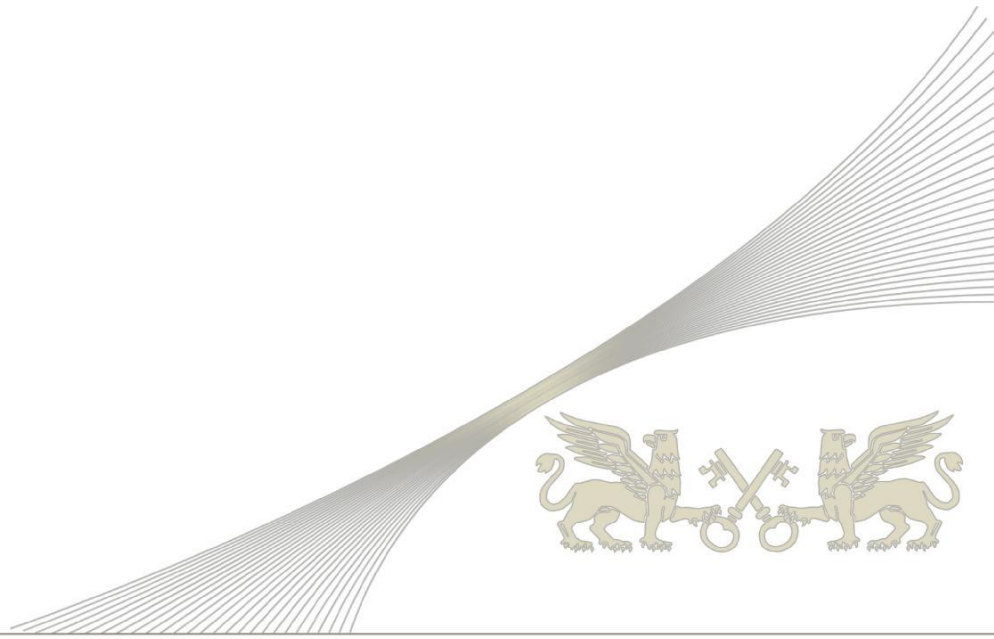
Report

GENERAL GOVERNMENT FINANCIAL SUSTAINABILITY

21 June 2016 No. Y-6



The report is available on the National Audit Office website at www.ifi.lt

CONTENT

A GLOSSARY OF TERMS AND ABBREVIATIONS USED

A glossary

Abbreviation	Term/ Concept	Definition
—Automatic debt dynamics/ Debt change factors		- differences between real interest norm and real GDP growth, as well as changes in currency, that increases or decreases debt ratio with GDP.
	Snowball effect	
GDP	Gross domestic product	Producer residents created gross value added taxes on products and imports and subtracting analogous subsidies.
GDP deflator	Gross domestic product deflator	Gross domestic product (GDP), expressed in current prices (nominal GDP) divided by the GDP expressed in constant prices (real GDP). Also called implicit GDP price deflator.
Cyclic budget component	Budget balance cyclical nature component (component)	The indicator expressed in monetary units which displays the output gap in the potential impact on general government balances during the reporting period
EDS	Economic development scenario	Ministry of Finance of the Republic of Lithuania (hereinafter - the Ministry of Finance) determined by the selected and contained assumptions, based on existing statistics, national accounts and economic data that does not contradict the patterns of economic development of a description of the preparation of the Republic of Lithuania for certain State Budget and Municipal Budgets Financial Indicators of the bill.
S1	The medium-term sustainability of public finances indicator of financial sustainability sector	The medium-term sustainability of public finances indicator of financial sustainability sector S1 that indicates the total amount needed to reduce / increase the rate of structural primary balance over the five years to 2030 years to reach 60 % of GDP debt level by including the additional costs associated with aging populations
S2	Long-term public finance sustainability indicator	Long-term public finance sustainability indicator S2 finance sustainability defined in infinite perspective and shows how much the reduced rate of structural primary balance, the debt-to-GDP ratio would be stable infinite perspective by including additional expenditures, related to the society aging.
HICP	Harmonized Index Of Consumer Prices	The consumer price index, calculated according to the methodology harmonized at EU level.
PPP	Purchasing Power Parity	It is national currency conversion ratios, economic indicators expressed in national currencies to a common currency.
—	Structural goverment balance indicator	According to the business cycle-adjusted general government balance indicator which shows you what would be the government's revenue and expenditure difference if actual GDP equaled the potential, did not apply when the temporary effect. The temporary effect - the economic cyclical fluctuations unrelated factors, indicators that affect the budget only for the specified period, reducing (or increasing) the general government balance rate or public debt (single exposure) or improving (or impairing) the budgetary situation in the future at the expense of budgetary positions.
—	Fiscal Authority	The National Audit Office as an independent fiscal authority, in accordance with the Treaty on the implementation of fiscal

Abbreviation	Term/ Concept	Definition
		constitutional law, performs set of fiscal discipline rules and the tasks of monitoring and prepare, and submit to the Seimas according to the law publicly disclose the findings of the said law

Other abbreviations

Abbreviation	Term / Concept
Report	General government financial sustainability report
TFP	Total factor productivity
OECD	Organisation for Economic Co-operation and Development
EC	European Commission
EU	European Union
EUROPOP2013	Population projections set up by Eurostat every three years on the expected population number in the European countries and the population aging structure. EUROPOP2013 scenarios are made up upon the base of 2013.
FDL	Fiscal Discipline Law
HP	The expanded Hodrick–Prescott filter
IFI 2016	GS financial sustainability baseline scenario
KL	Constitutional Law on the Implementation of the Fiscal Compact
LSD	Lithuanian Department of Statistics
NAWRU	Non-accelerating wage rate of unemployment
SPB	Structural primary balance
IMF	International Monetary Fund
MTT	Medium-term target
GS	Government Sector

RESUME

The National Audit Office, as a fiscal authority, has performed the Lithuanian government financial sustainability assessment and they prepared a report. With this independent assessment it was sought to enhance the understanding of the long-term government expenditures, risk factors, macroeconomic stability and sustainable economic development, as well as to reveal the future government liabilities burden. The government financial sustainability in the report is essentially assessed by a solvency perspective. The general government debt sustainability is assessed in accordance with the financial sustainability criteria, laid down in the Law on fiscal discipline and the government finance sustainability - under the sustainability indicators S1 and S2 applied by the European Commission.

The assessment, performed by the Fiscal authority, provides an independent approach to the government finance sustainability of 2016-2036. The financial sustainability is assessed considering the current state commitments, fiscal indicators and the expenditures related to the society aging. Data and projections published by other institutions are used for the assessment. The macro-economic and fiscal projections are developed using the Fiscal authority's assumptions and models. It is assumed that all liabilities, including the expenditures related to the society aging, will financed and the expenditure limitations, arising from the provisions of the Constitutional Law on the Implementation of the Fiscal Compact and Fiscal discipline Law, as well as the Stability of 2016 program were not assessed. The influence of the social model to the government finances was not assessed as well (for more information see Part 1 of the Report).

Compared with other EU countries, the Lithuanian starting position, on the basis of data of 2015, under the fiscal and macro-economic point of view is favorable. Two years in a row the government primary structural surplus is recorded. The government debt level in the context of the EU is one of the smallest. The macro-economic situation is relatively good: the production close to the potential level, a moderate inflation environment, high credit ratings. There are no fundamental factors for such environment to survive in the long term is not (for more information see Part 1 of the Report).

The significant differences between the baseline scenario concluded by the Fiscal authority from the baseline scenario of the European Commission's fiscal sustainability of 2015 report appear because of assumptions of more optimistic net migration and technological advances. The impact of the baseline scenario net migration assumptions leads a more numerous population projection in 275.4 thousand for 2036, if compared with the Eurostat EUROPOP2013 demographic projections. The faster technological progress leads the faster convergence to the EU-15 average (for more information see Section 3.2 of the Report).The baseline scenario is just a hypothetical long-term development scenario, which by the Fiscal authorities is not recommended to identify with the long-term development projections.

The performed assessments show that by 2036 the age-related expenditures, including the social security expenditures for pensions, health care, long-term health care and education will increase by the 2.0 % of GDP (for more information see Section 3.4 of the Report).

The assessment revealed that the level of the existing government debt is unsustainable - because of the society aging population and the so-called snowball effect, so until 2036 the debt will rise to 54.2 % of GDP, in addition to this, the trend of the annual debt change is acceleratingly rising.

The calculations show that the government debt since 2016 will be moderately declining to 34.3 % of GDP untill 2023, and since 2024 they will again start to increase rapidly regarding the age-related expenditures and because of the so-called positive snowball effect; in ten years it will increase by about 20 % of GDP. The calculations show that if all the commitments, including the age-related expenditures will be financed, it will not be ensured that the designed government debt in several decades will meet the government finance sustainability criteria, i.e. the government debt would not exceed the 60 % of GDP. This criteria, defined in the Lithuanian law, is common to the EU member states, regardless of their economic size and openness, and the calculations as to what level of debt is sustainable to the Lithuanian government finances have not been performed. It is forseen in the Stability of 2016 program to keep the debt below 40 percent. The level of GDP by the Government to be sustainable, but it does not confirm the calculations.

The debt level would be declining, if it were strictly complied with the fiscal discipline rules. In accordance with the Fiscal Authority assessments in such a case, the debt would be reducing, but the risk would be increasing that a wider public would appear below the poverty line (for more information see Part IV of the Report).

In accordance with the baseline scenario and with the 60 % of GDP debt target of 2031, it is estimated that the tax burden is low. The risk indicator S1 of the medium-term financial sustainability baseline scenario indicates that the structural primary balance impetus is unnecessary as 60 % of GDP debt target value allows to reduce the structural primary surplus/ increas the structural primary deficit, at the same time covering the age related expenditures. However, during the long term the Lithuanian government financial sustainability is of average regarding the significant increase in age-related expenditures. The financial sustainability risk indicator S2 assessed in accordance with the baseline scenario shows that the overall structural primary balance displace in a long-term perspective should reach the 2.5 % of GDP.

The fiscal authority is of the opinion that, in determining the medium-term target in accordance with the Constitutional Law on the Implementation of the Fiscal Compact it is reasonable to follow the historical average structural primary balance scenario, but not to overly optimistic structural primary balance projection. The target value of the debt is important when assessing the tax increase risk indicator. This means that the tax increase risk is low, if all the age-related liabilities are covered while the debt growing. If the debt growth is limited, then the age-related expenditures are financed by increasing the taxes. The debt reduction and the expenditures related to the society aging can not be achieved at the same time without increasing the taxes. (for more information see Part V of the Report).

The report consists of 5 parts. Part I describes the government financial sustainability assessment system, Part II contains information on the starting position – the structural government primary balance target of 2015 and the government debt of 2015 and the dynamics of these indicators of 2011-2015; Part III speaks of the baseline scenario - is evaluated using demographic, macroeconomic projections are expenditure projections are used for the assessment, presented key assumptions are presented and based on them the revenue and expenditure projections are concluded; Part IV contains the government debt sustainability analysis; Part V contains the government financial sustainability indicators and analysis.

1. GENERAL GOVERNMENT FINANCIAL SUSTAINABILITY ASSESSMENT SYSTEM

The National Audit Office as the independent fiscal authority (hereinafter - Fiscal Authority) in accordance with the Constitutional Law on the Implementation of the Fiscal Compact (hereinafter - CL) performs the monitoring of acting in accordance with the fiscal discipline rules and tasks and prepares, renders to the Seimas and in accordance with the procedure established by law makes public the conclusions specified in the said law.[1]

The assessment of sustainability of public finances is recommended by international institutions and organizations. According to the International Monetary Fund (hereinafter - the IMF), the World Bank, the Economic Co-operation and Development (hereinafter - OECD) the activity target of the independent fiscal institutions is not only to measure the compliance with the fiscal discipline rules, but also to monitor if the effective management of public finances and fiscal discipline are ensured in the long run. It is therefore very important the forward-looking assessment of how government decisions are made today will respond to future generations. The OECD has developed budgetary governance principles that are recommended for identifying, evaluating and prudent management of the long-term government (hereinafter - GS) financial sustainability and other fiscal risk factors, as well as regularly prepare and publish the long-term sustainability reports. [2]

Public finance sustainability assessment is widespread among the fiscal authorities. In order to enhance the understanding of the potential future expenditures, arising from the current policy decisions, help to control the risk factors, to maintain the macroeconomic stability and growth and to reveal the future government liability burden, the independent fiscal authorities of different countries (Slovakia, the United Kingdom, the USA, Canada, South Korea and etc.) assess the GS finance long-term sustainability, and they regularly publish reports. The long-term GS financial sustainability assessment mandate and evaluation criteria for the fiscal authorities are usually determined by law.

Examples of the long-term GS fiscal authorities financial sustainability assessments

In the United Kingdom Budget responsibility and national audit Act[3] sets out the obligation to prepare the annual GS financial sustainability analysis for the Office for Budget Responsibility.

In the Slovak Republic the Fiscal Responsibility Act[4] sets out the obligation to prepare and to make public the annual reports on the long-term GS financial sustainability for the Council for Budget Responsibility. That law defines the sustainability assessment criteria, such as the Slovak State is considered solvent if the pursued fiscal policy over the next 50 years will maintain the GS debt to below than 50 % of GDP limit threshold.

The state assessment in the context of other EU countires is presented in the Aging and GS financial sustainability reports[5] that are produced by the European Commission once in a three years period. In the Aging Report the expenditure projections related to the society aging are provided

[1] The Constitutional Law on the Implementation of the Fiscal Compact of the Republic of Lithuania, 06/11/2014 No. XII-1289, Part 1, Article 2, the Government Control Law of the Republic of Lithuania, 30/05/1995 No. I-907, Part 3, Article 4.

[2] Recommendation of the Council on Budgetary Governance, 2015-02-18 Public Governance&Territorial Developement Directorate, OECD.

[3] Access through internet: *http://budgetresponsibility.org.uk/topics/legislation-and-related-material/#legislation*

[4] Access through internet: *http://www.rozpoctovarada.sk/images//constitutional_act_493_2011.pdf*

[5] The 2015 European Commission sustainability report. Access through internet: *http://ec.europa.eu/economy_finance/publications/eeip/pdf/ip018_en.pdf*
The 2015 Aging Report. Access through internet: *http://europa.eu/epc/pdf/ageing_report_2015_en.pdf*

and in the GS financial sustainability report the debt dynamics is projected, including the impact of the above-mentioned expenditures, as well as the macroeconomic environment impact on the debt development. On one hand, the advantage of these reports is that they contain comparable analysis of all the EU and neighboring countries. On the other hand, the outcome of the Lithuanian GS debt level is formed in relation to the 60 % of GDP debt level, which is established in the Maastricht Treaty contains the EU countries or in the context of different EU countries having the GS debt, under which the Lithuanian position, for example in relation to Italy or Portugal, seems more positive. Fiscal authority believes that the analysis and conclusions under the one-size-fits-all principle are imperfect and does not allow for rational decision-making. The Fiscal authority in this GS financial sustainability report (hereinafter - Report) applies the adjusted demographic and macroeconomic projections, that, upon the Fiscal authority, the more accurately illustrates the hypothetical scenario of the Lithuanian GS debt development. This report was prepared in the Lithuanian language, therefore, it is accessible to the general public.

At present the long-term GS financial perspectives are provided in the annual stability program produced by the Lithuanian government, however the GS long-term financial sustainability report is not prepared. The Lithuanian legislation does not directly regulate the GS financial sustainability term, but provides its definition. According to the Fiscal Discipline Act[6] (hereinafter - FDA) the fiscal discipline is a set of legal measures to ensure that the projected government debt, according to the implicit government liabilities, including liabilities arising from the demographic changes of the Lithuanian population, would fall in line with the financial sustainability criteria for a few dozen of years, i.e. the GS would not exceed the 60 % of GDP at current prices.

OECD[7] recommends to assess the GS financial sustainability using the analysis of solvency, growth, stability and justice assessment aspects, according to which the government possibilities to comply with its liabilities are assessed. The fiscal policy is considered sustainable when the tax burden and the expenditure benefits are distributed fairly between the generations. The sustainable policy ensures that future generations of taxpayers will not have to pay unmanageable bills for public services provided to current generations.

Sustainability assessment aspects[8]

Solvency - the ability to pay in the future all currently assumed liabilities. In other words, the expected present value of the future primary balances has to include / cover assumed liabilities of the state;

Growth - in order to ensure the future economic growth, the Government has to manage their finances prudently;

Stability - the Government's ability to meet their liabilities to the existing tax burden;

Justice - the Government's ability to pay the current liabilitiess, without shifting the expenditures to the future generations**.**

The whole of the assessment aspects provides the multiple GS financial sustainability assessment, which shows how much the government has accumulated long-term future liabilities, that are not disclosed in current budgets and balance sheets, but affects the future government's fiscal position and thus has influence on the future generations.

[6] The Fiscal Discipline Act of the Republic of Lithuania, 08/11/2007 No. X-1316, Part 1, Article 2.
[7] Practices for Independent Fiscal Institutions' Long Term Fiscal Sustainability Analysis: An introductory concept note, Trevor Shaw, March 1, 2016, OECD (draft version).
[8] Schick, A. (2005) Sustainable Budget Policy: Concepts and Approaches.

In assessing the 2016. the draft budget, the Fiscal Institution warned that, in the event of sudden adverse shocks during the medium- and long-term, Lithuania does not have a sufficient fiscal space to accumulate them. In the long-term the fiscal sustainability will be significantly impacted by the additional expenditures, associated with the society aging.[9]

Realizing that Lithuania needs to pursue the fiscal system reliability and the long-term GS financial sustainability, the Fiscal Authority has performed an independent Lithuanian GS financial sustainability assessment and prepared this report. After assessing the recommendations of international institutions and organizations, and independent fiscal institutions practices of other countries and considering the fact that the assessment was carried out for the first time, it was decided that the GG financial sustainability in this report is essentially measured by the solvency dimension. The GS debt sustainability aspect was assessed according to the financial sustainability criteria set out in the FDA, and the GS financial sustainability was assessed by calculating the average and long-term GS financial sustainability indicators.

The aim of the report is to provide an independent assessment of whether the GS finances in the long run will stay sustained. While assessing it was regarded to:

- Starting position (the liabilities assumed by 2016 and the GS structural primary balance, as well as other fiscal indicators);
- Expenditures related to the society aging;
- Impact of the automatic debt dynamic[10]

While assessing the assumption is made that all liabilities, including the expenditures related to the society aging, will be financed, however the expenditure constraints arising from the CL and the FDA, as well as from the 2016 Stability program provisions are not assessed. The Social model influence on GS finances also remains unassessed.

The selected assessment period covers the period of years of 2016–2036. Currently the legislation precisely defines only the average period of five calendar years, covering the current, the past calendar year and the three upcoming calendar years, following immediately one after the other. [11] The long-term projections shall be composed for several dozen of years. EC Fiscal Sustainability of 2015 report applies to the term of 10 years GS projections for the debt analysis and simulation experiments to perform, and evaluating GS liabilities, arising from the EU Member States population demographic changes, apply the term of 45 years projections. Since the 20 years term covers almost all of the two business cycles, and almost the whole financial cycle, taking into account other independent fiscal authorities communication efficiency and modeling experience, the Fiscal authority decided that the GS financial sustainability assessment will cover the period of twenty years. The calculations are based on the historical data of 2004-2015.

The Fiscal Authority the GS financial sustainability assessment performed in accordance with data and projections announced by other institutions:

- Data announced by the Lithuanian Department of Statistics (hereinafter LSD) about the GS assumed liabilities in 2004–2015, as well as fiscal and macroeconomic indicators.
- EUROPOP2013 demographic projections by Eurostat

[9] The National Audit Office Report as of 13/11/2015 No. Y-12-1 „Regarding the 2016 financial indicators".
[10] See the Glossary in the Report, pg. 3
[11] The Fiscal Discipline Act of the Republic of Lithuania, 08/11/2007 No. X-1316, Part 10, Article 2

- The Ministry of Finance data about:
  - Predictions of the GS assumed liabilities for the period of 2016–2019;
  - Repayments of assumed liabilities by 2016 and interest repayments until 2036
- The indicators of the 2016–2019 economic development scenario (hereinafter – EDS)[12]
- The indicators of Lithuanian stability program of 2016
- The European Commission:
  - The indicators of the 2015 Aging report;
  - The indicators and methods of the 2015 fiscal sustainability report.

The calculations and projections performed by the Fiscal Authority:

- Macroeconomic projections of 2019–2036
- Potential GDP of 2004–2036
- Expenditures related to the society aging of 2016–2036
- Expenditures to cover the GS debt interest of 2016–2036
- The GS debt of 2016–2036
- Average and long-term GC financial sustainability indicators

2. STARTING POSITION

While examining the sustainability of public finances in the long run, it is important to know what kind of condition the GS finances are now, i.e. to know the structural primary GS balance and the current GS debt level. This chapter reviews the edevelopment of these indicators since 2011 and until 2015.

2.1. The structual primary GS balance of 2015

GS balance surplus (+)/deficit (-) in 2015 formed the -0.2 % of GDP (0.2 % of GDP deficit) or -77.6 million Euro. In comparison to 2014 the GS deficit declined by 0.5 % of GDP. This is the lowest deficit since 1995 and the lowest in 2015 of all the EU Member States[13] that were fixating the deficit. chronicling the. According to sub-sectors the central government deficit in 2015 formed the 0.5 % of GDP and the local government surplus - 0.3 % of GDP. The surplus for the second year in a row was due to the higher than expected revenues and lower expenditures. The sub-sector of social security funds was balanced (see Table 1).

[12] Prepared by the ministery of Finances as of 18/03/2016 and approved by the Fiscal Authority as of 30/03/2016.
[13] *http://ec.europa.eu/eurostat/documents/2995521/7235991/2-21042016-AP-EN.pdf/50171b56-3358-4df6-bb53-a23175d4e2de*

1 table. GS fiscal indicators according to the sub-sectors

Indicator	2011	2012	2013	2014	2015
Balance surplus (+)/deficit (–), in % of GDP					
Government sector	–8,9	–3,1	–2,6	–0,7	–0,2
Central government	–6,7	–1,2	–1,3	0,4	–0,5
Local government	–0,4	–0,2	–0,3	0,1	0,3
Social security funds	–1,8	–1,7	–1,0	–1,2	0,0
Primary balance, in % of GDP					
Government sector	–7,1	–1,2	–0,9	0,9	1,3
Central government	–5,3	0,3	–0,1	1,6	0,6
Local government	–0,3	–0,2	–0,2	0,2	0,3
Social security funds	–1,4	–1,3	–0,5	–0,8	0,4

Sources – Lithuanian Department of Statistics, Fiscal Authority estimates

The expenditures on interest payments for the GS debt of 2015 amounted the 1.5 % of GDP. If eliminating these expenses from the GS balance surplus (+) /deficit (-), the primary GS balance is obtained, which represents 1.3 % of GDP.
(2 table).

2 table. GS fiscal indicators

Indicator	In % of GDP					Source
	2011	2012	2013	2014	2015	
1. GS balance surplus (+)/deficit (–)	–8,9	–3,1	–2,6	–0,7	–0,2	LSD
2. Interest	1,8	2,0	1,8	1,6	1,5	LSD
3. GS primary balance (1 + 2)	–7,1	–1,1	–0,8	0,9	1,3	FAE
4. One-off and other temporary measures	–3,7	0,1	–0,4	0,3	0,3	EC/SP
5. The output gap	–4,3	–1,6	0,0	0,9	–0,1	FAE
6. Cyclical budgetary component[14]	–1,8	–0,7	0,0	0,4	0,0	FAE
7. GS balance, adjusted according to the cycle (1 – 6)	–7,1	–2,4	–2,6	–1,1	–0,2	FAE
8. GS balance, adjusted according to the cycle (2 + 7)	–5,3	–0,4	–0,8	0,5	1,3	FAE
9. Structural GS balance (7 – 4)	–3,4	–2,5	–2,2	–1,4	–0,5	FAE
10. Structural GS primary balance (8 – 4)	–1,6	–0,5	–0,4	0,2	1,0	FAE

Sources – SP – Lithuanian Stability program (of 2015 and of 2016), EC – European Commission data base (AMECO), LSD – Lithuanian Department of Statistics, FAE – Fiscal Authority Estimate

The GS primary balance in 2015 was positively (+0.3 % of GDP) affected by the one-off and other temporary measures: the margin (+0.5 % of GDP) and expenditures (-0.2 % of GDP) of the SI Deposit and Investment Insurance revenue and expenditures, related to the insured events, that were for compensating the wage, which was disproportionately reduced during the economic crise[15].

[14] Cyclical budgetary component is calculated as the elastic product of the output in the year gap between the potential and the general government balance indicator. GS balance indicator elasticity value equals to 0.413, and coincides with the EC and the value used in the Government stability program.

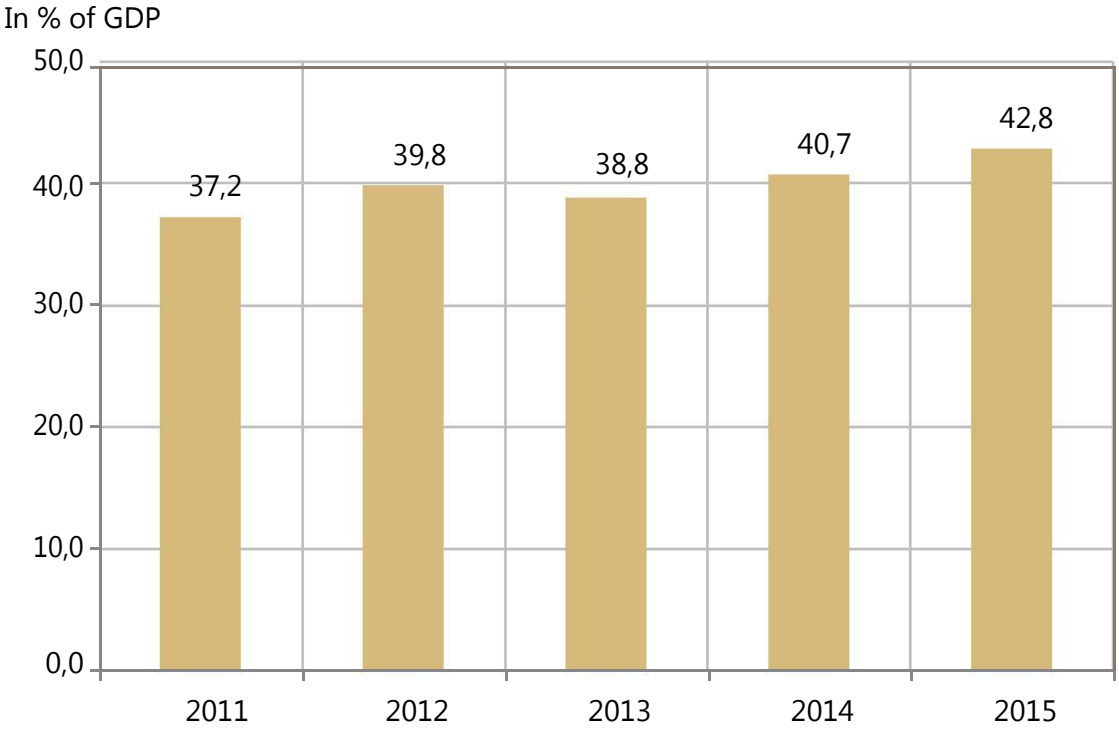
[15] The wage (salary) return law of the Republic of Lithuania for persons who are paid for their work from the state or municipal budget and whose wage has been disproportionately reduced during the economic crisis, 30/06/2015 No. XII-1927.

The structural GS primary balance in 2015 made up of 1,0 % of GDP[16]. In comparison to 2014 this indicator has improved by 0.8 % of GDP. This is mainly due to the improved local government and social security funds sub-sector primary balance (Table 1). The structural GS primary balance value of the indicator since 2011 improved (Table 2): from the beginning of the observed period the 2.6 % of GDP is recorded. improvement.

2.2. The government sector debt of 2015

The GS debt in the end of 2015 made up the 15 882 mln. EUR, or 42,8 % of GDP. In comparison to 2014 GS debt has increased by 1,9 % of GDP. (1 picture)

1 picture GS debt dynamic[17] of 2011-2015



Source – Lithuanian Department of Statistics

Over the past five years, except for 2013, the GS debt at a nominal value was generally increasing by 5 % faster than the nominal GDP (3 table):

3 table. GS debts at a nominal value and the nominal annual change of GDP

Indicator	In %				
	2011	2012	2013	2014	2015
Nominal GDP	11,5	6,6	4,9	4,2	2,0
GS debt at a nominal value	14,6	14,1	2,2	9,4	7,1
Difference of indicators change, in %	3,0	7,4	–2,7	5,2	5,1

Sources – Lithuanian Department of Statistics, Fiscal Authority estimates

[16] The structural GS primary balance is calculated using the potential GDP calculations carried out by the Fiscal authority, from the GS balance indicator subtracting the cyclical budgetary component, less interest expenses and taking into account one-off and other temporary measures.

[17] The GS debt is understood as the debt ratio to GDP, unless otherwise stated.

The GS debt of 2015 mainly increased due to funds borrowed to finance the negative balance (about 3 % of GDP) of the EU support flow and for early funds accumulation to redeem the Eurobond issue in 2016 (2.7 % of GDP). Without the allowance of pre-funding of refinancing risk management, GS debt would make up 40.1 % of GDP.

94 % of GS debentures have a central government sub-sector, 4 % - of local government and 2 % - of social security funds sub-sector.

The warranty liabilities (part of the contingent liabilities) assumed on behalf of the state at the end of 2015 amounted to 0.7 % of GDP.

The government debt level in the context of the EU is one of the lowest and it falls below the Maastricht limit of 60 % of GDP criteria. The debt sustainability criteria is also not assessed and it is not legally required in Lithuania, i.e. the optimal debt level, which does not pose a threat to Lithuanian government finances. In the Government Stability program[18] of 2016 it is foreseen to reduce the GS debt and keep it below the 40 % of GDP.

3. BASELINE SCENARIO

3.1. The importance of the baseline scenario and risk factors of its conclusion

The baseline (hereinafter - the IFI 2016) scenario is based on a likely long-term Lithuanian economic and social development, on the legislation in force[19] and on the anticipated GS future liabilities. This scenario allows for the fiscal policy makers to assess the impact of the current and stable fiscal policies to the GS financial sustainability, completely covering the expected age-related expenditures. At the same time, it is a benchmark to compare the GS financial sustainability analysis with the findings of the alternative hypothetical scenarios[20]. It should be noted that GS financial sustainability analysis and interpretation of the findings of reasonableness inseparable from the main scenario assumptions.

The Fiscal authority recommends the IFI 2016 scenario to understand and interpret carefully as a great uncertainty hypothetical scenarios based on real and nominal convergence hypotheses. Unlike the average term of the EDS, the long-term scenarios are composed of much greater uncertainty. At the same time, the long-term projections are based on the development of the EU Member States, real and nominal convergence hypotheses, in which both the real GDP, per capita and price levels between the EU Member States in the long run, will disappear. It should be noted, that the convergence assumptions are not necessarily aligned with the unchanging assumptions of fiscal politics because the existing and future internal and external risk factors may require a weighty package of structural reform

[18] Lithuanian Stability Pogram of 2016, approved by the Resolution No. 417, Part 3 of the Government of the Republic of Lithuania as of 27/04/2016

[19] Excluding the Constitutional Law on the Implementation of the Fiscal Compact of 06/11/2014 No. XII-1289; the Fiscal Discipline Act of the Republic of Lithuania, 2007-11-08 No. X-1316 and the Stability program of 2016 endorsed by the Resolution No. 417 of the Republic of Lithuania as of 2016-04-27.

[20] Some hypothetical scenarios are directly dependent on the fiscal policy assumptions, eg.: the continuing the long historical behavior of fiscal policies, in line with the restrictions of the Fiscal discipline Act, fully implementing the the Stability program of 2016. Other hypothetical scenarios measure the sensitivity of the GS financial sustainability analysis conclusions for the changes of demographic and macroeconomic assumptions, which are not directly led to changes in fiscal policy.

implementation. For the indicated reasons, the baseline scenario is only hypothetical long-term development scenario, which the Fiscal authority do not recommend to identify with the long-term development forecasts.

The Fiscal authority identifies three risk factors: undeclared emigration, the overall geopolitical situation and the state of the education system, essentially determining the uncertainty of the IFI 2016 scenario. Undeclared emigration quite strongly influences the population revisions. It has been observed after population census in 2001 and 2011, therefore it is likely that the coming Census in 2021 net migration statistics will also be significantly revised[21]. The geopolitical factor encourages Lithuanian businessmen to shift from traditional industrial activities and services to higher-skilled professionals requiring medium and high-tech activities. However, the not adapted education system poses a long-term threat to the transition process that prepares future specialists unmarketable in the labor market. This encourages not only the study and work emigration of young people, but also the poor and weak investment attraction of creative potential of the economy, generating and implementing innovative ideas. Thus, although the expenditures for the education system can be similar to that of Poland or the Czech Republic according to the quality indicators the education system will not allow to ensure the convergence of real GDP growth rates, so convergence assumption indirectly implicits changes in the education system.

The carried out sustainability analysis must be transparent, so other sections of this paragraph detail all IFI 2016 scenario components: (1) demographic projections (2) macroeconomic projections (3) GS revenue and expenditure projections, (4) other GS obligations regulated by laws. Precisely on the basis of IFI 2016 projections and assumptions the Fiscal authorities has prepared the main GS finance long-term development scenario and performed its analysis.

3.2. Demografic projections

One of the most important long-term economic development factors are changes in the Lithuanian population and their structure, related to assumptions for demographic future development processes. Demographic processes have a significant impact to economic growth potential, measured by the potential GDP change, as well as to GS fiscal indicators. At the same time, the demographic structural evolution analysis allows to purify challenges related to the society aging. Demographic processes are slowly changing phenomenas, so the natural population loss in the last quarter of a century, resulting from the significantly reduced birth rates and economic reasons caused by negative net migration trends can not suddenly change. This is illustrated by practically all EUROPOP2013[22] hypothetical scenarios of long-term Lithuanian demographic projections, concluded by Eurostat in accordance with statistic institutions harmonised methods. The fundamental methodological

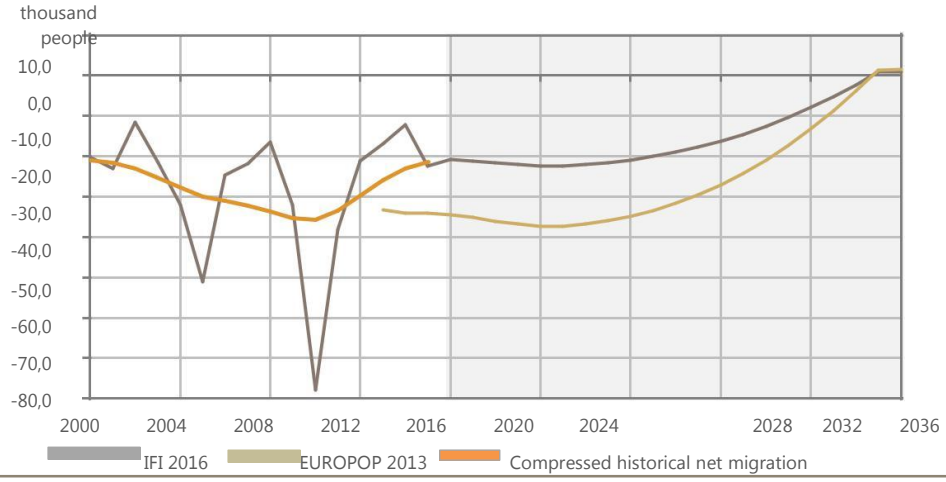
[21] The Fiscal authority has so far taken the assumption of the Lithuanian Department of Statistics that emigrating Lithuanian residents avoiding to pay compulsory health insurance contributions (hereinafter - CHIC) must declare their departure, so since 2010. undeclared emigration flow is zero. However, since the CHIC administration contributions for persons not declaring their departure is expensive, there is a risk that in 2021 the census will reveal the real situation of undeclared emigration.

[22] Population projections set up by Eurostat every three years on the expected population number in the European countries and the population aging structure. EUROPOP2013 scenarios are made up upon the base of 2013. Access on internet:: *http://ec.europa.eu/eurostat/statistics-explained/index.php/People_in_the_EU_%E2%80%93_population_projections*

principle of these projections is the assumption of convergence, whereby all fundamental demographic parameters: (a) the birth rate, (b) mortality and (c) the net migration[23] between the EU Member States in the long-term run convergence, and in the medium term continue the emerging trends of the last decade.

The Fiscal authority comprises the demographic projections on the EUROPOP2013 projections basis, but it is based on a weaker negative net migration assumption, based on the actual 2000-2015 Lithuanian demographic statistics. According to the study[24] conducted by the Lithuanian Social Research Center, over the past few years in all major Lithuanian demographic development components slow improvement gives a rise to optimistic future scenarios – it is approached to the demographic sustainability status faster than it is forseen in the baseline EUROPOP2013 scenario. The authors note that the Eurostat demographic forecast assumptions for demographic processes of possible future trajectories of change were formed based on the average indicators for the entire population, when the main differences occur in certain subpopulations. If the Eurostat assumption for fertility rate fundamentally falls in line with the statistics of 2014-2015, then a precondition for improvement in the mortality rate, especially of men, seemsto be too optimistic. The typical portrait described by the Eurostat assumptions is specific for advanced, successful Lithuanian demographic subset: for upper than secondary education, employed, city residents, who are also less likely to emigrate. It is a kind of aa desirable objective for long-term projections and therefore generally acceptable. Upon the Fiscal authority the most doubtful is the Eurostat net migration projection. As indicators of migration is difficult to assess, they are published as a time-varying more than it really is, therefore it is appropriate to examine the compressed net migration flow[25], for which the improvement trend of 2010-2015 is observed (2 picture).

2 picture. Historical development of net migration and future perspect



Sources – Eurostat, Fiscal Authority estimates

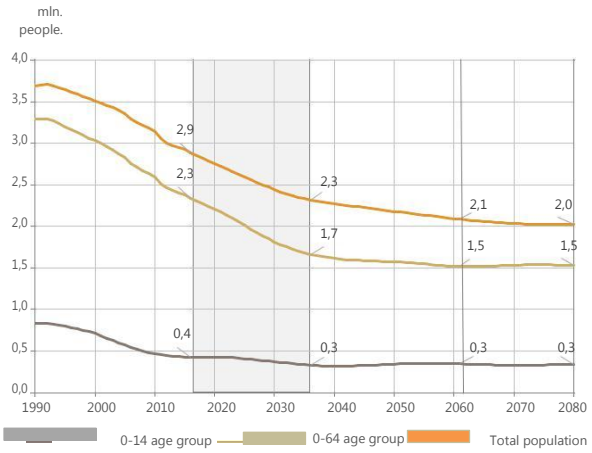
[23] According to Eurostat migration the four main positive net migration directions are retained: Italy, Great Britain, Germany, Spain; when a large negative net migration trends including Lithuania initially extended by resulting in 2003-2013 trends, and then gradually weakened to zero or even moderate positive net migration. Thus, the assumption of convergence in net migration respect is not fully maintained.

[24] D. Jasilionis, V. Stankūnienė, A. Maslauskaitė, D. Stumbrys. Differentiation of the Lithuanian demographic processes. Vilnius, 2015. Lithuanian Social Research Center

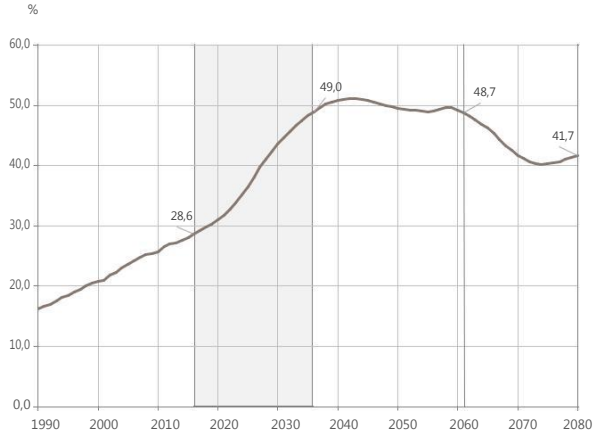
[25] Hodrick and Prescott filter applied for compression with the prameter value of 15,26, in order to eliminate the business cycles of 10 year duration

The main population projection for the development of the migration characteristics is defined as the weighted average of the baseline EUROPOP2013 scenario and a hypothetical scenario with zero net migration average (3 picture). The demographic data of 2015 shows that the net migration flow should be at least 40 % lower, so the weight of 0.6 applied to the baseline EUROPOP2013 scenario and to 0.4 scenario with zero net migration.

3 picture. IFI 2016 demographic projections



4 picture. Development of aging indicator



Sources – Eurostat, European Commission, Fiscal Authority estimates

Due to the formed demographic trends and a long-term development scenario assumptions IFI 2016 foresees large Lithuanian population age[26] structure changes. In spite of that demographic processes improvement, the overall demographic situation in 2036 will not be sustainable still. According to the Bank of Lithuania[27] analysis, a number of factors define the working 15-64 age group change. Firstly, the complementary flow of working age group was negatively affected during the 1993-2002 years when there was almost double reduction in the number of newborns. The latter recession is explained by structural changes in fertility distribution of the age of the mother getting closer to the first delivery Western deferred distribution. Most often emigrating families who do not have children emigrate, but the zero net migration would have allowed for 2001-2015 almost 9.5 % (about 0.6 % per annum) to fill the Lithuanian working age group. Secondly, the reduction in the number of newborns has long-term consequences, when the working-age group leaving flow[28] becomes larger than the complementary group of people flow. Thirdly, not all persons of the working-age population is going through, but the main scenario decreasing mortality assumptions, the negative impact on the projected weaker. As mainly working-age population emigrates, so the 2 picture basically shows a tendency of this age group net migration changes. According to IFI 2016 scenario envisaged an even weakening of this factor in the negative impact. On the other hand, older than 65 years age group of the population due to increasing life expectancy and poor assumptions of this group continue to rise in emigration. 4 picture shows the working-age population relative aging burden suggests that the society aging problem will possibly exacerbate in the next 20 years. Then, from 3.5 working-age people per elderly person in 2016 will be moved to almost 2: 1 ratio[29].

[26] The Aging indicator is defined as the ratio of the population aged over 65 years old and 15-64 years old working-age ratio, measured in percentages.
[27] The overview of Lithuanian Economy, the Bank of Lithuania, 2015 December.
[28] Those who survived and moved to the group of elderly persons 65 years of age.
[29] Defining the Aging indicator as the economic one (the percentage of 65+ years age group the number of insured) projected image is 2.4 to 1 in 2016 and 1.5 to 1 already in 2036

This means that in the near term, the aging will lead to serious challenges for Lithuanian GS finances, more information is provided in section 3.3.

3.3. Macroeconomic projections

The Fiscal authority formed the macroeconomic projections for 2016-2036 years combining the Ministry of Finance EDS and their long-term economic growth model projections. According to the established simulation practice, the medium-term projections are formed on the basis of the official projections, so the 2016-2019 year values correspond to the Ministry of Finance, spring EDS of 2016. Non-current projections of 2020-2036 years are calculated using the neoclassical Solow and Swan the economic growth model affected by the external factors. According to this model, the long-term economic development will largely depend on two external factors: demographics and total factor productivity (hereinafter - TFP). The projections of the following factors shall be awarded according to the projections of the EU Member States, nominal and real convergence assumptions. The model is quite simple, because it is confined only by neoclassical technology, so basically it only emphasizes the supply side resulting from the restrictions. Technology is usually described with aggregate Cobb and Douglas production function, so the mathematical model corresponds to the Fiscal authority tool, used for production function approach to assess the potential GDP and actual GDP gap from the potential[30]. The economic growth model leads to long-term GDP gap to disappear, so the actual and potential GDP in the future will be the same, and the goods used in the production of physical capital to GDP ratio will remain constant.

According to the Fiscal authorities assumptions TFP (technological level) the annual growth rate twill be slowly approaching to 1 % target value. Lithuanian convergence to the EU average TFP annual growth target is set at 1 %, as well as in the EC Aging report of 2015. The projected evolution of this indicator is based on the EU Member States' real convergence assumption. The fiscal authority defines the Mechanical convergence rule, unlike the Aging reports, convergences the process so-called S-shaped curve[31]. It should be noted that the curve quite accurately describes the structural reforms and liberalization of the market caused by the rapid catch-up phase in the period of 2000-2008 and the follow-up period of slower convergence. According to the Fiscal Authority estimates[32], in 2014. the remaining 31 % of real GDP per capita (adjusted according to the purchasing power parity (hereinafter - (PPP)), the gap between the EU-15 average has to fall every 18 years by half.

[30] National Audit Office conclusion "Due to the economic development scenario mounting, 18/09/2015 No. Y-10, Part B, inset. See also. The Bank of Lithuania of 2013 February Lithuanian Economic Outlook Box 2.
[31] S-shaped curve is mathematically described bounded real continuously differentiated mono (sigmoidal) function.
[32] Excluding the decline caused actual TPF rate part of 2009.

4 table. Macronomic and demographic projections

Indicator	Fact	Medium-term projections				Long-term projections				
	2015	2016	2017	2018	2019	2020	2024	2028	2032	2036
Annual change of macroeconomic projection in %										
Real GDP	1,6	2,5	3,2	3,1	3,1	2,5	1,7	1,4	1,5	1,7
Potential GDP, of which:	2,5	2,4	2,5	2,7	2,7	2,7	1,9	1,4	1,5	1,7
1. Employment part, of which	8,5	–0,3	–0,4	–0,5	–0,6	–0,7	–1,3	–1,3	–0,9	–0,6
1.1. 15–64 of working age population	–0,7	–1,0	–1,1	–1,1	–1,1	–1,1	–1,4	–1,4	–1,0	–0,6
1.2. activity level	0,8	0,7	0,6	0,5	0,4	0,3	0,0	0,0	0,0	0,0
1.3. not enhanced average working rate of unemployment[33]	0,1	0,1	0,1	0,1	0,1	0,1	0,0	0,0	0,0	0,0
1.4. a parked hours worked	–0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
2. TFP part	1,3	1,5	1,7	1,9	2,1	2,2	2,2	1,9	1,7	1,7
3. Capital part	1,1	1,1	1,2	1,2	1,2	1,2	1,1	0,9	0,7	0,6
Average annual HCPI inflation	–0,7	0,7	2,2	2,5	2,5	2,4	2,0	2,0	2,0	2,0
GDP deflator	0,4	1,1	2,0	2,3	2,3	2,3	2,0	2,0	2,0	2,0
Activity level (15–64), %	75,0	75,8	76,6	77,2	77,7	78,2	78,8	78,8	78,9	79,0
Unemployment level (15–64), %	9,1	8,0	7,1	6,3	5,4	6,2	9,4	9,2	9,0	8,9
Average monthly gross wages	5,1	5,8	6,0	6,1	6,2	5,8	5,4	5,0	4,7	4,6
Annual implicit interest rate [34], %	3,8	4,2	3,8	3,7	3,2	3,2	4,0	4,8	5,0	5,0
Demographic projections										
Population (thousand) from whichthe age group part in %:	2921	2889	2854	2823	2791	2759	2628	2500	2389	2319
Of 0–14 years old	14,6	14,7	14,8	14,9	15,1	15,3	15,8	15,5	14,9	14,2
Of 15–64 years old	66,7	66,3	66,0	65,5	65,1	64,7	62,3	59,9	58,5	57,6
In 65 years	18,7	19,0	19,2	19,5	19,7	20,0	21,9	24,6	26,7	28,2
Net migration (thousand)	–22,4	–20,8	–21,1	–21,7	–22,1	–22,4	–21,0	–16,3	–8,0	0,8

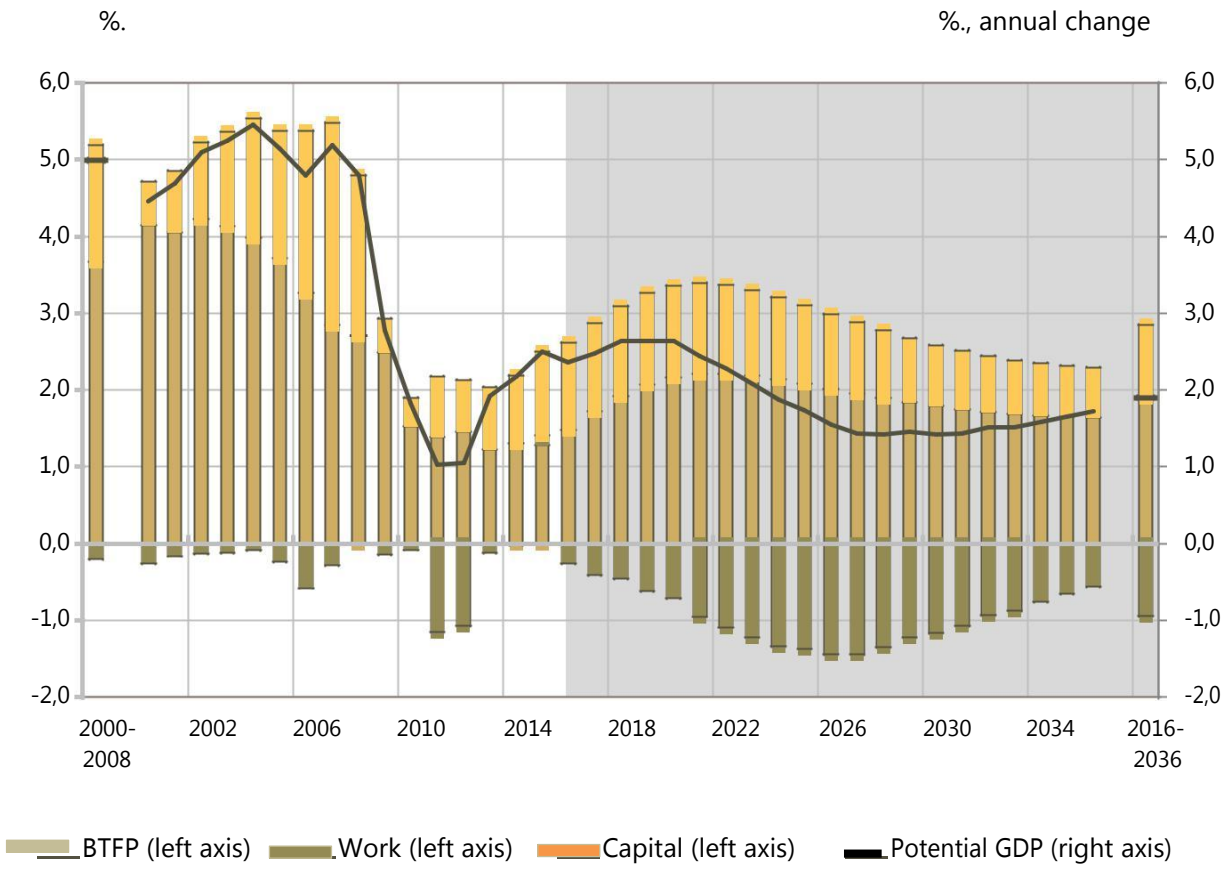
Source – Lithuanian Department of Statistics, Ministry of Finance, Fiscal Authority estimate

The TFP values in Table 4 are cyclically adjusted with the extended Hodrick and Prescott (hereinafter - HP) filter, eliminating the 10-year business cycle, taking into account the additional factors of production utilization. Picture 5 shows that after 2009 the sluggish technological progress by 2020 returns to the convergence trajectory that continues moving slowly approaching the selected 1 % of gGrowth target values. Compared with the rapid catch-up period the projected TFP as a potential TFP growth is almost halved.

[33] NAWRU

[34] Annual implicit interest rate payable for GS debt management

5 picture. Potential annual TFP growth and its change factors



Source – Eurostat, Fiscal Authority estimate

It is appropriate the labor factor measured in hours worked to consider as a result of four structural indicators of which a decisive role is played by declining working-age population. Reference factor is working 15-64. age population, which numbering projection assumptions are detailed above (see section 3.2 of the report). In the long term it remains essentially the only component of the following assumptions:

- one parked average number of hours worked is equal to the last actual value;
- working-age activity level will slightly increase from 78.5 % value in 2019 of up to 79.0 % value in 2036.
- not enhanced average working rate of unemployment (NAWRU) will be slowly getting closer to the 8% of the long-term target value when 1.8 % point gap to the target is reduced by half every 23 years[35]

Table 4 shows the potential GDP and employment related HP filter cyclically adjusted components change factors[36]. The table shows that the positive three-bearing structural employment indicators almost diappear during the first decade.

35 The calculation does not exclude Nawru statistically 8-12 year business cycle time interval, and elsewhere in the mid-range 10-year business cycle used for removal time is likely.

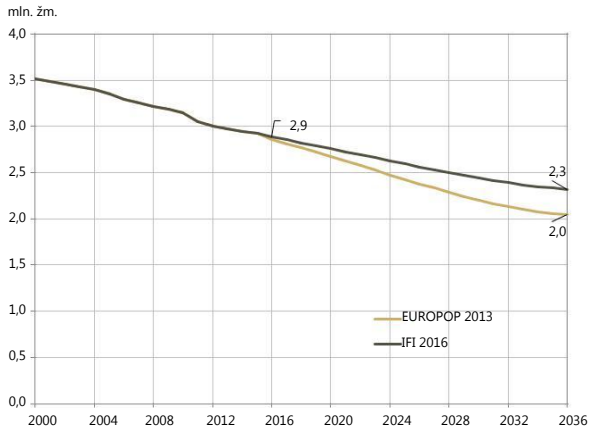
[36] With work on the installation of Figure 5 Developments, calculated as annual natural logarithm of the difference multiplied by 64 percent. assumptions about the labor factor of the value added and capital-analogous differences multiply respectively of 36 percent. assumptions. Table 4 Change GROWTH FACTOR converted into a simple annual rate of growth, so their sum does not necessarily coincide with the real GDP growth rate for the additional positive or negative interaction between members

It should be noted that, compared with the catch-up phase of 2000-2008, the negative past fertility and net migration demographic consequences will emerge in the near term (5 picture).

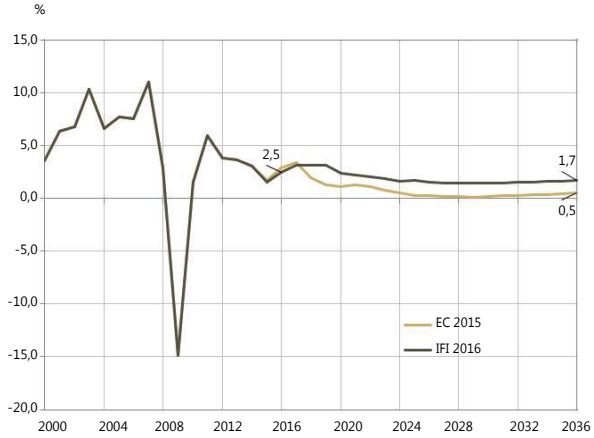
The economic growth model determines that the Lithuanian economy is moving according to the sustainable growth trajectory, capital and potential GDP ratio will remain constant. Based on the modeling practices, the Fiscal authorities defines the capital fund as the net stock of fixed assets at year-end, although notes that conceptually capital fund should be measured in capital services[37]. It is assumed that the long-term equity fund will be used of 77.9 % capacity and the average wear of 5.3 % per year. Then the annual used capital fund to GDP ratio in 2036 will be approaching the 2.2 value and then it will remain constant.

Other indicators in Table 4 from 2020 to 2036 are calculated according to the assumptions of the EC Aging report of 2015 and Fiscal Sustainability of 2015report. Harmonized consumer price level and the GDP deflator annual inflation target is 2.0 % of the value. The average monthly gross wage growth projection consists of labor productivity growth projections and inflation projections. Labour productivity is calculated as a projection BGVN growth projection divided by the EC assumptions about the labor factor added value of (0.64). All of inflation, wages and real GDP mismatches resulting from deviations of actual 2019 at the end of linear approaching the target values within five years - half the length of the business cycle. Long-term average VS debt management nominal interest rate assumption is 5.0 % from 2016 to 2019 meaning that the fiscal authorities of the debt sustainability of detailed calculations, and the transition from 2019 nominal interest rate values coregate to the target values for over 10 years - about half of the financial cycle duration.

6 pic. Number of population at the begining of the year



7 pic. Real annual GDP growth rate



Source – Eurostat, European Commission, Fiscal Authority Estimates

According to the fiscal authorities scenario make the optimistic net migration assumption positively affect not only demographic, but also the long-term GDP growth projections. IFI 2016 scenario net migration assumptions impact results into more numerous population 275.4 thousand

[37] According to the OECD definition the capital services fall in line with the actual manufacturing process used for productive capital services flow the current value. The capital services to meet the physical capital in the amount of work actually carried out, in contrast to the net fixed asset balances, which shows the residual market value of physical capital.

projection in 2036 (6 picture). For this reason, the negative impact to the labor force potential GDP is projected lower, which leads to faster real GDP growth projection for the long term than in the EC assumptions (7 picture) The accelerating potential and real GDP growth in 2024-2036 a significantly contributs the technological progress projection made up in the S-shaped curve.

3.4. Government sector revenue and expenditure projections

The Fiscal authority shall presume that the GS revenue projections for 2016-2036 fall in line with the projections provided in the Stability program of 2016 and the expenditures[38] do not relate to the aging population, consists of 18.2 % of GDP in 2019-2036 period. In the medium-term GS income is uneven rising from 34.9 % of GDP in 2015 and reaches 35.3 % GDP value in 2019. The long-term in 2020-2036 projections are based on the premise of sustainable economic development, according to the GS revenue structure will not change and will be equal to the 2019 structure. Other expenditure projections unrelated to aging are equal to 18.2 % of GDP in 2019-2036 and in 2016-2018. gradually rising from 17 % of GDP to 18.2 % of GDP in 2019 (Table 5).

5 table. GS revenue and expenditures

Indicator	In % of GDP									
	2016	2017	2018	2019	2020	2024	2028	2032	2036	2036–2016 difference
1. All expenditures (1.1+1.2)	35,7	35,8	35,9	36,0	36,1	36,8	37,9	39,0	39,9	4,1
1.1 Primary expenditures (1.1.1+1.1.2)	34,0	34,2	34,5	34,8	34,9	35,3	36,0	36,8	37,2	3,2
1.1.1 From which the age-related expenditures:	17,0	16,8	16,7	16,6	16,7	17,1	17,8	18,6	19,0	2,0
For pensions	6,8	6,7	6,7	6,6	6,6	6,8	7,3	7,7	8,0	1,2
For health care	4,7	4,7	4,7	4,7	4,8	4,9	5,0	5,0	5,1	0,4
For long-term health care	1,0	1,0	1,0	1,0	1,1	1,2	1,3	1,5	1,6	0,5
For education	4,3	4,2	4,1	4,0	4,0	4,0	4,1	4,3	4,3	0,0
Other age related expenditures	0,2	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	–0,1
1.1.2 Other expenditures	17,0	17,4	17,8	18,2	18,2	18,2	18,2	18,2	18,2	1,2
1.2 Expenditures to pay the interest	1,7	1,5	1,4	1,2	1,2	1,4	1,8	2,2	2,7	0,9
2. All revenue	34,6	35,2	35,7	35,3	35,3	35,3	35,3	35,3	35,3	0,7
3. Primary balance (2–1.1)	0,6	1,0	1,2	0,5	0,4	0,0	–0,7	–1,5	–1,9	–2,5
4. Nominal balance (2–1)	–1,1	–0,6	–0,2	–0,7	–0,8	–1,5	–2,6	–3,7	–4,6	–3,4

Sources – the 2016 Stability program (GS revenue, Fiscal Authority Estimates)

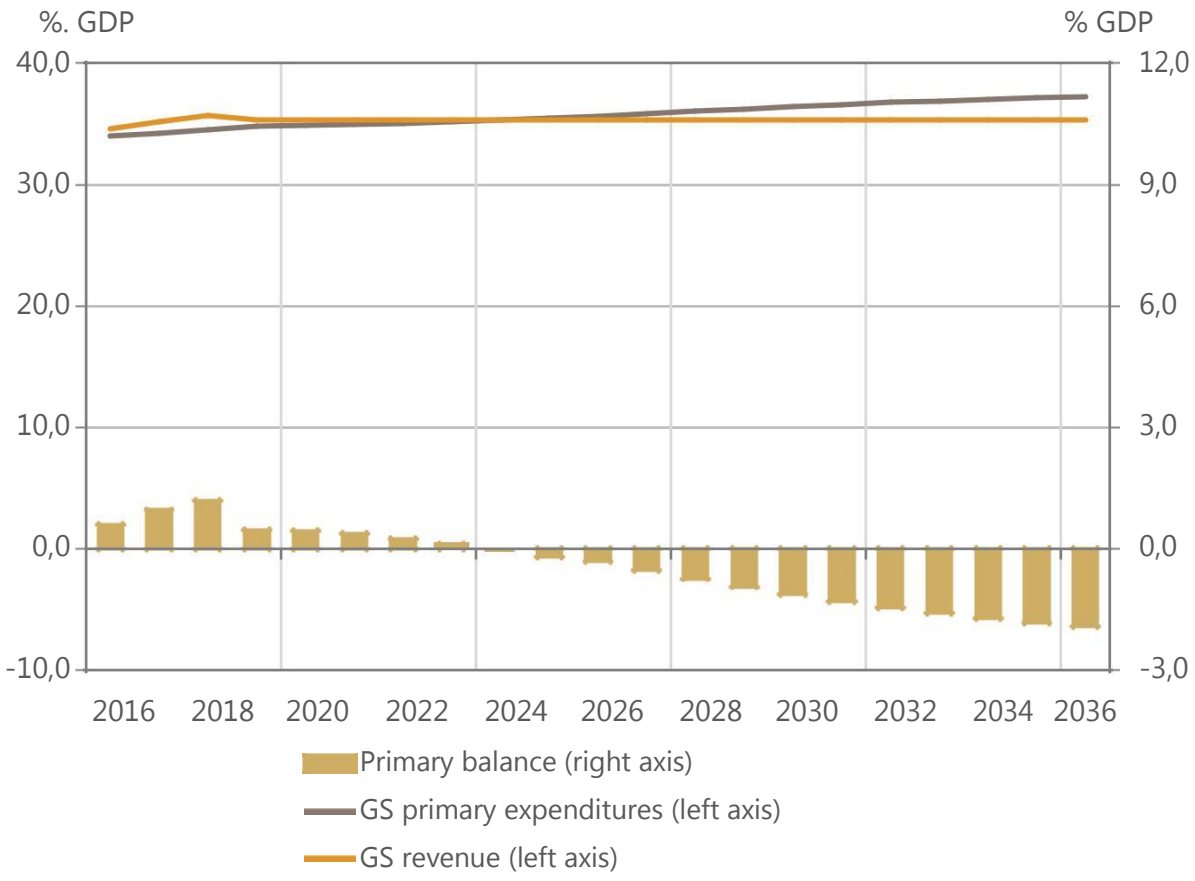
According to the IFI 2016 scenario age-related expenditure will increase by 2.0 % of GDP by 2036. Due to the increased life expectancy, immigration, lower fertility rates and those factors resulting from growing over the age of 65 and working age (15-64) population ratio, the GS spending areas, such as social security pensions, health care, long-term health care and education will be affected significantly. The Fiscal Authority applies own models to assess the expenditure projections for health care, long-term

[38] Not inclusive the expenditures to pay for the GS debt.

Health care and education. It should be noted that the EC does not prepare a long-term pension expenditure projections for pension schemes between the Member States of heterogeneity (multiplicity), but preparing aging reports uses the Member States projections[39]. In this report, the pension expenditure projections until 2036 drawn up in consultation with the Social Security and the Ministry of Labour and the Ministry of Lithuania by applying the social security pension system forecasting (cohorts) model LSIM involving fiscal authorities demographic and macroeconomic forecasts.

According to IFI 2016 scenario GS primary surplus will be moderate declining by 2023 and later it will go into the GS primary deficit. The ratio of revenue and GDP since 2019 is constant, and the initial cost of the GS grows on the cost of the value associated with age. According to the IFI 2016 projections, this part will decline moderately until 2019 and then gradually increase. This trend leads to the emergence of the primary deficit VS since 2025 (8 picture). With the growing GS debt, expenditures for interest to pay will increase by 0.9 % of GDP in 2036 and will form 2.7 % of GDP.

8 picture. GS revenue, expenditures and primary balance



Source – Fiscal Authority estimates

[39] Pension expenditure projections are subject to external review procedure. Aging Working Group of the EU Member States 'experts review the Member States' long-term projections of pension expenditure and only after this review, the projection is adopted and used in the European Commission and the Member States in analytical instruments.

3.4.1. Expenditure for pensions projections

Pension expenditure projections due to differences in the Fiscal authority and demographic assumptions of macroeconomic indicators (Table 6). According to demographic projections of this institution, which are based on a lower negative net migration assumption, in 2036 it will be 16.5 %. more people of working age, and a projected acceleration in real GDP growth rate. The higher GDP (denominator) is the more pension costs are lower than in accordance with the assessment presented in the Report of 2016 Stability Program and Aging 2015. (6 table).

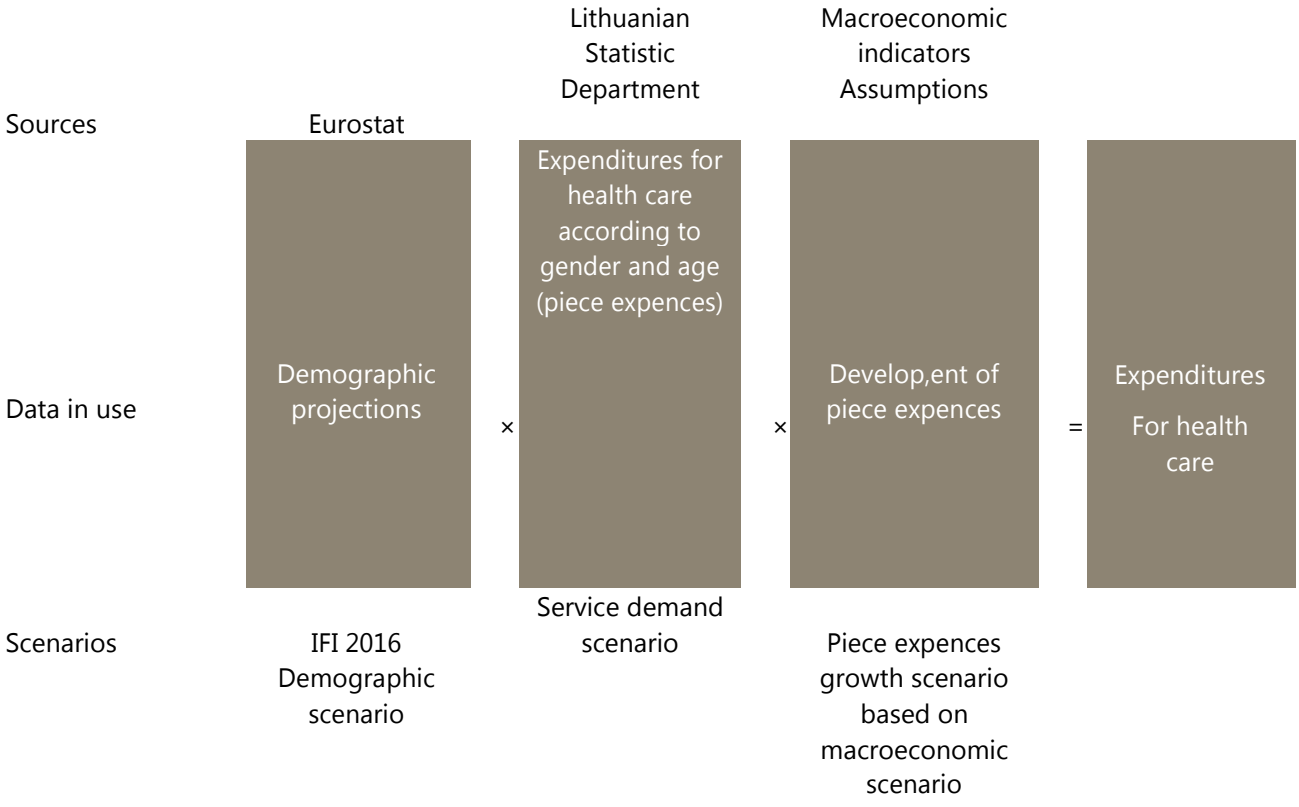
6 table. Expenditure for pensions projections

Source	In % GDP			
	2020	2025	2030	2035
IFI 2016	6,6	6,9	7,5	7,9
Aging report of 2016	6,8	7,6	8,7	9,4
Stability report of 2016	6,7	7,5	8,6	9,3

3.4.2. Expenditures for health care projections

The expenditures for health care projections are made up in accordance with the microsimulation model of the Fiscal Authority and its scheme is provided in picture 9.

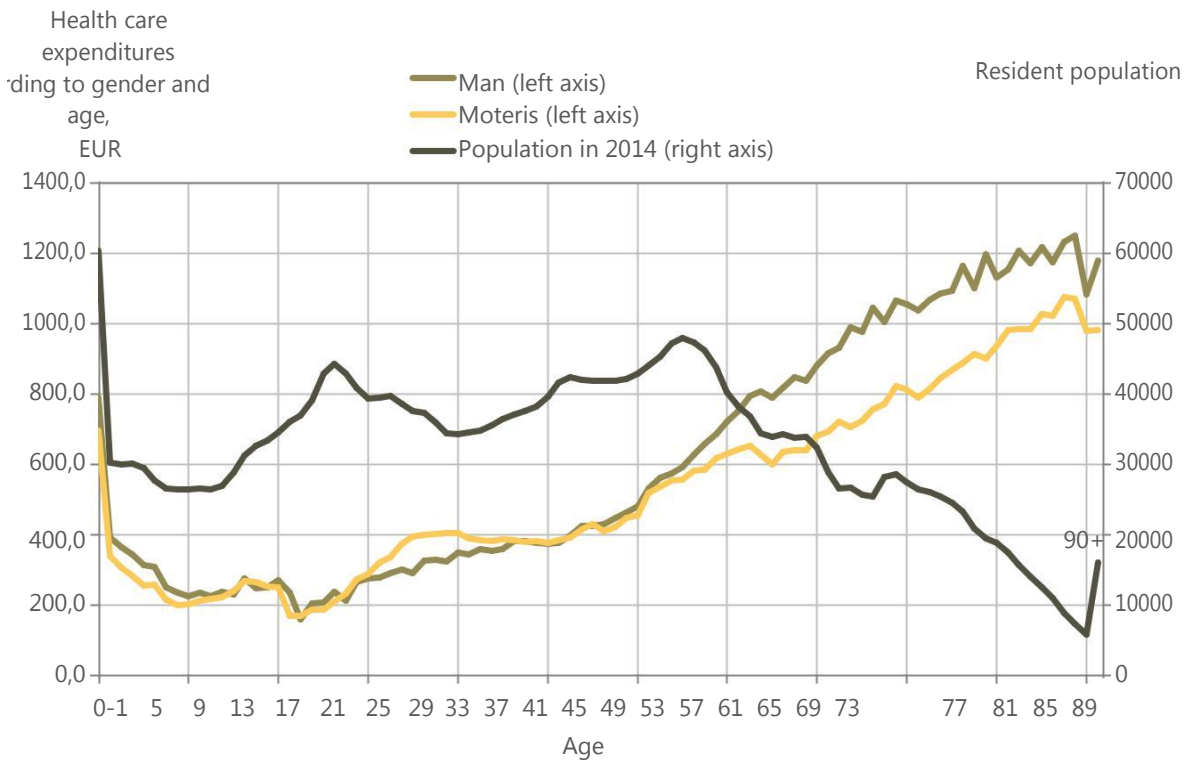
9 icture. Išlaidų sveikatos apsaugai projekcijų schema



Sources – Fiscal Authority

Analyzing the cost of health care by age group and sex distribution, it is clear that an aging health care expenditures increase. The increase in the number of older people the more people will go to higher health care costs range (Picture 10), so health care expenditures will be increasing.

10 pav. Distribution of expenditures for health care according to gender and age



Sourcesi – Lithuanian Statistic Department, Fiscal Authority estimates

Not only demographic changes in the population structure determine the dynamics of health care expenditures. In case of converging countries, under the income growth the higher quality of health care services is likely to happen and then the coverage of demand is introduced, but in designing the health care expenditurres for the next 20 years, it ws assumed that the single health care expenditures grow in terms of GDP per capita[40]. This means that only the effect of aging is introduced in the projections up to 2036. These factors determine that the health expenditures over the next 20 years will increase by 0.4 % of GDP.

The expenditure on health by IFI 2016 scenario are higher than in the Aging 2015 Report and Stability 2016 program. The differences occur due to a bigger number of people of working is influenced by the lower net migration assumptions (Table 7).

7 table. Comparing projections of health care expenditures

Source	In % GDP			
	2020	2025	2030	2035,0
IFI 2016	4,8	4,9	5,0	5,1
Aging report of 2016	4,0	4,1	4,2	4,3
Stability report of 2016	4,2	4,3	4,4	4,5

[40] Elasticity equals to 1

3.4.3. Expenditures for long-term health care projections

The expenditure projections for long-term health care are prepared in accordance with the Fiscal authorities microsimulation model, the scheme of which is the same as the cost for health assessment scheme (9 picture). The only difference is that the allocation (single expenditures) the long-term health care expenditures according to age and sex are used for the assessment. It is assumed that these expenditures will increase at the GDP growth rate which falls per each worker. These single expenditures are multiplied by demographic projections.

In order to receive the projections for long-term care as provided in the 2016 Stability program the same pattern is used. The difference is due because of diverging demographic and macroeconomic assumptions. EC applies the more detailed model with more assumptions, and so the assessment results vary (8 table).

8 table. Comparing projections of long-term health care expenditures

Source	In % of GDP			
	2020	2025	2030	2035
IFI 2016	1,1	1,2	1,4	1,5
Aging report of 2016	1,6	1,8	1,9	2,1
Stability report of 2016	0,8	1,0	1,1	1,2

3.4.4. Expenditures for education projections

In contrast to the expenditures for pensions and health care projections of the evolution, the impact of aging population for education expenditure is not unequivocal. On one hand, the smaller number of young people should provide space for saving, but the longer period, which a person adedicates for learning, the demand for higher education quality and continuously growing price for education put pressure on the expenditure increase in the future.

The projected expenditure for education are based on UOE[41] data according to the International Standard Classification of Education ISCED 2011 the purpose of which is forming education program levels of education programs and their sub-divisions. The four classification levels: ISCED 1, ISCED 2, ISCED 3 4 ISCED 5 8, are used to prepare the projections which fall within the education program, as set out in Table 9as. Eurostat currently publishes the data of only 2013-2014 according to ISCED 2011 classification, and some data, such as educational expenditure per pupil/student, adjusted for purchasing power parity (hereinafter - PPP), published only in 2013.

[41] UNESCO–UIS/OECD/Eurostat Education Statistics. Access on internet: *http://ec.europa.eu/eurostat/data/database*

9 table. International Standard Classification of Education ISCED 2011

ISCED levels		The program level name in Lithuanian	The program level name in English According to ISCED 2011	Description
ISCED 1	1	Pradinis ugdymas	Primary education	Level corresponding to primary education programs from 7 (6) years, granting the right to primary education.
ISCED 2	2	Pagrindinis ugdymas	Lower secondary education	Level corresponding to the basic education programs that give the right to acquire basic education and vocational training programs, giving the right to acquire the basic education and training, or the right to carry out work or work function.
ISCED 3	3	Vidurinis ugdymas	Upper secondary	Level corresponding to secondary education, providing the right to acquire the secondary education and vocational training programs, giving the right to acquire a secondary education and qualifications or the right to carry out work or work function.
	4	Profesinis	Post secondary	Level corresponding to vocational training programs in secondary education, providing the right to acquire a qualification or to perform work or work function.
ISCED 5 8	5	–	Short-cycle tertiary education	According to the Lithuanian legislation does not provide the level of education programs.
	6	Bakalauro ir profesinio bakalauro studijos	Bachelor's or equivalent level	Level corresponding to the study programs that give the right to acquire a bachelor or professional bachelor's degree.
	7	Magistrantūros studijos	Master's or equivalent level	Level corresponding to the study programs that give the right to acquire master's degree.
	8	Doktorantūra	Doctoral or equivalent level	Level corresponding to the scientific or artistic doctoral studies, giving the right to acquire scientific or artistic doctoral degree.

Sources – Ministry of Education and Science, Order of Minister of Education and Science, 11/12/2013 No. V-1232

Lithuania falls to the second quintiles by VS annual expenditure on education per pupil /student, adjusted according to PPP. These expenditures significantly differ between both ISCED categories and between countries (Table 10). In 2013 Lithuania released 5 558 EUR (PPP) per pupil, learning in the primary education program. Compared with other countries, Lithuania in education spending per pupil at ISCED level 1 experiences much like as Poland and France. Lithuania in according to the expenditures for basic education is at the lowest point, comparing with other ISCED levels. So this means that for the basic education in 2013 it was spent 4 996 million (PPP) per student (the 19th place out of 25). A similar amount Poland and Portugal spend out. Lithuania according to expenditures for ISCED 3, 4 and ISCED 5, 8 categories takes place the 17 of 25, i.e. similar to Poland, Slovakia and Portugal.

A wide range of costs between the parties is determined by many factors: teachers, trainers and other staff salaries, different class sizes, capital expenditures and other national circumstances.

10 table. Expenditures* for education per each pupil/student, EUR corrected according to PPP

Countries	ISCED 1 (Place)	ISCED 2 (Place)	ISCED 3 4 (Place)	ISCED 5 8 (Place)
Ireland	5 941 (13)	7 711 (13)	10 121 (6)	9 711 (11)
Austria	8 730 (4)	11 922 (2)	13 250 (2)	ND
Belgium	7 994 (5)	9 804 (6)	9 667 (7)	20 314 (2)
Bulgaria	2 769 (22)	3 057 (21)	3 295 (20)	2 982 (20)
Czechia	3 370 (20)	5 589 (17)	3 954 (19)	5 476 (15)
Spain	4 454 (18)	5 677 (16)	6 448 (15)	7 652 (12)
Italy	5 728 (14)	6 173 (15)	10 195 (5)	ND
United Kingdom	7 628 (7)	8 980 (9)	8 398 (10)	12 766 (9)
Cyprus	7 439 (8)	8 931 (10)	8 106 (12)	13 479 (7)
Latvia	3 036 (21)	3 056 (22)	2 593 (22)	2 464 (22)
Poland	4 776 (17)	4 807 (20)	4 854 (18)	4 907 (16)
Lithuania	**5 558 (16)**	**4 996 (19)**	**4 984 (17)**	**4 170 (17)**
Malta	6 562 (9)	9 613 (7)	7 569 (13)	16 110 (3)
Netherlands	6 281 (10)	9 009 (8)	9 069 (8)	9 895 (10)
Norway	9 854 (2)	10 470 (3)	8 110 (11)	ND
Portugal	3 891 (19)	5 348 (18)	6 094 (16)	7 175 (13)
France	5 683 (15)	7 745 (12)	8 479 (9)	14 082 (5)
Romania	1 533 (25)	1 897 (24)	1 790 (24)	3 070 (19)
Slovakia	2 745 (23)	2 715 (23)	2 851 (21)	4 098 (18)
Slovenia	9 400 (3)	10 143 (4)	11 643 (3)	13 794 (6)
Finland	6 279 (11)	9 811 (5)	10 771 (4)	13 383 (8)
Sweden	7 966 (6)	8 619 (11)	7 025 (14)	14 673 (4)
Switzeland	17 222 (1)	21 282 (1)	13 741(1)	28 785 (1)
Hungary	2 267 (24)	1 654 (25)	2 028 (23)	2 886 (21)
German	6 152 (12)	7 566 (14)	ND	6 999 (14)

*recalculated to the full-time learning or studying equivalent
Source – Eurostat

In decreasing in the number of pupils and students, the number of teachers and lecturers in proportion fell as well. According to the data provided in Table 11 it should be noted that the increase in the number of pupils in the secondary education in vocational training (ISCED 4), respectively, and increased the number of teachers. In the remaining ISCED level the number of teachers and lecturers has been decreasing in proportion to the decreasing number of pupils and students.

11 table. Number of Lithuanian teachers and lecturers according to the ISCED 2011

ISCED 2011		2013	2014	Alteration, in %
ISCED 1	Primary Education	10 474	10 331	–1,4
ISCED 2	Lower Secondary Education	26 027	25 014	–3,9
ISCED 3 4		12 140	11 549	–4,9
ISCED 3	Secondary Education	10 931	10 296	–5,8
ISCED 4	Post secondary non-tertiary Education	1 209	1 253	3,6
ISCED 5 8		8 327	8 030	–3,6

*State schools and universities, recalculated to the full-time learning or studying equivalent
Source – Eurostat

In 2014 Lithuania the number of students in the vocational training holding the secondary education (ISCED 4) increased by 15.0 % and the number of r pupils at all the other ISCED levels, the number of decreased. In 2014 the bigger decreas (7.7 %) occured in bachelor and professional bachelor degree level (Table 12).

12 table. Number of students and pupils according to ISCED 2011

ISCED 2011		2013	2014	Alteration, in %
ISCED 1	Primary Education	107 486	105 829	–1,5
ISCED 2	Lower Secondary Education	198 124	184 464	–6,9
ISCED 3 4		105 537	102 507	–2,9
ISCED 3	Secondary Education	90 245	84 915	–5,9
ISCED 4	Post secondary non-tertiary Education	15 292	17 592	15,0
ISCED 5 8		133 762	125 361	–6,3
ISCED 5	–	–	–	–
ISCED 6	Bachelor's or equivalent level	101 782	93 896	–7,7
ISCED 7	Master's or equivalent level	29 391	28 885	–1,7
ISCED 8	Doctor or equivalent level	2 589	2 580	–0,3

* State schools and universities, recalculated to the full-time learning or studying equivalent
Source – Eurostat

The assumptions and projection methodologies. The average expenditure of the two recent years for which the data is available, are selected as the base year. The recent published data of 2014., so the average of 2013 and 2014 is accounted. All GS expenditures for education[42] are broken down into four components: compensation for employees, other current consumption, gross capital formation and transfers (subsidies and social benefits).

The aim of this procedure is to design expenditures for education and GDP ratio for four [43]analyzed ISCED 2011 levels of the classification: ISCED 1 ISCED 2 ISCED 3 ISCED 4 5 8 (hereinafter indicated by the index i).

$$\frac{\sum_i \check{S}VIET_t^i}{BVP_t} = \frac{\sum_i [ATL_t^i + VART_t^i + KAP_t^i + TR_t^i]}{BVP_t},$$

Here:
$\check{S}VIETti$ it is expenditures for education for the ISCED level i and years t;
$ATLti$ is the compensation for workers;
$VARTti$ is the other current usage;
$KAPti$ is the general capital forming;
$TRti$ it is transfers.

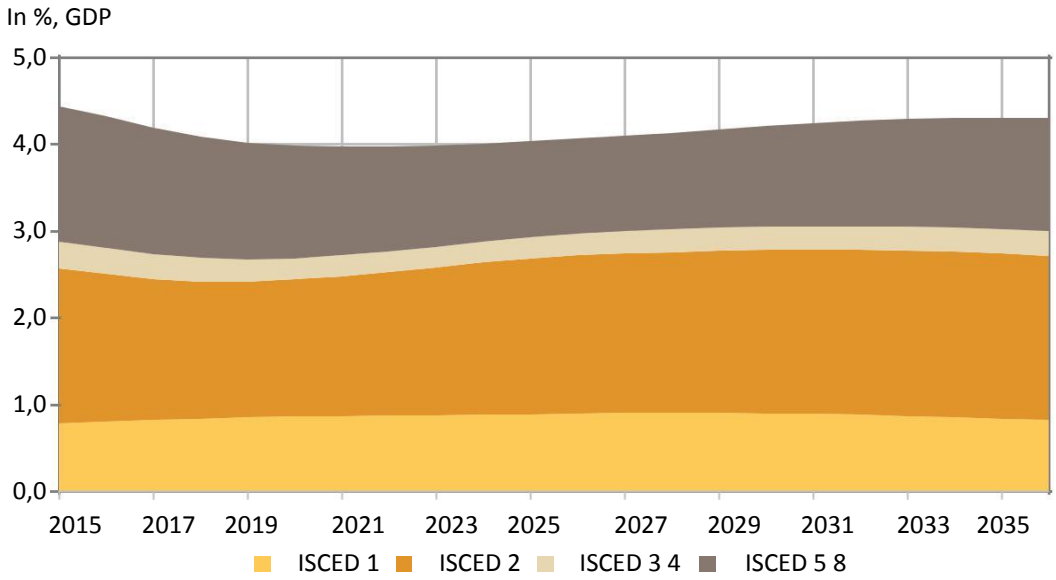
In order prepare the Education expenditure scenario of 2016-2036 the following assumptions are used: the single costs, calculated as the cost per pupil/student or teacher/tutor, growing labor productivity in accordance to growth rate. Specifically, the compensation for employees is divided from the number of teachers / lecturers ($MDti$), and all other components are divided by the pupils / students ($MDti$). It is considered that pupils / students and teachers / faculty ratio over the 2016-2036 remains constant.

[42] According to COFOG classificator
[43] Note that is not intended to project the total expenditure of education, because the analysis does not include ISCED level 0 (pre-primary education). Fiscal authority did not include ISCED 0 level in order to maintain comparability, because it excludes the European Commission

This means that the number of teachers / lecturers at the same time adjusts to the number of pupil / student changing resulting from demographic data. Assuming that the single expenditures ($ATLtiMDti$,$VARTtiMSti$,$KAPtiMSti$,$TRtiMSti$) increase according to labor productivity growth rate, the single expenditure projection for 2016 to 2036 is calculated. These single expenditures are multiplied by the projected pupils / students and teachers / trainers for each individual component of the expenditures. Resulting expenditures of million EUR according to ISCED levels are aggregated into one sum and they are divided by the sum of the projected real[44] GDP. The final result is expressed in a percentage of GDP.

It is projected that the change for spending on education during the year period of 2016-2036 will be neutral. The age-related expenditures for education will be moderately declining until 2022., then they switch to slow growth phase. the projection of the total spending for education is provided in Picture 11 and its breakdown according to ISCED levels. According to ISCED levels, the expenditures for ISCED 2 category will vary the most.

11 picture. Expenditure for education projection according to ISCED classificator.



Source – Fiscal authority estimate

The Fiscal authority applies other demographic assumptions and macroeconomic indicators, but expenditures for education projections are very similar to those estimates published in the Aging 2015 Report and Stability in 2016 program. Such a result (Table 13) is due to the fact that, according to demographic projections the population aged 0 to 30 years old, almost indistinguishable from the main scenario of Aging in 2015 Report and Stability in 2016 Program. The single expenditures are faster inflated according to labor productivity growth rate and higher nominal expenditures of million EUR are also divided by a larger denominator - GDP, so the relative sizes in percentage of GDP are almost identical.

[44] Divided by a real GDP, because unit costs are inflated in real labor productivity growth.

13 table. Comparing of age-related expenditures for education projection

Source	In %, GPD			
	2020	2025	2030	2035
IFI 2016	4,0	4,0	4,2	4,3
Aging in 2015 report	3,6	3,9	4,2	4,3
Stability in 2016 program	4,0	3,9	3,9	3,9

3.5. Other contingent VS liabilities

Due to the high uncertainty of data and failure indirect GS liabilities are not included in the 2016 IFI scenario. In addition to the factors mentioned in Sections 3.1-3.4 of the report the so-called indirect or contingent liabilities of the state may also affect the GS financial sustainability. They are liabilities under on behalf of the state that are not included in the calculation of the GS debt, but in the future they could become th GS liabilities, affecting the GS financial sustainability. For example, the name of the state guarantees, liabilities related to the closure of Ignalina nuclear power plant, commitments for actions to the state for possible bankruptcy of financial institutions and other potential, but currently the contingent liabilities are not clearly stated. Information about the state guarantees is disclosed in the Reports drafted on behalf of the Ministry of Finance, since 2014 such data is being published by Eurostat. Information about other possible contingent liabilities is limited. In producing the main IFI 2016 scenario it is assumed that the medium-term contingent liabilities (the governmental guarantees) will be about 1 % of GDP.

4. GOVERNMENT DEBT SUSTAINABILITY ANALYSIS

GS debt in the long term projected through the Fiscal authority model, developed by the debt sustainability analysis model recommended by the FIM. The data of the GS assumed debt obligations until 2016 and data about the GS planned obligations for 2016-2019 by vehicle type, time and expected interest rates is used for making the calculations. Macroeconomic and fiscal projections are prepared on the basis of the Fiscal authority's assumptions and models (IFI 2016 scenario), which are further described in Chapter 3 of the Report.

Assessing derivative financial means, the whole GS debt (2016) is denominated in euros. This means that the risk of currency exchange rate is under control. It is assumed that in the future the borrowing in euros will be taking place or the transactions for borrowing will be insured against currency exchange rate risk using derivatives. The design of the GS debt does not take account of potential future funding early refinancing risks.

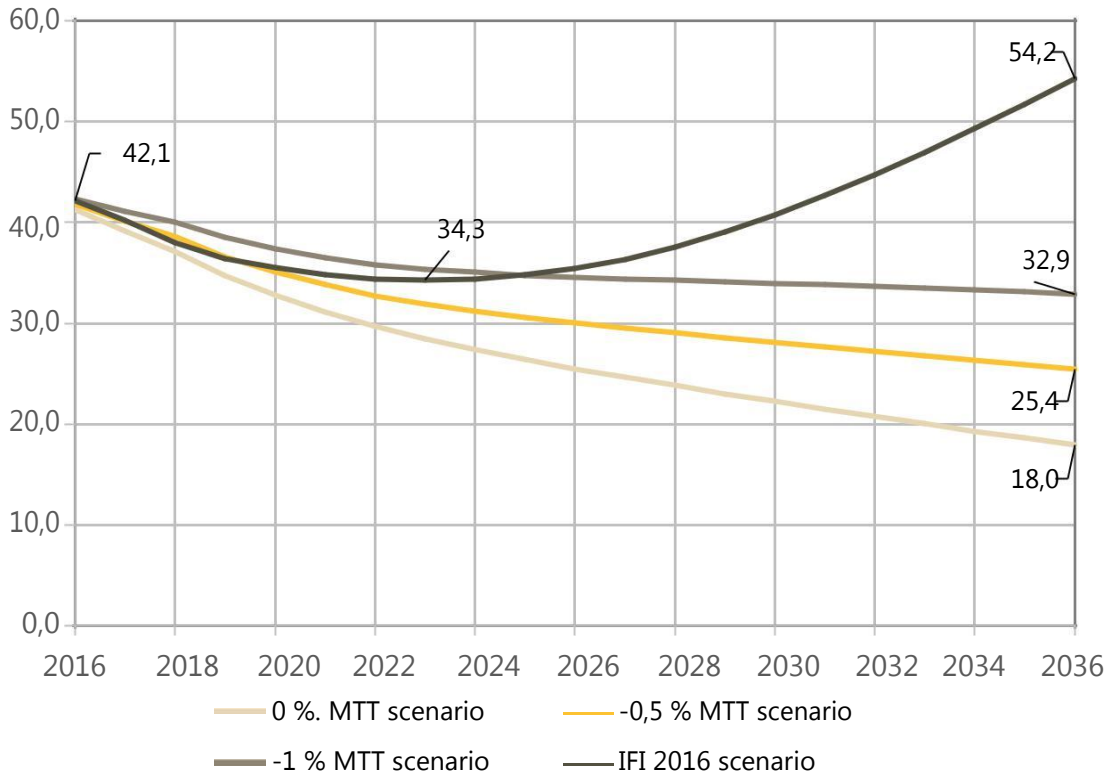
The GS current debt level is unsustainable - because of aging the GS debt by the year of 2036 will increase up to 54.2 % of GDP and it will move closer to 60 % of GDP. In addition, the annual change in the debt trend is acceleratingly rising. The calculations indicate that the GS debt from 2016 will be moderately declining,

however, since 2024 the age related expenditures and the debt will again increase rapidly, and within ten years it will increase by about 20 % of GDP (12 picture IFI 2016 scenario). The calculations show that if all the commitments, including the age-related expenditures will be financed, it will not ensure that the designed GS debt for several decades will be in line with the financial sustainability criteria, i.e. the GS debt would not exceed the 60 % of GDP[45].

It should be noted that the indirect financial sustainability criteria defined in Lithuanian law, is common to EU member states, regardless of their economic size and openness, and estimates what level of debt is sustainable for the Lithuanian GS finances have not been performed (for more information see the Fiscal Authority report[46]). Stability in 2016 Program provides for the GS to keep debt below 40 % the level of GDP, which the government, accounts as sustainable, but there is no evidence of this calculation.

12 picture. Debt projection in accordance to different scenarios, in 2016–2036

In percentage, GDP



Sources – the Ministry of Finance, Fiscal Authority estimates

The Fiscal authorities GS debt projections are made assuming that the age-related expenditures will be financed and therefore it does not include the cost constraints arising from the fiscal discipline rules. Historical data shows that so far the cost containment rules have been "turned off" on the statutory clauses, and the pursued objectives in the Government of convergence / stability

[45] Fiscal discipline definition, Fiscal Discipline Act of the Republic of Lithuania, 08/11/2017 No. X-1316 Part 1, Article 2
[46] National Audit Report No. Y-12-1, dated 13/11/2016 „Regarding GS financial indicators .

annual programs were postponed[47]. Alternative scenarios have been developed on the assumption that the medium-term future target[48] (hereafter - MTT) GS will maintain the structural balance of -1 % of GDP -0.5 % and 0 % of GDP at GDP levels. Under this scenario the GS debt until 2036 will respectively drop to 18.0, 25.4 and 32.9 % of GDP (12 picture MTT scenarios). These sccenarios are set up regardless the future liabilities related to aging.

The Fiscal discipline rules do not address the expenditures related to an aging population, the growth problems. If MTT is determined by one of the scenarios (12 picture MTT scenarios), the debt is respectively declining, but the costs associated with aging are not financed by increasing taxes. If debt reduction is achieved by freezing the costs associated with age, growth, and tax share of GDP is not growing, the bigger part of society would face the risk of poverty (for more information see Section 5.4 of the Report).

The main changes in the annual GS debt factors are the primary GS balance and automatic debt dynamics, or otherwise known as the snowball effect. The, positive or negative impact of the above-mentioned factors on the debt developments is presented in Table 14. If the GS initial balance is negative (deficit) it increases the debt (in the Table with the plus sign), the corresponding positive balance (surplus) reduces the debt (shown on the sign). If the expected real interest rates are higher than the real growth of GDP -then an automatic debt dynamics increases the debt (the table with a plus sign), i.e. acts positively, and vice versa, if the economy is growing faster than the expected real interest, then the debt is decreasing - automatic debt dynamics (in the table with a minus sign) is operating the debt to negative.

14 table. GS debt and its change dynamics according to IFI 2016 scenario of 2016–2036.

Indicator, in % of GDP	2016	2017	2018	2019	2020	2024	2028	2032	2036
1. Debt	42,1	40,2	38,0	36,4	35,5	34,4	37,5	44,7	54,2
2. GS debt change	–0,7	–1,9	–2,2	–1,6	–0,9	0,2	1,2	2,1	2,5
3. Debt change factors (4+7)	–0,4	–1,5	–1,9	–1,3	–0,9	0,2	1,2	2,1	2,5
4. Primary balance	–0,6	–1,0	–1,2	–0,5	–0,4	0,0	0,7	1,5	1,9
5. Government sector revenue	34,6	35,2	35,7	35,3	35,3	35,3	35,3	35,3	35,3
6. Primary Expenditure	34,0	34,2	34,5	34,8	34,9	35,3	36,0	36,8	37,2
7. Automatic debt dynamic (8+11)	0,2	–0,6	–0,7	–0,8	–0,5	0,1	0,5	0,6	0,6
8. Real interest norms and real difference of GDP growth	0,2	–0,6	–0,7	–0,8	–0,5	0,1	0,5	0,6	0,6
9. Real interest norm	1,2	0,7	0,5	0,3	0,4	0,7	1,0	1,2	1,5
10. Real GDP growth	–1,0	–1,3	–1,2	–1,1	–0,9	–0,6	–0,5	–0,6	–0,9
11. Influence of currency exchange	-	-	-	-	-	-	-	-	-
12. Balance	–0,3	–0,4	–0,3	–0,3	0,0	0,0	0,0	0,0	0,0

Sources – Ministery of Finance, Fiscal Authority estimates

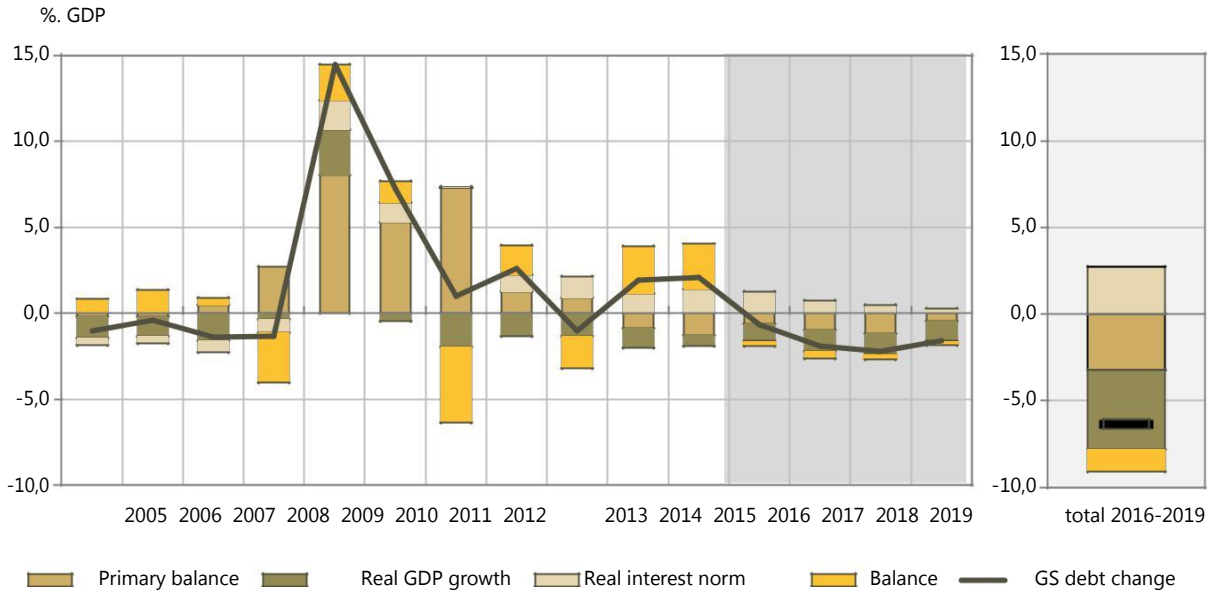
The GS debt since 2005 was declining, in 2008 it accounted for 14.6 % of GDP, because of theimpact of the financial crisis the GS debt in 2009-2010 increased by 21.7 % of GDP. Over the past few years, the debt growing is minimal and it is teetering slightly at 40 % GDP level. Due to the impact of real GDP gowth in 2005-2008. GS debt declined by 4.3 % of GDP, the decline was influenced by the relatively small the GS primary deficit. In 2008 – 2009 the

[47] National Audit Report No. Y-12-1, dated 13/11/2016 „Regarding GS financial indicators: 1 and 2 paragraphs .

[48] Law on the Implementation of the Fiscal Compact f the Republic of Lithuania, 06/11/2014, No. XII-1289 Part 4, Article 2. The medium-term target - the structural general government balance target, to be achieved through four one after the other the previous year period or less, skipping a year, which results in exceptional circumstances.

reduced economic growth of 15.0 %, the higher real interest rates and the negative primary balance led to a sharp surge in debt (13 picture). For 2012-2015 automatic debt dynamics effect was essentially neutral, this cam also be said of the GS primary balance. To the small increase of the debt in 2014- 2015 other factors had the most effect (funds borrowed by the EU to support the cash flow negative balance to finance advance funds accumulation of large-scale redemption of Eurobonds, etc.).

13 picture. GS debt change factors dynamic in 2005–2019

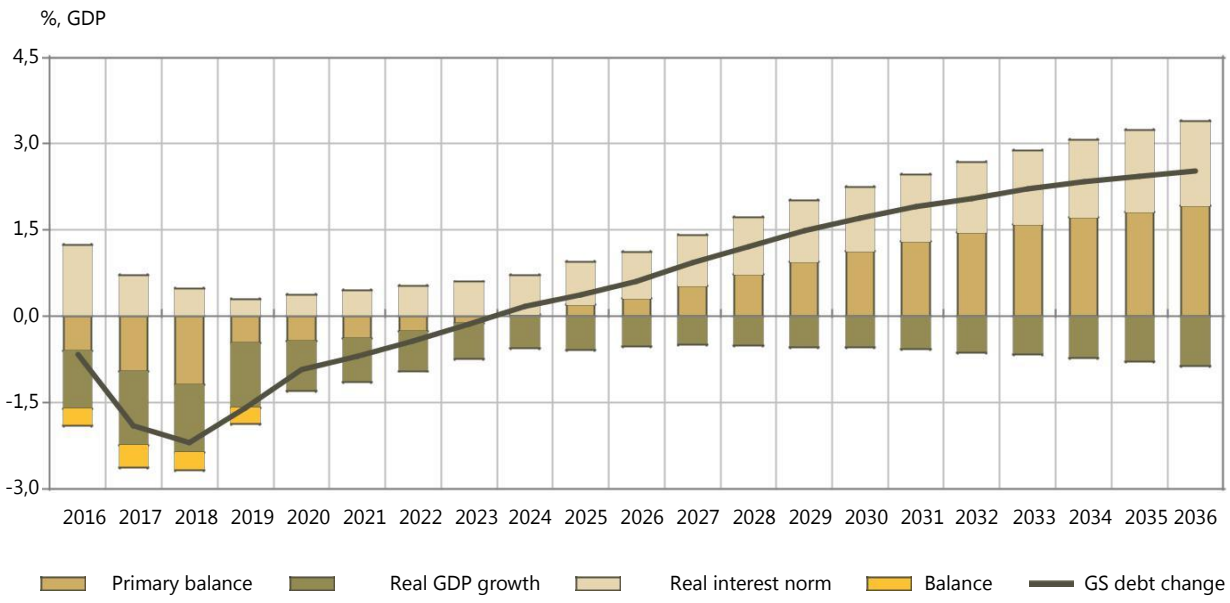


Sources – Ministery of Finance, Lithuanian Statistic Department, Fiscal Authority estimates

At medium term the debt will gradually decline due to the negative effect of a snowball effect and a positive primary balance (surplus). According to IFI 2016 scenario it is projected that from 2016 to 2023 the GS debt will decline by about 8.5 % of GDP. It will be reduced the negative snowball effect, which will form the 3.1 % of GDP. This means that during this period it is projected that the real GDP will grow faster, and the average real GS debt for the interest rate will remain low.

In the long term until 2036 the GS debt will be increased by the positive snowball effect and impact on the expenditures associated with an aging population, a very substantial increase occur in the negative primary balance (deficit). The current structure of the Lithuanian population by age is determined by that of 2023 Lithuanian potential GDP growth will significantly slow down due to strong working-age population decline, and Lithuania's real GDP will grow slower than the expected real interest rate. The positive real interest rates and real GDP growth was 6.2 % different from the GDP debt growth for the period of 2024 to 2036 (14 picture).

14 picture. GS debt change dynamics of 2016–2036



Sources – Ministery of Finance, Fiscal Authority estimates

5. ANALYSIS OF THE GS SUSTAINABILITY FINANCES

5.1. The importance of GS Financial sustainability indicators and their legal basis

The GS financial sustainability is assessed in accordance to the GS financial sustainability indicators (hereinafter - the risk factor) S1 and S2. The EC defines[49] the risk indicator S1 as a medium-term financial sustainability indicator S2 and - as a long-term financial sustainability GS indicator. S1 represents the total amount needed to reduce or increase the structural primary balance (hereinafter - SPB) in the five years to 2030 years to reach 60 % of GDP debt level, including the additional expenditures related to aging. S2 is defined in infinite perspective and shows how the SPB[50] has to be a change in the debt-to-GDP ratio would be stable infinite perspective, including the additional costs associated with aging.

In the Budget Structure Act[51] risk indicator is called S1 tax increases risk indicator[52]. The Medium-term financial sustainability of the GS and tax increases risk indicators should be considered synonymous.

[49] European Commission Sustainability Report of 2015. Access on internet: *http://ec.europa.eu/economy_finance/publications/eeip/pdf/ip018_en.pdf*

[50] Since the end of the projection point: EC-case scenario this year from 2018, and Stability Program of 2016 scenario - from 2020

[51] The Lithuanian Budget Structure Act, as of 30/07/1990 No. I-430, Article 2, Part 15.

[52] Article 2, Part 15 of the Budget Act of the Republic of Lithuania points out the tax increases risk indicator definition. The tax increase risk indicator - the European Commission as part of the gross domestic product (hereinafter - GDP) at current prices calculated indicator S1, presented in accordance with 2005. 27 June. European Union Council Regulation (EC) No. 1055/2005 as of 27/05/2005 amending the Regulation (EC) No. 1466/97 on strengthening of the surveillance and economic policy coordination and surveillance (hereinafter - the Stability and Growth Pact), Article 1, paragraph 5 subparagraph a certain assessing the Lithuanian convergence program or stability programs under the Stability and Growth Pact Article 1, paragraph 3 1 subparagraph.

The Article 19, Paragraph 1, point 1 , subparagraph h, of Lithuanian Budgetary Act[53] shall indicate that the government in the Budget project the explanatory memorandum has to provide data on the GS long-term sustainability prospects of change, measured by tax increases the risk index and the change in the basis of some of the State Budget and Municipal Budgets approval of financial indicators of the draft law during the preparation of the most recent data published by the European Commission. The Government, through the structure of the Budget Law Art. 19, since 2013 provides[54] data on the long-term sustainability GS perspectives change, analyzing not only the risk indicator S1 but S2 as well.

The Risk indicator S2 is used to form a decision on the setting of the MTT in accordance with CL provision[55]. In 2015 the government presented to parliament a draft resolution, which was proposed to set less ambitious MTT - 1 % of GDP structural deficit, because, according to the Commission estimated by the EC the risk indicator S2 of the Stability 2015 program scenario, the Lithuania GS long-term financial sustainability is low. The Seimas in assenting less ambitious MTT setting, has adopted the Resolution[56]. Such a clause may under Article 5 of the CL Law of the Article 5, Part 3 [57], where the risk is low and the amount is less than 60 % of GDP. Otherwise, the lower MTT limit is -0.5 %

The Fiscal Institution has not agree to accept the MTT equal to 1% of GDP for structural GS deficit. Objections arguments presented its report[58] on 2016 government financial indicators.

Since, in accordance with risk indicators, decisions affecting the fiscal sustainability in the future, it is important to calculate the fiscal authorities of the baseline scenario and present the conclusions of which assumptions are important indicators of risk estimates.

5.2. Risk indicators interpretation

Risk indicators are interpreted by assigning one of three risk categories and risk indicators are analyzed by determining factors change. Risk indicators values interpretation consistent with the EC noted ranges presented in Table 15. Risk indicators are classified in three categories. It should be noted that the low-risk category does not mean fiscal policy optimality.

15 table. Risk categories of financial sustainability indicators

Indicator	Risk category		
	Low	**Average**	**High**
Medium-term, S1	≤ 0,0	0,0–2,5	2,5 <
Long-term, S2	≤ 2,0	2,0–6,0	6,0 <

Source – European Commission

[53] The Republic of Lithuania to the State Budget and Municipal Budgets Financial Indicators of the bill
[54] The Republic of Lithuania Government Resolution No. 1148, dated 04/11/2015 on the conclusion of the Republic of Lithuania on the 2016 State Budget and Municipal Budgets Financial Indicators of the draft law compliance to 14/07/2015 European Union Council's recommendation.
[55] Constitutional Law on the Implementation of the Fiscal Compact, 06/11/2014 No. XII-1289, Article 5, Part 2 and 3.
[56] The Republic of Lithuania Seimas Resolution dated 08/12/2015 No. XII-2147 „In regards to setting the medium-term"
[57] Constitutional Law on the Implementation of the Fiscal Compact, 06/11/2014 No. XII-1289, Article 5, Part 3.
[58] Report as of 13/11/2015 „In regards to the government financial indicators of 2016. Access on Internet: http://www.ifi.lt/isvados.aspx

For deeper analysis of fiscal sustainability indicators it is appropriate to break down the indicators into a number of changes factors. One of the risk factors are indicators of change initial budgetary position, which shows the debt stabilizing[59] SPB and the projected in 2019 SPB[60] difference. The second risk factor indicator S1 is shift delay the balance due to the fact that the stimulus occurs gradually over five years. The third indicator S1 factor depends on the debt of the target value of the difference between the original debt value. According to the S2 indicator definition of the second and third Contributions zero. Four indicators of both risk factor is age-related expenditure, showing an additional burden on the population age structure changes (see section 3.2).

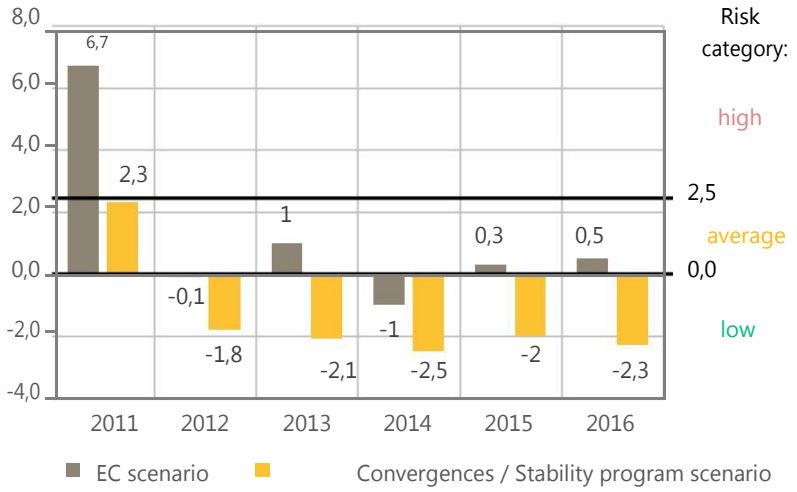
5.3. The change of risk indicators of 2011–2016 assessed by the European Commission

During the medium and long-term the financial GS sustainability risk for characteristics S1 and S2 consistently declined during the period under review. Each year,in the convergence / stability programs assessments[61] the EC provides estimates of the risk indicators under several hypothetical scenarios. According to the European Commission scenario assumes that the SPB will vary according to projections by the European Commission next year (this year until 2017), and later will be at the same level. The Convergence / Stability scenario assumed that the SPB will improve over the next four years and beyond will be a constant level (this year from 2019). In the 15 and 16 pictures provide the EC calculated risk indicators S1 and S2 since for 2011. For GS deficit reduction policies risk indicators improved steadily. It is important to point out that the risk rate estimate sensitive to the predicted SBS after a few years, and shows what would be the risk indicator, if it is designed to implement the objectives of the SPB.

The tax increase is low due to insufficient space on debt to grow to 60 % of GDP by 2030. According to the convergence / stability programs 2011-2016 years the SPB targets from the 2012 tax increase risk (figure S1) is low (Fig. 15). This means that, even with the higher financing costs related to an aging population, the increase in debt up to 60 % of GDP space is sufficient. Therefore, if the debt is to 60 % of GDP, higher age-related spending funding is not available for increasing taxes, but the debt. According to the EC SPB[62] scenario, tax increases the risk of 2011-2012 and 2015-2016 is medium.

[59] The structural primary balance, which maintains a constant period the debt, measured in % of GDP
[60] Last projections point for the OFT as a constant.
[61] *http://ec.europa.eu/economy_finance/economic_governance/sgp/pdf/20_scps/2016/15_lt_scp_en.pdf*
[62] Usually by the European Commission's assessment of the output gap in the Lithuanian economy's output gap is larger than the Ministry of Finance are estimates because the structural primary surplus is lower (higher deficits). Maintaining a lower structural primary surplus (greater deficits) remains less space for growing debt to 60 % of GDP, so in most cases received an average tax increase risk.

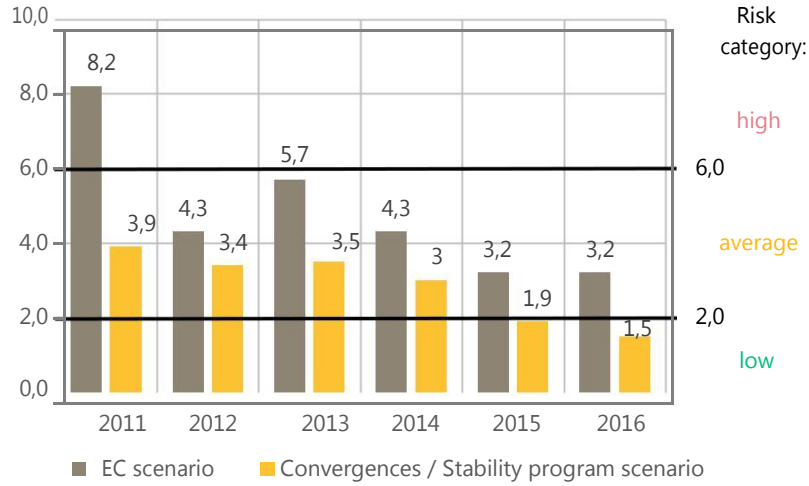
15 picture. Historical change of the medium-term financial sustainability indicator S1



Source – European Commission

In accordance to the EC and Convergences/ Stability program scenario the long-term financial sustainability risk in 2011-2016 year is moderately reducing. The risk indicator S2 showing the current debt level retention risk in accordance to the EC scenario is in a medium-risk category. After two declining years this indicator in 2015-2016 is constant and reaches 3.2% of GDP (16 picture). This means that the SPB should be reduced by 3.2 % of GDP in order, after covering the expenditures related to the society aging, the debt ratio would not increase and remain at the same level. According to the Stability program of 2015-2016 scenarios, the long-term financial sustainability risk is low, because the design SPB (excess), seeking 1.3% of GDP in accordance to the Stability program of 2015 and in accordance to 1.9 % of GDP in accordance to the Stability program of 2016, in the infinite perspective would allow to maintain a stable debt and GDP ratio, even covering the expenditures related to the society aging.

16 picture. Historical change of the long-term financial sustainability indicator S2



Source – European Commission

5.4. S1 and S2 risk indicators in accordance of IFI 2016 scenario

As the risk indicators S1 and S2 are used in decision-making, it is important to calculate them in accordance to the Fiscal authorities baseline scenario and to present its conclusions as to what determines their estimates.

As the EC counts the indicator S1 only to one target value of debt, reaching 60 % of GDP in 2030, and the Paragraph 3[63] of the Stabillity program 2016 states that „in the medium term it is necessary to continue sustainably reducing the level of debt and maintain the lower than 40 % of GDP", so it is appropriate to calculate the required change in SPB (indicator S1), if it is aimed to reach a 40 % of GDP debt in 2031. Also, the risk indicator S1 assessment is presented in the event that until 2031it would be seeking to return to the pre-crisis possessed 20 % GDP of the debt level.

In addition, the Fiscal authority has performed the financial sustainability risk assessments based on the alternative scenarios. It has been estimated the influence of 1 % higher and 1 % lower the nominal interest rate scenarios to the values of analyzed risk indicators. The aim of this is to examine how the risk factors indicators of change depend on the debt management risk supplement. In the future, based on the best practices of other fiscal authorities, it is planned to develop more alternative scenarios, e.g. in changing demographic and other macroeconomic assumptions, estimating the primary balance in accordance to the assessed fiscal response function and so on.

In accordance with to 2016 scenario and the 60% of GDP debt target in 2031tax increase risk is low. The basic scenario medium-term risk indicator S1 indicates that the SPB displacement is unnecessary as the 60 % of GDP debt target value formally allows to reduce the structural primary surplus (to increase the structural primary deficit) and to covere the age-related expenditures (Table 16). Selecting the 40% of GDP debt target in 2031., the tax increase risk increases and becomes moderate. In order to return to the pre-crisis possessed 20% of GDP debt level, the tax increase risk is high (2.7% of GDP). If the interest rate would be 1% lower, even debt target being at 20 % of GDP, the tax increase risk would be average (2.1 % of GDP).

16 table. The medium term fiscal sustainability risk indicator S1 in accordance of three scenarios

Indicator	In percentage of GDP								
	IFI 2016 scenario			1 proc. p. > against interest rate			1 proc. p. < against interest rate		
The debt target value	20	40	60	20	40	60	20	40	60
S1 indicator (total), from which:	**2,7**	**0,8**	**-1,1**	**3,3**	**1,5**	**-0,2**	**2,1**	**0,1**	**-1,9**
The budgetary starting position	0,2	0,2	0,2	0,8	0,8	0,8	-0,4	-0,4	-0,4
Expenses of balance displacement suspension	0,5	0,1	-0,2	0,6	0,3	0,0	0,3	0,0	-0,3
The debt target value	1,3	-0,3	-1,9	1,2	-0,3	-1,7	1,4	-0,3	-2,0
Age related expenditures	0,8	0,8	0,8	0,7	0,7	0,7	0,8	0,8	0,8
Gradual correction	0,5	0,2	-0,2	0,7	0,3	0,0	0,4	0,0	-0,4

Notes: the fiscal correction gradually happens at 2020–2024, the target value is reached in 2031

Source - Fiscal Authority estimates

In long-term the Lithuania's financial sustainability risk is average because of a significant increase in the part of age-related expenditures. The risk indicator S2, assessed in accordance to

[63] Lithuanian 2016 Stability program, which was approved by the Government of the Republic of Lithuania Resolution No. 417, Part 3, dated 27/04/2016.

IFI20116, shows that the general SPB displacement in the long term should reach 2,5 % of GDP (17 table). Most of the so high index value is determined by large (2.2 % of GDP) age-related expenditures. As the demographic trends show, as presented in Picture 4, the relative aging burden of the working age population almost reaches the peak in 2036 and after that continue almost unchanged until 2061. For this reason, the OFT % of GDP constancy assumption, starting from 2036 is reasonable. As the nominal GDP growth rate because of the convergence moderately slows down, then the difference between the nominal interest and nominal GDP growth will slightly grow. So it is really appropriate to look at the impact of a higher interest rate assumption on the S2 indicator. According to the Fiscal Authority estimates, the value differences between IFI2016 and 1 % point higher interest rate scenario S2 reaches just 0.1 % of GDP, which is considered insignificant.

17table. The long term fiscal sustainability risk indicator S2 in accordance of three scenarios

Indicator	In percentage of GDP		
	IFI 2016 scenario	1 % > against interest rate	1 % < against interest rate
S2 indicator, from which:	**2,5**	**2,6**	**2,4**
The budgetary starting position	0,3	0,4	0,1
Age-related expenditures	2,2	2,2	2,3

Source - Fiscal Authority estimates

The fiscal authority is of the opinion that, in determining the MTO in accordance with the Constitutional Act, it is reasonable to follow the historical[64] SPB scenario, and in assessing the tax increase risk indicator the target value of the debt is of high importance. Results of the presented analysis show that the risk indicators S1 and S2 depends largely on the design of the SPB value. If the MTO is determined by the risk, which is valid according to the optimistic SPB(excess) scenario, then the MTO do not guarantee the implementation of that scenario. Interpreting the tax increase risk indicator S1, the attention must be paid to the debt target value. In other words, the tax increase risk is low, if the age-related liabilities are covered during the growth of debt. If the debt growth is limited, then the age-related expenditures are covered by increasing taxes. The debt reduction and age-related expenditures coverage, without increasing taxes, can not be achieved at the same time.

[64] The designed SPB conforms the historical SPB average.

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